

Funding Opportunity Announcement No. BOR-DO-17-F003

WaterSMART:

Development of Feasibility Studies

under the Title XVI Water

Reclamation and Reuse Program for Fiscal Year 2017

**Lower Moosa Canyon Wastewater Recycling, Reuse
and Sub-regional Brine Disposal Project Feasibility
Study Proposal**

Grant Application: Funding Group I

Prepared for:

U.S. Department of the Interior

Policy and Administration

Bureau of Reclamation

Prepared by:

Valley Center Municipal Water District (Applicant)

29300 Valley Center Road

Valley Center, CA 92082

Tel: (760) 735-4558

Fax: (760)-749-4098

Wally Grabbe, District Engineer, Deputy

General Manager & Project Manager

wgrabbe@vcmwtd.org

January 5, 2017

JAN 9 '17 AM 7:47

TABLE OF CONTENTS

MANDATORY FEDERAL FORMS

TITLE PAGE

TABLE OF CONTENTS

TECHNICAL PROPOSAL

Executive Summary	1
Study Description	1
Evaluation Criteria	13
Criterion 1: Statement of Problems and Needs	13
Criterion 2: Water Reclamation and Reuse Opportunities	15
Criterion 3: Description of Potential Alternatives	15
Criterion 4: Stretching Water Supplies	17
Criterion 5: Environment and Water Quality	18
Criterion 6: Legal and Institutional Requirements	18
Criterion 7: Renewable Energy and Energy Efficiency	19
Criterion 8: Watershed Perspective	20

STUDY BUDGET

Funding Plan and Letters of Project Support	21
Table 1 - Summary of Non-Federal and Federal Funding Sources	23
Budget Proposal	23
Table 2 - Budget Proposal	24
Budget Narrative	25
Exhibit D - Projected Fringe Benefits 2016-2017	26
Table 3 - Technical Project Report Budget Summary	27

LETTERS OF PROJECT SUPPORT

DRAFT OFFICIAL RESOLUTION

TECHNICAL PROPOSAL: EXECUTIVE SUMMARY

Title: Lower Moosa Canyon Wastewater Recycling, Reuse and Sub-regional Brine Disposal Project Feasibility Study Proposal

Date: January 5, 2017

Applicant: Valley Center Municipal Water District
Valley Center, San Diego County, California

Summary of the Proposal

A one paragraph project summary that identifies the proposed work, including how funds will be used to accomplish specific feasibility study activities and briefly identifies how the proposed feasibility study contributes to accomplishing the goals of this FOA.

Valley Center Municipal Water District (VCMWD) in Valley Center, San Diego County, California, is proposing to study the feasibility of various options for re-using the effluent from its Lower Moosa Canyon Water Reclamation Facility (LMCWRF), as well as options for developing a brine disposal pipeline to serve surrounding agencies. The funds will be used to hire consultants to: 1) examine/review various re-use approaches including Indirect Potable Reuse (IPR), agricultural re-use, and golf course irrigation; 2) develop feasible brine pipeline routing alternatives; 3) review groundwater basin conditions/characteristics, 4) identify environmental issues/concerns associated with the alternatives; 5) identify regulatory requirements and approaches to enhancing re-use feasibility; and 6) manage the development of the overall feasibility report including monitoring of budget, schedule and content. District staff will develop community outreach approaches necessary to promote public acceptance and implementation of viable alternatives. This project will serve the goals of this Bureau of Reclamation FOA by providing a reuse project for effluent that is currently put to no beneficial use, as well as providing a brine pipeline that would promote the development of demineralization-oriented IPR, reuse and impaired groundwater reclamation projects in the region which may include at least two Tribal lands. In keeping with the Interior's goal of achieving a sustainable water strategy, this project will create an overall template for smaller inland water agencies to follow in the development of such reclamation and reuse projects

Length of Time/Estimated Completion Date for Proposed Feasibility Study

It is estimated that the feasibility study can be completed in 10 months, by October 31, 2017.

TECHNICAL PROPOSAL: STUDY DESCRIPTION

The technical study description should describe the work in detail including specific activities that will be accomplished. This description should have sufficient detail to permit a comprehensive evaluation of the proposal. The study description should address the requirements of a Title XVI feasibility study described in Section 4.B of the Reclamation Feasibility Study Directives and Standards.

The requirements put forth in Section 4.B will be stated below in *"italics"* and identified by their "4.B." outline numbering (1) through (10).

Section 4.B. (1) Introductory Information

a. Identification of the non-Federal project sponsor(s).

The non-federal project sponsor is:

- Valley Center Municipal Water District (VCMWD) in Valley Center, San Diego County, CA

b. "A description of the study area and an area/project map.

The study area is in North San Diego County, California, and includes Valley Center, and portions of Fallbrook, Bonsall, Rainbow, and the City of Escondido. This broader area is depicted in Exhibit 1. A more focused portion of this study area is presented in Exhibit 2 which sites the Lower Moosa Canyon Wastewater Treatment Plant and their associated percolation ponds. The topography of the area is generally hilly with some flat areas. Variations in elevation range from approximately 200 feet to over 1600 feet MSL.

c. "A definition of the study area in terms of both the site-specific project areas and where the reclaimed water supply will be needed and developed, and any reclaimed water distribution systems.

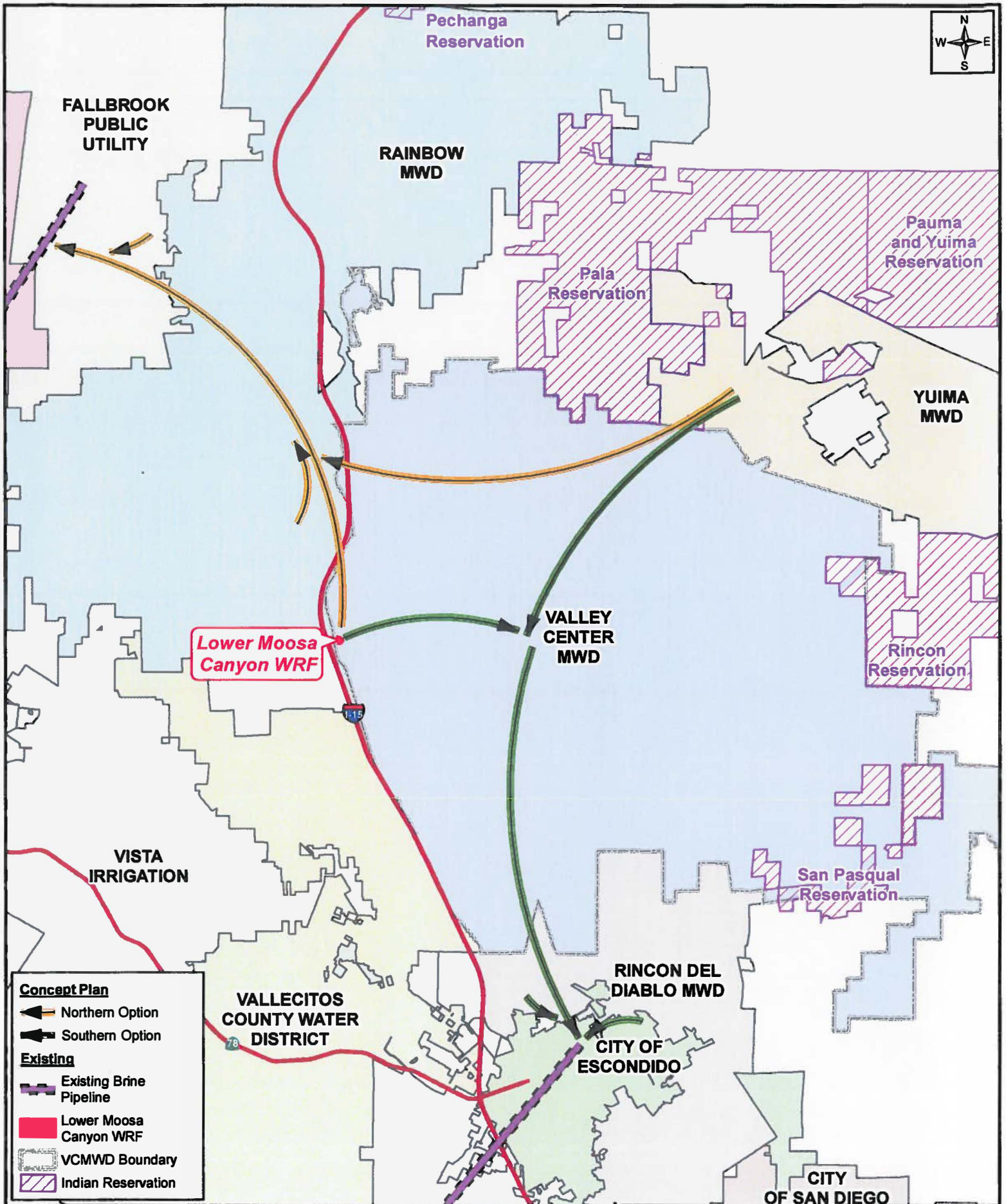
Agricultural Reuse Distribution. Exhibit 2 provides the location of potential agricultural recycled water users. Essentially, farms north of the LMCWRF would be the study targets for developing estimates of where the reclaimed agricultural water supply would be needed. As shown conceptually in "brown" in Exhibit 2, the potential distribution systems would be established in existing road rights-of-way. Operational storage might be sited on an existing reservoir site. Locations and sizing for wet weather storage would be identified during the study. Recycled water from the LMCWRF also has the potential to be put to direct beneficial agricultural and irrigation use in VCMWD and two adjacent water districts: RMWD and VWD.

Golf Course Irrigation Distribution. Exhibit 2 presents the location of a golf course adjacent to the LMCWRF plant site. The recycled water distribution system may be located in private easements, given the proximity of the golf course, but advantages of locating the system in public right-of-way will be examined during the study. Siting of seasonal storage presents a significant issue to be examined through review of nearby terrain, as well as discussions with the golf course owners.

Title 22 Treatment. The location at which Title 22 recycled water will be developed will be the Lower Moosa Canyon WRF (LMCWRF) plant site. This site presently has secondary treatment processes featuring biological nutrient removal. An aerial photo of the existing plant is presented in Exhibit 3. It is anticipated that the Title 22 treatment facilities would be located in the easterly portion of the plant.

IPR/DPR Treatment. These facilities may be located at the LMCWRF plant site or elsewhere proximal to Moosa Creek. Their location will be impacted by the characteristics of the groundwater basin coupled with input and direction from the Regional Water Quality Control Board (RWQCB) and Division of Drinking Water (DDW) concerning configuration of the treatment system and distribution system interface.

Brine Disposal. Valley Center Municipal Water District will be working in conjunction with Fallbrook Public Utilities District, Yuima Municipal Water District, Rainbow Municipal Water District, Rincon del Diablo Municipal Water District, and the City of Escondido (collectively, the "Supporting Agencies") to determine the feasibility of a Regional Brine Pipeline to serve surrounding agencies including at least two Tribal lands. The pipeline would be used in conjunction with future projects involving demineralization and generation of brine waste such as Indirect Potable Reuse (IPR), Direct Potable Reuse (DPR), and reclamation of impaired groundwater basins. Exhibit 1 - Regional Brine Disposal Alternatives presents the concept of the pipeline. The brine pipeline will convey the high TDS waste from demineralization systems to the existing brine outfalls in either FPU or Escondido. The existing outfalls currently discharge to the ocean for disposal. The Regional Brine Pipeline is a critical element that overcomes a fatal flaw in project development for demineralization projects at inland water/wastewater agencies.



VALLEY CENTER
MUNICIPAL WATER
DISTRICT

Sub-Regional Brine Disposal Alternatives Concept Plan

Exhibit 1

1/4/2017
Y:\GISProjects\RecycledWater\RegionalBrineDispAlt_P.mxd
Source: SanGIS, SANDAG, SDCWA, VCMWD





VALLEY CENTER
MUNICIPAL WATER
DISTRICT

Existing Lower Moosa Canyon Plant Aerial View

Exhibit 3

12/29/2016
Y:\GISProjects\RecycledWater\LMoosaCanyon_P.mxd
Source: SanGIS, SANDAG, SDCWA, VCMWD

Section 4.B. (2) Statement of Problems and Needs

(a) Description of the problem and need for water reclamation and reuse project

The regional needs for the project are centered on the history of long-term droughts in this region, the continuing drought, and the desire to reduce dependence on imported water deliveries while developing drought-tolerant, reliable and sustainable sources. Water in southern California is in critically short supply. Currently, the entire State has endured five years of severe drought. Access to traditional California Bay Delta/Colorado River supplies is being limited by growing needs in the areas of origin, other states, and regulatory measures to protect the riverine species and habitats. Given these challenges, public water agencies must focus on developing new, alternative local supplies to offset reductions in imported water and provide adequate, affordable and secure supplies for their respective communities.

In the sub-region involved in this project, there has been a steady decline in agriculture, related to the lack of a reliable and affordable water supply. The vast majority of water to this sub-region is imported, a notable exception being the costly water produced by the recently completed Bud Lewis Desalination Plant. This Desalination Plant has raised the cost of the next increment of water supply development, thus opening the door to more expensive options for developing water supplies. Water reclamation and reuse projects described herein will provide needed drought-tolerant, reliable and sustainable water supply. Furthermore, an IPR/DPR project would directly develop potable water supplies that are drought-tolerant, reliable and sustainable through the conversion of wastewater to potable water. The sub-regional brine disposal project facilitates the development of potable water supplies both now and in the future by providing brine disposal for the demineralization processes involved in IPR/DPR projects and projects desalting naturally impaired ground-water basins.

(b) Description of current and projected water supplies, including water rights, and potential sources of additional water, other than the proposed Title XVI project, and plans for new facilities.

VCMWD's water master plan will be the source of this information. VCMWD will obtain relevant information from existing studies and plans developed by our potential Brine Disposal Pipeline partners. At present VCMWD has no rights to naturally occurring potable water in this watershed.

(c) Description of current and projected water demands.

SDCWA develops regional estimates in its Urban Water Management Plan which will be the source of this information.

(d) Description of any water quality concerns for the current and projected water supply.

VCMWD's water master plan will be the source of this information. VCMWD will obtain relevant information from existing studies and plans developed by our potential Brine Disposal Pipeline partners. High TDS, boron and chloride in recycled water supplies limit its use for agriculture for many crops in this region. This highlights the need for demineralization treatment technologies, which are brine-producing and require a cost-effective brine disposal alternative.

(e) Description of current and projected wastewaters and disposal options other than the proposed Title XVI project, and plans for new wastewater facilities, including projected costs.

VCMWD's Lower Moosa Canyon wastewater treatment plant Master Plan Update will be the source of this information including the plans and costs for future wastewater facilities. We are currently aware of no other plans in our area to develop a sub-regional Brine Disposal pipeline.

Section 4.B.(3) Water Reclamation and Reuse Opportunities

Address the opportunities for water reclamation and reuse in the study area, and identify the sources of water that could be reclaimed, including the following information.

Uses. For VCMWD, potential reclamation/reuse opportunities include agricultural reuse, golf course irrigation, groundwater recharge, and domestic reuse (IPR). TDS, boron, chloride and nitrogen are important water characteristics for these uses. These uses, water quality and treatment requirements will likely be reinforced and expanded through our discussions with neighboring agencies regarding the sub-regional brine disposal pipeline.

Markets. Within VCMWD, reuse markets include agricultural reuse, golf course irrigation, and domestic reuse (IPR/DPR) with current domestic customers. Impacts and improvements through ground water recharge/reclamation as a result of proposed projects will also be examined by the consulting groundwater hydro-geologist. VCMWD staff assisted by consultants will use water use records to determine potential volumes for screening of re-use opportunities, and meetings/discussions with potential users to determine interest/needs for the reuse alternatives.

Maximizing the potential sub-regional markets will require brine removal and disposal. Brine disposal will be necessary for development of projects involving demineralization, a technology that reduces total dissolved solids (TDS), boron, and chloride (Cl⁻) in water. These constituents are often limiting water quality factors in water reuse for groundwater recharge and domestic reuse as well as certain local high-dollar agricultural reuse. Brine pipeline alternative routes will be examined by the design consultant. Refer to Exhibit 1 – Sub-Regional Brine Disposal Alternatives Concept Plan which shows the Northern Route (in orange) from Yuima MWD (YMWD) through Rainbow MWD (RMWD) and VCMWD to FPUD, as well as the Southern Route (in green) from Yuima/VCMWD to Rincon del Diablo MWD (Rincon) and the City of Escondido (Escondido). The brine line may also benefit two or more Tribal lands. We have spoken with the Supporting Agencies regarding their interest in such a regional facility and have included letters of support from them for this effort.

Considerations. A review of considerations will be undertaken by VCMWD. These presently include water quality, public acceptance of IPR/DPR, and cost considerations. District staff will provide outreach activities/approaches to promote public acceptance. VCMWD has implemented a recycled water project in another area of the District and will draw on those experiences. When identified, stakeholders will be contacted to provide feedback to promote inclusion in the process. Additional methods of eliminating these challenges will be reviewed with other Southern California agencies such as the City of San Diego, Orange County Water District, and Padre Dam Municipal Water District, to draw on their experiences as well.

Agencies having jurisdiction. VCMWD and the Supporting Agencies are agencies with jurisdiction in the area that have potential projects that may require brine disposal. VCMWD is a water and wastewater agency that has jurisdiction over sources of reclaimed water.

Potential water sources to be reclaimed. Besides reclaiming of wastewater effluent, impaired groundwater in all of the regional agencies is a potential source of water to be reclaimed. For VCMWD, the groundwater basins near the LMCWRF and near the discharge percolation ponds are potential impaired source waters which currently have no identified beneficial uses. Also, no beneficial use is being made of the effluent from the existing Lower Moosa Canyon Water Reclamation Facility (LMCWRF) which currently discharges 0.31 mgd to percolation ponds for disposal.

Description of Source Water Facilities. VCMWD will contact the engineering/planning departments of the Supporting Agencies to identify their existing and future planned source water facilities, as well as to estimate the amount of impaired waters available to meet reclaimed and reuse

water demands. VCMWD has no natural source water facilities, and will have the consulting groundwater hydro-geologist identify any potential quantity of impaired groundwater available near LMCWRF.

Current Water Reuse. VCMWD reuses all of the current 0.035 mgd flow from its 0.075 mgd Woods Valley Ranch WRF (WVR). Escondido creates approximately 9.0 mgd of wastewater from its HAARF Treatment Facility which it shares with Rincon. Rincon acts as a purveyor of recycled water. Lists of water users, the type of reuse, and maps of distribution systems and use sites for VCMWD, Rincon and the City of Escondido will be included in the study.

Current water reclamation technologies. Both the Woods Valley and HAARF facilities use Full Title 22 treatment technologies. The use of TDS, boron and chloride-reducing technologies (demineralization) would expand the desirability/uses of the water into new markets of agricultural reuse and domestic reuse.

Section 4.B. (4) Description of Alternatives

(a) Description of the non-Federal funding condition. The reasonably foreseeable future actions that the non-Federal project sponsor would take if Federal funding were not provided for the proposed water reclamation and reuse project, including estimated costs.

In this condition VCMWD would continue 100 percent reliance on imported and ocean desalinated water from SDCWA for providing water in the area surrounding Lower Moosa Canyon Wastewater Plant. VCMWD has used imported water from SDCWA for agriculture and residential/commercial development for the past 60 years. There are no imminent plans for reusing the effluent from the Lower Moosa Canyon Wastewater Treatment Plant until the plant flow increases to 0.44 mgd. This approach likely will subject growers to projected *minimum* 5-10 percent rate increases each and every year and for all VCMWD customers for the foreseeable future. Currently, the retail cost of imported water is roughly \$1,900 per acre foot and \$1,400 per acre foot for domestic and agricultural uses, respectively. While the increase of these rates will create a stress on domestic and commercial customers, for agricultural users the situation is much more dire. Many have already been driven out of business. Water at the increased prices will be unaffordable for agricultural users and drive more of them out of business. This study is going to determine whether the treatment and distribution systems for reused wastewater within VCMWD would be feasible with or without Federal funding.

At present there are no plans to construct a regional brine pipeline, and this study would determine whether it would be feasible with Federal funding. The use of IPR/DPR is currently being explored by Escondido. VCMWD would be determining whether IPR/DPR is feasible with or without such funding, but presently there are no plans to build an IPR/DPR project.

(b) Statement of the objectives all alternatives are designed to meet.

Each alternative is designed with the following objectives:

- Maximize the beneficial use of local non-potable sources, including recycled wastewater, non-potable, ground and surface water, while facilitating the environmental benefits of reduced demand on imported water sources and reduced waste stream discharges to area aquifers and watersheds.
- Contribute toward the region's wholesale water supplier, the San Diego County Water Authority (SDCWA), in meeting its Water Supply Reliability and Integrated Resource Planning Goals for the development of local supplies, specifically water reclamation.
- Relieve demand on imported sources from the California Bay Delta and the Colorado River by expanding VCMWD's local water supply, which is **currently 100 percent dependent on imported water and water produced from ocean desalination.**

(c) +Description of other water supply alternatives considered to accomplish the objectives to be + addressed by the proposed Title XVI project. +

VCMWD's water supply alternative is to receive additional water from the wholesaler SDCWA which supplies imported water and water produced by the Bud Lewis Desalination Plant.

(d) Description of the proposed Title XVI project AND

(f) Description of at least two alternative measures, or technologies available for water reclamation, distribution, and reuse for the project under consideration.

This project is comprised of: A) VCMWD Title 22 Treatment Options; B) Title 22 Distribution System Options; C) IPR/DPR Alternatives; and D) Regional Brine Disposal Options. The design consultant working in conjunction with VCMWD staff will fulfill the life cycle costing requirements including non-construction costs of all of these alternatives to facilitate comparison in the required formats.

A. VCMWD Title 22 Treatment Options

At the LMCWRF at least two treatment train options will be considered. The existing secondary processes (anoxic/aerobic tanks followed by secondary clarifiers) will be supplemented by either: 1) chemical addition, filtration (disk filters), and disinfection (chlorination/UV); or 2) MBR treatment and disinfection (chlorination/UV). Again, life-cycle costing will be used in comparing these alternatives to assure financial sustainability of the selected projects into the future. For golf course irrigation, these treatment options will cover the range of alternatives considered. For agricultural reuse, water quality requirements may result in the consideration of blending or even a third treatment option of demineralization to achieve the desired user water quality.

B. Title 22 Distribution System Options

A series of alternatives will be considered for the two main Title 22 irrigation options: 1) agricultural reuse and 2) golf course reuse. Refer to Exhibit 2.

Agricultural distribution alternatives will undergo a screening that weighs the cost of the system against revenues generated by the quantity of recycled water that can be distributed by that alternative to pay for the costs. Piping networks and pump station requirements will be developed, along with operational storage and seasonal storage. Piping will preferentially be in public right-of-way to avoid issues related to right-of-way acquisition.

Golf course reuse will present pipeline and pump station options, along with potential operational and seasonal storage facilities. Due to the proximity of the golf course to the LMCWRF (See Exhibit 2), the number of pipeline options to be examined will likely be limited.

C. VCMWD IPR/DPR Alternatives

It is anticipated that IPR/DPR treatment will start with and consider Title 22 Treatment alternatives given the potential impact that an MBR facility would have on the pre-treatment requirements for a demineralization process. Demineralization processes that are currently in use for this type of application will be given priority in the feasibility review, such that the successful/cost-effective technologies may be limited. For IPR, options for introducing recycled water into the environment will consider the groundwater and surface water conditions near the plant and at other injection/discharge points to create the most cost effective approach for this project. Pro-actively working with the RWQCB, DDW and our regulatory consultant, VCMWD will work to assure that the alternative is acceptable to regulators.

It is anticipated that IPR/DPR options will require a tank for blending IPR water with existing domestic water prior to introduction into the domestic system. The location of this tank and the point of introduction into the domestic system will be identified.

D. Regional Brine Disposal Options.

As presented in Exhibit 1, two conceptual alternative routes for the Regional Brine Pipeline will stretch from either 1) YMWD and VCMWD through RMWD to FPUD, or 2) YMWD through VCMWD and Rincon to Escondido. It is anticipated that this brine pipeline will be a small diameter pipeline conveying quantities of brine concentrate from demineralization treatment processes. Though the distances are fairly long, preliminary cost estimates indicate that the small diameter of this pipeline makes it potentially feasible. Preferred routes will be in public roadways to avoid right-of-way issues, though if substantial savings can be realized, private easements will be considered.

In parallel with consideration of the regional brine pipeline, hauling of the brine concentrate will be considered as an option to the regional brine pipeline.

(e) Description of waste-stream discharge treatment and disposal water quality requirements for the proposed Title XVI project.

Working with our regulatory consultant, VCMWD will confirm the above requirements. There are precedence for all of the requirements. Title 22 regulations for reuse options have been in place for decades. In 2015 IPR/DPR groundwater regulations were established. Brine disposal has been occurring in California for decades as well.

Section 4.B. (5) Economic Analysis

A Title XVI feasibility study report must include an economic analysis of the proposed Title XVI project relative to other water supply alternatives that could be implemented by the non-Federal project sponsor. This assessment needs to identify the degree to which the water recycling and reuse alternative is cost-effective, and the economic benefits that are to be realized after implementation.

As VCMWD has no alternative water supplies other than buying water from SDCWA, this economic analysis will be comparing the most cost effective Title XVI alternative to simply continuing to purchase water from SDCWA. The economic analysis will examine whether there will be economic relief to the hard-hit agricultural irrigation customers or domestic users. Life cycle costs for each reuse alternative will be examined in determining economic feasibility.

Beyond economic considerations, historical records of recurring drought along with the current drought gives greater weight to non-economic considerations such as the supply reliability measured in terms of drought tolerance and on-going sustainability of water supplies. This favors a reduced reliance on imported water supplies and potential improvements in groundwater quality. Any of the anticipated alternatives will reduce the need for increasing imported water supplies.

Section 4.B. (6) Selection of the Proposed Title XVI Project

Provide a justification of why the proposed Title XVI project is the selected alternative in terms of meeting objectives, demands, needs, cost effectiveness, and other criteria important to the decision.

- (a)) Provide an analysis of whether the proposed Title XVI project would address the following:*
 - (i)) Reduction, postponement, or elimination of development of new or expanded water supplies;*
 - (ii)) Reduction or elimination of the use of existing diversions from natural watercourses, or withdrawals from aquifers;*

- (iii) <Reduction of demand on existing Federal water supply facilities; and
- (iv) <Reduction, postponement, or elimination of new or expanded wastewater facilities.

Any of the proposed alternatives will reduce the need for new water supplies while at the same time reduce the diversions from the natural water courses that are the sources for our imported water supplies from the California Bay Delta of the State Water Project and also from the Colorado River.

As the Colorado River facilities encompass several Federal Water Supply Facilities, the proposed project will reduce the demand on those sources. Cost effectiveness in the sense of weighing the price that can be charged for the type of water produced (i.e. irrigation vs. drinking water) against the total cost of producing and distributing that water will be a key criteria in selecting a proposed Title XVI project. Other criteria include: the annual amount of water that can be produced and the extent to which the quality of natural waters (i.e. groundwater or streams) can be improved.

Section 4.B. (7) Environmental Consideration and Potential Effects

The review of a Title XVI feasibility study report does not require National Environmental Policy Act (NEPA) compliance.

- (a) *The Title XVI feasibility study report must include sufficient information on each alternative to allow Reclamation to assess the potential measures and costs that may be necessary to comply with NEPA, and any other applicable Federal law.*

Given the scope of proposed improvements and alternatives envisioned, significant environmental impacts are not expected. However, the proposed action will require evaluation under the National Environmental Policy Act (NEPA) to demonstrate consistency with applicable federal regulations and procedures defined in the Bureau of Reclamation NEPA Handbook (February, 2012). The feasibility study will evaluate the applicability of federal regulations based on resources present within the area of potential disturbance and scope of improvements. Research will include a cultural resource record search and review of applicable biological habitat management plans. A field visit will be performed to document the presence of cultural, biological and other resources that may be adversely affected by the project so design options can be considered to minimize or avoid direct or indirect impacts. The focus of this effort will be to determine the potential extent of any environmental impact weighed against the offsetting environmental benefits of reduced reliance on imported supplies and improvements to groundwater quality. Data gathered during preparation of the feasibility study will be used to determine the approach and scope of documentation needed to complete the NEPA process.

Section 4.B. (8) Legal and Institutional Requirements

The Title XVI feasibility study shall identify any legal or institutional requirements, or barriers to implementing the proposed Title XVI project.

- (a) *The Title XVI feasibility study shall identify any legal or institutional requirements, or barriers to implementing the proposed Title XVI project.*
- (b) *<Discussion of legal and institutional requirements (e.g., contractual water supply obligations, Indian trust responsibilities, water rights settlements, regional water quality control board requirements), state, and/or local requirements with the potential to affect implementation of the project. Title XVI projects using Reclamation project water must address contractual requirements as described in RM Policy, Reuse of Project Water (WTR P09).*

Our regulatory/legal consultant will identify legal and institutional requirements and potential barriers. Pro-active communications with the RWQCB and DDW will be used for early identification of permitting requirements or issues. There are precedence for all of the requirements. Title 22 regulations for reuse

options have been in place for decades. In 2015 IPR/DPR groundwater regulations were established. Brine disposal has been occurring in California for decades, as well.

(c) 1 Discussion of the need for multi-jurisdictional or interagency agreements, any coordination undertaken, and any planned coordination activities.

It is anticipated that a multijurisdictional agreement for the brine disposal pipeline will be required. Given the range of potential participants, this agreement may involve water districts, a city and/or Native American tribes. Once the brine disposal option is selected, coordination with several entities will be required when identifying the capacities and cost sharing responsibilities to be addressed in the agreement.

In addition to this agreement, the entities involved will also have to enter into the existing agreements for the existing brine outfalls that lead from either Fallbrook or Escondido and travel to the ocean.

A meeting between agencies involved in the northern brine disposal option is being set up at this time. Meetings and conversations with all of the entities involved in both the northern and southern brine disposal routes will be undertaken. Where possible, joint meetings will be held to promote transparency and common understanding of the issues.

(d) 1 Discussion of permitting procedures required for the implementation of water reclamation projects in the study area, and any measures that the non-Federal project sponsor can implement that could speed the permitting process.

In most cases it is likely that a Master Reclamation Permit will be issued by the RWQCB to the District. In this case of Title 22 treatment and irrigation distribution facilities, the permitting process is not expected to delay project implementation. In the case of an IPR/DPR project, meetings will be held with the RWQCB and Division of Drinking Water to expedite conducting tracer studies, etc. to confirm hydraulic residence time, log removal goals, etc. and other long-lead time items in that permitting process.

(e) 1 Discussion of any unresolved issues associated with implementing the proposed water reclamation and reuse project, how and when such issues will be resolved, and how the project would be affected if such issues are not resolved.

One unresolved issue associated with the IPR/DPR project is the means of addressing requirements should the natural waters near the LMCWRF not provide the necessary volume for dilution or 2 months hydraulic retention time. Should a regulatory solution to this not be identified, proposed project facilities would need to move further away from the plant which could be more costly.

(f) Identification of current and projected wastewater discharge requirements resulting from the proposed Title XVI project (e.g., brine disposal).

A permit for brine disposal will be required for the Brine Disposal Pipeline.

(g) 1 Description of rights to wastewater discharges resulting from implementation of the proposed Title XVI project.

We anticipate the issuance of a WDR or Master Reclamation Permit by the RWQCB which will address District handling of the wastewater discharges. Given that the District has purchased the imported or desalinated water, water rights are not anticipated to be an issue.

Section 4.B. (9) Financial Capability of Sponsor

At the Title XVI feasibility study stage, Reclamation must request enough information to determine that the non-Federal project sponsor is likely to demonstrate financial capability if the project moves to construction.

A schedule for project implementation will be developed, along with a sustainable funding plan outlining how VCMWD will fund the construction, O&M and replacement costs of the selected treatment and distribution alternative.

Similarly for the selected brine disposal alternative, a schedule will be presented based on consultant and VCMWD staff interaction with the appropriate neighboring agencies. Also, a sustainable funding plan outlining how the Supporting Agencies associated with that alternative will fund the construction, O&M and replacement costs will be developed.

Audited financial reports for VCMWD and other involved agencies will serve as the basis for proving financial capability.

Letters of commitment from all non-Federal project sponsors will be presented to show the willingness of parties to pay for their share of capital, O&M and replacement costs for all of the selected project alternatives.

Sources of funding will be listed including revenue streams (water sales, user fees, capacity charges, etc.), grants, low interest loans and any others that create the basis for financially sustaining the projects during construction and through the project life cycle.

Section 4.B. (10) Research Needs

At a minimum, the report must include a statement on whether the proposed water reclamation and reuse project includes basic research needs, and the extent that the proposed Title XVI project will use proven technologies and conventional system components.

It is anticipated that the alternatives developed in this study will use proven technologies and conventional system components. Anything to the contrary will be described with parties conducting the research and timeframes for the conducting the research identified as required in the Reclamation Manual Directives and Standards.

TECHNICAL PROPOSAL: EVALUATION CRITERIA

Evaluation Criterion 1: Statement of Problem and Needs (10 Points)

"Points will be awarded based on the presence of watershed-based water resource management problems and needs for which water reclamation and reuse may provide a solution. Describe in detail the water resource management problems and needs in the area and explain how water reclamation and reuse may address those problems and needs. Additional consideration will be given to proposals that explain how the problems and needs in the area may be impacted by climate change, and/or if the feasibility study will include climate change information in the supply and demand projections used."

The regional needs for the project are centered on the continuing drought, the history of long-term droughts in this region, and the desire to reduce dependence on imported water deliveries while developing drought-tolerant, reliable and sustainable sources. VCMWD, itself, has no natural alternative sources of water though a few agencies in the region have natural water resources that partially meet their water needs. The effluent of the Lower Moosa Canyon wastewater plant that is the focus of this study is currently discharged to percolation ponds and, thus, is not put to beneficial use.

In the sub-region involved in this project, there has been a steady decline in agriculture, related to the lack of a reliable and affordable water supply. The vast majority of water to this sub-region is imported from the California Bay Delta and Colorado River, sources with climate change driven swings in volume and reliability, a notable exception being the costly water produced by the recently completed Bud Lewis Desalination Plant. The Desalination Plant has raised the cost of the next increment of water supply development, thus opening the door to more expensive options for developing water supplies. The water reclamation and reuse projects described herein will provide the needed drought-tolerant, reliable and

sustainable water supply. The IPR/DPR project would directly develop potable water supplies that are drought-tolerant, reliable and sustainable through the conversion of wastewater. The sub-regional brine disposal project facilitates the development of potable water supplies both now and in the future by providing brine disposal for the demineralization processes involved in IPR/DPR projects and projects desalting naturally impaired groundwater basins.

VCMWD and its neighboring districts historically have served their respective agricultural and domestic customer-bases completely dependent on imported, potable water supplies from the California Bay Delta and Colorado River (100 percent dependent on imported water). In order to support current and future planned critical infrastructure needs which include essential community services, schools, fire departments and the like, VCMWD and its neighboring districts need to take advantage of increased recycled water flows to provide an alternative drought-tolerant, cost-competitive, price-stable, local source of water. In developing the treatment and distribution systems to deliver the non-potable local supplies, the involved Districts also will reduce long-term reliance on imported water supplies from the California Bay Delta and the Colorado River, maximize the investment of non-renewable energy resources invested in importing water to the San Diego Region, and improve local groundwater quality by reducing sub-surface disposal. This effort will serve both domestic and agricultural customers well into the future.

Evaluation Criterion 2: Water Reclamation and Reuse Opportunities (15 Points)

"Points will be awarded based on the extent to which the proposal demonstrates that the feasibility study will explore opportunities for water reclamation and reuse in the study area."

1. Describe how the feasibility study will investigate potential uses for reclaimed water (e.g., environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation, and recreation)."

This study will specifically consider using wastewater plant effluent, that is currently not put to beneficial use, as water for agricultural and golf course irrigation, as well as reclaiming it for potable use through an Indirect Potable Reuse concept. As part of the IPR concept the potential of reclamation of impaired local groundwater will be examined.

The sub-regional brine disposal project would be required to support the IPR alternative. An impact of this brine disposal project would be to support opportunities for reuse alternatives requiring demineralization in the Supporting agencies. Brine disposal is a key impediment that represents a fatal flaw in our sub-region to the development of impaired inland groundwater supplies and IPR projects. Thus, addressing brine disposal opens the door to development of further inland water supplies in our sub-region.

The District's propose is to explore and evaluate maximizing the use of future recycled wastewater, as well as other sources of non-potable supplies to provide a reliable and affordable alternative source of water supply. While expanding the production and distribution of highly treated recycled wastewater from existing wastewater treatment facilities will be the primary focus of the study, groundwater and surface water alternatives also will be evaluated. To address environmental restoration, fish and wildlife issues any and all development of local surface and groundwater sources will be done in such a manner as to protect surface habitats reliant on groundwater resources as well as in-stream and riparian resources and habitats.

"2. Describe the potential water market available to use any recycled water that might be produced upon completion of a water reuse project, as well as potential methods to stimulate recycled water demand and/or methods to eliminate obstacles for use of reclaimed water."

Several water markets are available to these alternatives; agricultural irrigation, golf course irrigation and potable reuse. For the agricultural market, price and water quality are the two chief issues/obstacles needed to be overcome to stimulate demand. Cost and affordability are key focuses of this feasibility study. Water quality, specifically reduction of TDS, boron or chloride, will be addressed through the approaches of blending and demineralization.

Demand for golf course irrigation is impacted by price and to a lesser extent water quality. Again, cost and affordability are key points of this study. Water quality issues could be addressed by blending or use of recycled water on the more salt-tolerant fairway grasses as opposed to on the greens.

Potable reuse in the form of IPR is impacted by price as well as public acceptability. As before, price and affordability will be focused on in this study. To address public acceptability District staff will provide outreach activities/approaches to promote public acceptance. VCMWD has implemented a recycled water project in another area of the District and will draw on those experiences. When identified, stakeholders will be contacted to provide feedback to promote inclusion in the process. Additional methods of eliminating these challenges will be reviewed with other Southern California agencies, such as the City of San Diego, Orange County Water District, Padre Dam Municipal Water District, to draw on their experiences as well.

As part of the potable reuse market, the study will examine reclamation of naturally impaired groundwater as an alternative source. Public acceptance issues related to this source are much less significant than IPR.

"3. Describe the sources of water that will be investigated for potential reclamation, including impaired surface and ground waters."

Geographically, VCMWD has no naturally-occurring drinking water resources. As part of the IPR concept the potential for reclamation of a naturally impaired groundwater proximal to the LMCWRF will be examined. On the sub-regional scale as a result of the Brine Disposal portion of the feasibility study, the reclamation of other impaired sources of surface and groundwater within the purview of YMWD, RMWD, FPUD, Rincon and Escondido, as well as at least two tribal lands will be examined.

Evaluation Criterion 3: Description of Potential Alternatives (15 Points)

"Points will be awarded based on the extent to which the proposal demonstrates that the feasibility study will develop descriptions of water supply alternatives, including a proposed water reuse project and other water supply alternatives."

"1. Describe the objectives that all alternatives will be designed to meet. What other water supply alternatives will be investigated as part of the feasibility study?"

Each of VCMWD's proposed Title XVI project water supply alternatives will be designed to meet the objectives being drought-tolerant, reliable and economically sustainable. These objectives are the overriding objectives for the study.

Besides the reuse alternatives, the study will include reclaiming the naturally impaired groundwater basin near LWCWRF proximal to Moosa Creek. Sub-regionally, alternatives include the reclamation of other impaired sources of surface and groundwater within the purview of YMWD, RMWD, FPUD, Rincon, Escondido and at least two Tribal lands.

"2. Provide a general description of the proposed project that will be the subject of a feasibility study."

This project is comprised of: A) VCMWD Title 22 Treatment Options for Lower Moosa Canyon Wastewater Treatment Plant; B) Title 22 Distribution System Options; C) IPR/DPR Alternatives; and D)

Regional Brine Disposal Options.

A. VCMWD Title 22 Treatment Options

At the LMCWRF at least two treatment train options will be considered. The existing secondary processes (anoxic/aerobic tanks followed by secondary clarifiers) will be supplemented by either: 1) chemical addition, filtration (disk filters), and disinfection (chlorination/UV); or 2) MBR treatment and disinfection (chlorination/UV). Again, life-cycle costing will be used in comparing these alternatives to assure financial sustainability of the selected projects into the future. For golf course irrigation, these treatment options will cover the range of alternatives considered. For agricultural reuse, water quality requirements may result in the consideration of blending or even a third treatment option of demineralization to achieve the desired user water quality.

B. Title 22 Distribution System Options

A series of alternatives will be considered for the two main Title 22 irrigation options: 1) agricultural reuse and 2) golf course reuse. Refer to Exhibit 2.

Agricultural distribution alternatives will undergo a screening that weighs the cost of the system against revenues generated by the quantity of recycled water that can be distributed by that alternative to pay for the costs. Piping networks and pump station requirements will be developed, along with operational storage and seasonal storage. Piping will preferentially be in public right-of-way to avoid issues related to right-of-way acquisition.

Golf course reuse will present pipeline and pump station options, along with potential operational and seasonal storage facilities. Due to the proximity of the golf course to the LMCWRF (See Exhibit 2), the number of pipeline options will likely be limited.

C. VCMWD IPR/DPR Alternatives

It is anticipated that IPR/DPR treatment will start with and consider Title 22 Treatment alternatives given the potential impact that an MBR facility would have on the pre-treatment requirements for a demineralization process. Demineralization processes that are currently in use for this type of application will be given priority in the feasibility review, such that the successful/cost-effective technologies may be limited. For IPR, options for introducing recycled water into the environment will consider the groundwater and surface water conditions near the plant and at other injection/discharge points to create the most cost effective treatment approach. Pro-actively working with the RWQCB and DDW with our regulatory consultant, VCMWD will work to assure that the alternative is acceptable to regulators.

It is anticipated that IPR/DPR options will require a tank for blending IPR water with existing domestic water prior to introduction into the domestic system. The location of this tank and the point of introduction into the domestic system will be identified.

D. Regional Brine Disposal Options

As presented in Exhibit 1, two alternative routes for the Regional Brine Pipeline will stretch from either 1) YMWD and VCMWD through RMWD to FPUD, or 2) YMWD through VCMWD and Rincon to Escondido. It is anticipated that this brine pipeline will be a small diameter pipeline conveying quantities of brine concentrate from demineralization treatment processes. Though the distances are fairly long, preliminary cost estimates indicate that the small diameter of this pipeline makes it potentially feasible. Preferred routes will be in public roadways to avoid right-of-way issues, though if substantial savings can be realized, private easements will be considered.

In parallel with consideration of the regional brine pipeline, hauling of the brine concentrate will be considered as an option to the regional brine pipeline.

"3. Describe alternative measures or technologies for water reclamation, distribution, and reuse that will be investigated as part of the feasibility study."

Use of MBR technology to serve as both the secondary clarification and filtration portions of the Title 22 treatment train, as well as the pre-treatment step for the IPR alternative is being considered. Though this is an alternative technology, it has been in use for this application for years and is not considered unproven.

Use of RO technology as the second step in the IPR alternative treatment train is also being considered as the demineralization approach. Again, this technology has been in use for decades and would not be considered as unproven.

Evaluation Criterion 4: Stretching Water Supplies (15 Points)

"Points will be awarded based on the extent to which the proposal demonstrates that the feasibility study will address activities that will help to secure and stretch water supplies. For each of the following sub-criteria, include descriptions of any specific issues that will be investigated or information that will be developed as part of the feasibility study."

"1. Describe the potential for the project to reduce, postpone, or eliminate the development of new or expanded water supplies."

Agricultural reuse would replace the use of potable water for irrigation by providing Title 22 treated water for this use. The golf course irrigation project, while creating a beneficial use for the LMCWRF effluent, would replace groundwater supplies that are used to irrigate the golf course. Since this groundwater source is threatened by the current drought, and may exist intermittently or dry up in the future, the use of Title 22 recycled water to irrigate the golf course may supplant the future use of potable water.

An IPR/DPR alternative would create a new potable water supply that directly acts to stretch existing supplies from the California Bay Delta and Colorado River by the amount of the produced water from the demineralization process.

The presence of the sub-regional brine disposal pipeline would facilitate the development of a number of projects that could reduce the need for expanded water supplies across the sub-region. By providing a means to dispose of brine, this pipeline could be the catalyst in developing demineralization plants that could reclaim impaired groundwater basins, and support IPR/DPR projects that produce domestic water. This would further stretch existing supplies by creating an additional sources of drinking water. The extent of this impact would be determined through this feasibility study.

"2. Describe the potential for the project to reduce or eliminate the use of existing diversions from natural watercourses or withdrawals from aquifers."

The proposed project will not reduce diversions within VCMWD from local natural water courses or withdrawals from local natural water courses. However, it will take pressure off of the already strained California Bay Delta and Colorado River, because VCMWD, as explained earlier, is currently dependent on this imported water for the majority of its supply.

In our sub-region surface and groundwater sources are usually significantly less expensive than recycled water. However, during drought reuse supplies might be used as a supplemental source to preserve the integrity of these local sources, to keep them viable if they are threatened by drought conditions. In the long term, due to the cost difference, the reduction in use from natural sources would not expected to be significant.

"3. Describe, if applicable, the potential for the project to reduce the demand on existing Federal water supply facilities."

Currently, approximately one half of the VCMWD imported water supply comes from the Colorado River via the Metropolitan Water District of Southern California ("MWD") Colorado River Aqueduct as well as the storage, treatment and distribution system operated by MWD and the San Diego County Water Authority ("SDCWA"). This project will reduce reliance on imported water, thus reducing reliance on the river system and storage resources owned and operated by the Federal Government. Thus, replacing the use of potable supplies, as these project alternatives will do, results in these projects alleviating pressure on the existing Federal water supply facilities.

Evaluation Criterion 5: Environment and Water Quality (15 Points)

"Points will be awarded based on the extent to which the proposal demonstrates that the feasibility study will address the potential for a water reclamation and reuse project to improve surface, groundwater, or effluent discharge quality; restore or enhance habitat for non-listed species; or provide water or critical habitat for federally listed threatened or endangered species. For each of the following sub-criteria, include descriptions of any specific issues that will be investigated or information that will be developed as part of the feasibility study."

"1. Describe the potential for the project to improve the quality of surface or groundwater, including description of any specific issues that will be investigated or information that will be developed as part of the feasibility study."

The agricultural and golf course irrigation project alternatives will each remove the salt and nutrient load that the wastewater plant effluent places on the percolation pond groundwater basin, and move that effluent to a location at which the nutrients can be used by crops or grass.

The IPR/DPR alternative will remove salt loads entirely from the sub-region, through the demineralization process and brine disposal project.

As part of the IPR/DPR study the examination of existing well logs, geotechnical/geological/hydrological reports/maps, and other information concerning the local impaired groundwater basin will be used to approximate dimensions and volume of this basin and estimate the velocity through the basin. This information will be used in a rough analyses of hydraulic residence times and dilution that will be used to judge the feasibility of using this basin for IPR/DPR alternatives. It will enable the high-level assessment of different IPR/DPR configurations to meet regulatory standards.

"2. Describe the potential for the project to improve flow conditions in a natural stream channel, including a description of any specific issues that will be investigated or information that will be developed as part of the feasibility study."

It is not anticipated that this project will impact the flow conditions in Moosa Creek.

"3. Describe the potential for the project to provide water or habitat for federally listed threatened or endangered species, including description of any specific issues that will be investigated or information that will be developed as part of the feasibility study."

The project may provide the following benefits: Potential means will be examined for preserving the natural habitat for the **Least Bell's Vireo** near the existing percolation ponds. This bird is on the Federal Endangered Species listing and is protected.

Evaluation Criterion 6: Legal and Institutional Requirements (10 Points)

"Points will be awarded based on the extent to which the proposal demonstrates that the feasibility study will address legal or institutional requirements or barriers to implementing a project, including water rights issues"

and any unresolved issues associated with implementation of a water reclamation and reuse project.”

The District will have a regulatory consultant as well as their retained law firm review all aspects of the selected Title XVI alternative. Few, if any legal issues should arise because: 1) the District owns the LMCWRF site upon which Title 22 treatment facilities would be built; 2) the distribution systems by and large would be in public rights of way; and 3) the District owns the percolation ponds currently used for effluent disposal. The District with their regulatory consultant plans to pro-actively work with the Regional Water Quality Control Board (RWQCB) and DDW from the very outset of our feasibility study to let them know what we are planning to examine and to confirm what information and analysis will meet their needs and will pave the way for permitting the project in the future. Projects involving Title 22 irrigation have been performed numerous times and the requirements for treatment and distribution are well documented. Regulations and requirements for IPR projects associated with groundwater were approved in 2015, so there is a path to development of these projects, though less of a track record. At this time, we do not see any legal or institutional barriers to implementing the project.

From the standpoint of meeting these requirements, there are no foreseeable issues with the Title 22 irrigation projects. For the IPR/DPR alternatives the characteristics of the groundwater basins need to be confirmed in order to confirm that the basins will satisfy the requirements of the IPR/DPR regulations.

A joint use agreement will need to be created to administrate the sub-regional brine disposal pipeline, should it prove to be feasible. Given the support letters and mutual benefits such a pipeline would provide, we expect few problems in creating such an agreement and implementing such a pipeline project.

As part of the feasibility study, all legal and institutional issues related to implementation of the Title XVI Feasibility Study will be addressed. Specific areas to be addressed and reviewed include permitting requirements for the treatment plants, water quality requirements for recycled water from the reclamation plants, and inter-agency co-operative agreements.

Criterion 7: Renewable Energy and Energy Efficiency (10 Points)

“Points will be awarded based on the extent to which the proposal demonstrates that the feasibility study will address methods to incorporate the use of renewable energy or will otherwise address energy efficiency aspects of the water reclamation and reuse project being investigated.”

The installation of small scale Photo-Voltaic Solar facilities will be evaluated and included if economically feasible, to reduce the carbon footprint and reduce operating costs as much as possible. This could address a key cost feasibility issue in the more energy-intensive demineralization processes associated with IPR/DPR projects. Such a project would provide a consistent local use of such energy.

In reviewing MBR alternatives, recently developed products that represent advances in technology that conserve energy will be examined.

In developing the treatment and distribution systems to deliver the locally developed reuse water as part of this project, the involved Districts will reduce long-term reliance on imported water supplies from the California Bay Delta and the Colorado River, and hence maximize the life of and the investment of non-renewable energy resources expended in importing water to the San Diego Region. The selected alternative will make the most of the investment of non-renewable electrical power used to import water to Southern California by re-using as much of the imported water supply as possible.

Furthermore, in developing the IPR/DPR project which will be able to use existing distribution networks, we will avoid the need for a separate “purple pipe” network and thereby, save all of the energy and material resources necessary to manufacture and construct such a system.

All treatment facilities and pumping stations will be designed to employ highly efficient pumps and electric motors and state of the art Supervisory Control and Data Acquisition (“SCADA”) technologies to

maximize operational efficiency through remote monitoring and control. Reducing on-site operation staff requirements will lower transportation costs and related energy and exhaust emissions resulting in benefits to the environment and to the growers and irrigation users through lower recycled water costs. The SCADA system can be used to track and trend real time pump and motor efficiencies so maintenance can be scheduled and performed as needed to maintain maximum performance.

The recycled water distribution system will be evaluated for design improvements to minimize energy requirements comparing the use of an operational reservoir to provide peak demands vs. using higher pump capacities to meet peak flow rates. The change in the electricity pricing structure due to the proliferation of solar power creates the need for such an analysis. Proper line sizing and material selection also will be evaluated to reduce head loss, resulting in lower energy requirements.

As part of VCMWD's Title XVI Feasibility Study, an analysis of the energy efficiency of local production of water versus imported water will be conducted. The cost of importing water from the California Bay Delta and Colorado River will be contrasted with the cost of utilizing local sources.

Criterion 8: Watershed Perspective (10 Points)

"Points will be awarded based on the extent to which the proposal demonstrates that the feasibility study will address alternatives that promote and apply a regional or watershed perspective to water resource management."

Natural flows from the VCMWD service area have the potential to primarily impact the San Luis Rey Watershed. The reuse of wastewater for irrigation purposes (agricultural or golf course) coupled with the elimination of effluent discharges to the percolation ponds will result in an overall reduction of pollutant loads to the watershed. The pollutants being eliminated are the pounds of salts associated with the irrigation water that is being replaced with the reused wastewater. Those salts will no longer be added to the groundwater basin.

An even greater benefit would be realized from the IPR/DPR projects and projects associated with the Brine Disposal Pipeline. The IPR/DPR demineralization processes remove salts from wastewater and concentrate them into a brine. The water produced from these processes is generally lower in salt loading than existing imported water sources, thus when this water is used for potable purposes, its pollutant load impacts will be less than existing potable water sources. The IPR/DPR project would be implemented in conjunction a Brine Disposal Pipeline alternative.

The Brine Disposal pipeline represents a sub-regional solution to brine disposal. It will handle the salts/brine removed from either wastewater reuse projects or impaired groundwater/surface water reclamation projects. This brine will be conveyed from the watersheds of the supporting agencies to the existing brine outfalls for ultimate ocean disposal. This takes the brine load totally out of the watershed, thus improving overall water quality. This would result in an overall reduction in pollutant loading to the watershed and the San Luis Rey River system.

REQUIRED PERMITS OR APPROVALS

Applicants must state in the application whether any permits or approvals are required for development of the proposed feasibility study and explain the plan for obtaining such permits or approvals.

Currently, VCMWD's waste discharge permits allow discharges of up to 440,000 gpd from the Lower Moosa Canyon Water Reclamation Facility.

- 1) [Production and distribution of Title 22 wastewater will require a New or Amended Waste Discharge Permit or a Master Recycling Permit issued by the San Diego Regional Water Quality Control Board.
- 2) [IPR/DPR facility will require a new Waste Discharge permit from RWQCB and approvals from DDW. RWQCB has indicated that they may issue a Master Recycling Permit.
- 3) [The Brine Disposal Pipeline will require an NPDES permit from RWQCB since this discharge is eventually going to a surface water. This pipeline would connect to an existing brine outfall and the permit for that outfall would be amended at that time to reflect changes in discharges and ownership.

The first step in obtaining required permits is to meet with the RWQCB and DDW to discuss the requirements and processes surrounding obtaining the permits and submit a Report of Waste Discharge. This will allow us to confirm that our approach to the study supports obtaining the required permits. We plan at least 2 follow-up meetings with both RWQCB and DDW to provide them status updates and confirm our direction.

LETTERS OF PROJECT SUPPORT

Letters of project support are provided from the Supporting Agencies as Attachments.

OFFICIAL RESOLUTION

On January 17, 2017, VCMWD's Board of Directors will adopt a resolution similar to Resolution 2017-01 adopted in 2017 (See Attachments) supporting the grant application and granting the District General Manager or his designee legal authority to enter into a financial agreement with the Bureau of Reclamation. The final resolution will be submitted prior to the 30-day deadline following submittal of this application.

STUDY BUDGET

(1) FUNDING PLAN AND LETTERS OF COMMITMENT

Describe how the non-Federal share of study costs will be provided.

The applicant is providing all non-Federal funding through a combination of in-kind services and payments to consultants.

The funding plan must include all study costs, as follows:

How you will make your contribution to the cost-share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments).

Source of Non-Reclamation Funds -- If VCMWD is awarded a funding grant, VCMWD will be providing all of the non-reclamation funding for this study from its wastewater capital reserve account. The District's

funding share is part of an overall water resource planning effort that the District has undertaken. In addition to consultant costs, VCMWD will provide in-kind contributions for District staff personnel Salary, Wages and Fringe Benefits. There are no time constraints or other contingencies associated with this funding commitment.

Describe any project expenditures that have been incurred or may be incurred before the anticipated award date that you may seek to include as project costs. For each cost, identify:

- *The project expenditure and the amount*
- *Whether the expenditure is or will be in the form of in-kind services or donations*
- *The date of cost incurrence*
- *How the expenditure benefits the project*

Consulting services were provided during July through Dec and are anticipated to be provided through anticipated award date of mid-May. The following has been expended so far:

Consulting Services Incurred

<u>Month</u>	<u>Hours</u>	<u>Cost</u>	<u>Description</u>
July	7	1,666	Began development of process concepts and sizing
Aug	20	4,760	Further IPR consideration and began developing the brine disposal concept with agency outreach.
Sept	27.5	6,545	Gathered info on cost of and regs for IPR, MBR info and EDU/sizing of alternatives
Oct	23	5,474	Writing some report segments, further cost development, and cross reference to Bur Rec rqmts
Nov	23.5	5,593	Discussed Regulatory issues of IPR/DPR, reviewed concept to Lake Turner, further cost info.
Dec	13	3,094	Developed costs further, clarifier sizing, developed text further
		\$27,132	

Anticipated Consulting and In-kind Services Prior to May 2017

Jan	188	40,052	IPR regulatory discussions, Initiate Geotech studies; Begin IPR treatment process development, Agency Brine Disposal Discussions
Feb	194	40,392	Continue Geotech studies; IPR treatment process development and costing, begin environmental work, brine disposal outreach
Mar	194	40,052	Further Geotech studies: IPR treatment and costing; environ work, regulatory contact/status report
April	154	30,712	Geotech, Brine disposal
May	174	35,212	Continue Geotech studies: IPR treatment requirements; environmental work, regulatory contact/status report
		\$186,420	

Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.

Funding Partners - There are no funding partners. Refer to the following Table 1.

Describe any funding requested or received from other Federal partners.

Other Federal Partners — No funding from other Federal sources has been requested or received for this feasibility study project.

Describe any pending funding requests that have not yet been approved and explain how the study will be affected if such funding is denied.

Outside Sources/Pending Funding Requests — There are no pending funding requests.

Table 1 - Summary of Non-Federal and Federal Funding Sources

Funding Sources	Funding Amount
Non-Federal Entities	
1) Valley Center MWD - Cash	\$120,000
2) Valley Center MWD – In-kind*	\$50,000
Non Federal Subtotal:	\$170,000
Other Federal Entities	\$0
Requested Reclamation Funding (46.88%)	\$150,000

* In-Kind contribution

(2) BUDGET PROPOSAL

The following Table 2 summarizes the proposed Feasibility Study Budget and includes the value of in-kind contributions for District staff salary, wages, and fringe benefits.

Table 2. Budget Proposal

Budget Item Description	Computation			Total
	\$/Unit	Unit	Quantity	Cost
[REDACTED]				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]				
[REDACTED]	[REDACTED]			[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]			[REDACTED]
[REDACTED]				
[REDACTED]				[REDACTED]
[REDACTED]	[REDACTED]			[REDACTED]
[REDACTED]				[REDACTED]
[REDACTED]				[REDACTED]

(3) Budget Narrative

Salaries and Wages – Key personnel assigned to working on the Feasibility Study will be District Engineer/Deputy General Manager Wally Grabbe, P.E., and Project Manager Fernando Carrillo. Other staff personnel assigned to the study will include Senior Engineering Technicians, and Administrative Support staff. Compensation rates and estimated hours for all District staff assigned to the Project are indicated in Table 2 – Budget Summary

The District Engineer is in responsible charge of the project and will provide oversight of all activities. District Project Manager will oversee the consultants and provide District information when required, and District staff will provide mapping and GIS analysis support as needed. Hourly involvement of District staff is estimated at the following average monthly time estimates over a 10 month project schedule: District Engineer (10 hour per month); Project Manager and Technician (12 hours per month) and Administrative support (8 hours per month).

Fringe Benefits – For capital improvement work, VCMWD adds on 109.36% of the direct salary cost for fringe benefits. These benefits are enumerated in **Exhibit D - Projected Fringe Benefits 2016-2017**.

Travel – Travel expenses represent consultant travel over the 10 month period for preparation of the Feasibility Study. This is for mileage of consultants to meetings with agencies, tribes, and regulators.

Equipment – Represents a potential \$15,000 installation of a monitoring well and \$10,000 for soil/water testing/sampling by the groundwater hydro-geologist during the preparation of the Feasibility Study.

Materials and Supplies – This amount represents preparation of documents of meetings, printing and binding final documents, and miscellaneous costs.

Contractual—Table 2 provides a summary of the anticipated costs for various consultants to complete the Technical Feasibility Study Report.

The Consulting Engineer will prepare the report, develop design criteria and sizing for cost estimates for the: Title 22 treatment train alternatives, the Title 22 distribution system alternatives, the IPR/DPR treatment and configuration alternatives, and the Brine Disposal Pipeline alternatives. The Geotechnical Groundwater consultant will examine/review existing information and develop hydro-geologic analyses concerning the groundwater basin and its characteristics. The Regulatory and Legal consultant will help formulate and coordinate discussions with the Regional Water Quality Control Board and Division of Drinking Water concerning the alternatives. Environmental consultant shall investigate those items outlined in Section 4.B. (7) including a preliminary records search along with a cultural resources and biological resources feasibility evaluation. This scope and fee covers a full term investigation of all alternatives. Should one of the alternatives prove to be infeasible, work on that alternative will cease, which would cause the task budgets associated with that alternative to not be fully expended. The District feels the rates and scopes are fair and reasonable. The consulting engineer is currently under an as-needed services agreement with the District and rates and scope have been negotiated for this work. Rates of other consultants have been previously negotiated and are, in our opinion, below market rates for similar services in Southern California.

Reporting -- District staff time is included for preparation of two semi-annual Federal Financial Reports and two Program Performance Reports (one semi-annual report and one final report).

Other -- No additional project expense items are anticipated.

Total Cost -- Total Project cost is estimated at \$320,000.

Exhibit D

[illegible]

[illegible]

TABLE 3 - Budget Breakdown - Consultants (continued)

[illegible]

* Includes: Soils and Water Sampling - \$25,000

**** Includes: Cultural Resource Record Search - \$500**

Cultural Resources Feasibility Evaluation - \$2,000

Biological Resources Feasibility Evaluation - \$3,000

Board of Directors

David A. Drake, President
Diana L. Towne, Vice President
James B. Murtland, Treasurer
Dr. Gregory M. Quist, Director
Erin R. Lump, Director



*A Public Agency Serving the
Greater Escondido Valley Since 1954*

General Manager

Greg Thomas

Board Secretary

Wanda Cassidy

General Counsel

Redwine and Sherrill

December 22, 2016

Gary Arant, General Manager
Valley Center Municipal Water District
P.O. Box 67
Valley Center, CA 92082

Subject: Support of Bureau of Reclamation Water Smart Project Feasibility Grant
Application for 2017 – ***Lower Moosa Canyon Wastewater Recycling, Reuse
and Sub-regional Brine Disposal Project***

Dear Gary:

This is to express our interest and support for your Bureau of Reclamation Water Smart Project Feasibility Grant Application, "*Lower Moosa Canyon Wastewater Recycling, Reuse and Sub-regional Brine Disposal Project.*"

We find your study of the potential for wastewater recycling for landscape, agricultural and potentially potable re-use at your existing Lower Moosa Canyon Wastewater Recycling Facility important and very timely. Of great direct interest are the sub-regional brine management and disposal aspects of the proposed study. Brine management and disposal challenges often stand in the way of realizing the full potential and range of wastewater recycling or brackish groundwater reclamation in their respective service areas.

Please keep us apprised of your progress in the Feasibility Grant Application process and advise us how your project might be coordinated with Rincon Water's ongoing efforts to maximize use of our local water resources as your planning process moves forward.

Sincerely,

A handwritten signature in blue ink, appearing to read "G. Thomas", is written over the word "Sincerely,".

Greg Thomas
General Manager



December 22, 2016

**Gary Arant, General Manager
Valley Center Municipal Water District
P.O. Box 67
Valley Center, CA 92082**

**Subject: Support of Bureau of Reclamation Water Smart Project Feasibility Grant
Application for 2017 – Lower Moosa Canyon Wastewater Recycling, Reuse
and Sub-regional Brine Disposal Project**

Dear Gary;

This is to express our interest and support for your Bureau of Reclamation Water Smart Project Feasibility Grant Application, "Lower Moosa Canyon Wastewater Recycling, Reuse and Sub-regional Brine Disposal Project."

We find your study of the potential for doing wastewater recycling for landscape, agricultural and potentially potable re-use at your existing Lower Moosa Canyon Wastewater Recycling Facility important and very timely. Of great direct interest are the sub-regional brine management and disposal aspects of the proposed study. Brine management and disposal challenges often stand in the way of realizing the full potential and range of wastewater recycling or brackish groundwater reclamation in their respective service areas. As you are aware, Rainbow Municipal Water District is in the planning stages for a similar project where brine management will play an important part in the feasibility of the project.

Please keep us apprised of your progress in the Feasibility Grant Application process and advise us how we might be directly or indirectly involved in the next phase of the project concept.

Sincerely,

RAINBOW MUNICIPAL WATER DISTRICT

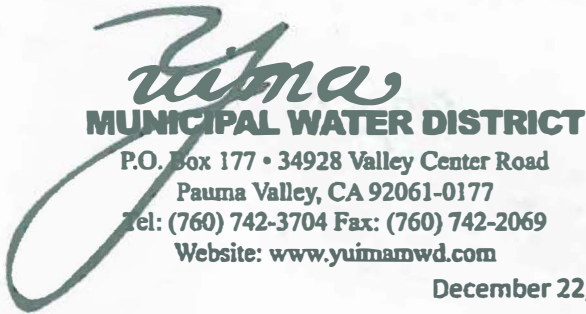
A handwritten signature in black ink, appearing to read 'Tom Kennedy', is written over the printed name and title.

**Tom Kennedy
General Manager**

Board of Directors
W.D. "Bill" Knutson - President
Ron W. Watkins - Vice President
Terry Yasutake - Secretary/Treasurer
Roland Simpson - Director
Lancy Villalobos - Director

Interim General Manager
Susan Collins Meyer

Counsel
Jeffery G. Scott



December 22, 2016

Valley Center Municipal Water District
P. O. Box 67
Valley Center, CA 92082

Attn: Gary Arant, General Manager

Re: Support of Bureau of Reclamation Water Smart Project Feasibility Grant
Application for 2017 – *Lower Moosa Canyon Wastewater Recycling, Reuse
and Sub-regional Brine Disposal Project*

Dear Gary:

This is to express our interest and support for your Bureau of Reclamation Water Smart Project Feasibility Grant Application, *"Lower Moosa Canyon Wastewater Recycling, Reuse and Sub-regional Brine Disposal Project."*

We find your study of the potential for doing wastewater recycling for landscape, agricultural and potentially potable reuse at your existing Lower Moosa Canyon Wastewater Recycling Facility important and very timely. Of great direct interest are the sub-regional brine management and disposal aspects of the proposed study. Brine management and disposal challenges often stand in the way of realizing the full potential and range of wastewater recycling or brackish groundwater reclamation in their respective service areas.

Please keep us apprised of your progress in the Feasibility Grant Application process and advise us how we might be directly or indirectly involved in the next phase of the project concept.

Sincerely,

YUIMA MUNICIPAL WATER DISTRICT



Susan M. Meyer, Interim General Manager



990 East Mission Road
P. O. Box 2290
Fallbrook, California
92088-2290

(760) 728-1125 (Phone)
(760) 728-5943 (Fax)

Board of Directors:

Milt Davies
Jennifer DeMeo
Al Gebhart
Don McDougal
Charley Wolk

Staff:

Brian J. Brady
General Manager

Jack Bebee
Assistant General Manager

Marcie Eilers
Admin Services Manager

Paula de Sousa Mills
General Counsel

Robert H. James
Of Counsel to the District

Mary Lou Boultinghouse
Board Secretary

December 28, 2016

Gary Arant
General Manager
Valley Center Municipal Water District
P.O. Box 67
Valley Center, CA 92082

**Subject: Support of Bureau of Reclamation Water Smart Project
Feasibility Grant Application of 2017 – *Lower Moosa
Canyon Wastewater Recycling, Reuse and Sub-regional
Brine Disposal Project***

Dear Mr. Arant:

This is to express Fallbrook Public Utility District's (FPUD) interest and support for your Bureau of Reclamation Water Smart Project Feasibility Grant Application, "*Lower Moosa Canyon Wastewater Recycling, Reuse and Sub-regional Brine Disposal Project.*"

Your study of the potential for doing wastewater recycling for landscape, agricultural and possible potable re-use at your existing Lower Moosa Canyon Wastewater Recycling Facility promises to produce valuable data for FPUD as we pursue similar projects. Specifically, the brine management aspects of the proposed study are of special interest to us, given that brine disposal is often times the most daunting aspect of reclamation projects.

Please keep us apprised of your progress. We would be most interested in future phases of your project concept.

Sincerely,

A handwritten signature in black ink, appearing to read 'Brian J. Brady', is written over a horizontal line.

Brian J. Brady, P.E.
General Manager
Fallbrook Public Utility District



Christopher W. McKinney
Director of Utilities
201 N. Broadway, Escondido, CA 92025
760-639-4662 cmckinney@escondido.org

December 30, 2016

Gary Arant, General Manager
Valley Center Municipal Water District
P.O. Box 67
Valley Center, CA 92082

Subject: Support of Bureau of Reclamation Water Smart Project Feasibility Grant
Application for 2017 – ***Lower Moosa Canyon Wastewater Recycling, Reuse
and Sub-regional Brine Disposal Project***

Dear Gary;

This is to express our interest and support for your Bureau of Reclamation Water Smart Project Feasibility Grant Application, "***Lower Moosa Canyon Wastewater Recycling, Reuse and Sub-regional Brine Disposal Project.***"

We find your study of the potential for doing wastewater recycling for landscape, agricultural and potentially potable re-use at your existing Lower Moosa Canyon Wastewater Recycling Facility important and very timely. Of great direct interest are the sub-regional brine management and disposal aspects of the proposed study. Brine management and disposal challenges often stand in the way of realizing the full potential and range of wastewater recycling or brackish groundwater reclamation in their respective service areas.

Please keep us apprised of your progress in the Feasibility Grant Application process and advise us how your project might be coordinated with our ongoing efforts to maximize use of our local water resources as your planning process moves forward.

Sincerely,

A handwritten signature in blue ink that reads "Christopher W. McKinney". The signature is fluid and cursive, with a large, stylized "M" and "K".

Christopher W. McKinney
Director of Utilities
City of Escondido

RESOLUTION NO. 2017-01

**RESOLUTION OF THE BOARD OF DIRECTORS
OF THE VALLEY CENTER MUNICIPAL WATER DISTRICT
COMMITTING TO FINANCIAL AND LEGAL OBLIGATIONS ASSOCIATED WITH
BUREAU OF RECLAMATION TITLE XVI GRANT APPLICATION FOR
PREPARATION OF THE VALLEY CENTER WATER RECLAMATION AND REUSE
PROGRAM FACILITIES FEASIBILITY STUDY**

WHEREAS, the District prepared and submitted a grant application in response to the Bureau of Reclamation's ("Reclamation") Funding Opportunity Announcement No. BOR-DO-17-F003 for Development of Feasibility Studies under the Title XVI Water Reclamation and Reuse Program, for Fiscal Year 2017;

WHEREAS, this funding opportunity provides grant funding participation by Reclamation for 50% of the total study cost up to \$150,000, for the selected projects;

WHEREAS, Reclamation requires the applicant to commit to certain legal and cooperative obligations associated with the receipt of Federal financial assistance;

WHEREAS, the grant application proposes to evaluate Lower Moosa Canyon Water Reclamation and Reuse Project for the beneficial use of the existing effluent; and

WHEREAS, total cost of the study is estimated at \$320,000.

NOW, THEREFORE, BE IT RESOLVED AND ORDERED by the Board of Directors of the Valley Center Municipal Water District as follows:

1. That Gary Arant, General Manager, has legal authority to enter into a financial agreement with Reclamation.
2. That the Board of Directors has reviewed and supports the grant application for the Valley Center Water Reclamation and Reuse Program Facilities Feasibility Study, submitted on January 05, 2017.
3. That the District will provide the amount of funding and/or in-kind contributions specified in the funding plan.
4. That District Staff will work with Reclamation to meet established deadlines for entering into a cooperative agreement.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of Valley Center Municipal Water District held on the 17th day of January 2017, by the following vote, to wit:

AYES:

NOES:

ABSTAIN:

ABSENT:

Board President/Chairperson

ATTEST:

Secretary