

A G E N D A

SOUTHERN NEVADA WATER AUTHORITY BOARD OF DIRECTORS

REGULAR MEETING
9:00 A.M. – SEPTEMBER 15, 2016

BOARD CHAMBERS, SOUTHERN NEVADA WATER AUTHORITY
100 CITY PARKWAY, SEVENTH FLOOR, LAS VEGAS, NEVADA
(702) 258-3100

Board of Directors

Mary Beth Scow, Chair
Sam Bateman, Vice Chair
Bob Coffin
Marilyn Kirkpatrick
Duncan McCoy
Steve Sisolak
Anita Wood

John J. Entsminger,
General Manager

Date Posted: September 8, 2016



The Southern Nevada Water Authority makes reasonable efforts to assist and accommodate persons with physical disabilities who desire to attend the meeting. For assistance, call the Agenda Coordinator at (702) 258-3939 at least 24 hours prior to the meeting.

THIS MEETING HAS BEEN PROPERLY NOTICED AND POSTED IN THE FOLLOWING LOCATIONS:

City of Boulder City, City Hall
401 California Street
Boulder City, Nevada

City of Henderson, City Hall
240 Water Street
Henderson, Nevada

City of North Las Vegas, City Hall
2250 Las Vegas Boulevard North
North Las Vegas, Nevada

City of Las Vegas, City Hall
495 South Main Street
Las Vegas, Nevada

Clark County Government Center
500 S. Grand Central Parkway
Las Vegas, Nevada

Clark County Water Reclamation District
5857 E. Flamingo Road
Las Vegas, Nevada

Southern Nevada Water Authority
100 City Parkway, Suite 700
Las Vegas, Nevada

Las Vegas Valley Water District
1001 S. Valley View Boulevard
Las Vegas, Nevada

All items on the agenda are for action by the Board of Directors, unless otherwise indicated. Items may be taken out of order. The board may combine two or more agenda items for consideration, and the board may remove an item from the agenda or delay discussions relating to an agenda item at any time.

Visit our website at <http://www.snwa.com> or main office at 1001 S. Valley View Boulevard, Las Vegas, Nevada for Southern Nevada Water Authority agenda postings, copies of supporting material and approved minutes. To receive meeting information, including supporting material, contact the Agenda Coordinator at (702) 258-3939 or agendas@snwa.com.

CALL TO ORDER

COMMENTS BY THE GENERAL PUBLIC

NO ACTION MAY BE TAKEN: This is a period devoted to comments by the general public pertaining to items on this agenda. If you wish to speak to the Board about items within its jurisdiction, but not appearing on this agenda, you must wait until the “Comments by the General Public” period listed at the end of this agenda. Please limit your comments to three minutes or less and refrain from making comments that are repetitious, offensive, or amounting to personal attacks. No action may be taken upon a matter not listed on the posted agenda.

ITEM NO.

1. *For Possible Action:* Approve agenda with the inclusion of tabled and/or reconsidered items, emergency items and/or deletion of items, and approve the minutes from the regular meeting of July 21, 2016.

CONSENT AGENDA Items 2 - 9 are routine and can be taken in one motion unless a Director requests that an item be taken separately.

2. *For Possible Action:* Ratify the approval of an assistance agreement between the Bureau of Reclamation and the Authority to accept a grant to support the Authority’s Water Smart Landscape Rebate Program, and authorize the General Manager to approve future modifications only if the future modifications do not fiscally impact the Authority.
3. *For Possible Action:* Approve a subgrant agreement between the Nevada Division of Environmental Protection and the Authority to accept grant funding for regional water quality activities and related public outreach initiatives.
4. *For Possible Action:* Authorize an increase to Bid No. 2241-13, Annual Requirements Contract for the Repair of Electric Motors, to Koffler Electrical Mechanical Apparatus Repair, Inc., for a revised estimated annual contract amount for the current and two remaining option periods.

5. *For Possible Action:* Authorize the renewal of the Authority’s membership in the Water Research Foundation for fiscal year 2016/2017.
6. *For Possible Action:* Approve and authorize the General Manager to sign an agreement between the Water Research Foundation and the Authority for the Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria study, authorize the Authority to contribute monetary funds and in-kind services as its cost-share portion, and accept funds and in-kind services.
7. *For Possible Action:* Approve and authorize the General Manager to sign a joint funding agreement between the U.S. Geological Survey and the Authority for hydrologic data collection.
8. *For Possible Action:* Approve and authorize the General Manager to sign a funding contribution agreement between the Nevada Division of Water Resources and the Authority for surface and groundwater data collection services within Nevada to be performed by the U.S. Geological Survey.
9. *For Possible Action:* Authorize the utilization of the National Joint Powers Alliance Cooperative Purchasing Contract No. 021815 for Agricultural Tractors and/or Implements to purchase five John Deere model tractors with accessories and extended warranties from Deere & Company.

BUSINESS AGENDA

10. *For Possible Action:* Approve and authorize the General Manager to execute, in substantially the same form, a System Conservation Implementation Agreement between the Authority and the United States Bureau of Reclamation; execute ministerial documents to effectuate the transaction and to accept payment for conserved system water over a three-year period with options for Reclamation to renew for seven additional years.
11. *For Possible Action:* Approve and authorize the General Manager to execute an Amended and Restated Water Operation and Management Agreement with the Muddy Valley Irrigation Company; authorize the General Manager or designee to approve the lease of shares; execute ministerial documents to effectuate the transactions; and pay the associated administrative costs of the irrigation company per year with annual escalation as applicable.
12. *For Possible Action:* Approve and authorize the General Manager to execute, in substantially the same form, a Design and Construction Agreement and Water Services Agreement between Robin Prop Holdco, LLC, and the Authority regarding interim water facilities and water service in Garnet Valley.
13. *For Possible Action:* Approve and authorize the General Manager or his designee to execute, in substantially the same form, the First Amended and Restated Lease and Option Agreement and Grant of Rights of First Refusal between Parkway Center LLC and the Authority, and any ministerial documents necessary to effectuate the transaction.
14. *For Information Only:* Receive an update from staff on water resources including, but not limited to, drought conditions in the Colorado River Basin, the results of the implementation of the Authority’s Water Resource and Conservation Plan, activities on the Colorado River, the development of in-state water resources, and the status of construction activities near Lake Mead.

COMMENTS BY THE GENERAL PUBLIC

NO ACTION MAY BE TAKEN: At this time, the Board of Directors will hear general comments from the public on matters under the jurisdiction of the Southern Nevada Water Authority. Please limit your comments to three minutes or less and refrain from making comments that are repetitious, offensive, or amounting to personal attacks. No action may be taken upon a matter not listed on the posted agenda.

**SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
REGULAR MEETING
JULY 21, 2016
MINUTES**

CALL TO ORDER 9:09 a.m., Colorado River Conference Rooms, Southern Nevada Water Authority, 100 City Parkway, Seventh Floor, Las Vegas, Nevada

BOARD MEMBERS PRESENT Mary Beth Scow, Chair
Sam Bateman, Vice Chair
Marilyn Kirkpatrick (via phone)
Duncan McCoy (via phone)
Steve Sisolak
Anita Wood

BOARD MEMBERS ABSENT Bob Coffin

STAFF PRESENT John Entsminger, Greg Walch, Julie Wilcox, Dave Johnson

OTHERS PRESENT None

Unless otherwise indicated, all members present voted in the affirmative.

COMMENTS BY THE GENERAL PUBLIC

For complete comments, audio is available online at snwa.com

There were no speakers.

ITEM NO.

1. ***For Possible Action:*** Approve agenda with the inclusion of tabled and/or reconsidered items, emergency items and/or deletion of items, and approve the minutes from the regular meeting of May 19, 2016.

FINAL ACTION: A motion was made by Director Sisolak that the agenda for this meeting, and the minutes for the regular meeting of May 19, 2016 be approved. The motion passed.

2. ***For Possible Action:*** Appoint a chairman and vice chairman to preside over the Board of Directors for fiscal year 2016/2017, and appoint three directors to serve as commissioners of the Colorado River Commission for two year terms.

FINAL ACTION: A motion was made by Director Sisolak that Mary Beth Scow serve as Chair, Sam Bateman serve as Vice Chair and Directors Duncan McCoy, Marilyn Kirkpatrick and Steve Sisolak serve on the Colorado River Commission. The motion was approved.

CONSENT AGENDA

3. ***For Possible Action:*** Approve a Grant and Cooperative Agreement between the United States Geological Survey and the Authority to accept funding for LiDAR Digital Elevation Data acquisition of the Las Vegas Valley, and authorize the General Manager to approve future modifications to the agreement only if future modifications do not fiscally impact the Authority.
4. ***For Possible Action:*** Approve Amendment No. 1 to the existing agreement between Merrick & Company and the Authority for LiDAR Digital Elevation Data authorizing an increase in compensation for an amount not to exceed \$86,522, for the period from January 1, 2016, through December 31, 2016.
5. ***For Possible Action:*** Approve a Grant and Cooperative Agreement between the Bureau of Land Management and the Authority to receive funding for the Warm Springs Natural Area Public Use Improvements, Phases II and III, and authorize the General Manager to approve future modifications only if future modifications do not fiscally impact the Authority.
6. ***For Possible Action:*** Approve and authorize the General Manager to sign an assistance agreement between the Bureau of Reclamation and the Authority to receive funding for aerial imagery acquisition of the Las Vegas Valley in support of the Water Smart Landscapes Program, and authorize the General Manager to approve future modifications only if future modifications do not fiscally impact the Authority.

7. ***For Possible Action:*** Approve and authorize the General Manager to sign the Third Amended and Restated Agreement between the U.S. Department of the Interior, Bureau of Reclamation, and the Authority for sharing of equipment rental, materials, and subcontractor service costs in the Las Vegas Wash for an amount not to exceed \$900,000.
8. ***For Possible Action:*** Recertify the 2016-17 budget to correct ministerial errors that occurred in the conversion from the Authority's cash-basis budget to the State-required accrual-basis accounting.

FINAL ACTION: Vice Chair Bateman made a motion to approve staff's recommendations. The motion was approved.

BUSINESS AGENDA

9. ***For Possible Action:*** Approve and authorize the General Manager to sign, in substantially the same form as that attached hereto, the Water Service Agreement between the City of North Las Vegas and the Authority for provision of wholesale and retail water service in Garnet Valley.

Director Wood expressed appreciation to the Authority on behalf of the City of North Las Vegas. Chair Scow stated that this item will still have to go through the legislature to enact provisions in the agreement and make North Las Vegas the retail purveyor.

FINAL ACTION: Director Wood made a motion to approve staff's recommendation. The motion was approved.

10. ***For Possible Action:*** Approve and authorize the General Manager to sign, in substantially the same form as that attached hereto, the Water Service Agreement between Hyperloop Technologies, Inc. and the Authority for provision of construction water in the Apex area.

FINAL ACTION: Vice Chair Bateman made a motion to approve staff's recommendation. The motion was approved.

11. ***For Possible Action:*** Approve and authorize the General Manager to execute, in substantially the same form as that attached hereto, Amended and Restated Water Operation and Management Agreements with the Bunkerville Irrigation Company and the Mesquite Irrigation Company; authorize the General Manager or designee to approve the lease of shares; execute ministerial documents to effectuate the transactions; and pay the associated administrative costs of the irrigation companies for an amount not to exceed \$2,500,000 per year with annual escalation as applicable.

FINAL ACTION: A motion was made by Chair Scow to follow staff's recommendations. The motion was approved.

12. ***For Possible Action:*** Authorize an increase in expenditures to Bid No. 2285-15, API 600 Wedge Gate Isolation Valves, awarded to Ferguson Enterprises, Inc., from the amount of \$834,491 to the estimated amount of \$904,491.

FINAL ACTION: Director Wood made a motion to approve staff's recommendation. The motion was approved.

13. ***For Possible Action:*** Award Contract No. 320O 01 C1, AMSWTF Filter Improvements Demonstration, to the Whiting Turner Contracting Company, in the amount of \$3,073,250, authorize a change order contingency amount not to exceed \$300,000, and authorize the General Manager to sign the contract agreement.

FINAL ACTION: Director Wood made a motion to approve staff's recommendation. The motion was approved.

14. ***For Possible Action:*** Approve a professional services agreement with Hobbs, Ong & Associates, Inc., for independent financial advisory services for an amount not to exceed \$150,000 per fiscal year, with the option to renew for four additional one-year periods.

FINAL ACTION: A motion was made by Vice Chair Bateman to follow staff's recommendation. The motion was approved with Director Sisolak abstaining.

15. ***For Information Only:*** Receive an update from staff on water resources including, but not limited to, drought conditions in the Colorado River Basin, the results of the implementation of the Authority's Water Resource and Conservation Plan, activities on the Colorado River, the development of in-state water resources, and the status of construction activities near Lake Mead.

Greg Walch gave a brief update on Colorado River drought conditions, noting minimal changes in hydrology since the last update.

Director Sisolak had a question about a reported statistic regarding return flow usage by the Colorado River Commission, and that it was not consistent with what was reported by the Authority. John Entsminger, General Manager, stated that the Authority would engage on a staff level and make certain that explanations are consistent.

NO ACTION REQUIRED.

16. ***For Information Only:*** View a video commemorating the 25th anniversary of the creation of the Southern Nevada Water Authority.

The Board viewed a video highlighting the Authority's accomplishments over the past 25 years. Following the video, Mr. Entsminger announced the retirement of Engineering Director, Marc Jensen. The Board congratulated and thanked Mr. Jensen, for his service to the agency.

NO ACTION REQUIRED.

Public Comment

Director Sisolak expressed appreciation to Tabitha Fiddymont, Director of Legal Services, for her work representing the agency and its Board members.

Adjournment

There being no further business to come before the Board, the meeting adjourned at 9:36 a.m.

APPROVED:

Mary Beth Scow, Chair

John J. Entsminger, General Manager

Copies of all original agenda items and minutes, including all attachments, are on file in the General Manager's office at the Las Vegas Valley Water District, 1001 South Valley View Boulevard, Las Vegas, Nevada.

**SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS**

AGENDA ITEM

September 15, 2016

Subject: Agreement	Director's Backup
Petitioner: Julie A. Wilcox, Deputy General Manager, Administration	
Recommendations: That the Board of Directors ratify the approval of an assistance agreement between the Bureau of Reclamation and the Authority to accept a grant in an amount not to exceed \$1,000,000 to support the Authority's Water Smart Landscape Rebate Program, and authorize the General Manager to approve future modifications only if the future modifications do not fiscally impact the Authority.	

Fiscal Impact:

The Bureau of Reclamation will reimburse the Authority up to \$1,000,000 in grant funding. Grant funding is contingent on the Authority expending \$9,494,253 toward the issuance of landscape conversion rebates over a three-year period. The required \$3,164,751 for Fiscal Year 2016-2017 is available in the Authority's Capital Budget. Funds for future year expenditures will be budgeted accordingly.

Background:

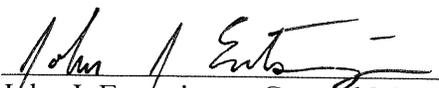
The Bureau of Reclamation (Reclamation) established the WaterSMART: Water and Energy Efficiency Grants Program to provide funding for projects that conserve water and increase water use efficiency and other initiatives. Since 2009, the Authority has submitted grant applications for Reclamation's consideration to offset costs associated with these types of initiatives.

On January 21, 2016, the Board of Directors approved a resolution authorizing the submission of a grant application seeking \$1,000,000 to support funding for the Authority's Water Smart Landscape Rebate Program (WSL Program). The WSL Program provides a financial incentive for property owners to convert turf to water-efficient landscaping by providing funds to offset a portion of conversion costs. In June 2016, the Authority was notified that Reclamation approved a grant in an amount not to exceed \$1,000,000. Reclamation provided the Assistance Agreement to the Authority on August 9, 2016.

Reclamation advised the Authority that the Assistance Agreement must be fully executed by August 31, 2016, in order to fund the award. To accommodate this deadline and receive the funding, Authority staff executed the Assistance Agreement, pending ratification by the Board of Directors. At this time, the Board is being asked to ratify the approval of the Assistance Agreement, which includes the provisions necessary for the Authority to obtain federal funding.

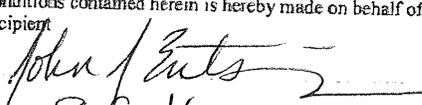
This agreement is being entered into pursuant to NRS 277.180 and Section 6(o) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the agreement.

Respectfully submitted:


 John J. Entsminger, General Manager
 JJE:JAW:ZLM:AMB:KH:kf
 Attachment

AGENDA ITEM #	2
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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
ASSISTANCE AGREEMENT

1A. AGREEMENT NUMBER R16AP00118		1B. MOD NUMBER N/A		2. TYPE OF AGREEMENT <input checked="" type="checkbox"/> GRANT <input type="checkbox"/> COOPERATIVE AGREEMENT		3. CLASS OF RECIPIENT Special District Government	
4. ISSUING OFFICE Bureau of Reclamation Financial Assistance Services 84-27850 Denver Federal Center P.O. Box 25007 Denver Colorado 80225				5. RECIPIENT Southern Nevada Water Authority 1001 S. Valley View Blvd. Las Vegas, NV 89153			
				EIN #:		880278492	
				DUNS #:		135965650	
				County:		Clark	
				Congress. Dist.:		NV-001	
6. GRANTS MANAGEMENT SPECIALIST Bureau of Reclamation Janeen Koza Financial Assistance Operations 84-27852 Denver Federal Center P.O. Box 25007 Denver Colorado 80225 jkoza@usbr.gov 303-445-3446				7. RECIPIENT PROJECT MANAGER Kathy Flanagan Southern Nevada Water Authority 1001 S. Valley View Blvd. Las Vegas, NV 89153 702-258-3173 Kathy.flanagan@snwa.com			
8. GRANTS OFFICER TECHNICAL REPRESENTATIVE Bureau of Reclamation Kenneth Isakson 500 Fir St. - LC-4212 Boulder City, NV 89006-1470 kisakson@usbr.gov 702-293-8537				9A. INITIAL AGREEMENT EFFECTIVE DATE: See block 17.a below		9B. MODIFICATION EFFECTIVE DATE: N/A	
				10. COMPLETION DATE June 30, 2019			
11A. PROGRAM STATUTORY AUTHORITY Section 9504(a) of the Secure Water Act, Subtitle F of Title IX of the Omnibus Public Land Management Act of 2009, Public Law 111-11 (42 United States Code 10364)						11B. CFDA Number 15.507	
12. FUNDING INFORMATION		RECIPIENT/OTHER		RECLAMATION		13. REQUISITION NUMBER 0020107917	
Total Estimated Amount of Agreement		\$9,494,253		\$1,000,000		14A. ACCOUNTING AND APPROPRIATION DATA 16XR0680A1 RY30180006SNWNV30	
This Obligation		\$9,494,253		\$1,000,000			
Previous Obligation		0		0			
Total Obligation		\$9,494,253		\$1,000,000		14B. TREASURY ACCOUNT FUNDING SYMBOL 14X0680	
Cost-Share %		90%		10%			
15. PROJECT TITLE SNWA WaterSmart Landscapes Rebate Program							
16a. Acceptance of this Assistance Agreement in accordance with the terms and conditions contained herein is hereby made on behalf of the above-named recipient  DATE: 8.9.16				17a. Award of this Assistance Agreement in accordance with the terms and conditions contained herein is hereby made on behalf of the United States of America, Department of the Interior, Bureau of Reclamation BY: _____ DATE: _____			
16b. NAME, TITLE, AND TELEPHONE NUMBER OF SIGNER John J. Entsminger, General Manager 702-875-7080 <input type="checkbox"/> Additional signatures are attached				17b. NAME OF GRANTS OFFICER Wilson Orvis 303-445-2444			

Southern Nevada Water Authority

Approved as to form:

By: Dana Walsh

Date: 8-9-16

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Grant Agreement
Between
Bureau of Reclamation
And
Southern Nevada Water Authority
For
SNWA WaterSmart Landscapes Rebate Program

I. OVERVIEW AND SCHEDULE

1. AUTHORITY

This Cooperative Agreement (Agreement) is entered into between the United States of America, acting through the Department of the Interior, Bureau of Reclamation, hereinafter referred to as “Reclamation,” and the Southern Nevada Water Authority, hereinafter referred to as the “Recipient” or “Grantee,” pursuant to the **Section 9504(a) of the SECURE WATER ACT, Subtitle F of Title IX of the OMNIBUS PUBLIC LAND MANAGEMENT ACT OF 2009, Public Law 111-11 (42 United States Code 10364) (the “Act”)**. The following section, provided in full text, authorizes Reclamation to award this financial assistance agreement:

SEC. 9504. WATER MANAGEMENT IMPROVEMENT.

(a) AUTHORIZATION OF GRANTS AND COOPERATIVE AGREEMENTS.—

(1) AUTHORITY OF SECRETARY.—The Secretary may provide any grant to, or enter into an agreement with, any eligible applicant to assist the eligible applicant in planning, designing, or constructing any improvement—

(A) to conserve water;

(B) to increase water use efficiency;

(C) to facilitate water markets;

(D) to enhance water management, including increasing the use of renewable energy in the management and delivery of water;

(E) to accelerate the adoption and use of advanced water treatment technologies to increase water supply;

(F) to prevent the decline of species that the United States Fish and Wildlife Service and National Marine Fisheries Service have proposed for listing under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) (or candidate species that are being considered by those agencies for such listing but are not yet the subject of a proposed rule);

(G) to accelerate the recovery of threatened species, endangered species, and designated critical habitats that are adversely affected by Federal reclamation projects or are subject to a recovery plan or conservation plan under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) under which the Commissioner of Reclamation has implementation responsibilities; or

(H) to carry out any other activity—

(i) to address any climate-related impact to the water supply of the United States that increases ecological resiliency to the impacts of climate change; or

(ii) to prevent any water-related crisis or conflict at any watershed that has a nexus to a Federal reclamation project located in a service area.

2. PUBLIC PURPOSE OF SUPPORT OR STIMULATION

The Nation faces an increasing set of water resource challenges. Aging infrastructure, rapid population growth, depletion of groundwater resources, impaired water quality associated with particular land uses and land covers, water needed for human and environmental uses, and climate variability and change all play a role in determining the amount of fresh water available at any given place and time. Water shortages and water-use conflicts have become more commonplace in many areas of the United States, even in normal water years. As competition for water resources grows—for crop irrigation, growing cities and communities, energy production, and the environment—the need for information and tools to aid water resource managers also grows. Water issues and challenges are increasing across the Nation, but particularly in the West, due to prolonged drought.

3. BACKGROUND AND OBJECTIVES

Water conservation and efficiency are crucial to most Western States' plans to ensure that water is available to meet demands into the future. WaterSMART Grants are an important part of the Department's implementation of the President's June 2013 Climate Action Plan and the November 1, 2013, Executive Order, *Preparing the United States for the Impacts of Climate Change*. Through near-term improvements, projects carried out as WaterSMART Grants can increase water management flexibility, making our water supply more resilient and thereby helping to prepare for the impacts of climate change.

WaterSMART: Water and Energy Efficiency Grants allow States, Indian tribes, irrigation districts, water districts, and other organizations with water or power delivery authority to leverage their money and resources by cost sharing with the Bureau of Reclamation (Reclamation) on projects that seek to conserve and use water more efficiently, increase the use of renewable energy and improve energy efficiency, benefit endangered and threatened species, facilitate water markets, or carry out other activities to address climate-related impacts on water or prevent any water-related crisis or conflict.

The Recipient will expand its landscape rebate program in Las Vegas, Nevada, which provides a financial incentive for property owners to replace turf with water efficient landscaping. The project is expected to result in the replacement of approximately 6,321,839 square feet of turf, with an expected annual water savings of 1,082 acre-feet. Water conserved through this project may be left in the Colorado River for other uses in the Colorado River Basin, augment the Recipient's water resources portfolio or may contribute to existing water banks in California, Arizona, and Southern Nevada.

4. PERIOD OF PERFORMANCE AND FUNDS AVAILABILITY

This Agreement becomes effective on the date shown in Block 17a of Form 7-2279, United States of America, Department of the Interior, Bureau of Reclamation, Assistance Agreement. The Agreement shall remain in effect until the date shown in Block 10 of Form 7-2279, United States of America, Department of the Interior, Bureau of Reclamation, Assistance Agreement. The period of performance for this Agreement may only be modified through written modification of the Agreement by a Reclamation Grants Officer (GO).

No legal liability on the part of the Government for any payment may arise until funds are made available, in writing, to the Recipient by the Grants Officer. The total estimated amount of federal funding for this agreement is **\$1,000,000** of which the initial amount of federal funds available is limited to **\$1,000,000** as indicated by "this obligation" within Block 12 of Form 7-2279, United States of America, Department of the Interior, Bureau of Reclamation, Assistance Agreement. Subject to the availability of Congressional appropriations, subsequent funds will be made available for payment through written modifications to this agreement by a Reclamation Grants Officer.

5. SCOPE OF WORK AND MILESTONES

The Recipient will provide rebates to encourage property owners to convert turf to drought-tolerant landscaping. Through the Water Smart Landscapes Rebate program, Southern Nevada Water Authority provides \$2.00 rebates per square-foot for the first 5,000 square-feet of lawn converted per property and \$1.00 rebates per square-foot for each additional square-foot removed. Under this program, the maximum award for any property per fiscal year (July 1 through June 30) is \$300,000.00 in approved rebates. These rebate amounts are subject to change with approval by the Recipient's Board of Directors. Reclamation approval, through a formal modification to this Agreement, is required if any proposed change to the scope (including but not limited to the rebate structure or percentage of non-federal cost-share) could result in change to the amount of water conserved (for this Agreement, it is estimated that the program will result in 1,082 acre-feet of water conserved annually).

Through this Agreement, the Recipient will provide rebates for the conversion of approximately 6.3 million square-feet of turf to water efficient landscaping, resulting in an estimated water savings of 1,082 acre-feet per year (AFY). Rebate amounts are set by Southern Nevada Water Authority's Board based on the number of square feet converted. Average rebate issuance is about \$1.66 per square foot converted.

Areas to be converted must use water from a Southern Nevada Water Authority (SNWA) member agency or groundwater well within the Las Vegas Valley Groundwater Basin.

Water Smart Landscapes Program Process:

The following details the general process that applicants to the Water Smart Landscape Rebates (WSL) program follow to qualify for and receive landscape conversion rebates:

(Step 1-2 Approximate Duration: 14 days)

1. Application - Single-family property owners must submit an application to the WSL Program via mail or internet. Commercial and institutional properties contact a Programs Coordinator directly.
2. Pre-conversion site inspection – All properties must meet eligibility requirements. At the pre-conversion site inspection, Recipient staff will document the existing landscape, determine eligibility to participate in the program and explain the program requirements to the property owner or agent.

(Step 3 Approximate Duration: Customer dependent up to 6 months)

3. Six month performance period – After the Recipient deems the property eligible for participation, the property owner is given up to six months to complete a landscape conversion. Subject to Recipient approval, participants may be granted up to six additional months.

(Step 4-5 Approximate Duration: 21 days)

4. Post-conversion site inspection – Upon notice from the applicant that a conversion is complete, Recipient will inspect the landscape to ensure it meets minimum requirements and to determine the square footage eligible for rebate. If program requirements are not met, the applicant is given an additional 60 days or the remainder of the six-month time period to take corrective action.
5. Rebate issuance – Following a successful post-conversion site inspection, the customer is notified of the rebate amount. The customer acknowledges the amount by signing a form and returning it. A rebate check is then processed and mailed.

On average, this entire process takes approximately 3 to 4 months from initial customer request. The Recipient will track and monitor the effectiveness of the WSL Program.

Information regarding results of the program can be made available to Reclamation as needed, or quarterly through progress reporting processes. At project completion, Reclamation will be provided with a report summarizing the number of square feet converted, rebates issued, acre-feet per year saved and other relevant program information.

After review of the methodology used to estimate water conservation savings, consideration of the supporting documentation provided by Recipient, and adjustments made during the evaluation of the Project, it was determined that these improvements are expected to result in 1,082 acre-feet of water conserved annually.

Milestone / Task / Activity	Planned Start Date	Planned Completion Date
YEAR 1 Rebate Program	July 1, 2016	June 30, 2017
YEAR 2 Rebate Program	July 1, 2017	June 30, 2018
YEAR 3 Rebate Program	July 1, 2018	June 30, 2019

6. RESPONSIBILITY OF THE PARTIES

6.1 Recipient Responsibilities

6.1.1 The Recipient shall carry out the Scope of Work (SOW) in accordance with the terms and conditions stated herein. The Recipient shall adhere to Federal, state, and local laws, regulations, and codes, as applicable, and shall obtain all required approvals and permits. If the SOW contains construction activities, the Recipient is responsible for construction inspection, oversight, and acceptance. If applicable, the Recipient shall also coordinate and obtain approvals from site owners and operators.

6.1.2 Recipient will prepare and submit to Reclamation a final project performance report (Final Report) as required by Section 9 of this Agreement. The Final Report will include (but is not limited to) the information identified in Paragraph 9.3 and will discuss the following:

- Whether the Project objectives and goals were met
- The amount of water conserved, if applicable, including information and/or calculations supporting that amount
- The amount of energy the renewable energy system is generating annually, if applicable
- How the Project demonstrated collaboration, if applicable

6.2 Reclamation Responsibilities

Reclamation will monitor and provide Federal oversight of activities performed under this Agreement. Monitoring and oversight includes review and approval of financial status and performance reports, payment requests, and any other deliverables identified as part of the SOW. Additional monitoring activities may include site visits, conference calls, and other on-site and off-site monitoring activities. At the Recipient's request, Reclamation may also provide technical assistance to the Recipient in support of the SOW and objectives of this Agreement.

7. BUDGET

7.1 Budget Estimate. The following is the estimated budget for this Agreement. As Federal financial assistance agreements are cost-reimbursable, the budget provided is for estimation purposes only. Final costs incurred under the budget categories listed may be either higher or lower than the estimated costs and may occur in different times than those listed throughout the three year period. All costs incurred by the Recipient under this agreement must be in accordance with any pre-award clarifications conducted between the Recipient and Reclamation, as well as with the terms and conditions of this Agreement. Final determination of the allowability, allocability, or reasonableness of costs incurred under this agreement is the responsibility of the Grants Officer. Recipients are encouraged to direct any questions regarding allowability, allocability or reasonableness of costs to the Grants Officer for review prior to incurrence of the costs in question.

R16AP00118 - SNWA Rebate Program

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	\$/Unit	Quantity		
Other				\$10,494,253
Customer Rebates Year One	\$1.66	2107279	square feet	\$3,498,083
Customer Rebates Year Two	\$1.66	2107280	square feet	\$3,498,083
Customer Rebates Year Three	\$1.66	2107280	square feet	\$3,498,083
TOTAL ESTIMATED PROJECT COSTS				\$10,494,253

FUNDING SOURCES	ESTIMATED PERCENT TOTAL PROJECT COST	TOTAL COST BY SOURCE
RECIPIENT FUNDING	90%	\$9,494,253
OTHER NON-FEDERAL FUNDING	0%	\$0
RECLAMATION FUNDING	10%	\$1,000,000
OTHER FEDERAL FUNDING	0%	\$0
TOTALS	100%	\$10,494,253

7.2 Cost Sharing Requirement

At least 50 % non-Federal cost-share is required for costs incurred under this Agreement. If pre-award costs are authorized, reimbursement of these costs is limited to federal cost share percentage identified in this Agreement.

The Federal share of allowable costs shall not be expended in advance of the Recipient's non-Federal share. It is expected that expenditure of Federal and non-Federal funds shall occur

concurrently based upon the cost share percentages reflected in Block 12 of Form 7-2279 United States of America, Department of the Interior, Bureau of Reclamation, Assistance Agreement. At the end of the period of performance, if the final costs are lower than the original estimate and the 50% nonfederal cost share is met, the final payment and financial report can reflect a lower Recipient cost share than the original budget estimate.

If a bona fide need arises which requires the expenditure of Federal funds in advance of the Recipient share, then the Recipient must request written approval from the Grants Officer prior to the expenditure. Recipients may expend their agreed upon share of costs in advance of the expenditure of Federal funds without prior written approval.

7.3 Pre-Award Incurrence of Costs

The Recipient shall be entitled to reimbursement for costs incurred on or after July 1, 2016, which if had been incurred after this Agreement was entered into, would have been allowable, allocable, and reasonable under the terms and conditions of this Agreement.

7.4 Allowable Costs (2 CFR Subpart E §200.400 through §200.475)

Costs incurred for the performance of this Agreement must be allowable, allocable to the project, and reasonable. The following regulations, codified within the Code of Federal Regulations (CFR), governs the allowability of costs for Federal financial assistance:

2 CFR Subpart E, "Cost Principles"

Expenditures for the performance of this Agreement must conform to the requirements within this CFR. The Recipient must maintain sufficient documentation to support these expenditures. Questions on the allowability of costs should be directed to the GO responsible for this Agreement.

The Recipient shall not incur costs or obligate funds for any purpose pertaining to operation of the program or activities beyond the expiration date stated in the Agreement. The only costs which are authorized for a period of up to 90 days following the project performance period are those strictly associated with closeout activities for preparation of the final reports.

7.5 Revision of Budget and Program Plans (2 CFR §200.308)

In accordance with 2 CFR §200.308(c)-(e) the Recipient must request prior written approval for any of the following changes:

- a) A change in the approved scope of work or associated tasks, even if there is no associated budget revisions.
- b) Change in key personnel specified in Section 8 "Key Personnel" of this Agreement.
- c) Changes in the approved cost-sharing or matching outlined within this Agreement in Section 7.2 "Cost Share requirements"

- d) Inclusion of pre-award costs or reimbursement for pre-award costs which are not included in the initially approved budget and included in Section 7.3 "Pre-Award Incurrence of Costs" of this Agreement.
- e) Extensions to the Completion Date outlined in Block 10 of the coversheet (form 7-2279) of this Agreement.
- f) The transfer of funds between direct cost categories, functions, and activities for which the expected transfer amount is to exceed 10 percent of the total approved budget.

7.6 Modifications

Any changes to this Agreement shall be made by means of a written modification. Reclamation may make changes to the Agreement by means of a unilateral modification to address administrative matters, such as changes in address, no-cost time extensions, changes to Reclamation Key Personnel, or the addition of previously agreed upon funding. Additionally, a unilateral modification may be utilized by Reclamation if it should become necessary to suspend or terminate the Agreement in accordance with 2 CFR §200.338.

All other changes shall be made by means of a bilateral modification to the Agreement. No oral statement made by any person, or written statement by any person other than the GO, shall be allowed in any manner or degree to modify or otherwise effect the terms of the Agreement.

All requests for modification of the Agreement shall be made in writing, provide a full description of the reason for the request, and be sent to the attention of the GO. Any request for project extension shall be made at least 45 days prior to the expiration date of the Agreement or the expiration date of any extension period that may have been previously granted. Any determination to extend the period of performance or to provide follow-on funding for continuation of a project is solely at the discretion of Reclamation.

8. KEY PERSONNEL

8.1 Recipient's Key Personnel

The Recipient's Project Manager for this Agreement shall be:

Kathy Flanagan
Southern Nevada Water Authority
1001 S. Valley View Blvd.
Las Vegas, NV 89153
702-258-3173
Kathy.flanagan@snwa.com

8.2 Reclamation's Key Personnel

8.2.1 Grants Officer (GO):

Wilson Orvis
Bureau of Reclamation
Financial Assistance Services, Denver Federal Center
PO Box 25007, Denver Federal Center
Denver, CO 80225
worvis@usbr.gov
303-445-2444

- (a) The GO is the only official with legal delegated authority to represent Reclamation. The GO's responsibilities include, but are not limited to, the following:
- (1) Formally obligate Reclamation to expend funds or change the funding level of the Agreement;
 - (2) Approve through formal modification changes in the scope of work and/or budget;
 - (3) Approve through formal modification any increase or decrease in the period of performance of the Agreement;
 - (4) Approve through formal modification changes in any of the expressed terms, conditions, or specifications of the Agreement;
 - (5) Be responsible for the overall administration, management, and other non-programmatic aspects of the Agreement including, but not limited to, interpretation of financial assistance statutes, regulations, circulars, policies, and terms of the Agreement;
 - (6) Where applicable, ensures that Reclamation complies with the administrative requirements required by statutes, regulations, circulars, policies, and terms of the Agreement.

8.2.2 Grants Officer Technical Representative (GOTR):

Kenneth Isakson
LC-4212
500 Fir St.
Boulder City, NV 89006-1470
702-293-8537
kisakson@usbr.gov

- (a) The GOTR's authority is limited to technical and programmatic aspects of the Agreement. The GOTR's responsibilities include, but are not limited to, the following:

- (1) Assist the Recipient, as necessary, in interpreting and carrying out the scope of work in the Agreement;
 - (2) Review, and where required, approve Recipient reports and submittals as required by the Agreement;
 - (3) Where applicable, monitor the Recipient to ensure compliance with the technical requirements of the Agreement;
 - (4) Where applicable, ensure that Reclamation complies with the technical requirements of the Agreement;
- (b) The GOTR does not have the authority to and may not issue any technical assistance which:
- (1) Constitutes an assignment of additional work outside the scope of work of the Agreement;
 - (2) In any manner causes an increase or decrease in the total estimated cost or the time required for performance; or
 - (3) Changes any of the expressed terms, conditions, or specifications of the Agreement.

8.2.3 Grants Management Specialist. The Grants Management Specialist is the primary administrative point of contact for this Agreement and should be contacted regarding issues related to the day-to-day management of the Agreement. Requests for approval regarding the terms and conditions of the Agreement, including but not limited to modifications and prior approval, may only be granted, in writing, by a Reclamation Grants Officer. Please note that for some agreements, the Grants Officer and the Grants Management Specialist may be the same individual.

Janeen Koza, Grants Management Specialist
Bureau of Reclamation
Financial Assistance Services, Denver Federal Center
PO Box 25007, Denver Federal Center
Denver, CO 80225
jkoza@usbr.gov
303-445-3446

9. REPORTING REQUIREMENTS AND DISTRIBUTION

9.1 Noncompliance. Failure to comply with the reporting requirements contained in this Agreement may be considered a material noncompliance with the terms and conditions of the award. Noncompliance may result in withholding of payments pending receipt of required reports, denying both the use of funds and matching credit for all or part of the cost of the activity or action not in compliance, whole or partial suspension or termination of the Agreement, recovery of funds paid under the Agreement, withholding of future awards, or other legal remedies in accordance with 2 CFR §200.338.

9.2 Financial Reports. Financial Status Reports shall be submitted by means of the SF-425 and shall be submitted according to the Report Frequency and Distribution schedule below. All financial reports shall be signed by an Authorized Certifying Official for the Recipient's organization.

9.3 Monitoring and reporting program performance (2 CFR §200.328)

(a) Monitoring by the non-Federal entity. The non-Federal entity is responsible for oversight of the operations of the Federal award supported activities. The non-Federal entity must monitor its activities under Federal awards to assure compliance with applicable Federal requirements and performance expectations are being achieved. Monitoring by the non-Federal entity must cover each program, function or activity. See also §200.331 Requirements for pass-through entities.

(b) Non-construction performance reports. The Federal awarding agency must use standard, OMB-approved data elements for collection of performance information (including performance progress reports, Research Performance Progress Report, or such future collections as may be approved by OMB and listed on the OMB Web site).

(1) The non-Federal entity must submit performance reports at the interval required by the Federal awarding agency or pass-through entity to best inform improvements in program outcomes and productivity. Intervals must be no less frequent than annually nor more frequent than quarterly except in unusual circumstances, for example where more frequent reporting is necessary for the effective monitoring of the Federal award or could significantly affect program outcomes. Annual reports must be due 90 calendar days after the reporting period; quarterly or semiannual reports must be due 30 calendar days after the reporting period. Alternatively, the Federal awarding agency or pass-through entity may require annual reports before the anniversary dates of multiple year Federal awards. The final performance report will be due 90 calendar days after the period of performance end date. If a justified request is submitted by a non-Federal entity, the Federal agency may extend the due date for any performance report.

(2) The non-Federal entity must submit performance reports using OMB-approved government-wide standard information collections when providing performance information. As appropriate in accordance with above mentioned information collections, these reports will contain, for each Federal award, brief information on the following unless other collections are approved by OMB:

(i) A comparison of actual accomplishments to the objectives of the Federal award established for the period. Where the accomplishments of the Federal award can be quantified, a computation of the cost (for example, related to units of accomplishment) may be required if that information will be useful. Where performance trend data and analysis would be informative to the Federal awarding agency program, the Federal awarding agency should include this as a performance reporting requirement.

(ii) The reasons why established goals were not met, if appropriate.

(iii) Additional pertinent information including, when appropriate, analysis and explanation of cost overruns or high unit costs.

(c) Construction performance reports. For the most part, onsite technical inspections and certified percentage of completion data are relied on heavily by Federal awarding agencies and pass-through entities to monitor progress under Federal awards and subawards for construction. The Federal awarding agency may require additional performance reports only when considered necessary.

(d) Significant developments. Events may occur between the scheduled performance reporting dates that have significant impact upon the supported activity. In such cases, the non-Federal entity must inform the Federal awarding agency or pass-through entity as soon as the following types of conditions become known:

(1) Problems, delays, or adverse conditions which will materially impair the ability to meet the objective of the Federal award. This disclosure must include a statement of the action taken, or contemplated, and any assistance needed to resolve the situation.

(2) Favorable developments which enable meeting time schedules and objectives sooner or at less cost than anticipated or producing more or different beneficial results than originally planned.

Reclamation requires Performance reporting for all financial assistance awards, both Construction and non-Construction. Performance reports for Construction agreements shall meet the same minimum requirements outlined in 2 CFR §200.328(b)(2) above.

9.4 Report Frequency and Distribution. The following table sets forth the reporting requirements for this Agreement. Please note the first report due date listed for each type of report.

Required Reports	Interim Reports	Final Report
Performance Report		
Format	No specific format required. See content requirements within Section 9.3 (2 CFR §200.328) above.	Summary of activities completed during the entire period of performance is required. See content requirements within Section 9.3 (2 CFR §200.328) above.
Reporting Frequency	Semi-Annual	Final Report due after completion of Agreement's period of performance
Reporting Period	For Semi-Annual Reporting: October 1 through March 31 and April 1 through September 30.	Entire period of performance
Due Date*	Within 30 days after the end of the Reporting Period.	Within 90 days after the completion date of the Agreement
First Report Due Date	The first performance report is due for reporting period ending September 30, 2016	N/A
Submit to:	<u>sha-dro-faoperations@usbr.gov</u>	<u>sha-dro-faoperations@usbr.gov</u>
Federal Financial Report		
Format	SF-425 (all sections must be completed)	SF-425(all sections must be completed)
Reporting Frequency	Semi-Annual	Final Report due after completion of Agreement's period of performance
Reporting Period	For Semi-Annual Reporting: October 1 through March 31 and April 1 through September 30.	Entire period of performance
Due Date*	Semi-Annual Reporting: Within 30 days after the end of the Reporting Period.	Within 90 days after the completion date of the Agreement
First Report Due Date	The first performance report is due for reporting period ending September 30, 2016	N/A
Submit to:	<u>sha-dro-faoperations@usbr.gov</u>	<u>sha-dro-faoperations@usbr.gov</u>

* If the completion date is prior to the end of the next reporting period, then no interim report is due for that period. Instead, the Recipient is required only to submit the final financial and performance reports, which will cover the entire period of performance including the last abbreviated reporting period.

10. REGULATORY COMPLIANCE

The Recipient agrees to comply or assist Reclamation with all regulatory compliance requirements and all applicable state, Federal, and local environmental and cultural and paleontological resource protection laws and regulations as applicable to this project. These may include, but are not limited to, the National Environmental Policy Act (NEPA), including the Council on Environmental Quality and Department of the Interior regulations implementing NEPA, the Clean Water Act, the Endangered Species Act, consultation with potentially affected Tribes, and consultation with the State Historic Preservation Office.

Certain environmental and other associated compliance are Federal responsibilities, and will occur as appropriate. Reclamation will identify the need for and will complete any appropriate environmental compliance requirements, as identified above, pertinent to Reclamation pursuant to activities specific to this assisted activity. Environmental and other associated compliance shall be completed prior to the start of this project. As such, notwithstanding any other provision of this Agreement, Reclamation shall not provide any funds to the Recipient for Agreement purposes, and the Recipient shall not begin implementation of the assisted activity described in this Agreement, until Reclamation provides written notice to the Recipient that all applicable environmental and regulatory compliance analyses and clearances have been completed and that the Recipient may begin implementation of the assisted activity. If the Recipient begins project activities that require environmental and other regulatory compliance approval, such as construction activities, prior to receipt of written notice from Reclamation that all such clearances have been obtained, then Reclamation reserves the right to unilaterally terminate this Agreement for cause.

11. AGRICULTURAL OPERATIONS [Public Law 111-11, Section 9504(a)(3)(B)]

The Recipient shall not use any associated water savings to increase the total irrigated acreage of the Recipient or otherwise increase the consumptive use of water in the operation of the Recipient, as determined pursuant to the law of the State in which the operation of Recipient is located.

12. TITLE TO IMPROVEMENTS [Public Law 111-11, Section 9504(a)(3)(D)]

If the activities funded under this Agreement result in an infrastructure improvement to a federally owned facility, the Federal Government shall continue to hold title to the facility and improvements to the facility.

13. OPERATION AND MAINTENANCE COSTS [Public Law 111-11, Section 9504(a)(3)(E)(iv.)]

The non-Federal share of the cost of operating and maintaining any infrastructure improvement funded through this Agreement shall be 100 percent.

14. LIABILITY [Public Law 111-11, Section 9504(a)(3)(F)]

- (a) **IN GENERAL.**—Except as provided under chapter 171 of title 28, United States Code (commonly known as the “Federal Tort Claims Act”), the United States shall not be liable for monetary damages of any kind for any injury arising out of an act, omission, or occurrence that arises in relation to any facility created or improved under this Agreement, the title of which is not held by the United States.
- (b) **TORT CLAIMS ACT.**—Nothing in this section increases the liability of the United States beyond that provided in chapter 171 of title 28, United States Code (commonly known as the “Federal Tort Claims Act”).

II. RECLAMATION STANDARD TERMS AND CONDITIONS

1. REGULATIONS

The regulations at 2 CFR Subtitle A, Chapter II, Part 200 “Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards”, are hereby incorporated by reference as though set forth in full text. Failure of a Recipient to comply with any applicable regulation or circular may be the basis for withholding payments for proper charges made by the Recipient and/or for termination of support.

2. PAYMENT

2.1 Payment. (2 CFR §200.305)

(a) For states, payments are governed by Treasury-State CMIA agreements and default procedures codified at 31 CFR Part 205 “Rules and Procedures for Efficient Federal-State Funds Transfers” and TFM 4A-2000 Overall Disbursing Rules for All Federal Agencies.

(b) For non-Federal entities other than states, payments methods must minimize the time elapsing between the transfer of funds from the United States Treasury or the pass-through entity and the disbursement by the non-Federal entity whether the payment is made by electronic funds transfer, or issuance or redemption of checks, warrants, or payment by other means. See also §200.302 Financial management paragraph (b)(6). Except as noted elsewhere in this part, Federal agencies must require recipients to use only OMB-approved standard government-wide information collection requests to request payment.

- (1) The non-Federal entity must be paid in advance, provided it maintains or demonstrates the willingness to maintain both written procedures that minimize the time elapsing between the transfer of funds and disbursement by the non-Federal entity, and financial management systems that meet the standards for fund control and accountability as established in this part. Advance payments to a non-Federal entity must be limited to the minimum amounts needed and be timed to be in accordance with the actual, immediate cash requirements of the non-Federal entity in carrying out the purpose of the approved program or project. The timing and amount of advance payments must be as close as is administratively feasible to the actual disbursements by the non-Federal entity for direct program or project costs and the proportionate share of any allowable indirect costs. The non-Federal entity must make timely payment to contractors in accordance with the contract provisions.
- (2) Whenever possible, advance payments must be consolidated to cover anticipated cash needs for all Federal awards made by the Federal awarding agency to the recipient.
 - (i) Advance payment mechanisms include, but are not limited to, Treasury check and electronic funds transfer and must comply with applicable guidance in 31 CFR part 208.
 - (ii) Non-Federal entities must be authorized to submit requests for advance payments and reimbursements at least monthly when electronic fund transfers are not used, and as often as they like when electronic transfers are used, in accordance with the provisions of the Electronic Fund Transfer Act (15 U.S.C. 1693-1693r).
- (3) Reimbursement is the preferred method when the requirements in paragraph (b) cannot be met, when the Federal awarding agency sets a specific condition per §200.207 Specific conditions, or when the non-Federal entity requests payment by reimbursement. This method may be used on any Federal award for construction, or if the major portion of the construction project is accomplished through private market financing or Federal loans, and the Federal award constitutes a minor portion of the project. When the reimbursement method is used, the Federal awarding agency or pass-through entity must make payment within 30 calendar days after receipt of the billing, unless the Federal awarding agency or pass-through entity reasonably believes the request to be improper.
- (4) If the non-Federal entity cannot meet the criteria for advance payments and the Federal awarding agency or pass-through entity has determined that reimbursement is not feasible because the non-Federal entity lacks sufficient working capital, the Federal awarding agency or pass-through entity may provide cash on a working capital advance basis. Under this procedure, the Federal awarding agency or pass-through entity must advance cash payments to the non-Federal entity to cover its estimated disbursement needs for an initial period generally geared to the non-Federal entity's disbursing cycle. Thereafter, the Federal awarding agency or pass-through entity must reimburse the non-Federal entity for its actual cash disbursements. Use of the working capital advance method of payment requires that the pass-through entity provide timely advance

payments to any subrecipients in order to meet the subrecipient's actual cash disbursements. The working capital advance method of payment must not be used by the pass-through entity if the reason for using this method is the unwillingness or inability of the pass-through entity to provide timely advance payments to the subrecipient to meet the subrecipient's actual cash disbursements.

(5) Use of resources before requesting cash advance payments. To the extent available, the non-Federal entity must disburse funds available from program income (including repayments to a revolving fund), rebates, refunds, contract settlements, audit recoveries, and interest earned on such funds before requesting additional cash payments.

(6) Unless otherwise required by Federal statutes, payments for allowable costs by non-Federal entities must not be withheld at any time during the period of performance unless the conditions of §§200.207 Specific conditions, Subpart D—Post Federal Award Requirements of this part, 200.338 Remedies for Noncompliance, or one or more of the following applies:

(i) The non-Federal entity has failed to comply with the project objectives, Federal statutes, regulations, or the terms and conditions of the Federal award.

(ii) The non-Federal entity is delinquent in a debt to the United States as defined in OMB Guidance A-129, "Policies for Federal Credit Programs and Non-Tax Receivables." Under such conditions, the Federal awarding agency or pass-through entity may, upon reasonable notice, inform the non-Federal entity that payments must not be made for obligations incurred after a specified date until the conditions are corrected or the indebtedness to the Federal Government is liquidated.

(iii) A payment withheld for failure to comply with Federal award conditions, but without suspension of the Federal award, must be released to the non-Federal entity upon subsequent compliance. When a Federal award is suspended, payment adjustments will be made in accordance with §200.342 Effects of suspension and termination.

(iv) A payment must not be made to a non-Federal entity for amounts that are withheld by the non-Federal entity from payment to contractors to assure satisfactory completion of work. A payment must be made when the non-Federal entity actually disburses the withheld funds to the contractors or to escrow accounts established to assure satisfactory completion of work.

(7) Standards governing the use of banks and other institutions as depositories of advance payments under Federal awards are as follows.

(i) The Federal awarding agency and pass-through entity must not require separate depository accounts for funds provided to a non-Federal entity or establish any eligibility requirements for depositories for funds provided to the

non-Federal entity. However, the non-Federal entity must be able to account for the receipt, obligation and expenditure of funds.

(ii) Advance payments of Federal funds must be deposited and maintained in insured accounts whenever possible.

(8) The non-Federal entity must maintain advance payments of Federal awards in interest-bearing accounts, unless the following apply.

(i) The non-Federal entity receives less than \$120,000 in Federal awards per year.

(ii) The best reasonably available interest-bearing account would not be expected to earn interest in excess of \$500 per year on Federal cash balances.

(iii) The depository would require an average or minimum balance so high that it would not be feasible within the expected Federal and non-Federal cash resources.

(iv) A foreign government or banking system prohibits or precludes interest bearing accounts.

(9) Interest earned amounts up to \$500 per year may be retained by the non-Federal entity for administrative expense. Any additional interest earned on Federal advance payments deposited in interest-bearing accounts must be remitted annually to the Department of Health and Human Services Payment Management System (PMS) through an electronic medium using either Automated Clearing House (ACH) network or a Fedwire Funds Service payment. Remittances must include pertinent information of the payee and nature of payment in the memo area (often referred to as "addenda records" by Financial Institutions) as that will assist in the timely posting of interest earned on federal funds. Pertinent details include the Payee Account Number (PAN) if the payment originated from PMS, or Agency information if the payment originated from ASAP, NSF or another federal agency payment system. The remittance must be submitted as follows:

(i) For ACH Returns:

Routing Number: 051036706

Account number: 303000

Bank Name and Location: Credit Gateway—ACH Receiver St. Paul, MN

(ii) For Fedwire Returns*:

Routing Number: 021030004

Account number: 75010501

Bank Name and Location: Federal Reserve Bank Treas NYC/Funds Transfer Division New York, NY

(* Please note organization initiating payment is likely to incur a charge from your Financial Institution for this type of payment)

(iii) For International ACH Returns:
Beneficiary Account: Federal Reserve Bank of New York/ITS (FRBNY/ITS)
Bank: Citibank N.A. (New York)
Swift Code: CITIUS33
Account Number: 36838868
Bank Address: 388 Greenwich Street, New York, NY 10013 USA
Payment Details (Line 70): Agency
Name (abbreviated when possible) and ALC Agency POC: Michelle Haney,
(301) 492-5065

(iv) For recipients that do not have electronic remittance capability, please make check** payable to: "The Department of Health and Human Services."
Mail Check to Treasury approved lockbox:
HHS Program Support Center, P.O. Box 530231, Atlanta, GA 30353-0231
(** Please allow 4-6 weeks for processing of a payment by check to be applied to the appropriate PMS account)

(v) Any additional information/instructions may be found on the PMS Web site at <http://www.dpm.psc.gov/>.

2.2 Payment Method

Recipients must utilize the Department of Treasury Automated Standard Application for Payments (ASAP) payment system to request advance or reimbursement payments. ASAP is a Recipient-initiated payment and information system designed to provide a single point of contact for the request and delivery of Federal funds. ASAP is the only allowable method for request and receipt of payment. Recipient procedures must minimize the time elapsing between the drawdown of Federal funds and the disbursement for agreement purposes.

Recipients must complete enrollment in ASAP for all active financial assistance agreements with Reclamation. ASAP enrollment is specific to each Agency and Bureau; meaning, if a Recipient organization has an existing ASAP account with another Federal agency or Department of the Interior bureau, but not with Reclamation, then the Recipient must initiate and complete enrollment in ASAP under Reclamation's Agency Location Code (1425) through submission of an enrollment form found at www.usbr.gov/mso/aamd/asap.html. For information regarding ASAP enrollment, please visit www.usbr.gov/mso/aamd/asap.html, or contact the Reclamation ASAP Help Desk BOR_ASAP_Enroll@usbr.gov. Further information regarding ASAP may be obtained from the ASAP website at <http://www.fms.treas.gov/asap>.

In accordance with 2 CFR 25.200(b)(2) the Recipient shall "Maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by an agency". If the Recipient allows their SAM registration to lapse, the Recipient's accounts within ASAP will be automatically suspended by Reclamation until such time as the Recipient renews their SAM registration.

3. PROCUREMENT STANDARDS (2 CFR§200.317 through §200.326)

§200.317 Procurements by states.

When procuring property and services under a Federal award, a state must follow the same policies and procedures it uses for procurements from its non-Federal funds. The state will comply with §200.322 Procurement of recovered materials and ensure that every purchase order or other contract includes any clauses required by section §200.326 Contract provisions. All other non-Federal entities, including subrecipients of a state, will follow §§200.318 General procurement standards through 200.326 Contract provisions.

§200.318 General procurement standards.

- (a) The non-Federal entity must use its own documented procurement procedures which reflect applicable State, local, and tribal laws and regulations, provided that the procurements conform to applicable Federal law and the standards identified in this part.
- (b) Non-Federal entities must maintain oversight to ensure that contractors perform in accordance with the terms, conditions, and specifications of their contracts or purchase orders.
- (c)
 - (1) The non-Federal entity must maintain written standards of conduct covering conflicts of interest and governing the actions of its employees engaged in the selection, award and administration of contracts. No employee, officer, or agent may participate in the selection, award, or administration of a contract supported by a Federal award if he or she has a real or apparent conflict of interest. Such a conflict of interest would arise when the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization which employs or is about to employ any of the parties indicated herein, has a financial or other interest in or a tangible personal benefit from a firm considered for a contract. The officers, employees, and agents of the non-Federal entity may neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or parties to subcontracts. However, non-Federal entities may set standards for situations in which the financial interest is not substantial or the gift is an unsolicited item of nominal value. The standards of conduct must provide for disciplinary actions to be applied for violations of such standards by officers, employees, or agents of the non-Federal entity.
 - (2) If the non-Federal entity has a parent, affiliate, or subsidiary organization that is not a state, local government, or Indian tribe, the non-Federal entity must also maintain written standards of conduct covering organizational conflicts of interest. Organizational conflicts of interest means that because of relationships with a parent company, affiliate, or subsidiary organization, the non-Federal entity is unable or appears to be unable to be impartial in conducting a procurement action involving a related organization.
- (d) The non-Federal entity's procedures must avoid acquisition of unnecessary or duplicative items. Consideration should be given to consolidating or breaking out procurements to obtain a

more economical purchase. Where appropriate, an analysis will be made of lease versus purchase alternatives, and any other appropriate analysis to determine the most economical approach.

(e) To foster greater economy and efficiency, and in accordance with efforts to promote cost-effective use of shared services across the Federal Government, the non-Federal entity is encouraged to enter into state and local intergovernmental agreements or inter-entity agreements where appropriate for procurement or use of common or shared goods and services.

(f) The non-Federal entity is encouraged to use Federal excess and surplus property in lieu of purchasing new equipment and property whenever such use is feasible and reduces project costs.

(g) The non-Federal entity is encouraged to use value engineering clauses in contracts for construction projects of sufficient size to offer reasonable opportunities for cost reductions. Value engineering is a systematic and creative analysis of each contract item or task to ensure that its essential function is provided at the overall lower cost.

(h) The non-Federal entity must award contracts only to responsible contractors possessing the ability to perform successfully under the terms and conditions of a proposed procurement. Consideration will be given to such matters as contractor integrity, compliance with public policy, record of past performance, and financial and technical resources. See also §200.212 Suspension and debarment.

(i) The non-Federal entity must maintain records sufficient to detail the history of procurement. These records will include, but are not necessarily limited to the following: rationale for the method of procurement, selection of contract type, contractor selection or rejection, and the basis for the contract price.

(j)

(1) The non-Federal entity may use a time and materials type contract only after a determination that no other contract is suitable and if the contract includes a ceiling price that the contractor exceeds at its own risk. Time and materials type contract means a contract whose cost to a non-Federal entity is the sum of:

(i) The actual cost of materials; and

(ii) Direct labor hours charged at fixed hourly rates that reflect wages, general and administrative expenses, and profit.

(2) Since this formula generates an open-ended contract price, a time-and-materials contract provides no positive profit incentive to the contractor for cost control or labor efficiency. Therefore, each contract must set a ceiling price that the contractor exceeds at its own risk. Further, the non-Federal entity awarding such a contract must assert a high degree of oversight in order to obtain reasonable assurance that the contractor is using efficient methods and effective cost controls.

(k) The non-Federal entity alone must be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements. These issues include, but are not limited to, source evaluation, protests, disputes, and claims. These standards do not relieve the non-Federal entity of any contractual responsibilities under its contracts. The Federal awarding agency will not substitute its judgment for that of the non-Federal entity unless the matter is primarily a Federal concern. Violations of law will be referred to the local, state, or Federal authority having proper jurisdiction.

§200.319 Competition.

(a) All procurement transactions must be conducted in a manner providing full and open competition consistent with the standards of this section. In order to ensure objective contractor performance and eliminate unfair competitive advantage, contractors that develop or draft specifications, requirements, statements of work, or invitations for bids or requests for proposals must be excluded from competing for such procurements. Some of the situations considered to be restrictive of competition include but are not limited to:

- (1) Placing unreasonable requirements on firms in order for them to qualify to do business;
- (2) Requiring unnecessary experience and excessive bonding;
- (3) Noncompetitive pricing practices between firms or between affiliated companies;
- (4) Noncompetitive contracts to consultants that are on retainer contracts;
- (5) Organizational conflicts of interest;
- (6) Specifying only a "brand name" product instead of allowing "an equal" product to be offered and describing the performance or other relevant requirements of the procurement; and
- (7) Any arbitrary action in the procurement process.

(b) The non-Federal entity must conduct procurements in a manner that prohibits the use of statutorily or administratively imposed state, local, or tribal geographical preferences in the evaluation of bids or proposals, except in those cases where applicable Federal statutes expressly mandate or encourage geographic preference. Nothing in this section preempts state licensing laws. When contracting for architectural and engineering (A/E) services, geographic location may be a selection criterion provided its application leaves an appropriate number of qualified firms, given the nature and size of the project, to compete for the contract.

(c) The non-Federal entity must have written procedures for procurement transactions. These procedures must ensure that all solicitations:

(1) Incorporate a clear and accurate description of the technical requirements for the material, product, or service to be procured. Such description must not, in competitive procurements, contain features which unduly restrict competition. The description may include a statement of the qualitative nature of the material, product or service to be procured and, when necessary, must set forth those minimum essential characteristics and standards to which it must conform if it is to satisfy its intended use. Detailed product specifications should be avoided if at all possible. When it is impractical or uneconomical to make a clear and accurate description of the technical requirements, a "brand name or equivalent" description may be used as a means to define the performance or other salient requirements of procurement. The specific features of the named brand which must be met by offers must be clearly stated; and

(2) Identify all requirements which the offerors must fulfill and all other factors to be used in evaluating bids or proposals.

(d) The non-Federal entity must ensure that all prequalified lists of persons, firms, or products which are used in acquiring goods and services are current and include enough qualified sources to ensure maximum open and free competition. Also, the non-Federal entity must not preclude potential bidders from qualifying during the solicitation period.
[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014]

§200.320 Methods of procurement to be followed.

The non-Federal entity must use one of the following methods of procurement.

(a) Procurement by micro-purchases. Procurement by micro-purchase is the acquisition of supplies or services, the aggregate dollar amount of which does not exceed the micro-purchase threshold (§200.67 Micro-purchase). To the extent practicable, the non-Federal entity must distribute micro-purchases equitably among qualified suppliers. Micro-purchases may be awarded without soliciting competitive quotations if the non-Federal entity considers the price to be reasonable.

(b) Procurement by small purchase procedures. Small purchase procedures are those relatively simple and informal procurement methods for securing services, supplies, or other property that do not cost more than the Simplified Acquisition Threshold. If small purchase procedures are used, price or rate quotations must be obtained from an adequate number of qualified sources.

(c) Procurement by sealed bids (formal advertising). Bids are publicly solicited and a firm fixed price contract (lump sum or unit price) is awarded to the responsible bidder whose bid, conforming with all the material terms and conditions of the invitation for bids, is the lowest in price. The sealed bid method is the preferred method for procuring construction, if the conditions in paragraph (c)(1) of this section apply.

(1) In order for sealed bidding to be feasible, the following conditions should be present:

(i) A complete, adequate, and realistic specification or purchase description is available;

(ii) Two or more responsible bidders are willing and able to compete effectively for the business; and

(iii) The procurement lends itself to a firm fixed price contract and the selection of the successful bidder can be made principally on the basis of price.

(2) If sealed bids are used, the following requirements apply:

(i) Bids must be solicited from an adequate number of known suppliers, providing them sufficient response time prior to the date set for opening the bids, for state, local, and tribal governments, the invitation for bids must be publically advertised;

(ii) The invitation for bids, which will include any specifications and pertinent attachments, must define the items or services in order for the bidder to properly respond;

(iii) All bids will be opened at the time and place prescribed in the invitation for bids, and for local and tribal governments, the bids must be opened publicly;

(iv) A firm fixed price contract award will be made in writing to the lowest responsive and responsible bidder. Where specified in bidding documents, factors such as discounts, transportation cost, and life cycle costs must be considered in determining which bid is lowest. Payment discounts will only be used to determine the low bid when prior experience indicates that such discounts are usually taken advantage of; and

(v) Any or all bids may be rejected if there is a sound documented reason.

(d) Procurement by competitive proposals. The technique of competitive proposals is normally conducted with more than one source submitting an offer, and either a fixed price or cost-reimbursement type contract is awarded. It is generally used when conditions are not appropriate for the use of sealed bids. If this method is used, the following requirements apply:

(1) Requests for proposals must be publicized and identify all evaluation factors and their relative importance. Any response to publicized requests for proposals must be considered to the maximum extent practical;

(2) Proposals must be solicited from an adequate number of qualified sources;

(3) The non-Federal entity must have a written method for conducting technical evaluations of the proposals received and for selecting recipients;

(4) Contracts must be awarded to the responsible firm whose proposal is most advantageous to the program, with price and other factors considered; and

(5) The non-Federal entity may use competitive proposal procedures for qualifications-based procurement of architectural/engineering (A/E) professional services whereby competitors' qualifications are evaluated and the most qualified competitor is selected, subject to negotiation of fair and reasonable compensation. The method, where price is not used as a selection factor, can only be used in procurement of A/E professional services. It cannot be used to purchase other types of services though A/E firms are a potential source to perform the proposed effort.

(e) [Reserved]

(f) Procurement by noncompetitive proposals. Procurement by noncompetitive proposals is procurement through solicitation of a proposal from only one source and may be used only when one or more of the following circumstances apply:

(1) The item is available only from a single source;

(2) The public exigency or emergency for the requirement will not permit a delay resulting from competitive solicitation;

(3) The Federal awarding agency or pass-through entity expressly authorizes noncompetitive proposals in response to a written request from the non-Federal entity; or

(4) After solicitation of a number of sources, competition is determined inadequate.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014]

§200.321 Contracting with small and minority businesses, women's business enterprises, and labor surplus area firms.

(a) The non-Federal entity must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

(b) Affirmative steps must include:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

- (4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;
- (5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and
- (6) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (1) through (5) of this section.

§200.322 Procurement of recovered materials.

A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014]

§200.323 Contract cost and price.

- (a) The non-Federal entity must perform a cost or price analysis in connection with every procurement action in excess of the Simplified Acquisition Threshold including contract modifications. The method and degree of analysis is dependent on the facts surrounding the particular procurement situation, but as a starting point, the non-Federal entity must make independent estimates before receiving bids or proposals.
- (b) The non-Federal entity must negotiate profit as a separate element of the price for each contract in which there is no price competition and in all cases where cost analysis is performed. To establish a fair and reasonable profit, consideration must be given to the complexity of the work to be performed, the risk borne by the contractor, the contractor's investment, the amount of subcontracting, the quality of its record of past performance, and industry profit rates in the surrounding geographical area for similar work.
- (c) Costs or prices based on estimated costs for contracts under the Federal award are allowable only to the extent that costs incurred or cost estimates included in negotiated prices would be allowable for the non-Federal entity under Subpart E—Cost Principles of this part. The non-Federal entity may reference its own cost principles that comply with the Federal cost principles.

(d) The cost plus a percentage of cost and percentage of construction cost methods of contracting must not be used.

§200.324 Federal awarding agency or pass-through entity review.

(a) The non-Federal entity must make available, upon request of the Federal awarding agency or pass-through entity, technical specifications on proposed procurements where the Federal awarding agency or pass-through entity believes such review is needed to ensure that the item or service specified is the one being proposed for acquisition. This review generally will take place prior to the time the specification is incorporated into a solicitation document. However, if the non-Federal entity desires to have the review accomplished after a solicitation has been developed, the Federal awarding agency or pass-through entity may still review the specifications, with such review usually limited to the technical aspects of the proposed purchase.

(b) The non-Federal entity must make available upon request, for the Federal awarding agency or pass-through entity pre-procurement review, procurement documents, such as requests for proposals or invitations for bids, or independent cost estimates, when:

- (1) The non-Federal entity's procurement procedures or operation fails to comply with the procurement standards in this part;
- (2) The procurement is expected to exceed the Simplified Acquisition Threshold and is to be awarded without competition or only one bid or offer is received in response to a solicitation;
- (3) The procurement, which is expected to exceed the Simplified Acquisition Threshold, specifies a "brand name" product;
- (4) The proposed contract is more than the Simplified Acquisition Threshold and is to be awarded to other than the apparent low bidder under a sealed bid procurement; or
- (5) A proposed contract modification changes the scope of a contract or increases the contract amount by more than the Simplified Acquisition Threshold.

(c) The non-Federal entity is exempt from the pre-procurement review in paragraph (b) of this section if the Federal awarding agency or pass-through entity determines that its procurement systems comply with the standards of this part.

- (1) The non-Federal entity may request that its procurement system be reviewed by the Federal awarding agency or pass-through entity to determine whether its system meets these standards in order for its system to be certified. Generally, these reviews must occur where there is continuous high-dollar funding, and third party contracts are awarded on a regular basis;

(2) The non-Federal entity may self-certify its procurement system. Such self-certification must not limit the Federal awarding agency's right to survey the system. Under a self-certification procedure, the Federal awarding agency may rely on written assurances from the non-Federal entity that it is complying with these standards. The non-Federal entity must cite specific policies, procedures, regulations, or standards as being in compliance with these requirements and have its system available for review.

§200.325 Bonding requirements.

For construction or facility improvement contracts or subcontracts exceeding the Simplified Acquisition Threshold, the Federal awarding agency or pass-through entity may accept the bonding policy and requirements of the non-Federal entity provided that the Federal awarding agency or pass-through entity has made a determination that the Federal interest is adequately protected. If such a determination has not been made, the minimum requirements must be as follows:

(a) A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.

(b) A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

(c) A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

§200.326 Contract provisions.

The non-Federal entity's contracts must contain the applicable provisions described in Appendix II to Part 200—Contract Provisions for non-Federal Entity Contracts Under Federal Awards.

4. EQUIPMENT (2 CFR §200.313)

See also §200.439 Equipment and other capital expenditures.

(a) Title. Subject to the obligations and conditions set forth in this section, title to equipment acquired under a Federal award will vest upon acquisition in the non-Federal entity. Unless a statute specifically authorizes the Federal agency to vest title in the non-Federal entity without further obligation to the Federal Government, and the Federal agency elects to do so, the title must be a conditional title. Title must vest in the non-Federal entity subject to the following conditions:

(1) Use the equipment for the authorized purposes of the project during the period of performance, or until the property is no longer needed for the purposes of the project.

(2) Not encumber the property without approval of the Federal awarding agency or pass-through entity.

(3) Use and dispose of the property in accordance with paragraphs (b), (c) and (e) of this section.

(b) A state must use, manage and dispose of equipment acquired under a Federal award by the state in accordance with state laws and procedures. Other non-Federal entities must follow paragraphs (c) through (e) of this section.

(c) Use.

(1) Equipment must be used by the non-Federal entity in the program or project for which it was acquired as long as needed, whether or not the project or program continues to be supported by the Federal award, and the non-Federal entity must not encumber the property without prior approval of the Federal awarding agency. When no longer needed for the original program or project, the equipment may be used in other activities supported by the Federal awarding agency, in the following order of priority:

(i) Activities under a Federal award from the Federal awarding agency which funded the original program or project, then

(ii) Activities under Federal awards from other Federal awarding agencies. This includes consolidated equipment for information technology systems.

(2) During the time that equipment is used on the project or program for which it was acquired, the non-Federal entity must also make equipment available for use on other projects or programs currently or previously supported by the Federal Government, provided that such use will not interfere with the work on the projects or program for which it was originally acquired. First preference for other use must be given to other programs or projects supported by Federal awarding agency that financed the equipment and second preference must be given to programs or projects under Federal awards from other Federal awarding agencies. Use for non-federally-funded programs or projects is also permissible. User fees should be considered if appropriate.

(3) Notwithstanding the encouragement in §200.307 Program income to earn program income, the non-Federal entity must not use equipment acquired with the Federal award to provide services for a fee that is less than private companies charge for equivalent services unless specifically authorized by Federal statute for as long as the Federal Government retains an interest in the equipment.

(4) When acquiring replacement equipment, the non-Federal entity may use the equipment to be replaced as a trade-in or sell the property and use the proceeds to offset the cost of the replacement property.

(d) Management requirements. Procedures for managing equipment (including replacement equipment), whether acquired in whole or in part under a Federal award, until disposition takes place will, as a minimum, meet the following requirements:

- (1) Property records must be maintained that include a description of the property, a serial number or other identification number, the source of funding for the property (including the FAIN), who holds title, the acquisition date, and cost of the property, percentage of Federal participation in the project costs for the Federal award under which the property was acquired, the location, use and condition of the property, and any ultimate disposition data including the date of disposal and sale price of the property.
- (2) A physical inventory of the property must be taken and the results reconciled with the property records at least once every two years.
- (3) A control system must be developed to ensure adequate safeguards to prevent loss, damage, or theft of the property. Any loss, damage, or theft must be investigated.
- (4) Adequate maintenance procedures must be developed to keep the property in good condition.
- (5) If the non-Federal entity is authorized or required to sell the property, proper sales procedures must be established to ensure the highest possible return.

(e) Disposition. When original or replacement equipment acquired under a Federal award is no longer needed for the original project or program or for other activities currently or previously supported by a Federal awarding agency, except as otherwise provided in Federal statutes, regulations, or Federal awarding agency disposition instructions, the non-Federal entity must request disposition instructions from the Federal awarding agency if required by the terms and conditions of the Federal award. Disposition of the equipment will be made as follows, in accordance with Federal awarding agency disposition instructions:

- (1) Items of equipment with a current per unit fair market value of \$5,000 or less may be retained, sold or otherwise disposed of with no further obligation to the Federal awarding agency.
- (2) Except as provided in §200.312 Federally-owned and exempt property, paragraph (b), or if the Federal awarding agency fails to provide requested disposition instructions within 120 days, items of equipment with a current per-unit fair-market value in excess of \$5,000 may be retained by the non-Federal entity or sold. The Federal awarding agency is entitled to an amount calculated by multiplying the current market value or proceeds from sale by the Federal awarding agency's percentage of participation in the cost of the original purchase. If the equipment is sold, the Federal awarding agency may permit the non-Federal entity to deduct and retain from the Federal share \$500 or ten percent of the proceeds, whichever is less, for its selling and handling expenses.

(3) The non-Federal entity may transfer title to the property to the Federal Government or to an eligible third party provided that, in such cases, the non-Federal entity must be entitled to compensation for its attributable percentage of the current fair market value of the property.

(4) In cases where a non-Federal entity fails to take appropriate disposition actions, the Federal awarding agency may direct the non-Federal entity to take disposition actions.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75884, Dec. 19, 2014]

5. SUPPLIES (2 CFR §200.314)

See also §200.453 Materials and supplies costs, including costs of computing devices.

(a) Title to supplies will vest in the non-Federal entity upon acquisition. If there is a residual inventory of unused supplies exceeding \$5,000 in total aggregate value upon termination or completion of the project or program and the supplies are not needed for any other Federal award, the non-Federal entity must retain the supplies for use on other activities or sell them, but must, in either case, compensate the Federal Government for its share. The amount of compensation must be computed in the same manner as for equipment. See §200.313 Equipment, paragraph (e)(2) for the calculation methodology.

(b) As long as the Federal Government retains an interest in the supplies, the non-Federal entity must not use supplies acquired under a Federal award to provide services to other organizations for a fee that is less than private companies charge for equivalent services, unless specifically authorized by Federal statute.

6. INSPECTION

Reclamation has the right to inspect and evaluate the work performed or being performed under this Agreement, and the premises where the work is being performed, at all reasonable times and in a manner that will not unduly delay the work. If Reclamation performs inspection or evaluation on the premises of the Recipient or a sub-Recipient, the Recipient shall furnish and shall require sub-recipients to furnish all reasonable facilities and assistance for the safe and convenient performance of these duties.

7. AUDIT REQUIREMENTS (2 CFR Subpart F §200.501)

(a) Audit required. A non-Federal entity that expends \$750,000 or more during the non-Federal entity's fiscal year in Federal awards must have a single or program-specific audit conducted for that year in accordance with the provisions of this part.

(b) Single audit. A non-Federal entity that expends \$750,000 or more during the non-Federal entity's fiscal year in Federal awards must have a single audit conducted in accordance with §200.514 Scope of audit except when it elects to have a program-specific audit conducted in accordance with paragraph (c) of this section.

(c) Program-specific audit election. When an auditee expends Federal awards under only one Federal program (excluding R&D) and the Federal program's statutes, regulations, or the terms and conditions of the Federal award do not require a financial statement audit of the auditee, the auditee may elect to have a program-specific audit conducted in accordance with §200.507 Program-specific audits. A program-specific audit may not be elected for R&D unless all of the Federal awards expended were received from the same Federal agency, or the same Federal agency and the same pass-through entity, and that Federal agency, or pass-through entity in the case of a subrecipient, approves in advance a program-specific audit.

(d) Exemption when Federal awards expended are less than \$750,000. A non-Federal entity that expends less than \$750,000 during the non-Federal entity's fiscal year in Federal awards is exempt from Federal audit requirements for that year, except as noted in §200.503 Relation to other audit requirements, but records must be available for review or audit by appropriate officials of the Federal agency, pass-through entity, and Government Accountability Office (GAO).

(e) Federally Funded Research and Development Centers (FFRDC). Management of an auditee that owns or operates a FFRDC may elect to treat the FFRDC as a separate entity for purposes of this part.

(f) Subrecipients and Contractors. An auditee may simultaneously be a recipient, a subrecipient, and a contractor. Federal awards expended as a recipient or a subrecipient are subject to audit under this part. The payments received for goods or services provided as a contractor are not Federal awards. Section §200.330 Subrecipient and contractor determinations sets forth the considerations in determining whether payments constitute a Federal award or a payment for goods or services provided as a contractor.

(g) Compliance responsibility for contractors. In most cases, the auditee's compliance responsibility for contractors is only to ensure that the procurement, receipt, and payment for goods and services comply with Federal statutes, regulations, and the terms and conditions of Federal awards. Federal award compliance requirements normally do not pass through to contractors. However, the auditee is responsible for ensuring compliance for procurement transactions which are structured such that the contractor is responsible for program compliance or the contractor's records must be reviewed to determine program compliance. Also, when these procurement transactions relate to a major program, the scope of the audit must include determining whether these transactions are in compliance with Federal statutes, regulations, and the terms and conditions of Federal awards.

(h) For-profit subrecipient. Since this part does not apply to for-profit subrecipients, the pass-through entity is responsible for establishing requirements, as necessary, to ensure compliance by for-profit subrecipients. The agreement with the for-profit subrecipient must describe applicable compliance requirements and the for-profit subrecipient's compliance responsibility. Methods to ensure compliance for Federal awards made to for-profit subrecipients may include pre-award

audits, monitoring during the agreement, and post-award audits. See also §200.331 Requirements for pass-through entities.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75887, Dec. 19, 2014]

8. REMEDIES FOR NONCOMPLIANCE (2 CFR §200.338)

§200.338 Remedies for noncompliance.

If a non-Federal entity fails to comply with Federal statutes, regulations or the terms and conditions of a Federal award, the Federal awarding agency or pass-through entity may impose additional conditions, as described in §200.207 Specific conditions. If the Federal awarding agency or pass-through entity determines that noncompliance cannot be remedied by imposing additional conditions, the Federal awarding agency or pass-through entity may take one or more of the following actions, as appropriate in the circumstances:

- (a) Temporarily withhold cash payments pending correction of the deficiency by the non-Federal entity or more severe enforcement action by the Federal awarding agency or pass-through entity.
- (b) Disallow (that is, deny both use of funds and any applicable matching credit for) all or part of the cost of the activity or action not in compliance.
- (c) Wholly or partly suspend or terminate the Federal award.
- (d) Initiate suspension or debarment proceedings as authorized under 2 CFR part 180 and Federal awarding agency regulations (or in the case of a pass-through entity, recommend such a proceeding be initiated by a Federal awarding agency).
- (e) Withhold further Federal awards for the project or program.
- (f) Take other remedies that may be legally available.

9. TERMINATION (2 CFR §200.339)

(a) The Federal award may be terminated in whole or in part as follows:

- (1) By the Federal awarding agency or pass-through entity, if a non-Federal entity fails to comply with the terms and conditions of a Federal award;
- (2) By the Federal awarding agency or pass-through entity for cause;
- (3) By the Federal awarding agency or pass-through entity with the consent of the non-Federal entity, in which case the two parties must agree upon the termination conditions, including the effective date and, in the case of partial termination, the portion to be terminated; or

(4) By the non-Federal entity upon sending to the Federal awarding agency or pass-through entity written notification setting forth the reasons for such termination, the effective date, and, in the case of partial termination, the portion to be terminated. However, if the Federal awarding agency or pass-through entity determines in the case of partial termination that the reduced or modified portion of the Federal award or subaward will not accomplish the purposes for which the Federal award was made, the Federal awarding agency or pass-through entity may terminate the Federal award in its entirety.

(b) When a Federal award is terminated or partially terminated, both the Federal awarding agency or pass-through entity and the non-Federal entity remain responsible for compliance with the requirements in §§200.343 Closeout and 200.344 Post-closeout adjustments and continuing responsibilities.

10. DEBARMENT AND SUSPENSION (2 CFR §1400)

The Department of the Interior regulations at 2 CFR 1400—Governmentwide Debarment and Suspension (Nonprocurement), which adopt the common rule for the governmentwide system of debarment and suspension for nonprocurement activities, are hereby incorporated by reference and made a part of this Agreement. By entering into this grant or cooperative Agreement with the Bureau of Reclamation, the Recipient agrees to comply with 2 CFR 1400, Subpart C, and agrees to include a similar term or condition in all lower-tier covered transactions. These regulations are available at <http://www.gpoaccess.gov/ecfr/>.

11. DRUG-FREE WORKPLACE (2 CFR §182 and §1401)

The Department of the Interior regulations at 2 CFR 1401—Governmentwide Requirements for Drug-Free Workplace (Financial Assistance), which adopt the portion of the Drug-Free Workplace Act of 1988 (41 U.S.C. 701 et seq, as amended) applicable to grants and cooperative agreements, are hereby incorporated by reference and made a part of this agreement. By entering into this grant or cooperative agreement with the Bureau of Reclamation, the Recipient agrees to comply with 2 CFR 182.

12. ASSURANCES AND CERTIFICATIONS INCORPORATED BY REFERENCE

The provisions of the Assurances, SF 424B or SF 424D as applicable, executed by the Recipient in connection with this Agreement shall apply with full force and effect to this Agreement. All anti-discrimination and equal opportunity statutes, regulations, and Executive Orders that apply to the expenditure of funds under Federal contracts, grants, and cooperative Agreements, loans, and other forms of Federal assistance. The Recipient shall comply with Title VI or the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and any program-specific statutes with anti-discrimination requirements. The Recipient shall comply with civil rights laws including, but not limited to, the Fair Housing Act, the Fair Credit Reporting Act, the Americans with Disabilities Act, Title VII of the Civil Rights Act of 1964, the Equal Educational Opportunities Act, the Age Discrimination in Employment Act, and the Uniform Relocation Act.

Such Assurances also include, but are not limited to, the promise to comply with all applicable Federal statutes and orders relating to nondiscrimination in employment, assistance, and housing; the Hatch Act; Federal wage and hour laws and regulations and work place safety standards; Federal environmental laws and regulations and the Endangered Species Act; and Federal protection of rivers and waterways and historic and archeological preservation.

13. COVENANT AGAINST CONTINGENT FEES

The Recipient warrants that no person or agency has been employed or retained to solicit or secure this Agreement upon an Agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide offices established and maintained by the Recipient for the purpose of securing Agreements or business. For breach or violation of this warranty, the Government shall have the right to annul this Agreement without liability or, in its discretion, to deduct from the Agreement amount, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

14. TRAFFICKING VICTIMS PROTECTION ACT OF 2000 (2 CFR §175.15)

Trafficking in persons.

(a) Provisions applicable to a recipient that is a private entity.

(1) You as the recipient, your employees, subrecipients under this award, and subrecipients' employees may not

(i) Engage in severe forms of trafficking in persons during the period of time that the award is in effect;

(ii) Procure a commercial sex act during the period of time that the award is in effect; or

(iii) Use forced labor in the performance of the award or subawards under the award.

(2) We as the Federal awarding agency may unilaterally terminate this award, without penalty, if you or a subrecipient that is a private entity —

(i) Is determined to have violated a prohibition in paragraph a.1 of this award term; or

(ii) Has an employee who is determined by the agency official authorized to terminate the award to have violated a prohibition in paragraph a.1 of this award term through conduct that is either:

(A) Associated with performance under this award; or

(B) Imputed to you or the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR

part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our agency at 2 *CFR part 1400*.

(b) *Provision applicable to a recipient other than a private entity.* We as the Federal awarding agency may unilaterally terminate this award, without penalty, if a subrecipient that is a private entity—

(1) Is determined to have violated an applicable prohibition in paragraph a.1 of this award term; or

(2) Has an employee who is determined by the agency official authorized to terminate the award to have violated an applicable prohibition in paragraph a.1 of this award term through conduct that is either:

(i) Associated with performance under this award; or

(ii) Imputed to the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 *CFR part 180*, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our agency at 2 *CFR part 1400*.

(c) *Provisions applicable to any recipient.*

(1) You must inform us immediately of any information you receive from any source alleging a violation of a prohibition in paragraph a.1 of this award term.

(2) Our right to terminate unilaterally that is described in paragraph a.2 or b of this section:

(i) Implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. 7104(g)), and

(ii) Is in addition to all other remedies for noncompliance that are available to us under this award.

(3) You must include the requirements of paragraph a.1 of this award term in any subaward you make to a private entity.

(d) *Definitions.* For purposes of this award term:

(1) "Employee" means either:

(i) An individual employed by you or a subrecipient who is engaged in the performance of the project or program under this award; or

(ii) Another person engaged in the performance of the project or program under this award and not compensated by you including, but not limited to, a volunteer or individual

whose services are contributed by a third party as an in-kind contribution toward cost sharing or matching requirements.

(2) "Forced labor" means labor obtained by any of the following methods: the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.

(3) "Private entity":

(i) Means any entity other than a state, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 CFR 175.25.

(ii) Includes:

(A) A nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 CFR 175.25(b).

(B) A for-profit organization.

(4) "Severe forms of trafficking in persons," "commercial sex act," and "coercion" have the meanings given at section 103 of the TVPA, as amended (22 U.S.C. 7102).

15. NEW RESTRICTIONS ON LOBBYING (43 CFR §18)

The Recipient agrees to comply with 43 CFR 18, New Restrictions on Lobbying, including the following certification:

(a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Recipient, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying" in accordance with its instructions.

(c) The Recipient shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under

grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

16. UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970 (URA) (42 USC § 4601 *et seq.*)

- (a) The Uniform Relocation Assistance Act (URA), 42 U.S.C. § 4601 *et seq.*, as amended, requires certain assurances for Reclamation funded land acquisition projects conducted by a Recipient that cause the displacement of persons, businesses, or farm operations. Because Reclamation funds only support acquisition of property or interests in property from willing sellers, it is not anticipated that Reclamation funds will result in any “displaced persons,” as defined under the URA.
- (b) However, if Reclamation funds are used for the acquisition of real property that results in displacement, the URA requires Recipients to ensure that reasonable relocation payments and other remedies will be provided to any displaced person. Further, when acquiring real property, Recipients must be guided, to the greatest extent practicable, by the land acquisition policies in 42 U.S.C. § 4651.
- (c) Exemptions to the URA and 49 CFR Part 24
 - (1) The URA provides for an exemption to the appraisal, review and certification rules for those land acquisitions classified as “voluntary transactions.” Such “voluntary transactions” are classified as those that do not involve an exercise of eminent domain authority on behalf of a Recipient, and must meet the conditions specified at 49 CFR § 24.101(b)(1)(i)-(iv).
 - (2) For any land acquisition undertaken by a Recipient that receives Reclamation funds, but does not have authority to acquire the real property by eminent domain, to be exempt from the requirements of 49 CFR Part 24 the Recipient must:
 - (i) provide written notification to the owner that it will not acquire the property in the event negotiations fail to result in an amicable agreement, and;
 - (ii) inform the owner in writing of what it believes to be the market value of the property
- (d) Review of Land Acquisition Appraisals. Reclamation reserves the right to review any land appraisal whether or not such review is required under the URA or 49 CFR § 24.104. Such reviews may be conducted by the Department of the Interior’s Appraisal Services Directorate or a Reclamation authorized designee. When Reclamation determines that a review of the original appraisal is necessary, Reclamation will notify the Recipient and provide an estimated completion date of the initial appraisal review.

17. CENTRAL CONTRACTOR REGISTRATION AND UNIVERSAL IDENTIFIER REQUIREMENTS (2 CFR 25, APPENDIX A)

The Central Contractor Registration (CCR) has been migrated to the System for Award Management (SAM). Recipients must continue to comply with the CCR requirements below by maintaining current registration within www.SAM.gov.

A. Requirement for Central Contractor Registration (CCR)

Unless you are exempted from this requirement under 2 CFR 25.110, you as the recipient must maintain the currency of your information in the CCR until you submit the final financial report required under this award or receive the final payment, whichever is later. This requires that you review and update the information at least annually after the initial registration, and more frequently if required by changes in your information or another award term.

B. Requirement for Data Universal Numbering System (DUNS) Numbers

If you are authorized to make subawards under this award, you:

1. Must notify potential subrecipients that no entity (*see* definition in paragraph C of this award term) may receive a subaward from you unless the entity has provided its DUNS number to you.
2. May not make a subaward to an entity unless the entity has provided its DUNS number to you.

C. Definitions

For purposes of this award term:

1. *Central Contractor Registration (CCR)* means the Federal repository into which an entity must provide information required for the conduct of business as a recipient. Additional information about registration procedures may be found at the CCR Internet site (currently at <http://www.ccr.gov>).
2. *Data Universal Numbering System (DUNS) number* means the nine-digit number established and assigned by Dun and Bradstreet, Inc. (D&B) to uniquely identify business entities. A DUNS number may be obtained from D&B by telephone (currently 866-705-5711) or the Internet (currently at <http://fedgov.dnb.com/webform>).
3. *Entity*, as it is used in this award term, means all of the following, as defined at 2 CFR part 25, subpart C:
 - a. A Governmental organization, which is a state, local government, or Indian Tribe;
 - b. A foreign public entity;
 - c. A domestic or foreign nonprofit organization;
 - d. A domestic or foreign for-profit organization; and
 - e. A Federal agency, but only as a subrecipient under an award or subaward to a non-Federal entity.

4. *Subaward*:

- a. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.
- b. The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, *see* Sec. 11.210 of the attachment to OMB Circular A-133, “Audits of States, Local Governments, and Non-Profit Organizations”).
- c. A subaward may be provided through any legal agreement, including an agreement that you consider a contract.

5. *Subrecipient* means an entity that:

- a. Receives a subaward from you under this award; and
- b. Is accountable to you for the use of the Federal funds provided by the subaward.

18. PROHIBITION ON TEXT MESSAGING AND USING ELECTRONIC EQUIPMENT SUPPLIED BY THE GOVERNMENT WHILE DRIVING

Executive Order 13513, *Federal Leadership On Reducing Text Messaging While Driving*, was signed by President Barack Obama on October 1, 2009 (ref: <http://edocket.access.gpo.gov/2009/pdf/E9-24203.pdf>). This Executive Order introduces a Federal Government-wide prohibition on the use of text messaging while driving on official business or while using Government-supplied equipment. Additional guidance enforcing the ban will be issued at a later date. In the meantime, please adopt and enforce policies that immediately ban text messaging while driving company-owned or rented vehicles, government-owned or leased vehicles, or while driving privately owned vehicles when on official government business or when performing any work for or on behalf of the government.

19. REPORTING SUBAWARDS AND EXECUTIVE COMPENSATION (2 CFR 170 APPENDIX A)

I. Reporting Subawards and Executive Compensation.

a. *Reporting of first-tier subawards.*

1. *Applicability.* Unless you are exempt as provided in paragraph d. of this award term, you must report each action that obligates \$25,000 or more in Federal funds that does not include Recovery funds (as defined in section 1512(a)(2) of the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5) for a subaward to an entity (see definitions in paragraph e. of this award term).

2. *Where and when to report.*

i. You must report each obligating action described in paragraph a.1. of this award term to <http://www.fsrs.gov>.

- ii. For subaward information, report no later than the end of the month following the month in which the obligation was made. (For example, if the obligation was made on November 7, 2010, the obligation must be reported by no later than December 31, 2010.)
- 3. *What to report.* You must report the information about each obligating action that the submission instructions posted at <http://www.fsrs.gov> specify.
- b. *Reporting Total Compensation of Recipient Executives.*
 - 1. *Applicability and what to report.* You must report total compensation for each of your five most highly compensated executives for the preceding completed fiscal year, if—
 - i. the total Federal funding authorized to date under this award is \$25,000 or more;
 - ii. in the preceding fiscal year, you received—
 - (A) 80 percent or more of your annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and
 - (B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and
 - iii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.)
 - 2. *Where and when to report.* You must report executive total compensation described in paragraph b.1. of this award term:
 - i. As part of your registration profile at <http://www.ccr.gov>.
 - ii. By the end of the month following the month in which this award is made, and annually thereafter.
- c. *Reporting of Total Compensation of Subrecipient Executives.*
 - 1. *Applicability and what to report.* Unless you are exempt as provided in paragraph d. of this award term, for each first-tier subrecipient under this award, you shall report the names and total compensation of each of the subrecipient's five most highly compensated executives for the subrecipient's preceding completed fiscal year, if—
 - i. in the subrecipient's preceding fiscal year, the subrecipient received—
 - (A) 80 percent or more of its annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and

(B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts), and Federal financial assistance subject to the Transparency Act (and subawards); and
ii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.)

2. *Where and when to report.* You must report subrecipient executive total compensation described in paragraph c.1. of this award term:

- i. To the recipient.
- ii. By the end of the month following the month during which you make the subaward. For example, if a subaward is obligated on any date during the month of October of a given year (*i.e.*, between October 1 and 31), you must report any required compensation information of the subrecipient by November 30 of that year.

d. *Exemptions*

If, in the previous tax year, you had gross income, from all sources, under \$300,000, you are exempt from the requirements to report:

- i. Subawards,
and
- ii. The total compensation of the five most highly compensated executives of any subrecipient.

e. *Definitions.* For purposes of this award term:

1. *Entity* means all of the following, as defined in 2 CFR part 25:

- i. A Governmental organization, which is a State, local government, or Indian tribe;
- ii. A foreign public entity;
- iii. A domestic or foreign nonprofit organization;
- iv. A domestic or foreign for-profit organization;
- v. A Federal agency, but only as a subrecipient under an award or subaward to a non-Federal entity.

2. *Executive* means officers, managing partners, or any other employees in management positions.

3. *Subaward:*

- i. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.
- ii. The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, see Sec. __.210 of the attachment to OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations").

- iii. A subaward may be provided through any legal agreement, including an agreement that you or a subrecipient considers a contract.
- 4. *Subrecipient* means an entity that:
 - i. Receives a subaward from you (the recipient) under this award; and
 - ii. Is accountable to you for the use of the Federal funds provided by the subaward.
- 5. *Total compensation* means the cash and noncash dollar value earned by the executive during the recipient's or subrecipient's preceding fiscal year and includes the following (for more information see 17 CFR 229.402(c)(2)):
 - i. *Salary and bonus.*
 - ii. *Awards of stock, stock options, and stock appreciation rights.* Use the dollar amount recognized for financial statement reporting purposes with respect to the fiscal year in accordance with the Statement of Financial Accounting Standards No. 123 (Revised 2004) (FAS 123R), Shared Based Payments.
 - iii. *Earnings for services under non-equity incentive plans.* This does not include group life, health, hospitalization or medical reimbursement plans that do not discriminate in favor of executives, and are available generally to all salaried employees.
 - iv. *Change in pension value.* This is the change in present value of defined benefit and actuarial pension plans.
 - v. *Above-market earnings on deferred compensation which is not tax-qualified.*
 - vi. Other compensation, if the aggregate value of all such other compensation (e.g. severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.

20. RECIPIENT EMPLOYEE WHISTLEBLOWER RIGHTS AND REQUIREMENT TO INFORM EMPLOYEES OF WHISTLEBLOWER RIGHTS (SEP 2013)

- (a) This award and employees working on this financial assistance agreement will be subject to the whistleblower rights and remedies in the pilot program on Award Recipient employee whistleblower protections established at 41 U.S.C. 4712 by section 828 of the National Defense Authorization Act for Fiscal Year 2013 (Pub.L. 112-239).
- (b) The Award Recipient shall inform its employees in writing, in the predominant language of the workforce, of employee whistleblower rights and protections under 41 U.S.C 4712.
- (c) The Award Recipient shall insert the substance of this clause, including this paragraph (c), in all subawards or subcontracts over the simplified acquisition threshold. 48 CFR § 52.203-17 (as referenced in 48 CFR § 3.908-9).

21. RECIPIENT INTEGRITY AND PERFORMANCE MATTERS (APPENDIX XII to 2 CFR Part 200)

A. Reporting of Matters Related to Recipient Integrity and Performance

1. General Reporting Requirement

If the total value of your currently active grants, cooperative agreements, and procurement contracts from all Federal awarding agencies exceeds \$10,000,000 for any period of time during the period of performance of this Federal award, then you as the recipient during that period of time must maintain the currency of information reported to the System for Award Management (SAM) that is made available in the designated integrity and performance system (currently the Federal Awardee Performance and Integrity Information System (FAPIIS)) about civil, criminal, or administrative proceedings described in paragraph 2 of this award term and condition. This is a statutory requirement under section 872 of Public Law 110-417, as amended (41 U.S.C. 2313). As required by section 3010 of Public Law 111-212, all information posted in the designated integrity and performance system on or after April 15, 2011, except past performance reviews required for Federal procurement contracts, will be publicly available.

2. Proceedings About Which You Must Report

Submit the information required about each proceeding that:

a. Is in connection with the award or performance of a grant, cooperative agreement, or procurement contract from the Federal Government;

b. Reached its final disposition during the most recent five year period; and

c. Is one of the following:

(1) A criminal proceeding that resulted in a conviction, as defined in paragraph 5 of this award term and condition;

(2) A civil proceeding that resulted in a finding of fault and liability and payment of a monetary fine, penalty, reimbursement, restitution, or damages of \$5,000 or more;

(3) An administrative proceeding, as defined in paragraph 5. of this award term and condition, that resulted in a finding of fault and liability and your payment of either a monetary fine or penalty of \$5,000 or more or reimbursement, restitution, or damages in excess of \$100,000; or

(4) Any other criminal, civil, or administrative proceeding if:

(i) It could have led to an outcome described in paragraph 2.c.(1), (2), or (3) of this award term and condition;

(ii) It had a different disposition arrived at by consent or compromise with an acknowledgment of fault on your part; and

(iii) The requirement in this award term and condition to disclose information about the proceeding does not conflict with applicable laws and regulations.

3. Reporting Procedures

Enter in the SAM Entity Management area the information that SAM requires about each proceeding described in paragraph 2 of this award term and condition. You do not need to submit the information a second time under assistance awards that you received if you already provided the information through SAM because you were required to do so under Federal procurement contracts that you were awarded.

4. Reporting Frequency

During any period of time when you are subject to the requirement in paragraph 1 of this award term and condition, you must report proceedings information through SAM for the most recent five year period, either to report new information about any proceeding(s) that you have not reported previously or affirm that there is no new information to report. Recipients that have Federal contract, grant, and cooperative agreement awards with a cumulative total value greater than \$10,000,000 must disclose semiannually any information about the criminal, civil, and administrative proceedings.

5. Definitions

For purposes of this award term and condition:

a. Administrative proceeding means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (e.g., Securities and Exchange Commission Administrative proceedings, Civilian Board of Contract Appeals proceedings, and Armed Services Board of Contract Appeals proceedings). This includes proceedings at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include audits, site visits, corrective plans, or inspection of deliverables.

b. Conviction, for purposes of this award term and condition, means a judgment or conviction of a criminal offense by any court of competent jurisdiction, whether entered upon a verdict or a plea, and includes a conviction entered upon a plea of nolo contendere.

c. Total value of currently active grants, cooperative agreements, and procurement contracts includes—

- (1) Only the Federal share of the funding under any Federal award with a recipient cost share or match; and
- (2) The value of all expected funding increments under a Federal award and options, even if not yet exercised.

**SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM
September 15, 2016**

Subject: Agreement	Director's Backup
Petitioner: Julie A. Wilcox, Deputy General Manager, Administration	
Recommendations: That the Board of Directors approve a subgrant agreement between the Nevada Division of Environmental Protection and the Authority to accept grant funding in the amount of \$61,700 for regional water quality activities and related public outreach initiatives.	

Fiscal Impact:

The total subgrant projects cost is \$142,452. The Nevada Division of Environmental Protection will provide funding in the amount of \$61,700 for costs associated with the subgrant projects. The Authority will provide a matching contribution of \$60,752 made up of in-kind services and funding, which is available in the Authority's Operating Budget. The Clark County Regional Flood Control District will provide a matching contribution of \$20,000 via separate agreement with the Authority.

Background:

In January 2016, the Nevada Division of Environmental Protection approved the Authority's subgrant application requesting \$61,700 in Clean Water Act funding. The subgrant application was submitted in partnership with the Clark County Regional Flood Control District (Regional Flood) and the Conservation District of Southern Nevada (CDSN) for related public outreach initiatives.

If approved, this subgrant agreement will provide funds to support regional water quality objectives, which include revegetation, erosion control, water quality improvement, public education, and outreach efforts including two "Green-Up" events at the Las Vegas Wash. Pursuant to separate agreements, Regional Flood will contribute \$20,000 for a public service announcement and the Authority will provide \$5,200 of subgrant funds to the CDSN for public education and outreach, which are approved project components.

This subgrant agreement is being entered into pursuant to NRS 277.180, and Section 6(o) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the subgrant agreement.

Respectfully submitted:


 John J. Entsminger, General Manager
 JJE:JAW:ZLM:AMB:KH:kf
 Attachment

AGENDA ITEM # 3

SUB-GRANT AGREEMENT

A Sub-grant awarded by:

Department of Conservation and Natural Resources, Division of Environmental Protection
901 S. Stewart Street, Carson City, NV 89701-5249
Phone: (775) 687-4670 Fax: (775) 687-5856

and awarded to Sub-grantee:

Southern Nevada Water Authority
1001 South Valley View Boulevard, m/s 760
Las Vegas, NV 89153
Phone: (702) 258-3173

hereinafter the "Sub-grantee"

WHEREAS, 40 CFR Part 31.37, NRS 445A.265 and NRS 445A.450 authorize the Division of Environmental Protection to award sub-grants of federal financial assistance to local governments for the purposes set forth in authorizing statutes; and

WHEREAS, it is deemed that the project purposes hereinafter set forth are consistent with the federal grant agreement that provides support of the sub-grant;

NOW, THEREFORE, in consideration of the aforesaid premises, the parties mutually agree as follows:

1. **REQUIRED APPROVAL.** This Sub-grant shall not become effective until and unless approved by appropriate official action of the governing body of each party.
2. **DEFINITIONS.** "State" means the State of Nevada and any state agency identified herein, its officers, employees and immune contractors as defined in NRS 41.0307.
3. **SUB-GRANT TERM.** This Sub-grant shall be effective from the Nevada Division of Environmental Protection Administrator's approval to December 31, 2017, unless sooner terminated by either party as set forth in this Sub-grant.
4. **TERMINATION.** This Sub-grant may be terminated by either party prior to the date set forth in paragraph (3), provided that a termination shall not be effective until 30 days after a party has served written notice upon the other party. This Sub-grant may be terminated by mutual consent of both parties or unilaterally by either party without cause. The parties expressly agree that this Sub-grant shall be terminated immediately if for any reason federal and/or State Legislature funding ability to satisfy this Sub-grant is withdrawn, limited, or impaired.
5. **NOTICE.** All notices or other communications required or permitted to be given under this Sub-grant shall be in writing and shall be deemed to have been duly given if delivered personally in hand, by telephonic facsimile with simultaneous regular mail, or mailed certified mail, return receipt requested, postage prepaid on the date posted, and addressed to the other party at the address set forth above.
6. **INCORPORATED DOCUMENTS.** The parties agree that the services to be performed shall be specifically described; this Sub-grant incorporates the following attachments in descending order of constructive precedence:

ATTACHMENT: SCOPE OF WORK (consisting of 11 pages)

ATTACHMENT: ADDITIONAL AGENCY TERMS & CONDITIONS (consisting of 3 pages)

7. **CONSIDERATION.** Public Agency agrees to provide the services set forth in paragraph (6) at a cost of \$N/A per N/A with the total Sub-grant or installments payable: Quarterly, not exceeding \$61,700.00. Any intervening end to a biennial appropriation period shall be deemed an automatic

renewal (not changing the overall Sub-grant term) or a termination as the results of legislative appropriation may require.

8. **ASSENT.** The parties agree that the terms and conditions listed on incorporated attachments of this Sub-grant are also specifically a part of this Sub-grant and are limited only by their respective order of precedence and any limitations expressly provided.

9. **INSPECTION & AUDIT.**

a. **Books and Records.** Each party agrees to keep and maintain under general accepted accounting principles full, true and complete records, agreements, books, and documents as are necessary to fully disclose to the State or United States Government, or their authorized representatives, upon audits or reviews, sufficient information to determine compliance with all state and federal regulations and statutes.

b. **Inspection & Audit.** Each party agrees that the relevant books, records (written, electronic, computer related or otherwise), including but not limited to relevant accounting procedures and practices of the party, financial statements and supporting documentation, and documentation related to the work product shall be subject, at any reasonable time, to inspection, examination, review, audit, and copying at any office or location where such records may be found, with or without notice by the State Auditor, Employment Security, the Department of Administration, Budget Division, the Nevada State Attorney General's Office or its Fraud Control Units, the State Legislative Auditor, and with regard to any federal funding, the relevant federal agency, the Comptroller General, the General Accounting Office, the Office of the Inspector General, or any of their authorized representatives.

c. **Period of Retention.** All books, records, reports, and statements relevant to this Sub-grant must be retained a minimum three years from the date of final payment by the State to the Public Agency, and all other pending matters are closed. Retention time shall be extended when an audit is scheduled or in progress for a period reasonably necessary to complete an audit and/or to complete any administrative and judicial litigation which may ensue.

10. **BREACH; REMEDIES.** Failure of either party to perform any obligation of this Sub-grant shall be deemed a breach. Except as otherwise provided for by law or this Sub-grant, the rights and remedies of the parties shall not be exclusive and are in addition to any other rights and remedies provided by law or equity, including but not limited to actual damages. If the court awards reasonable attorney's fees to the prevailing party, reasonable shall be deemed \$125 per hour.

11. **LIMITED LIABILITY.** The parties will not waive and intend to assert available NRS chapter 41 liability limitations in all cases. Sub-grant liability of both parties shall not be subject to punitive damages. Actual damages for any State breach shall never exceed the amount of funds which have been appropriated for payment under this Sub-grant, but not yet paid, for the fiscal year budget in existence at the time of the breach.

12. **FORCE MAJEURE.** Neither party shall be deemed to be in violation of this Sub-grant if it is prevented from performing any of its obligations hereunder due to strikes, failure of public transportation, civil or military authority, act of public enemy, accidents, fires, explosions, or acts of God, including, without limitation, earthquakes, floods, winds, or storms. In such an event the intervening cause must not be through the fault of the party asserting such an excuse, and the excused party is obligated to promptly perform in accordance with the terms of the Sub-grant after the intervening cause ceases.

13. **INDEMNIFICATION.**

a. To the fullest extent of limited liability as set forth in paragraph (11) of this Sub-grant, each party shall indemnify, hold harmless and defend, not excluding the other's right to participate, the other from and against all liability, claims, actions, damages, losses, and expenses, including but not limited to reasonable attorneys' fees and costs, arising out of any alleged negligent or willful acts or omissions of the party, its officers, employees and agents. Such obligation shall not be construed to negate, abridge, or otherwise reduce any

other right or obligation of indemnity which would otherwise exist as to any party or person described in this paragraph.

b. The indemnification obligation under this paragraph is conditioned upon receipt of written notice by the indemnifying party within 30 days of the indemnified party's actual notice of any actual or pending claim or cause of action. The indemnifying party shall not be liable to hold harmless any attorneys' fees and costs for the indemnified party's chosen right to participate with legal counsel.

14. INDEPENDENT PUBLIC AGENCIES. The parties are associated with each other only for the purposes and to the extent set forth in this Sub-grant, and in respect to performance of services pursuant to this Sub-grant, each party is and shall be a public agency separate and distinct from the other party and, subject only to the terms of this Sub-grant, shall have the sole right to supervise, manage, operate, control, and direct performance of the details incident to its duties under this Sub-grant. Nothing contained in this Sub-grant shall be deemed or construed to create a partnership or joint venture, to create relationships of an employer-employee or principal-agent, or to otherwise create any liability for one agency whatsoever with respect to the indebtedness, liabilities, and obligations of the other agency or any other party.

15. WAIVER OF BREACH. Failure to declare a breach or the actual waiver of any particular breach of the Sub-grant or its material or nonmaterial terms by either party shall not operate as a waiver by such party of any of its rights or remedies as to any other breach.

16. SEVERABILITY. If any provision contained in this Sub-grant is held to be unenforceable by a court of law or equity, this Sub-grant shall be construed as if such provision did not exist and the nonenforceability of such provision shall not be held to render any other provision or provisions of this Sub-grant unenforceable.

17. ASSIGNMENT. Neither party shall assign, transfer or delegate any rights, obligations or duties under this Sub-grant without the prior written consent of the other party.

18. OWNERSHIP OF PROPRIETARY INFORMATION. Unless otherwise provided by law any reports, histories, studies, tests, manuals, instructions, photographs, negatives, blue prints, plans, maps, data, system designs, computer code (which is intended to be consideration under this Sub-grant), or any other documents or drawings, prepared or in the course of preparation by either party in performance of its obligations under this Sub-grant shall be the joint property of both parties.

19. PUBLIC RECORDS. Pursuant to NRS 239.010, information or documents may be open to public inspection and copying. The parties will have the duty to disclose unless a particular record is made confidential by law or a common law balancing of interests.

20. CONFIDENTIALITY. Each party shall keep confidential all information, in whatever form, produced, prepared, observed or received by that party to the extent that such information is confidential by law or otherwise required by this Sub-grant.

21. PROPER AUTHORITY. The parties hereto represent and warrant that the person executing this Sub-grant on behalf of each party has full power and authority to enter into this Sub-grant and that the parties are authorized by law to perform the services set forth in paragraph (6).

22. GOVERNING LAW; JURISDICTION. This Sub-grant and the rights and obligations of the parties hereto shall be governed by, and construed according to, the laws of the State of Nevada. The parties consent to the jurisdiction of the Nevada district courts for enforcement of this Sub-grant.

23. ENTIRE AGREEMENT AND MODIFICATION. This Sub-grant and its integrated attachment(s) constitute the entire agreement of the parties and such are intended as a complete and exclusive statement of the promises, representations, negotiations, discussions, and other agreements that may have been made in connection with the subject matter hereof. Unless an integrated attachment to this Sub-grant specifically displays a mutual intent to amend a particular part of this Sub-grant, general conflicts in language between any such attachment and this Sub-

grant shall be construed consistent with the terms of this Sub-grant. Unless otherwise expressly authorized by the terms of this Sub-grant, no modification or amendment to this Sub-grant shall be binding upon the parties unless the same is in writing and signed by the respective parties hereto. **IN WITNESS WHEREOF, the parties hereto have caused this Sub-grant to be signed and intend to be legally bound thereby.**

SUB-GRANTEE

By: _____
Signature

Name: John J. Entsminger

Title: General Manager Date: _____

*Approved as to form:
Dana Walsh*

DIVISION

By: _____
Signature

Name: David Emme

Title: Administrator Date: _____

**Scope of Work
And
Budget Attachment**

Scope of Work and Budget Attachment
Initiatives to Reduce NPS Pollution in Southern Nevada, 2016

SUB-GRANTEE ORGANIZATION: Southern Nevada Water Authority (SNWA)
DUNS#: 13-596-5650

PROJECT BUDGET PROJECTION:

319(h) funds awarded	\$61,700.00
Total amount of non-federal match funds	<u>\$80,752.00</u>
Total Project Cost	\$142,452.00

SUB-GRANTEE CONTACT PERSONS: Kathy Flanagan,
Assistant Management Analyst

MAILING ADDRESS: Southern Nevada Water Authority
1001 South Valley View Boulevard, m/s 760
Las Vegas, NV 89153
PHONE NUMBER: 702-258-3173
E-MAIL: kathy.flanagan@snwa.com

NDEP CONTACT PERSONS:

CONTRACT COORDINATOR: Jon Paul Kiel
Environmental Scientist
PHONE NUMBER: (775) 687-9558
E-MAIL: jpkie@ndep.nv.gov

NDEP CONTRACT MANAGER: Stephanie Simpson
Contract Manager
PHONE NUMBER: (775) 687-9444
E-MAIL: s.simpson@ndep.nv.gov

NDEP MAILING ADDRESS: Nevada Division of Environmental Protection
Bureau of Water Quality Planning
901 South Stewart Street, Suite 4001
Carson City, Nevada 89701

Initiatives to Reduce Non-Point Source Pollution in Southern Nevada 2016

Project Location: USGS Hydrographic Region: Colorado River/Las Vegas Wash
Clark County
8-Digit USGS HUCs: 15010005 Lake Mead
15010010 Lower Virgin
15010012 Muddy
15010015 Las Vegas Wash

Sub-grant Term: NDEP Sub-grant Approval – December 31, 2017

Project Summary (Overview)

Project funding will be used to implement objectives of the Las Vegas Wash Comprehensive Adaptive Management Plan (CAMP) and Lake Mead Water Quality Forum. These objectives include revegetation, erosion control, water quality improvement, and public education and outreach efforts. Specific tasks identified for funding include (1) Implementation of two Wash “Green-Up” events; (2) Mabel Hoggard Math and Science Magnet School field trips for elementary students; (3) The airing of a variety of stormwater public service announcements all with the shared theme of non-point source pollution prevention; and (4) Completion of a Stormwater Pollution Poster Contest.

Project Partners

The Southern Nevada Water Authority (SNWA) is the lead agency on this project and will coordinate with the Lake Mead Water Quality Forum and the Las Vegas Wash Coordination Committee. Elements of this project will be performed by the Clark County Regional Flood Control District and the Conservation District of Southern Nevada.

The Lake Mead Water Quality Forum members include(d): Colorado River Commission, Nevada Division of Environmental Protection, Nevada State Health Division, Nevada Department of Wildlife, University of Nevada System, Clark County Department of Comprehensive Planning, Clark County Department of Parks & Recreation, Clark County Health District, Clark County Regional Flood Control District, Clark County Water Reclamation District, City of Henderson, City of Las Vegas, City of North Las Vegas, Southern Nevada Water Authority, U.S. EPA, U.S. Fish & Wildlife Service, U.S. Geological Survey, National Park Service, U.S. Natural Resources Conservation Service, and the U.S. Bureau of Reclamation.

Partners of the Las Vegas Wash Coordination Committee include: Clark County, Clark County Regional Flood Control District, City of Henderson, City of Las Vegas, City of North Las Vegas, Clark County Water Reclamation District, Clark County Department of Comprehensive Planning, CC Department of Parks and Recreation, Southern Nevada Health District, Lake Las Vegas Resort, Las Vegas Boat Harbor, Water Quality Citizens Advisory Committee, Desert Wetlands Conservancy, University of Nevada – Las Vegas, Nevada Department of Wildlife, Nevada State Health Division, Conservation District of

Scope of Work and Budget Attachment
Sub-grant Control Number: DEP S 16-030

Initiatives to Reduce Non-Point Source Pollution in Southern Nevada 2016

Southern Nevada, Colorado River Commission, National Park Service, U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, U.S. Environmental Protection Agency, U.S. Fish & Wildlife Service, U.S. Geological Survey, Natural Resource Conservation Service, and, Basic Management Inc.

I. Introduction

In 1997, the SNWA convened the Water Quality Citizens Advisory Committee to address water quality issues affecting Lake Mead. After several months of discussion, the advisory committee recommended the development of a management plan for the Las Vegas Wash (Wash) and the formation of an inter-agency management entity to oversee these activities. Based on these recommendations, the Las Vegas Wash Coordination Committee (“Coordination Committee”) was established.

The Coordination Committee is comprised of representatives from 30 different federal, state and local agencies, as well as representatives from local businesses and environmental groups. A primary objective in forming this group was to ensure that all relevant and interested stakeholders have a voice in the long-term management and restoration of the Wash. In 2000, the Coordination Committee completed the CAMP document, which identified 44 recommendations for restoring the health and water quality of the Wash. Objectives of the CAMP include the construction of erosion control structures and revegetation of wetlands habitat, while involving the public via education and outreach programs, to improve water quality in Lake Mead, the primary source of Southern Nevada’s drinking water.

The CAMP was certified by the U.S. Environmental Protection Agency as meeting the nine required elements of a watershed plan. The Wash also has been identified by the U.S. Environmental Protection Agency as a Category I Priority Watershed under the 1998 Unified Watershed Assessment. All tasks included in this project proposal implement or support components of the CAMP.

Since 2000, significant progress has been made in stabilizing the Wash. The implementation of CAMP recommendations has helped to reduce erosion, while increasing sedimentation and wetlands habitat, ultimately improving downstream water quality. Public education and other outreach efforts have contributed by increasing awareness and fostering a sense of community in the effort to reduce non-point source pollution and restore the Wash.

Also in 1997, in response to growing concerns over water quality issues in Lake Mead and the Las Vegas Wash, the Nevada Division of Environmental Protection created the Lake Mead Water Quality Forum to support the protection of human health and the environment, and to preserve and improve the water quality of the Las Vegas Wash, Las Vegas Bay and Lake Mead.

Initiatives to Reduce Non-Point Source Pollution in Southern Nevada 2016

The elements of this proposal further regional water quality and non-point source pollution reduction initiatives by stabilizing the Wash and restoring wetland habitat. This includes continued implementation of Wash “Green-Up” events; implementing and expanding work with the Mabel Hoggard Math and Science Magnet School by bringing elementary-school students to the Wash to learn about water quality, wetlands, the complexity of biological communities, and the importance of resource stewardship; the airing of a variety of public service announcements implemented by the Clark County Regional Flood Control District; and by conducting the Stormwater Pollution Poster Contest with the Conservation District of Southern Nevada.

II. Scope of Work (Objectives & Methods)

Goal #1. Improve water quality in the Las Vegas Wash and Las Vegas Bay of Lake Mead towards meeting water quality standards for the support of beneficial uses.

Objective 1.a. Stabilize the Las Vegas Wash channel to reduce sediment loads to Lake Mead.

Task 1 - Fall 2016 and Spring 2017 “Green-Up” Events.

Involve the community in revegetation and habitat restoration activities by implementing two Wash “Green-Up” events that will result in the likely revegetation of 16-20 acres at two locations in the Wash. Revegetation efforts include the introduction of a variety of native-stock emergents, as well as trees and shrubs such as willows, creosote, mesquite and cottonwoods. This work will be implemented according to methods outlined in the CAMP and the Las Vegas Wash Revegetation Management Plan. It is anticipated that both Green-Up events will be held on the south side of the Wash, with the fall 2016 event located adjacent to the DU 2 Weir and the spring 2017 event located near the Three Kids Weir. These projections are only for general planning purposes and may be adjusted due to construction schedules and unforeseen developments. This action supports Goals 1 and 2.

Goal #2. Address non-point source pollution through public education and outreach.

Objective 2.a. Perform outreach activities to inform and educate the community and encourage local stewardship.

Task 1. Implement two “Wash Green-Up” events to allow the community an opportunity to volunteer in the revegetation and restoration of the Las Vegas Wash. Green-Up events consist of more than 800 volunteers planting native trees and shrubs each year in areas recently cleared of invasive plant species. (See Objective 1.a., Task 1 above and Project Location Map below).

Task 2 - Mabel Hoggard Math and Science Magnet School Field Trips

The Las Vegas Wash Coordination Committee has partnered with the Mabel Hoggard Math and Science Magnet School for 16 years to introduce elementary-school students to the Wash. Nevada Division of Environmental Protection grants have previously funded each student with a "reconnaissance backpack" filled with a set of binoculars and a notebook for students to record field data and to keep for their reference. The current field trip itinerary allows each fifth grade class to spend a half day at Lake Mead on the Desert Princess and a half day at the Wash. The proposed funds would be used to cover equipment replacement, transportation and other related costs associated with the field trips. This action supports Goal 2.

Task 3 - Public Service Announcements

Broadcast stormwater public service announcements with a shared theme of non-point source pollution prevention. These announcements will be implemented by the Clark County Regional Flood Control District and broadcast on major network television stations during the fall of 2016 and/or the spring of 2017. This action supports Goal 2.

Task 4 - Stormwater Pollution Poster Contest

Conduct an educational campaign culminating in a stormwater pollution poster contest implemented by the Conservation District of Southern Nevada. The campaign will be facilitated by distribution of Stormwater Workbooks to students prior to promotion of the Poster Contest. The contest winner's reward (A field trip to Mandalay Bay's Shark Reef) is shared with his/her classmates. This action supports Goal 2.

III. Monitoring and Maintenance Program

A comprehensive monitoring program will be implemented to meet the goals and objectives outlined in this proposal.

Task 1 - Fall 2016 and Spring 2017 “Green-Up” Events.

(1) Conduct vegetation monitoring according to the Vegetation Monitoring Plan. The main goal of the monitoring plan is to ensure a minimum 80 percent survival rate for at least two consecutive years, through either active plantings or passive re-establishment of native vegetation at each restoration site. To measure this goal, the Vegetation Monitoring Plan describes specific vegetation monitoring techniques that are implemented at all planting sites in the Wash. Data will be collected on species composition, percent cover, survival rates, and encroachment of non-native species. This information will ensure that what is learned in terms of success and/or failure from active planting activities will be adaptively applied to future plantings. In addition, photo documentation at permanently established photo points (confirmed via GPS) will assist in tracking changes in vegetation communities over time. Subsequently, SNWA will use the data gathered from implementing these techniques to compile a list of specific planting methods that have been successful in the Wash and are therefore recommended specifically for the Wash.

Quantities for sediment, nitrogen, and phosphorus as a result of project implementation are to be derived by NDEP in consultation with SNWA. Should SNWA estimate load reductions, loading reduction for sediment shall be reported in tons; Reductions in nitrogen and phosphorus shall be reported in pounds. If estimated by SNWA, the method of load reduction calculation (by direct measurement, indirect measurement, or employment of a model) shall be described in the report.

- (2) Track volunteer turnout at “Green-Up” events.
- (3) Conduct water quality, biological, vegetation and wildlife monitoring on a regular basis to evaluate program effectiveness.

Task 2 - Mabel Hoggard Math and Science Magnet School Field Trips

- (1) Track success of Mabel Hoggard educational outreach by administering surveys to students after field trips. The survey will provide a measure of success in communicating watershed concepts to students during class visits and field trips. Success will be measured in the percentage of correct responses to questions in the survey, with a target of 85%.

Task 3 - Public Service Announcements

- (1) Track success of public service announcements by performing annual survey of residents’ awareness and behavior changes.

Task 4 - Stormwater Pollution Poster Contest

- (1) Track success of poster contest by comparing the number of workbooks sent to schools with the number of poster contest entries received, as well as the number of entries received from the current versus previous years' contests.

IV. Measures of Success:

Achievement of long-term goals and overall success of the program will be measured by (1) improved water quality in the Wash and Lake Mead, including reduced total suspended solids concentrations; (2) increased native habitat; and (3) a more informed and environmentally aware public.

Short-term benefits from public education efforts with the goal of changing attitude and behavior are not easily measured. While the true indicator of success is ultimately dependent upon changes in behavior (such as decreased use of turf fertilizers and proper disposal of household chemicals), a number of other indicators will be used to identify short-term program effectiveness.

V. Contingency Plan

There is a great deal of flexibility built into this project. Activities can be reconfigured or relocated to reflect a variety of priorities, such as taking advantage of funding opportunities or shifting restoration to different locations. Similarly, shortfalls in funding can be accommodated by scaling back or modifying activities.

VI. Acknowledgements

When issuing statements, press releases, printed materials or other items describing any aspect of activities supported in whole or in part with funds provided under this contract, SNWA will ensure that the Nevada Division of Environmental Protection and the USEPA are acknowledged.

VII. Deliverables

1. Two Wash Green-Up events, resulting in the revegetation of approximately 16-20 acres of habitat in the Las Vegas Wash and increased community awareness and understanding.
2. Implementation of Mabel Hoggard Field Trip Program.
3. An accounting of Stormwater Workbooks Distributed, and completion of the Stormwater Poster Contest.
4. Run a variety of Public Service Announcements (PSAs) all with the shared theme of non-point source pollution prevention.
5. Quarterly and annual reports¹ summarizing project accomplishments and activities.
6. Documentation supporting project expenditures and match amounts.
7. Final report detailing all activities and summary of activities, including evaluation of monitoring results and public outreach evaluation.
8. Other updates as requested by NDEP.

¹ To facilitate NDEP annual grant program reporting to and required by the US EPA, an Annual Project Report will be submitted to NDEP on or before July 15th in electronic format (MS WORD and/or MS Excel as appropriate). The Annual Report shall describe project activity during the previous 4 quarters (July through June) and shall include the following information:

1. A Summary of Progress made towards completion of the project; including:
 - a. Project budget, scheduling status and forecasts (Under or over budget? Behind or ahead of schedule?).
 - b. A description of any problems encountered during project implementation, and whether technical assistance is requested of NDEP, or if any contract amendments are anticipated to facilitate completion of the project.
 - c. A description of how pollutant load reductions will be calculated.
 - d. Pollutant load reductions thus far to include pounds of nitrogen and phosphorus, and tons of sediment captured.
 - e. An updated estimate of Pollutant Load Reduction expected upon completion of the project, or upon completion of project tasks at the end of the calendar year for those projects with recurring, ongoing installations of Best Management Practices.
 - f. A description of project successes, including photographs of project activities if appropriate.
 - g. An assessment as to whether match requirements are being met in a timely fashion.

VIII. Project Timeline

Task 1: “Green-Up” Events

Fall 2016 Green-Up Event 1
Spring 2017 Green-Up Event 2

Task 2: Mabel Hoggard Math and Science Magnet School Field Trips

Fall 2016 Field trip equipment replaced
December 2016-June 2017 Field trips

Task 3: Public Service Announcements

Fall 2016 and Spring 2017 Broadcast public service announcements

Task 4: Stormwater Pollution Poster Contest

January - March 2017 Distribution of workbooks and contest information; event judging; winner announcement and prize distribution.

Monitoring

Ongoing through 12/31/17 Conduct water quality, biological, vegetation and wildlife monitoring
Report results with analysis and evaluation of effectiveness of the program

Public Outreach Evaluation

Ongoing through 12/31/17 Assess response of public to outreach efforts
Report results with analysis and evaluation of effectiveness of the program

IX. Detailed Project Budget

Detailed Project Budget: Initiatives to Reduce Non-Point Source Pollution in Southern Nevada, 2016

Division #s:	96, 97
Subgrant Control #	DEP S 16-030
SubGrantee:	Southern Nevada Water Authority
SubGrantee Contact:	Flanagan, Kathy
NDEP Contract Monitor:	Kiel, Jon Paul

Contract Award: \$61,700.00

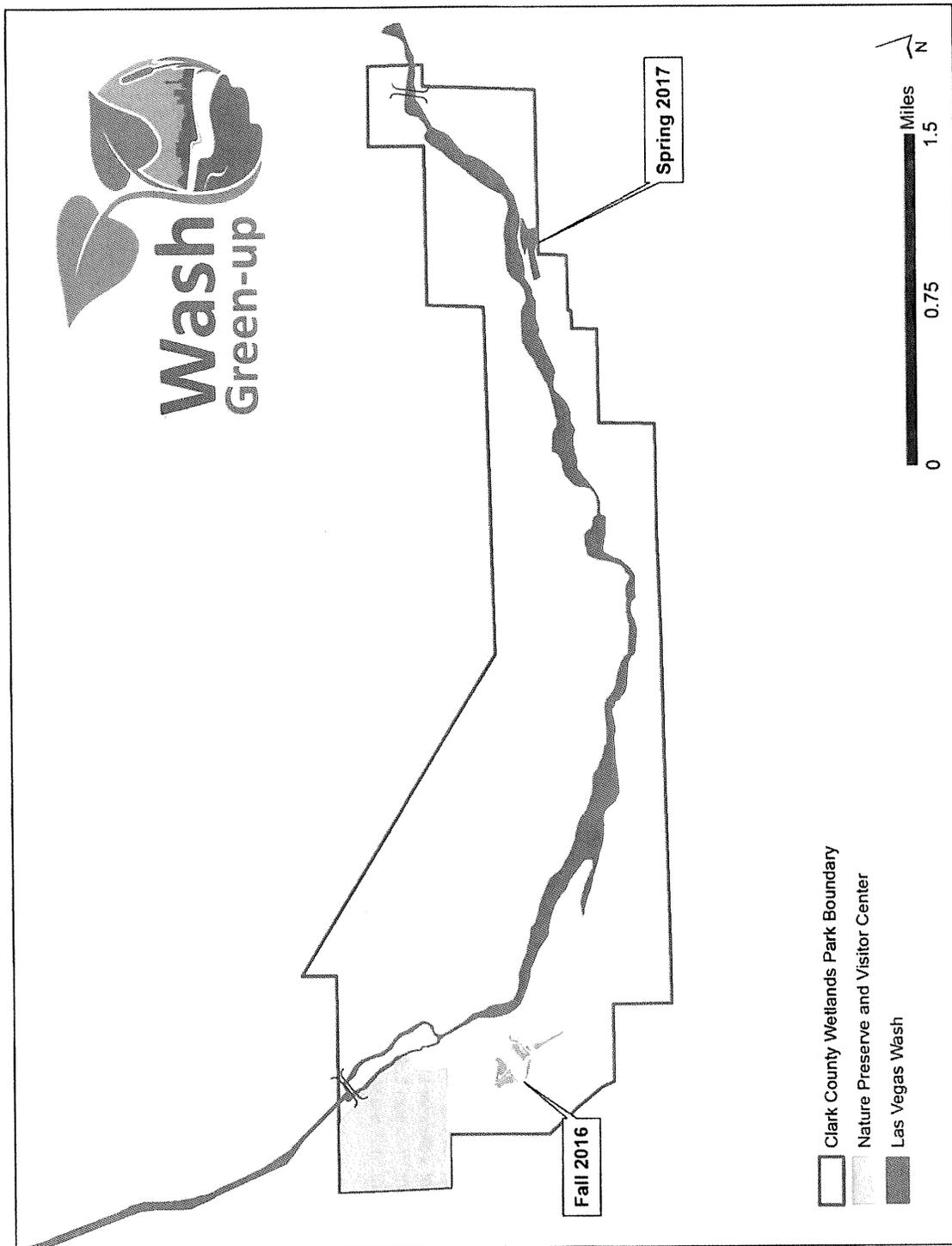
REIMBURSIBLE EXPENDITURE BREAK-OUT - 319(h) FUNDS

Task	319(h)	Match - Cash	Match - In-kind	Project Totals
Green-Up Event Supplies	\$20,000.00			\$20,000.00
Green-Up Event Volunteer Lunch	\$10,000.00			\$10,000.00
Green-Up Event Volunteer Labor		\$40,000.00		\$40,000.00
Green-Up Event Staff Salaries		\$10,000.00		\$10,000.00
PSA Airtime	\$20,000.00	\$20,000.00		\$40,000.00
Mabel Hoggard Equipment Costs	\$1,500.00			\$1,500.00
Mabel Hoggard Field Trip Costs	\$5,000.00			\$5,000.00
Mabel Hoggard Field Trip Staff Salaries		\$10,752.00		\$10,752.00
Stormwater Pollution Poster Contest:				
Includes expenditures on Workbook and Certificate Production/Printing, Workbook Distribution, Teacher and Student Awards*, Field Trip Transportation, Field Trip Lunch**				
Sub-Totals	\$61,700.00	\$40,752.00	\$40,000.00	\$142,452.00

*Teacher Awards NTE \$200.

**Poster Field Trip Lunch NTE \$300.

X. Project Location Map, Green-Up Areas



**Additional Agency Terms
And Conditions
Attachment**

**ADDITIONAL AGENCY TERMS & CONDITIONS
ATTACHMENT TO SUB-GRANT
SUB-GRANT CONTROL #DEP-S 16-030
Southern Nevada Water Authority (SNWA)**

1. The Nevada Division of Environmental Protection shall pay no more compensation than the federal Executive Service Level 4 (U.S. Code) daily rate (exclusive of fringe benefits) for individual consultants retained by the Sub-grantee or by the Sub-grantee's contractors or subcontractors. This limitation applies to consultation services of designated individuals with specialized skills who are paid at a daily or hourly rate. The current Level 4 rate is \$75.27 per hour.
2. ***NDEP shall only reimburse the Sub-grantee for actual cash disbursed.*** Original invoices (facsimiles are not acceptable) must be received by NDEP no later than forty (40) calendar days after the end of a month or quarter except at the end of the fiscal year of the State of Nevada (June 30th), at the expiration date of the grant, or the effective date of the revocation of the Sub-grant, at which times original invoices must be received by NDEP no later than thirty-five (35) calendar days after this date. Failure of the Sub-grantee to submit billings according to the prescribed timeframes authorizes NDEP, in its sole discretion, to collect or withhold a penalty of ten percent (10%) of the amount being requested for each week or portion of a week that the billing is late. The Sub-grantee shall provide with each invoice a detailed fiscal summary that includes the approved Sub-grant budget, expenditures for the current period, cumulative expenditures to date, and balance remaining for each budget category. If match is required pursuant to paragraph 3 below, a similar fiscal summary of match expenditures must accompany each invoice. The Sub-grantee shall obtain prior approval to transfer funds between budget categories if the funds to be transferred are greater than ten percent (10%) cumulative of the total Sub-grant amount.
3. The Sub-grantee shall, as part of its approved scope of work and budget under this Sub-grant, provide third party match funds of not less than: \$80,752.00. If match funds are required, the Sub-grantee shall comply with additional record-keeping requirements as specified in 40 CFR 31.24 and the Third party Match Record-Keeping Requirements attachment, which is attached hereto and by this reference is incorporated herein and made part of this Sub-grant.
4. Unless otherwise provided in Scope of work attachment, the Sub-grantee shall submit quarterly reports or other deliverables within ten (10) calendar days after the end of each quarter.
5. All payments under this Sub-grant are contingent upon the receipt by NDEP of sufficient funds, necessary to carry out the purposes of this Sub-grant, from either the Nevada Legislature or an agency of the United States. NDEP shall determine if it has received the specific funding necessary for this Sub-grant. If funds are not received from either source for the specific purposes of this Sub-grant, NDEP is under no obligation to supply funding for this Sub-grant. The receipt of sufficient funds as determined by NDEP is a condition precedent to NDEP's obligation to make payments under this Sub-grant. Nothing in this Sub-grant shall be construed to provide the Sub-grantee with a right of payment over any other entity. If any payments that are otherwise due to the Sub-grantee under this Sub-grant are deferred because of the unavailability of sufficient funds, such payments will promptly be made to the Sub-grantee if sufficient funds later become available.
6. Notwithstanding the terms of paragraph 5, at the sole discretion of NDEP, payments will not be made by NDEP unless all required reports or deliverables have been submitted to and approved by NDEP within the schedule stated in Attachment A.
7. Any funds obligated by NDEP under this Sub-grant that are not expended by the Sub-grantee shall automatically revert back to NDEP upon the completion, termination or cancellation of this Sub-grant. NDEP shall not have any obligation to re-award or to provide, in any manner, such unexpended funds to the Sub-grantee. The Sub-grantee shall have no claim of any sort to such unexpended funds.
8. The Sub-grantee shall ensure, to the fullest extent possible, that at least the "fair share" percentages as stated below for prime contracts for construction, services, supplies or equipment are made available to organizations owned or controlled by socially and economically disadvantaged individuals (Minority Business Enterprise (MBE) or Small Business Enterprise (SBE)), women (Women Business Enterprise (WBE)) and historically black colleges and universities.

	MBE/SBE	WBE
Construction	3%	1%
Services	1%	1%
Supplies	1%	1%
Equipment	2%	1%

The Sub-grantee agrees and is required to utilize the following seven affirmative steps:

- a. Include in its bid documents applicable "fair share" percentages as stated above and require all of its prime contractors to include in their bid documents for subcontracts the "fair share" percentages;
- b. Include qualified Small Business Enterprises (SBEs) Minority Business Enterprises (MBEs), and Women Business Enterprises (WBEs) on solicitation lists;
- c. Assure that SBEs, MBEs, and WBEs are solicited whenever they are potential sources;
- d. Divide total requirements, when economically feasible, into small tasks or quantities to e. permit maximum participation of SBEs, MBEs, and WBEs;
- e. Establish delivery schedules, where the requirements of the work permit, which will encourage participation by SBEs, MBEs, and WBEs;
- f. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency, U.S. Department of commerce as appropriate; and
- g. If a subcontractor awards contracts/procurements, require the subcontractor to take the affirmative steps in subparagraphs a. through e. of this condition.

9. The Sub-grantee shall complete and submit to NDEP a Minority Business Enterprise/Woman Business Enterprise (MBE/WBE) Utilization Report (Standard Form 334) within fifteen (15) calendar days after the end of each federal fiscal year (September 30th) for each year this Sub-grant is in effect and within fifteen (15) calendar days after the termination date of this Sub-grant.

10. The books, records, documents and accounting procedures and practices of the Sub-grantee or any subcontractor relevant to this Sub-grant shall be subject to inspection, examination and audit by the State of Nevada, the Division of Environmental Protection, the Attorney General of Nevada, the Nevada State Legislative Auditor, the federal or other funding agency, the Comptroller General of the United States or any authorized representative of those entities.

11. All books, reports, studies, photographs, negatives, annual reports or other documents, data, materials or drawings prepared by or supplied to the Sub-grantee in the performance of its obligations under this Sub-grant shall be the joint property of both parties. Such items must be retained by the Sub-grantee for a minimum of three years from the date of final payment by NDEP to the Sub-grantee, and all other pending matters are closed. If requested by NDEP at any time within the retention period, any such materials shall be remitted and delivered by the Sub-grantee, at the Sub-grantee's expense, to NDEP. NDEP does not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, report or product of any kind that the Sub-grantee may disclose or use for purposes other than the performance of the Sub-grantee's obligations under this Sub-grant. For any work outside the obligations of this Sub-grant, the Sub-grantee must include a disclaimer that the information, report or products are the views and opinions of the Sub-grantee and do not necessarily state or reflect those of NDEP nor bind NDEP.

12. Unless otherwise provided in Attachment A, when issuing statements, press releases, requests for proposals, bid solicitations and other documents describing projects or programs funded in whole or in part with funds provided under this Sub-grant, the Sub-grantee shall clearly state that funding for the project or program was provided by the Nevada Division of Environmental Protection and, if applicable, the U.S. Environmental Protection Agency. The Sub-grantee will insure that NDEP is given credit in all official publications relative to this specific project and that the content of such publications will be coordinated with NDEP prior to being published.

13. Unless otherwise provided in Attachment A, all property purchased with funds provided pursuant to this Sub-grant is the property of NDEP and shall, if NDEP elects within four (4) years after the completion, termination or cancellation of this Sub-grant or after the conclusion of the use of the property for the purposes of this Sub-grant during its term, be returned to NDEP at the Sub-grantee's expense.

Such property includes but is not limited to vehicles, computers, software, modems, calculators, radios, and analytical and safety equipment. The Sub-grantee shall use all purchased property in accordance with local, state and federal law, and shall use the property only for Sub-grant purposes unless otherwise agreed to in writing by NDEP.

For any unauthorized use of such property by the Sub-grantee, NDEP may elect to terminate the Sub-grant and to have the property immediately returned to NDEP by the Sub-grantee at the Sub-grantee's expense. To the extent authorized by law, the Sub-grantee shall indemnify and save and hold the State of Nevada and NDEP harmless from any and all claims, causes of action or liability arising from any use or custody of the property by the Sub-grantee or the Sub-grantee's agents or employees or any subcontractor or their agents or employees.

14. The Sub-grantee shall use recycled paper for all reports that are prepared as part of this Sub-grant and delivered to NDEP. This requirement does not apply to standard forms.

15. The Sub-grantee, to the extent provided by Nevada law, shall indemnify and save and hold the State of Nevada, its agents and employees harmless from any and all claims, causes of action or liability arising from the performance of this Sub-grant by the Sub-grantee or the Sub-grantee's agents or employees or any subcontractor or their agents or employees. NDEP, to the extent provided by Nevada law, shall indemnify and save and hold the Sub-grantee, its agents and employees harmless from any and all claims, causes of action or liability arising from the performance of this Sub-grant by NDEP or NDEP's agents or employees.

16. The Sub-grantee and its subcontractors shall obtain any necessary permission needed, before entering private or public property, to conduct activities related to the work plan (Attachment A). The property owner will be informed of the program, the type of data to be gathered, and the reason for the requested access to the property.

17. This Sub-grant shall be construed and interpreted according to the laws of the State of Nevada and conditions established in OMB Circular A-102. Nothing in this Sub-grant shall be construed as a waiver of sovereign immunity by the State of Nevada. Any action brought to enforce this Sub-grant shall be brought in the First Judicial District Court of the State of Nevada. The Sub-grantee and any of its subcontractors shall comply with all applicable local, state and federal laws in carrying out the obligations of this Sub-grant, including all federal and state accounting procedures and requirements established in OMB Circular A-87 and A-133. The Sub-grantee and any of its subcontractors shall also comply with the following:

- a. 40 CFR Part 7 - Nondiscrimination In Programs Receiving Federal Assistance From EPA
- b. 40 CFR Part 29 - Intergovernmental Review Of EPA Programs And Activities.
- c. 40 CFR Part 31 - Uniform Administrative Requirements For Grants And Cooperative Agreements To State and Local Governments;
- d. 40 CFR Part 32 - Governmentwide Debarment And Suspension (Nonprocurement) And Governmentwide Requirements For Drug-Free Workplace (Grants);
- e. 40 CFR Part 34 - Lobbying Activities;
- f. 40 CFR Part 35, Subpart O - Cooperative Agreements And Superfund State Contracts For Superfund Response Actions (Superfund Only); and
- g. The Hotel And Motel Fire Safety Act of 1990.

18. The Sub-grantee shall neither assign, transfer nor delegate any rights, obligations or duties under this Sub-grant without the prior written consent of NDEP.

**Third Party Match
Record-Keeping Requirements
Attachment**

**THIRD PARTY MATCH RECORD-KEEPING REQUIREMENTS ATTACHMENT
TO CONTRACT/SUB-GRANT AGREEMENT
CONTROL #DEPS-16-030
Southern Nevada Water Authority (SNWA)**

THIRD PARTY MATCH RECORD-KEEPING REQUIREMENTS

- A. If not included in the scope of work / budget attachment of the contract, the Public Agency, Contractor or Sub-grantee shall provide to the Nevada Division of Environmental Protection (NDEP) a detailed match budget clearly distinguishing between cash and non-cash (in-kind) contributions, prior to submittal of the first invoice.
- B. With each invoice, the Public Agency, Contractor or Sub-grantee shall submit a detailed match schedule that includes: (1) the total match budget; (2) match expenditures for the current period; (3) cumulative match expenditures; and (4) balance remaining. Cash and in-kind expenditures must be identified separately
- C. The Public Agency or Independent Contractor shall establish a file dedicated to this contract that includes the following:
1. For any declared in-kind contributions:
 - (a) An itemized listing of each employee's hourly rate, including the justification for the rate such as the current "Prevailing Wage Rates for Nevada Counties", NRCS cost-share rates, etc.
 - (b) A Fringe Benefit detail and explanation.
 - (c) A copy of an approved Overhead/Indirect Cost Allocation Plan.
 - (d) An itemization of per diem rates, equipment rental/usage rates, etc.
 - (e) Copies (or originals) of timesheets, with employee's and supervisor's signature, noting dates, hours, and projects worked.
 - (f) Copies (or originals) of logs/schedules for equipment usage.
 - (g) Signed statements noting fair market value for in-kind donations of materials or supplies.
 2. For any declared cash contributions:
 - (a) An itemization of each employee's hourly rate including fringe benefits, overhead, and indirect cost.
 - (b) An itemization of per diem rates, equipment rental/usage rates, etc.
 - (c) Copies (or originals) of timesheets, with employee's and supervisor's signature, noting dates, hours, and projects worked.
 - (d) Copies (or originals) of logs/schedules for equipment usage.
 - (e) Copies (or originals) of invoices for materials, supplies, equipment, etc.
- D. The Public Agency, Contractor or Sub-grantee agrees and acknowledges that:
1. Neither the costs nor the values of third party match contributions being used to satisfy the match requirements of the attached contract have been or will be used to satisfy a cost share or match requirement of another federal grant agreement, federal procurement contract, or any other award of federal funds.
 2. Third-party match contributions or expenditures must be made within the effective dates of: October 1, 2015 through September 30, 2020.
 3. All financial records, including match documentation, relevant to this project shall be retained by the Public Agency, Contractor or Sub-grantee for three years from the date of final payment by NDEP to the Public Agency, Contractor or Sub-grantee, and all other pending matters are closed.
 4. Reported match contributions deemed inappropriate or unreasonable during the invoice review process may be disallowed.
 5. NDEP may, at any time, audit the Public Agency, Contractor or Sub-grantee contract files to ensure compliance with the Third Party Match Record-Keeping Requirements. Reported match contributions deemed inappropriate or unreasonable during an audit may be disallowed.
 6. NDEP may require the Public Agency, Contractor or Sub-grantee to repay any funds provided to the Public Agency, Contractor or Sub-grantee under the attached contract that the Public Agency, Contractor or Sub-grantee is unable to match or provide adequate documentation for the reported match.

**SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS**

AGENDA ITEM

September 15, 2016

Subject: Authorization to Increase Funding	Director's Backup
Petitioner: David L. Johnson, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors authorize an increase to Bid No. 2241-13, Annual Requirements Contract for the Repair of Electric Motors, to Koffler Electrical Mechanical Apparatus Repair, Inc., in the amount of \$400,000, for a revised estimated annual contract amount of \$1,150,000 for the current and two remaining option periods.	

Fiscal Impact:

Funds requested for current year expenditures are available in the Authority's Capital Budget. Funds for future year expenditures will be budgeted accordingly.

Background:

On September 17, 2015, the Board of Directors approved an increase in funding to Koffler Electrical Mechanical Apparatus Repair, Inc. (Koffler), for the reconditioning and repairs of electric motors from \$400,000 to \$750,000 annually. The Southern Nevada Water System (SNWS) relies heavily on these electric motors to turn the large pumps that deliver up to 900 MGD of potable water to Authority purveyor members.

In addition to the motor repairs and upgrades identified in 2015, there are motors at Pump Stations 1C and 2C that are beginning to show signs of failure to develop the necessary torque during start-up, which is causing improper operation. Also, motors at Pump Stations 1A and 2A are aging and in need of refurbishment to enable them to continue to deliver water to the Authority's treatment facilities.

If approved, this increase will fund the ongoing motor repairs and upgrades in addition to any unforeseen motor failures or repairs. The estimated annual contract amount of \$1,150,000 would apply to the current and two remaining contract option periods and will allow the Authority to perform necessary comprehensive repairs. Adding this funding to the existing Koffler contract will allow staff to maintain continuity with the Authority's large motor maintenance program through the use of a proven vendor who has consistently complied with the Authority's repair specifications.

This action is authorized pursuant to NRS 332.065 and Section 6(j) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved this item.

Respectfully submitted:


John J. Entsminger, General Manager
JJE:DLJ:KAA:MAW:SAL:JRB:MJW:jd
Attachment

AGENDA ITEM #	4
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DISCLOSURE OF OWNERSHIP/PRINCIPALS

Business Entity Type							
<input type="checkbox"/> Sole Proprietorship	<input type="checkbox"/> Partnership	<input type="checkbox"/> Limited Liability Company	<input checked="" type="checkbox"/> Privately Held Corporation	<input type="checkbox"/> Publicly Traded Corporation	<input type="checkbox"/> Trust	<input type="checkbox"/> Non-Profit Organization	<input type="checkbox"/> Other
Business Designation Group							
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	<input checked="" type="checkbox"/> SBE	<input type="checkbox"/> PBE	<input type="checkbox"/> ESB	<input type="checkbox"/>		
Minority Business Enterprise	Women-Owned Business Enterprise	Small Business Enterprise	Physically Challenged Business Enterprise	Emerging Small Business			
Corporate/Business Entity Name:		Koffler Electrical Mechanical Apparatus Repair, Inc.					
(Include d.b.a., if applicable)							
Street Address:		527 Whitney St		Website: www.koffler.com			
City, State and Zip Code:		San Leandro, CA 94577		POC Name and Email: CHARLES KOFFLER CHARLIE@KOFFLER			
Telephone No:		510-567-0630		Fax No: 510-567-0630			
Local Street Address:		527 Whitney St.		Website: www.koffler.com			
City, State and Zip Code:		San Leandro, CA 94577		Local Fax No: 510-567-0630			
Local Telephone No:		510-567-0630		Local POC Name Email: CHARLES KOFFLER CHARLIE@KOFFLER			
Number of Clark County, Nevada Residents Employed: 0							

All entities, with the exception of publicly-traded and non-profit organizations, must list the names of individuals, either directly or indirectly, holding more than five percent (5%) ownership or financial interest in the business entity appearing before the SNWA Board of Directors.

Publicly-traded entities and non-profit organizations shall list all Corporate Officers and Directors in lieu of disclosing the names of individuals with ownership or financial interest. The disclosure requirement, as applied to land-use applications, extends to the applicant and the landowner(s).

Entities include all business associations organized under or governed by Title 7 of the Nevada Revised Statutes, including but not limited to private corporations, close corporations, foreign corporations, limited liability companies, partnerships, limited partnerships, and professional corporations.

Full Name	Title	% Owned <small>(Not required for Publicly Traded Corporations/Non-profit organizations)</small>
Nilaria & Charles Koffler	President/CEO	64%
Koffler Family Living Trust		10%
Balance of stock split between others all less than		5%

This section is not required for publicly-traded corporations.

- Are any individual members, partners, owners or principals, involved in the business entity, an SNWA full-time employee(s), or appointed/elected official(s)?
 - Yes No (If yes, please note that SNWA employee(s), or appointed/elected official(s) may not perform any work on professional service contracts, or other contracts, which are not subject to competitive bid.)
- Do any individual members, partners, owners or principals have a spouse, registered domestic partner, child, parent, in-law or brother/sister, half-brother/half-sister, grandchild, grandparent, related to an SNWA full-time employee(s), or appointed/elected official(s)?
 - Yes No (If yes, please complete the Disclosure of Relationship form on Page 2. If no, please print N/A on Page 2.)

I certify under penalty of perjury, that all of the information provided herein is current, complete, and accurate. I also certify that the entity is not on the federal government's Excluded Parties List, as defined by 2 CFR § 180.945. I further understand that the SNWA will not take action on land-use approvals, contract approvals, land sales, leases or exchanges without the completed disclosure form.

Charles A. Koffler
 Signature
 CEO, Technical
 Title

Charles A. Koffler
 Print Name
07/29/16
 Date

DISCLOSURE OF RELATIONSHIP

List any disclosures below:
(Mark N/A, if not applicable.)

NAME OF BUSINESS OWNER/PRINCIPAL	NAME OF SNWA EMPLOYEE OR OFFICIAL AND JOB TITLE	RELATIONSHIP TO SNWA EMPLOYEE OR OFFICIAL	SNWA EMPLOYEE'S/OFFICIAL'S DEPARTMENT
N/A	N/A	N/A	N/A

"Consanguinity" is a relationship by blood. "Affinity" is a relationship by marriage.

"To the second degree of consanguinity" applies to the candidate's first and second degree of blood relatives as follows:

- Spouse – Registered Domestic Partners – Children – Parents – In-laws (first degree)
- Brothers/Sisters – Half-Brothers/Half-Sisters – Grandchildren – Grandparents – In-laws (second degree)

For SNWA Use Only:

If no Disclosure or Relationship is noted above or if the section is marked N/A, please check this box:

No Disclosure

If any Disclosure of Relationship is noted above, please complete the following:

- Yes No Is the SNWA employee(s) noted above involved in the contracting/selection process for this particular agenda item?
- Yes No Is the SNWA employee(s) noted above involved in any way with the business in performance of the contract?

Notes/Comments:

Michelle White
Signature

Michelle White
Print Name
Authorized Department Representative

**AGREEMENT
BID NO. 2241-13**

THIS AGREEMENT, is made and entered into, by and between the Southern Nevada Water Authority (Owner) and Koffler Electrical Mechanical Apparatus Repair, Inc. (Contractor).

The Parties do mutually agree as follows:

1. Contractor was awarded Bid No. 2241-13-Annual Requirements Contract for the Repair of Electric Motors in the amount of \$400,000 in accordance with the terms, conditions, and specifications of said bid. An increase in funding of \$350,000 for an annual total of \$750,000 was approved by the SNWA Board on September 17, 2015, for the ongoing reconditioning and repair of large electric motors throughout the SNWS facilities. Owner has identified 11 Louis Allis motors that are in need of rotor bar connection modifications and 12 motors throughout the facilities that need refurbishment. Contractor has agreed to provide these motor services under the terms and conditions of Bid No. 2241-13. The increase in price to include the additional services would be approximately \$400,000, increasing the Blanket Agreement from \$750,000 to \$1,150,000.
2. Owner agrees to purchase and Contractor agrees to provide the specified products, supplies, and services to properly perform and complete the contractual obligations in strict accordance with the Contract Documents and throughout the term of the contract.
3. The Contractor certifies that the Contractor has read and understands every provision contained in the Contract Documents. Contractor shall be bound and shall comply with each term, condition, and covenant set forth in the Contract Documents.
4. Contract Documents which comprise the entire agreement between the Owner and Contractor for the performance of Work consist of the following (as applicable):

Agreement
SNWA Invitation to Bid No. 2241-13 and Addendums 1, 2, and 3
Exhibits
Koffler Bid Form dated December 2, 2013

IN WITNESS WHEREOF, Contractor has caused this agreement to be executed this 9 day of August, 2016

Koffler Electrical Mechanical

Southern Nevada Water Authority

By: Charlie Koffler
Charlie Koffler
CEO

By: _____
John J. Entsminger
General Manager

**Southern Nevada Water Authority
Approved as to form:**

By: J. Claes Date: 8/9/16

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM
September 15, 2016

Subject: Association Membership	Director's Backup
Petitioner: David L. Johnson, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors authorize the renewal of the Authority's membership in the Water Research Foundation for fiscal year 2016/2017 in the subscription amount of \$355,866.	

Fiscal Impact:

The requested \$355,866 is available in the Authority's Operating Budget.

Background:

The Water Research Foundation (WRF) is a recognized research organization supporting the water industry through the financial participation of its subscriber members. The WRF currently has over 864 water utility subscribers located in the United States, Canada, Europe, Australia, and Northeast Asia. The WRF advances practical research that impacts the regulatory and operational concerns of the drinking water community. Since its inception in 1966, the WRF has sponsored more than \$535 million in research, represented by more than 1,585 research projects that address the full spectrum of research needs including distribution systems, improvements in water treatment processes, water quality monitoring, health effects, compliance requirements, and water system security enhancements. Several Authority employees continue to serve on Project Advisory Committees, which are groups of water industry professionals that select and oversee the various research projects.

The Authority acknowledges the importance of research, contributes to future research activities, and benefits from the WRF's proactive global research initiatives. The Authority has participated in 114 WRF-funded projects valued at \$49,483,097. Additionally, the WRF has provided \$2,800,959 in funds toward Authority-sponsored projects. The resulting data will continue to assist the Authority by enhancing practices and methodologies that further its ability to provide reliable, quality water to its customers.

If approved, the Authority's membership would continue to allow all purveyor members access to WRF membership benefits.

This action is authorized pursuant to Section 6(p) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved this agenda item.

Respectfully submitted:


John J. Entsminger, General Manager
JJE:DLJ:KPF:jac

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM
September 15, 2016

Subject: Agreement	Director's Backup
Petitioner: David L. Johnson, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors approve and authorize the General Manager to sign an agreement between the Water Research Foundation and the Authority for the Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria study, authorize the Authority to contribute \$100,000 in monetary funds and \$57,000 of in-kind services as its cost-share portion, and accept funds and in-kind services in a combined amount not to exceed \$262,000.	

Fiscal Impact:

The requested \$100,000 is available in the Authority's Operating Budget. If the above recommendation is approved, the Authority will contribute \$100,000 plus \$57,000 of in-kind services as its cost-share portion. The Water Research Foundation will contribute \$100,000 in monetary funding and other participants will contribute \$5,000 of in-kind services for a total award value of \$262,000, which includes the Authority's contribution.

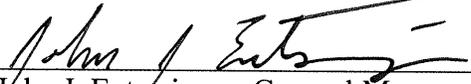
Background:

In March 2015, Lake Mead experienced its first documented *Microcystis* bloom that produced cyanotoxin; microcystin. In June 2015, the U.S. Environmental Protection Agency issued a Health Advisory (HA) for cyanotoxins in drinking water. The HA prompted the need for additional research to help utilities respond to future cyanotoxin events in source water supplies. In response, the Water Research Foundation (WRF) will be conducting a research study, Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria, and has selected the Authority's Water Quality Research and Development Division as the Principal Investigator.

If approved, the attached Multi Funded Research Agreement provides for the Authority to receive \$262,000 in monetary and in-kind services from the WRF and its partners, which includes the Authority's contribution of \$157,000 combined cash and in-kind cost share. The Authority would pay Co-Principal Investigators, in this instance the University of New South Wales, Hazen and Sawyer, and Utah State University, through separate agreements payable from the WRF funds received.

This agreement is being entered into pursuant to NRS 332.115(1)(b) and Section 6(j) and 6(o) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the agreement.

Respectfully submitted:


John J. Entsminger, General Manager
JJE:DLJ:KPF:DJR:EW:jf
Attachments

AGENDA
ITEM #

6

DISCLOSURE OF OWNERSHIP/PRINCIPALS

Business Entity Type							
<input type="checkbox"/> Sole Proprietorship	<input type="checkbox"/> Partnership	<input type="checkbox"/> Limited Liability Company	<input type="checkbox"/> Privately Held Corporation	<input type="checkbox"/> Publicly Traded Corporation	<input type="checkbox"/> Trust	<input checked="" type="checkbox"/> Non-Profit Organization	<input type="checkbox"/> Other
Business Designation Group							
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	<input type="checkbox"/> SBE	<input type="checkbox"/> PBE	<input type="checkbox"/> ESB	<input type="checkbox"/>		
Minority Business Enterprise	Women-Owned Business Enterprise	Small Business Enterprise	Physically Challenged Business Enterprise	Emerging Small Business			
Corporate/Business Entity Name:		Water Research Foundation					
(Include d.b.a., if applicable)							
Street Address:		14141 W. Quincy Ave		Website: WaterRF.ORG			
City, State and Zip Code:		Denver CO 80235		POC Name and Email:			
Telephone No:		303-347-6100		Fax No:			
Local Street Address:				Website:			
City, State and Zip Code:		SAME AS ABOVE		Local Fax No:			
Local Telephone No:				Local POC Name Email:			
Number of Clark County, Nevada Residents Employed:							

All entities, with the exception of publicly-traded and non-profit organizations, must list the names of individuals, either directly or indirectly, holding more than five percent (5%) ownership or financial interest in the business entity appearing before the SNWA Board of Directors.

Publicly-traded entities and non-profit organizations shall list all Corporate Officers and Directors in lieu of disclosing the names of individuals with ownership or financial interest. The disclosure requirement, as applied to land-use applications, extends to the applicant and the landowner(s).

Entities include all business associations organized under or governed by Title 7 of the Nevada Revised Statutes, including but not limited to private corporations, close corporations, foreign corporations, limited liability companies, partnerships, limited partnerships, and professional corporations.

Full Name	Title	% Owned <small>(Not required for Publicly Traded Corporations/Non-profit organizations)</small>
Chuck Murray	Chair	
Dennis Doll	Vice-Chair	
Barrett Murphy	TREASURER	
Robert Renner	SECRETARY	

This section is not required for publicly-traded corporations.

1. Are any individual members, partners, owners or principals, involved in the business entity, an SNWA full-time employee(s), or appointed/elected official(s)?
 - Yes No (If yes, please note that SNWA employee(s), or appointed/elected official(s) may not perform any work on professional service contracts, or other contracts, which are not subject to competitive bid.)

2. Do any individual members, partners, owners or principals have a spouse, registered domestic partner, child, parent, in-law or brother/sister, half-brother/half-sister, grandchild, grandparent, related to an SNWA full-time employee(s), or appointed/elected official(s)?
 - Yes No (If yes, please complete the Disclosure of Relationship form on Page 2. If no, please print N/A on Page 2.)

I certify under penalty of perjury, that all of the information provided herein is current, complete, and accurate. I also certify that the entity is not on the federal government's Excluded Parties List, as defined by 2 CFR § 180.945. I further understand that the SNWA will not take action on land-use approvals, contract approvals, land sales, leases or exchanges without the completed disclosure form.

Robert C. Renner
 Signature
 Chief Executive Officer
 Title

Robert C. Renner
 Print Name
7/18/16
 Date

(pf)

DISCLOSURE OF RELATIONSHIP

List any disclosures below:
(Mark N/A, if not applicable.)

NAME OF BUSINESS OWNER/PRINCIPAL	NAME OF SNWA EMPLOYEE OR OFFICIAL AND JOB TITLE	RELATIONSHIP TO SNWA EMPLOYEE OR OFFICIAL	SNWA EMPLOYEE'S/OFFICIAL'S DEPARTMENT

N/A

"Consanguinity" is a relationship by blood. "Affinity" is a relationship by marriage.

"To the second degree of consanguinity" applies to the candidate's first and second degree of blood relatives as follows:

- Spouse – Registered Domestic Partners – Children – Parents – In-laws (first degree)
- Brothers/Sisters – Half-Brothers/Half-Sisters – Grandchildren – Grandparents – In-laws (second degree)

For SNWA Use Only:

If no Disclosure or Relationship is noted above or if the section is marked N/A, please check this box:

No Disclosure

If any Disclosure of Relationship is noted above, please complete the following:

Yes No Is the SNWA employee(s) noted above involved in the contracting/selection process for this particular agenda item?

Yes No Is the SNWA employee(s) noted above involved in any way with the business in performance of the contract?

Notes/Comments:

No LVVWD or SNWA employees were noted.

Signature

David J. Rexing

Print Name

Authorized Department Representative

N/A

Multi Funded Research Agreement 04692

Title

“Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria”

This Multi Funded Research Agreement (hereafter “MFRA”) is entered into on _____, 20___, (the “Effective Date”) by and among the Water Research Foundation (“WRF”), a Colorado non-profit corporation whose principal place of business is located at 6666 W. Quincy Ave., Denver, Colorado 80235, the organization(s) executing this MFRA as “Co-funders”, and Southern Nevada Water Authority (“Authority”) whose principal place of business is located at 1299 Burkholder Blvd., Henderson, Nevada 89015, in furtherance of their common interest to support research on behalf of the water community. WRF, the Co-funders, and the Authority may be referred to herein singularly as a Party or collectively as the Parties.

WRF and the Co-funders have selected said Authority to receive a research and development grant as more specifically detailed in this MFRA. The parties mutually agree as follows:

- I. **DEFINITIONS.** The following defined terms shall apply in this MFRA:
- A. “Co-funder Funds” is that portion of the Project Funds which each Co-funder has agreed to provide to fund the Project under this MFRA, as detailed in Exhibit C.
 - B. “Cost Share” the portion of allowable costs that the Authority, subcontractor, or third-party participant funds toward completing the WRF Project. Cost share includes any non-federal cash and non-cash Project funding from the Authority and subcontractors, and non-federal cash funding from participants. All Cost Share must meet Code of Federal Regulations (CFR) requirements in 2 CFR Part 200.306.
 - C. “Co-Principal Investigator or Co-PI”
An individual involved with the Principal Investigator in the scientific development or execution of the Project. A Co-PI typically devotes a specified percentage of time to the Project and is considered “key personnel,” but is not a part of the Authority’s organization. The designation of a Co-PI, if applicable, does not affect the Principal Investigator's roles and responsibilities as specified in this MFRA.
 - D. “Educational Purpose” is defined as any non-commercial and non-profit use of Intellectual Property, as defined by Paragraph I.G, including, but not limited to, a WRF owned publication or report utilized as a research tool and/or reference, to inform the water community, water utility personnel, or the general public of the outcome of this Project.
 - E. “Expenses” Any WRF approved expenses associated with the research and development performed by the Authority for the Project.
 - F. “Foundation Award” is that portion of the Project Funds which WRF has agreed to provide to fund the Project under this MFRA, as detailed in Exhibit C.

- G. "Intellectual Property - IP" is all rights to copyrights, trademarks, service marks, patents, trade secrets, know how, and confidential information, including the right to enforce, divest, license, seek registration, prosecute infringers, and commercially or otherwise exploit such rights.
- H. "PAC" is the Project Advisory Committee that consists of independent volunteers selected by WRF and Co-funders to provide technical review, assistance, and/or expertise related to the Project. The number of volunteers to serve on the PAC will be determined by WRF.
- I. "Principal Investigator" is the Authority employee identified in Exhibit B, who is primarily responsible for ensuring that all terms and conditions of this MFRA are met and to whom WRF shall give all notices intended for the Authority.
- J. "Project" is the work to be completed by the Authority, as described more specifically in the Project Proposal attached hereto as Exhibit A.
- K. "Project (Award) Funds" is the aggregate maximum amount of cash award which WRF and the Co-funders have collectively agreed to provide to Authority to fund its performance of the Project pursuant to this MFRA.
- L. "Project Proposal" is the final and written description of the Project to be undertaken by Authority for which the Project Funds are granted and performance is monitored pursuant to this MFRA.
- M. "Proposal Guidelines" is WRF's written guidelines, currently maintained at <http://www.waterrf.org/funding/ProposalDocuments/TailoredCollaborationProposalGuidelines.pdf> in which the procedures, criteria and requirements for eligibility, proposal, performance, administration, reporting, and other matters governing the proposal of and performance of a Project are set forth. The Proposal Guidelines were provided to the Authority prior to its submission of a Project Proposal, and its terms and requirements are incorporated in this MFRA by this reference. The terms "Deliverable", "Periodic Report", "Draft Report", and "Final Report" appearing in this MFRA shall have the definitions, and be governed by the requirements applicable thereto, as set forth in the Proposal Guidelines.
- N. "Reports" are the Periodic Reports, Draft Report, and/or Final Report, collectively.
- O. "Subcontractor" is any individual or entity identified by Authority in the Project Proposal as assisting in the performance of the Project under this MFRA.
- P. "Authority" is the awarded entity who performs the substantive, programmatic work or an important or significant portion of the Project.
- Q. "Subject Data" shall mean all non-patented original and raw research data, notes, computer programs, writings, sounds recordings, pictorial reproductions, drawings or other graphical representations and works of any similar nature originated by the Authority in performance of this MFRA, but specifically excluding WRF Intellectual Property or Authority Intellectual Property as defined within this MFRA. Subject Data also excludes financial reports, costs, analysis, and similar information incidental to contract administration.

- R. "Work Product" is copyrightable works of authorship created by or on behalf of the Authority or its Subcontractors in the course of performing under this MFRA or the Project, including, without limitation, the Scope of Work, all Deliverables, Periodic Reports, Draft Reports, the Final Report, all interim drafts of the foregoing, and any computer software and related documentation developed under the Project.

II. GENERAL OBLIGATIONS OF THE PARTIES

A. The Authority.

1. The Authority agrees to complete the research, prepare written Reports, deliver the Deliverables to WRF, and perform such other functions, all in accordance with the schedules and other requirements set forth in the Exhibits and this MFRA. The Authority shall itself, and shall require all of its Subcontractors to, perform the Project and all other activities related thereto in full compliance with all laws, regulations, ordinances, and other requirements governing them.
2. Authority may not use Project Funds received under this MFRA as a match or cost-sharing vehicle to secure U.S. Federal monies or money from any other sources, unless otherwise expressly stated and fully disclosed in the Project Proposal. The Authority may not use any portion of the Project Funds for any purpose other than as detailed in the Project Proposal, and as is necessary to perform the Project.
3. All disbursements of Project Funds will be paid directly to Authority. Authority shall remain solely responsible for payment of its Subcontractors, and for procurement of all equipment, materials, and other resources necessary for performance of the Project hereunder.

B. The Co-funders. The Co-funders agree to pay their respective Co-funder funds in accordance with the terms and timelines in this MFRA. The Co-funders shall deliver their full Co-funder funding; by company check made payable to WRF, by no later than the Effective Date.

C. WRF. Provided that WRF has received the full Co-funder funding from each of the Co-funders by the day following the Effective Date, WRF will disburse the Project Funds to the Authority as detailed in this MFRA and Exhibit C. WRF's disbursement of the Project Funds shall be subject to WRF first having received full corresponding payment from all of the Co-funders, and may further be subject to WRF's receipt of its own funding from appropriate sources. In no event shall WRF be required to disburse the Co-funder funding if WRF itself has not received same from Co-funders.

III. DISBURSEMENT OF PROJECT FUNDS

A. Advance Payment. All payments of the Project Funds will be disbursed by WRF directly to the Authority. Each disbursement shall be deemed to be made by WRF and the Co-funders in proportion to their relative payment to the Project Funds. The amount of Project Funds was determined on the basis of the budget submitted by the Authority, and set forth in Exhibit C. The Project Funds is a "not to exceed" amount and no payments in excess of such amount are authorized or required. Subject to WRF's prior receipt of the full amount of the Co-funder funding, following the Effective Date WRF will advance to the Authority 10% of the Project (Award) Funds. No invoice is required from the

Authority for the 10% advance. All subsequent disbursements of the Project Funds shall be governed by the requirements described in Section III.B below and in Exhibit C.

B. Invoicing and Payments.

1. Beginning three (3) months after the Effective Date, and every three (3) months thereafter during the term of this MFRA, Authority shall submit to WRF a detailed invoice itemizing the expenses actually incurred in the three (3) months prior to the invoice date by the Authority in the performance of the Project, and identifying all Cost Share and third party in-kind contributions as well as the contributing parties. The invoice shall be sent to the Project Coordinator identified in Exhibit B.
2. Each invoice should be displayed according to the budget line items in Exhibit A. All invoices must be submitted using the form attached in Exhibit D, must be on the Authority's letterhead, and must be sent to WRF's Project Coordinator identified in Exhibit B. Only out of pocket costs and expenses actually incurred by the Authority may be invoiced under this MFRA.
3. WRF will disburse Project Funds conditioned upon the Authority timely submitting Reports. No portion of the Project Funds will be disbursed by WRF unless and until WRF receives and accepts each corresponding invoice and Report. If the invoices and Reports are accepted, the Authority will be paid as follows:
 - (a) The ten percent (10%) advance payment must be shown on all invoices, including the final invoice, as an advance payment received. Subject to the hold back provision below, invoices will be paid to the extent actual costs incurred exceed the advance payment.
 - (b) Regardless of the actual amounts invoiced, WRF will at all times during this MFRA hold back twenty percent (20%) of the Project Funds, and will only disburse same as follows: Ten percent (10%) of the Project Funds will be disbursed to the Authority when WRF receives and accepts the Draft Report. The remaining held back ten percent (10%) of the Project Funds will be disbursed to the Authority after the Authority has completely and adequately responded to editor queries on the Final Report, has made all revisions reasonably requested by WRF to finalize the Final Report, submitted a final invoice, and Exhibit E – Assignment of Copyright (if applicable).
 - (c) No conditions, notations, acknowledgements, comments, or terms other than the items required to be included and itemized on the Authority's invoice shall be binding on WRF.
 - (d) WRF may deduct amounts or withhold payments invoiced by the Authority if the Authority fails to comply with any WRF standard and/or Federal Uniform Administrative Requirements that are applicable to the Authority.

IV. COMPLIANCE MONITORING

- A. Financial Management System. The Authority shall maintain an accounting system and accurate and complete accounting records that, at a minimum but without limitation, allow for the identification, tracking, and verification of costs, expenses, Cost Share, in-kind contributions, invoiced items, and

funding received, all in a manner that is segregated and allocable solely to performance of the Project. All costs incurred must be supported by original receipts and be made available to WRF upon request.

B. U.S. Federal Administrative, Cost and Audit Requirements. The Authority represents and warrants that the budget disclosures included in the Project Proposal and presented to WRF were prepared by Authority in full compliance with Water Research Foundation Guidelines and all relevant U.S. laws, regulations and agreement terms and conditions related to U.S. Federal Financial Assistance including, but not limited to, 2 CFR 200 [U.S. Code of Federal Regulations Title 2 (Grants and Agreements) Part 200: Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards (a/k/a/ Uniform Grants Guidance or UGG)]. Cost Principles specifically applicable for awards to for-profit organizations are set forth in the Federal Acquisition Regulations System (FARS, at 48 CFR 31.2) to determine allowable costs under WRF project funding agreements. Authority shall throughout the Project, and in the preparation of every invoice, report, and maintenance of its accounting system, remain in compliance with the above regulations. It shall be Authority's obligation to determine and comply with its governing cost principles.

C. Indirect Costs and Allocation of Costs:

1. If the Authority proposes to invoice for indirect costs, substantiation of those charges must be in compliance with WRF's "Tailored Collaboration Proposal Guidelines," which include compliance with the applicable cost principles referenced in Section IV.B.

D. Record Retention. Authority shall retain all records pertinent to this MFRA and the Project for at least three (3) years from the termination of this MFRA.

E. Audit and Monitoring.

1. The Authority's use of the Project Funds under this MFRA are to be in compliance with 2 CFR 200, including Subpart F, Audit Requirements, and may be audited by WRF or its designee. Furthermore, WRF shall have the right to itself or through a designee visit the Authority premises to observe, review, and monitor the Authority's performance of the Project, as well as its application and use of the Project Funds. Accordingly, following a two (2) business day prior notice from WRF, the Authority shall provide WRF and its designee access to its premises, technical staff, supervisors, knowledgeable personnel, computer systems and databases, assistance, original documents, including those required to be maintained under this MFRA, and any information related to the Authority's use of the Project Funds and performance under this MFRA, to enable WRF's audit and monitoring. WRF's audit rights shall survive termination of this MFRA by three (3) years.
2. WRF will keep any of Authority's proprietary financial, technical and/or scientific proposal information reviewed under this Section in confidence provided that such material is appropriately marked as "Confidential," was not already generally known to the public, is not required to be disclosed as a result of a legal proceeding, or applicable legal requirement, and was not already known to WRF or others without a confidentiality obligation.
3. Any deficiencies or non-compliance in Authority's systems, procedures, record keeping, finances, and performance of other obligations under this MFRA discovered in the audit, review or monitoring process, or discovered otherwise, may, at WRF's option, require Authority to take corrective action

that has been detailed by the Authority and approved by WRF for the Authority to remedy the deficiency or noncompliance, or may result in WRF exercising its termination rights under Section VII below.

4. If WRF approves of the Authority's proposed corrective action plan, in connection with such approval it may require the Authority to submit additional periodic written verification that the corrective action plan has been implemented and continues to correct the targeted deficiencies and noncompliance. If the approved corrective action fails to correct the deficiencies within the time set by WRF in its sole discretion, WRF may exercise its termination rights under Section VII.
5. Nothing herein obligates WRF to accept or approve a corrective action or to forbear from exercising its right to terminate this MFRA. WRF's right to termination shall be in addition to all other rights and remedies available to it at law or in equity.

V. PROCUREMENT STANDARDS

A. Procurement Standards. It is an express requirement under the Proposal Guidelines and this MFRA that the Authority remain in compliance with the U.S. Federal standards for procurement under 2 CFR 200 Subpart D, Procurement Standards. These standards govern procedures for procurement of supplies, equipment, and other services for which cost is incurred in whole or in part under this MFRA. These standards include but are not limited to the following:

1. Authority procurement policies must adhere to the minimum standards applicable to its organization type;
2. Authority shall maintain and enforce with its officers, employees, and agents (including Subcontractors) a code of conduct designed to enhance goodwill, ethics, and compliance with laws while performing under this MFRA; and
3. Sub-contractors shall conduct all procurement transactions in a manner that maximizes open and free competition.

VI. IP RIGHTS AND PUBLICATION

A. Work Product.

1. WRF shall own all worldwide copyrights in all the Work Product including the Scope of Work, All Periodic Reports, All Draft Reports, the Final Report, and all drafts of these works and reports. Authority shall and hereby does assign exclusively to WRF all right, title, and interest in and to the Work Product and the copyrights embodied therein, subject to provisions of 2 CFR 200 Subpart D, Property Standards, Intangible Property (200.315); and 37 CFR 401 which are made part of this MFRA by reference except where superseded by this Section VI or the U.S. Federal Grant Agreement. The Authority may use without restrictions all subject data from the Work Product such as innovations, creations, processes, designs, methods, formulas, plans, technical data, and specifications. The use of this Intellectual Property will not be released by the Authority or Co-funder, if applicable, before WRF has released the final Work Product.

2. WRF will provide the Authority with five (5) hardcopies of the Final Report and a PDF. If the Final Report is published in a PDF format only, the Authority will receive the Final Report in that format. The Work Product may not be copied, published, adapted, posted on an intranet or website, or disclosed in any manner by the Authority, any Subcontractor or other third Party except with WRF's prior written approval. The Authority shall utilize WRF's *Material Use Permission Request Form* located at <http://www.waterrf.org//funding/Pages/project-report-guidelines.aspx> for securing the foregoing required permission for WRF.
3. WRF hereby grants the Authority and Co-funders a royalty free, perpetual, irrevocable, world-wide, *nonexclusive, transferable* license and right to use, without the requirement for any accounting or rental payments, to utilize Foundation's Intellectual Property solely for Educational Purposes.
4. *Each Party shall promptly notify the other Parties of any actual or potential infringement, counterfeiting, or other unauthorized use of the Intellectual Property by any third party (an "Infringement") of which it becomes aware.*
5. *WRF shall have the first right to enforce its rights in any of the Intellectual Property, including to bring action with respect to any Infringement. Notwithstanding the foregoing, if within 30 days following a Party's receipt of a notice provided under Section VI(a)(4), WRF does not initiate legal action with respect to any Infringement, or if WRF subsequently decides not to proceed with any such action, and if Authority has a good faith belief that such Infringement has impaired or will impair the value of the Intellectual Property or otherwise adversely affect its rights under this MFA, then Authority shall have the right, but no obligation, to bring or take any such action as it determines is necessary to halt any such Infringement and to control the conduct of such enforcement action, including settlement.*

C. Inventions and Patents.

1. All proprietary or patentable ideas, devices, methods, formulations, designs, and other inventions developed or conceived by or on behalf of the Authority in the course of performing under the Project, including, but not limited to, the right to apply for patent protection thereon (collectively, "Inventions"), shall remain the property of the Authority.
2. If the Authority decides to abandon its rights to the Inventions, or not to seek patent protection on its Inventions, or to abandon any pending patent application or patent issued on the Inventions, Authority shall notify WRF of the same and promptly assign all rights in the abandoned Inventions to WRF at its request.
3. Authority shall not withhold any information on or descriptions of Inventions, whether or not patentable, from Work Products or any Report. The Authority's rights in Inventions shall not limit, delay, restrict, or in any other manner interfere with WRF's right to own, publish, and exercise all other copyrights in the Work Product. If information contained in the Work Product owned by WRF is considered to be and is treated by the Authority as confidential information and/or trade secrets, the Authority shall be solely responsible for marking confidential portions of the Work Product as such, and may request that WRF reasonably delay, but in no event by more than one month, publication of a Work Product in order to allow the Authority to apply for patent protection on Inventions described in the Work Product.

4. All IP rights that were owned and developed by the Authority or third Parties prior to the Effective Date and outside the scope of the Project, and which the Authority will use in the performance of the Project, or incorporate in whole or in part into any Deliverables (*collectively, "Pre-existing IP"*), has been fully disclosed and identified by the Authority in the Project Proposal. The Authority represents and warrants that all Pre-existing IP is used with full authorization and permission from its respective owner, and copies of such permissions and licenses shall be provided to WRF by the Effective Date. The Authority shall obtain all appropriate permissions on WRF's behalf to the extent necessary to enable WRF to exercise its ownership and publication rights in the Work Product, including the Final Report, such right shall be transferable, sublicenseable, and shall not be subject to any payment or other obligation on the part of WRF. Such agreements to procure rights for WRF shall be subject to WRF's prior approval, in its sole discretion.
5. The Authority hereby grants WRF a fully paid-up, royalty free, perpetual, irrevocable, world-wide, nonexclusive license, with the right to grant sublicenses, to utilize the Inventions and Preexisting IP for Educational Purposes.

E. Publication. As the owner of Work Product, all rights to publish, distribute, publicly perform, and publicly present the Reports belong solely to WRF. The Co-funders and Authority may publish or present based on the Work Product, in whole or in part, and only with the prior written permission of WRF, which may be withheld or conditioned at WRF's sole discretion. Any such request for permission from WRF must be made to WRF at least three (3) weeks prior to the requesting party's proposed date of publication or presentation based on any portion of the Work Product, and the request must be accompanied by copies of the proposed publication or presentation material. All copies of or presentations based on the Work Product authorized to be made by WRF shall furthermore conspicuously display the following notice:

*Author, Title of Foundation Work
Copyright [year of publication]
Water Research Foundation Reproduced with permission*

- F. Student Thesis. In the event a college or graduate student is a part of Authority work on the Project, and that student completes a thesis, dissertation, or report relating to this Project, solely for Educational Purposes, the student may utilize Subject Data, but may not use any written materials that are substantially similar to WRF Intellectual Property.
- G. Acknowledgement. Any public presentation or publication by the Authority or Co-funders, including a student writing a thesis, dissertation, or report, based on any portion of the Work Product, if permitted by WRF, shall include a statement substantially as follows: "Authority gratefully acknowledges that the Water Research Foundation, [Co-funders] are co-funders of certain technical information upon which this publication [manuscript [presentation] is based. Authority thanks the Water Research Foundation, [Co-funders] for their financial, technical, and administrative assistance in funding the project through which this information was discovered."
- H. Return of IP. The Authority shall provide to WRF legible copies of all Work Product (including source and object code of any computer software program) and all Inventions abandoned by the Authority, and shall furthermore provide to WRF and Co-funders legible copies of all Pre-existing IP that was used in performance of the Project, all within thirty (30) days of any Party's delivery of a notice of termination hereunder, whether or not a cure period is provided. Further, at the same time, Authority shall provide

copies and originals shall be delivered in whatever medium and format is reasonably designated by WRF. No further payments will be made unless the Authority fully complies with the foregoing requirements.

- I. Originality. The Authority represents, warrants, and covenants that it, and its Subcontractors, are the sole creator(s) and originator(s) of all Work Product and Inventions, and none of those rights have been bargained, sold, encumbered, licensed or otherwise transferred to any other party in a manner that would limit or interfere with the requirements and covenants of the Authority under this MFRA. Further, the Authority shall ensure that no portion of this Project, including any portion completed by Subcontractors, infringes upon the IP rights of any other person or entity or violates the common law or statutory right, title, or interest of any person or entity. The Authority, shall execute and deliver to WRF, and shall cause its Subcontractors and agents to execute and deliver to WRF, all documents and instruments reasonably requested by WRF, including, without limitation, the Assignment of Copyright attached hereto as Exhibit E, to further evidence or memorialize the assignment of rights to WRF set forth in this MFRA.

VII. TERM AND TERMINATION

- A. Term. This MFRA is effective as of the Effective Date, and shall continue for the duration of the Project, ending on WRF's delivery to the Authority of the final disbursement of the Project Funds in accordance with Section III.B above, and as further specified in Exhibit C. This MFRA may be terminated earlier for the following reasons:
1. WRF may terminate this MFRA by written notice to the other Parties at any time in the event of a breach of this MFRA or any requirements of or timelines in the Project by the Authority or its agents following Authority's receipt of WRF's notice of breach and a reasonable opportunity to cure the identified breach.
 2. WRF may terminate this MFRA effective immediately by written notice to the other Parties in the event WRF after consultation with the Co-funders and the PAC reasonably determines that the Project is no longer feasible or its performance desired, or that if Authority is not likely to complete the requirements of the Project on time.
 3. Co-funders may terminate this MFRA by a ninety (90) day prior written notice to the other Parties if either the Authority or WRF materially breaches this MFRA following receipt of Co-funder's notice of breach and a reasonable opportunity to cure the identified breach.
 4. Upon receipt of any written notice of termination, the Authority shall cease all work associated with this MFRA as of the date of receipt of the notice, but shall continue to prepare whatever reports, accounting statements, and invoices that are necessary to support receipt of any payments and deliver existing Work Product as required under the MFRA.
 5. If the Authority, after reasonable consultation with WRF and sufficient exploration of other options and possible mutual agreements to amend this MFRA, determines that circumstances beyond its control prevent it from continuing the Project, the Authority may terminate this MFRA at any time by written notice to WRF.
 6. Any change in legal requirements or entitlements which materially alter Authority's performance under this MFRA, or any change in the availability of funds to WRF, shall warrant good faith

renegotiation of the provisions of this MFRA impacted by such change. If the Parties cannot agree to an amendment to this MFRA, at WRF's option the Authority's performance of the Project may be suspended, or this MFRA may be terminated effective immediately by WRF's written notice.

7. If termination occurs under this Section, the Authority shall prepare and submit to WRF a final invoice and accounting of expended and non-cancellable funds as of the date of receipt of the notice of termination. Any portion of the Project Funds that was prepaid to the Authority but which remains unspent shall be returned to WRF with the final invoice. WRF shall pay any amount owed under the final invoice, if reasonably accepted by WRF, and shall return to the Co-funders any remaining and unspent funds in proportion to the Co-funder funding of the Project. The Authority shall be entitled to compensation for all satisfactory and authorized work completed as of the termination date, provided that all Work Product corresponding to the invoiced amounts have been delivered to WRF, and further provided that funds are available (i.e., a reduction in granted funds as stated above).

VIII. DISPUTE RESOLUTION

- A. In the event of a dispute between WRF and the Co-funders with respect to the Authority's performance, or other acts or omissions in performing the Project or under this MFRA, WRF's final determination, following reasonable consultation with the PAC, shall govern.
- B. All other disputes arising under this MFRA by or among the Parties shall be resolved by binding arbitration conducted in accordance with the then effective rules of expedited commercial arbitration of the American Arbitration Association ("AAA") in Denver, Colorado U.S.A. There shall be one Arbitrator selected in accordance with such rules. The Arbitrator shall have subpoena powers. Any final binding determination issued by the Arbitrator shall be in writing and issued within thirty (30) days of the final arbitration session. Such written decision may be enforced in any court having proper jurisdiction.

IX. STANDARD TERMS AND CONDITIONS

- A. Survival. All terms which by their nature and intent are required to be performed after termination of this MFRA shall survive to the extent necessary to enable their fulfillment.
- B. Quality Assurance. The Authority shall use its best efforts to ensure that all data and test results developed during the course of this MFRA and included, or relied upon, in the Final Report are accurate to the best of its knowledge, information, and belief. In the event the Authority obtains any data, test results, information derived from such data or test results, or other information to be included in the Project from water utilities or any Subcontractor, the Authority will utilize reasonable and customary efforts to ensure the accuracy of the information obtained.
- C. Co-funders' Review. The Co-funders shall have the right and reasonable opportunity prior to submission of the Final Report, to review the data, results and conclusions derived from the Project, and to correct or comment upon any discrepancies in the reviewed materials. The Authority shall be responsible for providing letters for review and execution by each Co-funder confirming that they have reviewed the submitted materials. Such confirmation letters, signed by each Co-funder, shall be submitted to WRF with the Final Report. If the Authority has made reasonable efforts but is not able to obtain signed confirmation letters, the Principal Investigator may submit a signed letter stating this fact and further

stating that the Co-funders were provided reasonable opportunity to review and comment upon the materials as required.

- D. Standard of Performance. At all times, all obligations performed by the Authority or by any Subcontractors pursuant to this MFRA shall be performed in a manner consistent with the professional standards governing such activities. *Further, to the extent permitted by Nevada law*, the Authority shall be responsible for, and shall hold harmless and indemnify the WRF, Co-funders, and their officers, directors, affiliated organizations, employees, agents, volunteers, and publisher, if any, from any and all liability, obligation, damage, loss, cost, claim, lawsuit, cause of action, or demand whatsoever of any kind or nature, including, but not limited to, attorneys' fees and costs, arising from (i) any actions taken by, or omissions of, the Authority, its officers, directors, Subcontractors, employees, independent contractors, agents, or other related entities or individuals, (ii) any use or misuse of IP claimed to be owned by another, or (iii) any material breach of this MFRA by the Authority. WRF shall be responsible for, and shall hold harmless and indemnify the Authority, Co-funders, and their officers, directors, affiliated organizations, employees, independent contractors, agents, volunteers, and publisher, if any, from any and all liability, obligation, damage, loss, cost, claim, lawsuit, cause of action, or demand whatsoever of any kind or nature, including, but not limited to, attorneys' fees and costs, arising from (i) any actions taken by, or omissions of, the WRF, its officers, directors, employees, independent contractors, agents, or other related entities or individuals, (ii) any use or misuse of IP claimed to be owned by another, or (iii) any material breach of this MFRA by the WRF.
- E. Governmental Entities. If the Authority or any Subcontractor is a governmental or quasi-governmental entity that is by law prohibited from indemnifying others, Section IX.D is modified to the extent that will impose the maximum available liability and responsibility on Authority or any Subcontractor. Authority shall require all Parties involved in the performance of this MFRA that are not prohibited from indemnifying others to so indemnify WRF and the Co-funders through a written agreement acceptable to WRF and the Co-funders.
- F. Insurance. The Authority shall maintain a financially sound program of self-insurance or commercially purchased liability insurance covering unfair competition claims and all reckless, intentional, knowing, and negligent actions or omissions of any and all of Authority's officers, directors, employees, agents, and independent contractors and/or Subcontractors in the amount of one million dollars (\$1,000,000.00). Proof of such insurance shall be presented to WRF pursuant to the schedule detailed by Exhibit B and to the Co-funders upon request. The proof of insurance document shall clearly specify the Project by number and title on the insurance certificate.
- G. Worker's Compensation. The Authority and all Subcontractors shall maintain Worker's Compensation Insurance which complies with the applicable state laws. Proof of such insurance shall be presented to WRF pursuant to the schedule detailed by Exhibit B.
- H. Authority. The individuals executing this MFRA on behalf of their respective Parties hereby represent and warrant that they have the right, power, legal capacity, and appropriate authority to enter into this MFRA on behalf of the entity for which they sign below.
- I. Modifications: No provision, requirement, or term of this MFRA may be modified, supplemented or amended, nor may it be waived or discharged, except in writing, signed by all Parties. A written waiver of

a breach of one provision in this MFRA shall not operate as a waiver of a subsequent breach of the same provision.

1. Examples of *modifications* requiring WRF's prior written approval include, but are not limited to, the following:

- Deviations from the Project plan.
- Change in scope or objective of the Project.
- Change in a key person specified in the *Project Proposal*.
- The absence for more than three months or a 25% reduction in time by the *Principal Investigator*.
- Need for additional funding.
- Inclusion of costs that require prior approvals as outlined in the Uniform Grants Guidance and 48 CFR 31.2, as applicable.
- Any changes in budget line item(s) as described in Exhibit A of greater than ten percent (10%) of the total.

J. **No Assignment.** The *Authority* shall not assign this MFRA in whole or in part, including by operation of law, merger, reorganization, or change in ownership or control. Any unauthorized assignments shall be void.

K. **Sub-Contracting:** The *Authority* may only utilize Subcontractors under this MFRA that have been disclosed in the Project Plan and are pre-approved by WRF.

1. *Authority* shall require any and all Subcontractors to comply with all applicable and material terms of this MFRA prior to working on the Project in any manner. All obligations of the *Authority* apply equally to the Subcontractor(s). *Authority* shall at all times remain primarily responsible and liable to WRF and the Co-funders for the acts and omissions and performance of this MFRA by its Subcontractors.
2. Payment for services of any and all Subcontractors shall be the *Authority's* sole obligation and responsibility. The *Authority* hereby indemnifies and holds WRF and Co-funders harmless for any liability concerning such payment. In furtherance of the foregoing, and to safeguard WRF if *Authority* or any Subcontractors is legally prohibited from indemnifying others, *Authority* shall in all its Subcontractor agreements specify that WRF and Co-funders shall have no liability or obligation to the Subcontractor, and that the Subcontractor agrees to look solely to the *Authority* for payment and enforcement of its rights under its agreement with the *Authority*.
3. Subcontractors shall conduct all procurement transactions in a manner that maximizes open and free completion.
4. WRF shall require for *Authority* to notify WRF, within two (2) months of the Project start date pursuant to the schedule detailed in Exhibit B, that all Subcontractor agreements have been executed between the *Authority* and any Subcontractors set forth in the Project Proposal (if applicable). Send notification to Peg Falor, WRF Manager – Contracts & Project Administration, Email: pfalor@WaterRF.org.

- L. Integration. This MFRA, including all attachments hereto and the documents and requirements referenced herein, contains the entire understanding between the Parties relating to this MFRA. This MFRA supersedes all prior and contemporaneous understandings, representations, negotiations, and agreements between the Parties whether written or oral regarding the subject matter hereof. In the event of a conflict between the terms of an Exhibit or other document referenced herein and this MFRA, the terms of this MFRA shall control.
- M. Severability. The provisions of this MFRA shall be severable, and the invalidity, illegality or unenforceability of any provision of this MFRA shall not affect the validity or enforceability of any other provisions. If any provision of this MFRA is found to be invalid, illegal, or unenforceable, such provision shall be modified to the extent necessary to render it enforceable, and as modified, this MFRA shall remain in full force and effect.
- N. WRF and Co-funders' Right of Approval. WRF and Co-funders shall have the right, in their sole discretion, to refuse to permit any employee of the Authority, or employee of an approved agent, assignee, or subcontractor of the Authority, to be located at a WRF or Co-funders' work location, or to provide services to WRF, Co-funders or their clientele pursuant to this MFRA.
- O. Notices. Any notice, request, demand, or communication required or allowed under this MFRA shall be sent in writing to the addresses and contact information for the Parties set forth in Exhibit B, and shall be deemed served upon delivery, if delivered by hand (signed receipt obtained), or three (3) days after posting if properly addressed and sent certified mail return receipt requested, or upon receipt if sent via facsimile or email, if delivery can be confirmed by the sender. Notices shall become effective on the date of receipt or the date specified within the notice, whichever comes later.
- P. Captions for Convenience. All captions, fonts, underlining, or footers used in this MFRA are for convenience only and shall have no meaning in the interpretation or effect of this MFRA.
- Q. Construction. This MFRA, and any and all amendments to it, shall not be construed against the drafter.
- R. Force Majeure. None of the Parties hereto will be liable for damages for any delay or default in performance during the term hereof if such delay or default is caused by conditions beyond its control, including, but not limited to, acts of God, Government restrictions, continuing domestic or international problems such as wars, threats of terrorism, or insurrections, strikes, fires, floods, work stoppages and embargoes; provided, however, that any Party will have the right to terminate this MFRA upon thirty (30) days prior written notice if another Party's delay or default due to any of the above-mentioned causes continues for a period of two (2) months.
- S. Applicable Law/Venue. Except as stated in the following sentence, the Parties elect to remain silent on applicable law and venue with regard to actions against the Authority, which silence is not to be construed as an agreement on that one Party's State law applies or is more appropriate for venue. If legal action is taken against the Authority, to the extent that the law applied conflicts with the protections afforded to the Authority by the Nevada Revised Statutes Chapter 41, Nevada law shall apply. Any action, including, without limitation, any claim or other complaint, against WRF, however, must be brought in U.S. Federal District Court. The terms of this Paragraph will survive the termination of MFRA.

- T. Counterparts. This MFRA may be executed and delivered in counterparts, and by facsimile and email, and each shall be valid as if all Parties had executed the same document.
- U. Relationship. The Parties are independent contractors, and no agency, employer-employee, partnership, or joint venture relationship is intended or created by this MFRA. No Party shall have any right or authority to assume or create any obligation, commitment or responsibility for or on behalf of the others except as the other may expressly authorize in writing. No Party shall be eligible to participate in another's benefit program. Authority shall be solely responsible for the performance and compensation of its employees, for withholding taxes and providing unemployment and other benefits.

[Rest of Page Intentionally Left Blank]

Title: Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria

IN WITNESS WHEREOF, the Parties have caused this MFRA to be signed and dated as shown below.

Water Research Foundation

Southern Nevada Water Authority



By: John J. Entsminger
Title: General Manager

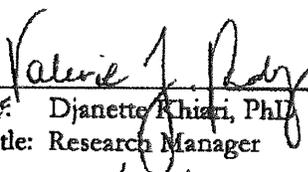
By: Robert C. Renner, PE, BCCE
Title: Chief Executive Officer

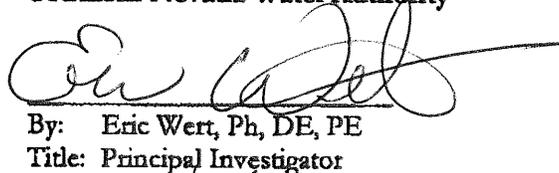
Date: 8/3/16

Date: _____

Water Research Foundation

Southern Nevada Water Authority

For 
By: Djanette Khizri, PhD
Title: Research Manager


By: Eric Wert, Ph, DE, PE
Title: Principal Investigator

Date: 8/3/16

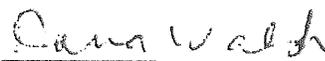
Date: 8/8/2016

Above signed has read and understands the terms, conditions, and deliverables of this MFRA.

Above signed has read and understands the terms, conditions, and deliverables of this MFRA.

Southern Nevada Water Authority

APPROVED AS TO FORM


By: Dana R. Walsh
Title: Deputy Counsel

Final Agreement Signature Page Instructions

1. Please sign this page by a duly Authorized Representative and the Principal Investigator.
2. Please return the signature page to:
Peg Falor at pfalor@WaterRF.org and
Lisa Rather at lrather@WaterRF.org
3. Please return no later than ten (10) calendar days from receipt.
4. WRF will send out a fully executed PDF of this agreement via email.

Title: Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria

SPONSOR/Co-funder

Southern Nevada Water Authority

By: John J. Entsminger
Title: General Manager

Date: _____

Above signed has read and understands the terms, conditions, and deliverables of this MFRA.

Final Agreement Signature Page Instructions

1. Please sign this page by a duly Authorized Representative and the Principal Investigator.
2. Please return the **signature page** to:
Peg Falor at pfalor@WaterRF.org and
Lisa Rather at lrather@WaterRF.org
3. Please return no later than **ten (10) calendar days** from receipt.
4. WRF will send out a fully executed PDF of this agreement via email.

Title: Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria

Project proposal, & all subsequent correspondence.

Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria

Water Research Foundation Tailored Collaboration Proposal

Submitted by:

Southern Nevada Water Authority

Prepared by:

Eric Wert, Ph.D., P.E.
Southern Nevada Water Authority

Arash Zamyadi, Ph.D.
University of New South Wales Australia

Craig Adams, Ph.D., P.E.
Utah State University

Benjamin Stanford, Ph.D.
Hazen and Sawyer

April 2016

1. Proposal Cover Letter and Worksheet

TAILORED COLLABORATION PROPOSAL COVER WORKSHEET

Proposal Title: Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria

Sponsoring Utility (Foundation Subscriber submitting proposal): Southern Nevada Water Authority

Contact at Sponsoring Utility:

Name: Eric Wert

Address: P.O. Box 99954, Las Vegas, NV 89193

Phone: 702-856-3669

Fax: 702-856-3647

e-mail: eric.wert@snwa.com

Co-Funding and In-kind Summary: (attach additional sheet if needed)

Organization Name	Cash Co-fund Amount	In-Kind Contribution Amount
1. Southern Nevada Water Authority	\$100,000	\$57,000
2. University of New South Wales		\$3,000
3. Manatee County		\$2,000
4.		
Total cash \$ 100,000		In-Kind \$ 62,000

Project Personnel

Principal Investigator (i.e., researcher responsible for conducting research)

Name: Eric C. Wert

Organization: Southern Nevada Water Authority

Address: P.O. Box 99954, Las Vegas, NV 89193

Phone: 702-856-3669

Fax: 702-856-3647

e-mail: eric.wert@snwa.com

Co- Principal Investigator

Name: Arash Zamyadi

Organization: University of New South Wales

Address: UNSW Sydney NSW 2052 Australia

Phone: +61 (2) 9385 5947

Fax: +61 (2) 9313 8624

e-mail: a.zamyadi@unsw.edu.au

Co- Principal Investigator

Name: Craig Adams

Organization: Utah State University

Address:

Phone: 435-797-9115

Fax: N/A

e-mail: craig.adams@usu.edu

Co- Principal Investigator

Name: Ben Stanford

Organization: Hazen and Sawyer

Address: 4011 Westchase Blvd, Suite 500, Raleigh, NC 27607

Phone: 919-863-1027

Fax: N/A

e-mail: bstanford@hazenandsawyer.com

Person responsible for finalizing *Funding Agreement* (i.e., research contract)

Name: David J. Rexing

Address: P.O. Box 99954, Las Vegas, NV 89193

Phone: 702-856-3664

Fax: 702-856-3647

e-mail: d.rexing@snwa.com

Person responsible for accounting matters of contractor:

Name: Jennifer Fuel

Address: P.O. Box 99954, Las Vegas, NV 89193

Phone: 702-856-3665

Fax: 702-856-3647

e-mail: Jennifer.fuel@snwa.com

Foundation Funds Requested: \$100,000 USD

Amount of Funds eligible for Foundation match: \$100,000 USD

Amount of Funds not eligible for Foundation match: \$0 USD

Total Cash Budget (Foundation Funds + All Co-Funding Cash): \$200,000

Total In-kind Contributions: \$62,000 USD

Total Project Budget (Cash + In-kind): \$262,000 USD

Proposals with an incomplete Proposal Cover Worksheet will not be accepted.

TC CO-FUNDING SUPPORT FORM

Note: Each co-funding organization (including the sponsoring utility) must complete a separate Co-Funding Support Form and include it in the proposal.

Co-Funding Organization: Southern Nevada Water Authority

Type of Organization: water utility consulting firm manufacturer other (describe)

Is your organization eligible to participate in one of The Foundation's subscription programs? Yes No

Is your organization requesting that The Foundation match its funds? Yes No

Is your organization eligible for The Foundation matching funds? Yes No

Cash co-funding amount being provided by your organization (in USD) \$ 100,000

Person responsible for contract matters for your organization:

Name: David J. Rexing

Address at which FedEx packages can be received: 1299 Burkholder Blvd., Henderson, NV 89015

Phone/Fax/e-mail: 702.856.3664/702.856.3647/d.rexing@snwa.com

Person responsible for accounting matters for your organization:

Name: Jennifer Fuel

Address at which FedEx packages can be received: 1299 Burkholder Blvd., Henderson, NV 89015

Phone/Fax/e-mail: 702.856.3665/702.856.3647/jennifer.fuel@snwa.com

What approvals will be required in order for your funds to be released to the Foundation? (e.g., City Council, Board of Commissioners)

SNWA Board of Directors

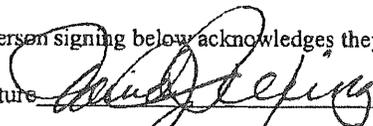
Have these approvals been obtained? Yes No

Can approvals be obtained and co-funding agreements be signed within 120 days of award? Yes No
(Note: 120 days after award notification the Foundation may cancel the award--see TC proposal guidelines for details.)

Are there any conditions of the Foundation Co-Funding Agreement that would prevent you from signing it as it is currently worded? Yes No

If yes, please explain: (attach additional pages if required)

The person signing below acknowledges they are authorized to commit their organization to the proposed work.

Signature:  Print Name: David J. Rexing

Title: Water Quality R&D Manager Organization: Southern Nevada Water Authority

Date: 4/19/16 Phone: 702.856.3664

Mailing Address: SNWA @ RMWTF, David Rexing M/S 1970, POB 99954, Las Vegas, NV 89193-9954

2. Sponsoring Utility Letter



SOUTHERN NEVADA WATER AUTHORITY

SOUTHERN NEVADA WATER SYSTEM

River Mountains Water Treatment Facility

1299 Boulder Boulevard • Henderson, NV 89016

MAILING ADDRESS: P.O. Box 99954 • Las Vegas, NV 89193-9954

(702) 358-3500 • snwa.com

April 18, 2016

John Albert
Deputy Executive Director
Water Research Foundation
6666 West Quincy Avenue
Denver, Colorado 80235-3098

RE: Water Research Foundation Tailored Collaboration Proposal

Dear John:

The Southern Nevada Water Authority (SNWA) is pleased to submit to the Water Research Foundation our Tailored Collaboration Proposal entitled "Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria." SNWA feels strongly that the water industry must address the issue of the potential release of cyanotoxins during oxidation processes. We are confident that the research proposed here will be of great benefit to the water industry and provide necessary guidance for drinking water utilities.

The Southern Nevada Water Authority (SNWA) uses ozone and chlorine for disinfection purposes in its two drinking water facilities. In March 2015, Lake Mead experienced the first documented *Microcystis* bloom that produced microcystin. Although, no microcystin was detected in SNWA's source water supply it emphasizes the need to continue this research in order to develop treatment guidance for utilities. The proposed research will (a) conduct a literature review summarizing the state-of-the-science regarding intracellular cyanotoxin release, (b) review and assess current methods to extract and measure total cyanotoxins, (c) evaluate the effect of different oxidants on laboratory cultured and naturally occurring cyanobacteria cells, and (d) develop a CyanoTOX model component that incorporates intracellular release. Finally, the team will gather all the information and prepare a final report including detailed recommendations to utilities. Our team is comprised of well-established scientists with a proven history of research excellence and publication. The final products from this project will be published in peer-reviewed scientific literature, where they will receive worldwide recognition and be available for citation.

As the co-funding agency, SNWA will contribute \$100,000 in cash funds to support this research and requests \$100,000 of matched funds from the Foundation under the Tailored Collaboration program. SNWA will also contribute an additional \$57,000 as in-kind support for this project from the use of the FlowCAM and personnel time. Dr. Eric Wert (SNWA) will serve as the Principal Investigator joined by three Co-Principal Investigators: Dr. Arash Zamyadi from the University of New South Wales, Dr. Craig Adams from Utah State University, and Dr. Benjamin Stanford (Hazen & Sawyer). This research team brings extensive knowledge regarding cyanobacteria cell degradation and cyanotoxin release.

We hope that the Foundation views this proposal favorably and look forward to the opportunity to work with you on this interesting and exciting project.

Please contact me if you have further questions or comments.

Respectfully,

David J. Rexing
SNWA Water Quality R&D Manager
P.O. Box 99954
Las Vegas, NV 89193-9954
702.856.3664
702.856.3647 Fax
D.Rexing@SNWA.com

SNWA MEMBER AGENCIES

Big Bend Water District • Boulder City • Clark County Water Reclamation District • City of Henderson • City of Las Vegas • City of North Las Vegas • Las Vegas Valley Water District

3. Co-Funding Support Form

4. Project Abstract

With the recently published USEPA Health Advisory for microcystin and cylindrospermopsin, drinking water utilities need to begin addressing several knowledge gaps in order to better respond when blooms develop. Over the past 25 years, most drinking water treatment research has focused on the oxidation of cyanotoxins and taste and odor compounds already present in water (extracellular form). More recently, oxidation studies have focused on the release of cell-bound cyanotoxins (intracellular form) using primarily laboratory cultured cells with few mass balance determinations using total, intracellular, and extracellular cyanotoxin measurements. Few studies have been performed to identify oxidation conditions resulting in complete intracellular release of cyanotoxins using naturally occurring cyanobacteria cells or mixtures of cells.

Current treatment guidance suggests that preoxidation should be suspended during a bloom of potentially toxic cyanobacteria in order to prevent cell lysis and metabolite release. However, other treatment objectives (i.e. disinfection) may take priority over this recommendation prompting the need for a thorough understanding of the fate of intracellular cyanotoxins. The proposed research will review and expand on available literature regarding the fate of intracellular cyanotoxins during typical drinking water treatment conditions during oxidation of laboratory cultured and naturally occurring cyanobacteria cells.

The Southern Nevada Water Authority (SNWA) supports this research effort in an attempt to help existing utilities understand the fate of intracellular cyanotoxin concentrations during oxidation processes in drinking water treatment. In March 2015, Lake Mead experienced the first documented *Microcystis* bloom that produced microcystin. While no microcystin was detected in the raw water supply to SNWA's treatment facilities, ozone and chlorine dosages were increased as a precaution to oxidize any extracellular microcystin entering the plants. Additional questions were raised about the fate of intracellular cyanotoxins, since abandoning preoxidation was not a feasible response to a cyanobacteria event. Improved guidance is needed to better understand how natural and laboratory cyanobacteria cells respond to different oxidants and exposure conditions.

The project will be led by Dr. Eric Wert (SNWA), with support from Dr. Arash Zamyadi (University of New South Wales), Dr. Craig Adams (Utah State University), and Dr. Ben Stanford (Hazen and Sawyer). The project approach includes six primary tasks. Task 1 will provide a literature review summarizing the state-of-the-science regarding intracellular cyanotoxin release. Task 2 will review and assess current methods to extract and measure total cyanotoxins. Tasks 3 and 4 will evaluate the effect of several oxidants on laboratory cultured and naturally occurring cyanobacteria cells under practical drinking water conditions. Task 5 will develop a CyanoTOX model component that would incorporate intracellular release into the existing version of the model. The results from Tasks 1-5 will be summarized into a final report as Task 6. As a result of this research, threshold oxidation values will be established for various oxidants that result in the release of intracellular organic matter and metabolites.

5. Project Description

Statement of Problem

Freshwater cyanobacteria blooms have emerged as an area of concern to drinking water utilities due to increasing nutrient loadings (nitrogen and phosphorus) related to climate change (i.e. temperature, carbon dioxide) and changes in hydrology (Paerl and Huisman 2009). These algae blooms can become problematic for drinking water utilities for several reasons including filter clogging and the production of algal metabolites (i.e. cyanotoxins, taste and odor compounds, disinfection byproduct (DBP) precursors). Three cyanotoxins were listed on the Contaminant Candidate List 3 (CCL3) including anatoxin-a, microcystin-LR, and cylindrospermopsin. Numerous research studies have focused on the oxidation of extracellular cyanotoxins found in the source water supplies of utilities (Rositano et al. 2001, Onstad et al. 2007, Rodriguez et al. 2007, Rodriguez et al. 2007, Rodriguez et al. 2007, Ho et al. 2008). More recently, research studies have focused on the release of intracellular cyanotoxins from cyanobacteria cells during oxidation processes (Daly et al. 2007, Ding et al. 2010, Zamyadi et al. 2010, Wert et al. 2014, Wert et al. 2014). In 2013, the Water Research Foundation published a report titled “Release of Intracellular Metabolites during Oxidation Processes” (Project #4406). The study investigated three different types of cyanobacteria for the release of microcystin, MIB and geosmin. Testing conditions were designed to release and remove extracellular cyanotoxin. However, the majority of dosages were focused on CT exposures greater than those used in practice. Furthermore, there was no mass balance determinations measuring total, extracellular, and intracellular cyanotoxins, and natural blooms samples were not included.

Additional research is needed regarding the effect of preoxidants on cyanobacteria and the potential to release intracellular metabolites within the treatment plant via cell lysis. Many utilities in the United States use preoxidation for disinfection purposes or to control the growth of invasive zebra or quagga mussels. As a result, it may not be feasible for utilities to remove intact cells prior to treatment or minimize preoxidation as suggested by USEPA guidance (USEPA 2015). Other guidance remains unclear regarding the impact of preoxidation on intracellular release and whether the effect of oxidants are positive or negative (AWWA and Foundation 2015). Further research has shown that naturally occurring cyanobacteria cells are more resistant to oxidants than laboratory cells (Zamyadi et al. 2015, He and Wert 2016), which emphasizes the need for more research using naturally occurring cyanobacteria cells. Additional data gaps include information on lower oxidant exposures and delayed release of intracellular cyanotoxins from damaged cell membranes following oxidation. This study will focus on addressing these knowledge gaps and expand the available information to utilities to better respond to conditions when cyanobacteria cells enter the treatment process. In addition, guidance will also be provided to include a module within the AWWA CyanoTOX model for intracellular release.

The Southern Nevada Water Authority (SNWA) is proposing this research project to address these water quality and treatment concerns in the event of additional cyanobacteria blooms in Lake Mead. SNWA operates two drinking water facilities totaling 1 billion gallons per day (BGD) of production capacity. The SNWA cyanobacteria response plan includes increasing the ozone dose to oxidize any extracellular cyanotoxins found in the raw water, and concurrently

lyse cells, releasing and oxidizing intracellular cyanotoxins due to the rapid reaction kinetics with ozone. Additional data are needed to further refine this strategy for release and oxidation of intracellular cyanotoxins using different oxidants.

Background

The specific treatment technology for the removal of cyanotoxins depends on their physical state. Intracellular cyanotoxins can be physically removed through conventional treatment processes (i.e. clarification, filtration) and other process such as dissolved air flotation and microstrainers. Extracellular cyanotoxins on the other hand can be removed through oxidation or adsorption processes (Newcombe 2002). However, if chemical pretreatments are needed for mussel control or other treatment objectives, then cells may become lysed resulting in the release of intracellular algal metabolites. As mentioned previously, anatoxin-a, microcystin-LR, and cylindrospermopsin were listed on the CCL3. Most research in these areas has focused on the oxidation of these contaminants present as extracellular metabolites found in the source waters of drinking water plants.

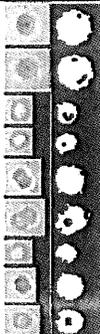
Guidance is readily available regarding the general treatment efficacy of various oxidants to remove cyanotoxins as shown in Table 1 (AWWA and Foundation 2015). Ozone and hydroxyl radicals react rapidly with cyanotoxins (Bruchet et al. 1998, Rositano et al. 2001, Onstad et al. 2007, Rodriguez et al. 2007).

Table 1. – Ability of Various Oxidants to Remove Extracellular Cyanotoxins
(From: (AWWA and Foundation 2015))

Oxidant	Effectiveness
Chlorination	Effective for oxidizing extracellular cyanotoxins (other than anatoxin-a) when the pH is below 8
Chloramines	Not Effective
Potassium Permanganate	Effective for oxidizing microcystins and anatoxins. Not effective for cylindrospermopsin and saxitoxins
Chlorine dioxide	Not effective with doses typically used in drinking water treatment
Ozone	Very effective for oxidizing extracellular microcystin, anatoxin-a, and cylindrospermopsin
Activated carbon	Most types generally effective for removal of microcystin, anatoxin-a, saxitoxins, and cylindrospermopsin. Because adsorption varies by carbon type and source water chemistry, each application is unique; activated carbons must be tested to determine effectiveness.
UV radiation	Degrades toxins when used at high doses, but not adequate to destroy cyanotoxins at doses used for disinfection
Membranes	RO effectively removes extracellular cyanotoxins. Typically, NF has a molecular weight cut off of 200 to 2,000 Daltons, which is larger than some cyanotoxins. Individual membranes must be piloted to verify toxin removal.

Minimal research has been performed regarding the effects of various oxidants on the physical destruction of algae and corresponding cell lysis (Plummer and Edzwald 2002). Several studies have documented the physical destruction of algal cells and filaments using ozonation using scanning electron microscopy (SEM) pictures (Plummer and Edzwald 2001, Plummer and Edzwald 2002, Huang et al. 2006, Miao and Tao 2009). However, the SEM photos provide more qualitative data regarding cell lysis and destruction. More quantitative information is needed regarding the potential to release dissolved algal metabolites (i.e. cyanotoxins, taste and odor compounds) during oxidation processes, which may place greater emphasis on physical removal processes during drinking water treatment. A digital flow cytometer has shown promise as a way to quantify total particles and fluorescent particle in order to assess cell damage as shown in Table 2 (Wert et al. 2013, Wert et al. 2013).

Table 2. Morphological changes following oxidation processes captured using the FlowCAM

Cyanobacteria	Before Oxidation (Control)	Ozone (5 mg/L)	Free Chlorine (5 mg/L)	Chlorine Dioxide (5 mg/L)	Chloramine (5 mg/L)
<i>Microcystis aeruginosa</i>					

Oxidation and advanced oxidation techniques, both as pre-oxidation to prevent breakthrough of contaminants and post-oxidation prior to distribution, are popular among water utilities. The efficiency of oxidation for removal of harmful cyanobacteria and cyanotoxins (Figs. 1a & 2a) from water under limited conditions has been demonstrated (Newcombe 2009, Zamyadi 2014). The available literature on toxin oxidation focuses on a wide range of oxidants; but has remained limited to extracellular toxins, single lab-cultured species and limited cell lysis and release parameters (Zamyadi 2014). However, breakthrough of cyanotoxins into treated water destined for human consumption was recently reported; this was primarily due to knowledge gaps regarding oxidation of cyanobacteria and their toxins in natural water conditions (Zamyadi 2014, Zamyadi et al. 2016). Recent studies demonstrated that the efficiency and rate of oxidation of cells and toxins decreased in mixed species and natural water conditions (Figs. 1b & 2b) compared to mono-species and controlled water conditions (Zamyadi et al. 2012, Coral et al. 2013, Zamyadi et al. 2013, Zamyadi et al. 2015, Zamyadi et al. 2016). For example, in controlled conditions and in the presence of only a single species, a very small ozone dose and contact time was sufficient for complete cell lysis (Fig. 1a), whereas significantly higher ozone dose and contact time were not sufficient to achieve 80% cell lysis in mixed-species suspensions (Fig. 1b).

It is hypothesized that the reduction in oxidation efficiency from Figure 1a to Figure 1b is due to presence of multispecies, water organic matter concentration, or a combination of these conditions. These observations demonstrate that further research is urgently required to understand the underlying mechanisms and thus identify the key parameters that impact oxidation reaction kinetics. In identifying these parameters (e.g. algal organic matter) and associated impact on oxidation, water professionals will be able to develop targeted monitoring protocols that will dictate oxidation operating conditions, leading to more robust oxidation processes that are better able to safeguard public health.

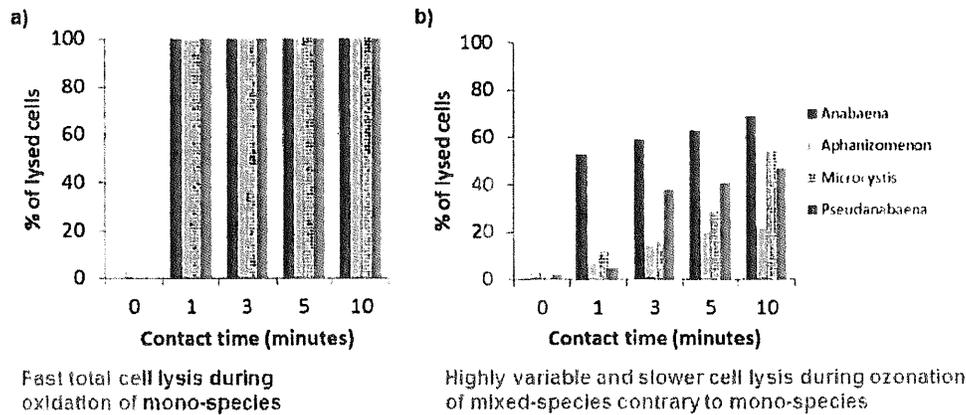


Figure 1. Influence of mixed-species of cyanobacteria on oxidation efficiency: Oxidation of (a) mono-species toxic cyanobacteria using 0.5 mg/L ozone with 10 minute of contact time (Coral et al. 2013), and (b) mixed-species of toxic cyanobacteria using 2 mg/L ozone and 10 minutes of contact time (Zamyadi et al. 2015).

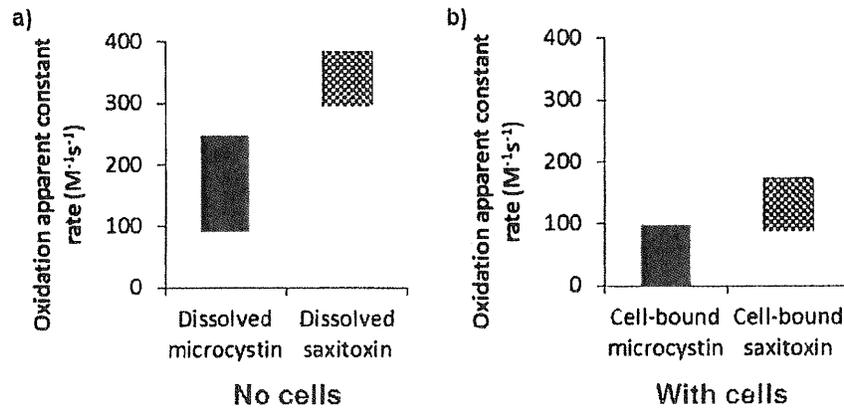


Figure 2. Slower oxidation in heterogeneous mixture: Range (min-max in form of the box) of chlorine reaction rate values during oxidation of cyanotoxins (a) in absence of cyanobacterial cells, and (b) in the presence of cells (Zamyadi et al. 2013, Zamyadi 2014). Similar results were observed for ozonation (Zamyadi et al. 2015).

Currently, a sufficiently reliable science based mechanistic model is not available that would allow water professionals to design oxidation barriers that would prevent toxin breakthrough into

treated water and avoid adverse public health effects. Early models were only based on the oxidation rate of dissolved toxins in ultra-pure and a limited number of natural water conditions. However, recent studies have demonstrated that there is a significant reduction in cyanotoxin oxidation rates in the presence of cyanobacterial cells compared to their absence (Fig. 3). Furthermore, it has been demonstrated (Coral et al. 2013, Zamyadi et al. 2013, Zamyadi et al. 2015) that, in presence of cells (for pre-oxidation purposes and in case of breakthrough of cells for post-oxidation), the release of cell-bound toxins by the action of the oxidant on the cells, and the subsequent degradation of released toxins by that oxidant have to be included within the model. Thus, the loss of cell integrity (and by inference toxin release) and toxin degradation as a function of oxidant exposure can be considered as consecutive reactions, as shown in Equation 1 (Zamyadi et al. 2013). In these reactions the cell-bound toxins (Reaction A Eq. 1) are first released by the action of oxidant on the cell and then the dissolved toxins (Reaction B Eq. 1) are degraded by the remaining oxidant (Reaction C Eq. 1). Based on this assumption, the concentration of cell-bound and dissolved toxin can be described by Equations 2 and 3 respectively (Zamyadi et al. 2013):

Equation 1:	$A \xrightarrow{k_{release}} B \xrightarrow{k_{dissolved}} C$
Equation 2:	$A = A_0 e^{-k_{release}CT}$
Equation 3:	$B = B_0 e^{-k_{dissolved}CT} + \frac{A_0}{1 - k_{dissolved} / k_{release}} (e^{-k_{dissolved}CT} - e^{-k_{release}CT})$

where A_0 and A are the concentration of cell-bound toxin at CT=0 and a given CT; B_0 and B are the concentration of dissolved toxin at CT=0 and a given CT, respectively; C is the degraded toxin at given CT; $k_{release}$ is the release rate of cell-bound toxin; $k_{dissolved}$ is the degradation rate of dissolved toxin; CT is the exposure to the oxidant.

However, in comparison to full-scale oxidation results, the existing models overestimate the efficiency of oxidation in releasing and degrading cyanotoxins (Zamyadi et al. 2013, Zamyadi et al. 2015). Thus, further studies are required to investigate the sources of bias in kinetics modelling. The impact of (1) background organic matter in water, (2) changes in the fraction of cyanobacterial organic matter and their release during different stages of cell growth and on oxidation (Fig. 3), (3) the resistance of cyanobacterial cells' to oxidation at different stages of growth, (4) cyanobacterial shape and colonial formation, (5) toxin production capacity at different growth phases, and (6) ratio of intracellular to extracellular organic matter (Fig. 3) and toxins on oxidation, have not been studied in a systematic way; nor have they been included within the model (Henderson et al. 2008, Fellman et al. 2009, Ziegmann et al. 2010, Zamyadi et al. 2013, Zamyadi et al. 2015). Development of a comprehensive model is particularly important to assess potential responses to toxic cyanobacterial breakthrough events based on historic and climate change scenarios.

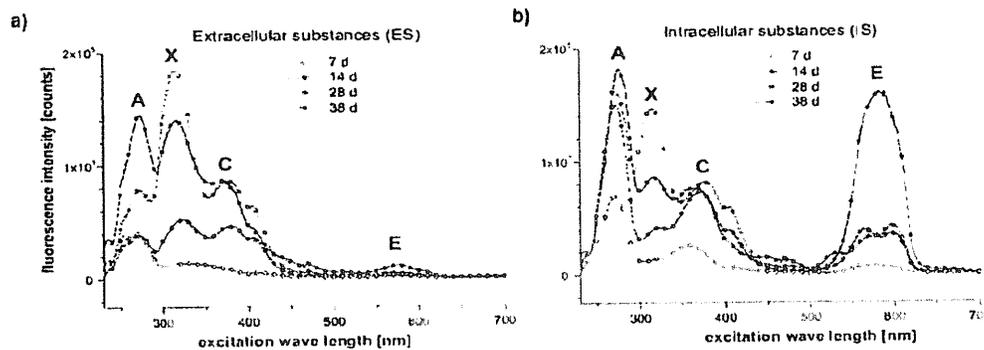


Figure 3. Fluorescence screening of *Microcystis aeruginosa* (a) extracellular substances and (b) intracellular substances, during growth (Adapted from (Ziegmann et al. 2010)).

This research will fill the gap in available knowledge base related to the fate of intra- and extra-cellular cyanotoxins during oxidation of natural cyanobacterial bloom samples. Furthermore, the project will focus on the effect of cellular growth phase, colonial versus unicellular species, and mono-suspensions versus mixed-suspensions, and use in situ measurements to assess cell damage and release of intracellular compounds.

Research Approach

This project will evaluate the release of intracellular cyanotoxins due to preoxidation processes. The proposed project will accomplish this general objective with six primary tasks shown below. Task 1 will provide a literature review summarizing the state-of-the-science regarding intracellular cyanotoxin release. Task 2 will review and assess current methods to extract and measure total cyanotoxins. Tasks 3 and 4 will evaluate the effect of several oxidants on laboratory cultured and naturally occurring cyanobacteria cells under practical drinking water conditions. Task 5 will develop a CyanoTOX model component that would incorporate intracellular release into the existing version of the model. The results from Tasks 1-5 will be summarized into a final report as Task 6. As a result of this research, threshold oxidation values will be established for various oxidants that result in the release of intracellular organic matter and metabolites.

Task 1 – Literature Review

Task 2 – Review and Assessment of Cell Lysis Methods

Task 3 – Oxidation of Laboratory Cultured *Microcystis*

Subtask 3.1 – Effect of Low CT Conditions on Cyanotoxin Release

Subtask 3.2 – Effect of Stagnation Time following Oxidation

Subtask 3.3 – Effect of Growth Phase on Cyanotoxin Release

Task 4 - Oxidation of Naturally Occurring Cyanobacteria Cells

Subtask 4.1 – Development of Experimental Plan

Subtask 4.2 – Treatment of Natural Bloom Samples from US Waters

Subtask 4.3 – Treatment of Natural Bloom Samples from Australian Waters

Task 5 - Development of a CyanoTOX Model Component for Intracellular Release

Task 6 – Final Report

Task 1 – Literature Review
(Lead: Hazen and Sawyer)

A literature review will be conducted focusing on the release of intracellular cyanotoxins and other metabolites during oxidation processes. Literature will be reviewed regarding the common applications of preoxidants (e.g. ozone, chlorine, chloramine, chlorine dioxide, hydrogen peroxide, copper sulfate, potassium permanganate) during drinking water treatment (i.e. mussel control, DBP minimization), and the ability of these preoxidants to cause cell lyses. Differences in the cell oxidation rates will be examined using laboratory cultured versus naturally occurring cells. The effect of cell morphology on cell damage and subsequent metabolite release will also be included during the literature review. Information will also be summarized regarding common treatment techniques to remove extracellular cyanotoxins from drinking water supplies. The expectation for this review will be a state-of-the-science review paper for publication in JAWWA that summarizes the available literature on the subject area and identifies research gaps.

Task 2 – Review and Assessment of Cell Lysis Methods
(Lead: Southern Nevada Water Authority)

Several methods have been used to rupture cells in order to measure the total cyanotoxin concentration (Rosen et al. 2010). These methods for cell lysis will be reviewed and evaluated including freeze thaw sequences, microwave, sonication, and chemical reagents (i.e. Quiklyse, chloramine). Experiments will be conducted using laboratory cultured *Microcystis* cells (Figure 4) and mass balance calculations will be performed regarding total, intracellular, and extracellular microcystin recovery using LC-MS/MS analysis. The expectation for this task will be to provide guidance to utilities seeking a robust method to evaluate the total microcystin concentration and will not investigate various cell morphologies. If a natural bloom event is identified in Lake Mead, these techniques will be repeated using naturally occurring *Microcystis* cells, which are expected to be protected by a colonial sheath and more resistant to oxidation methods. These results will provide guidance to utilities interested in measuring the total cyanotoxin concentration. A summary table will be provided evaluating each method based upon time for extraction, yield, complexity, and approximate cost.



Figure 4. Photos of laboratory cultured *Microcystis* cells: (a) day 0, (b) day 12, and (c) day 28.

Task 3 – Oxidation of Laboratory Cultured *Microcystis* cells (Lead: Southern Nevada Water Authority)

Bench scale experiments will be performed using ozone, chlorine, chloramine, chlorine dioxide, potassium permanganate, copper sulfate, and hydrogen peroxide using a laboratory culture of *Microcystis aeruginosa* (LB 2385, Culture Collection of Algae at the University of Texas, Austin, TX, USA). The strain of *Microcystis* was confirmed to produce microcystin-LR during previous Foundation study (Wert et al. 2013). During each experiment, both extracellular and total cyanotoxin concentrations will be measured to calculate the intracellular cyanotoxin concentration. Microcystin analysis will be conducted by LC/MS-MS with a subset of samples also analyzed using the ELISA method. During these experiments, in situ analysis of chlorophyll and phycocyanin will be monitored to determine if a threshold exists for cell damage where the majority of intracellular cyanotoxin have been released.

This Task will result in recommendations regarding the oxidation conditions (i.e. concentration over time, oxidant/DOC ratio) where the intracellular cyanotoxin has been released. In addition, fluorescence information may prove to be useful online instrument to assess the relative degree of cell damage in a treatment process. These guidelines are intended to promote future work using naturally cultured cells and varying morphologies (i.e. filamentous, sheaths, colonies), so that utilities understand the oxidation conditions resulting in partial and complete intracellular release.

Subtask 3.1 – Effect of Low CT Conditions on Cyanotoxin Release

Oxidant exposures less than demand will be evaluated in order to better understand whether release is attributed to an oxidative stress response or a physical release through a compromised cell membrane followed by a practical range of oxidant exposures exceeding the demand (i.e. concentration over time). Short term oxidant exposures will be evaluated for release of intracellular cyanotoxins. These treatment conditions are practical for systems using chloramines where a brief period of free chlorine exposure ($t < 20$ min) is applied for primary disinfection followed by the addition of ammonia to form chloramines for secondary disinfection. Under these treatment conditions, free chlorine may lyse cells with inadequate chlorine exposure to oxidize extracellular microcystin, followed by minimal additional oxidation of intra/extracellular microcystin by chloramine. The degree of physical transformation of cyanobacteria cells during oxidation will be measured using a FlowCAM[®] (Fluid Imaging Technologies, Inc., Yarmouth, ME). A FlowCAM[®] is a digital imaging microscope and flow cytometer. It can rapidly analyze particles in water using microscopic images compared to conventional light microscopy. The FlowCAM has been demonstrated to differentiate fluorescent and non-fluorescent particles in order to better assess cell damage (Table 1) (Wert et al. 2013, Wert et al. 2013).

Subtask 3.2 – Effect of Stagnation Time following Oxidation

During some previous work by the project team, extracellular microcystin concentrations were detected following high ozone dosages using *Microcystis* cells. Due to the rapid reaction rate between ozone and microcystin, it was believed that the stagnation time between

oxidation/quenching and filtration resulted in some delayed release of intracellular microcystin. This Subtask will investigate delayed release of intracellular cyanotoxins from cells damaged during oxidation processes.

Oxidation processes mentioned previously will be examined followed by filtration at different time intervals: after quenching/filtration, 20 mins, 40 mins, 1 hr, 2 hrs, 4 hrs, 8 hrs, 24 hrs, 48 hrs, and 72 hrs. These time intervals will determine if delayed release occurs and how soon after oxidation. Time intervals of 24-72 hours will provide perspective to utilities with downstream filtration processes where damaged cells may be retained on top of the filter media and slowly release remaining intracellular cyanotoxins through a damaged cell membrane.

Subtask 3.3 – Effect of Growth Phase on Cyanotoxin Release

The role of cyanobacteria growth phase has not been investigated following oxidation conditions. While the role of growth phase could evolve into an independent project, the goal of this subtask will be to evaluate lab cultured *Microcystis* while in the early exponential growth phase and early stationary phase. Experiments with lab cultured cells would be conducted at different growth phases (exponential, stationary) based on optical density measurements (Figure 1). Growth phase may impact the thickness and robustness of the cell membrane. In addition, the concentration of intracellular cyanotoxin may be greater during the exponential growth phase, potentially leading to greater release in the treatment plant during this growth phase. The full suite of chemical oxidants is expected to be evaluated.

Task 4 – Oxidation of Naturally Occurring Cyanobacteria Cells (Lead: University of New South Wales, Australia and SNWA)

Task 4 will focus on the treatment of naturally occurring cells from the United States and Australia. While these blooms are difficult to predict, historical information indicates that annual cyanobacteria blooms can be expected. The task begins the development of experimental plan. The preliminary basis for the experimental plan is provided in Subtask 4.1 below. In general, the project team will create a comprehensive test plan to be used during studies in the United States and Australia so that the results can be directly compared. Some deviations in the experimental design are anticipated based on the capabilities of each lab. For example, SNWA will evaluate cell damage using a digital flow cytometer (FlowCAM), and UNSW will evaluate organics release using LC-OCD. The project team recognizes the risk of not having access to naturally occurring toxic cyanobacteria blooms. If this occurs, then a revised test plan will be submitted to the PAC for review. The focus may shift to developing a better understanding of different cell morphologies using laboratory cultured cells.

Subtask 4.1 – Development of Experimental Plan

The effect of various oxidants will be investigated on mixtures of naturally occurring cyanobacteria that produce cyanotoxins. Bench-scale testing will be conducted to evaluate the previously identified oxidants and their ability to degrade naturally occurring strains of cyanobacteria. List of proposed oxidation experiments is presented in Table 3. Oxidant dosages will be normalized based on the background DOC of the water matrix. Comparisons will be

made regarding the oxidation of laboratory cultured cells versus naturally occurring cells. In addition, the effect of cell morphology will be examined should blooms contain mixtures of colonial cells and filamentous cyanobacteria. In situ analysis of chlorophyll and phycocyanin will again be monitored to identify the different stages of cell damage. Furthermore, to test the influence of cyanobacterial/algal organic matter, their associated IOM and EOM, on oxidation at each measurement points sample will be taken for the fluorescence excitation-emission matrix (EEM) measurement and Liquid Chromatography - Organic Carbon Detection (LC-OCD) analysis.

Table 3. Details of cyanotoxins oxidation experiments: Cell numbers and oxidant/chemical doses are selected based on toxic cell concentrations detected at the water intake of Australian water treatment facilities and their oxidation practices.

Water type	Cell numbers (Cells/mL)* and growth phase	Oxidant agents					Chemicals used for source water protection	
		Free chlorine	Chloramine	Potassium permanganate	Ozone (both molecular & radical forms)	Chlorine dioxide	Hydrogen peroxide	Copper sulphate
Natural bloom sample	~ 100k, 200k, 500k and 1000k At stationary, growth phase of the bloom	0.5, 1.5 & 5 mg/l with 5 measurement points per dosage up to 60 minutes of contact time	0.2, 1.2 & 2 mg/l with 5 measurement points per dosage up to 90 minutes of contact time	1, 5, and 10 mg/l with 5 measurement points per dosage up to 120 minutes of contact time	0.5, 1.5 and 3 mg/l with 5 measurement points per dosage up to 10 minutes of contact time	0.2, 1.2 & 2 mg/l with 5 measurement points per dosage up to 90 minutes of contact time	1, 4 & 10 mg/l with 5 measurement points per dosage up to 300 minutes of contact time	0.2, 1.5 & 3 mg/l with 5 measurement points per dosage up to 420 minutes of contact time

The design of experiments will be used to not only understand under what conditions cyanotoxins are released from cyanobacteria, but also to provide quantitative data to calibrate the lysing module we are developing for CyanoTOX (Ver. 2.0). The PIs have modeled the fundamental equilibrium, oxidative and transport equations involved in the lysing/oxidation process, which are solved numerically as a system of differential and implicit equations using specialized software. The module being developed within this TC is an approximation of the mechanistic model which can be executed in the lysing module for CyanoTOX (Ver. 2.0). The module will utilize Microsoft Excel programming (possibly with imbedded VBA (Visual Basic for Applications) programming as needed).

Key reactions within the process are the oxidation of cyanotoxins under a range of conditions (e.g., pH, temperature, etc) which in its current form is within CyanoTOX (Ver. 1.0). Oxidant consumption kinetics with other soluble constituents (e.g., natural organic matter, etc.) will also be included within the lysing module, as well as the formation of secondary oxidants. Most of

these reactions are well characterized and the PIs are experienced as modeling these reactions. Less is known about the reactions of the study oxidants with cyanobacterial cells with respect to the rate of oxidative cell damage and the subsequent release rate of intracellular cyanotoxins. Limited studies have been conducted mostly with cultured *Microcystis* cells (including by the PIs) which provides preliminary data as to lysing rates. A key purpose of this proposed work is to provide data with a range of natural occurring cyanobacteria to understand these release mechanisms in sufficient detail to provide accurate guidance to utilities.

To accomplish these goals, experiments will include only “gently” oxidizing cells at low concentrations and/or dosing primary oxidants (e.g., free chlorine) in a manner that they are quenched (eliminated) rapidly. These represent the conditions at which maximum release and accumulation of extracellular toxins are generated as demonstrate by preliminary work of the PIs and others.

Water samples for the experiments will be conducted from sites experiencing HABs of different type, severity, morphology, and age. These waters will be characterized in detail from which the waters to be used in the detailed experiments will be selected. Cyanobacterial cells will generally be as collected from HABs in the existing matrix. As needed, adjustments to the water solutions will be made prior to oxidation experiments.

Prior to each experiment, waters will be characterized and preliminary oxidation experiments will be conducted. Water characterization will include pH, TOC, UV₂₅₄, ammonia, alkalinity, and other parameters. Oxidant decay experiments will be used to determine the instantaneous and subsequent first-order decay rates for the oxidants. Oxidant doses (and sampling times) for the experiments will be specifically designed around this preliminary information as well as calculated values such as the location of the breakpoint associated with chlorine/chloramine chemistry. Based on preliminary experiments, oxidant dosages (for chlorine) might be on the order of 0, 0.25, 0.5, 1, 4 and 8 mg/L for an experiments. Sample times for a typical experiment may be on the order of 0, 5, 10, 30, 60 and 120 minutes.

Oxidation experiments will in general be conducted in six-gang stirrers to simulate conditions in a water treatment plant. Identical solutions will be placed in six to ten 2-L beakers, and preconditioned prior to oxidation. In selected beakers, reductants will be added to rapidly (in some cases near “instantaneously”) scavenge the primary oxidant added. This will allow observation of both the “instantaneous” damage achievable by different oxidants and doses, and the subsequent release rate achieved. In other beakers, no reductants will be added. In all cases, the primary and secondary oxidant concentrations monitored throughout the experiments.

Each beaker will be spiked at time zero with a predetermined oxidant dosage (including a zero spike control sample). For each beaker, samples will be taken at four to six predetermined times for analysis. The key analyses will include total cyanotoxin (lysed with freeze thaw or other method), and extracellular toxin (by prefiltration for the sample to removal intracellular toxins). By difference, the intracellular toxin is calculated. All samples from chlorination experiments will be analyzed for total chlorine, free chlorine, and monochloramine (using standard Hach methods 8021, 8167, and 10200). Oxidants in samples in permanganate and ozonation experiments will be analyzed using total chlorine or other appropriate methods. In selected samples, pH and TOC

will be measured. In a limited number of samples, THMs and HAAs will also be determined to help bracket allowable maximum chlorine dosages.

Results from these experiments will be analyzed using differential equation based models to assess effects of primary and secondary oxidants on cell damage rates, and cell lysing rates and form. These data will then be used in the development of the cyanobacterial cell lysing guidance for utilities generally, and the lysing module CyanoTOX (Ver. 2.0) specifically.

Subtask 4.2 – Treatment of Natural Bloom Samples from US Waters

The occurrence of natural toxic cyanobacteria blooms has been well documented at the sites in the United States proposed below:

- Lake Mead, Nevada
- Lake Havasu, Arizona
- Manatee County, FL

In March 2015, localized blooms of naturally occurring *Microcystis* were detected in Lake Mead and Lake Havasu. If samples are available from either Lake Mead or Lake Havasu, then these sites will be used for the treatment evaluation. Otherwise, we have additional utilities who have provided a letter of in kind support and are willing to ship samples for testing at SNWA. This Subtask will evaluate one natural water from the list of potential testing sites.

Subtask 4.3 – Treatment of Natural Bloom Samples from Australian Waters

Frequent occurrences of natural toxic blooms in Australia (100,000 to 12,000,000 cells/mL) guarantee the feasibility of this project task. The selected sites for collection of natural bloom samples are:

- Wingecarribee reservoir, New South Wales (Australia)
- Bolivar lagoons, South Australia (Australia)

Dr. Arash Zamyadi is currently a Senior Research Associate and works across two research groups, the UNSW Water Research Centre (WRC) in the School of Civil and Environmental Engineering, and the bioMASS Lab, in the School of Chemical Engineering. He is supervised by Prof. Richard Stuetz, co-director of the, and Dr. Rita Henderson, leader of the bioMASS Lab. Dr. Zamyadi has access to UNSW WRC, UNSW Schools of Civil and Environmental Engineering and Chemical Engineering, and Mark Wainwright Analytical Centre research facilities to conduct his DECRA project. Prof. Stuetz and Dr. Henderson have expertise on detection and treatment of cyanobacteria and associated toxins. The WRC (UNSW) experts are recognized by water quality researchers internationally for their expertise in the fields of taxonomy, ecology, toxicity and management of cyanobacteria. Their scientific publications are the essential references for other research in this field. Dr. Zamyadi will invest 30% of his time during natural bloom sampling and oxidation in Australia. He will also supervise an honors student (100% of research work time) at UNSW to conduct the experiments.

The WRC at UNSW has a comprehensive monitoring capacity (qualified personnel and sampling equipment) and analytical capacity for cyanobacteria and their toxins (microscopic enumeration, analytical methods for toxins: GC-MS-MS, HPLC-ICP-MS, LC-MS-MS). Furthermore, WRC and bioMASS Lab laboratory facilities include all the required experimental (e.g. ozone generator and all the chemicals) and analytical (e.g. fluorescence spectrophotometer) equipment for the successful conduit of this project. WRC brings together the diverse expertise and work environment needed for the successful accomplishment of this project. Dr. Rita Henderson (UNSW) is a world-renowned expert in FEEM analysis and PARAFAC modelling, cyanobacterial organic matter detection and cyanotoxin detection with an exceptional publication record and experience. The UNSW Mark Wainwright Analytical Centre, at which the candidate will have full access, hosts the only LCOCD equipment for organic matter fractionation in Australia and NMR, X-ray, fluorescence and surface analysis, flow cytometry and SEM and TEM analysis. This Subtask will evaluate 2 natural waters from the list of potential testing sites.

Task 5 – Development of a CyanoTOX Model Component for Intracellular Release (Lead: Utah State University)

The purpose of Task 5 (Development of a CyanoTOX Model Component for Intracellular Release) is to develop a simplified model for utilities to use to better understand the range of release rates and scenarios they may face based on the cyanotoxin and oxidant involved, specific water quality parameters, and oxidant exposure scenario. The current state of understanding of the effects of oxidants on cyanobacterial cell integrity are currently not well understood. It is our hypothesis that cell membranes can be made permeable by short term exposure to specific oxidants, and that cyanotoxins can continue to leak into extracellular water phase after the primary oxidant has decayed to a degree that it can no longer oxidize the released toxins. Our preliminary experiments have demonstrated and confirmed this hypothesis clearly with selected systems.

In this task, a conceptual model based on key components involved in cell oxidation and lysing will first be developed. Using this model, data from Task 3 (Oxidation of Laboratory Cultured Cells) and Task 4 (Oxidation of Naturally Occurring Cyanobacteria Cells) will be used to adjust the conceptual model to the degree possible with a limited data set as discussed in more detail below. Validation of the developed module will be conducted with a subset of data.

The basis of the model includes cell membrane oxidation reactions and subsequent release, along with competing reactions which consume the primary oxidants. At the heart of the model is the rate at which oxidation of the cell membrane causes permeability (or lysing), and the diffusion rate and form of cyanotoxins through the membrane after oxidation.

Some of these competing reactions are very quick with selected oxidants (e.g., HOCl) causing a rapid (or “instantaneous”) consumption of part of the oxidant, followed often by a slower (often exponential) decay. Depending on the relative concentrations of these non-cell fractions and the oxidants, as well as the relative decay rates, the primary (added) oxidant concentration may very rapidly be negligible, or instead, may be maintained for a significant period of time. This oxidant exposure is characterized by the integrated concentration times time or “CT” value. The extracellular cyanotoxin decay rates will use the computational “engine” already at the heart of

CyanoTOX. Numerical modeling of a large number of differential equations representing individual reaction rates, toxin diffusion rates (and mode), and equilibria, is not possible within the spreadsheet constraint of CyanoTOX.

The spreadsheet will very clearly communicate to the user that the purpose is to elucidate and constrain potential cyanotoxin buildup resulting from oxidant exposure. Inputs to the model will include oxidant type and dose, cyanotoxin type, intra- and extra-cellular cyanotoxin concentrations, instantaneous oxidant demand, first-order decay (as input as half-life), pH, temperature, and other parameters. Best estimates of release rates will be used, and the uncertainties clearly and explicitly described for the user. Specifically, the developed module will clearly communicate what can be known with certainty, what may be likely and what is unlikely with respect to release and removal of cyanotoxins. For example, the maximum amount of cyanotoxin that could enter the extracellular water is the total (intracellular plus extracellular) concentration. The model will have several release scenarios automatically calculated and based in part on data from Task 3 and 4, in addition to other studies. One scenario is instantaneous release of all intracellular toxins, as would occur with complete cell breakage or lysing. Another scenario is continuous linear release based on oxidant exposure. Other scenarios such as increasing or decreasing rates will also be considered. In each case, the extracellular toxin oxidation rate will be well characterized by the existing computational engine within CyanoTOX.

The results will be presented for the user in tabular as well as graphical form, again in a manner that clearly addresses the range of possible results that could occur. Output will be similar to the existing (CyanoTOX (Ver. 1)) output for consistency and understanding.

Task 6 – Final report and recommendations to utilities

A final report will be prepared to provide guidance to utilities susceptible to harmful cyanobacteria blooms that use preoxidation processes. The report will summarize the findings of Tasks 1 through 5, and provide improved framework to better understand intracellular release of cyanotoxins during oxidation processes. Additional guidance will be provided in the following areas:

- Summarize the state-of-the-science regarding intracellular cyanotoxin release during oxidation processes
- Provide guidance regarding which lysing methods are optimal for measuring total cyanotoxin concentrations.
- Provide guidance regarding the oxidant exposure conditions resulting in complete release of intracellular cyanotoxins
- Evaluate short term oxidant exposures to further understanding the mechanism of release (oxidative stress response or physical release through a compromised cell membrane)
- Simulate delayed release of intracellular cyanotoxins on a subsequent filter surface
- Highlight differences between the oxidation of laboratory cultured cells and naturally occurring cells.
- Enhance the CyanoTOX model to incorporate intracellular cyanotoxin release

- Propose conceptual models for cell lysis and cyanotoxin release for different oxidants (Figure 5). These conceptual models will be intended for utility personnel to understand the complexities of cell lysis rather than empirical or kinetic modeling. The models will vary based upon oxidant, morphology, and growth stage. CT values will be proposed to better define the extent of cell damage and expected microcystin release.

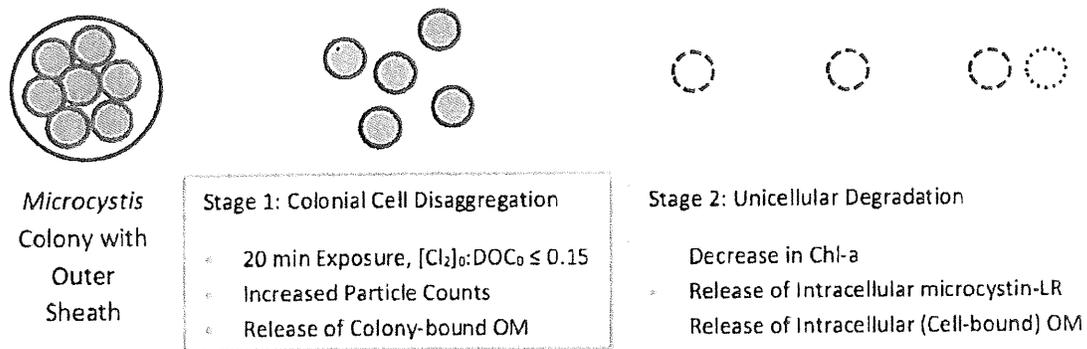


Figure 5. Conceptual Model for Cyanobacteria Cell Destruction Based on Published Literature (Wert et al. 2013, He and Wert 2016).

6. Applications Potential

With cyanobacteria blooms becoming more prevalent, utilities incorporating a preoxidation step must consider the risk of releasing intracellular algal organic material. Preoxidation presents a scenario where a weak oxidant may release metabolites at a faster rate than they are destroyed, resulting in a net concentration gain.

The following are some of the key objectives from the proposed research:

- To evaluate various lysing methods for total cyanotoxin measurement (e.g. chemical reagents, freeze-thaw sequences, sonication, microwaves)
- To perform microcystin mass balance calculations following the oxidation of *Microcystis* cells under various growth/environmental conditions (e.g. growth phases, colonial versus unicellular, natural versus laboratory cultured)
- To compare cyanotoxin release during natural bloom conditions with mixtures of cyanobacteria to release from laboratory cultured *microcystis* cells.
- To evaluate the use of in vivo chlorophyll and phycocyanin probes to develop guidance thresholds regarding intracellular cyanotoxin release.
- To develop a model component for implementation in the AWWA CyanoTOX model to predict the release of intracellular cyanotoxins.

As a result of this research, operating guidelines will be established for utilities to better understand the conditions leading to complete release of intracellular cyanotoxins. Information will be developed using both lab cultured and naturally occurring cyanobacteria cells to identify in cell damage. Based on this data set, a model will be developed and incorporated into the existing CyanoTOX model to better account for intracellular release during drinking water treatment.

7. Quality Assurance/ Quality Control (QA/QC)

The accuracy of each analysis will be determined by measuring spike recoveries in the matrix of interest. The relative errors will be calculated and will be considered acceptable if they fall within the control limits determined for the particular test. In general, a test will not be deemed useful if its precision or accuracy is found to be equal to or greater than 20% of the highest values observed. Wherever possible, external performance standards will also be run. This serves as a measure of accuracy both for the analysis and for standard preparation.

Results are presented in routine (minimum weekly) project meetings, where any analytical problems are discussed. Further, these data will be provided to the PAC on routine intervals for feedback.

Samples Collection/Preservation

All sampling will be performed using Nitrile gloves to prevent accidental contamination. Travel blanks will also be collected.

All samples will be refrigerated at $\leq 4^{\circ}\text{C}$ until sample analysis has taken place. In addition to samples taken before and after a particular process has been tested, quality control samples will be taken as well. This includes at least one blank (trip and/or equipment blank) and one duplicate for each sampling event.

All details related to sample collection and preservation will be recorded in a laboratory logbook. This logbook will contain all relevant information including time and date of sampling, retrieval method, initials of sampler, sample identification number, and any other items deemed necessary. This logbook will also contain any deviations that may occur during the sampling process.

Sample Preparation

All sample preparation will be performed in distinct batches. A batch will be defined as ten field samples or samples prepared on any given day, whichever is less. Each preparation batch will be accompanied by the following quality control samples: one reagent water blank, one sample duplicate, and one laboratory control sample. Due to the inherent variability of source waters, matrix spikes will be performed on an as needed basis to characterize the effects of different water matrices using spiked analyte concentrations.

All information related to the preparation of any standard or reagent will be recorded in a standard preparation logbook. This logbook will contain all relevant information including initial standard volume, final standard volume, final concentration, identity of stock solution, solvent, and analyst's initials.

All information related to sample preparation and extraction will be recorded in a sample preparation logbook. This logbook will contain all relevant information including date of

analysis, initial sample volume, spikes added, elution solvent type and amount, final extract volume, initials of extractionist, and comments.

Sample Analysis

Each instrument involved in the project will be required to have a well-maintained logbook documenting instrument performance and maintenance. This logbook will contain information relevant to the project and will document any applicable changes to instrument hardware, performance, calibration, routine maintenance, and any other items deemed necessary.

Before the start of qualitative analysis, each instrument will have the following items calculated and/or defined for each applicable analyte: instrument detection limit (IDL), method detection limit (MDL), practical quantitation limit (PQL), and initial calibration.

IDL

The IDL is a measure of the lowest detectable amount of an analyte that can be distinguished from a blank by an instrument. It will be defined as the amount determined by multiplying by three the standard deviation obtained for the analysis of a standard solution at a concentration three to five times the desired IDL on three nonconsecutive days with seven consecutive measurements per day.

MDL

The MDL is the concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. Unlike the IDL, it represents the entire process of analysis, including extraction/preparation and instrumental detection. It will be defined as the amount determined by multiplying the standard deviation of multiple replicate analyses by the appropriate t-statistic obtained from the table below. The analyte concentration used to determine the MDL should be approximately the value of the expected MDL.

<u>No. of samples</u>	<u>t-statistic</u>
3	6.96
4	4.54
5	3.75
6	3.36
7	3.14
8	3.00
9	2.90
10	2.82

PQL

The PQL is generally defined as 5 times the MDL and is considered to be the lowest practical level from which data can be reported. Any concentration measured that is below the PQL will not be considered reliable and will be reported as non-detectable (ND). We generally use the PQL as the lowest concentration analytical standard in the calibration curve.

Initial Calibration

In order to calibrate an analytical instrument, the delineation of the relationship between the response of the instrument and the amount of an analyte introduced must be determined. Two

types of calibration procedures will be used for LC/triple-quadrupole MS (LC/MS/MS): internal calibration using response factors and/or linear regression. If deemed necessary and justifiable by the analyst, non-linear regression may be used. However, non-linear regression will not be accepted as a means to compensate for detector saturation or improper instrument maintenance. For each calibration curve, a minimum of 5 calibration points will be used. For maximum sensitivity, the lowest standard should be at or below the PQL. Either the PQL or the lowest calibration standard will be considered the reporting limit, depending on which is lowest. If the lowest standard used is below the PQL, then the PQL will be considered the reporting limit. If the lowest standard is above the PQL, then the lowest standard will be considered the reporting limit. The origin, (0,0), will not be used when employing response factors because this method assumes that the line passes through the origin. Likewise, (0,0) will not be used when employing linear regression because it assumes that the line does not pass through the origin. By the same logic, when employing linear regression, the line will also not be forced through the origin. When selecting the calibration model to be used, the analyst will start with the simplest approach (linear model) and progress through other options until all calibration criteria have been met.

Internal calibration with response factors involves the comparison of instrument responses with responses from specific standards added to the sample or sample extract prior to injection. These standards are referred to as “internal standards” and will be selected to mimic the target analytes as closely as possible to ensure meaningful conclusions from their performance. Stable isotopically labeled internal standards will be used through the analyses using mass spectrometric detection. Isotopically labeled standards are exact chemical analogues of their respective compound classes and are not found in nature at any relevant concentrations, making them ideal internal standard compounds. These will be used whenever possible during the analytical work of this research effort.

When preparing calibration standards for initial calibration, the same amount of the internal standard(s) selected will be added to each calibration standard. The response factor for each of the initial calibration standards will be calculated as follows:

$$RF = \frac{A_s * C_{is}}{A_{is} * C_s}$$

where:

- A_s = Peak area of the analyte or surrogate
- A_{is} = Peak area of the internal standard
- C_s = Concentration (or mass) of the analyte or surrogate
- C_{is} = Concentration (or mass) of the internal standard

Although under ideal conditions the factors will not vary with concentration, in practice, some variation is expected. In order to determine whether the set of response factors is acceptable, the relative standard deviation (RSD) will be calculated.

To evaluate the linearity of the response factors, the mean and the standard deviation of the response factors will be calculated. The RSD will be calculated as follows:

$$RSD = \frac{SD}{RF_{mean}} * 100$$

where:

SD = Standard deviation of response factors
RF_{mean} = Mean of response factors

If the RSD of the response factors is $\leq 15\%$, then linearity is assumed and the calibration may be used to determine sample concentrations/amounts.

If the RSD $> 15\%$, the following steps will be taken. The instrument will be checked to ensure that all operating conditions are within the normal range for that analysis. Area counts, calculations, and standard preparations will be checked to rule out the possibility of a systematic error or oversight. If it is found that the problem is associated with only one of the calibration standards, it will be reanalyzed and the RSD recalculated. A narrower range of linearity will also be considered; however, it will be kept in mind that changes to the upper region of the calibration curve will affect dilution frequency and changes to the lower range of the calibration curve will affect sensitivity. If none of these steps corrects the problem, the analyst will progress to linear regression as a means of analyte quantification.

Linear regression will be used to define the line that best fits the instrument response versus the concentration (mass) of the standards if the RSD of the RFs is $> 15\%$. Instrument response will be treated as the dependent variable (y), while standard concentration will be used as the independent variable (x). The regression will produce a linear equation with the following form:

$$y = ax + b$$

where:

y = Instrument response
a = Slope of the line
x = Concentration of the calibration standard
b = the y-intercept

The regression will also generate a correlation coefficient (r) that is a measure of how well the calculated line fits the data used to generate the line. In order for the line to be used, r must be ≥ 0.99 .

Instrumental QC

All instrumental analysis will be performed in batches. A batch will be defined as ten extracted samples or the number of sample analyzed in one 24-hour period whichever is less. Each batch will have quality control samples associated with it as outlined below.

All extracted samples will be bracketed by both blanks and calibration verification samples (CVS). CVSs will be prepared at concentrations that fall on the middle of the calibration curve. Control charts and acceptable recoveries will be determined and implemented as necessary, and it will be kept in mind that a recovery of $\pm 20\%$ is generally accepted.

Each batch will have one duplicate analysis associated with it, not including the duplicate analysis performed during sample extraction. From these duplicates, a relative percent difference (RPD) will be calculated for each analyte as follows:

$$RPD = \frac{|C_1 - C_2|}{\text{Average}} * 100$$

$$(C_1 + C_2)/2$$

where:

- C₁ = Concentration determined in first analysis
C₂ = Concentration determined in second analysis

If the RPD of the set is $\geq 15\%$, the analysis will be reviewed to determine whether reanalysis is possible and/or necessary. This calculation should be performed for both the extracted duplicates and the non-extracted duplicates.

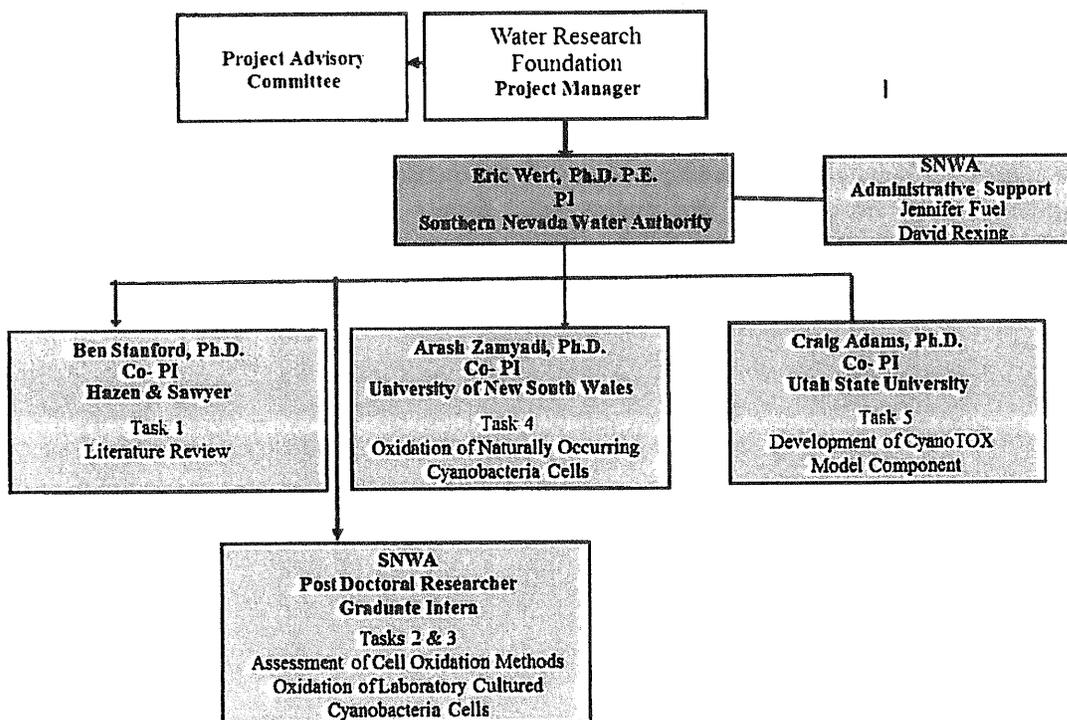
Every sample analyzed will have internal standard added to give a final amount equal to that in the initial calibration standard. Internal standard raw area counts will be monitored for the deterioration of system performance. If internal standard area counts in blanks and CVSs either fall below 50% or climb above 200% of the internal standard area counts in the initial calibration, system performance will be closely watched to determine if recalibration is necessary.

Instrumentation Maintenance

Maintenance activities and schedules on each instrument, including service calls by commercial service representatives, are recorded in instrument maintenance log notebooks. Run logs for each instrument for each method are maintained. SNWA holds manufacturer maintenance contracts on all analytical instruments.

8. Management Plan and Statement of Qualifications

The purpose of the Management and Communication Plan is to ensure effective implementation of project roles and responsibilities, communication routes, and accountability for schedule maintenance and submission of deliverables for all project members. The project will be managed by Eric Wert, Project Manager of Applied Water Quality Research with the Southern Nevada Water Authority (SNWA). Additional staff will support the project in both an administrative role (Jennifer Fuel and David Rexing) and technical role supporting Tasks 2 and 3 (Post Doctoral Researcher and Graduate Intern). Dr. Ben Stanford will serve as a co-Principal Investigator responsible for Task 1: Literature Review. Dr. Arash Zamyadi will serve as a co-Principal Investigator responsible for Task 4: Oxidation of Naturally Occurring Cyanobacteria Cells. Dr. Craig Adams will serve as co-Principal Investigator responsible for Task 5: Development of CyanoTOX Model Component. The project team organization is illustrated in Figure 5.



Conference calls will be held as needed to present the updates of project progress and discuss the ongoing and future work plans. In addition, the research team will communicate technical issues and exchange experimental ideas through telephone and email. Each progress report will be reviewed within the research team for technical accuracy, writing style, and grammatical correctness. Review by the Project Advisory Committee provides final check on technical accuracy and readability of all submitted documents.

Our project team represents interests from drinking water utilities, consultants, and academia through SNWA, University of New South Wales, Utah State University, and Hazen & Sawyer. The project team has extensive experience with conducting oxidation studies related to the release of intracellular metabolites from cyanobacteria cells. The collective experience and facilities offered by the project team provide an excellent foundation to conduct the research described above regarding the impact of oxidants on microcystin release during drinking water treatment conditions.

Dr. Eric Wert, P.E. will serve as the Principal Investigator (PI) for the project. Dr. Wert is the Project Manager-Applied Water Quality Research at SNWA, and has served as PI and co-PI for numerous research projects funded by the Water Research Foundation and WaterReuse Foundation. Dr. Wert has authored or coauthored over 30 peer reviewed manuscripts focused on the oxidation of trace contaminants, disinfection byproduct minimization, and cyanobacteria cell lysis. From 2011-2013, Dr. Wert served as the PI for Foundation project #4406 focused on the release of intracellular metabolites from cyanobacteria during drinking water treatment processes, which provides an excellent foundation for the proposed research. Dr. Wert will plan and direct research activities, monitor project budget and prepare project reports.

Dr. Arash Zamyadi will serve as a co-Principal Investigator for the project. Dr. Zamyadi is a Senior Research Associate at the Water Research Centre in the School of Civil and Environmental Engineering, University of New South Wales, Sydney, Australia. Dr. Zamyadi completed his Ph.D. in 2011 having studied at the Ecole Polytechnique in Montreal (Canada) on a project for the Quebec Ministry of the Environment that helped to define the scope of the cyanobacteria problem in Eastern Canada and for the water industry in general, with a very extensive publication record on the topic (19 peer reviewed journal papers). He subsequently received a Natural Sciences and Engineering Research Council of Canada (NSERC) Postdoctoral Fellowship to continue his research at the University of Toronto, focusing on activated carbon adsorption for removal of cyanobacterial and algal taste and odour compounds. These experiences led to his employment in Australia to conduct leading research on detection and removal of cyanobacteria and their associated harmful metabolites on a project funded by the Australian Research Council, in partnership with utilities representing 70% of the Australian population.

Dr. Craig Adams will serve as a co-Principal Investigator for the project. Dr. Adams, P.E., F.ASCE is a professor at Utah State University. Dr. Adams is an international research leader in analysis and control of emerging contaminants including cyanotoxins, pharmaceuticals, endocrine disrupting chemicals, disinfection byproducts, pesticides, and nanoparticles. Recent research has focused extensively on the control of cyanobacteria and cyanotoxins including cell lysing, oxidation kinetics modeling, ELISA-based kinetics, development of guidance documents for utilities and other activities. Dr. Adams has nearly 100 peer review manuscripts in print, and is highly engaged in professional activities including with the American Water Works Association and the International Water Association.

Dr. Ben Stanford will serve a co-Principal Investigator for the project. Dr. Stanford is the Director of Applied Research at Hazen and Sawyer in Raleigh, NC where he manages a portfolio of over two dozen research grants and also leads the company's water reuse practice area. Dr. Stanford earned his Ph.D. in Environmental Sciences and Engineering from the University of North Carolina at Chapel Hill. Dr. Stanford has over 30 peer-reviewed publications, and was awarded the 2012 Publications Award by the American Water Works Association.

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10. Licenses and Inventions

The proposed research is not expected to produce inventions, new products, or new processes. Furthermore, no patents are expected to result from this work.

11. Schedule

The project is expected to have a duration of 24 months. It is anticipated to launch the project around October 2016 after contract and subcontract negotiations are completed. The following table illustrates the research work plan and schedule for preparing and submitting reports. Task 1 will begin upon notification that the project has been awarded. Tasks 2 -4 will begin once enough literature has been gathered and the specific algal strains have been selected. Tasks 3 and 4 are schedule for a duration of 12 months to allow sufficient time to perform experiments with natural bloom samples. In Australia, cyanobacteria blooms typically occur between October and March. Therefore, some work related to Task 4 may begin in late 2016. Task 5 will begin once enough data has been gathered from Tasks 3 and 4 to build a CyanoTOX model component.

Task	Approximate Schedule (months)											
	2	4	6	8	10	12	14	16	18	20	22	24
Task 1 - Literature Review												
Task 2 - Assessment of Lysing Methods												
Task 3 - Oxidation of Lab-Cultured Cells												
Task 4 - Oxidation of Naturally Occurring Cells												
Task 5 - CyanoTOX Model Component												
Reports		QR		QR		QR		QR		QR		FR

QR = Quarterly Report or Web Meeting
FR = Final Report

12. Third Party Contribution Letters of Commitment



14 April 2016

Dr. Eric Wert
Southern Nevada Water Authority
P.O. Box 99955
Las Vegas, NV 89193-9955

RE: Participation in a Water Research Foundation Tailored Collaboration project

Dear Dr. Wert,

The University of New South Wales (UNSW) Water Research Centre (WRC) is pleased to participate in your Tailored Collaboration proposal entitled "Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria."

Dr. Arash Zamyadi, Senior Research Associate at WRC, and WRC have great interest in this topic and we believe the proposed research will provide much needed information regarding the effect of different oxidants on intracellular cyanotoxin release during drinking water treatment. Therefore, Dr. Zamyadi is willing to provide the following information and/or services to the project:

- Participate in project meetings, webinars and conferences.
- Provide water samples from bloom events upon request
- Conduct oxidation experiments on bloom samples
- Review and provide comment on the bench-scale testing protocol
- Provide case-study information including full-scale plant performance data and corresponding water quality information during bloom events.

Dr. Zamyadi will provide these services as a Co-Principal Investigator for the agreed-to cash remuneration of \$35,000 USD. Additional services will be provided as an in kind contribution of \$3,000. We know the proposed research will contribute significantly to the drinking water industry, and look forward to working with you on this important project.

If you or the Water Research Foundation has any questions regarding our role and involvement in the project, please contact us.

Respectfully,

A handwritten signature in black ink, appearing to read "R. Stuetz".

Richard Stuetz,
Professor and Director,
E: s.stuetz@unsw.edu.au

water@
UNSW

water research centre

UNSW WATER RESEARCH CENTRE
UNSW AUSTRALIA | UNSW SYDNEY NSW 2052 AUSTRALIA
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May 13, 2016

Dr. Eric Wert
Southern Nevada Water Authority
P.O. Box 99955
Las Vegas, NV 89193-9955

RE: Participation in a Water Research Foundation Tailored Collaboration project

Dear Dr. Wert,

Utah State University is pleased to participate in your Tailored Collaboration proposal entitled "Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria."

Utah State University has great interest in this topic and we believe the proposed research will provide much needed information regarding the effect of different oxidants on intracellular cyanotoxin release during drinking water treatment. We know the proposed research will contribute significantly to the drinking water industry, and look forward to working with you on this important project.

Dr. Craig Adams will serve as a Co-Principal Investigator for the agreed-to cash remuneration of \$20,000, which will support Task 5 (Development of a CyanoTOX Model Component for Intracellular Release)." If you or the Water Research Foundation has any questions regarding our role and involvement in the project, please contact us.

Sincerely,

A handwritten signature in black ink that reads "Craig D. Adams". The signature is written in a cursive style.

Craig D. Adams, Ph.D., P.E.
Professor, Civil and Environmental Engineering, USU



Hazen and Sawyer
498 Seventh Avenue, 11th Floor
New York, NY 10018 • 212.539.7000

April 13, 2016

Dr. Eric Wert
Southern Nevada Water Authority
P.O. Box 99955
Las Vegas, NV 89193-9955

Re: Participation in a Water Research Foundation Tailored Collaboration Project

Dear Dr. Wert:

Hazen and Sawyer is pleased to participate in your Tailored Collaboration proposal entitled "Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria."

Hazen and Sawyer has great interest in this topic and we believe the proposed research will provide much needed information regarding the effect of different oxidants on intracellular cyanotoxin release during drinking water treatment. Furthermore, with our extensive client network and our previous experience in developing the Hazen-Adams CyanoTOX model, we believe that we can add significant value to the research team and to the Foundation's subscribers. We know the proposed research will contribute significantly to the drinking water industry, and look forward to working with you on this important project.

As such, Dr. Ben Stanford will serve as a Co-Principal Investigator on the project with an agreed cash remuneration of \$20,000, which will support Tasks 1 (Literature Review) and Task 5 (Development of a CyanoTOX Model Component for Intracellular Release), along with providing QA/QC and experimental design input on other tasks. If you or the Water Research Foundation has any questions regarding our role and involvement in the project, please contact us.

Very truly yours,

Benjamin D. Stanford, Ph.D.
Director of Applied Research



Manatee County
Water Treatment Plant
17915 Waterline Road
Bradenton, FL 34212
Phone: (941) 746-3020
www.manatee.org

April 13, 2016

Dr. Eric Wert
Southern Nevada Water Authority
P.O. Box 99955
Las Vegas, NV 89193-9955

RE: Participation in a Water Research Foundation Tailored Collaboration project

Dear Dr. Wert,

The Manatee County Water Treatment Plant is pleased to participate in your Tailored Collaboration proposal entitled "Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria."

Manatee County has great interest in this topic and we believe the proposed research will provide much needed information regarding the effect of different oxidants on intracellular cyanotoxin release during drinking water treatment. Therefore, Manatee County is willing to provide the following information and/or services to the project:

- Provide water samples from potential bloom events upon request
- Review and provide comment on the bench-scale testing protocol
- Provide case-study information including full-scale plant performance data and corresponding water quality information during bloom events.

Manatee County will contribute these services as an in-kind contribution valued at \$2,000. We know the proposed research will contribute significantly to the drinking water industry, and look forward to working with you on this important project.

If you or the Water Research Foundation has any questions regarding our role and involvement in the project, please contact us.

Respectfully,

Katie Gilmore
Water Treatment Plant Superintendent
17915 Waterline Rd Bradenton, FL 34212
(941)746-3020 x222
katherine.gilmore@mymanatee.org

14. Budget Form

**Water Research Foundation
Research Project Budget**

Sub-recipient (organization name): Southern Nevada Water Authority
 PI Name: Dr. Eric Wert, P.E.
 Project Title: Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanob
 Preparation/Revision Date: 1/0/1900
 RFP # (if applicable): RFP #

OK
OK

Note: All amounts below will be automatically populated from the following pages/worksheets.

	Total	Award	Cost Share
A Key Personnel	25,561	15,561	10,000
B Other Personnel	99,439	97,439	2,000
Total Direct Labor and Fringe Benefits			
	125,000	113,000	12,000
C Equipment Rental	0	0	0
Special Equipment	0	0	0
D Materials and Supplies	47,000	2,000	45,000
E Travel	10,000	10,000	0
F Subcontracts	75,000	75,000	0
G Other Direct Costs	0	0	0
Total Direct Costs			
	257,000	200,000	57,000
H Indirect Costs	0	0	0
I Fee	0	0	0
J Surveys	0	0	0
Total Direct and Indirect Costs			
	257,000	200,000	57,000
Third-Party Non-Cash In Kind	5,000	n/a	n/a
Total Project Value			
	262,000		

**Water Research Foundation
Research Project Budget**

Sub-recipient (organization name): Southern Nevada Water Authority
 PI Name: Dr. Eric Wert, P.E.
 Project Title: Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria
 Preparation/Revision Date: Preparation/Revision Date
 RFP # (if applicable): RFP #

C. Equipment Rental and Special Equipment Purchase

Equipment Rental (List items and dollar amount for each item exceeding \$1,000)	Total	Award	Cost Share
			0
			0
			0
			0
			0
			0
Total Equipment Rental	0		0

Special Equipment Purchase (List items and dollar amount for each item exceeding \$5,000)	Total	Award	Cost Share
			0
			0
			0
			0
			0
			0
Total Special Equipment Purchase	0		0

15. Budget Narrative

The total project budget is \$262,000, which is comprised of the Foundation Share of \$200,000 and Third Party Contributions of \$62,000. The Southern Nevada Water Authority will provide a co-funding cash contribution of \$100,000 to be matched with a Water Research Foundation funds totaling \$100,000. Third Party contributions include in kind contributions of \$57,000 from the Southern Nevada Water Authority. SNWA is proposing to complete this project in 24 months. We estimate that approximately \$150,000 of the Foundation Share will be spent in the 12 months of the project, and the remaining \$50,000 spent in the final 6 months.

SNWA's total direct labor is \$125,000, which includes \$113,000 from the Foundation Share and \$12,000 as an in kind contribution. The labor cost includes 300 hours of Eric Wert's (Principal Investigator) time at a total cost of \$25,561. Dr. Wert will devote 7% of his time over the course of the 24 month project duration to planning and directing research activities, monitoring the project budget, and preparing project reports for submission to the Foundation. Additional SNWA labor costs include a total of 3,181 hours for other personnel including a post doctoral researcher (1035 hours to assist with performing experiments and developing reports), an intern (1946 hours to assist with algae culturing, performing experiments and FlowCAM[®] operation), and a research chemist (200 hours to perform cyanotoxin analyses). SNWA's budget also includes \$2,000 for materials to support algae culturing and water quality analyses. Travel costs include \$10,000 to support travel to four conferences or team meetings. Travel costs were estimated based upon \$2,500 per conference (\$400 for airfare, \$800 conference registration, \$800 for 4 nights in a hotel room, and \$500 for meals, parking and ground transportation).

The budget of \$20,000 to Hazen and Sawyer includes salary for co-PI Stanford along with support staff including Elisa Arevalo, Allison Reinert, and Erik Rosenfeldt. The budget includes a fringe benefits and overhead multiplier of 186.4% on direct labor costs, and includes \$1000 for travel to SNWA for team meetings. Any conference travel will be provided as in-kind. Dr. Stanford will be involved in all Tasks including: conducting the literature review (Task 1); input into the experimental design and analysis of results for Tasks 2, 3 and 4; assisting Dr. Adams in developing kinetic models and specifically programming the lysing module for CyanoTOX (Ver. 2.0); and writing of the final report.

The budget of \$20,000 to USU includes salary for the co-PI Adams, fringe (44%), indirect (43%), and includes \$1000 for travel to SNWA for experiments and meetings, and possibly conference travel to present project results. Dr. Adams will be involved in all Tasks including: conducting the literature review (Task 1); experimental design and analysis of results for Tasks 2, 3 and 4; developing kinetic models and specifically the lysing module for CyanoTOX (Ver. 2.0); and writing of the final report.

The budget also includes a subcontract in Australia with a total cost of US \$35,000. The University of New South Wales, Sydney, Australia subcontract budget includes labor for co-Principal Investigator Dr. Arash Zamyadi (30% of his time during natural bloom sampling in Australia corresponding to Task 4). It also covers materials needed to perform oxidation experiments (Subtask 4.3), cyanotoxins analysis, organic matter characterization, travel cost to collect natural bloom samples in Australia, and travel costs to USA to support attendance at a project meeting.

16. Communication Plan

Target Audiences

The primary audiences for this research project are drinking water utilities that use ozone as a preoxidant. In addition, other utilities that are concerned about algae in their source water supply and corresponding formation of both chlorinated and nitrogenous DBPs will also find these results to be beneficial.

External Communication

The outreach options to be used for this research project include print media such as the WaterRF final report and peer-reviewed archival journal articles, as well as trade journal manuscripts. These publications will allow the results to reach both national and international audiences. In addition to print media, the research project title, sponsor, and major themes will be highlighted on individual investigators professional web pages. With the support of the Foundation, the researchers are also interested in presenting web casts on the project findings, if there was deemed to be a broad enough audience of interest.

In addition to the printed and web based media, the investigators plan on presenting the findings of the research in conference venues, such as AWWA annual and specialty conference, International Water Association (IWA) conferences, and conferences of the International Ozone Association (IOA). The research findings will also likely make up part of talks the PIs give as invited speakers to universities and industry.

Internal Communication

The project team will have regular conference calls and conduct video conferencing for key project meetings. Also, the project team proposes to have conference calls with the WRF project manager and PAC every six months to facilitate obtaining feedback. We have found from past projects that this keeps the PAC more engaged as they may not always read the reports or provide feedback.

MEMORANDUM

TO: Tailored Collaboration Review Committee

FROM: Mike Dirks, Water Research Foundation and the Project Advisory Committee (Barry Rosen, USGS; Sarah Page, Arcadis; and Zaid Chowdhury, Garver USA)

DATE: May 19th, 2016

SUBJECT: Review and Funding Recommendation for the Full Tailored Collaboration (TC) Proposal TC-16-006-7, "Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria."

Dear Board Members,

The recommendation to fund this work is summarized from email and conference call correspondence between the project advisory committee and WRF staff.

The Project Advisory Committee (PAC) recommends that this project be funded. The research proposed has implications, upon successful results, that can have direct applications to other drinking water facilities. This proposal is ambitious, very focused, well defined, and thoroughly planned. The investigative team has very strong skills and will fully be able to carry out the proposal.

This recommendation is made following detailed proposal review. A series of questions and concerns were raised by the PAC following proposal review, and the research team provided clarification and appropriate assurances to the PAC to respond adapt and incorporate suggestions throughout the project, upon the Board's decision. Upon consideration of the entire package of materials (proposal, comments, and responses) we feel that this project would be useful to the water community.

Attachments:

Full Proposal

Comments document (May 17th)

SNWA Responses to Comments (May 18th)

Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria

Preliminary discussion with the project advisory committee members and WRF staff.

Djanette Khiari and Mike Dirks, Water Research Foundation and the Project Advisory Committee (Barry Rosen, USGS; Sarah Page, Arcadis; and Zaid Chowdhury, Garver USA)

1. Page 10, Subtask 3.3: Effect of Growth Phase on Cyanotoxin Release

How will the investigator attribute the bloom resource limiting resources and nutrients from the field samples?

2. Page 12: Figure 4.

Indicates the unicellular model, how will the investigators account for the mucilage protective coats surrounding microcystis cell colonies from field samples? This variable can complicate extrapolating treatments conducted on laboratory cultures to replicating the results on colonies from natural waters.

Recommendation: need a freshly isolated culture with the colonies intact, clumped and grown as in the natural environment. Can the researcher, if provided a natural water sample, replicate the experiment on a natural sample bloom. Diluted to the same level of the lab samples and measured on chlorophyll or another proxy. Capture treating different biomass with different oxidation levels.

Recommendation: Extracellular polymeric substances, avoiding the issues. Natural variation in the sugar composition. That sugar will interfere with oxidation processes, address in future studies if not in this study.

3. Subtask 3.1 (page 13)

Consider verifying the flow cam. The investigators can accomplish verification of cell condition from the Flow Cam by directly visualizing subsets of the samples from all treatment categories in both the laboratory and the field samples. Dyes used in direct visualization through microscopy (and cell counting) can indicate whether the condition of the cells has been compromised and the cell membranes have been damaged or "lysed."

Recommendations: Epifluorescent microscope suggested (Zenon light source, filters with excitement measures and screens) watch the degradation happen under the light microscope.

4. Figure 1a and Figure 1b

Reduced oxidation efficiency is displayed in the two figures. Reduced oxidation efficiency is attributed to presence of multiple unicellular species, water organic matter concentrations and the combination of these two suggested limitations. Could it be that a mixture of unicellular species promotes health and resilience of the cells? Could this also explain the differences in oxidation efficiencies within a single-culture and a mixed species population?

5. Subtask 4.2

How can the investigators address variability between natural water samples compared from the U.S and the Australian bloom events? The responsiveness of the species/mixture to oxidation treatments in the experiments described could be influenced by species present, background water quality, bloom growth phase. Are these elements adequately controlled for or accounted for? Can the treatments be replicated or repeated to improve the demonstration? Or would a larger emphasis on more natural water samples be needed?

Recommendation: Natural water is what is most applicable to utilities and to the experiments. Maybe three samples wouldn't achieve an adequate extrapolation to build into the cyanotox model. The variability in natural waters is what needs to be included in the model design. It will quantify good parameters for conditions and levels of toxins, using natural waters as much

1. Page 9 of 70, last paragraph:

CyanoTOX needs to be explained, or at least mention that it is an AWWA software with a publication date.

2. Page 10 of 70, 2nd line:

I am not sure we can say that increased nutrient loading is related to climate change. It's happening due to population growth and inadequate wastewater treatment, while climate change may be exacerbating the algal blooms.

3. Page 10 of 70, first paragraph:

We need to fully understand if this project is advancing the science beyond WRF 4406. For example, if WRF 4406 showed that toxins are not released at the higher doses, do we need to study if these will be released at lower doses?

4. Page 10 of 70, second paragraph:

Is this project going to provide guidance to include a module on CyanoTOX or incorporate a new module to the CyanoTOX tool as mentioned in the abstract?

5. Page 11 of 70, 2nd paragraph:

Aren't these cyanotoxins also included in CCL4? I believe they are. Why not mention CCL4?

6. Page 13 of 70, Figure 1:

Are other water quality conditions (e.g., alkalinity, pH, TOC, and other radical scavengers) similar in both set of experiments? If not, the comparison is not entirely valid.

7. Page 16 of 70, Task 1:

I think this task is largely done as demonstrated by the table shown on page 11. I think the researcher need to justify why a new literature review is necessary by possibly listing the publications that came out after the previous (AWWA and WRF 4406) projects are completed. If there are already some published paper on literature review, they will have a hard time publishing a paper in the journal.

8. Page 16 of 70, Task 2:

It is a good idea to try to do mass balance calculation; however, I think it will be very tough to close on the mass balance at these very low (ng/L) concentration. Do the researcher feel confident that they can do mass balance?

9. Page 17 and 18 of 70, Task 3:

There is no mention of other water quality conditions during these experiments. Other water quality conditions dictating the relative abundance of various oxidant species (radical versus molecular) should be a very important determinant particularly when it comes to ozonation. Water quality conditions (particularly pH) is also very important during chlorination. I think independent variables (such as water quality conditions) need to be incorporated in the experimental matrix.

10. Page 18 of 70, Task 3.2: In addition to the toxin and cell concentration, the residual oxidant concentration also should be measured.

11. Page 18 of 70, Task 4, 1st paragraph:

In the event of not getting a naturally occurring toxic algae bloom, can the researchers utilize laboratory grown toxic algae spiked in to natural waters?

Recommendation: as an alternative, not necessarily a compromise to reconcile other water quality conditions. This was possible with the SNWA samples in USGS lab, they sterile filtered the natural water, spike with lab cultures and then compare the two results.

Recommendation: focus on more natural occurring blooms.

If not, focus on natural waters sterile filtered and spike.

Then focus on the laboratory cultures.

Get better blooms, then use laboratory blooms in natural waters,

The model is an afterthought, but not necessarily a useful result to represent other conditions. Consider using the resources for the model to invest in the strategy for experimenting on the natural waters and natural blooms. WITAF?

Task 3 and 4 are the heart. Task 3 is very important to do in a natural water matrix. Deemphasize task1, and deemphasize task 5 (by developing a scenario that can be used in the model.

Response:

Some operational guidance on cell degradation, they may have some results to conceptual model and not oxidant to DOC ratios or CT values, to assess whether not all of the intracellular.



SOUTHERN NEVADA WATER AUTHORITY

SOUTHERN NEVADA WATER SYSTEM
River Mountains Water Treatment Facility
1299 Burkholder Boulevard • Henderson, NV 89015
MAILING ADDRESS: P.O. Box 99954 • Las Vegas, NV 89193-9954
(702) 856-3500 • snwa.com

May 18, 2016

Michael Dirks
Regional Liason
Water Research Foundation
6666 West Quincy Avenue
Denver, Colorado 80235-3098

RE: Water Research Foundation Tailored Collaboration Proposal "Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria" (TC-16-006)

Dear Mike:

On behalf of the project team, we would like to thank the Technical Review Committee (TRC) for providing feedback on our proposal. Our responses to the comments are included below:

- 1) Throughout the project, the investigative team should emphasize eliminating comparisons from culture media and natural waters. Use natural waters to run the experiments on the lab cultured cells.
Response: In Task 3, we do not plan to perform oxidation experiments in the culture media. Cells will be removed from the culture media, rinsed, characterized, and then added to natural waters to complete the testing. The procedure will be similar to that used during previous work by the project team during WRF Project #4406.
- 2) The investigative team should prioritize resources to collect as many natural bloom event samples for the oxidation experiments as possible. This appears to be the heart of the project.
Response: Since proposal submission, an additional letter of support was provided from Lake Havasu City (attached). The project team will continue to work with utilities to obtain samples from naturally occurring sources that may be used to meet project goals. Depending on the frequency and availability of natural blooms samples, emphasis will be placed on Task 4 (oxidation of natural cells) versus Task 3 (oxidation of cultured cells).
- 3) The effort in adding results to a model component suggested in Task 5 is interesting. However, this effort might take away important resources needed for items 1) conducting experiments in natural waters and 2) obtaining as many natural bloom events as possible for experiments.
Response: Tasks 3 and 4 will be the primary focus areas for the project. At a minimum, the conceptual level model identified in Figure 5 of the proposal will be expanded upon to improve operational guidance (i.e. oxidant:DOC ratios, oxidant exposure or CT values) regarding conditions favorable for intracellular cyanotoxin release and continued cell degradation.

We hope that the Foundation views this proposal favorably and look forward to the opportunity to working with you and the TRC on this interesting and exciting project.

Please contact me if you have further questions or comments.

Respectfully,

Eric C. Wert, Ph.D., P.E.
Project Manager – Applied Water Quality Research
Southern Nevada Water Authority
P.O. Box 99954
Las Vegas, NV 89193-9954
702.856.3669
702.856.3647 Fax
eric.wert@snwa.com

SNWA MEMBER AGENCIES

Big Spring Water District • Boulder City • Clark County Water Reclamation District • City of Henderson • City of Las Vegas • City of North Las Vegas • Las Vegas Valley Water District

Title: Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria

<u>TASK</u>	<u>DUE DATE (1st or 15th Month)</u>
Project Start	October 1, 2016
Scope of Work	November 1, 2016
Proof of Insurance (Ref. IX.F)	November 1, 2016
Notification of Subcontractor(s) Agreement(s) executed (Ref. IX.K.4)	December 1, 2016
Periodic Report 1 – electronic copy & Invoice (Periodic Reports-Ref. II.A.1, Invoices – Ref. III.B)	January 1, 2017
Periodic Report 2 (incl. Technical Summary & Web Update) - electronic copy & Invoice	April 1, 2017
Periodic Report 3 – electronic copy & Invoice	July 1, 2017
Periodic Report 4 (incl. Technical Summary & Web Update) – electronic copy & Invoice	October 1, 2017
Periodic Report 5 – electronic copy & Invoice	January 1, 2018
Periodic Report 6 (incl. Technical Summary & Web Update) – electronic copy & Invoice	April 1, 2018
Draft Report – electronic copy & Invoice	July 1, 2018
Final Report – electronic copy	December 1, 2018
Letters of Confirmation from participating utilities	December 1, 2018
Exhibit E - Assignment of Copyright (Ref. III.3.b)	December 1, 2018
Final Invoice & Final Compensation	December 1, 2018
Project End & Foundation Publication Date (Ref. VI.C)	July 1, 2019

Note: Please submit one electronic copy of each Periodic Report and Draft Report. Submit the Final Report in electronic copy in *MSWord format*. For each report an invoice shall be submitted for payment using Exhibit D – printed on your company letterhead. **All Reports and Invoices should be sent to the Research Manager and Project Coordinator identified in Exhibit B WRF Key Contacts.**

WRF Key Contacts:

Project Management

- Djanette Khiari, Research Manager, Water Research Foundation, 6666 W. Quincy Ave., Denver, CO 80235, Phone: 303.734.3478, and Email: dkhiari@WaterRF.org.

Contract Administration

- Peggy Falor, Manager Contracts and Project Administration, Water Research Foundation, 6666 W. Quincy Ave., Denver, CO 80235, Phone: 303.734.3424, and Email: pfalor@WaterRF.org.
- Valerie Roundy, Project Coordinator, Water Research Foundation, 6666 W. Quincy Ave., Denver, CO 80235, Phone: 303.347.6124, and Email: vroundy@WaterRF.org.
- Lisa Rather, Contract Administrative Assistant, Water Research Foundation, 6666 W. Quincy Ave., Denver, CO 80235, Phone: 303.347.6211, and Email: lrather@WaterRF.org.

Authority / Sponsor Key Contacts:

Principal Investigator

- Eric Wert, Project Manager, Southern Nevada Water Authority, PO Box 99954, Las Vegas, NV 89193, Phone: 702.856.3669, and Email: eric.wert@snwa.com.

Authorized Representative and Contact for contract (legal matters) for your organization including contract negotiations.

- John J. Entsminger, General Manager, Las Vegas Valley Water District, 1001 S. Valley View Road, Las Vegas, NV 89153, Phone: 702.258.3104, and Email: john.entsminger@lvvwd.com.

Accounting Contact (Project Funds disbursements will be mailed to the care of this contact)

- Jennifer Fuel, Southern Nevada Water Authority, 1299 Burkholder Blvd., Henderson, NV 89015, Phone: 702.856.3665, and Email: jennifer.fuel@snwa.com.

Co-Principal Investigator:

- Craig Adams, Professor, Department of Civil and Environmental Engineering, Utah State University, ENGLAB 268 – 410 Old Main Hill, Logan, UT 84322, Phone: 435.797.9115, and Email: craig.adams@usu.edu.
- Ben Stanford, Director of Applied Research, Hazen and Sawyer, 4011 Westchase Blvd., Suite 500, Raleigh, NC 27607, Phone: 919.863.1027, and Email: bstanford@hazenandsawyer.com.
- Arash Zamyadi, Senior Research Associate, University of New South Wales, UNSW Sydney NSW 2052 Australia, +61 (2) 9385 5947, and Email: a.zamyadi@unsw.edu.au.

Each Party shall provide written notice of changes in contact persons, addresses, telephone, fax, and email addresses. The Principal Investigator, Co-Principal Investigator, or any Subcontractor may only be changed with the prior written approval of the Foundation.

BUDGET SUMMARY

**Exhibit C
Project 04692**

Authority: Southern Nevada Water Authority
1229 Burkholder Boulevard
Henderson, NV 89015

Title: Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria

Neither WRF nor the Co-funders shall have any obligation for payment of invoices for costs incurred by the Authority after the foregoing end date.

Payments to the Authority will be issued to the Authority organization and mailed to the address shown in the first paragraph and shown above of this funding agreement unless otherwise noted below:

• Jennifer Fuel, Southern Nevada Water Authority, 1299 Burkholder Blvd.,
Henderson, NV 89015, Phone: 702.856.3665, and Email: jennifer.fuel@snwa.com.

Project Start Date 10/01/2016

End Date: 07/01/2019

Financial obligations for this PFA are:

- | | |
|--|--------------|
| a. WRF agrees to provide Award Funds: | \$100,000.00 |
| b. Authority agrees to provide Cost Share: | \$57,000.00 |
| c. Authority agrees to provide in-kind: | \$5,000.00 |
| d. Co-funder(s) agree to provide to WRF: | \$100,000.00 |
| e. Total Project budget is: | \$262,000.00 |

All amounts are in U.S. dollars.

ORGANIZATION	Award Amount	Cost Share	In-Kind Amount
Sponsor/ Co-funder			
Southern Nevada Water Authority	\$100,000.00	\$57,000.00	\$0.00
Participants			
Manatee County Utility Operations	\$0.00	\$0.00	\$2,000.00
University of New South Wales	\$0.00	\$0.00	\$3,000.00
Co-Principal Investigators			
Utah State University	\$0.00	\$0.00	\$0.00
Manatee County Utility Operations	\$0.00	\$0.00	\$0.00
Water Research Foundation	\$100,000.00	\$0.00	\$0.00

Exhibit C
Project 04692
Exhibit C
Continued

	Award Amount	Cost Amount	In-Kind Amount
TOTALS	\$200,000.00	\$57,000.00	\$5,000.00
Total Project Budget	\$262,000.00		

Award Funds Not to Exceed: \$200,000.00
 10% of Project Funds Advance: \$20,000.00
 (Ref. III.B.3.a)
 Draft Report & Invoice Retainage: \$20,000.00
 (Ref. III.B.3.b):
 Final Report & Invoice Retainage: \$20,000.00
 (Ref. III.B.3.b).

Title: Release of Intracellular Cyanotoxins during Oxidation of Naturally Occurring and Lab Cultured Cyanobacteria

Exhibit D – Invoice Form

For access to the Water Research Foundation website please see:

<http://www.waterrf.org>

To download Exhibit D – Invoice Form please see WRF's website:

http://www.waterrf.org/funding/ContractMaterials/Invoice_ExhibitD.pdf

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM
September 15, 2016

Subject: Agreement	Director's Backup
Petitioner: David L. Johnson, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors approve and authorize the General Manager to sign a joint funding agreement between the U.S. Geological Survey and the Authority for hydrologic data collection in an amount not to exceed \$224,970.	

Fiscal Impact:

The requested \$224,970 is available in the Authority's Operating Budget.

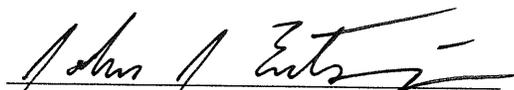
Background:

Since 2002, the Authority has participated in a cooperative program with the U.S. Geological Survey (USGS) to operate and maintain stream gages and perform water quality analyses. If approved, this agreement provides for joint funding from the USGS and the Authority for the ongoing monitoring, operation, and maintenance of 16 stream gages on the Las Vegas Wash and the Virgin and Muddy rivers. This agreement also provides for Authority funding to install, monitor, operate, and maintain one additional stream gage, if needed, on either the Virgin River or Muddy River to support the Authority's water rights. These gages are critical for quantifying water resources relied upon by the Authority. Water quality sample collection and analyses at two stream gage stations would also be funded under this agreement.

The total cost to operate and maintain the stream gages and perform water quality analyses is \$340,320 for the period from October 1, 2016, through September 30, 2017. If approved, the Authority will contribute \$224,970 and the USGS will fund the remaining \$115,350.

This agreement is being entered into pursuant to NRS 277.180 and Section 6(j) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the agreement.

Respectfully submitted:


John J. Entsminger, General Manager
JJE:DLJ:ZLM:AB:JJ:lmv:nsh
Attachments

AGENDA ITEM #	7
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Form 9-1366
(April 2015)

**U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

JOINT FUNDING AGREEMENT

Customer #: 6000000359
 Agreement #: 17WSNV00103
 Project #: ZJ00AA7
 TIN #: 88-0278492
 Fixed Cost Agreement YES

FOR
WATER RESOURCES INVESTIGATIONS

THIS AGREEMENT is entered into as of the, 1st day of October, 2016 by the U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the SOUTHERN NEVADA WATER AUTHORITY, party of the second part.

1. The parties hereto agree that subject to availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation a Surface-water (SW) and water quality (QW) monitoring program as described in Endlosures 1-3 attached hereto herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50; and 43 USC 50b.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) includes In-Kind Services in the amount of \$0.00
 - (a) by the party of the first part during the period

Amount	Date	to	Date
\$115,350.00	October 1, 2016		September 30, 2017

 - (b) by the party of the second part during the period

Amount	Date	to	Date
\$224,970.00	October 1, 2016		September 30, 2017

 - (c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of:

 Description of the USGS regional/national program:

 - (d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
 - (e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.
4. The party of the first part, or its duly authorized representative(s) will conduct, supervise, and periodically review all field and analytical work to be completed pertaining to this program.
5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.
6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

9-1366 (Continuation)

Customer #:

600000359

Agreement #:

17WSNV00103

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.
8. The maps, records, or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records, or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program and, if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at costs, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records, or reports published by either party shall contain a statement of the cooperative relations between the parties.
9. USGS will issue billings utilizing Department of the Interior Bill for Collection (form DI-1040). Billing documents are to be rendered QUARTERLY. Payments of bills are due within 60 days after the billing date.

U.S. Geological Survey
United States
Department of the Interior

Southern Nevada
Water Authority

USGS Point of Contact

Customer Point of Contact

Name: Steven N. Berris
Address: 2730 N. Deer Run Road
Carson City, NV 89701
Telephone: 775-887-7693
Email: snberris@usgs.gov

Name: Jeff Johnson
Address: P.O. Box 99956
Las Vegas, NV 89193-9956
Telephone: 702-875-7080
Email: jeff.johnson@snwa.com

Signatures and Date

Signature: _____ Date: _____ Signature: _____ Date: _____

David L. Berger 8/4/2016

Name: David L. Berger
Title: Director

Name: John J. Entsminger
Title: General Manager

Signature: _____ Date: _____ Signature: _____ Date: _____

Dana Wash 8-16-16

Name: _____ Title: _____
Name: Southern Nevada Water Authority
Title: Approved as to form:

Summary of Cooperative Surface-Water Program for Fiscal Year 2017

Program Elements

A. Operation & Maintenance of Streamflow Sites

The work-plan calls for site operation and maintenance of 17 surface-water gaging stations monitored during the time period from October 1, 2016 through September 30, 2017. One gaging station, Las Vegas Wasteway near East Las Vegas, has been temporarily discontinued during channel construction, but is expected to be re-installed in January 2017.

The operation & maintenance (O&M) costs include:

1. Maintaining the stream-gaging equipment.
2. Making scheduled water discharge measurements. Sites are generally visited on a 6-week basis, but may require more frequent visits as conditions warrant.
3. Reduction and analysis of stage data.
4. Verification and development of stage/discharge relationships (ratings).
5. Computation of daily streamflow, and data publication costs.
6. Real-time (updated every hour) provisional data from sites will be available on NWISWeb at <http://waterdata.usgs.gov/nv/nwis/rt>.
7. All data will be compiled, reviewed, quality-assured, finalized and disseminated throughout the year and annually as water year summaries on NWISWeb.

Total costs include supplemental tasks for four gaging stations to increase the timeliness and accuracy of the streamflow records. For the three gages: (1) Las Vegas Wash at Pabco Rd. nr Henderson, (2) Las Vegas Wash below Lake Las Vegas and (3) Muddy River near Glendale, at least 12 site visits and streamflow measurements will be made and provisional streamflow records will be computed and reported on a monthly interval and finalized in July and January. The gaging station Las Vegas Wasteway near East Las Vegas is expected to be re-installed in January 2017. When the gage is re-installed, monthly streamflow measurements will be made and provisional streamflow records will be computed and reported on a monthly interval, and finalized in July 2017.

Operation of Surface-Water Gaging Stations at:

<u>Site Name</u>	<u>Type</u>	<u>DCP</u>
1. Muddy Spring at L.D.S. Farm near Moapa, NV	Spring	Yes
2. Pederson Spring near Moapa, NV	Spring	Yes
3. Warm Springs West near Moapa, NV	Stream	Yes
4. Pederson East Spring nr Moapa, NV	Spring	Yes
5. Warm Springs Confluence at Iverson Flume nr Moapa, NV	Stream	Yes
6. Virgin River at the Narrows, near Littlefield, AZ	River	Yes
7. Beaver Dam Wash near Beaver Dam, AZ	Stream	Yes
8. Muddy River at Lewis Avenue near Moapa, NV	River	Yes
9. Virgin River at Littlefield, AZ	River	Yes
10. Las Vegas Wasteway near East Las Vegas, NV (Temporarily discontinued during wasteway construction. To be re-installed in January 2017.)	Stream	Yes
11. Las Vegas Wash at Pabco Rd. near Henderson, NV	Stream	Yes
12. Duck Creek at Broadbent Boulevard at East Las Vegas, NV	Stream	Yes
13. Las Vegas Wash abv 3-Kids Wash blw Henderson, NV	Stream	Yes
14. Las Vegas Wash below Lake Las Vegas near Boulder City	Stream	Yes

15. Mesquite Canal blw Mesquite, NV	Irrigation	Yes
16. Virgin River above Lake Mead near Overton, NV	River	Yes
17. Potential new Muddy or Virgin River station	Stream	Yes

B. Installation, Operation and Maintenance of One New Surface-Water Site

The work-plan includes the installation of one DCP (Data Collection Platform) stream gaging station on the Muddy or Virgin River. Installation will include gage house, outside staff, reference marks, and the equipment will include a data logger, DCP, solar panel, antenna, battery, etc. Data will be transmitted to a satellite and will be available on the Web shortly after transmission. Cost for O&M for the station is based on a December installation.

Cost Structure for Program Elements A and B:

<i>Number</i>	<i>USGS Station No.</i>	<i>USGS Station Name</i>	<i>AUTHORITY Funds</i>	<i>USGS Funds</i>	<i>Total Funds</i>
<u>Program Element A.</u>					
1	NV00100	Muddy Spring at L.D.S. Farm near Moapa	\$11,040	\$6,915	\$17,955
2	NV00100	Pederson Spring near Moapa	\$11,040	\$6,915	\$17,955
3	NV00100	Warm Springs West near Moapa	\$11,040	\$6,915	\$17,955
4	NV00100	Pederson East Spring near Moapa	\$11,040	\$6,915	\$17,955
5	NV00100	Iverson Flume	\$11,040	\$6,915	\$17,955
6	NV00100	Virgin River at the Narrows	\$11,040	\$6,915	\$17,955
7	NV00100	Beaver Dam Wash near Beaver Dam	\$11,040	\$6,915	\$17,955
8	NV00100	Muddy River near Lewis Avenue	\$11,040	\$6,915	\$17,955
9	NV00100	Virgin River at Littlefield, AZ	\$11,040	\$6,915	\$17,955
10	NV00100	Las Vegas Wasteway near East Las Vegas, NV (Temporarily discontinued during construction. To be re-installed in January 2017.)	\$ 8,340	\$5,190	\$13,530
11	NV00100	Las Vegas Wash at Pabco Road nr Henderson, NV	\$11,040	\$6,915	\$17,955
12	NV00100	Duck Creek at Broadbent Blvd. at East Las Vegas	\$11,040	\$6,915	\$17,955
13	NV00100	Las Vegas Wash at 3-Kids Wash	\$11,040	\$6,915	\$17,955
14	NV00100	Las Vegas Wash below Lake Las Vegas nr Boulder City	\$11,040	\$6,915	\$17,955
15	NV00100	Mesquite Canal nr Mesquite	\$11,040	\$6,915	\$17,955
16	NV00100	Virgin River above Lake Mead near Overton ¹	\$1,380	\$ 865	\$ 2,245
17	NV00100	Las Vegas Wash at Pabco Road nr Henderson, NV (Supplemental tasks: monthly streamflow measurements and monthly computation and reporting provisional streamflow record, and approval and finalization of streamflow records in July and January.)	\$ 3,600	\$ - 0 -	\$ 3,600
18	NV00100	Las Vegas Wasteway nr East Las Vegas, NV (Supplemental tasks: monthly streamflow measurements and monthly computation and reporting provisional streamflow record, and approval and finalization of streamflow records in July.)	\$ 2,700	\$ - 0 -	\$ 2,700

Cost Structure for Program Elements A and B – con't:

<i>Number</i>	<i>USGS Station No.</i>	<i>USGS Station Name</i>	<i>AUTHORITY Funds</i>	<i>USGS Funds</i>	<i>Total Funds</i>
<u>Program Element A con't</u>					
19	NV00100	Las Vegas Wash blw Lake Las Vegas, NV (Supplemental tasks: monthly streamflow measurements and monthly computation and reporting provisional streamflow record, and approval and finalization of streamflow records in July and January.)	\$ 3,600	\$ - 0 -	\$3,600
20	NV00100	Muddy River nr Glendale, NV (Supplemental tasks: monthly streamflow measurements and monthly computation and reporting provisional streamflow record, and approval and finalization of streamflow records in July and January.)	\$ 3,600	\$ - 0 -	\$3,600
Sub-Total			\$177,780	\$102,865	\$280,645
<u>Program Element B</u>					
1	NV00100	Installation of one gaging station on the Virgin or Muddy Rivers	\$ 11,050	\$ - 0 -	\$ 11,050
2	NV00100	O&M for Virgin or Muddy River gaging station for nine months	\$ 16,200	\$ - 0 -	\$16,200
Sub-Total			\$27,250	\$ - 0 -	\$27,250
Total			\$205,030	\$102,865	\$307,895

¹Bureau of Reclamation, Fish and Wildlife Service, National Park Service, and Nevada Division of Wildlife provide a portion of the funding.

Summary of Cooperative Water-Quality Program for Fiscal Year 2017

Program Elements

A. Collection of Water-Quality Parameters from Surface-Water Gaging Stations at:

<u>Site Name</u>	<u>Schedule(s)</u>
1. Virgin River at the Narrows, near Littlefield, AZ	Field parameters
2. Virgin River at Littlefield, AZ	Field Parameters, 997,1201,2003,2060

Note: a complete description of each schedule can be found below.

A1. Water-Quality Sampling at Virgin River at the Narrows, near Littlefield, AZ

Water quality field parameters (temperature, conductance, pH, and dissolved oxygen) will be measured at Virgin River at the Narrows on a quarterly basis throughout the water year.

A2. Water-Quality Sampling at Virgin River at Littlefield, AZ

Water-quality data (temperature, specific conductance, sediment-concentration, and chemical analyses) have been collected at the Virgin River at Littlefield from 1948 to 2016, at quarterly intervals or more frequently under several different USGS programs. Long-term records of water quality, particularly sediment and chemical constituents contributing to salt-loading problems, are important for this site to establish base-line loadings to Lake Mead over a full range of hydrologic conditions. AUTHORITY funds will be matched with available USGS Nevada Water Science Center cooperative federal matching funds to maintain a water-quality record at this important station for the following constituents and indicators:

- Field values
- Physical properties
- Suspended-sediment concentration
- Nutrients (schedule 997 – attached)
- Common and trace inorganic constituents (schedule 1201 - attached)
- Pesticides (schedules 2003 & 2060 – attached)
- Fecal Bacteria counts
- E-coli Bacteria

Sampling will occur, as close as possible, in the last week of the months November, February, May, and August. For continuity, the NASQAN II sampling techniques will be followed, including the use of the Parts Per Billion (PPB) sampling protocol.

Cost Structure for Program Element A:

<i>No.</i>	<i>USGS Project No.</i>	<i>Program Element</i>	<i>AUTHORITY Funds</i>	<i>USGS Funds</i>	<i>Total Funds</i>
<u>Program Element A.</u>					
1	NV00390	Virgin River at the Narrows – Field parameters only	\$ 920	\$ 575	\$ 1,495
2	NV00390	Virgin River at Littlefield, AZ – Water quality	\$19,020	\$11,910	\$30,930
Total			\$19,940	\$12,485	\$32,425

Sample Parameters

NWQL Schedule 997	
Parameter Name	Unit
Inorganic carbon	mg/L
Total carbon	mg/L
Organic carbon	mg/L
Organic carbon	mg/L
nitrogen, ammonia	mg/L
nitrogen, ammonia + organic nitrogen	mg/L
nitrogen, ammonia + organic nitrogen	mg/L
nitrogen, nitrite	mg/L
nitrogen, nitrite + nitrate	mg/L
Total nitrogen	mg/L
Phosphorus	mg/L
phosphorus, phosphate, ortho	mg/L
Phosphorus	mg/L
Ultraviolet absorbing organic constituents - 254 nm	u/cm
Ultraviolet absorbing organic constituents - 280nm	u/cm

NWQL Schedule 1201	
Parameter Name	Unit
Alkalinity, laboratory	mg/L
arsenic	µg/L
boron	µg/L
calcium	mg/L
chloride	mg/L
fluoride	mg/L
ICP Mass Spectrometry (ICPMS) setup	Unspcfd
Inductively coupled plasma (ICP) setup	Unspcfd
iron	µg/L
lithium	µg/L
magnesium	mg/L
pH, laboratory	pH
potassium	mg/L
residue, 180 degrees Celsius	mg/L
selenium	µg/L
silica	mg/L
sodium	mg/L
specific conductance, laboratory	µS/cm
strontium	µg/L
sulfate	mg/L
turbidity	NTRU
vanadium	µg/L

Sample Parameters (cont.)

NWQL Schedule 2003			
Parameter Name	Unit	Parameter Name	Unit
1-Naphthol	µg/L	Desulfinylfipronil	µg/L
2-Chloro-2,6-diethylacetanilide	µg/L	Fipronil	µg/L
2-Ethyl-6-methylaniline	µg/L	Fonofos	µg/L
3,4-Dichloroaniline	µg/L	alpha-HCH-d6	pct
4-Chloro-2-methylphenol	µg/L	Hexazinone	µg/L
Acetochlor	µg/L	Iprodione	µg/L
Alachlor	µg/L	Isofenphos	µg/L
Atrazine	µg/L	Malaoxon	µg/L
Azinphos-methyl	µg/L	Malathion	µg/L
Azinphos-methyl-oxon	µg/L	Metalaxyl	µg/L
Benfluralin	µg/L	Methidathion	µg/L
Carbaryl	µg/L	Parathion-methyl	µg/L
Chlorpyrifos	µg/L	Metolachlor	µg/L
Chlorpyrifos, oxygen analog	µg/L	Metribuzin	µg/L
cis-Permethrin	µg/L	Myclobutanil	µg/L
Cyfluthrin	µg/L	Paraoxon-methyl	µg/L
Cypermethrin	µg/L	Pendimethalin	µg/L
Dacthal	pct	Phorate	µg/L
2-Chloro-4-isopropylamino-6-amino-s-triazine {CIAT}	µg/L	Phorate oxygen analog	µg/L
Diazinon	µg/L	Phosmet	µg/L
Diazinon, oxygen analog	µg/L	Phosmet oxon	µg/L
Diazinon-d10	pct	Prometon	µg/L
Dichlorvos	µg/L	Prometryn	µg/L
Dicrotophos	µg/L	Propyzamide	µg/L
Dieldrin	µg/L	Sample volume	mL
Dimethoate	µg/L	Set number	No.
Ethion	µg/L	Simazine	µg/L
Ethion monoxon	µg/L	Tebuthiuron	µg/L
Fenamiphos	µg/L	Terbufos	µg/L
Fenamiphos sulfone	µg/L	Terbufos oxygen analog sulfone	µg/L
Fenamiphos sulfoxide	µg/L	Terbutylazine	µg/L
Desulfinylfipronil amide	µg/L	Tribufos	µg/L
Fipronil sulfide	µg/L	Trifluralin	µg/L
Fipronil sulfone	µg/L	Paraoxon-methyl	µg/L

Sample Parameters (cont.)

NWQL Schedule 2060			
Parameter Name	Unit	Parameter Name	Unit
2,4,5-T	pct	Dinoseb	ug/L
2,4-D	ug/L	Diphenamid	ug/L
2,4-D methyl ester	ug/L	Diuron	ug/L
2,4-DB	ug/L	Fenuron	ug/L
2-Hydroxy-4-isopropylamino-6-ethylamino-s-triazine {OIET}	ug/L	Flumetsulam	ug/L
3(4-Chlorophenyl)-1-methyl urea	ug/L	Fluometuron	ug/L
Acifluorfen	ug/L	Imazaquin	ug/L
Aldicarb	ug/L	Imazethapyr	ug/L
Aldicarb sulfone	ug/L	Imidacloprid	ug/L
Aldicarb sulfoxide	ug/L	Linuron	ug/L
Chloramben, methyl ester	ug/L	MCPA	ug/L
Atrazine	ug/L	MCPB	ug/L
Barban	pct	Metalaxyl	ug/L
Bendiocarb	ug/L	Methiocarb	ug/L
Benomyl	ug/L	Methomyl	ug/L
Bensulfuron-methyl	ug/L	Metsulfuron methyl	ug/L
Bentazon	ug/L	Neburon	ug/L
Bromacil	ug/L	Nicosulfuron	ug/L
Bromoxynil	ug/L	Norflurazon	ug/L
Caffeine	ug/L	Oryzalin	ug/L
Caffeine-C13	pct	Oxamyl	ug/L
Carbaryl	ug/L	Picloram	ug/L
Carbofuran	ug/L	Propham	ug/L
3-Hydroxycarbofuran	ug/L	Propiconazole	ug/L
Chlorimuron-ethyl	ug/L	Propoxur	ug/L
Clopyralid	ug/L	Sample volume	mL
Cycloate	ug/L	Set number	no.
Dacthal monoacid	ug/L	Siduron	ug/L
2-Chloro-4-isopropylamino-6-amino-s-triazine {CIAT}	ug/L	Sulfometuron-methyl	ug/L
2-Chloro-6-ethylamino-4-amino-s-triazine {CEAT}	ug/L	Tebuthiuron	ug/L
Dicamba	ug/L	Terbacil	ug/L
Dichlorprop	ug/L	Triclopyr	ug/L

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2730 N. Deer Run Road
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Southern Nevada Water Authority
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Executive Contact
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Or
Zane Marshall
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Any updates to contact information can be submitted to Helen Houston at NVFinance@usgs.gov.

**SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS**

AGENDA ITEM

September 15, 2016

Subject: Agreement	Director's Backup
Petitioner: David L. Johnson, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors approve and authorize the General Manager to sign a funding contribution agreement between the Nevada Division of Water Resources and the Authority for surface and groundwater data collection services within Nevada to be performed by the U.S. Geological Survey in an amount not to exceed \$143,245.	

Fiscal Impact:

The requested \$143,245 is available in the Authority's Capital Budget.

Background:

Since 2006, the Authority has participated in a cooperative program with the Nevada Division of Water Resources (NDWR) and the U.S. Geological Survey (USGS) to fund a surface and groundwater monitoring program in southern and eastern Nevada. The total annual cost of the program is \$408,855, of which the USGS and NDWR will collectively contribute \$265,610. If approved, the Authority will contribute the remaining \$143,245.

The program includes two elements:

1. Eastern and southern Nevada Surface Water Data Network (\$93,840) for operating and maintaining stream flow gages and monitoring spring discharge in the Las Vegas Valley and eastern Nevada.
2. Eastern and southern Nevada Groundwater Data Network (\$49,405) for monitoring groundwater in the Las Vegas Valley and regional carbonate-rock province.

If approved, the program provided for in this agreement partially fulfills the Authority's hydrological monitoring requirements associated with groundwater permits issued by the Nevada State Engineer and requirements set forth in the U.S. Department of the Interior and Authority stipulated agreements.

This agreement is being entered into pursuant to NRS Chapter 277.180 and Section 6(j) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the agreement.

Respectfully submitted:


John J. Entsminger, General Manager
JJE:DLJ:ZLM:AB:JPP:GMK:lmv:nsh
Attachments

AGENDA ITEM #	8
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BRIAN SANDOVAL
Governor

STATE OF NEVADA



LEO DROZDOFF
Director

JASON KING, P.E.
State Engineer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

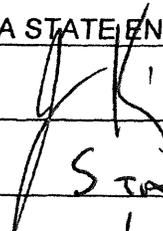
901 South Stewart Street, Suite 2002
Carson City, Nevada 89701-5250
(775) 684-2800 • Fax (775) 684-2811
<http://water.nv.gov>

FUNDING CONTRIBUTION AGREEMENT FOR
HYDROLOGIC STUDIES IN
EASTERN AND SOUTHERN NEVADA

The Southern Nevada Water Authority (SNWA) agrees to contribute funding to the Nevada State Engineer (NSE) for Federal Fiscal Year 2017 for continuation of hydrologic studies in eastern and southern Nevada with work to be performed by the U.S. Geological Survey (USGS).

SNWA agrees to contribute a portion of the total cost of hydrologic work as described in the letter to the NSE dated August 11, 2016 from David L. Berger, Director of the USGS Nevada Water Science Center. It is understood that the total cost of the project for the period October 1, 2016 through September 30, 2017 is \$408,855. SNWA's share is \$143,245, or such lesser amount as determined by reducing SNWA's share by the sum contributed by any other participant from the State of Nevada. The specified amount will be paid to the NSE for use in performing, or having performed said studies, with payments to be made promptly after receipt of the NSE's billing.

The hydrologic work is to be performed as a cooperative effort between the USGS, the NSE and SNWA to further understand the hydrology and water resources of eastern and southern Nevada.

NEVADA STATE ENGINEER	SOUTHERN NEVADA WATER AUTHORITY
BY: 	BY: John J. Entsminger
TITLE: STATE ENGINEER	TITLE: General Manager
DATE: 8/18/16	DATE:

Southern Nevada Water Authority
Approved as to form:
By: Dana Walsh Date: 8-25-16



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
 PACIFIC REGION
 NEVADA WATER SCIENCE CENTER
 2730 N. Deer Run Road
 Carson City, Nevada 89701
 Phone: 775-887-7600; Fax: 775-887-7629
 Website: <http://www.usgs.gov/>

August 11, 2016

Jason King, State Engineer
 Nevada Division of Water Resources
 901 South Stewart Street, Suite 2002
 Carson City, Nevada 89701

Dear Mr. King: *Jason*

The Nevada Water Science Center (NVWSC) thanks you for your continued support of the surface-water (SW) and groundwater (GW) monitoring program conducted cooperatively between the U.S. Geological Survey (USGS) and the Nevada Division of Water Resources (NDWR). This program is conducted using pass-through funding from Southern Nevada Water Authority (AUTHORITY) for monitoring operations in the eastern and southern part of Nevada. This letter is in regards to the new funding agreement of the monitoring program for the upcoming period of October 1, 2016 through September 30, 2017.

Cooperative Matching Funds (CMF) allocated by the Nevada Water Science Center (NVWSC) have decreased for FY 2017 compared to FY 2016. Competition for CMF has increased while our Federal appropriation of these funds has decreased. NVWSC strives to apportion our matching funds in an equitable manner that is mutually beneficial to both our customers and our science.

The total cost for continued operation and maintenance (O&M) will be \$408,855 for the period of performance October 1, 2016 – September 30, 2017. NDWR's portion of the funds to support the cooperative program is \$108,170 and the AUTHORITY's portion of the funds is \$143,245. Pending availability of Cooperative Water Program funds, the USGS contribution will be \$157,440.

The following table lists the contributions from NDWR, AUTHORITY, and USGS. A more detailed description of the funding is provided on Enclosures 1 and 2.

USGS Project No.	Program Element	Funding Structure			Total Funds
		NDWR	AUTHORITY	USGS	
NV-00100	Eastern and Southern Nevada SW (Enclosure 1)	\$50,130	\$ 93,840	\$90,175	\$234,145
NV-00200	Eastern and Southern Nevada GW (Enclosure 2)	\$58,040	\$49,405	\$ 67,265	\$174,710
GRAND TOTAL		\$108,170	\$143,245	\$157,440	\$408,855

The objectives of this study are to:

1. Establish, operate, and maintain hydrologic monitoring networks;
2. Maintain a data base of collected hydrologic data;
3. Collect long-term hydrologic data within the carbonate-rock province study area;
4. Obtain new or refined hydrologic information that would advance the level of knowledge on how the carbonate-rock province study area hydrologically functions;
5. Maintain a cooperative working relationship with all organizations that manage and/or monitor surface-water in southern Nevada;
6. Provide quality assurance and quality control protocols for hydrologic data collection by all involved agencies;
7. Disseminate collected data in a timely manner.

If you approve of this work and the funding required, please sign the attached JFA and return a scanned copy to Helen Houston at NVFinance@usgs.gov so we may provide your agency with uninterrupted, continuous data. Funds are not required at this time. A signed agreement is not a bill, only an agreement to pay for the work that will be done.

If you have questions please refer to the contact list on Enclosure 3.

Sincerely,



David L. Berger, Director
USGS Nevada Water Science Center

Enclosures

cc: B. Rinne, J. Johnson, G. Kistingner, SNWA
M. Poff, S. Berris, USGS, NVWSC
GS-W-NV Finance

Enclosure 1

Summary of Cooperative Surface-Water Program for Federal Fiscal Year 2017

Program Elements

A. Operation of Surface-Water Gaging Stations

The current work-plan calls for site operation and maintenance of surface-water gaging stations at two diversions, six springs and four streams; monitored during the agreement period.

The operation & maintenance costs include maintaining the stream-gaging equipment, providing real-time telemetry and display of hydrologic data on USGS web page, making scheduled water discharge measurements, reduction and analysis of stage data, verification and development of stage/discharge relationships (ratings), computation of stream-flow, and data publication costs. Sites are generally visited on a 6-week basis, but may require more frequent visits as conditions warrant.

Provisional data from sites with data collection platforms (DCPs), will be updated every hour and available on the USGS NWIS (National Water Information System) web interface (NWISWeb) at <http://waterdata.usgs.gov/nv/nwis/rt>. All data will be compiled, reviewed, quality-assured, finalized and disseminated throughout the year and annually as water year summaries on NWISWeb.

Operation of Continuous Surface-Water Gaging Stations at:

<u>Site Name</u>	<u>Type</u>
1. Corn Creek Spring near Las Vegas	Spring
2. Big Springs Creek North Channel near Baker	Stream
3. Big Springs Creek South Channel near Baker	Stream
4. Cleve Creek near Ely	Stream
5. Steptoe Creek near Ely, NV	Stream
6. Preston Big Spring near Preston, NV	Spring
7. Crystal Springs near Hiko, NV	Spring
8. Crystal Springs Diversion near Hiko, NV	Diversion
9. Ash Springs Creek below Hwy. 93 at Ash Springs, NV	Spring
10. Ash Springs Creek Diversion	Diversion
11. NDW-Hot Creek Spring	Spring
12. Geyser Spring	Spring

B. Biannual collection of discharge

Miscellaneous measurements collected on a biannual basis, at twenty springs in Moapa, Railroad, and Meadow Valleys, are planned for May and September, 2017. Panaca Spring will only be measured on an annual frequency because of operational constraints. Included in this activity are data reduction, quality assurance, and dissemination of measurements.

Provisional water-level data will be supplied to cooperators within four weeks of data collection. All data will be compiled, reviewed, quality-assured, finalized and disseminated on NWISWeb.

Cost Structure of Program Elements A and B (Surface Water):

USGS Station Number	Program Element	NDWR Funds	AUTHORITY Funds	USGS Funds	Total Funds
Program Element A.					
09419625	Corn Creek Spring near Las Vegas, NV	\$0	\$11,040	\$6,915	\$17,955
102432241	Big Springs Creek North Channel near Baker, NV	\$0	\$11,040	\$6,915	\$17,955
10243224	Big Springs Creek South Channel near Baker, NV	\$0	\$11,040	\$6,915	\$17,955
10243700	Cleve Creek nr. Ely, NV	\$11,040	\$0	\$6,915	\$17,955
10244950	Steptoe Creek nr. Ely, NV	\$10,070	\$0	\$6,305	\$16,375
09415510	Preston Big Spring nr. Preston, NV	\$11,040	\$0	\$6,915	\$17,955
09415590	Crystal Springs nr Hiko, NV	\$0	\$11,040	\$6,915	\$17,955
09415589	Crystal Springs Diversion nr Hiko, NV	\$0	\$11,040	\$6,915	\$17,955
09415645	Ash Springs Crk Below Diversion at Hwy. 93 at Ash Springs, NV	\$0	\$11,040	\$6,915	\$17,955
094156395	Ash springs Diversion Ditch blw Hwy 93 at Ash Springs, NV	\$0	\$11,040	\$6,915	\$17,955
09415558	Hot Creek nr Sunnyside, NV	\$0	\$11,040	\$6,915	\$17,955
10245100	Geyser Creek at Springs Orifice nr Minerva, NV	\$5,520	\$5,520	\$6,915	\$17,955
Program Element B.					
	Misc. Spring Measurements	\$12,460	\$0	\$7,805	\$20,265
TOTAL		\$50,130	\$93,840	\$90,175	\$234,145

Enclosure 2

Summary of Cooperative Groundwater Program for Federal Fiscal Year 2017

Program Elements

A. Operation of water level monitoring stations

The current work-plan calls for site operation and maintenance of continuous water level monitoring stations in eight wells completed in basin-fill and seven wells completed in carbonate rock; monitored during FY 2017. Of these sites nine wells are in the Carbonate-Rock Province, and six wells are in Las Vegas Valley.

The operation & maintenance costs include maintaining the water level monitoring equipment, making scheduled water level measurements with calibrated measuring tapes, reduction and analysis of water level data, quality assurance (including calibration) of field equipment, computation of daily water level, and data publication. Sites are generally visited on a 6-8 week basis, but may require more frequent visits if conditions warrant.

Provisional data from sites with data collection platforms (DCP) will be available on NWISWeb at <http://waterdata.usgs.gov/nv/nwis/rt>. All data will be compiled, reviewed, quality-assured, finalized and disseminated on NWISWeb.

Operation of water level monitoring stations at:

<u>Station Name</u>	<u>Local Well Number</u>	<u>Aquifer</u>	<u>Depth</u>	<u>DCP</u>
1. CNLV Regional Park 1	212 S19 E61 21DDB 1	fill ¹	1300'	No
2. CNLV Deer Springs	212 S19 E61 19BC1	fill	650'	No
3. CNLV Allen & Lone Mtn	212 S19 E61 32CC1	fill	650'	No
4. CNLV Diana Terrace	212 S20 E61 13ABDB1	fill	1230'	No
5. CNLV Wilshire	212 S20 E62 05CAA1	fill	1000'	No
6. Maude Fitzpatrick	212 S22 E61 04BCB 1	fill	355'	No
7. USBLM SHV-1	217 S16 E63 09DDAB1	carb ²	920'	Yes
8. CE-DT-4 (MX-4)	210 S13 E63 23DDDC1	carb	669'	Yes
9. CSV-2 well	219 S13 E65 28DAC1	carb	478'	Yes
10. USGS-MX (Delamar Well)	182 S06 E63 12AD 1	fill	1195'	Yes
11. USGS-MX (S. Dry Lake)	181 S03 E64 12AC 1	fill	1000'	Yes
12. USGS-MX (N. Dry Lake)	181 N03 E63 27CAA 1	carb	2395'	Yes
13. USGS MX Coal Valley Well	172 N03E5910BD1	carb	1837'	Yes
14. USGS-MX Steptoe Valley Well	179 N12 E63 12AB1	carb	640'	Yes
15. Creech New Field Well	161 16S 56E 03CC	carb	560'	Yes

¹fill = Basin fill aquifer

²carb = Regional Paleozoic carbonate aquifer

B. Quarterly collection of water levels in the Carbonate-Rock Province

Miscellaneous water level measurements collected on a quarterly basis, from wells in the Carbonate Rock Province, are planned for FY 2017. Included in this activity are data reduction, quality assurance, and dissemination of measurements. Frequency of data collection will be fixed, and will occur in December 2016, March 2017, June 2017, and September 2017.

Provisional water level data will be supplied to cooperators quarterly within four weeks of data collection. All data will be compiled, reviewed, quality-assured, finalized and disseminated on NWISWeb.

Water levels measured by the Southern Nevada Water Authority will be provided to USGS at the same schedule as when these data are provided to the State of Nevada.

Quarterly collection of water levels in the Carbonate-Rock Province at:

	<u>Agency Site ID</u>	<u>Local Number</u>	<u>Name</u>	<u>Aquifer</u>	<u>Depth</u>
1.	380652116200901	156 N03 E50 13CA 1	USGS-MX (Revielle Valley)	fill ¹	682'
2.	382901116125201	156 N07 E51 10AD 1	USGS-MX (Hot Creek 1)	fill	480'
3.	380906116050502	173B N03 E52 02DA 2	USGS-MX (S. R&R Valley)	fill	495'
4.	384338115283601	173B N10 E58 17CAAB1	USGS-MX (N. R&R Valley)	fill	581'
5.	384920115343001	173B N11 E57 09CDB 1	USBLM - Ball Creek Well 1	fill	186'
6.	393624115244601	175 N20 E58 14BDAB1	-----	fill	135'
7.	393510115274801	175 N20 E58 20DBDA1	USBLM	fill	233'
8.	393425115215301	175 N20 E59 30DADA1	-----	fill	unknown
9.	394418115250301	175 N22 E58 34AADA1	175 Big Tank Well	fill	unknown
10.	394340115252501	175 N22 E58 34DC 1	USGS-MX	fill	150'

¹fill = Basin fill aquifer

Cost Structure of Programs A and B (Groundwater):

Program Element	NDWR Funds	AUTHORITY Funds	USGS Funds	Total Funds
Program Element A.				
CNLV Regional Park 1	\$6,645	\$0	\$4,160	\$10,805
CNLV Deer Springs	\$6,645	\$0	\$4,160	\$10,805
CNLV Allen & Lone Mtn	\$6,645	\$0	\$4,160	\$10,805
CNLV Diana Terrace	\$6,645	\$0	\$4,160	\$10,805
CNLV Wilshire	\$6,645	\$0	\$4,160	\$10,805
Maude Fitzpatrick	\$6,645	\$0	\$4,160	\$10,805
USBLM SHV-1	\$0	\$6,645	\$4,160	\$10,805
CE-DT-4 (MX-4)	\$0	\$6,645	\$4,160	\$10,805
CSV-2 well	\$0	\$6,645	\$4,160	\$10,805
USGS-MX (Delamar Well)	\$0	\$6,645	\$4,160	\$10,805
USGS-MX (N. Dry Lake)	\$0	\$6,645	\$4,160	\$10,805
USGS-MX (S. Dry Lake)	\$0	\$6,645	\$4,160	\$10,805
USGS MX Coal Valley Well	\$6,645	\$0	\$4,160	\$10,805
USGS-MX Steptoe Valley Well	\$6,645	\$0	\$4,160	\$10,805
Creech Near Field Well	\$0	\$6,645	\$4,160	\$10,805
Total	\$53,160	\$46,515	\$62,400	\$162,075
Program Element B.				
Quarterly Water Levels in Carbonate Rock Prov.	\$4,880	\$2,890	\$4,865	\$12,635
TOTAL	\$58,040	\$49,405	\$67,265	\$174,710

Enclosure 3

17WSNV00101

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Carson City, NV 89701
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Fax: 775-887-7629
DUNS: 178930541

Nevada Division of Water Resources
901 S. Stewart Street, Suite 2001
Carson City, NV 89701
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Executive Contact
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Executive Contact
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Billing Contact
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slwebb@water.nv.gov

Any updates to contact information can be submitted to Helen Houston at NVfinance@usgs.gov.

Form 9-1366
(April 2015)

**U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

JOINT FUNDING AGREEMENT

FOR

WATER RESOURCES INVESTIGATIONS

Customer #: 600000345
Agreement #: 17WSNV00101
Project #: ZJ00AA7
TIN #: 88-6000022
Fixed Cost Agreement YES

THIS AGREEMENT is entered into as of the, 11th day of August, 2016 by the U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the Nevada Division of Water Resources, party of the second part.

1. The parties hereto agree that subject to availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation with the Surface-water (SW) and Groundwater (GW) Monitoring Program herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50; and 43 USC 50b.
2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) includes In-Kind Services in the amount of \$0.00
 - (a) by the party of the first part during the period

Amount	Date	to	Date
\$157,440.00	October 1, 2016		September 30, 2017
 - (b) by the party of the second part during the period

Amount	Date	to	Date
\$251,415.00	October 1, 2016		September 30, 2017
 - (c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of:

Description of the USGS regional/national program:
 - (d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
 - (e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.
3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.
4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.
5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.
6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

9-1366 (Continuation) Customer #: 600000345 Agreement #: 17WSNV00101

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.
8. The maps, records, or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records, or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program and, if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at costs, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records, or reports published by either party shall contain a statement of the cooperative relations between the parties.
9. USGS will issue billings utilizing Department of the Interior Bill for Collection (form DI-1040). Billing documents are to be rendered QUARTERLY. Payments of bills are due within 60 days after the billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30 day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983).

<p style="text-align: center;">U.S. Geological Survey United States Department of the Interior</p> <p style="text-align: center;"><u>USGS Point of Contact</u></p> <p>Name: Steven N. Berris Address: 2730 N. Deer Run Road Carson City, NV 89701 Telephone: 775-887-763 Email: snberris@usgs.gov</p>	<p style="text-align: center;">Nevada Division of Water Resources</p> <p style="text-align: center;"><u>Customer Point of Contact</u></p> <p>Name: Matt Dillon, Associate Engineer Address: 901 S. Stewart Street, Suite 2001 Carson City, NV 89701 Telephone: 775-684-2856 Email: mdillon@water.nv.gov</p>
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Signatures and Date

<p>Signature:  Date: 8/11/2016</p> <p>Name: David L. Berger Title: Director</p>	<p>Signature: _____ Date: _____</p> <p>Name: Jason King Title: State Engineer</p>
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<p>Signature: _____ Date: _____</p> <p>Name: Micheline Fairbank Title: Deputy Attorney General</p>	
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<p>Signature: _____ Date: _____</p> <p>Name: Audrey Brooks-Scott Title: Administrative Services Officer</p>	
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<p>Signature: _____ Date: _____</p> <p>Name: James R. Wells Title: Nevada State Board of Examiners</p>	
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SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM
September 15, 2016

Subject: Authorization to Utilize Contract	Director's Backup
Petitioner: David L. Johnson, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors authorize the utilization of the National Joint Powers Alliance Cooperative Purchasing Contract No. 021815 for Agricultural Tractors and/or Implements to purchase five John Deere model tractors with accessories and extended warranties from Deere & Company in the estimated amount of \$1,100,000.	

Fiscal Impact:

The requested \$1,100,000 is available in the Authority's Capital Budget.

Background:

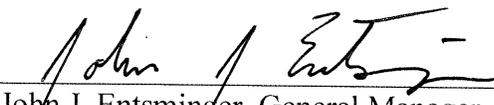
In 2006 and 2007, the Authority acquired 13 John Deere tractors with the purchase of the ranch properties. These tractors range from model year 1978 to 1991. Since that time, two tractors have been replaced, one in 2011 and another in 2013. An additional five tractors need replacement that have become maintenance intensive and unreliable. Staff recommends disposition of these tractors via auction to maximize residual value, as trade-in values were less than comparative auction results.

The National Joint Powers Alliance (NJPA) discount is 23 percent off list pricing. The NJPA is a public municipal contracting agency originally established under Minnesota law.

If approved, the Authority will purchase five John Deere tractors for use at its Great Basin Ranch in Northern Nevada, consisting of two Model No. 6175R tractors, one Model No. 7250R tractor, and two Model 8295R tractors. Authority equipment operators and maintenance technicians have expertise on this type of equipment and satellite maintenance facilities maintain an inventory of preventive maintenance parts. These new tractors will be equipped to pull larger equipment and possess positioning system technology for precise row alignment and satellite communications for field access to software updates for diagnostic and control systems.

This agreement is being entered into pursuant to NRS 332.195.1(b) and Section 6(j) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved this action.

Respectfully submitted:


John J. Entsminger, General Manager

JJE:DLJ:ZLM:JDM:SAL:JRB:jd
Attachments

AGENDA ITEM #	9
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DISCLOSURE OF OWNERSHIP/PRINCIPALS

Business Entity Type							
<input type="checkbox"/> Sole Proprietorship	<input type="checkbox"/> Partnership	<input type="checkbox"/> Limited Liability Company	<input type="checkbox"/> Privately Held Corporation	<input checked="" type="checkbox"/> Publicly Traded Corporation	<input type="checkbox"/> Trust	<input type="checkbox"/> Non-Profit Organization	<input type="checkbox"/> Other
Business Designation Group							
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	<input type="checkbox"/> SBE	<input type="checkbox"/> PBE	<input type="checkbox"/> ESB	<input type="checkbox"/>		
Minority Business Enterprise	Women-Owned Business Enterprise	Small Business Enterprise	Physically Challenged Business Enterprise	Emerging Small Business			
Corporate/Business Entity Name:		Deere & Company					
(Include d.b.a., if applicable)							
Street Address:		2000 John Deere Run			Website: JohnDeere.com		
City, State and Zip Code:		Cary, NC 27513			POC Name and Email: Andrew Hill - GovContractSupport@JohnDeere.com		
Telephone No:		800-358-5010 opt 2			Fax No: 309-749-2313		
Local Street Address:					Website:		
City, State and Zip Code:					Local Fax No:		
Local Telephone No:					Local POC Name Email:		
Number of Clark County, Nevada Residents Employed: 0							

All entities, with the exception of publicly-traded and non-profit organizations, must list the names of individuals, either directly or indirectly, holding more than five percent (5%) ownership or financial interest in the business entity appearing before the LVVWD Board of Directors.

Publicly-traded entities and non-profit organizations shall list all Corporate Officers and Directors in lieu of disclosing the names of individuals with ownership or financial interest. The disclosure requirement, as applied to land-use applications, extends to the applicant and the landowner(s).

Entities include all business associations organized under or governed by Title 7 of the Nevada Revised Statutes, including but not limited to private corporations, close corporations, foreign corporations, limited liability companies, partnerships, limited partnerships, and professional corporations.

Full Name	Title	% Owned <small>(Not required for Publicly Traded Corporations/Non-profit organizations)</small>
Please see attached list		
_____	_____	_____
_____	_____	_____
_____	_____	_____

This section is not required for publicly-traded corporations.

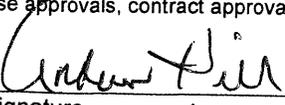
- Are any individual members, partners, owners or principals, involved in the business entity, an LVVWD full-time employee(s), or appointed/elected official(s)?

 Yes No (If yes, please note that LVVWD employee(s), or appointed/elected official(s) may not perform any work on professional service contracts, or other contracts, which are not subject to competitive bid.)

- Do any individual members, partners, owners or principals have a spouse, registered domestic partner, child, parent, in-law or brother/sister, half-brother/half-sister, grandchild, grandparent, related to an LVVWD full-time employee(s), or appointed/elected official(s)?

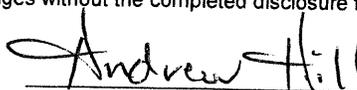
 Yes No (If yes, please complete the Disclosure of Relationship form on Page 2. If no, please print N/A on Page 2.)

I certify under penalty of perjury, that all of the information provided herein is current, complete, and accurate. I also certify that the entity is not on the federal government's Excluded Parties List, as defined by 2 CFR § 180.945. I further understand that the LVVWD will not take action on land-use approvals, contract approvals, land sales, leases or exchanges without the completed disclosure form.



 Signature
 Contract Administrator

 Title



 Print Name
 8-8-16

 Date

DISCLOSURE OF RELATIONSHIP

List any disclosures below:
(Mark N/A, if not applicable.)

NAME OF BUSINESS OWNER/PRINCIPAL	NAME OF LVVWD EMPLOYEE OR OFFICIAL AND JOB TITLE	RELATIONSHIP TO LVVWD EMPLOYEE OR OFFICIAL	LVVWD EMPLOYEE'S/OFFICIAL'S DEPARTMENT
N/A			

“Consanguinity” is a relationship by blood. “Affinity” is a relationship by marriage.

“To the second degree of consanguinity” applies to the candidate’s first and second degree of blood relatives as follows:

- Spouse – Registered Domestic Partners – Children – Parents – In-laws (first degree)
- Brothers/Sisters – Half-Brothers/Half-Sisters – Grandchildren – Grandparents – In-laws (second degree)

For LVVWD Use Only:

If no Disclosure or Relationship is noted above or if the section is marked N/A, please check this box:

No Disclosure

If any Disclosure of Relationship is noted above, please complete the following:

Yes No Is the LVVWD employee(s) noted above involved in the contracting/selection process for this particular agenda item?

Yes No Is the LVVWD employee(s) noted above involved in any way with the business in performance of the contract?

Notes/Comments:

[Handwritten Signature]

Signature

James R Barber

Print Name

Authorized Department Representative

Samuel R. Allen

Chairman and
Chief Executive Officer

Mary K. W. Jones

Senior Vice President and
General Counsel

Rajesh Kalathur

Senior Vice President and
Chief Financial Officer

Todd E. Davies

Corporate Secretary and
Associate General Counsel

Margaret A. Curry

Vice President, Taxes

Pierre J. Guyot

Vice President,
Global Supply Management and
Logistics

Matthew G. Haney

Vice President and Deputy General Counsel
Deere & Company
Senior Vice President and Chief Counsel
John Deere Financial

Michael A. Harring

Vice President and
Deputy General Counsel,
North America

Klaus G. Hoehn

Vice President,
Advanced Technology
and Engineering

Marc A. Howze

Vice President,
Global Human Resources and Employee Communications

Ganesh Jayaram

Vice President,
Information Technology

Renee A. Mailhot

Vice President and
Chief Compliance Officer

Bradley D. Morris

Vice President,
Global Labor Relations and Continuous Improvement

Gregory R. Noe

Vice President
and Deputy General Counsel,
International

Luann K. Rickert

Vice President,
Internal Audit

Thomas C. Spitzfaden

Vice President and
Treasurer

Charles R. Stamp, Jr.

Vice President,
Public Affairs Worldwide

John H. Stone

Vice President,
Corporate Strategy & Business Development

James E. Temperley

Vice President and
Comptroller

Jeffrey A. Trahan

Vice President,
Pension Fund & Investments

**SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS**

AGENDA ITEM

September 15, 2016

Subject: Agreements	Director's Backup
Petitioner: Gregory J. Walch, General Counsel	
Recommendations: That the Board of Directors approve and authorize the General Manager to execute, in substantially the same form as that attached hereto, a System Conservation Implementation Agreement between the Authority and the United States Bureau of Reclamation; execute ministerial documents to effectuate the transaction and to accept payment for conserved system water of up to \$199,365.20 over a three-year period with options for Reclamation to renew for seven additional years.	

Fiscal Impact:

If approved, the Authority will receive up to \$64,500 for conserved system water in water year 2017, \$66,435 for water year 2018, and \$68,430 for water year 2019, for a total estimated amount of up to \$199,365, \$64,000 of which is from the money the Board authorized by approving the Pilot Program System Conservation Agreement on April 17, 2014, as amended on July 16, 2015. United States Bureau of Reclamation (Reclamation) has the option to renew the System Conservation Implementation Agreement (Agreement) for up to seven additional years, through September 30, 2026, subject to interest escalation.

Background:

On December 13, 2007, the Secretary of the Interior issued a Record of Decision for the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (Guidelines). The Guidelines allow the Authority to create and divert Intentionally Created Surplus (ICS) by conveying its pre-1929 Muddy and Virgin River water rights and its Coyote Spring Valley groundwater rights to Lake Mead.

In April 2014, the Board authorized the General Manager to execute an agreement for the creation of a Colorado River System Conservation Pilot Program (Pilot Program). The Pilot Program seeks to determine if voluntary demand management would conserve Colorado River system water to mitigate the impacts of drought. The Pilot Program's funding members are the Central Arizona Water Conservation District, Metropolitan Water District of Southern California, Denver Water, the Authority (Local Funding Entities) and Reclamation. The Pilot Program is now in its second round of project funding. The Authority will contribute up to \$1,000,000 of the estimated \$6,000,000 available for Round 2 funding.

On July 21, 2016, the Board appropriated \$2,700,000 for lease of shares in Bunkerville Irrigation Company (Bunkerville) and Mesquite Irrigation Company (Mesquite). Each Bunkerville share represents a right to 7.82 acre-feet of pre-1929 water and 1.44 acre-feet of post-1929 water annually. Through separate agreements, the Authority will use the pre-1929 water to create ICS credits. Post-1929 water is not eligible for ICS credits, but can be used for Pilot Program projects.

AGENDA ITEM #

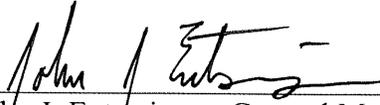
10

In July 2016, the Authority submitted a proposal to Reclamation regarding the contribution of the Authority's post-1929 water acquired through the Bunkerville leases. The Authority anticipates conserving up to 860 acre-feet per year for water years 2017-2019 for a total of 2,580 acre-feet. Actual amounts will be known when all leases are executed with Bunkerville shareholders in mid-September 2016. Reclamation has approved the Authority's project. Accordingly, the Authority and Reclamation seek to formalize the Agreement as represented in the attachment hereto.

If approved, the Agreement allows the Authority to receive \$75.00 per acre-foot of conserved post-1929 water in 2017, with three percent escalation in 2018 and 2019. Thus, in exchange for creating up to 2,580 acre-feet of water to benefit the Colorado River over a three-year period, the Authority will receive an anticipated maximum amount of \$199,365.20. Reclamation has the option to renew the Agreement for up to seven additional years, through September 30, 2026, subject to escalation. Reclamation may exercise the option for multiple successive years through one notification.

The Agreement is authorized by NRS 277.180 and Section 6(j) of the Authority's 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the agreement.

Respectfully submitted:



John J. Entsminger, General Manager
JJE:GJW:CNP:cmc
Attachment

SYSTEM CONSERVATION IMPLEMENTATION AGREEMENT (“SCIA”)
BETWEEN THE UNITED STATES BUREAU OF RECLAMATION AND
THE SOUTHERN NEVADA WATER AUTHORITY TO IMPLEMENT A PILOT SYSTEM
CONSERVATION PROGRAM (“PILOT PROGRAM”)

This SCIA to implement a Pilot Program is entered into this ___ day of _____, 2016, by and between the United States Bureau of Reclamation (“Reclamation”) and the Southern Nevada Water Authority (“SNWA”), hereinafter referred to singularly as “Party” or collectively as “Parties.”

1. EXPLANATORY RECITALS

1.1 On July 30, 2014, Reclamation and four municipal entities, the Central Arizona Water Conservation District (“CAWCD”), The Metropolitan Water District of Southern California (“MWD”), Denver Water (“DW”), and SNWA (collectively “Funding Agreement Parties”), entered into Agreement No. 14-XX-30-W0574 for a Pilot Program for funding the creation of Colorado River System water through voluntary water conservation and reductions in use (“Funding Agreement”).

1.2 On August 12, 2015, the Funding Agreement was amended to increase Reclamation’s funding ceiling for the Pilot Program.

1.3 Under the Funding Agreement, as amended above, the Funding Agreement Parties will fund up to \$14 million for a Pilot Program to conserve Colorado River System water for storage in Lakes Powell and Mead.

1.4 On March 8, 2016, the Funding Agreement was further amended to allow the Funding Agreement Parties to provide additional funding for the Pilot Program.

1.5 The Pilot Program provides funding to develop short-term pilot projects that keep water in Lakes Powell and Mead through temporary, voluntary, and compensated conservation mechanisms.

1.6 Participation in System Conservation activities as part of the Pilot Program in the Lower Division States is limited to Entitlement Holders as defined in the Funding Agreement, as amended.

1.7 SNWA holds entitlements to Colorado River water under Contract No. 7-07-30-W0004, as amended, Contract No. 2-07-30-W0266, as amended, and Contract No. 09-07-30-W0011.

1.8 SNWA also owns or otherwise controls agricultural water rights on the Muddy and Virgin Rivers, all or a portion of which are not being used for agricultural irrigation, but instead, are being conveyed through the Muddy and Virgin River systems to the Colorado River mainstem to create Tributary Conservation Intentionally Created Surplus (“ICS”) credits in

accordance with the ICS Program established in the December 2007 *Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead* (“2007 Interim Guidelines”).

1.9 Some of the agricultural water rights that are owned or otherwise controlled by SNWA are from shares of stock in the Bunkerville Irrigation Company (“BIC”) that are owned or leased by SNWA for the purposes of creating ICS credits (water is leased for the water year which is October 1 through September 30 the following year). The majority of the leases expire at the end of water year 2016. Only those water rights perfected prior to June 25, 1929, are eligible for the creation of ICS and are referred to as “pre-1929” water rights. The water rights that are not perfected prior to June 25, 1929, are not eligible to create ICS credits and are referred to as “post-1929” water rights. Each of the owned or leased shares of stock controlled by SNWA in BIC represent approximately 7.82 acre-feet of pre-1929 water and 1.44 acre-feet of post-1929 water annually.

1.10 During the lease negotiations between SNWA and BIC for the upcoming period beginning October 1, 2016, BIC expressed a desire to fully utilize all water resources, more specifically the post-1929 water, thereby potentially increasing agricultural consumptive use on the Virgin River. BIC has the ability to use the post-1929 water that would increase agricultural consumptive use on the Virgin River in comparison to the consumptive use from 2008-2016 (the period of time that SNWA has been creating ICS with BIC shares).

1.11 SNWA submitted to Reclamation a Pilot Program proposal to dedicate to the Colorado River System for a 3-year period beginning October 1, 2016 through September 30, 2019 (which are water years 2017, 2018, and 2019), with optional renewals to extend the project for up to 7 additional water years to September 30, 2026, the Virgin River water from the post-1929 water rights that it leases in BIC in lieu of BIC utilizing the post-1929 water rights. SNWA anticipates conserving up to 860 acre-feet per year for the 3 water years for a total amount of 2,580 acre-feet.

1.12 SNWA’s Pilot Program proposal was evaluated independently and collectively by Reclamation, CAWCD, MWD and DW, pursuant to the factors provided in Section 5.5 of the Funding Agreement.

1.13 SNWA’s Pilot Program proposal was selected by Reclamation, CAWCD, MWD, and DW for inclusion in the Pilot Program.

1.14 A copy of SNWA’s Pilot Program proposal dated June 22, 2016, as revised by letter dated July 21, 2016, is attached hereto as Exhibit A and made a part of this SCIA.

1.15 SNWA desires to augment Colorado River System storage in Lake Mead by implementing the Pilot Program through this voluntary SCIA in exchange for financial compensation.

1.16 Prior to entering into this voluntary SCIA, as required in Section 5.3 of the Funding Agreement, Reclamation and the participating Funding Agreement Parties are required to enter into a project specific funding agreement providing for, among other things, the timing

of the Funding Agreement Parties' contributions, and the project specific performance metrics.

1.17 The project specific funding agreement ("Project Funding Agreement No. 16-XX-30-W0613") was entered into and a copy is attached hereto as Exhibit B and made part of this SCIA.

NOW, THEREFORE, in consideration of the terms and conditions set forth herein, Reclamation and SNWA agree as follows:

2. DEFINITIONS

2.1 Definitions included in the Funding Agreement are applicable to this SCIA.

2.2 Colorado River Basin States means the states of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming.

2.3 Exhibit A is a copy of the SNWA Pilot Program proposal dated July 21, 2016. Exhibit A is attached hereto and made a part of this SCIA.

2.4 Exhibit B is a copy of Project Funding Agreement No. 16-XX-30-W0613 among Reclamation and the participating Funding Agreement Parties, which is a project specific funding agreement providing for, among other things, the amount and timing of Funding Agreement Parties' contributions, and project specific performance metrics. Exhibit B is attached hereto and made a part of this SCIA.

2.5 System Conservation Water means Virgin River water controlled by SNWA from its leased post-1929 water rights that is conveyed to the Colorado River mainstem and is conserved in Lake Mead for the benefit of the Colorado River System pursuant to this SCIA.

3. DESCRIPTION OF THE SNWA PILOT PROGRAM PROJECT

3.1 SNWA owns or otherwise controls agricultural water rights on the Muddy and Virgin River. These agricultural water rights fall under the jurisdiction of the State of Nevada's Division of Water Resources. The agricultural water rights owned or otherwise controlled by SNWA are not being used for agricultural irrigation and instead are being conveyed through the Muddy and Virgin River system to the Colorado River mainstem to create Tributary Conservation ICS credits.

3.1.1 Some of the agricultural water rights that are owned or otherwise controlled by SNWA are from shares of stock in BIC that are owned or leased by SNWA for the purposes of creating ICS credits. Each of the owned or leased shares of stock controlled by SNWA in BIC represent approximately 7.82 acre-feet of pre-1929 water and 1.44 acre-feet of post-1929 water annually. Only the pre-1929 water rights are eligible for the creation of ICS. The majority of these leases expire at the end of water year 2016.

3.1.2 SNWA elected to lease the post-1929 water for a 10-year period beginning in October 2016 and make such water available for the Pilot Program, thereby decreasing the

potential agricultural consumptive use on the Virgin River.

3.2 SNWA submitted to Reclamation a Pilot Program proposal to dedicate to the Colorado River System for a 3-year period beginning October 1, 2016 through September 30, 2019 (which are water years 2017, 2018, and 2019), with optional renewals to extend the project for up to 7 additional water years through September 30, 2026, the Virgin River water from the post-1929 water rights that it leases in BIC. SNWA anticipates conserving up to 860 acre-feet per year for the 3 water years for a total amount of 2,580 acre-feet.

4. IMPLEMENTATION

4.1 The implementation period for the 3-year period will begin October 1, 2016, and will end September 30, 2019 (which covers water years 2017, 2018, and 2019), unless the option is exercised by Reclamation, on behalf of the Funding Partners, in Section 4.4 herein.

4.2 For the purpose of creating System Conservation Water through participation in the Pilot Program, SNWA will conserve up to 860 acre-feet of Virgin River water and dedicate it to the Colorado River System from this project for a 3-year period beginning October 1, 2016 through September 30, 2019, for a total of 2,580 acre-feet, with optional renewals for Reclamation, on behalf of the Funding Agreement Parties, to extend this SCIA for up to 7 additional water years through September 30, 2026, as provided in Section 4.4 herein.

4.3 Upon completion of the negotiations and execution of the leases for the post-1929 water, SNWA will notify Reclamation in writing of the actual amount of leased water rights acquired, not to exceed 860 acre-feet. To the extent SNWA leases less than 860 acre-feet of post-1929 water rights, the payments in this SCIA for any year shall be adjusted by Reclamation to reflect the actual amount of water rights leased. For example, if SNWA leases 850 acre-feet of post-1929 water, the total payment to SNWA for the year beginning October 1, 2016 shall be \$63,750 (850 acre-feet times \$75 per acre-foot).

4.4 SNWA agrees that Reclamation, on behalf of the Funding Agreement Parties, will have the option to renew this SCIA for up to 7 additional years through September 30, 2026, in order to conserve additional System Conservation Water. In the event that Reclamation, on behalf of the Funding Agreement Parties, desires to exercise the option for the next water year(s), Reclamation shall notify SNWA in writing by letter or electronic mail dated on or before June 1 preceding the beginning of the water year the option will be exercised. Reclamation may exercise the option for multiple successive years through one notification. At such time as Reclamation does not elect by June 1 to exercise the option for a water year, this SCIA shall terminate upon Reclamation making the final payment for the last year water is being conserved under this SCIA.

4.5 In the event that Reclamation, on behalf of the Funding Agreement Parties, exercises the option(s) under Section 4.4 herein, the terms and conditions of this SCIA shall apply in the option year(s) in the same manner as they do in the initial year of this SCIA, except as otherwise provided herein.

4.6 Forbearance is not required for this project. SNWA will not need to reduce its

approved Colorado River water order in order to ensure this quantity of water is conserved and remains in the Colorado River System.

4.7 SNWA will use the existing ICS Program process for creating and certifying Tributary Conservation ICS and System Conservation Water. This process requires transmittal by SNWA to Reclamation of an annual ICS Plan of Creation and ICS Certification Report (Section XI.G. 3.B.1 and Section XI.G. 3.D of the 2007 Interim Guidelines).

4.8 SNWA will use the approved methods consistent with the ICS Program and documented in Exhibit A to the Lower Colorado River Basin Intentionally Created Surplus Forbearance Agreement to create System Conservation Water.

4.9 SNWA will amend the section in its Tributary Conservation ICS Plans of Creation entitled “Estimated Water Conserved” for the years this SCIA is in effect, to describe the volumes of water that will be dedicated as System Conservation Water resulting from this Pilot Program, along with the quantity of Tributary Conservation ICS to be created.

4.10 When the final conservation volumes created by the Virgin River project has been determined for any year, SNWA will submit the required ICS certification reports to Reclamation. SNWA’s Certification Reports, for the years this SCIA is in effect, will identify the respective conservation water volumes dedicated as System Conservation Water to remain in Lake Mead and the Tributary Conservation ICS within the section entitled “Flows Entering Lake Mead and SNWA Tributary Conservation ICS” for the Muddy River, and the section entitled, “Conclusions” for the Virgin River.

4.11 After consultation with the Colorado River Basin States, Reclamation will use the existing ICS Program process established in the 2007 Interim Guidelines to review and approve SNWA’s ICS Plans of Creation for the years this SCIA is in effect, in which SNWA proposes and certifies, respectively, the quantity of Tributary Conservation ICS created pursuant to the ICS Program and the quantity of System Conservation Water created under this SCIA.

4.12 SNWA, in consultation with the Nevada State Engineer and Reclamation, will use the methods consistent with the last 8 years of the ICS Program.

5. MONITORING

5.1 Pursuant to Section 5.3 of the Funding Agreement, Reclamation is required to verify and document reductions in consumptive use of Colorado River water under the Pilot Program.

5.2 By entering into this SCIA, SNWA grants access to Reclamation, or will provide for such access, to perform periodic on-site inspections of the Pilot Program project to verify compliance with this SCIA.

5.3 Reclamation and SNWA will use, among other methods, their existing periodic on-field verification process to determine that the Virgin River water rights owned or otherwise

controlled by SNWA are being used for ICS and creation of System Conservation Water in lieu of BIC or SNWA utilizing the post-1929 water.

6. EVALUATION

6.1 SNWA agrees that Reclamation’s annual *Colorado River Accounting and Water Use Report Arizona, California, and Nevada* will serve as the basis for documenting the amount of System Conservation Water created by SNWA.

6.2 Reclamation and SNWA agree that the System Conservation Water created pursuant to this SCIA shall accrue to the benefit of the Colorado River System and shall not accrue to the individual benefit of any Funding Agreement Party, SNWA, or any third party.

7. COMPENSATION AND PAYMENTS

7.1 Compensation for System Conservation Water created under this SCIA shall be paid by Reclamation from the amounts contributed by Funding Agreement Parties for the Pilot Program.

7.2 As required by Section 5.3 of the Funding Agreement, prior to entering into this SCIA, Reclamation and the Funding Agreement Parties entered into Project Funding Agreement No. 16-XX-30-W0613, a copy of which is Exhibit B.

7.3 For the initial period from October 1, 2016 through September 30, 2019, and for not to exceed 860 acre-feet per year, Reclamation will pay SNWA \$75.00 per acre-foot for System Conservation Water created in water year 2017, \$77.25 per acre-foot for System Conservation Water created in water year 2018, and \$79.57 per acre-foot for System Conservation Water created in water year 2019. Actual compensation will be determined by SNWA lease enrollment.

7.4 The total Pilot Project cost for the initial period is estimated to be \$199,365.

7.5 The total maximum payments to be made by Reclamation to SNWA for water conserved in water year 2017, 2018, and 2019 will be as follows:

Payments	Payment Amounts
Payment 1	\$64,500
Payment 2	\$66,435
Payment 3	\$68,430
Total Payments	(estimated amount) \$199,365

7.5.1 For water year 2017, Payment 1 will be made by Reclamation to SNWA no later than 60 days following the date of the letter to SNWA from the Regional Director, Lower Colorado Region, Bureau of Reclamation, in accordance with Section 3.D.1 of the 2007 Interim Guidelines (Final Verification Letter), verifying the amount of ICS created in 2017, which is anticipated to be issued during calendar year 2018.

7.5.2 For water year 2018, Payment 2 will be made by Reclamation to SNWA no later than 60 days following the date of the Final Verification Letter to SNWA from the Regional Director, Lower Colorado Region, Bureau of Reclamation, verifying the amount of ICS created in 2018, which is anticipated to be issued during calendar year 2019.

7.5.3 For water year 2019, Payment 3 will be made by Reclamation to SNWA no later than 60 days following the date of the Final Verification Letter to SNWA from the Regional Director, Lower Colorado Region, Bureau of Reclamation, verifying the amount of ICS created in 2019, which is anticipated to be issued during calendar year 2020.

8. COMPENSATION AND PAYMENTS FOR ADDITIONAL OPTION YEARS

8.1 In the event Reclamation, on behalf of the Funding Agreement Parties, exercises the additional option years, as provided in Section 4.4 herein, SNWA will be compensated in accordance with Table 1 below, subject to adjustment by Reclamation based on actual leased acreage.

Table 1

Water Year	2020	2021	2022	2023	2024	2025	2026
Compensation per acre-foot	\$81.96	\$84.42	\$86.95	\$89.56	\$92.25	\$95.02	\$97.87
Maximum Annual Cost	\$70,486	\$72,601	\$74,777	\$77,022	\$79,335	\$81,717	\$84,168

9.

10. GENERAL TERMS

10.1 SNWA agrees to remain in compliance with applicable Federal, State, and local environmental, cultural, and paleontological resource protection laws and regulations throughout the term of this SCIA.

10.2 Reclamation shall be responsible for ensuring that System Conservation Water created by SNWA under this SCIA does not inure to the benefit of any individual Entitlement Holder.

10.3 The System Conservation Water created by SNWA under this SCIA will not be charged against SNWA’s use of Colorado River water or charged to Nevada’s Colorado River apportionment.

10.4 Except as otherwise provided in this SCIA, SNWA hereby releases and agrees that it will indemnify and hold harmless the United States and its officers, agents, employees, and successors or assigns, from every claim for damages to persons or property, direct or indirect, and of whatever nature, arising by reason of the creation of System Conservation Water under this SCIA. The United States shall be liable only for negligence on the part of its officers and employees in accordance with the Federal Tort Claims Act, as amended.

10.5 None of the provisions of this SCIA shall be considered waived, except when such waiver is given in writing. The failure of a party to this SCIA to insist in any one or more instances upon strict performance of any of the provisions, or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or that party's relinquishment of any such rights for the future, but such provisions and rights shall continue and remain in full force and effect.

10.6 This SCIA is not intended nor shall it be construed to create any third-party beneficiary rights to enforce the terms of this SCIA in any person or entity that is not a party, other than CAWCD, MWD, and DW. CAWCD, MWD, and DW are expressly designated as third-party beneficiaries to this SCIA.

10.7 The Parties do not intend that any right or remedy given to a Party on the breach of any provision under this SCIA be exclusive; each such right or remedy is cumulative and in addition to any other remedy provided in this SCIA or otherwise available at law or in equity. If the non-breaching Party fails to exercise or delays in exercising any such right or remedy, the non-breaching party does not thereby waive that right or remedy. In addition, no single or partial exercise of any right, power or privilege precludes any other or further exercise of a right, power or privilege granted by this SCIA or otherwise.

10.8 Each Party to this SCIA represents that the person executing on behalf of such Party has full power and authority to do so, and that his/her signature is legally sufficient to bind the Party on whose behalf he/she is signing.

10.9 This SCIA constitutes a valid and binding SCIA of each Party, enforceable against each Party in accordance with its terms. This SCIA is and will be binding upon and will inure to the benefit of the Parties and, upon dissolution, the legal successors and assigns of their assets and liabilities.

10.10 This SCIA may be supplemented, amended, or modified only by the written agreement of the Parties. No supplement, amendment, or modification will be binding unless it is in writing and signed by the Parties.

10.11 Any notice, demand, or request shall be deemed properly served, given, or made if delivered in person; sent by registered or certified mail, postage prepaid; or overnight delivery, charges prepaid or charged to the sender's account to the persons in the positions executing this SCIA.

10.12 All information and data obtained or developed with the performance of duties mentioned in this SCIA shall be available upon request to a Party, subject to the provisions of the Freedom of Information Act or other applicable law. However, use of said reports, data and information shall appropriately reference the source for the respective documents.

10.13 The expenditure or advance of any money or the performance of any obligation by the United States under this SCIA shall be contingent upon the appropriation or allotment of funds. No monetary liability shall accrue to the United States in case funds are not appropriated or allocated or received from the Funding Agreement Parties as provided in Project Funding Agreement No. 16-XX-30-W0613.

10.14 No member of or Delegate to Congress, Resident Commissioner, or official of SNWA shall benefit from this SCIA other than as a water user or landowner in the same manner as other water users or landowners.

10.15 This SCIA is entered into under the Reclamation Act of 1902 as supplemented and amended and, in particular, the Boulder Canyon Project Act (45 Stat. 1057), the Colorado River Basin Salinity Control Act (88 Stat. 266), as amended, and consistent with Section 206 of Title II of Division D of the Consolidated and Further Continuing Appropriations Act, 2015 (Public Law 113-235) constitutes a pilot project designed to increase Colorado River System water in Lake Mead to address the effects of historic drought conditions. Nothing in this SCIA diminishes or abrogates the authority of the Secretary of the Interior under applicable Federal law, regulations, or the Consolidated Decree of the Supreme Court of the United States in the case of *Arizona v. California, et al.*, entered March 27, 2006, (547 U.S. 150 (2006)), or as it may be further modified. This SCIA is subject to and controlled by the Colorado River Compact.

11. EFFECTIVE DATE

10.1 This SCIA shall become effective upon the date of its execution by both Parties. Once effective, this SCIA will remain in effect until all terms and conditions are satisfied.

10.2 The Parties hereto have executed this SCIA on the day and year first written above.

Approved as to form:

**SOUTHERN NEVADA WATER
AUTHORITY**

By: _____
Gregory J. Walch, Esq.
General Counsel

By: _____
John J. Entsminger
General Manager

Signatures continued on next page.

Approved as to form:

UNITED STATES OF AMERICA

By: _____
Robert Snow, Esq.
Attorney-Advisor

By: _____
Terrance J. Fulp, Ph.D.
Regional Director
Lower Colorado Region
Bureau of Reclamation

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM
September 15, 2016

Subject: Agreements	Director's Backup
Petitioner: Gregory J. Walch, General Counsel	
Recommendations: That the Board of Directors approve and authorize the General Manager to execute an Amended and Restated Water Operation and Management Agreement with the Muddy Valley Irrigation Company; authorize the General Manager or designee to approve the lease of shares; execute ministerial documents to effectuate the transactions; and pay the associated administrative costs of the irrigation company for an amount not to exceed \$2,300,000 per year with annual escalation as applicable.	

Fiscal Impact:

The funds requested for current year expenditures of \$2,300,000 are available in the Authority's Capital budget. Funds for future year expenditures will be budgeted accordingly.

Background:

On December 13, 2007, the Secretary of the Interior issued a Record of Decision for the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (Guidelines). The Guidelines allow the Authority to create and divert Intentionally Created Surplus by conveying its pre-1929 Muddy and Virgin River water rights and its Coyote Spring Valley groundwater rights to Lake Mead.

On April 17, 2008, the Board of Directors appropriated \$40,000,000 for the purchase and lease of shares in the Muddy Valley Irrigation Company (Muddy Valley), Bunkerville Irrigation Company (Bunkerville), and Mesquite Irrigation Company (Mesquite). The Board also approved Water Operation and Management Agreements (Agreements) with Muddy Valley, Bunkerville, and Mesquite, which provided each irrigation company with an annual operation and maintenance budget to cover costs associated with the accounting and conveyance of the Authority's water rights to Lake Mead. The Agreements also allowed willing shareholders to sell or lease their shares to the Authority. On April 16, 2009, the Board appropriated an additional \$10,000,000 to acquire additional shares from irrigation company shareholders. Most recently, on July 21, 2016, the Board approved Amended and Restated Agreements with Bunkerville and Mesquite and appropriated \$2,500,000 for lease of shares in those two irrigation companies.

The Agreements with the irrigation companies were executed on May 12, 2008, and terminate on September 30, 2018. Shareholders were permitted to choose the termination date for their leases; however, the termination date did not extend beyond September 30, 2018. Many of the leases were for an initial term of two or three years. As a consequence, the Board authorized extending the leases on January 20, 2011, and May 15, 2014. The majority of the leases will now expire on September 30, 2016. In anticipation of the upcoming expiration date for the leases and the Water Operation and Management Agreement with Muddy Valley, the Authority and Muddy Valley

desire to enter into an Amended and Restated Water Operation and Management Agreement (Amended Agreement). The Amended Agreement would allow the Authority to enter into long-term leases with irrigation company shareholders. The Amended Agreement would also provide the Authority with additional flexibility should the Authority choose to purchase additional shares pursuant to a separate item also being considered by the Board today.

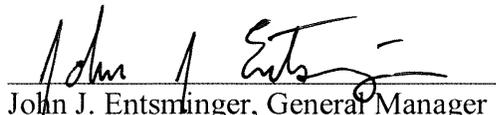
Upon approval of this agenda item, the Authority will execute the Amended Agreement with Muddy Valley. The Amended Agreement would terminate on December 31, 2026, and provides Muddy Valley with an annual operation, maintenance, and staff budget for management of ditch systems to account for and convey the Authority's Muddy River water rights to Lake Mead. Additionally, Muddy Valley is compensated for passage by their system of the Authority's Muddy River water rights that are not represented by shares, as well as a per share charge for conveyance of the Authority's Muddy Valley shares. The Amended Agreement also facilitates transactions with willing shareholders to lease or sell their shares to the Authority.

Due to timing constraints involved in negotiating the Amended Agreement and the need to allow shareholders to make plans for the upcoming water year, the Authority sent a Request for Offers to Lease to all Muddy Valley shareholders on August 25, 2016. Authority staff will not enter into any leases unless the Board approves this agenda item. The Request for Offers to Lease sets the initial annual lease payment at \$870 per preferred share and \$80 per common share, with an annual 3 percent increase. Each lease would be for a maximum of ten years, and all leases will terminate on September 30, 2026.

The Authority's rights obtained through these acquisitions will be held by Muddy River Water Holdings, Inc., a non-profit corporation authorized by the Board on December 15, 1999, to facilitate the holding of water rights through shares in irrigation companies.

The Amended Agreement is authorized by Sections 6(a) and 6(j) of the SNWA 1995 Amended Cooperative Agreement. The Office of the General Counsel has reviewed and approved the Amended Agreement.

Respectfully submitted:



John J. Entsminger, General Manager

JJE:GJW:CNP:cmc

Attachments

AMENDED AND RESTATED WATER OPERATION AND MANAGEMENT AGREEMENT

THIS AMENDED AND RESTATED WATER OPERATION AND MANAGEMENT AGREEMENT (“Amended and Restated Agreement”) is entered into this ____ day of _____, 2016 (“Effective Date”) by and between the Southern Nevada Water Authority (“SNWA”), a political subdivision of the State of Nevada and a joint powers authority established pursuant to Chapter 277 of the Nevada Revised Statutes; and the Muddy Valley Irrigation Company (“MVIC”), a Nevada corporation. SNWA and MVIC are at times herein referred to individually as “Party” and collectively as “Parties.”

RECITALS

A. MVIC holds legal title to surface water rights in the Muddy River under the laws of the state of Nevada, awarded in a Judgment and Decree dated March 12, 1920, in Muddy Valley Irrigation Co., et al. v. Moapa and Salt Lake Produce Co., et al. in what is currently Nevada’s Eighth Judicial District Court (“Decree”). All legal title to the water rights owned by MVIC are represented by Preferred and Common shares in MVIC.

B. SNWA owns 1,009.084 Preferred shares and 2,839.126 Common shares in MVIC, controls other Muddy River water rights not represented by MVIC shares, and owns 9,000 acre-feet per year of groundwater in the Coyote Spring Valley. These water rights, together with any other MVIC shares, other Muddy River water rights, or other Coyote Spring Valley groundwater rights, that in the future are leased, owned, acquired, or otherwise controlled by SNWA, are hereinafter referred to as the “SNWA Water Rights.”

C. SNWA and MVIC entered into an agreement dated February 20, 1997, pursuant to MVIC shareholder approval at MVIC’s 1997 annual meeting, subsequently amended by the Parties on April 26, 2000, regarding the acquisition of MVIC shares and use of Muddy River water by SNWA (together the “1997 Agreement”).

D. The 1997 Agreement set forth the procedure for purchase or lease of MVIC Preferred and Common shares and the procedure for future purchase or lease of MVIC shares by SNWA, which in time would allow for SNWA to transport MVIC water rights adjudicated in the Decree, and represented by such purchased and leased shares, out of the Moapa Valley.

E. On April 20, 2006 the Parties, together with the Moapa Band of Paiute Indians (“Tribe”), Las Vegas Valley Water District (“LVVWD”) and Moapa Valley Water District (“MVWD”) entered into a certain Water Supply Agreement (“WSA”), which also incorporated: (i) a proposed Water Settlement Agreement between the Parties, the Tribe, LVVWD, MVWD and the State of Nevada; and (ii) a Memorandum of Agreement between SNWA, Coyote Springs Investment, LLC, MVWD, the Tribe and the U.S. Fish and Wildlife Service. The WSA is a framework for the resolution of longstanding disputes concerning allocation and accounting of surface and groundwater uses on and affecting the Upper Muddy River. The WSA with its incorporated Water Settlement Agreement comports with and advances the stated goals of SNWA and MVIC set forth in Article 6 of the 1997 Agreement.

F. Pursuant to the *Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead* issued by the Secretary of the Interior on December 13, 2007 (“Guidelines”), SNWA may create Intentionally Created Surplus (“ICS”) by conveying SNWA Water Rights to Lake Mead. SNWA is then able to divert ICS created by such conveyances for municipal use in the Las Vegas Valley. The ICS program requires accurate accounting methods to measure the SNWA Water Rights conveyed to Lake Mead, which may involve quantifying consumptive uses on the Muddy River.

G. On May 12, 2008, the Parties entered into a Water Operation and Management Agreement (“2008 Agreement”) that amended the 1997 Agreement in certain respects, including incorporation of provisions for conveyance of SNWA Water Rights to Lake Mead

under the Guidelines, facilitated SNWA's purchase and lease of additional MVIC shares from willing MVIC shareholders, and confirmed MVIC's continued desire to work with SNWA to effectuate such arrangements.

H. Nevada State Engineer Order 1194, entered on July 15, 2008, established the procedure by which SNWA submits annual reports to the State Engineer's Office to account for SNWA Water Rights that have been conveyed through the Muddy River system to the Colorado River mainstream for the creation of ICS, and provided that pursuant to NRS 538.171 and Nevada Attorney General Opinion 88-16, no permit from the State Engineer is required for creation or use of ICS as authorized by the Guidelines.

I. On November 20, 2008, SNWA and MVIC entered into a Reimbursement Agreement ("Reimbursement Agreement") to cooperatively enhance MVIC's distribution system downstream of Bowman Reservoir to the Gubler Crossing outflow, along with other appurtenances, to convey at least 9,000 acre-feet per year of non-Muddy River SNWA Water Rights to the Muddy River.

J. As contemplated by the 2008 Agreement, SNWA acquired additional SNWA Water Rights and worked cooperatively with MVIC to discharge the Parties' respective obligations under that agreement. Although the 2008 Agreement does not expire until September 30, 2018, the Parties intend as of the Effective Date to enter into this Amended and Restated Agreement for the purpose of accommodating SNWA's request for more flexibility in the procedures for SNWA's purchase or lease of additional MVIC shares from willing shareholders and to confirm the Parties' desire to continue to work together cooperatively to quantify and convey SNWA Water Rights from Wells Siding or Bowman Reservoir to Lake Mead in a manner that benefits both SNWA and the other MVIC shareholders.

K. In 2014 SNWA entered into two agreements, one being a Colorado River System

Conservation Pilot Program, which authorizes SNWA to convey water to Lake Mead in order to increase water elevations therein and one for Pilot Drought Response Actions, which is intended to protect critical elevations in Lake Mead. SNWA may use the SNWA Water Rights to create ICS under the Guidelines or to help protect Lake Mead elevations as described in the agreements listed in this Recital K, any future modifications thereto, or any future agreements executed for these purposes.

L. The Parties desire to amend and restate the 1997 Agreement, 2008 Agreement, and Reimbursement Agreement such that all of the Parties' rights and obligations regarding the subject matter of the prior agreements are contained in this Amended and Restated Agreement.

M. SNWA desires throughout the term of this Amended and Restated Agreement to purchase, lease, or otherwise acquire additional MVIC shares from willing MVIC shareholders. MVIC desires to work with SNWA to effectuate these arrangements pursuant to the terms of the Amended and Restated Agreement as set forth below.

NOW, THEREFORE, in consideration of the premises and mutual covenants contained herein, the Parties hereto agree as follows:

1. MVIC to Convey SNWA Water Rights. Under the terms and conditions provided in this Amended and Restated Agreement and in accordance with the Operating Plan, described below, MVIC agrees to convey all SNWA Water Rights from the Wells Siding diversion on the Muddy River to the Colorado River Mainstream as defined in the Guidelines, or from Bowman Reservoir to the Muddy River and the Colorado River Mainstream. MVIC specifically agrees not to deliver SNWA Water Rights to any other MVIC shareholder, person, or entity, except as expressly directed in writing by SNWA.

1.1. MVIC agrees to reserve capacity in its water distribution system to pass at least 9,000 acre-feet per year of SNWA's Water Rights at the minimum flow rate of 6,200 gallons

per minute through Bowman Reservoir and for conveyance of such SNWA Water Rights from Bowman Reservoir to the Gubler Crossing outflow on the Muddy River.

1.2. MVIC retains sole ownership of its water distribution system.

1.3. At any one time, SNWA shall be entitled to receive only the amount of water which is available “on turn” applicable to the shares owned by SNWA, but on an aggregate basis the amount of water SNWA shall receive annually shall equal the amount of SNWA Water Rights. SNWA shall not take water at times other than the time such water would have been taken customarily, unless otherwise agreed to in the Operating Plan.

1.4. SNWA Water Rights originating from the Muddy River and conveyed to the Colorado River Mainstream by MVIC may be allowed to flow down the river or may be diverted into MVIC’s distribution system at the Wells Siding diversion and MVIC will flow such SNWA Water Rights through its ditches before returning them to the river for SNWA’s use, as determined by the Operating Plan.

1.5. MVIC may utilize a portion of SNWA’s Water Rights discharged into Bowman Reservoir in exchange for an equal amount of MVIC water rights not being diverted by MVIC at Wells Siding or by allocating an equal amount of water to SNWA on MVIC’s seasonal water schedule.

1.6. SNWA shall have the right to install such measuring devices on portions of MVIC’s system as it deems necessary, provided such devices shall not interfere with MVIC’s operation of its system and provided further that SNWA shall pay all costs thereof. If permission is needed to cross private land to install and monitor such devices, it shall be the responsibility of SNWA to secure such permission.

2. Sharing Data. SNWA agrees to share data, as requested by MVIC, concerning the diversion of water, consumptive use of water, irrigated lands, and other applicable data with

respect to use of water from the Muddy River by the Tribe and other upstream water users. The majority of this information is documented in SNWA's annual Muddy River Tributary Conservation ICS Certification Reports.

3. Purchase of MVIC Shares. If SNWA should choose to issue to all MVIC shareholders a Request for Offers to Sell, SNWA will consult with MVIC prior to issuing the Request for Offers to Sell. Notwithstanding the foregoing, SNWA may purchase MVIC shares from any willing shareholders that approach SNWA without issuing a Request for Offers to Sell to all shareholders.

3.1. Provisions Regarding the Request for Offers to Sell.

3.1.1. MVIC agrees to cooperate in facilitating share sales by reviewing MVIC's records and certifying the status of the offered shares pertaining to ownership, liens, and encumbrances filed in MVIC's records, and that the stock certificates for the shares being offered for sale are on deposit with MVIC and are endorsed for transfer. If SNWA does not accept an Offer to Sell, MVIC shall return such stock certificates to the shareholder(s). MVIC's signature on an Offer to Sell shall certify that all owners of such stock certificate(s) as appear on the records of MVIC have signed the Offer to Sell, and that no liens or encumbrances apply to the stock certificate(s) that would prevent the shareholder from completing the sale and/or prevent SNWA from utilizing the water represented by the shares to their full extent.

3.1.2. Upon notification of SNWA's acceptance of the Offer to Sell, MVIC will record the name of Muddy River Water Holdings, Inc., a Nevada non-profit corporation wholly controlled by SNWA, as the record owner of the shares in MVIC's records and shall deliver stock certificates evidencing the transfer to SNWA. Muddy River Water Holdings, Inc. was authorized by the SNWA Board of Directors on December 15, 1999 to facilitate holding of water rights through shares in irrigation

companies. SNWA is not relieved from any obligations under this Amended and Restated Agreement by virtue of the name of Muddy River Water Holdings, Inc. being included as the record owner on the stock certificates.

4. Leases of MVIC Shares. To establish a uniform and transparent process for the lease of MVIC shares to SNWA by willing shareholders, SNWA agrees to issue a Request for Offers to Lease, in substantially the same form as Exhibit A attached hereto, to all MVIC shareholders (“Request for Offers to Lease”).

4.1. Issuance of Request for Offers to Lease. SNWA has issued a Request for Offers to Lease, mailed on or before August 25, 2016. Shareholders wishing to lease their shares to SNWA shall return the Offer to Lease to SNWA on or before September 19, 2016. SNWA will mail notification to those shareholders whose Offers to Lease were accepted by SNWA by October 3, 2016. All leases of unencumbered shares will be effective on October 3, 2016, and remain in effect until September 30, 2026.

4.2. Currently Encumbered Shares. MVIC shareholders whose shares will be leased to SNWA or otherwise encumbered and not available for lease as of October 3, 2016, but who desire to make offers to lease shares effective once the encumbering lease terminates, must comply with the timetable described above in Section 4.1 and as further described in Exhibit A.

4.3. SNWA may, at its sole discretion, choose to issue subsequent Requests for Offers to Lease with different payment terms and deadlines, but in substantially the same form as Exhibit A.

4.4. MVIC agrees to cooperate in facilitating such leases by reviewing MVIC’s records and certifying the status of the offered shares pertaining to ownership, liens, and encumbrances filed in MVIC’s records. MVIC’s signature on an Offer to Lease shall certify that all owners of such stock certificate(s) as appear on the records of MVIC have signed the Offer to

Lease, and that no liens or encumbrances apply to the stock certificate(s) that would prevent the shareholder from executing the lease and/or prevent SNWA from utilizing the water represented by the shares to their full extent

4.5. Upon notification of SNWA's acceptance of the signed Offer to Lease, MVIC will record the name of Muddy River Water Holdings, Inc., as the Lessee of record of the shares in MVIC's records.

4.6. Availability of Lease Option to All Shareholders. SNWA agrees to lease, under the terms of this Amended and Restated Agreement and the Request for Offers to Lease, Preferred and Common shares from any shareholder who returns properly executed documents as described in Exhibit A, on a first-come, first-served basis and in a non-discriminatory manner, subject to the appropriation of funds by SNWA's Board of Directors for such purposes.

4.7. Exclusive Mechanism for Shareholder Leases. SNWA and MVIC agree that this Amended and Restated Agreement and any subsequently generated Request for Offers to Lease provide the exclusive mechanism for the lease of MVIC shares by shareholders to SNWA.

5. Obligations of the Parties.

5.1. The Parties shall be obligated to perform all of the duties set forth in the Request for Offers to Lease and this Amended and Restated Agreement.

5.2. Pursuant to Section 3(D) of the Guidelines, SNWA is required to submit plans to the U.S. Bureau of Reclamation for the accounting and verification of any Muddy River water introduced into Lake Mead for the creation of ICS. Under State Engineer Order 1194, SNWA is required to make an annual accounting report for ICS credit. SNWA is responsible for submitting such plans and reports and MVIC agrees to cooperate with SNWA in the compilation and submittal of such plans and reports.

5.3. SNWA and MVIC agree that MVIC has no responsibility to ascertain

ownership of shares or encumbrances affecting shares covered by any offer beyond matters revealed by its own records.

6. Operating Plan. The Parties agree to use an Operating Plan to describe appropriate mechanisms for the conveyance of all SNWA Water Rights from Wells Siding or Bowman Reservoir to Lake Mead by MVIC (“Operating Plan”). Water represented by SNWA-controlled shares may be diverted into the MVIC distribution system at Wells Siding and is included on MVIC’s winter and summer water schedules. Based on these schedules, SNWA receives a “turn” on the various MVIC ditches, and SNWA’s shares are delivered to the Muddy River channel. The current Operating Plan is attached as Exhibit B hereto. The Parties expressly ratify and agree that said Operating Plan respects and protects the rights of all MVIC shareholders, including but not limited to those who continue to use their MVIC shares for irrigation purposes as decreed to MVIC. The Operating Plan shall be amended as necessary to reflect actual operating experience. The Operating Plan and any amendment shall require the written approval of the SNWA’s General Manager and MVIC’s President and General Manager.

7. Consideration to MVIC. In consideration of MVIC’s management of MVIC’s system in accordance with the Operating Plan, including but not limited to operation and maintenance of metering devices, in a manner that accommodates the conveyance of the SNWA Water Rights to Lake Mead and to ensure that other MVIC shareholders are not adversely impacted by such management, SNWA will provide MVIC with the following consideration:

7.1. A \$31.67 per acre-foot annual fee for the conveyance of any Muddy River water, owned, leased, or otherwise controlled by SNWA, which is not represented by MVIC shares, including but not limited to water from “Baldwin Springs” under Nevada State Engineer Permit No. 28791, Certificate No. 13445 (collectively, “Upper Muddy River Water”) from Wells Siding to Lake Mead. Unless otherwise agreed to by the Parties in the Operating Plan, each year SNWA will

provide MVIC, 30 days prior to October 1 of each year, an itemized accounting of all Upper Muddy River Water that SNWA desires to convey to Lake Mead in that season. Such accounting will include a description of all such Upper Muddy River Water, including certificate or permit numbers and copies of all deeds, leases or other documents evidencing legal entitlement to the use of such water rights. SNWA will obtain any approvals required by the Nevada State Engineer for the conveyance of Upper Muddy River Water to Lake Mead. Unless otherwise agreed by the Parties in the Operation Plan, the \$31.67 per acre-foot fee contemplated in this Section 7.1 will be paid annually upon the issuance of a final verification report by the U.S. Bureau of Reclamation and will be based upon the actual number of acre-feet of Upper Muddy River Water credited to SNWA as ICS in the verification report. The \$31.67 per acre-foot fee for the conveyance of Upper Muddy River Water will apply to water conveyed during calendar year 2016 and will escalate by 3% per year each year thereafter during the Term.

7.2. A contribution towards the cost of one full-time employee or contract equivalent position each year during the Term in an amount not to exceed \$73,122.11. The \$73,122.11 contribution set forth in this Section 7.2 will be increased by the same percentage as any Cost of Living Increase implemented for employees of the Las Vegas Valley Water District each year during the Term. The \$73,122.11 will apply for Water Year 2017 and will escalate on October 1 of each year thereafter during the Term. This employment contribution (including applicable escalation) is to be paid on or before October 1st of each year during the Term.

7.3. An annual operation and maintenance budget for costs associated with the conveyance of the SNWA Water Rights in the amount of \$180,000, to be paid on or before October 1st of each year during the Term.

7.4. A \$60 annual fee per Preferred share and a \$5.45 annual fee per Common share, exclusive of annual share assessments, for all shares leased to SNWA in accordance with an

offer under this Amended and Restated Agreement or the 2008 Agreement. SNWA will also pay any fees and assessments due for such leased shares during the lease term not to exceed \$40 per Preferred share annually and \$10 per Common share annually. Any fees and assessments in excess of those described above shall be the responsibility of the share owner. MVIC agrees to notify SNWA in the event a share owner does not pay the fees or assessments as required.

7.5. The Parties shall review the Operating Plan annually, beginning on the second anniversary of this Amended and Restated Agreement's Effective Date, to determine its adequacy. Such reviews will include assessing MVIC's budget and actual cost expenditures for such items. Adjustments to the consideration described in Section 7 will be made as mutually agreed to by the Parties.

8. Modification. This Amended and Restated Agreement may be amended only in writing signed by the Parties.

9. No Third Party Beneficiaries. This Amended and Restated Agreement is for the sole benefit of the Parties and does not create any right or benefit, substantive or procedural, enforceable by any third parties against the Parties.

10. Counterparts. This Amended and Restated Agreement may be executed and approved in multiple counterparts, each of which shall be deemed an original.

11. Integration. This Amended and Restated Agreement contains the entire understanding between the Parties with respect to the subject matter hereof, and supersedes all prior or contemporaneous agreements and understandings, oral or written, except as herein contained.

12. Waiver. Neither failure nor delay on the part of any Party to exercise any right, remedy, power, or privilege under this Amended and Restated Agreement shall operate as a waiver thereof.

13. Controlling Law. This Amended and Restated Agreement and all questions relating to its validity, interpretation, performance, and enforcement shall be governed by the laws of the

State of Nevada, as determined by a court(s) of competent jurisdiction in Nevada, without reference to its choice of law provisions.

14. Assignment. Neither Party may assign, delegate, or transfer its rights or obligations under this Amended and Restated Agreement without the prior written consent of the other Party. Any assignment, delegation, or transfer made without prior written consent shall be void and not merely voidable.

15. Indemnification. Each Party agrees to indemnify and hold harmless the other Party, and all the other Party's successors or assigns (collectively referred to as "Indemnified Party"), from and against the aggregate of all expenses, losses, costs, deficiencies, liabilities, and damages incurred or suffered by the Indemnified Party resulting from or arising out of any claim, damages, loss, or liability on account of the performance or nonperformance of any provisions under this Amended and Restated Agreement.

16. Notices. All notices, requests or other communications required under this Amended and Restated Agreement shall be in writing and shall be deemed to have been received when delivered or on the third business day following mailing, addressed as set forth below:

To SNWA:
Southern Nevada Water Authority
Attn: General Manager
1001 S. Valley View Blvd.
Las Vegas, NV 89153

With a copy to:
Southern Nevada Water Authority
Attn: General Counsel's Office
1001 S. Valley View Blvd.
Las Vegas, NV 89153

To MVIC:
Muddy Valley Irrigation Company
Attn: General Manager
2625 N. Moapa Valley Blvd.
Logandale, NV 89021

17. Non-Appropriation. All SNWA obligations to lease shares and pay the fees itemized in Section 7, following the first year of the share leases for Water Year 2017, are subject to the appropriation by SNWA's Board of Directors of sufficient funds for such payments in the succeeding Water Years.

18. Term. Unless otherwise agreed to in writing by the Parties this Amended and Restated Agreement will be valid from the Effective Date through December 31, 2026 ("Term").

19. Default and Remedies.

19.1. The rights and remedies under this Amended and Restated Agreement are cumulative and are in addition to and not in substitution for any other rights and remedies available at law or in equity or otherwise.

19.2. The Parties agree that irreparable damage would occur if any provision of this Amended and Restated Agreement were not performed in accordance with the terms hereof and that the Parties shall be entitled to equitable relief, including injunctive relief or specific performance of the terms hereof, in addition to any other remedy to which they are entitled at law or in equity.

19.3. Either Party may terminate this Amended and Restated Agreement, effective upon written notice to the other Party (the "Defaulting Party"), if the Defaulting Party materially breaches this Amended and Restated Agreement, and such breach is incapable of cure, or with respect to a material breach capable of cure, the Defaulting Party does not cure such breach within sixty (60) days after receipt of written notice of such breach. The written notice of default shall specify the basis for the default. The Parties shall remain liable for any obligations that the Parties had pursuant to this Amended and Restated Agreement prior to the date of termination, in addition to any other surviving obligations specified herein.

19.4. The rights and obligations of the Parties set forth in Paragraphs 13 and 15, and any right or obligation of the Parties which, by its nature, should survive termination or

expiration of this Amended and Restated Agreement, will survive any such termination or expiration.

IN WITNESS WHEREOF, each of the Parties has executed this Agreement as of the date and year first written above.

SOUTHERN NEVADA
WATER AUTHORITY

By: _____
John J. Entsminger
General Manager

MUDDY VALLEY IRRIGATION
COMPANY

By:  _____
Todd Robison
President

Approved as to form:

By: Dana Walsh FOR
Gregory J. Walch, Esq.
General Counsel

REQUEST FOR OFFERS TO LEASE
PREFERRED AND/OR COMMON SHARES OF STOCK
IN THE
MUDDY VALLEY IRRIGATION COMPANY

The Southern Nevada Water Authority ("SNWA") requests that owners of shares of stock in the Muddy Valley Irrigation Company ("MVIC") who desire to lease some or all of their shares, submit a completed and signed copy of the attached Offer to Lease Shares ("OFFER") to SNWA, 100 City Parkway, Suite 700, Las Vegas, Nevada 89106, ATTENTION: Colby N. Pellegrino, and ensure that such documentation is in SNWA's actual possession on or before 5:00 p.m. on September 19, 2016. OFFERS may be mailed to P.O. Box 99956, Las Vegas, NV 89193-9956. SNWA must receive the signed OFFER at the above offices on or before 5:00 p.m. on September 19, 2016. Please call Colby Pellegrino at 702-822-3378 with any questions. SNWA intends to lease shares in MVIC on a first come, first served basis, subject to appropriation of funds by its Board of Directors for such purposes.

The terms of this Request for Offers to Lease are as follows:

1. SNWA is requesting OFFERS from all MVIC shareholders. No OFFER will be accepted for lease of less than one (1) preferred share or one (1) common share. SNWA will only lease common shares from shareholders who lease to SNWA at least 75% of the preferred shares they own, or from shareholders who do not own any preferred shares.
2. SNWA will only consider accepting an OFFER if it is made on the attached form with no alterations to the terms contained in it.
3. Leases with shareholders whose shares are free from liens or encumbrances that would prevent the shareholder from executing the lease and/or prevent SNWA from utilizing the water represented by the shares as of October 3, 2016, will begin on October 3, 2016. The term of each lease will continue for a ten-year term to expire on September 30, 2026. For shares owned by an individual person (and not a trust or business entity), in the event the shareholder passes away during the lease term, at the option of the estate of the shareholder, the lease may be terminated before its expiration date. In the event of early termination, the estate of the shareholder shall reimburse SNWA pro-rata for any rent paid corresponding to the year of early termination.
4. Shareholders whose shares are currently leased to SNWA or another person and the term of such leases expires on or before September 30, 2018, may offer to lease such shares to SNWA pursuant to the terms of this Request for Offers to Lease, effective upon the expiration of their current leases; provided, however, that such shareholders must execute and deliver an OFFER to SNWA by 5:00 p.m. on September 19, 2016. The term of such leases will begin on October 1, 2017, or October 1, 2018, depending on when the shares become available for lease to SNWA pursuant to this Request for Offers to Lease and continue for a term to expire on September 30, 2026. Please indicate the ending date of the current lease on the OFFER.
5. Shareholders whose shares are currently leased to another party pursuant to a lease that will not be expired on October 3, 2016, may offer to lease shares to SNWA pursuant to the terms of this Request for Offers to Lease, including that such shareholders must execute and deliver an OFFER to SNWA by 5:00 p.m. on September 19, 2016. However, the term of each new lease will begin on October 1st of the following water year when the shares are unencumbered. The term of each new lease will

continue for a fixed period expiring on September 30, 2026. Please indicate the ending date of the current lease on the OFFER.

6. The annual rent for the lease and the latest date by which the lease payment will be mailed by SNWA to the Lessor is described in the table below. The initial lease payment amount will be escalated by 3% each year, as shown in the table below.

Water Year	Date of Annual Lease Payment	Annual Lease Payment per Preferred Share	Lease Payment per Common Share
2017 October 3, 2016 - September 30, 2017	10/17/2016	\$870.00	\$80.00
2018 October 1, 2017 - September 30, 2018	9/1/2017	\$896.10	\$82.40
2019 October 1, 2018 - September 30, 2019	9/1/2018	\$922.98	\$84.87
2020 October 1, 2019 - September 30, 2020	9/1/2019	\$950.67	\$87.42
2021 October 1, 2020 - September 30, 2021	9/1/2020	\$979.19	\$90.04
2022 October 1, 2021 - September 30, 2022	9/1/2021	\$1,008.57	\$92.74
2023 October 1, 2022 - September 30, 2023	9/1/2022	\$1,038.83	\$95.52
2024 October 1, 2023 - September 30, 2024	9/1/2023	\$1,069.99	\$98.39
2025 October 1, 2024 - September 30, 2025	9/1/2024	\$1,102.09	\$101.34
2026 October 1, 2025 - September 30, 2026	9/1/2025	\$1,135.15	\$104.38

7. Shareholders whose lease term begins on October 1, 2017, will be compensated at the rate of \$896.10 per preferred share and \$82.40 per common share, with subsequent rate increases consistent with the table, above. Shareholders whose lease term begins on October 1, 2018, will be compensated

at the rate of \$922.98 per preferred share and \$84.87 per common share, with subsequent rate increases consistent with the table, above. Shareholders whose lease term begins on October 1 of any year following 2018 will be compensated at the rate shown for the corresponding water year, with subsequent rate increases consistent with the table, above.

8. The Lessor agrees not to use, order, or divert any portion of the water leased to SNWA during the lease term.

9. Each signed OFFER returned to SNWA must also be signed by MVIC certifying that all record owners of the stock certificate have signed the OFFER, and that the stock certificates do not reflect any leases, liens, or encumbrances that would prevent the shareholder from executing the lease and/or prevent SNWA from utilizing the water represented by the shares to its full extent.

10. In addition, all OFFERS must also be accompanied with a copy of the relevant stock certificate and completed W9 Form. The W9 Form will be used to complete a Form 1099 to be submitted to the Internal Revenue Service by SNWA as required by law.

11. If the shares to be leased are owned by a trust, the OFFER must be accompanied by a copy of the certification of trust in compliance with Nevada Revised Statute 164.410. If the shares to be leased are owned by a limited liability company or other corporate entity, the OFFER must be accompanied by a certification that the individual signing on behalf of the entity is authorized to do so. The certification shall be signed by the president, managing member, or other individual who has the authority to bind the corporate entity. SNWA may request additional documentation for entity signature authority as needed.

12. All OFFERS made to SNWA must be signed by all persons whose name(s) appear as owners on the stock certificates for the shares offered for lease.

13. Pursuant to State Engineer Order 1194, conveyance to Lake Mead of the water represented by the leased shares requires verification by the Nevada State Engineer. The Lessor expressly agrees not to take any actions to protest or otherwise prevent the conveyance of this water to Lake Mead.

14. MVIC will not deliver the water represented by the leased shares for irrigation, but may either leave the water in the Muddy River or divert such water into its diversion ditches and allow such water to pass through its ditches into the Muddy River for discharge into Lake Mead.

15. By returning a signed OFFER to SNWA, each Lessor warrants and represents that the shares of stock in MVIC offered for lease are free and clear of all encumbrances and obligations that would prevent the shareholder from executing the lease and/or prevent SNWA from utilizing the water represented by the shares to its full extent during the lease term.

16. By October 3, 2016, SNWA will mail notice to all persons who submitted an OFFER whether or not their OFFER has been accepted. SNWA will also promptly notify MVIC of the name(s) of the Lessor(s) and of the shares for which the OFFER has been accepted. OFFERS complying in all respects with the requirements herein will, subject to available appropriations and Paragraph 19 below, be accepted in the order received by SNWA.

17. SNWA will pay any MVIC fees and assessments due for each leased share during the lease term not to exceed \$40 per preferred share annually and \$10 per common share annually. Any fees

and assessments in excess of those described above shall be the responsibility of the shareholder. MVIC will notify SNWA in the event applicable fees and assessments are not paid by the shareholder and in order to preserve its ability to receive water pursuant to the Lease, SNWA may, in its discretion, pay the outstanding amounts due and may deduct such amounts paid from the rent that would otherwise be paid to the shareholder.

18. On receipt of notification of SNWA's acceptance of a shareholder's OFFER, MVIC will record the name of Muddy River Water Holdings, Inc. as the record lessee of the shares in the Irrigation Company's records and shall deliver stock certificates or other documentation evidencing the lease to SNWA.

19. SNWA reserves the right to reject an OFFER if in SNWA's sole judgment the aggregate amount of water represented by shares from a particular ditch is not sufficient to enable convenient monitoring of the conveyance of such water through the ditches of the MVIC to Lake Mead.

20. No OFFER is a binding lease unless and until accepted by SNWA.

21. All SNWA obligations to lease shares and pay the MVIC fees and assessments as provided in this Request for Offers to Lease, following the first year of the lease for Water Year 2017, are subject to the appropriation by SNWA's Board of Directors of sufficient funds for such payments in the succeeding Water Years.

DATED this 25th day of August, 2016.

SOUTHERN NEVADA WATER AUTHORITY
100 City Parkway, Suite 700
Las Vegas, Nevada 89106

By: 
John J. Entsminger
General Manager

OFFER TO LEASE SHARES

I own stock certificates for _____ preferred shares and _____ common shares in the Muddy Valley Irrigation Company ("MVIC") and of these hereby offer to lease _____ preferred shares and _____ common shares to the Southern Nevada Water Authority ("SNWA") on the terms, price, and conditions set forth in this Offer and in SNWA's Request for Offers to Lease, which is incorporated herein by reference. This Offer will remain open through October 3, 2016. In the event this Offer is accepted, the terms of the lease are contained herein and in the Request for Offers to Lease. The water delivered to the undersigned by MVIC for said shares is conveyed through the ditch(es) listed below.

If SNWA accepts this OFFER, the lease will begin on (check one):

_____ October 3, 2016 (or)

_____ The shares referenced above are currently leased to SNWA or another person and such lease will expire on _____; accordingly, the lease term contemplated herein will commence on October 1, 20__.

The lease will terminate on September 30, 2026.

(To be signed and dated by all persons whose names appear on the stock certificate)

LESSOR 1

LESSOR 2

Date

Date

Lessor 1

Lessor 2

Printed: _____

Printed: _____

Date: _____

Date: _____

Address: _____

Address: _____

Phone Number: _____

Phone Number: _____

If offering a lease of common shares, you must check ONE of the options below.

_____ I am leasing at least 75% of my preferred shares to SNWA OR

_____ I only own common shares.

Preferred Shares Offered for Lease			Common Shares Offered for Lease		
Stock Certificate		Ditch Name	Stock Certificates		Ditch Name
Cert #	# of Shares		Cert #	# of Shares	

- I have enclosed a completed and signed copy of the W-9 Request for Taxpayer Identification Number and Certification required by the Internal Revenue Service (IRS).

Lessor Name (print) _____

If the proposed term of the lease in this OFFER will not begin on October 3, 2016, due to a lease or other encumbrance, please describe the lease or encumbrance to the best of your ability:

MUDDY VALLEY IRRIGATION COMPANY CERTIFICATION (REQUIRED)

The Muddy Valley Irrigation Company (MVIC) hereby certifies that all of the record owner(s) of the stock certificate(s) being offered for lease in the foregoing Offer to Lease have signed the Offer and the stock certificate(s) do(es) not reflect any liens or encumbrances on such shares that would prevent the shareholder from executing this lease and/or prevent SNWA from utilizing the leased water to its full extent during the lease term. MVIC shall notify SNWA in the event of a change in certificate number listed above.

DATED this _____ day of _____, 2016.

MUDDY VALLEY IRRIGATION COMPANY

By: _____
General Manager

For SNWA Use Only

The above Offer is: Accepted Rejected

DATED this _____ day of _____, 2016

SOUTHERN NEVADA WATER AUTHORITY
100 City Parkway, Suite 700
Las Vegas, Nevada 89106

By: _____
Authorized Representative

Please submit Offer to: **Colby N. Pellegrino,**
Colorado River Programs Manager
Southern Nevada Water Authority
If by First Class Mail **P.O. Box 99956, Las Vegas, NV 89196-9956**
If by Federal Express or in Person: **100 City Parkway, Ste. 700, Las Vegas, NV 89106**

Lessor Name (print) _____

Muddy Valley Irrigation Company and Southern Nevada Water Authority Operating Plan

THIS OPERATING PLAN is entered into this ___ day of _____, 2016 by and between the Southern Nevada Water Authority (SNWA) and the Muddy Valley Irrigation Company (MVIC pursuant to that certain Amended and Restated Water Operation and Management Agreement of even date herewith. Capitalized terms not defined herein shall have the same meaning ascribed to such terms in the Amended and Restated Water Operation and Management Agreement.

RECITALS

Contemporaneously herewith, the Parties have entered into an Amended and Restated Water Operation and Management Agreement (Management Agreement). Paragraph 6 of the Management Agreement requires the SNWA and MVIC to develop and agree upon an annual Operating Plan concerning appropriate mechanisms for the conveyance of SNWA Water Rights to Lake Mead.

NOW, THEREFORE, in consideration of the premises and mutual covenants contained herein, the Parties hereto agree as follows:

1. Delivery of Water. To provide proof to the Nevada State Engineer and U.S. Bureau of Reclamation that MVIC shares controlled by SNWA are no longer being used for irrigation, the SNWA and MVIC agree to account for the use of shares and verify irrigated and fallowed acreage in a manner that includes, at a minimum, the following:
 - a. Seasonal water schedules submitted to SNWA by MVIC which documents the number of shares controlled by SNWA on each irrigation ditch and the corresponding start and ending date/times for when SNWA is receiving delivery of its shares
 - b. A letter of concurrence signed by SNWA and MVIC summarizing the number of shares controlled by SNWA during each month of the calendar year, to be signed within a month following the conclusion of a calendar year
 - c. Bowman Reservoir water level elevation data recorded by MVIC to be submitted to SNWA within the month following the conclusion of a calendar year
2. Accounting for Water.
 - a. The MVIC and SNWA agree a portion of the flow measured at the Glendale gage is comprised of non-MVIC Muddy River water rights owned or controlled by the SNWA

and these rights will not be used by the MVIC and/or delivered to MVIC shareholders other than SNWA. The flows measured at the Glendale gage, less SNWA's non-MVIC Muddy River water rights, and channel consumptive use between the Glendale Gage and Wells Siding, represent the divertible flows available to MVIC at the Wells Siding.

b. Based on the calculated divertible flows available to the MVIC at Wells Siding, the acre-feet of water represented by Preferred and Common shares of MVIC will be calculated as follows:

I. Preferred shares: 100% of the divertible flows available to MVIC from May 1 to September 30 (the summer season) plus 75% of the flows from October 1 to April 30 (the winter season).

II. Common shares: 25% of the divertible flows from October 1 to April 30 (the winter season).

c. The MVIC and SNWA agree that the Muddy River decreed duty of 8.54 acre-feet per acre and the calculated amount of water represented by Preferred and Common shares will be used by MVIC to assist with determining the turn time allocated per share.

d. The MVIC will also work with SNWA to produce a map depicting the acreage scheduled to be irrigated for the upcoming season. This will ensure actual irrigated acreage corresponds to the number of shares being used for specific acreage.

3. Verification of Irrigated Acreage.

a. The SNWA will periodically have high resolution aerial photography of MVIC's service area taken and may utilize satellite data to observe agricultural activities

b. The SNWA will analyze the aerial photography and satellite data to determine and verify acreage that is being actively farmed and fallowed over the course of the year.

4. Conveyance of SNWA Coyote Spring Valley Groundwater. At any time, SNWA may resume pumping groundwater from Coyote Spring Valley and delivering the water to Bowman Reservoir. MVIC agrees to coordinate filling and release of water from Bowman Reservoir with SNWA in a manner that: 1) ensures dam safety requirements are met; 2) maintains MVIC's ability to meet water delivery requirements; and 3) ensures conveyance of SNWA's Coyote Spring Valley groundwater rights to the Muddy River. SNWA and MVIC will also work with Moapa Valley Water District to ensure the meter which measures the discharge of water to the Muddy River at Gubler Crossing remains operational. MVIC will also work with SNWA to periodically operate the Gubler Crossing discharge for the purpose of collecting water quality parameters that are necessary to maintain permits associated with the Gubler Crossing discharge structure.

5. Term. This Plan of Operations shall be effective October 1, 2016 and shall be amended as requested by either SNWA or MVIC.

IN WITNESS WHEREOF, each of the Parties has executed this Operating Plan as of the date and year first written above.

SOUTHERN NEVADA
WATER AUTHORITY

MUDDY VALLEY IRRIGATION
COMPANY

By: _____
John J. Entsminger
General Manager

By:  _____
Todd Robison
President

Approved as to form:

By:  _____
Gregory J. Walch, General Counsel

SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM
September 15, 2016

Subject: Agreement	Director's Backup
Petitioner: David L. Johnson, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors approve and authorize the General Manager to execute, in substantially the same form as that attached hereto, a Design and Construction Agreement and Water Services Agreement between Robin Prop Holdco, LLC, and the Authority regarding interim water facilities and water service in Garnet Valley.	

Fiscal Impact:

If the above recommendation is approved, the Authority will receive funds from Robin Prop Holdco, LLC, for water service in Garnet Valley at the rate of 53 percent of the then-current Wholesale Water Delivery charge.

Background:

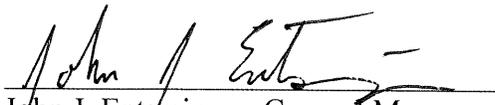
The 29th Special Session of the Nevada Legislature began on December 16, 2015, and adjourned on December 19, 2015 (29th Special Session). Senate Bill No. 1 of the 29th Special Session (SB 1) authorized the Governor's Office of Economic Development to finance infrastructure projects undertaken by local governments that support qualified projects. Senate Bill No. 3 of the 29th Special Session (SB 3) designated the Authority and the Las Vegas Valley Water District as the exclusive water service providers for the Garnet Valley groundwater basin in Clark County (Garnet Valley). Robin Prop Holdco, LLC (Faraday), is developing an electric car manufacturing facility, which is a qualified project pursuant to SB 1 and is located within the Apex Industrial Park (Apex) and Garnet Valley (Faraday Project).

Since April 21, 2016, the Board of Directors has approved agreements with Faraday and MWH Americas, Inc., to allow for the completion of the design of water infrastructure projects to serve portions of Apex pursuant to SB 3 (Apex Phase 1 Infrastructure). Provided that funding is secured pursuant to SB 1, it is anticipated that construction of the Apex Phase 1 Infrastructure will commence approximately 90 days after funding is made available. However, Faraday expects that it will require water service for the operational phase of the Faraday Project prior to completion of the Apex Phase 1 Infrastructure.

If approved, this agreement will provide a mechanism for Faraday to build a well to the Authority's design and construction specifications and to lease water from the Authority to serve the Faraday Project until such time as the Apex Phase 1 Infrastructure is complete.

This agreement is authorized pursuant to Section 6(j) of the SNWA 1995 Amended Cooperative Agreement. The office of the General Counsel has reviewed and approved the agreement.

Respectfully submitted:


John J. Entsminger, General Manager
JJE:DLJ:GPK:TDF:skm
Attachments

AGENDA ITEM #	12
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DISCLOSURE OF OWNERSHIP/PRINCIPALS

Business Entity Type							
<input type="checkbox"/> Sole Proprietorship	<input type="checkbox"/> Partnership	<input checked="" type="checkbox"/> Limited Liability Company	<input type="checkbox"/> Privately Held Corporation	<input type="checkbox"/> Publicly Traded Corporation	<input type="checkbox"/> Trust	<input type="checkbox"/> Non-Profit Organization	<input type="checkbox"/> Other
Business Designation Group							
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	<input type="checkbox"/> SBE	<input type="checkbox"/> PBE	<input type="checkbox"/> ESB	<input type="checkbox"/>		
Minority Business Enterprise	Women-Owned Business Enterprise	Small Business Enterprise	Physically Challenged Business Enterprise	Emerging Small Business			
Corporate/Business Entity Name:		Robin Prop Holdco LLC					
(Include d.b.a., if applicable)							
Street Address:		18455 S Figueroa Street			Website: www.faradayfuture.com		
City, State and Zip Code:		Gardena, CA 90248			POC Name and Email:		
Telephone No:		(424) 276-7616			Fax No:		
Local Street Address:		[To be determined]			Website: [To be determined]		
City, State and Zip Code:		[To be determined]			Local Fax No: [To be determined]		
Local Telephone No:		[To be determined]			Local POC Name Email: [To be determined]		
Number of Clark County, Nevada Residents Employed:							

All entities, with the exception of publicly-traded and non-profit organizations, must list the names of individuals, either directly or indirectly, holding more than five percent (5%) ownership or financial interest in the business entity appearing before the SNWA Board of Directors.

Publicly-traded entities and non-profit organizations shall list all Corporate Officers and Directors in lieu of disclosing the names of individuals with ownership or financial interest. The disclosure requirement, as applied to land-use applications, extends to the applicant and the landowner(s).

Entities include all business associations organized under or governed by Title 7 of the Nevada Revised Statutes, including but not limited to private corporations, close corporations, foreign corporations, limited liability companies, partnerships, limited partnerships, and professional corporations.

Full Name	Title	% Owned <small>(Not required for Publicly Traded Corporations/Non-profit organizations)</small>
Jia Yueting	Member / shareholder (indirect)	~94%

This section is not required for publicly-traded corporations.

- Are any individual members, partners, owners or principals, involved in the business entity, an SNWA full-time employee(s), or appointed/elected official(s)?
 Yes No (If yes, please note that SNWA employee(s), or appointed/elected official(s) may not perform any work on professional service contracts, or other contracts, which are not subject to competitive bid.)
- Do any individual members, partners, owners or principals have a spouse, registered domestic partner, child, parent, in-law or brother/sister, half-brother/half-sister, grandchild, grandparent, related to an SNWA full-time employee(s), or appointed/elected official(s)?
 Yes No (If yes, please complete the Disclosure of Relationship form on Page 2. If no, please print N/A on Page 2.)

I certify under penalty of perjury, that all of the information provided herein is current, complete, and accurate. I also certify that the entity is not on the federal government's Excluded Parties List, as defined by 2 CFR § 180.945. I further understand that the SNWA will not take action on land-use approvals, contract approvals, land sales, leases or exchanges without the completed disclosure form.

David H. Cichowski
 Signature
 President
 Title

David Wisniewski
David H. Cichowski
 Print Name
03/21/2016
 Date

DISCLOSURE OF RELATIONSHIP

List any disclosures below:
(Mark N/A, if not applicable.)

NAME OF BUSINESS OWNER/PRINCIPAL	NAME OF SNWA EMPLOYEE OR OFFICIAL AND JOB TITLE	RELATIONSHIP TO SNWA EMPLOYEE OR OFFICIAL	SNWA EMPLOYEE'S/OFFICIAL'S DEPARTMENT
N/A	N/A	N/A	N/A

"Consanguinity" is a relationship by blood. "Affinity" is a relationship by marriage.

"To the second degree of consanguinity" applies to the candidate's first and second degree of blood relatives as follows:

- Spouse – Registered Domestic Partners – Children – Parents – In-laws (first degree)
- Brothers/Sisters – Half-Brothers/Half-Sisters – Grandchildren – Grandparents – In-laws (second degree)

For SNWA Use Only:

If no Disclosure or Relationship is noted above or if the section is marked N/A, please check this box:

No Disclosure

If any Disclosure of Relationship is noted above, please complete the following:

Yes No Is the SNWA employee(s) noted above involved in the contracting/selection process for this particular agenda item?

Yes No Is the SNWA employee(s) noted above involved in any way with the business in performance of the contract?

Notes/Comments:

Tabitha Fiddymet

Signature

Tabitha Fiddymet

Print Name

Authorized Department Representative

**GARNET VALLEY WELL NO. GVWS-01
DESIGN AND CONSTRUCTION AGREEMENT
AND WATER SERVICES AGREEMENT**

THIS AGREEMENT, by and between the SOUTHERN NEVADA WATER AUTHORITY, a political subdivision of the State of Nevada, hereinafter called "SNWA," and ROBIN PROP HOLDCO, LLC, a Delaware limited liability company, hereinafter called "Developer." For convenience, SNWA and Developer are referred to herein individually as "**Party**" and collectively as the "**Parties**."

RECITALS

WHEREAS, Senate Bill No. 1 of the 29th Special Session of the Nevada Legislature ("**SB 1**") authorized the Governor's Office of Economic Development ("**GOED**") to finance infrastructure projects undertaken by local governments that support qualified projects;

WHEREAS, SB 1 establishes that when a local government receives notice that a qualified project will be located within its jurisdiction, the local government may obtain economic development financing, through an economic development financing agreement, to carry out infrastructure projects related to the qualifying project ("**Qualified Project**");

WHEREAS, GOED may finance the local government's infrastructure projects undertaken pursuant to SB 1 through the proceeds of bonds, securities or other indebtedness issued by the State of Nevada;

WHEREAS, to repay the financing, GOED will administer special districts or tax increment areas created for the purpose of carrying out the infrastructure projects, as the revenues from any special districts will be pledged for the repayment of any bonds, securities or other indebtedness;

WHEREAS, Senate Bill No. 3 of the 29th Special Session of the Nevada Legislature ("**SB 3**") designated SNWA and the Las Vegas Valley Water District as the exclusive water service providers for the Garnet Valley Ground Water Basin in Clark County ("**Garnet Valley**");

WHEREAS, pursuant to SB 1 and NRS 360.940 GOED established a Tax Increment Area (the "**TIA**") in the Garnet Valley and more specifically defined as the phase I influence area ("**Phase I**") (described in **Exhibit 1** attached hereto), which was established to facilitate certain development and provide financing for certain infrastructure projects;

WHEREAS, pursuant to SB 1 and NRS 360.940, Developer is developing a Qualified Project (the “**Faraday Project**”) within GOED’s Financing District in the Garnet Valley (as depicted in **Exhibit 2** attached hereto and incorporated herein by this reference);

WHEREAS, because the Faraday Project is a Qualified Project, and pursuant to SB 1, GOED may reimburse Developer for the costs and expenses incurred by Developer under this Agreement;

WHEREAS, pursuant to the terms of that certain Amended and Restated APEX Phase 1 Infrastructure Design Agreement, dated May 19, 2016, and that certain Amended and Restated Escrow Agreement Regarding Infrastructure Development, dated May 19, 2016, between SNWA and Developer, SNWA has initiated the design of permanent potable water facilities (“**Phase 1 Infrastructure**”) to serve Garnet Valley;

WHEREAS, pursuant to the terms of that certain Water Services Agreement, dated May 4, 2016, between SNWA and Developer (attached hereto as **Exhibit 3** and incorporated herein), SNWA is providing construction water for the construction phase of the Faraday Project;

WHEREAS, Developer requires interim non-potable water service prior to completion of the Phase 1 Infrastructure to serve the operational phase of the Faraday Project;

WHEREAS, Developer is willing to install a production water well, water pump and appurtenances (including provision for power) within the TIA and Phase 1 boundaries (“**Interim Facilities**”), and as depicted in **Exhibit 4** attached hereto and incorporated herein, that will allow Developer to divert up to 580 acre-feet per year for the operational phase of the Faraday Project until such time as the Phase 1 Infrastructure is complete (“**Water Service**”);

WHEREAS, in order to provide temporary service of adequate pressure and quantity to the Faraday Project, the installation of the Interim Facilities is required.

WHEREAS, SNWA Permit Nos. 85852T-85855T grant SNWA the right to temporarily divert 3,000 acre-feet of water per year originally permitted for diversion in Coyote Spring Valley (Hydrographic Area No. 210) from wells in Garnet Valley for use in certain portions of Clark County, Nevada, to accommodate anticipated water needs (“**SNWA Permits**”) for the Faraday Project;

WHEREAS, SNWA and Developer desire to enter into this Agreement to outline the rights and obligations of each Party in providing Water Service to Developer and for installation of the Interim Facilities;

NOW THEREFORE, in consideration of the mutual promises set forth herein, and for the other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties, intending to be legally bound, agree as follows:

ARTICLE I

DEVELOPER AGREES:

1. No real property shall receive a water commitment by virtue of the design and construction of the Interim Facilities. Nothing in this Agreement or any actions taken pursuant to this Agreement shall commit water service to any property. Further, nothing in this Agreement commits or reserves water capacity in the Interim Facilities being constructed. This Agreement does not grant the Developer any property right in a water service to any of Developer's property or otherwise to the Faraday Project.

2. To meet with SNWA within ten (10) working days of the Effective Date of this Agreement to establish a mutually acceptable project schedule.

3. To, at its sole cost and expense, and not reimbursable by SNWA, (i) have prepared the design, including all addenda, for the construction of the Interim Facilities, which include a production water well, water pump and appurtenances (including provision for power) necessary for supplying Water Service to the Faraday Project; (ii) design the production water well to SNWA specifications ("Well Facility"); (iii) obtain SNWA approval, consistent with the terms of this Agreement, of the design of the Well Facility; and (iv) obtain all necessary permits and approvals at Developers sole cost and expense for the construction and installation of the Interim Facilities, except those permits and or approvals to be secured by SNWA and specifically described in Article II Section 2 of this Agreement.

4. The design of the Well Facility shall be submitted to SNWA at least thirty (30) calendar days prior to commencement of construction. The Developer shall provide SNWA twenty-one days (21) calendar days for the review and approval of the design. SNWA's failure to respond in writing within such twenty-one (21) day period, shall be deemed SNWA's approval. Should the design submittal be disapproved, the Developer shall provide SNWA with a twenty-one (21) calendar days for the review and approval of each subsequent submittal.

5. Throughout the design and construction of the Well Facility, Developer's engineer shall carry Commercial General Liability insurance with limits of no less than \$3,000,000 per occurrence and \$3,000,000 in the aggregate, covering personal injury and property damage claims and naming SNWA

and Developer as an additional insured, and the insurer shall waive its right of subrogation against SNWA and Developer. In addition, Developer's engineer will carry Professional Liability Insurance with limits of no less than \$1,000,000 per claim. Developer's engineer shall provide evidence of Worker's Compensation coverage as required by Nevada Statute with Employer's Liability limits of no less than \$500,000 and a Waiver of Subrogation against SNWA and Developer. Developer's engineer will furnish SNWA and Developer with a Certificate of Insurance evidencing such insurance within thirty (30) days after the Effective Date.

6. To provide to SNWA, not less than thirty days prior to the start of construction, the name, title, address, email address, and telephone number of a designated local Project Administrator, who shall be responsible for administration of the Well Facility construction agreements. SNWA will address all correspondence regarding the Well Facility to the Project Administrator, at the designated address or email address. The mailing or emailing to the Project Administrator of any notice, letter, or other communication shall be deemed sufficient service thereof. The date of said service shall be two (2) days after the date of such mailing or the date of the email transmittal. The Project Administrator, or any of the related information, may be changed at any time by providing written notification to SNWA's Construction Division.

7. Upon selection of a contractor or contractors, to notify SNWA of the selection.

8. Developer shall be responsible for all damage or injury that may be caused on any property by trespass of Developer's officers, employees, agents, contractors, licensees, or invitees whether the said trespass was committed with or without the consent or knowledge of Developer. Developer shall provide SNWA with written permission of the owner of record of any and all public or private property (other than Developer's) upon which it stockpiles or stores materials and/or equipment. Material and equipment stored without said permission shall be immediately removed by Developer at Developer's sole expense. Said permission shall be furnished to SNWA prior to any use of public or private property.

9. To cause a pre-construction conference to be conducted at a location, at an hour, and on a day mutually acceptable to Developer and SNWA.

10. To cause to be constructed, at Developer's sole cost and expense, the Well Facility designed in accordance with the provisions of this Agreement, by furnishing all necessary materials, labor, equipment, and services therefor.

11. To cause all work required to construct the Well Facility to be subject to observation by an authorized representative of SNWA.

12. To pay SNWA for all direct and indirect costs incurred by SNWA or its contractors in the inspection of the construction of the Well Facility.

13. Developer and its officers, employees, agents, contractors, licensees or invitees, at Developer's sole cost and expense, shall at all times comply with all applicable laws, ordinances, statutes, rules, acts or regulations in effect, or that become in effect during the time work is performed under this Agreement, including but not limited to those laws outlined by the Endangered Species Act of 1973, and the Clark County Desert Conservation Plan, August 1, 1995.

14. Developer is fully responsible for ensuring no harm comes to any tortoises found on the work site, unless it is unavoidable. Tortoises will not be intentionally killed, harmed, or taken for private use. In the event that a desert tortoise is encountered on the work site, the SNWA Resources & Facilities Department biologist shall be notified and Developer shall be responsible for handling and relocating all such tortoises in accordance with all applicable laws and regulations.

15. To indemnify, defend and hold SNWA harmless from any and all claims, demands, liens, actions, damages, costs, expenses, and attorneys' fees based upon or arising out of alleged acts or negligence of Developer or its officers, employees, agents, contractors, licensees or invitees during the design, construction, and installation of the Interim Facilities, except to the extent caused by willful or negligent acts of SNWA or its agents. As a material part of the consideration for this Agreement, Developer hereby assumes all risk of injury to persons and damage to property resulting from the construction of the Interim Facilities from any source and to whomever belonging, except to the extent caused by willful or negligent acts of SNWA or its agents, and hereby waives all claims in respect thereof against SNWA, and agrees to defend and hold SNWA harmless from and against any such claims by others. SNWA shall not be liable or responsible for the loss of or damage to any of the Developer's property, or that of its employees, customers or invitees, resulting from burglary, theft or vandalism; nor shall SNWA be liable for loss of or injury or damage to persons or property occurring during the construction of the Project for any cause, or under any circumstances, except to the extent caused by or resulting from the willful or negligent acts of SNWA or its agents.

16. To furnish to SNWA all full-size, sealed, reproducible original design drawings and as-built drawings and specifications for the Well Facility and all proprietary rights thereto. These deliverables shall include CAD disks prepared using AutoCAD (version in accordance with the SNWA's Facility Engineering Guidelines) utilizing SNWA's insertion blocks and layering standards, one (1) copy of the specifications in Word 2010 or later format, one (1) set of full-size drawings plotted on paper medium, and one (1) set of blue-line prints of the full-size drawings. The submittal of the as-

built drawings and specifications shall be made within sixty (60) calendar days of delivery by SNWA of the as-built information, in accordance with the provisions of this Agreement. Revisions and resubmittals, if required after SNWA review, shall be made within thirty (30) calendar days of return of the reviewed submittal by SNWA. As-built drawing submittals must be accepted by SNWA prior to acceptance of the Well Facility by SNWA.

17. To pay all necessary design and construction costs for dust mitigation measures as required by the applicable jurisdiction at the construction site in accordance with the applicable laws or regulations covering the same subject matter.

18. To, upon SNWA's request, convey to SNWA all rights, title, and interest in the Well Facility and underlying real property, having dimensions reasonably acceptable to SNWA, by furnishing a Bill of Sale and Grant, Bargain, Sale Deed to SNWA on forms provided by SNWA and certifying that the Well Facility will be free of liens and other encumbrances, in each case subject to the following conditions being satisfied to SNWA's reasonable satisfaction:

- (a) SNWA has commenced construction of Phase 1 Infrastructure;
- (b) Funding for completion of construction of Phase 1 Infrastructure has been secured.

19. That until such time as SNWA accepts dedication of the Well Facility, Developer, at its sole cost and expense, will operate and maintain the Well Facility in good working order and shall have the right to use the Well Facility to obtain Water Service for the Faraday Project.

20. To meter and record all water diverted from the Well Facility and report such data to SNWA once per month. Developer acknowledges and agrees that SNWA is responsible for providing this information to the Nevada State Engineer as a condition of the SNWA Permits.

21. To make payment to SNWA within thirty (30) days of receipt of the invoice for water diverted in accordance with the provisions of this Agreement.

22. Developer agrees that it does not have any interest or estate in the SNWA Permits, and shall not claim at any time any interest or estate of any kind whatsoever in the SNWA Permits, by virtue of the rights granted under this Agreement. Developer acknowledges that the right to use water pursuant to the Agreement is in the nature of a usufructuary right. Developer agrees that the water provided to Developer is owned by SNWA and that any wastewater or treated effluent generated by Developer is also owned by SNWA and may not be transferred to any other party by Developer.

ARTICLE II

SNWA AGREES:

1. To make available, at its sole cost and expense, appropriate employees of the SNWA, during SNWA working hours, for consultation regarding design criteria, review and approval of the preliminary engineering design report, delivery of SNWA record data pertinent to the design, periodic review of the design, and final review and acceptance of the Interim Facilities design prepared by Developer's engineer, all in accordance with the project schedule as established jointly by SNWA and Developer.
2. To file with the Nevada State Engineer any necessary temporary or permanent change applications of the SNWA Permits to allow for diversion of up to 580 acre-feet of water per year from the Well Facility on a first priority basis. SNWA will make water available to Developer under the SNWA Permits to the extent water is available under any such approved temporary change application(s) and diversions are not limited or completely unavailable as provided for in the Agreement. To the extent water provision is limited or unavailable under the SNWA permits, SNWA will exercise commercially reasonable efforts to provide the water under other permits it may hold.
3. To provide to Developer the water meters and backflow prevention assemblies necessary for the provision of Water Service, to be installed by Developer at the Faraday Project site.
4. To review the as-built drawings and specifications submitted by Developer's Engineer, and return either SNWA's review comments or a letter accepting the as-built drawings and specifications within fourteen (14) calendar days of receipt by SNWA.
5. To invoice Developer in accordance with the charges set forth in Article III for any water use by Developer in any calendar year during the term hereof, by no later than March 1 of each subsequent year.
6. To meet with Developer within ten (10) working days of the Effective Date of this Agreement to establish a mutually acceptable project schedule.
7. To cause a pre-construction conference to be conducted at a location, at an hour, and on a date mutually acceptable to Developer and SNWA.
8. To collect from the Well Facility, and provide to the Nevada State Engineer as required by the SNWA Permits, monthly production volumes and any other required hydrologic data.

ARTICLE III

IT IS MUTUALLY AGREED:

1. SNWA has no obligation to accept dedication of the Well Facility unless construction of Phase 1 Infrastructure has commenced and funding for completion of construction of the Phase 1 Infrastructure has been secured.

2. SNWA will provide wholesale water service to Developer pursuant to the terms of this Agreement. Developer shall pay SNWA for the amount of water used pursuant to this Agreement at a rate of 53% of the then-current SNWA Wholesale Delivery Charge for the applicable use period. For example, the current SNWA Wholesale Delivery Charge is \$303 per acre-foot and approximately 53% of that charge is used to fund operating expenses that would be applicable to Garnet Valley. For the current SNWA Wholesale Delivery Charge, Developer's payment for Garnet Valley water service would be 53% of \$303 or \$160.59 per acre-foot. Developer's water use shall be measured by the annual volume of water pumped by Developer under the SNWA Permits. The SNWA Wholesale Delivery Charge is the per acre-foot charge that SNWA charges its purveyor member agencies for the treatment and delivery of treated, potable water and is determined and adopted by the SNWA Board of Directors. Developer's payments to SNWA for wholesale water service in Garnet Valley are meant to reimburse SNWA for the costs SNWA incurs in keeping any SNWA water rights available to Developer in good standing with the Nevada State Engineer, including monitoring and reporting expenses. Developer will not be charged for any SNWA fees that are applicable to water sources not available for service to Garnet Valley for water wholesaled by SNWA to Developer for use in Garnet Valley.

3. The property depicted on Exhibit 2 shall have no water commitment by virtue of the construction of the Interim Facilities. Requests for future use of said facilities to deliver water to the property depicted on Exhibit 2 shall require that a water commitment from the water purveyor be obtained before the facilities can be utilized.

4. Provisions for diversion of water require approval from the Nevada State Engineer. SNWA and Developer acknowledge that the Nevada State Engineer has, pursuant to both statutory and case law, broad authority to administer groundwater resources in the State of Nevada, and furthermore, that nothing contained in this Agreement obligates SNWA to provide water to Developer if SNWA's ability to provide such service is prohibited or diminished by a final, unstayed, interim or unappealable ruling or decision for the Nevada State Engineer, from a court of competent jurisdiction, or any federal, state or local governmental agency of competent jurisdiction that makes illegal or permanently restrains, enjoins or otherwise limits SNWA's ability to make water available for diversion (any of the foregoing

occurrences, “**Force Majeure Event**”). SNWA shall have no obligation hereunder to challenge any such ruling, decision or order, but SNWA will notify Developer in writing if it does not intend to challenge any such ruling, decision or order and will reasonably support, cooperate with (without any obligation to incur any costs), and not object to Developer appearing as a real party in interest to challenge any such ruling, decision or order in Developer desires to do so. In the event water availability is materially delayed, materially interrupted or terminated due to (i) the occurrence of a Force Majeure Event which SNWA elects not to challenge (and which Developer does not thereafter elect to challenge) or (ii) a final and non-appealable Force Majeure Event, Developer shall have the right to terminate this Agreement and in such event neither the Developer nor SNWA shall have any further obligations hereunder. Developer hereby releases and waives any claims or causes of action in law or equity against SNWA in the event water availability is delayed, interrupted or terminated due to the occurrence of any Force Majeure Event..

5. This Agreement shall inure to the benefit of, and be binding upon, SNWA and the Developer and their successors and assigns; provided however that no assignment of this Agreement shall be made without written consent of the Parties to this Agreement. Nothing in this Agreement shall be construed to give any rights or benefits to any member of the general public or any other individual or entity. This Agreement is intended to benefit only the Parties hereto.

6. The Effective Date of this Agreement is the date that the Agreement is formally executed by SNWA.

7. This Agreement shall be effective, unless otherwise terminated pursuant to the terms of this Agreement, for a period of fifty (50) years commencing on the Effective Date and renewable for another twenty-five (25) years by Developer giving written notice to renew at least ninety (90) days prior to the expiration of the original fifty-year (50) term.

8. Each Party hereto warrants to the other that it, and its signatory hereunder, is duly authorized and empowered to execute this Agreement and to bind said Party to the terms of this Agreement.

9. The construction, validity and effect of this Agreement shall be governed by the laws of the State of Nevada.

10. Should any covenant, condition, term or provision of this Agreement be deemed by a court of competent jurisdiction to be invalid or unenforceable, all of the remaining covenants, conditions, terms and provisions herein shall remain in full force and effect.

11. That this Agreement and attached Exhibits contain the entire agreement between the parties and can be modified, supplemented or amended only in writing, duly executed by both Developer and SNWA or its designees.

12. This Agreement shall automatically terminate upon the occurrence of any of the following:

- a. If the design for the Well Facility has not been approved for construction by SNWA within three (3) months following the Effective Date of this Agreement, or if the construction of the Interim Facilities has not commenced within three (3) months following the date of SNWA approval of the construction drawings, or if active construction work is discontinued for a period of six (6) months. SNWA may terminate the Agreement, at its sole option, if such construction is commenced within said three (3) month period, but is not diligently prosecuted to completion in a manner acceptable to SNWA. Termination for failure to diligently prosecute shall occur after SNWA's written notice to Developer that it has not followed the conditions of this Agreement.
- b. If construction of the Faraday Project has not begun within three years after the Effective Date. For purposes of this Agreement, "construction" shall be evidenced by mobilization of contractor forces, the delivery of substantial construction materials and the beginning of either substantial grading or trenching activities. Additional construction must proceed with all due diligence.
- c. If Phase 1 Infrastructure has been completed, Developer has dedicated the Well Facility to SNWA pursuant to this Agreement and Developer has obtained water service from the retail water purveyor in Garnet Valley.

13. Failure of a Party to enforce any provisions of this Agreement shall not constitute a waiver by such Party, and such Party may choose to enforce any breach of this Agreement at any time.

IN WITNESS WHEREOF, the Developer has executed this Agreement on the _____ day of _____, 2016.

ROBIN PROP HOLDCO, LLC
a Delaware Limited Liability Company

Chaoying Deng, President

THIS AGREEMENT shall be in full force and effect as of the _____ day of _____, 2016, when it was duly signed by the proper officer of the Southern Nevada Water Authority.

APPROVED AS TO FORM:

SOUTHERN NEVADA WATER AUTHORITY



Gregory J. Walch, General Counsel

John J. Entsminger, General Manager

EXHIBIT 1

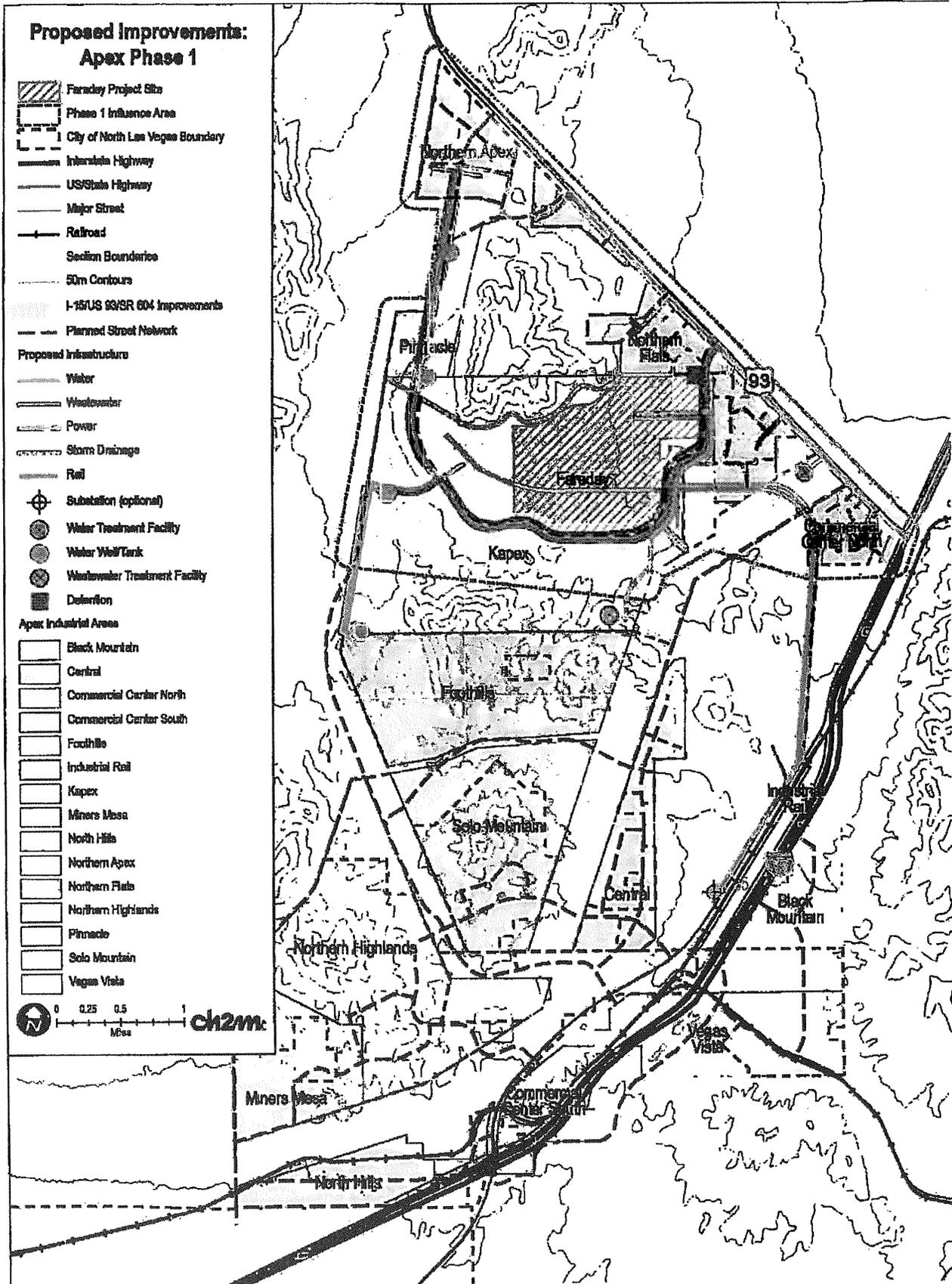
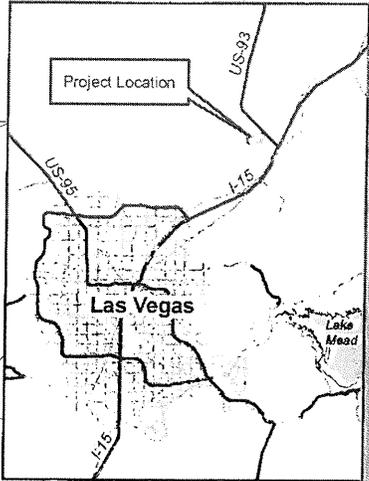


EXHIBIT 2



Apex Power Pwly

US HWY 93

Faraday Future

Gamel Valley Blvd

Grand Valley Pwly

Interstate-15

EXHIBIT 3

WATER SERVICE AGREEMENT

This Water Service Agreement ("Agreement") is made and entered into this 4th day of May, 2016 ("Execution Date"), by and between the Southern Nevada Water Authority, a political subdivision of the State of Nevada ("SNWA"), and Robin Prop Holdco, LLC, a Delaware limited liability company ("Faraday"). For convenience, SNWA and Faraday are referred to herein individually as "Party" and collectively as the "Parties."

WITNESSETH

- A. **WHEREAS**, Senate Bill No. 3 of the 29th (2015) Special Session of the Nevada Legislature ("**SB 3**") designated SNWA and the Las Vegas Valley Water District ("**LVVWD**") as the exclusive water service providers for the Garnet Valley Groundwater Basin in Clark County ("**Garnet Basin**");
- B. **WHEREAS**, Faraday, an electric vehicle developer, is developing an electric vehicle plant at the Apex Industrial Park ("**Apex**"), which is located within the Garnet Basin;
- C. **WHEREAS**, Faraday has requested water service from SNWA for construction activities related to its car plant, as required pursuant to SB 3;
- D. **WHEREAS**, other entities (which, together with Faraday, shall be referred to herein as "**Developers**") may request that SNWA provide water service for construction related activities in Garnet Basin during the Term (as defined below) of this Agreement;
- E. **WHEREAS**, NV Energy owns and operates generating facilities at the Arrow Canyon Complex ("**ACC**") including the Reid Gardner Generating Station, Chuck Lenzie Generating Station, and Silverhawk Generating Station, which is located in the vicinity of Apex;

- F. **WHEREAS**, as part of its ACC operations, NV Energy owns and operates wells that it uses to provide water to its generating facilities;
- G. **WHEREAS**, pursuant to that Water Facilities Use Agreement (“**NV Energy Agreement**”) executed on February 4, 2016, NV Energy has agreed to allow SNWA to use NV Energy’s wells at the ACC to provide water service to Developers to the extent such use does not negatively impact the generating facilities’ reliability, create undue risk to plant systems and equipment, or create undue risk to the environment in the form of spills or contamination, among other terms, conditions, and limitations set forth in the NV Energy Agreement. The NV Energy Agreement is attached hereto and incorporated herein as **Exhibit “A”**.
- H. **WHEREAS**, SNWA Permit Nos. 85852T-85855T grant SNWA the right to temporarily divert 3,000 acre-feet of water per year originally permitted for diversion in Coyote Spring Valley (Hydrographic Area No. 210) from wells in Garnet Basin for use in Clark County, Nevada to accommodate anticipated water needs for construction activities in Garnet Basin (“**SNWA Permits**”);
- I. **WHEREAS**, the Parties desire that SNWA develop, construct and operate the necessary tie-ins to NV Energy’s well distribution systems (“**SNWA Facilities**”) such that water can be delivered to Faraday via the points of delivery shown on **Exhibit “B”** attached hereto and incorporated herein by this reference (“**Points of Delivery**”);
- J. **WHEREAS**, SNWA and Faraday desire to enter into this Agreement in order to outline the rights and obligations of each Party in the provision of water to accommodate Faraday’s construction activities.

NOW THEREFORE, in consideration of the mutual promises set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties, intending to be legally bound, do hereby agree as follows:

1. **Term.** This Agreement commences on the Effective Date and continues until February 15, 2017 (“**Term**”); provided, however, this Agreement will automatically terminate if the NV Energy Agreement is terminated for any reason.
2. **Rate, Metering, and Construction Water Service.**
 - a. **Rate.** The rate SNWA will charge Faraday for construction water provided under this Agreement will be two dollars and thirty-three cents (\$2.33) per one thousand gallons (1,000).
 - b. **Metering.** SNWA shall monitor and record water metered at the Points of Delivery at least monthly and report such data to Faraday every 30 days. SNWA is responsible for providing well pumping information quarterly to the Nevada State Engineer as a condition of the SNWA Permits.
 - c. **Payment.** Prior to commencement of service, Faraday will pay SNWA a non-refundable amount of two hundred and fifty thousand dollars (\$250,000). SNWA will record water usage consistent with Paragraph 2(b) above, calculate the amount due using the rate stated in Paragraph 2(a) above, and deduct the amount due from the \$250,000 non-refundable deposit. If at the end of the Term, Faraday used less than \$250,000 of construction water at the rate stated in Paragraph 2(a), Faraday will not be entitled to a refund of the balance. If Faraday uses more than \$250,000 of construction water, SNWA will bill for water used and Faraday will pay the invoice within thirty days (30) of the invoice date.

3. SNWA's Obligations to Faraday.

- a. Provide Water. SNWA shall provide construction water to Faraday at the Points of Delivery to the extent water is available under the SNWA Permits and the NV Energy Agreement and is not limited by the Nevada State Engineer or completely unavailable as provided for in this Agreement. If the provision of construction water at the Points of Delivery is curtailed by the Nevada State Engineer or is otherwise unavailable under the SNWA Permits or the NV Energy Agreement, SNWA will exercise commercially reasonable efforts to provide the construction water to Faraday under other permits SNWA may hold. If a new point of diversion or water source is identified and utilized, the Rate as provided for in Paragraph 2(a) above will be recalculated.
- b. Provide Equipment. SNWA shall provide Faraday with necessary water meters and back flow prevention assemblies to be installed by Faraday at the Points of Delivery.

4. NV Energy Agreement & Faraday's Obligations to SNWA.

- a. Indemnification. Based on this Agreement and the acknowledgements contained herein, Faraday agrees to indemnify, hold harmless, and defend SNWA for any cost or liability SNWA may incur under the terms of the NV Energy Agreement. Faraday's indemnification obligation shall not apply to losses, damages, claims, expenses and other liabilities arising out of, relating to, or resulting from the reckless or willful misconduct of SNWA or any of SNWA's officers, directors, employees, contractors or agents. Specifically, and without limiting the foregoing, Faraday agrees to the following:

- i. If a mechanic's lien ("Lien") arising out of any activity undertaken pursuant to this Agreement is recorded against any property owned by NV Energy, its affiliates, or its subsidiaries at any time, Faraday shall obtain the release of (or otherwise satisfy) the Lien within ten (10) days of receipt of notice of the Lien. If Faraday fails to do so, (1) SNWA may take such steps and make such expenditures as, in its sole discretion, it deems advisable to obtain release of or otherwise satisfy the Lien(s), and (2) Faraday shall, upon demand, reimburse SNWA for all costs and expenditures incurred, including without limitation, attorneys' fees, court costs, surety premiums incurred by SNWA in obtaining such release or satisfaction.
- ii. Faraday, at its sole cost, shall repair any damage to NV Energy's property resulting from the activities of SNWA (to the extent such activities were not undertaken in a grossly negligent or intentional manner), Faraday or their respective employees, contractors or subcontractors, including without limitation restoring to the extent reasonably possible the property to the condition it was in before SNWA, Faraday and their respective employees, contractors and subcontractors commenced their activities permitted by this Agreement. Faraday shall perform all repair and restoration activities on NV Energy's property to the satisfaction of NV Energy and in accordance with all applicable laws as well as applicable guidelines of the Nevada Division of Environmental Protection and the State Engineer and any other state or local agency with relevant jurisdiction. If the activities of Faraday or its employees, contractors or subcontractors cause damage to NV

Energy's property or any improvements on it and (after SNWA has received written notice of such damage from NV Energy and after SNWA has provided Faraday written notice of the same) Faraday has failed to repair the damage to NV Energy's satisfaction by the deadline specified by SNWA in the written notice, SNWA or NV Energy will undertake to have repairs made and Faraday shall, upon demand, reimburse SNWA or NV Energy, as appropriate all associated costs together with any liability arising under the NV Energy Agreement.

- iii. Faraday shall not cause or permit any Hazardous Material to be brought upon, treated, kept, stored, disposed of, discharged, released, produced, manufactured, generated, refined or used upon, about or beneath NV Energy's property without the prior written consent of NV Energy. "Hazardous Material" means any substance, whether solid, liquid or gaseous in nature (A) the presence of which requires remediation under any law relating to the protection of human health or the environment; (B) that is or becomes defined as a "hazardous waste," "hazardous substance," pollutant or contaminant under any Law, including without limitation the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. section 9601 et seq.) and/or the Resource Conservation and Recovery Act (42 U.S.C. section 6901 et seq.), the Hazardous Materials Transportation Act (49 U.S.C. section 1801 et seq.), the Federal Water Pollution Control Act (33 U.S.C. section 1251 et seq.), the Clean Air Act (42 U.S.C. section 7401 et seq.), the Toxic Substances Control Act (15

U.S.C. section 2601 et seq.), and the Occupational Safety and Health Act (29 U.S.C. section 651 et seq.), as these laws are amended or supplemented; (C) that is toxic, explosive, corrosive, flammable, infectious, radioactive, carcinogenic, mutagenic, or otherwise hazardous and is or becomes regulated by any governmental authority, agency, department, commission, board, agency or instrumentality of the United States, the State of Nevada or any political subdivision thereof; (D) contains gasoline, diesel fuel or other petroleum hydrocarbons; (E) that contains polychlorinated biphenyls (PCBs), asbestos or urea formaldehyde foam insulation; or (F) that contains radon gas.

- iv. Faraday shall reimburse SNWA for any and all costs SNWA incurs in purchasing equipment or reimbursing NV Energy for same as required by the NV Energy Agreement.
- v. Faraday shall only use water provisioned by SNWA under this Agreement for the purposes, and in strict accordance with the terms and limitations, set forth in the SNWA Permits.
- vi. To secure the faithful performance of its obligations hereunder, including indemnity obligations, Faraday shall, within fifteen (15) days of the Effective Date, post with SNWA a cash bond, or another surety instrument acceptable to SNWA, in its sole discretion, in the amount of \$500,000.00 ("Bond"). The Bond shall specifically cover all damages for which Faraday is liable to SNWA under this Agreement, including all damages suffered by SNWA as a result of Faraday's failure to well and truly perform and fulfill

all the undertakings, covenants, terms, conditions, warranties and all other obligations and agreements of this Agreement. SNWA may use the Bond to discharge any Faraday obligation hereunder if, after fifteen (15) days written notice, Faraday fails to perform the obligation or otherwise provide SNWA a written assurance, satisfactory to SNWA in its sole discretion, to do so. Within thirty (30) days after the conclusion of the Term, SNWA shall return the Bond, or such portions thereof not used or retained by SNWA to discharge any unfulfilled Faraday obligations, to Faraday. If Faraday posts a surety Bond, the Bond shall be written with insurance companies admitted to do business in the State of Nevada and rated A- or better and Class V or higher of financial size category in the current issue of Best's Key Rating Guide. The Bond shall be executed by sureties included in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 by the Audit Staff Bureau of Government Financial Operations, U.S. Treasury Department. If the Bond is signed by an agent, the Bond must be accompanied by a certified copy of agent's authority to act. Only surety companies authorized to do business in, and having an agent for services of process in the State of Nevada will be acceptable. If the surety on the Bond is declared bankrupt or becomes insolvent or its right to do business is terminated in the State of Nevada or it ceases to meet the requirements of this Agreement, Faraday shall within

ten (10) days thereafter substitute another Bond and surety, both of which must be acceptable to SNWA.

b. Construction, Maintenance and Removal of Pipeline.

- i. Faraday shall, at its sole cost and expense, construct and maintain the necessary pipe to transport the construction water from the Points of Delivery to the construction site (hereinafter referred to as "Pipelines" and shown on Exhibit "C" attached hereto and incorporated herein by this reference) Faraday shall ensure that the Points of Delivery are secured such that only persons authorized pursuant to this Agreement may access water under, and in full conformance with, this Agreement. Upon conclusion of the Term, Faraday shall remove the Pipelines and all other Faraday equipment associated with the Pipelines and restore and repair all real property affected by the Pipelines, including the ACC real property, to conditions existing prior to the Effective Date, to the extent reasonably possible.
- ii. Faraday is solely responsible for arranging, obtaining permits, and paying expenses for the lands and rights-of-way required to accommodate the Pipelines. All such arrangements must be made in writing and approved by SNWA prior to Faraday implementing construction of the Pipelines. Faraday acknowledges that SNWA has made no representations regarding land use restrictions or permitting that may apply to construction of the Pipelines.

- iii. Any construction or work performed in public rights-of-way, in addition to conforming to the Pipeline Documents (defined below), shall comply with the requirements of the permit issued by the public agency in whose right-of-way the work or construction is located. Should the permit's requirements differ or conflict with the Pipeline Documents, the more stringent or restrictive requirement shall prevail.
- iv. Prior to constructing the Pipelines, Faraday shall provide to SNWA construction plans showing the path of the Pipelines and methods and materials for construction of the Pipelines, including arrangements, permits, and approvals of land use and rights-of-way for the Pipelines ("**Pipeline Documents**").

5. Acknowledgments.

- a. Faraday acknowledges that SNWA's ability to provide construction water is limited by the terms, conditions, and limitations of the NV Energy Agreement and agrees SNWA shall have no obligation whatsoever to provide construction water to Faraday from any source other than the SNWA Permits and the NV Energy Agreement to the extent such terms, conditions, and limitations render water unavailable to SNWA under the NV Energy Agreement. Such terms, conditions, and limitations include, but are not limited to: SNWA's preexisting obligations to provide water to NV Energy pursuant to the Agreement to Lease Water for Power Generation Purposes between NV Energy and LVVWD, dated October 12, 2009 ("**NV Energy Water Lease**"); NV Energy's sole and exclusive right to determine the operating times, output, and any other operating conditions/requirements of NV

Energy's wells from which the construction water will be pumped for purposes of Faraday's construction activities; and SNWA's inability to exceed the maximum capacity of NV Energy's wells as determined in NV Energy's sole discretion.

- b. Faraday acknowledges and agrees that NV Energy may, at its sole reasonable discretion, temporarily or permanently curtail or suspend SNWA's use of water under the NV Energy Agreement, if NV Energy is required to repair or conduct maintenance at ACC. SNWA shall not be obligated to contest any such curtailment or suspension by NV Energy but may seek or provide an alternative water supply for Faraday as provided for in Paragraph 3(a) above. SNWA shall not be required to pay for the cost penalties of work delays or cost of alternative means to supply water incurred by Faraday due to a curtailment or suspension.
- c. Faraday acknowledges that SNWA's provision of tie-in facilities to NV Energy's well discharges is a convenience to Faraday, as Faraday would be required to construct a well or otherwise arrange for access to the construction water.
- d. Faraday acknowledges that SNWA agreed to indemnify and hold harmless NV Energy for potential liability associated with accessing and using water under the NV Energy Agreement.

6. Limitation of Liability.

- a. No Consequential or Indirect Damages. In no event shall either Party be liable under this agreement to the other Party or any third party for consequential, indirect, incidental, special, exemplary, punitive or lost profits or revenues or diminution in value, arising out of, or relating to, and/or in connection with any breach of this agreement, regardless of (A) whether such damages were foreseeable, (B) whether

or not such Party was advised of the possibility of such damages, and (C) the legal or equitable theory upon which the claim is based.

b. **Indemnification and Hold Harmless.** In addition to the obligations agreed to above in Paragraph 4(a), Faraday shall indemnify, defend and hold harmless, SNWA from, for and against any and all claims, losses and damages, arising out of, relating to, or resulting from: (A) The NV Energy Agreement; (B) Applications with the State Engineer to change the point of diversion, manner of use and place of use of SNWA's water permits to provide service to Faraday under this Agreement; (C) inability to provide water service to Developers, regardless if it is technical, legal, seasonal or for any other reason; (D) construction of the SNWA Facilities; (E) operations of the SNWA Facilities; and (F) execution of this Agreement. Faraday's indemnification obligation shall not apply to losses, damages, claims, expenses and other liabilities arising out of, relating to, or resulting from the reckless or willful misconduct of SNWA or any of SNWA's officers, directors, employees, contractors or agents.

7. No Interest or Estate. Faraday agrees that it does not have any interest or estate in the SNWA Permits, and shall not claim at any time any interest or estate of any kind whatsoever in the SNWA Permits by virtue of this Agreement. Faraday agrees that the water provided to Faraday by SNWA is owned by SNWA and that any wastewater or treated effluent generated by use of the SNWA Permits is also owned by SNWA and may not be used by Faraday and Faraday may not transfer assign or allow use by any other party. Further, Faraday agrees that the use of SNWA Permits under this Agreement is exclusive to Faraday and may not be used by any other party or for any other purpose.

8. No Warranty and Acknowledgement. Faraday acknowledges that the water provided by SNWA is non-potable and is for construction purposes only. SNWA makes no representation or warranty regarding the quantity or quality of any water made available under this Agreement.
9. Authority of the Nevada State Engineer. The Parties acknowledge that the Nevada State Engineer has, pursuant to both statutory and case law, broad authority to administer groundwater resources in the State of Nevada, and furthermore, that nothing contained in this Agreement obligates SNWA to provide water service to Faraday if SNWA's ability to provide such service is prohibited or diminished by any order of the Nevada State Engineer, appealable, final, or otherwise, or by any order from a court of competent jurisdiction, or any federal, state, or local governmental agency of competent jurisdiction that makes illegal or permanently restrains, enjoins or otherwise limits SNWA's ability to provide water service to Faraday. SNWA shall have no obligation to appeal or otherwise contest any such orders, and Faraday hereby releases and waives any claims or causes of action in law or equity against SNWA in the event water service is delayed, interrupted or terminated due to the occurrence of any event described herein.
10. Notices. If notice is required to be sent to the Parties, the addresses are as follows:

If to Faraday:

Robin Prop Holdco, LLC
c/o Faraday Future
Attn: Legal Department
18455 South Figueroa Street
Gardena, CA 90248

If to SNWA:

General Manager
Southern Nevada Water Authority
1001 S. Valley View Blvd., MS #480
Las Vegas, Nevada 89153

With a copy to:

General Counsel
Southern Nevada Water Authority
1001 S. Valley View Blvd., MS #485
Las Vegas, Nevada 89153

Any and all notices and demands by any Party required or desired to be given to the other Party hereunder shall be in writing and shall be validly given or made only if deposited in the United States mail, certified or registered, postage prepaid, return receipt requested, or if made by Federal Express or other similar delivery service keeping records of deliveries and attempted deliveries. Service by United States Mail or by Federal Express or other similar delivery service shall be deemed complete three (3) business days following deposit with the United States mail or other delivery service, or upon actual receipt, whichever is sooner.

11. Assignment and Delegation. Faraday may not delegate, transfer or assign its rights or responsibilities pursuant to this Agreement without the prior written consent of SNWA. If a Party delegates, transfers or assigns its rights or responsibilities without the prior written consent of the other Party, the delegation, transfer or assignment shall be void and not merely voidable.
12. Governing Law and Venue. This Agreement shall be governed in accordance with the laws of the State of Nevada, without reference to its choice of law provisions. Any legal action related to this Agreement will only be filed in the Clark County District Court, or if applicable, the United States District Court for the District of Nevada, Southern Division.
13. Amendment. This Agreement may be changed, modified, or amended only by mutual written agreement of the Parties.

14. No Third Party Beneficiaries. This Agreement is not intended by the Parties to create any right in or benefit to parties other than Faraday and SNWA. This Agreement does not create any third party beneficiary rights or causes of action.
15. Waiver. The failure of either Party to enforce at any time, or for any period of time, the provisions hereof shall not be construed as a waiver of such provisions or of the rights of such Party to enforce each and every such provision.
16. Counterparts. This Agreement will become effective as between the Parties upon all Parties signing this Agreement. This Agreement may be executed in any number of counterparts and when so executed, each such counterpart shall be deemed to be an original hereof as against any Party who has signed it, and all counterparts together shall constitute one and the same instrument.
17. Authority. Each Party warrants to the other that it, and its signatory hereunder, is duly authorized and empowered to execute this Agreement and to bind said Party to the terms hereof.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the date first written above.

ROBIN PROP HOLDCO, LLC,
A Delaware limited liability company

By: David Wisniewski
Name: David Wisniewski
Title: CEO

SOUTHERN NEVADA WATER AUTHORITY

By: John J. Entsminger
Name: John J. Entsminger
Title: General Manager

Approved as to form:

By: Gregory J. Walch for 5/4/16
Name: Gregory J. Walch
Title: General Counsel

EXHIBIT "A" – NV ENERGY AGREEMENT

EXHIBIT A

WATER FACILITIES USE AGREEMENT

THIS WATER FACILITIES USE AGREEMENT (“Agreement”) dated as of February 4, 2016 (the “Effective Date”), is made by and between NEVADA POWER COMPANY, a Nevada corporation doing business as NV Energy (“NV Energy”), and SOUTHERN NEVADA WATER AUTHORITY, a political subdivision of the State of Nevada (“SNWA”). NV Energy and SNWA are also each referred to herein as a “Party” and collectively as the “Parties.”

WITNESSETH

WHEREAS, Senate Bill No. 3 of the 29th Special Session of the Nevada Legislature designated SNWA and the Las Vegas Valley Water District (“LVVWD”) as the exclusive water service providers for the Garnet Valley Ground Water Basin in Clark County (“Garnet Basin”);

WHEREAS, Faraday Future (“Faraday”), an electric vehicle developer, is developing an electric vehicle plant at the Apex Industrial Park (“Apex”), which is located within the Garnet Basin;

WHEREAS, Faraday has requested SNWA to provide it water service for its construction activities related to its car plant, as required pursuant to SB 3;

WHEREAS, other entities (which, together with Faraday, shall be referred to herein as “Developers”) may request that SNWA provide water service for construction related activities in Garnet Basin during the Term (as defined below) of this Agreement;

WHEREAS, NV Energy owns and operates generating facilities at the Arrow Canyon Complex (“ACC”), which is located in the vicinity of Apex;

WHEREAS, as part of its ACC operations, NV Energy owns water wells that it uses to provide water to its generating facilities; and

WHEREAS, SNWA desires to use NV Energy’s wells at ACC to provide water service to Developers, and NV Energy will allow SNWA to use NV Energy’s wells to the extent such use does not negatively impact the generating facilities’ reliability, create undue risk to plant systems and equipment, or create undue risk to the environment in the form of spills or contamination.

NOW THEREFORE, in consideration of the mutual promise set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties, intending to be legally bound, do hereby agree as follows:

1. **Term.** This Agreement commences on the Effective Date and continues until February 15, 2017 (“Term”); provided, however, that either Party may terminate this Agreement for any reason and without liability of any kind on or after August 15, 2016, by giving thirty (30) days written notice.

2. NV Energy Obligations.

- 2.1 Except as provided for herein, NV Energy shall allow SNWA to have continued access to the SNWA Facilities (as defined below) and use of its wells located at ACC, associated with NV Energy water permits #'s 79002 through 79010, but excluding 79006 which is not owned by NV Energy (the "Wells"), exclusively to provide water service for Developers' construction activities for the duration of the Term.
- 2.2 SNWA will have exclusive use of Wells associated with water permits #'s 79004 and 79009, and 79005 and 79010, at its Chuck Lenzie Generating Station, subject to Section 4.2 below.

3. Infrastructure.

- 3.1 NV Energy and SNWA will coordinate to allow SNWA to tie facilities to each Well as necessary to draw water from the Wells to provide service to Developers.
- 3.2 NV Energy shall, at its sole cost and expense, modify its facilities to allow such tie-in by SNWA ("NVE Connection") and SNWA shall, at its sole cost and expense, develop, construct and operate the necessary tie-in to the NVE Connection located on NV Energy property ("SNWA Facilities") and to draw water from the Wells consistent with this Agreement.
- 3.3 SNWA, its employees, contractors and subcontractors shall have a revocable license for access to NV Energy's property as necessary to accomplish the tie-in and repair and maintenance of the SNWA Facilities, provided, however, SNWA shall provide prior notice to NV Energy before entering NV Energy's property and shall comply with NV Energy's site safety procedures while on NV Energy's property. SNWA, its employees, contractors and subcontractors may not use NV Energy's property for any other reason except for the purposes set forth by this Agreement. SNWA does not acquire, and may not assert, any vested right or interest in or to any of NV Energy's property except as set forth otherwise in this Agreement. NV Energy may revoke the license granted by this section with or without cause upon two (2) business days written notice to SNWA as provided below. However, NV Energy may revoke the license immediately if it (in its discretion) determines that any emergency or unsafe condition exists on or might affect the property or that SNWA or one of its employees, contractors or subcontractors is not complying with one or more of the terms of this agreement. The license terminates at the end of the Term.
- 3.4 SNWA must keep NV Energy's property free and clear of all liens, claims, judgments, security interests, and encumbrances ("Liens") arising out of its, or its contractors or subcontractors' use of the NV Energy property. If any Lien is filed against the NV Energy property at any time, SNWA must obtain the release of (or otherwise satisfy) the Lien within ten (10) days of receipt of notice of the Lien. If SNWA fails to do so, (1) NV Energy may take such steps and make such

expenditures as, in its discretion, it deems advisable to obtain release of or otherwise satisfy the Lien(s), and (2) SNWA must, upon demand, reimburse NV Energy for all costs and expenditures incurred, including without limitation attorneys' fees, court costs, surety premiums incurred by NV Energy in obtaining the release or satisfaction.

- 3.5 SWNA (at its cost) must repair any damage to NV Energy's property resulting from the activities of SNWA or its employees, contractors or subcontractors, including without limitation restoring to the extent reasonably possible the property to the condition it was in before SNWA and its employees, contractors and subcontractors commenced their activities permitted by this Agreement. SNWA must perform all repair and restoration activities on NV Energy's property to the satisfaction of NV Energy and in accordance with all applicable laws as well as applicable guidelines of the Nevada Division of Environmental Protection and any other state or local agency with relevant jurisdiction. If the activities of SNWA or its employees, contractors or subcontractors cause damage to NV Energy's property or any improvements on it and (after NV Energy has provided SNWA written notice of the damage) SNWA has failed to repair the damage to NV Energy's satisfaction by the deadline specified by NV Energy in the written notice, NV Energy will undertake to have repairs made and SNWA will be responsible for all associated costs, including without limitation any consequential damages.
- 3.6 SNWA must not cause or permit any Hazardous Material to be brought upon, treated, kept, stored, disposed of, discharged, released, produced, manufactured, generated, refined or used upon, about or beneath NV Energy's property without the prior written consent of NV Energy. "Hazardous Material" means any substance, whether solid, liquid or gaseous in nature (A) the presence of which requires remediation under any law relating to the protection of human health or the environment; (B) that is or becomes defined as a "hazardous waste," "hazardous substance," pollutant or contaminant under any Law, including without limitation the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. section 9601 et seq.) and/or the Resource Conservation and Recovery Act (42 U.S.C. section 6901 et seq.), the Hazardous Materials Transportation Act (49 U.S.C. section 1801 et seq.), the Federal Water Pollution Control Act (33 U.S.C. section 1251 et seq.), the Clean Air Act (42 U.S.C. section 7401 et seq.), the Toxic Substances Control Act (15 U.S.C. section 2601 et seq.), and the Occupational Safety and Health Act (29 U.S.C. section 651 et seq.), as these laws are amended or supplemented; (C) that is toxic, explosive, corrosive, flammable, infectious, radioactive, carcinogenic, mutagenic, or otherwise hazardous and is or becomes regulated by any governmental authority, agency, department, commission, board, agency or instrumentality of the United States, the State of Nevada or any political subdivision thereof; (D) contains gasoline, diesel fuel or other petroleum hydrocarbons; (E) that contains polychlorinated biphenyls (PCBs), asbestos or urea formaldehyde foam insulation; or (F) that contains radon gas.

4. Limitations on SNWA's Use.

- 4.1 SNWA's rights described in this Agreement are subordinate to NV Energy's rights, and SNWA's rights cannot conflict or take precedence over its obligations to provide water to NV Energy pursuant to the Agreement to Lease Water for Power Generation Purposes between NV Energy and LVVWD, dated October 12, 2009 ("Water Lease").
- 4.2 NV Energy shall continue to have sole and exclusive right to determine the operating times, output, and any other operating conditions/requirements for all of the Wells covered in this Agreement.
- 4.3 SNWA shall comply with all laws, regulations and permits for or related to the Wells, its water rights, and the SNWA Facilities.
- 4.4 SNWA's use of the Wells cannot exceed the maximum capability of the Wells as determined in NV Energy's sole discretion.

5. SNWA's Obligations and Responsibilities.

- 5.1 SNWA is required, at its sole cost and expense, to obtain all necessary government approvals and permits to develop, install and operate the SNWA Facilities, and to obtain water rights necessary and to provide service from the Wells to Developers.
 - 5.2 SNWA shall reimburse NV Energy for any and all costs NV Energy incurs in purchasing equipment that is necessary to repair or replace the pumps or motors for any Well that SNWA uses exclusively during the Term, save and except for costs incurred in excess of those reasonably necessary to return such pumps or motors to their condition existing as of the Effective Date.
 - 5.3 SNWA shall maintain and repair the SNWA Facilities to ensure the SNWA Facilities do not adversely affect NV Energy's water system, the Wells, or the water quality and quantity being used at ACC.
 - 5.4 Upon the expiration of the Term, SNWA shall, at its sole cost and expense, remove the SNWA Facilities and restore and repair the ACC real property to conditions existing prior to the Effective Date, to the extent reasonably possible.
 - 5.5 SNWA will provide a minimum thirty (30) day advance written notice to NV Energy of the use of its Wells to serve any Developer other than Faraday. Such notice shall include the name of the Developer, designated use of the water, period of use to serve the Developer, and projected monthly pumpage from each Well.
6. Water Rights. SNWA shall use its permitted water rights solely for the service it provides to Developers. SNWA is responsible, at its sole cost and expense, for obtaining the State Engineer's approval for any change in the point of diversion, manner of use and place of use to allow SNWA to divert water from the Wells and provide service to Developers. In

no event shall SNWA use water designated for NV Energy pursuant to the Water Lease to provide service to Developers.

7. **Metering and Monthly Reports.** SNWA shall install a meter at the interconnection of SNWA Facilities to NV Energy facilities to measure its monthly diversion of water. SNWA shall read the meters on a monthly basis and provide NV Energy monthly reports of the amount of water that is being diverted for Developers at the Wells by the tenth (10th) day of each month.
8. **Indemnification.** SNWA shall, to the full extent authorized by law, indemnify, defend and hold harmless, on an after state and federal tax basis, NV Energy from, for and against any and all claims, losses and damages, including, but not limited to, any damages or contaminations to the Wells or other property owned or operated by NV Energy, arising out of, relating to, or resulting from SNWA's: (a) Applications with the State Engineer to change the point of diversion, manner of use and place of use of its water permits to provide service to Faraday from the Wells; (b) inability to appropriate water from the Wells or provide water service to Developers, regardless if it is technical, seasonal or for any other reason; (c) construction of the SNWA Facilities; (d) operations of the SNWA Facilities; and (e) execution of this Agreement; provided, however, that such obligation shall not include claims, losses, or damages to the extent caused by the action or inaction of NV Energy.
9. **Curtailment.** NV Energy may, at its sole reasonable discretion, curtail or suspend SNWA's use of the Wells to provide service to Developers, if NV Energy is required to repair or conduct maintenance at ACC. In the event of a curtailment or suspension, NV Energy is not required to seek an alternative water supply or source for SNWA. NV Energy shall not be required to pay for SNWA Facilities' failures, cost of work delays or cost of alternative means to supply water incurred by SNWA due to a curtailment or suspension.
10. **Notices.** Unless otherwise stated herein, all notices, demands, or requests required or permitted under this Agreement must be in writing and must be delivered or sent by overnight express mail or courier service, or certified mail, return receipt requested, addressed as follows:

SNWA:

Southern Nevada Water Authority
1001 S Valley View Blvd., M/S 485
Las Vegas, NV 89153
Attention: David Johnson, DGM,
Engineering and Operations

With a copy to:

Southern Nevada Water Authority
1001 S Valley View Blvd., M/S 485
Las Vegas, NV 89153

NV Energy:

NV Energy
6226 W. Sahara Ave., M/S 253
Las Vegas, NV 89146
Attention: Ann Casey, Manager
Joint Owed Plants

With a copy to:

NV Energy
6226 W. Sahara Ave., M/S 2
Las Vegas, NV 89146

Attention: General Counsel
Email: greg.walch@snwa.com

Attention: General Counsel
Facsimile No.: 702-402-5300

or to such other person at such other address as a Party may designate by like notice to the other Party. Notice received after the close of the business day will be deemed received on the next business day by 5:00 p.m., Pacific Prevailing Time.

11. **Assignment.** Neither Party may assign any of its rights or obligations under this Agreement and any attempted assignment without such consent shall be null and void.
12. **Default/Remedies.**
 - 12.1 **Event of Default.** With respect to SNWA, there shall be an "Event of Default" if SNWA is in breach of any representation or warranty set forth herein or fails to perform any material obligation set forth in this Agreement and such breach or failure is not cured within sixty (60) days after written notice of the default is provided to SNWA from NV Energy.
 - 12.2 **Termination.** Upon the occurrence of an Event of Default, NV Energy shall provide notice of the default to SNWA and shall specify in such notice the basis for the Event of Default. NV Energy does not waive its rights hereunder, by any failure to provide such notice. If the Event of Default is not cured within the sixty (60) day period, as described in Section 12.1, NV Energy may provide notice to SNWA that the Agreement has terminated. The termination shall be effective upon transmittal of the notice by any means specified in this Agreement to SNWA. SNWA shall remain liable for any obligations that SNWA had pursuant to the Agreement prior to the date of termination, in addition to any other surviving obligations specified herein or remedies available.
 - 12.3 **Remedies.** Upon an Event of Default by SNWA, NV Energy shall have, in addition to any other remedies available at law or in equity, the right, but not the obligation, to terminate or suspend this Agreement with respect to all obligations arising after the effective date of such termination or suspension.
13. **Limitation of Liability.** Under no circumstances will either Party be liable for any indirect, incidental, special, consequential or punitive damages incurred or suffered by the other Party arising out of or in connection with this Agreement (including without limitation, lost revenue, loss of income or loss of business advantage), even if such Party or an authorized representative of such Party has been advised of the possibility of such damage. The foregoing limitation of liability shall remain in full force and effect regardless of whether either Party's remedies hereunder are determined to have failed of their essential purpose.
14. **Counterparts.** This Agreement may be executed in several counterparts, each of which is an original and all of which constitute one and the same instrument.

15. **Governing Law; Venue.** This Agreement is governed by and must be construed in accordance with the laws of the State of Nevada, without giving effect to its conflict of law provisions. Nothing in this agreement is designed to eliminate the Public Utilities Commission of Nevada's jurisdiction over matters within its jurisdiction. In the event a court of competent jurisdiction has jurisdiction over a civil action or remedy brought under this Agreement, the Parties agree that they will first seek to initiate such action in the federal district court of Nevada with jurisdiction over Washoe County, Nevada. In the event the federal district court lacks jurisdiction over such a dispute, the parties agree the dispute will be brought in the Nevada state district court for Washoe County, Nevada in Reno, Nevada. Each Party agrees that it will not initiate an Action against the other Party in any other jurisdiction.
16. **Waiver of Jury Trial.** To the fullest extent permitted by Law, each of the Parties hereto waives any right it may have to a trial by jury in respect of litigation directly or indirectly arising out of, under or in connection with this Agreement. Each Party further waives any right to consolidate any action in which a jury trial has been waived with any other action in which jury trial cannot be or has not been waived.
17. **Amendments.** Any change, modification, or amendment to this Agreement is not enforceable unless consented to in writing by the Parties and executed with the same formality as this Agreement.
18. **No Third-Party Beneficiaries.** The provisions of this Agreement shall not impart rights enforceable by any person, firm or organization not a Party to this Agreement.
19. **Business Formation.** Nothing in this Agreement creates a partnership, joint venture or other similar business construct between the Parties.
20. **Authority; Enforceability.** The Parties warrant that each has full power to enter into this Agreement, and to carry out its respective obligations under this Agreement. Each Party has the full entity power and authority to execute and deliver this Agreement and the other transaction documents to which it will be a party in connection with the transactions contemplated hereby, to perform its obligations hereunder and thereunder and to consummate the transactions contemplated hereby and thereby. The execution and delivery by each Party of this Agreement and the other transaction documents to which it will be a party in connection with the transactions contemplated hereby, and the performance by such Party of its obligations hereunder and thereunder, have been duly and validly authorized by all necessary entity action, and assuming due and valid authorization, execution and delivery thereof by the other Party, will be when delivered valid and binding obligations of such Party enforceable against such Party in accordance with their terms (subject to applicable bankruptcy, insolvency, reorganization, moratorium or other similar laws relating to or affecting the enforcement of creditors' rights generally and to general principles of equity).
21. **Other Agreements.** If there are or may be other agreements in effect between the Parties (collectively, the "Other Agreements"), this Agreement and the Other Agreements are and will be separate and individual obligations of the respective parties thereto. The terms of

one agreement will in no event be deemed to be the terms of any Other Agreement, nor will the terms of one agreement be used to interpret the terms of any Other Agreement. No default or breach under, or expiration or termination of this Agreement will constitute a default or breach under, or cause any expiration or termination of, any Other Agreement, and vice versa.

22. **Severability.** If any portion or provision of the Agreement is invalid, illegal, or unenforceable, or any event occurs that renders any portion or provision of the Agreement void, the other portions or provisions of the Agreement will remain valid and enforceable. Any void portion or provision will be deemed severed from the Agreement, and the balance of the Agreement will be construed and enforced as if the Agreement did not contain the particular portion or provision held to be void. The Parties further agree to amend the Agreement to replace any stricken portion or provision with a valid provision that comes as close as possible to the intent of the stricken portion or provision.
23. **Survival of Terms.** All terms and provisions of this Agreement, including any and all exhibits, addenda and amendments hereto, which by their nature are intended to survive any termination or expiration of this Agreement, shall so survive.
24. **Entire Agreement.** This Agreement contains the Parties' entire understanding within.

[Signature page follows]

IN WITNESS WHEREOF, this Agreement has been duly executed by the Parties as of the Effective Date.

NEVADA POWER COMPANY d/b/a NV ENERGY,
a Nevada corporation

By: 
Name: Kevin C. O'Rourke
Title: VP, Energy Supply

Approved as to form:

By: 
Name: Tim Clausen
Title: Senior Attorney

SOUTHERN NEVADA WATER AUTHORITY

By: 
John J. Entsminger
General Manager

Approved as to form:

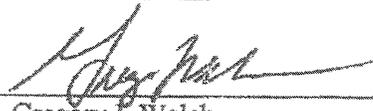
By: 
Gregory J. Walch
General Counsel

EXHIBIT "B" – POINTS OF DELIVERY

EXHIBIT B

**ALL PIPING WILL BE
CONSTRUCTED BY FARRADAY**

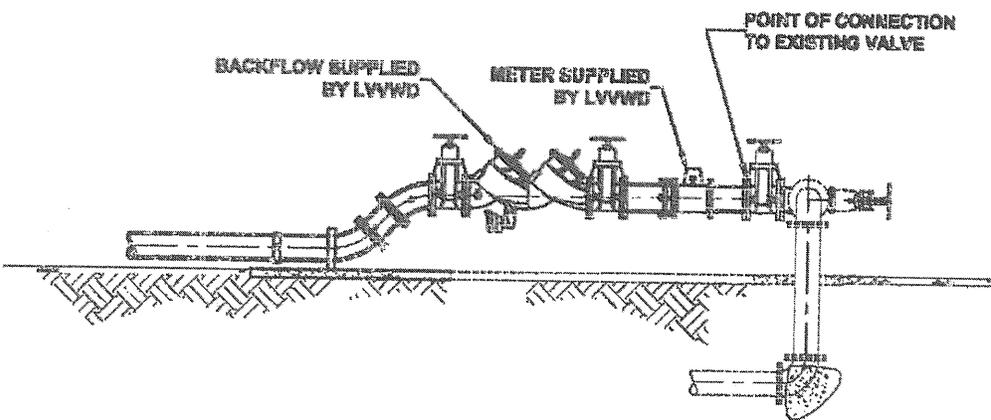
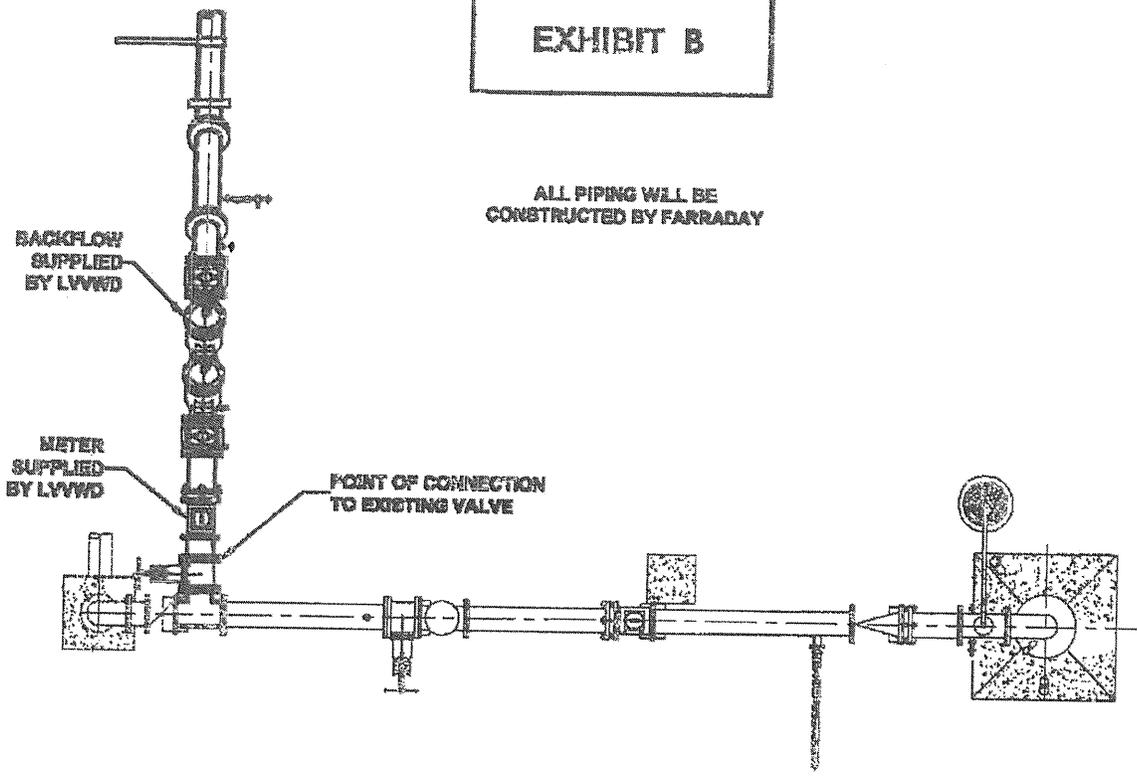
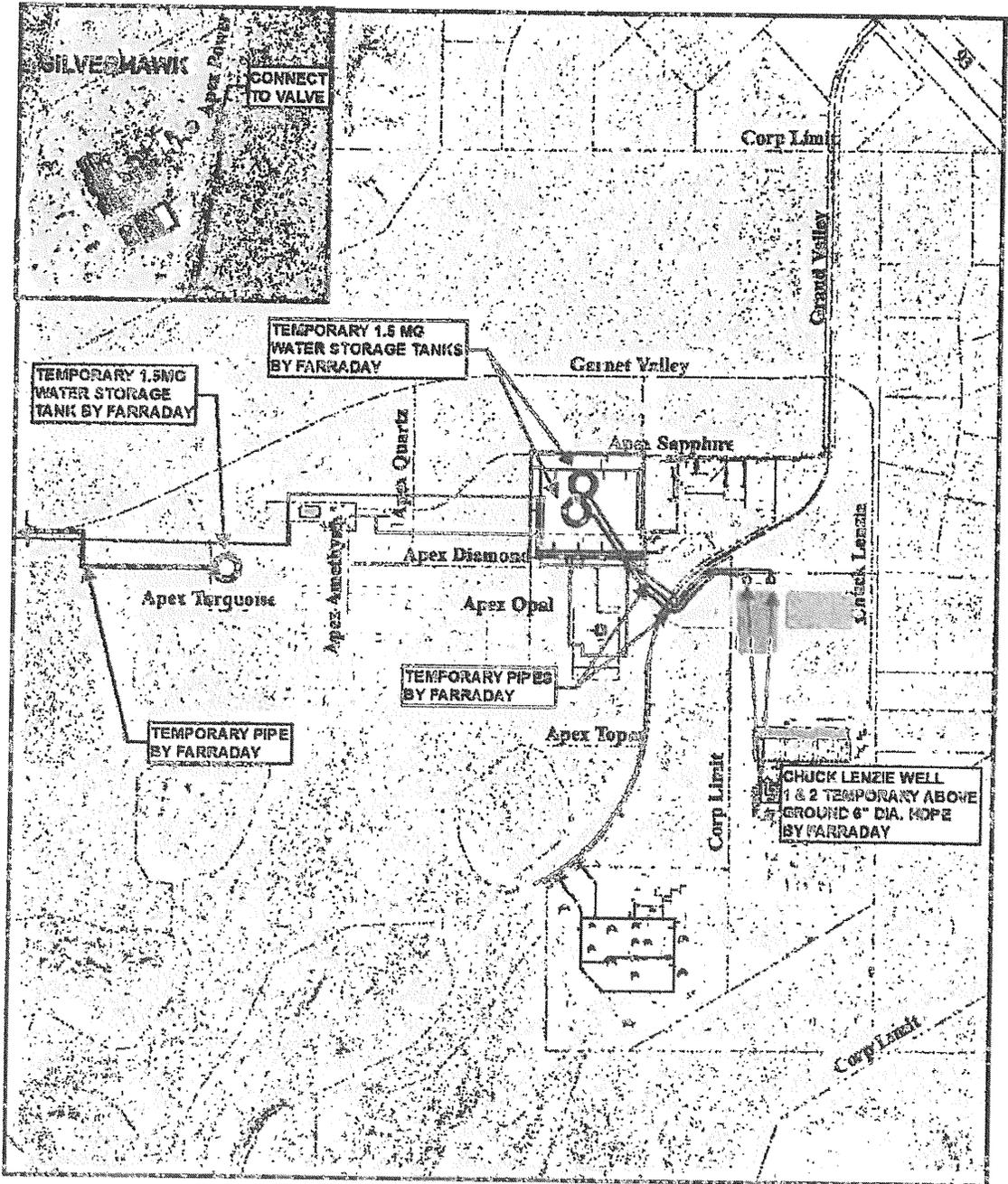


EXHIBIT "C" PIPELINES

EXHIBIT C



SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
AGENDA ITEM

September 15, 2016

Subject: Amendment	Director's Backup
Petitioner: David L. Johnson, Deputy General Manager, Engineering/Operations	
Recommendations: That the Board of Directors approve and authorize the General Manager or his designee to execute, in substantially the same form as that attached hereto, the First Amended and Restated Lease and Option Agreement and Grant of Rights of First Refusal between Parkway Center LLC and the Authority, and any ministerial documents necessary to effectuate the transaction.	

Fiscal Impact:

None by approval of the above recommendation.

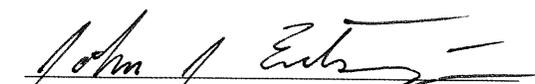
Background:

On November 19, 2015, the Board of Directors approved the Amended and Restated Lease and Option Agreement and Grant of Rights of First Refusal (Amended and Restated Option Agreement) between the Authority and Parkway Center LLC (Parkway) which, among other changes, made certain modifications to the Authority's existing options to purchase or lease the 15th, 16th, and 17th floors of the Molasky Corporate Center (MCC).

If approved, this item makes additional modifications to the Authority's existing options to purchase or lease the 15th floor of MCC. Currently, Duane Morris, LLP (Duane Morris), is a tenant of Parkway's and occupies a portion of the 15th floor. Duane Morris and Parkway wish to amend Duane Morris' existing lease to allow for an extension of Duane Morris's tenancy. The Amended and Restated Option Agreement requires the Authority's consent to any further encumbrance of the 15th floor. In exchange for the Authority's consent to a further encumbrance, the Authority and Parkway propose to revise the Amended and Restated Option Agreement to allow for the Authority's assumption of the Duane Morris lease in the event the Authority chooses to exercise its option at some point during the lease's term, and to make certain clarifying changes to the option price calculation for the Duane Morris space.

These agreements are being entered into pursuant to Section 6(e) of the SNWA 1995 Amended Cooperative Agreement. The Office of General Counsel has reviewed and approved the agreements.

Respectfully submitted:


John J. Entsminger, General Manager
JJE:DLJ:GJW:TDF:skm
Attachments

AGENDA
ITEM #

13

DISCLOSURE OF OWNERSHIP/PRINCIPALS

Business Entity Type							
<input type="checkbox"/> Sole Proprietorship	<input type="checkbox"/> Partnership	<input checked="" type="checkbox"/> Limited Liability Company	<input type="checkbox"/> Privately Held Corporation	<input type="checkbox"/> Publicly Traded Corporation	<input type="checkbox"/> Trust	<input type="checkbox"/> Non-Profit Organization	<input type="checkbox"/> Other
Business Designation Group							
<input type="checkbox"/> MBE	<input type="checkbox"/> WBE	<input type="checkbox"/> SBE	<input type="checkbox"/> PBE	<input type="checkbox"/> ESB	<input type="checkbox"/>		
Minority Business Enterprise	Women-Owned Business Enterprise	Small Business Enterprise	Physically Challenged Business Enterprise	Emerging Small Business			
Corporate/Business Entity Name:		Parkway Center LLC					
<i>(include d.b.s., if applicable)</i>							
Street Address:		100 N. City Parkway #1700		Website:			
City, State and Zip Code:		Las Vegas, NV 89106		POC Name and Email:			
Telephone No:		702-735-0155		Fax No:			
Local Street Address:				Website:			
City, State and Zip Code:				Local Fax No:			
Local Telephone No:				Local POC Name Email:			
Number of Clark County, Nevada Residents Employed: 0							

All entities, with the exception of publicly-traded and non-profit organizations, must list the names of individuals, either directly or indirectly, holding more than five percent (5%) ownership or financial interest in the business entity appearing before the SNWA Board of Directors.

Publicly-traded entities and non-profit organizations shall list all Corporate Officers and Directors in lieu of disclosing the names of individuals with ownership or financial interest. The disclosure requirement, as applied to land-use applications, extends to the applicant and the landowner(s).

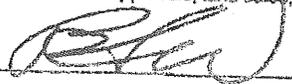
Entities include all business associations organized under or governed by Title 7 of the Nevada Revised Statutes, including but not limited to private corporations, close corporations, foreign corporations, limited liability companies, partnerships, limited partnerships, and professional corporations.

Full Name	Title	% Owned <small>(Not required for Publicly Traded Corporations/Non-profit organizations)</small>
See Separate Sheet attached		

This section is not required for publicly-traded corporations.

- Are any individual members, partners, owners or principals, involved in the business entity, an SNWA full-time employee(s), or appointed/elected official(s)?
 Yes No (If yes, please note that SNWA employee(s), or appointed/elected official(s) may not perform any work on professional service contracts, or other contracts, which are not subject to competitive bid.)
- Do any individual members, partners, owners or principals have a spouse, registered domestic partner, child, parent, in-law or brother/sister, half-brother/half-sister, grandchild, grandparent, related to an SNWA full-time employee(s), or appointed/elected official(s)?
 Yes No (If yes, please complete the Disclosure of Relationship form on Page 2. If no, please print N/A on Page 2.)

I certify under penalty of perjury, that all of the information provided herein is current, complete, and accurate. I also certify that the entity is not on the federal government's Excluded Parties List, as defined by 2 CFR § 180.945. I further understand that the SNWA will not take action on land-use approvals, contract approvals, land sales, leases or exchanges without the completed disclosure form.



 Signature
 President

 Title

Richard S. Worthington

 Print Name
 11/3/15

 Date

DISCLOSURE OF OWNERSHIP/PRINCIPALS

<u>FULL NAME</u>	<u>TITLE</u>	<u>% OWNED</u>
The Molasky Family 1998 Irrevocable Trust Fbo Alan Molasky	Trustee	13.05%
The Molasky Family 1998 Irrevocable Trust Fbo Andrew Molasky	Trustee	13.05%
The Molasky Family 1998 Irrevocable Trust Fbo Steven Molasky	Trustee	13.05%
The Molasky Family 1998 Irrevocable Trust Fbo Beth Molasky	Trustee	13.05%
Berlin Road Holdings, LLC Richard S. Worthington, Member	Manager	10.00%
The Irwin A. Molasky 1995 Irrevocable Trust Fbo Alan Molasky	Beneficiary	5.67%
The Irwin A. Molasky 1995 Irrevocable Trust Fbo Andrew Molasky	Beneficiary	5.67%
The Irwin A. Molasky 1995 Irrevocable Trust Fbo Steven Molasky	Beneficiary	5.67%
The Irwin A. Molasky 1995 Irrevocable Trust Fbo Beth Molasky	Beneficiary	5.67%

DISCLOSURE OF RELATIONSHIP

List any disclosures below:
(Mark N/A, if not applicable.)

NAME OF BUSINESS OWNER/PRINCIPAL	NAME OF SNWA EMPLOYEE OR OFFICIAL AND JOB TITLE	RELATIONSHIP TO SNWA EMPLOYEE OR OFFICIAL	SNWA EMPLOYEE'S/OFFICIAL'S DEPARTMENT
N/A			

'Consanguinity' is a relationship by blood. 'Affinity' is a relationship by marriage.

'To the second degree of consanguinity' applies to the candidate's first and second degree of blood relatives as follows:

- Spouse – Registered Domestic Partners – Children – Parents – In-laws (first degree)
- Brothers/Sisters – Half-Brothers/Half-Sisters – Grandchildren – Grandparents – In-laws (second degree)

For SNWA Use Only:

If no Disclosure or Relationship is noted above or if the section is marked N/A, please check this box:

No Disclosure

If any Disclosure of Relationship is noted above, please complete the following:

Yes No Is the SNWA employee(s) noted above involved in the contracting/selection process for this particular agenda item?

Yes No Is the SNWA employee(s) noted above involved in any way with the business in performance of the contract?

Notes/Comments:



Signature

David L. Johnson

Print Name

Authorized Department Representative

Trish Daws

Subject: FW: Disclosure of Owners/Principals

From: Anna Juarez [mailto:annaj@molaskycenter.com]
Sent: Tuesday, September 06, 2016 10:56 AM
To: Trish Daws <trish.daws@lvvwd.com>
Cc: Greg Walch <greg.walch@lvvwd.com>
Subject: {EXTERNAL} RE: Disclosure of Owners/Principals

Hi Trish

Everything remained the same.

adj

Anna D. Juarez, RPA
National Real Estate Manager - The Molasky Group of Companies
General Manager - The Molasky Corporate Center
100 City Parkway, Suite 140
Las Vegas, NV 89106
o: 702.671.0455
f: 702.382.8015
c: 702.612.7959
e: annaj@molaskyco.com
www.molaskyco.com
www.molaskycenter.com

From: Trish Daws [mailto:trish.daws@lvvwd.com]
Sent: Wednesday, August 31, 2016 3:45 PM
To: Anna Juarez <annaj@molaskycenter.com>
Cc: Greg Walch <greg.walch@lvvwd.com>
Subject: Disclosure of Owners/Principals

Hi Anna –

Attached is a copy of the disclosure form that Parkway Center submitted for the original amendment that went before our Board of Directors. Our procedure is to allow forms with no changes to be used for up to one year provided we receive a confirmation that no changes have occurred. Would you mind reviewing the attached and sending a confirmation email that no changes have occurred.

If changes have occurred, a new form will need to be completed. You will find a blank form attached if a new one must be completed.

Thank you in advance.

Trish Daws
Executive Assistant to
David L. Johnson
Deputy General Manager

**FIRST AMENDMENT TO AMENDED AND RESTATED LEASE AND OPTION
AGREEMENT AND GRANT OF RIGHTS OF FIRST REFUSAL**

THIS FIRST AMENDMENT TO AMENDED AND RESTATED LEASE AND OPTION AGREEMENT AND GRANT OF RIGHTS OF FIRST REFUSAL (this "**Amendment**") is entered into as of the ____ day of September, 2016 ("**Effective Date**") by and between Parkway Center, LLC, a Nevada limited liability company ("**Parkway**"), and the Southern Nevada Water Authority, a political subdivision of the State of Nevada ("**SNWA**").

R E C I T A L S

A. Parkway is the owner of that certain real property with improvements thereon consisting of a LEED Certified building, divided into multiple legal parcels (the "**Building**") located in downtown Las Vegas at the intersection of Grand Central Parkway and City Parkway, said real property being more particularly described on **Exhibit "A"** attached hereto and incorporated herein by this reference.

B. Parkway and SNWA previously entered into that certain Lease dated as of the 11th day of January, 2005, as the same has been amended by that certain First Amendment to Lease dated as of the 16th day of February, 2006, that certain Second Amendment to Lease dated as of the 7th day of December, 2006, and that certain Amended and Restated Lease and Option Agreement and Grant of Rights of First Refusal dated as of December 30, 2015 (collectively, as amended, the "**Agreement**").

C. Pursuant to the Agreement, SNWA has options to purchase or lease all or any portions of the fifteenth (15th), sixteenth (16th), and seventeenth (17th) floors of the Building.

D. Duane Morris LLP, a Delaware limited liability partnership ("**Duane Morris**") is currently a tenant of a portion of the fifteenth (15th) floor of the Building, and Duane Morris and Parkway desire to enter into that certain Second Amendment of Lease dated as of September ____, 2016, an unexecuted but final copy of which is attached hereto as **Exhibit "B"** and incorporated herein by this reference (the "**Duane Morris Extension**"), whereby, among other things, the term of Duane Morris's tenancy on a portion of the fifteenth (15th) floor would be extended to February 29, 2020, subject to one three-year extension potentially extending the term of Duane Morris's tenancy until February 28, 2023.

E. Section 7.3 of the Agreement prohibits Parkway from further encumbering the Building without SNWA's prior consent.

F. SNWA is willing to consent to the Duane Morris Extension subject to the terms and conditions of this Amendment.

G. Parkway and SNWA desire to amend the Agreement to reflect SNWA's consent to the Duane Morris Extension, to provide for SNWA's assumption of the Duane Morris Extension (and the underlying Duane Morris lease) in the event of SNWA's exercise of a purchase option concerning the portion of the fifteenth (15th) floor occupied by Duane Morris, to confirm the purchase price for the fifteenth (15th) floor in light of the Duane Morris Extension, and to make other related changes to the Amendment.

NOW, THEREFORE, in consideration of the covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, SNWA and Parkway agree as follows:

A G R E E M E N T

1. **Recitals.** The Recitals to this Amendment are true and correct and are incorporated herein by this reference.

2. **Amendments to Agreement.** The Agreement is hereby amended as follows:

2.1 **Amendment to Section 3.2.** Section 3.2 of the Agreement is hereby amended and restated in its entirety as follows:

3.2 **Option to Purchase or Lease the Fifteenth Floor.**

(a) **Trigger Date.** Optionee shall have the right to exercise its Option as to all or any portion of the 15th Floor of the Building ("15th Floor") at any time after August 1, 2017; provided, however, that should Optionee exercise a Purchase Option as to: (i) that portion of the 15th Floor currently occupied by the United States General Services Administration ("GSA") prior to the November 20, 2023 expiration of the existing lease by and between Optionor and the GSA (the "GSA Lease" and the "GSA Lease Term", respectively), and the GSA Lease is then still effective, Optionee shall take title to that portion of the 15th Floor currently encumbered by the GSA Lease subject to the GSA Lease; or (ii) that portion of the 15th Floor currently occupied by Duane Morris LLP ("Duane Morris") prior to the February 29, 2020 expiration of the existing lease by and between Optionor and Duane Morris, as the same may be extended to February 28, 2023 (the "Duane Morris Lease" and the "Duane Morris Lease Term", respectively), and the Duane Morris Lease is then still effective, Optionee shall take title to that portion of the 15th Floor currently encumbered by the Duane Morris Lease subject to the Duane Morris Lease. Optionee and Optionor agree to cooperate in any amendments, and obtain any attornments, concerning the GSA Lease or the Duane Morris Lease, respectively, that are necessary or appropriate to make such leases assumable by Optionee in the event that Optionee exercises a Purchase Option as to those portions of the 15th Floor currently encumbered by the GSA Lease or the Duane Morris Lease, respectively, prior to the expiration of the terms of such leases.

(b) **Notice.** Optionee agrees to provide Optionor with no less than one hundred twenty (120) days' notice before the end of the GSA Lease Term and the end of the Duane Morris Lease Term, as applicable, whether Optionee desires to exercise its Purchase Option or Lease Option for that portion of the 15th Floor currently occupied by the GSA or Duane Morris, respectively. In the event Optionee does not exercise an Option by the deadline set forth in this Section 3.2(b), Optionor may then re-lease that portion of the 15th Floor currently occupied by the GSA or Duane Morris, as applicable, to new or existing tenants upon terms acceptable to Optionor. Should Optionor re-lease the 15th Floor to new or existing tenants, such new or extended leases

shall not impact Optionee's Purchase Option, but rather Optionee's Purchase Option shall become subject to such new or extended leases.

2.2 Amendment to Section 3.5. Section 3.5 of the Agreement is hereby amended and restated in its entirety as follows:

3.5 Purchase Price for the Optioned Floors. Except with respect to the space leased by Duane Morris under the Duane Morris Lease, which is addressed at the end of this Section 3.5, the purchase price for any additional space purchased by Optionee pursuant to a Purchase Option with respect to all or any portion of the Optioned Floors shall be the value of the space as of Closing based only on an income approach using a capitalization rate of 7.5%, with net operating income determined using the greater of (a) standard Building rental rates or (b) the actual rental rates for such space, as determined by averaging the rental rates for such space over the duration of the then-effective lease and assuming an occupancy for the additional space of the greater of (x) ninety-five percent (95%), or (y) actual occupancy; provided, however, if the actual occupancy of the purchased space is less than ninety-five percent (95%), then Optionee shall receive a credit against the purchase price equal to the reasonably likely tenant improvement expenses and leasing commission costs which would be incurred with respect to the vacant space which must be leased to bring the occupancy to ninety-five percent (95%). Notwithstanding the foregoing, with respect to the space leased by Duane Morris under the Duane Morris Lease, the provisions of clause 3.5(a), above, shall not apply, and the following additional provisions shall apply in calculating the figure required in clause 3.5(b), above, which clause 3.5(b), as supplemented by the following provisions, shall be the exclusive method of calculating the purchase price: (i) If Duane Morris exercises its option to extend the Duane Morris Lease Term to February 28, 2023, pursuant to Section 7 of the Duane Morris Extension, then as between Optionee and Optionor, the rental during such extension term shall be deemed to increase by two and three-fourths percent (2.75%) per year from the rental payable by Duane Morris for the month of February 2020, regardless of what rental terms Duane Morris and Optionor ultimately agree to with respect to Duane Morris's extension term; and (ii) any unused "Allowance" (as such term is used in the Duane Morris Extension) shall be deducted from the purchase price otherwise payable by Optionee.

3. Effect of Amendment on Agreement; Interpretation. Except as set forth in Section 2, above, this Amendment does not alter, amend, or otherwise modify the terms and conditions of the Agreement, all of which unmodified terms and conditions shall continue in full force and effect. In the event of any conflict between this Amendment and the Agreement, the terms of this Amendment shall control.

4. No Third-Party Beneficiaries. This Amendment has no third-party beneficiaries, including, without limitation, the lessees referenced in this Amendment, and nothing in this Amendment shall be construed or interpreted in any manner whatsoever to confer any rights of any nature upon any person or entity not a party to this Amendment.

5. Representations and Warranties. Parkway hereby confirms that the representations and warranties given by Parkway in Section 5 of the Agreement remain true and

correct and all respects, and Parkway hereby gives such representations and warranties as of the Effective Date as if such representations and warranties were set forth herein in their entirety (and such representations and warranties are incorporated herein by this reference). SNWA hereby confirms that the representations and warranties given by SNWA in Section 6 of the Agreement remain true and correct and all respects, and SNWA hereby gives such representations and warranties as of the Effective Date as if such representations and warranties were set forth herein in their entirety (and such representations and warranties are incorporated herein by this reference).

6. Miscellaneous Provisions.

6.1 Governing Law. The laws of the State of Nevada shall govern the validity, construction, performance, and effect of this Amendment.

6.2 Successors & Assigns. This Amendment shall inure to the benefit of, and be binding upon, the parties hereto and their respective successors and assigns (where permitted). This Amendment shall continue to burden the real property subject to the Agreement notwithstanding any sale of any such property to a third-party. SNWA may not assign its rights in this Amendment nor delegate its duties hereunder without the prior written consent of Parkway, which consent shall not be unreasonably withheld or delayed.

6.3 Non-Waiver. The failure to enforce, or the delay in enforcement of, any provision of this Amendment by a party hereto, or the failure of a party to exercise any right hereunder, shall in no way be construed to be a waiver of such provision or right (or of any other provision or right hereof whether of a similar or dissimilar nature) unless such party expressly waives such provision or right in writing.

6.4 Partial Invalidity. If any term, provision, covenant, or condition of this Amendment, or any application thereof, should be held by a court of competent jurisdiction to be invalid, void or unenforceable, all provisions, covenants, and conditions of this Amendment, and all applications thereof not held invalid, void, or unenforceable, shall continue in full force and effect and shall in no way be affected, impaired, or invalidated thereby.

6.5 Attorneys' Fees. In the event any action is commenced by either party against the other in connection with this Amendment (including any action to lift a stay or other bankruptcy proceeding), the unsuccessful party (as determined by a final non-appealable court order) shall pay the costs and expenses, including reasonable attorneys' fees, as determined by the court, of the prevailing party.

6.6 Interpretation. This Amendment constitutes the entire agreement between the parties pertaining to the subject matter contained herein and supersedes all prior representations, agreements and understandings of the parties, including any "letter of intent", "letter of understanding" or similar documents. No addition to, or modification of, this Amendment shall be binding unless executed in writing by the parties hereto. The headings to this Amendment have been inserted only for convenience, and shall not be deemed in any manner to modify, limit, or aid in the interpretation of any of the provisions of this Amendment.

6.7 Further Assurances. Each of the parties hereto shall use commercially reasonable efforts to take, or cause to be taken, all actions, and to do, or cause to be done, all things necessary, appropriate, or desirable to consummate and effectuate, in the most expeditious manner

practicable, the transactions contemplated under this Amendment. Parkway and SNWA shall each execute any and all instruments requested by the other party in order to effectuate this Amendment and to accomplish any action necessary or appropriate in connection with this Amendment.

6.8 Memorandum of Amendment. Upon SNWA's request, Parkway and SNWA shall execute and cause to be recorded in the Official Records of Clark County, Nevada, a memorandum of this Amendment in form and substance generally similar to that attached as Exhibit "D" to the Agreement.

6.9 Signatures and Counterparts. This Amendment may be executed in any number of counterparts, each of which when executed and delivered shall be an original, but all such counterparts shall constitute one and the same Amendment. An electronically delivered .pdf signature shall be effective for all purposes as if it was a physical signature to this Amendment.

IN WITNESS WHEREOF, Optionee and Optionor have executed this Amendment as of the day and year first above written.

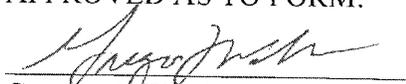
OPTIONOR: Parkway Center LLC, a Nevada limited liability company
Parkway Center MM, Inc., a Nevada corporation, its
By: Manager

By: _____
Richard S. Worthington, President

OPTIONEE: Southern Nevada Water Authority,
a political subdivision of the State of Nevada

By: _____
John J. Entsminger, General Manager

APPROVED AS TO FORM:



Gregory J. Walch
General Counsel

[Exhibits follow.]

Exhibit "A"

Legal Description of the Building

[See attached.]

LEGAL DESCRIPTION OF BUILDING

A PORTION OF LOT 4 AS SHOWN IN BOOK 53, PAGE 61 OF PLATS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE, LYING WITHIN THE SOUTH HALF (S 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 27, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID LOT 4, BEING A POINT ON THE WEST LINE OF PARCEL 3 AS SHOWN IN FILE 99, PAGE 68 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE; THENCE ALONG SAID EAST LINE OF LOT 4 AND WEST LINE OF SAID PARCEL 3 NORTH 27°55'16" EAST, 451.35 FEET TO THE POINT OF BEGINNING; WENCE NORTH 62°04'44" WEST, 26.03 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE SOUTHWEST, HAVING A RADIUS OF 30.00 FEET; THENCE NORTHWESTERLY ALONG SAID CURVE, THROUGH A CENTRAL ANGLE OF 38°51'33", AN ARC LENGTH OF 20.35 FEET; THENCE SOUTH 79°03'43" WEST, 54.72 FEET; THENCE SOUTH 105617 EAST, 18.07 FEET; THENCE SOUTH 79°03'43" WEST, 28.42 FEET; THENCE NORTH 10°56'17" WEST, 18.07 FEET; THENCE SOUTH 79°03'43" WEST, 118.90 FEET; THENCE SOUTH 27°55'16" WEST, 301.67 FEET; THENCE NORTH 62°04'44" WEST, 8.37 FEET; THENCE SOUTH 27°55'16" WEST, 39.16 FEET TO A POINT ON THE NORTH RIGHT-OF-WAY OF GRAND CENTRAL PARKWAY AND THE BEGINNING OF A NON-TANGENT CURVE, CONCAVE TO THE SOUTHWEST, HAVING A RADIUS OF 450.00 FEET FROM WHICH BEGINNING THE RADIUS BEARS SOUTH 09°34'00" WEST; THENCE ALONG SAID NORTH RIGHT-OF-WAY THE FOLLOWING FIVE (5) COURSES: 1) SOUTHWESTERLY ALONG SAID CURVE, THROUGH A CENTRAL ANGLE OF 22°37'58", AN ARC LENGTH OF 177.76 FEET; 2) NORTH 13°03'58" WEST, 10.00 FEET TO THE BEGINNING OF A NON-TANGENT CURVE, CONCAVE TO THE SOUTHEAST, HAVING A RADIUS OF 460.00 FEET FROM WHICH BEGINNING THE RADIUS BEARS SOUTH 13°03'58" EAST; 3) SOUTHWESTERLY ALONG SAID CURVE, THROUGH A CENTRAL ANGLE OF 02°37'53", AN ARC LENGTH OF 21.13 FEET; 4) SOUTH 74°18'09" WEST, 187.91 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 25.00 FEET; 5) NORTHWESTERLY ALONG SAID CURVE, THROUGH A CENTRAL ANGLE OF 90°00'00", AN ARC LENGTH OF 39.27 FEET TO A POINT ON THE EAST RIGHT-OF-WAY OF CITY PARKWAY; THENCE ALONG SAID EAST RIGHT-OF-WAY THE FOLLOWING THREE (3) COURSES:

1) NORTH 15°41'51" WEST, 33.21 FEET TO THE BEGINNING OF A CURVE, CONCAVE TO THE NORTHEAST, HAVING A RADIUS OF 270.00 FEET; 2) NORTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 14°24'02", AN ARC LENGTH OF 67.86 FEET; 3) NORTH 01°17'49" WEST, 43.12 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY OF ORAN K. GRAGSON EXPRESSWAY; THENCE ALONG SAID SOUTH RIGHT-OF-WAY THE FOLLOWING THREE (3) COURSES: 1) NORTH 42°48'45" EAST, 112.07 FEET; 2) NORTH 74°47'09" EAST, 527.45 FEET; 3) NORTH 79°03'43" EAST, 292.80 FEET TO A POINT ON THE EAST LINE OF SAID LOT 4, BEING A POINT ON THE WEST LINE OF SAID PARCEL 3; THENCE ALONG SAID EAST LINE OF LOT 4 AND WEST LINE OF PARCEL 3 SOUTH 27°55'16" WEST, 71.68 FEET TO THE POINT OF BEGINNING.

Exhibit "B"

Execution Copy of Duane Morris Extension

[*See attached.*]

SECOND AMENDMENT OF LEASE

THIS SECOND AMENDMENT OF LEASE (this "Second Amendment") is made and entered into as of August ____, 2016, by and between Parkway Center, LLC, a Nevada limited liability company ("Landlord"), and Duane Morris LLP, a Delaware limited liability partnership ("Tenant").

RECITALS

A. Landlord and Tenant are parties to that certain Lease dated October 31, 2008 (the "Original Lease"), as amended by that certain Acknowledgement of Lease Renewal and Amendment of Lease dated as of July 17, 2013 (the "First Amendment" and together with the Original Lease, the "Lease") regarding certain space (the "Leased Property") on the 15th floor of the Molasky Corporate Center located at 100 N. City Parkway, Las Vegas, Nevada. (Capitalized terms not defined herein shall have the meaning given in the Lease.)

B. Pursuant to the First Amendment, Tenant and Landlord acknowledged Tenant had extended the Term of the Lease pursuant to Section 2.04 of the Original Lease to expire on January 31, 2017 (the "Renewal Term"), and Landlord and Tenant had agreed upon the Basic Rent for the Renewal Term and related matters. Landlord and Tenant have now agreed upon an additional extension of the Term commencing February 1, 2017 and expiring on February 29, 2020 (the "Extension Term") and the Basic Rent for such new period and related matters.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant hereby agree as follows and the Lease is hereby amended as follows:

1. Effective as of the date hereof, the Term shall be extended for thirty-seven (37) months beginning on the day after the current expiration of the Term (i.e., January 31, 2017) on the same terms and conditions as set forth in the Lease except as expressly provided in this Second Amendment. Accordingly, the Term shall now expire on February 29, 2020.

2. Commencing on the first day of the Extension Term (i.e., February 1, 2017), Basic Rent shall be reduced to a monthly rental of \$3.20 per gross rentable square foot of the Leased Property, or \$14,921.60. For the Extension Term only, Section 3.02 of the Original Lease shall not apply and in lieu thereof Basic Rent shall be increased annually commencing February 1, 2018, by a fixed Two and 75/100 percent (2.75%) per Lease Year.

3. Commencing on the first day of the Extension Term (i.e., February 1, 2017), the Base Year shall be amended to be calendar year 2017.

4. Basic Rent shall be abated in full for the month of February, 2017.

5. Landlord shall provide to Tenant a tenant refurbishment allowance of \$39,520 (the "Allowance") to be used by Tenant to repaint the Leased Property, to install a new

security system with respect to the Leased Property or to make other Improvements or repairs (collectively, the "Refurbishment Work"). The Refurbishment Work shall be made in compliance with the terms of the Lease. Any unused portion of the Allowance shall be applied as a credit against monthly Basic Rent commencing February 1, 2018 until the Allowance is fully applied to the Refurbishment Work and to Basic Rent.

6. Section 1.10 of the Original Lease is hereby amended by the deletion of "Nine (9) undesignated spaces" and replaced with "Five (5) undesignated spaces". The third sentence of Section 9.02 of the Original Lease is hereby deleted and replaced with, "Tenant shall pay to Landlord for each such space monthly, in advance, an amount equal to the then prevailing rate for use of such spaces provided, however, Landlord shall provide Tenant with a rebate of fifteen percent (15%) of such amount on a monthly basis by providing such rebate on Tenant's monthly statement of amounts payable under this Lease." In addition, during the Extension Term, Tenant shall have the right, but not the obligation, to lease four (4) additional undesignated spaces at a monthly rate equal to the then prevailing rate for use of such spaces provided, however, Landlord shall provide Tenant with a rebate of fifteen percent (15%) of such amount on a monthly basis in the same manner as described in the third sentence of Section 9.02 of the Original Lease (as amended hereby).

7. Tenant is hereby granted the option to extend the Term for an additional three (3) years from the expiration of the Extension Term (i.e., February 29, 2020), subject to the provisions of Section 3.03 of the Original Lease.

8. Except as set forth herein, the Lease, including without limitation, Section 29.02 of the Original Lease, remains unmodified and in full force and effect.

9. In connection with this Second Amendment, Landlord agrees to pay a commission to G & E Real Estate, Inc. d/b/a Newmark Grubb Knight Frank (being represented by Brett Diamond) ("Tenant's Broker") and to Newmark Grubb Knight Frank (being represented by David Scherer) ("Landlord's Broker") in accordance with separate agreements between Landlord and Landlord's Broker and Tenant's Broker within thirty (30) days after the date hereof. Tenant hereby agrees to indemnify and hold Landlord harmless from any and all loss, costs, damages or expenses, including, without limitation, all attorneys' fees and disbursements by reason of any claim of or liability to any other broker, agent, entity or person claiming through Tenant (other than Tenant's Broker and Landlord's Broker) and arising out of or in connection with the negotiation and execution of this Second Amendment. Landlord hereby agrees to indemnify and hold Tenant harmless from any and all loss, costs, damages or expenses, including, without limitation, all attorneys' fees and disbursements by reason of any claim of or liability to any other broker, agent, entity or person claiming through Landlord (including Tenant's Broker and Landlord's Broker) and arising out of or in connection with the negotiation and execution of this Second Amendment.

10. In connection with that certain Subordination, Estoppel, Attornment, and Non-Disturbance Agreement dated as of April 8, 2016 among Tenant, Landlord and ZB, N.A., doing business as Nevada State Bank ("Lender"), Landlord shall obtain the written consent of Lender to this Second Amendment within thirty (30) days after the

date hereof and this Second Amendment is conditioned upon receipt of such consent within such thirty (30)-day period. In the event such consent is not obtained and a copy of such consent is not provided to Tenant within such thirty (30)-day period, this Second Amendment shall become null and void.

11. Tenant acknowledges the Southern Nevada Water Authority ("SNWA") has certain lease or purchase option rights with respect to the Leased Property and the 15th floor of the Building which require the consent of SNWA or the waiver by SNWA of certain rights in connection with the effectiveness of this Second Amendment. Landlord shall seek the written consent or waiver of SNWA and this Second Amendment is conditioned upon receipt of such consent or waiver. In the event such consent or waiver is not obtained and a copy of such consent or waiver is not provided to Tenant by September 30, 2016, this Second Amendment shall become null and void.

IN WITNESS WHEREOF, the parties have executed this Second Amendment as of the date first set forth above.

DUANE MORRIS LLP, a Delaware
Limited liability partnership

PARKWAY CENTER, LLC, a
Nevada limited liability company

By: _____
Name: John J. Soroko
Title: Chairman

By: _____
Name: Richard S. Worthington
Title: President

**SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS**

AGENDA ITEM

September 15, 2016

Subject: Update on Water Resources	Director's Backup
Petitioner: Gregory J. Walch, General Counsel	
Recommendations: That the Board of Directors receive an update from staff on water resources including, but not limited to, drought conditions in the Colorado River Basin, the results of the implementation of the Authority's Water Resource and Conservation Plan, activities on the Colorado River, the development of in-state water resources, and the status of construction activities near Lake Mead.	

Fiscal Impact:

None by approval of the above recommendation.

Background:

The Colorado River Basin has been experiencing severe drought conditions that began in 2000. The severity of these conditions has become increasingly evident in lake levels along the lower Colorado River Basin, where major reservoirs such as Lake Powell and Lake Mead are experiencing some of the lowest water levels since their initial filling.

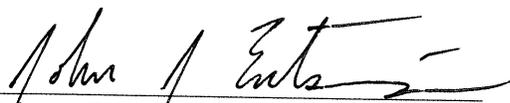
The nature of the drought in the Colorado River Basin has direct effects on water resources and future planning. The drought has prompted communities to launch major conservation initiatives to reduce water use among citizens and businesses, and has resulted in the development and implementation of the Authority's Water Resource and Conservation Plans.

In May 2005, the Board of Directors approved a project for design and construction of a third intake in Lake Mead to ensure Southern Nevada has access to best quality water in Lake Mead. The project design and environmental approvals were completed by 2007. Construction began on the project in March 2008. On December 10, 2014, the Board approved a low lake level pumping station for design and construction. When constructed, the pumping station will work alongside Intake No. 3 to protect access to the majority of Southern Nevada's drinking water supply despite severe drought conditions.

This agenda item provides for an update from staff on the drought, the results of the implementation of the Authority's Water Resource and Conservation Plans, activities on the Colorado River, the development of in-state water resources, and the status of construction activities near Lake Mead.

The office of the General Counsel has reviewed and approved this agenda item.

Respectfully submitted:


John J. Entsminger, General Manager
JJE:GJW:td

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