

APPENDIX E
NORTHERN KINGS COUNTY PILOT PROJECT

Disadvantaged Community Pilot Project
Northern Kings County Sub-Region
Armona CSD and Home Garden CSD Projects

FINAL
July 2013

Prepared for:

Kings Basin Water Authority

Prepared by:

EST. 1968
**PROVOST &
PRITCHARD**
CONSULTING GROUP
An Employee Owned Company

**DISADVANTAGED COMMUNITY PILOT PROJECT
NORTHERN KINGS COUNTY SUB-REGION**

TABLE OF CONTENTS

1	Introduction	4
1.1	Development of the Project Scope.....	7
2	Armona CSD IRWm Application.....	8
3	Home Garden Water Treatment plant.....	11
3.1	Process Improvements and Solids Disposal.....	12
3.1.1	Process Improvements	12
3.1.2	Sludge Disposal Alternatives	14
3.2	Advantages and Disadvantages of Alternatives.....	15
4	Next Steps	17
4.1	Armona CSD.....	17
4.2	Home Garden CSD.....	17
5	Potential Funding Sources	18
6	Bibliography/References	19

APPENDIX

A.....	Armona CSD Interested Party Application
B.....	Northern Kings Pilot Project Matrix

LIST OF FIGURES

	<u>Page</u>
Figure 1-1: Kings Basin IRWM Sub-Region Map	5
Figure 1-2: Northern Kings County Sub-Region Map.....	6
Figure 2-1: Armona and Home Garden CSD Map	9

LIST OF TABLES

	<u>Page</u>
Table 3-1: Northern Kings County Pilot Project – Process Modifications Options.....	15
Table 3-2: Northern Kings County Pilot Project – Disposal Options.....	16

**DISADVANTAGED COMMUNITY PILOT PROJECT
NORTHERN KINGS COUNTY SUB-REGION**

ABBREVIATIONS

CDBG	Community Development Block Grant
CDPH	California Department of Public Health
CSD	Community Service District
DAC	Disadvantaged Community
FKC	Friant Kern Canal
gpm	gallons per minute
KBWA	Kings Basin Water Authority
IRWM	Integrated Regional Water Management
IRWMG	Integrated Regional Water Management Group
mg/l	milligrams per liter
MHI	Median Household Income
ppb	parts per billion
psi	pounds per square inch
PUD	Public Utility District
RUS	Rural Utility Service
SDAC	Severely Disadvantaged Community
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
WTP	Water Treatment Plant

SECTION ONE

1 INTRODUCTION

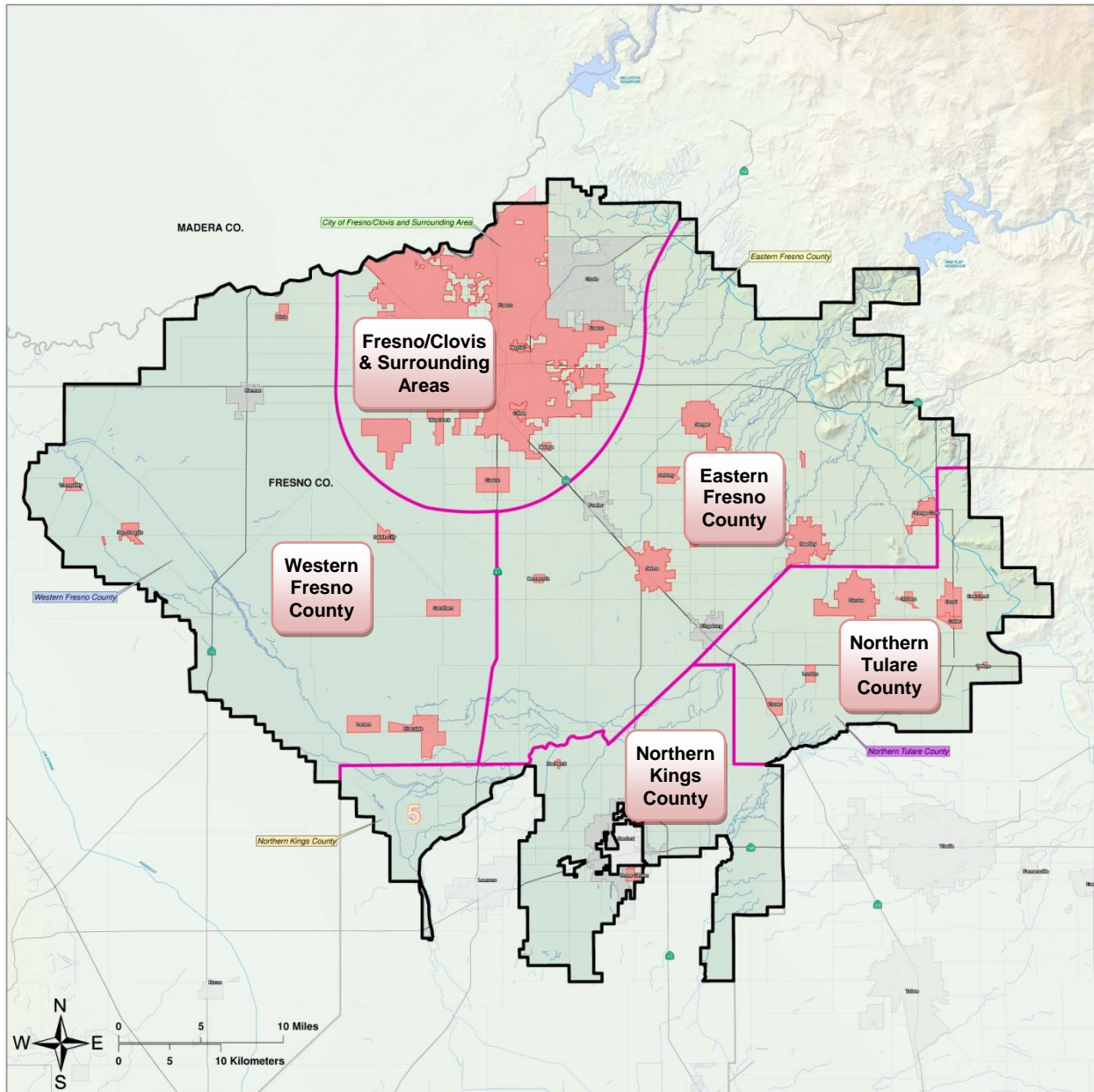
The Kings Basin Water Authority (KBWA) received a grant from the State of California, Department of Water Resources, to develop a pilot project or series of projects within the Integrated Regional Water Management (IRWM) boundary focusing on water, wastewater or storm water problems and issues faced by Disadvantaged Communities (DACs). A DAC is defined as a community with a Median Household Income (MHI) of less than 80% of the statewide MHI. The determination of a DAC was derived using Census 2010 data, and 80 percent of the statewide annual MHI (\$60,392) to reach a DAC MHI threshold of \$48,314. Severely Disadvantaged Communities (SDACs) are defined in California Water Code §13476(j) as those communities with an MHI less than 60% of the statewide MHI. Based upon the census numbers noted above, the SDAC threshold is \$36,235.

The Kings IRWM boundary extends over the majority of Fresno County and portions of northern Tulare and Kings Counties and contains over 100 DACs. In an effort to develop pilot projects that would address common problems and benefit multiple DACs, the IRWM region was divided into five sub-regions: 1.) Northern Tulare County, 2.) Fresno/Clovis and Surrounding Areas, 3.) Western Fresno County, 4.) Eastern Fresno County and 5.) Northern Kings County (See **Figure 1-1**).

SECTION ONE

DISADVANTAGED COMMUNITY PILOT PROJECT NORTHERN KINGS COUNTY SUB-REGION

Figure 1-1: Kings Basin IRWM Sub-Region Map

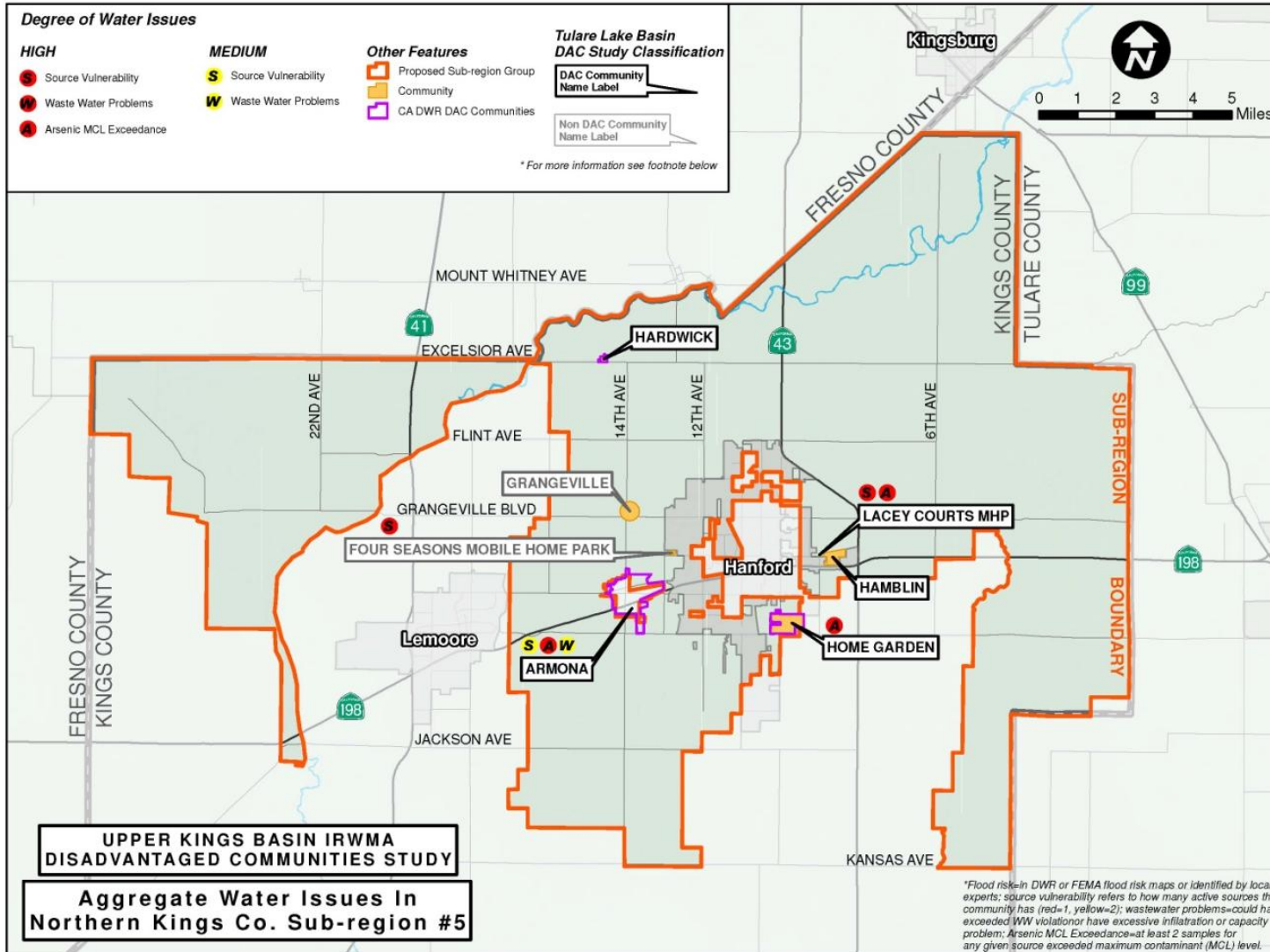


The Northern Kings County Sub-Region has several DACs (See **Figure 1-2**). Outreach was performed to many agencies within the Sub-Region in an effort to educate them about Integrated Regional Management Planning and to seek their participation to help identify pilot projects for the Sub-Region. Several agencies actively participated in the pilot project process: Armona Community Service District (CSD) (outside of KBWA Boundary), Home Garden CSD, Stratford Public Utility District (PUD) (outside of KBWA Boundary), City of Hanford, and residents from several communities.

SECTION ONE

DISADVANTAGED COMMUNITY PILOT PROJECT NORTHERN KINGS COUNTY SUB-REGION

Figure 1-2: Northern Kings County Sub-Region Map



SECTION ONE

1.1 Development of the Project Scope

Stakeholders such as community residents, board members, consultants (contract operators), and agency staff (City of Hanford) came together through several sub-region meetings to discuss their regional concerns and problems with a goal of developing a pilot project to address their common issues and concerns regarding infrastructure and operations of their water, wastewater or storm drainage systems. Based on concepts presented at these sub-region meetings, several potential projects were identified and categorized in a matrix.

Through consensus, the participating representatives identified two priority issues for their communities. The Armona CSD is surrounded by the KBWA boundary. Therefore, one of the two priorities was to prepare a KBWA application for Armona CSD to become an Interested Party. The application would trigger the KBWA Board to consider adjusting their boundary, and then consider accepting their application for membership. The second priority was to investigate process and solids handling improvement alternatives for Home Garden CSD's (Home Garden) Arsenic Water Treatment Plant (WTP). These two priority issues comprise the Pilot Project for the Northern Kings County Sub-Region.

For Home Garden, the Pilot Project was to identify viable options to decrease the operational costs of the WTP. This pilot study will provide a high level technical evaluation of some of the most viable alternatives and allow Home Garden to consider starting outreach and initiate discussions with key stakeholders, including those in their community and possibly the City of Hanford.

However, an alternative study will need to be conducted to provide a detailed engineered analysis of the most viable infrastructure options, evaluating the alternatives, permitting, and costs to determine the preferred alternative, and preparing recommendations for many other important aspects of the project.

SECTION TWO

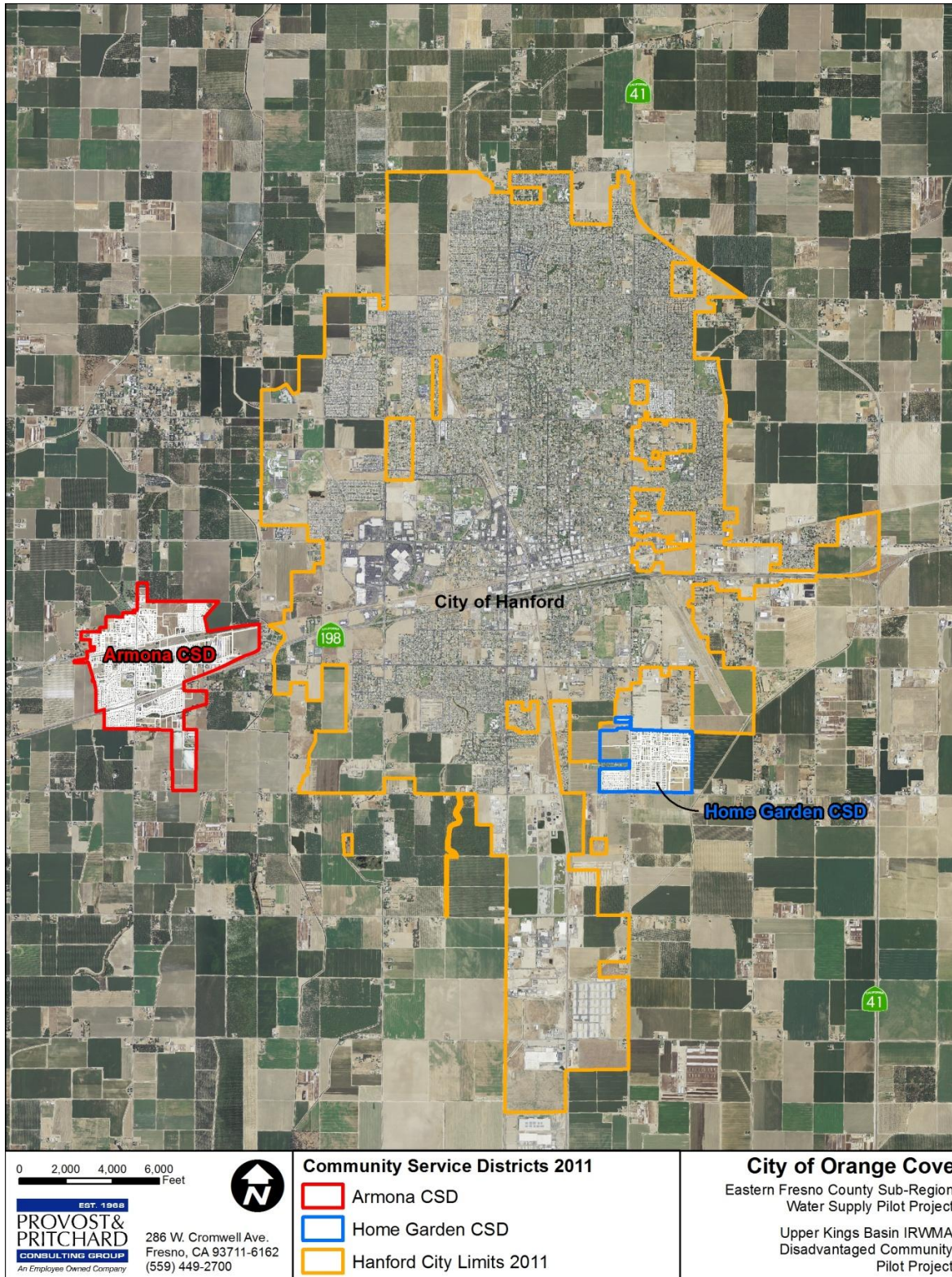
2 ARMONA CSD IRWM APPLICATION

The Armona CSD (Armona) is located in Kings County as shown in **Figure 2-1**. Armona is located approximately 35 miles south of the City of Fresno and 4 miles from the City of Hanford. The community has a history of consistent growth, over the past ten years the population in Armona has grown 22% from 3,239 (2000 census) to 4,156 (2010 census). Derived from a variety of sources including the 2000 Census, American Community Survey, and community income surveys the Median Household Income (MHI) is \$42,122¹ making Armona a DAC under the state's definition.

¹ 2007-2011 American Community Survey 5-Year Estimate; United State Census Bureau

DISADVANTAGED COMMUNITY PILOT PROJECT SECTION TWO NORTHERN KINGS COUNTY SUB-REGION

Figure 2-1: Armona and Home Garden CSD Map



G:\Clients\Upper Kings Basin IRWMA - 2048\20481201-Upper Kings Basin DAC Study\GIS\Map\PilotProjects\ArmonaHomeGarden\Armona_HomeGarden.mxd

**DISADVANTAGED COMMUNITY PILOT PROJECT
NORTHERN KINGS COUNTY SUB-REGION**

SECTION TWO

Currently Armona is surrounded by the KBWA's boundaries. During the public outreach meetings an Armona CSD Board Member expresses interest in joining the KBWA. Due to the fact that Armona is a "surrounded exclusion" of the boundary limit for the KBWA, a change to the current boundaries would require approval by the KBWA Board.

The application to join the KBWA has been prepared, in draft form, (see Appendix A) on behalf of Armona. Once Armona reviews the application and makes any necessary changes, they will be able to submit it to KBWA Board. Upon receipt of Armona's request, the KBWA will review the application and consider adjusting the boundary to include Armona CSD.

SECTION THREE

3 HOME GARDEN WATER TREATMENT PLANT

Home Garden is located in Kings County as shown in **Figure 2-1**, approximately 1.5 miles southeast of Hanford and 35 miles south of the City of Fresno. The population in the Home Garden community has not grown significantly over the past 10 years, 3.3% growth according to the recorded populations of 1,702 (census 2000) and 1,761 (census 2010). Derived from a variety of sources including the 2000 Census, American Community Survey, and community income surveys the Median Household Income (MHI) is \$33,092², meeting the State's definition of an SDAC.

To effectively evaluate the solids production and handling systems, members of the project team conducted a site visit. While at the site, discussions took place with maintenance and administrative staff, and a board member to review operations data, controls and better understand the treatment system.

Home Garden began operations of an arsenic treatment system in approximately 2011, utilizing a coagulation-filtration pressure filter treatment system manufactured by Layne Christensen. The water for the treatment system is mainly provided by a single well (D1) at 900 gallons per minute (gpm) which has a raw water arsenic concentration of 20 parts per billion (ppb). The drinking water limit for arsenic is 10 ppb. There is another well at the site (D4) that has a raw water arsenic concentration of 30 ppb and a flow of 900 gpm. Well D4 can be sent to the treatment system; however, the primary use for Well D4 is to provide backwash water to the pressure filters.

The raw water is treated with sulfuric acid (to lower the pH), sodium hypochlorite (to oxidize the arsenic), and ferric chloride (to pull together the arsenic in order to form a particle to be filtered) prior to going through four vertical pressure filters. Upon leaving the filters, sodium hydroxide is added to raise the pH. Treated water from the filters is discharged into a 240,000 gallon finished water tank. The finished water tank is used to supply water to Home Garden's customers. The existing treatment system has consistently produced treated water arsenic concentrations well below the 10 ppb limit.

Depending on water demand, the pressure filters are backwashed every 3-4 days during the summer and every 10-12 days during the winter. A backwash is triggered when the differential pressure across the filters exceed 10 pounds per square inch (psi). Backwashing the filters cleans the filter media by reversing the flow through the filters and carrying away the associated solids that accumulate during normal operations. The backwash water is collected in a 57,300 gallon backwash reclaim tank. The solids are allowed to settle in the backwash reclaim tank for one day. After settling, the water in the reclaim tank is decanted and recycled back through the treatment system. When the water has been decanted, the solids from the bottom of the reclaim tank are pumped into a 30 cubic yard bin. This bin is equipped with a perforated false floor to further dewater the solids. Approximately every six months, solids are removed from the 30 cubic yard bin, and are hauled off site for disposal.

² 2007-2011 American Community Survey 5-Year Estimate; United State Census Bureau

SECTION THREE

The solids removed from the site are typically above the hazardous waste limit for arsenic, requiring disposal at a hazardous waste site. The most recent arsenic concentration in the sludge from March 2012 was 14.8 milligrams per liter (mg/l) (the hazardous waste limit is 5 mg/l). The cost of disposing of hazardous waste is significantly more than non-hazardous waste. Home Garden pays between \$3,400 and \$6,000 every six months to dispose of the sludge as a hazardous waste

3.1 Process Improvements and Solids Disposal

Due to the high cost of solids disposal containing Arsenic, Home Garden wished to evaluate alternatives to lower the disposal costs. The following evaluation identified two methods that could potentially reduce solids disposal costs. The two methods focused on process improvements and sludge disposal alternatives. Process improvements include changes that can be made to the existing treatment plant operations that could improve chemical reaction efficiency and lessen the volume of sludge produced. The solids disposal evaluation include a variety of alternatives involving the reduction of volume, weight, concentration, disposal to a sewer system or combining solids with a partnering agency to improve the economy of scale.

Process Improvements

- Modify chemical feed locations
- Backwash more frequently
- Automate chemical feed systems

Sludge Disposal Alternatives

- Discharge Backwash to Sewer System
- Partner with Local Agency to Provide Dewatering Services
- On-site Dewatering System

The alternatives listed present the most logical solutions to reducing the operational and maintenance costs for the Home Garden WTP; ongoing operations costs, permitting, rates and interagency cooperation are all issues that will need to be evaluated further by the district to identify the most viable alternative. The following sections will describe the alternatives in greater detail.

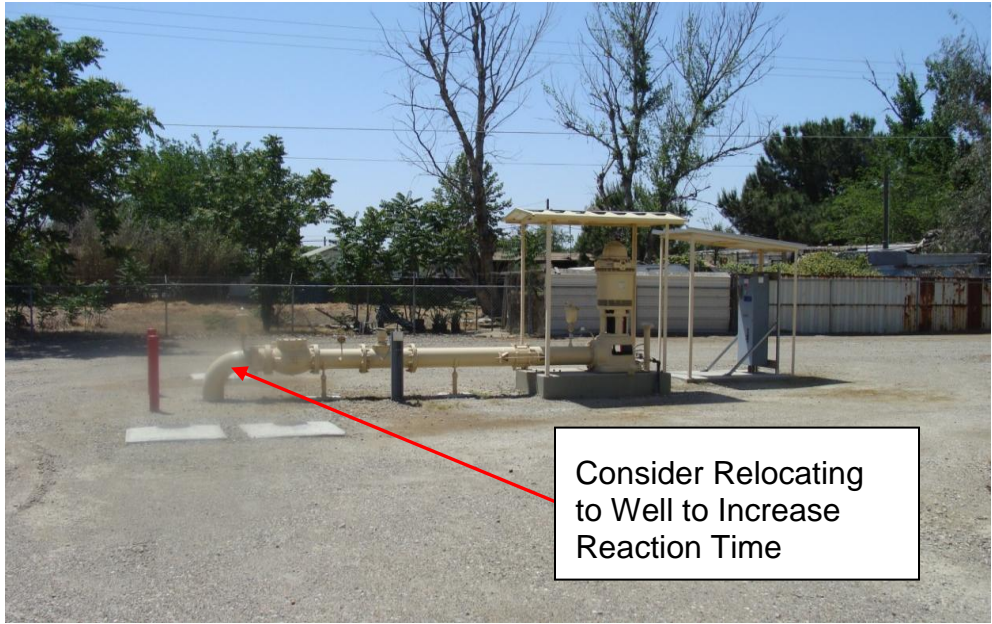
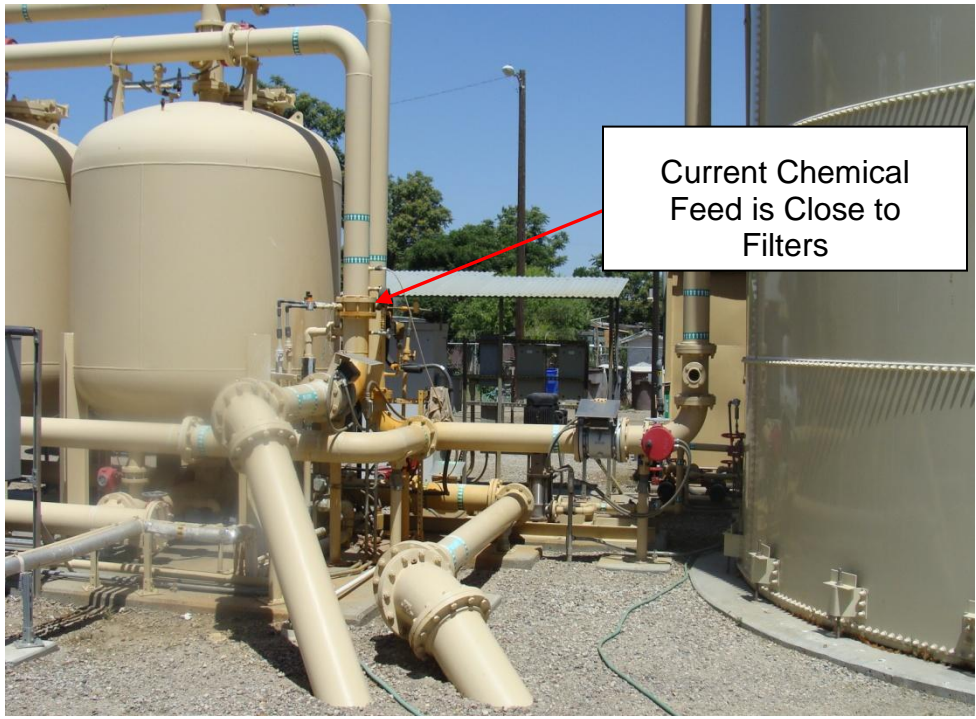
3.1.1 Process Improvements

Modify chemical feed locations: All three chemicals are fed at a single point a few feet before the pressure filters. This is less than an ideal and may not provide enough time

DISADVANTAGED COMMUNITY PILOT PROJECT
NORTHERN KINGS COUNTY SUB-REGION

SECTION THREE

for the chemicals to react completely. With properly located feed points, chemical feed rates may be lowered which would result in slightly less sludge production.



SECTION THREE

Backwash more frequently: Currently the filters are backwashed strictly based on pressure differential. These longer filter run times may result in less effective backwashing or clogging of the filter media. Backwashing the filters at least once per day during peak periods should prolong the life of the filter media.

Automate chemical feed systems: The chemical feed rates are set manually by the operator. As flow through the treatment system fluctuate, the operator must change the pump feed rates. This may result in overfeeding or underfeeding the chemicals. The chemical feed rates can be automated with some additional equipment and programming of the control system.

3.1.2 Sludge Disposal Alternatives

Several sludge disposal alternatives were investigated for Home Garden's consideration. The preliminary evaluation of the alternatives described below should be considered the first step to developing an ultimate solution. Additional engineering, costs analysis and interagency discussions may be required to validate the alternatives prior to implementation.

Discharge Backwash to Sewer System: The sludge currently hauled off site every six months is hazardous waste due to the accumulation of arsenic after each backwash. There is the possibility that some or all the sludge accumulated on the bottom of the backwash reclaim tank could be discharged to the sewer system. The concentration of arsenic from the reclaim tank will be below hazardous waste levels. However, wastewater treatment plants are hesitant to received arsenic laden sludge due to the fact that the arsenic will accumulate in the sludge at the wastewater treatment plant potentially making the wastewater sludge hazardous. Further discussions would be needed with the City of Hanford and their wastewater treatment plant operators.

Dewater Off-Site – Partner with another local agency that has a dewatering system: There are several agencies in the area that have arsenic treatment plants utilizing a similar process as the Home Garden WTP. Some of these agencies have de-watering systems. Home Garden could initiate discussions with these agencies to consider partnering with them to dewater their sludge. Due to the low volume of sludge produced by Home Garden, the cost to contract with a partnering agency may be more cost effective than operating dewatering system. This option would require the development and implementation of an inter-agency agreement.

Dewater On-Site: There are several mechanical and non-mechanical methods for dewatering sludge that could be integrated into the existing treatment system. This process will only decrease the volume of sludge to be removed. The hazardous classification of the sludge would more than likely remain.

- Mechanical Dewatering – The most common mechanical process used for this application would be a plate-and-frame filter press or a screw press. These types of presses could increase the solids content of the sludge to 30%. These systems are reasonably compact and don't require a lot of space.

**DISADVANTAGED COMMUNITY PILOT PROJECT
NORTHERN KINGS COUNTY SUB-REGION**

SECTION THREE

- Solar or Enhanced Drying – Lined basins could be constructed where the sludge can be spread to allow the sun to further dry the sludge. Products such as the Deskins “Quick Dry” Filtration Process could be considered for this application. The basins would need to be sized large enough to allow for adequate drying time as well as seasonal weather changes. These processes require more space and can be difficult to incorporate into an existing treatment site.

3.2 Advantages and Disadvantages of Alternatives

For each category of improvement, Process and Sludge Disposal, and possible solution, advantages and disadvantages were prepared for Home Garden’s consideration. **Table 3-1** shows the costs, advantages, and disadvantages for the improvements described in Section 3.1.1. Due to the greater complexity and interagency correlation that the sludge disposal alternatives incorporate, **Table 3-2** only shows the advantages and disadvantages for each alternative. It is premature to develop cost estimates for the Sludge Disposal alternatives, additional engineering and/or interagency coordination needs to be conducted in-order to develop realistic cost estimates.

Table 3-1: Northern Kings County Pilot Project – Process Modifications Options			
Process Change Option	Cost Estimate	Advantages	Disadvantages
Modify chemical feed locations	\$5,000	Optimizes chemical reaction time before the filters.	May have little impact on amount of sludge produced.
Increase Backwash frequently	\$1,000	Keeps the filter bed cleaner and will ensure a longer media life.	More water will be used for backwashing. Volume of sludge will likely not change.
Automate chemical feed systems	\$10,000	Ensures chemicals will be dosed optimally at all times.	May have little impact on amount of sludge produced.

**DISADVANTAGED COMMUNITY PILOT PROJECT
NORTHERN KINGS COUNTY SUB-REGION**

SECTION THREE

Table 3-2: Northern Kings County Pilot Project – Sludge Disposal Options		
Disposal Option	Advantages	Disadvantages
Discharge backwash to sewer system	Potentially the lowest cost alternative. No sludge handling would be required.	May be difficult to convince wastewater treatment plant operations to accept sludge containing arsenic. Monthly fees for sewer connection.
Off-Site - Dewater sludge off-site by partnering with another local agency	By partnering with another local water or wastewater treatment agency that has a dewatering system, it may be more cost effective than the current sludge disposal process.	It may be difficult to find a willing partnering agency. There would still be some transportation costs.
On-site – Mechanical Dewatering (Press System)	Sludge volume and weight would be reduced decreasing disposal costs and frequency.	Capital and operation costs would be required to operate the dewatering press. Also, additional space would be required to locate the press near the solids settling tank.
On-Site Dewatering – Solar or Enhanced Drying	Sludge volume and weight would be significantly reduced decreasing disposal costs and frequency.	The process would require the most capital costs for construction. Operation and maintenance costs would increase but would be similar to the mechanical dewatering. This process requires a significant amount of space and access by equipment to remove dried sludge.

SECTION FOUR

4 NEXT STEPS

Continued involvement in the KBWA is encouraged, and below are a few suggestions on how Home Garden can stay involved:

- Home Garden should continue to educate themselves and become more familiar with Integrated Regional Management Planning. Information is available at the following website <http://www.krcd.org/water/ukbirwma/>. Agencies such as the Community Water Center (559-733-0219) and/or Self-Help Enterprises (559-802-1681) can help provide information about the KBWA and the Kings IRWMP.
- The State of California has a website that provides additional information <http://www.water.ca.gov/irwm/grants/index.cfm>.
- Attending the KBWA Board or Advisory Committee Meetings. The meetings are posted on the following website <http://www.krcd.org/water/ukbirwma/agenda.html>.
- Becoming an Interested Party or a Member could help provide access to funding. Call the Kings River Conservation District at (559) 237-5567 to obtain additional information about becoming a Member or Interested Party.

4.1 Armona CSD

Armona should consider submitting the attached application to join the Kings Basin Water Authority and follow up to ensure the boundary will be extended to include their community. Armona should also keep up with the meetings and funding opportunities in the area to help improve their community's water and waste water issues. In the application to become an Interested Party of the Kings Basin Water Authority, Armona will need to designate a representative and an alternate to attend and have voting capabilities (if a full member) at the meetings.

4.2 Home Garden CSD

Home Garden should consider all the alternatives presented in this report for improving their water treatment system. Several of the alternatives involve partnering with another local agency. Home Garden should initiate a dialog with these potential partnering agencies to evaluate their wiliness to engage in a solution. Based on Home Garden's assessment of the alternatives and willingness of partnering agencies to engage, the list of solutions should be refined or validated. The list of validated projects can be further analyzed using a cost benefit analysis to determine the preferred alternative.

SECTION FIVE

5 POTENTIAL FUNDING SOURCES

KBWA Proposition 84 funding.

CDPH Proposition 84 Programs: Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act of 2006 (Public Resources Code Section 75001, et seq.), was passed by California voters in the November 2006 general election. CDPH is responsible for portions of the Act that deal with safe drinking water supplies, including emergency and urgent funding, infrastructure improvements, and groundwater quality.

Community Development Block Grant (CDBG)

United States Department of Agriculture (USDA) Rural Utility Service (RUS) Funding: The USDA RUS provides funding for water system improvements. The availability of grant funding through this program is usually less than that of the previous State programs listed, resulting often in a higher percentage of loan. However, USDA is an important resource and may be used in conjunction with other funding to help cover construction costs.

6 BIBLIOGRAPHY/REFERENCES

DAC Pilot Study Master Database, August 2013, Provost and Pritchard Consulting Group

2007-2011 American Community Survey, April 2013, United States Census Bureau

APPENDIX A

[DATE]

Advisory Committee
Kings Basin Water Authority
C/O Kings River Conservation District
4886 E. Jensen Avenue
Fresno, CA

Re: IRWMP Interested Party Application

Advisory Committee:

The Armona Community Services District (ACSD) would like to become an Interested party (per §1(f) of the UKB IRWMA Joint Powers Agreement) and participate in the UKB IRWMP.

ACSD was established in 1920 to provide community services to the residents of Armona. Located just west of Hanford and east of Lemoore, the CSD provides water, sewer, refuse services and street lighting to a population of nearly 3,500.

ACSD is interested in furthering their involvement in the region, taking part in potential studies or investigations on collaboration/consolidation opportunities, becoming eligible for IRWMP funding opportunities and/or adding projects to the IRWMP Project List.

Specific goals of ACSD that coincide with the regional goals of the IRWMP include 1) halting groundwater overdraft, 2) improve water quality, and 3) enhance operational flexibility.

If you have any questions or comments, please contact me at (559) 707-1601 or jim.maciel@qualitymc.net.

Respectfully,

Jim Maciel
President of the Board of Directors

**Kings Basin IRWMP
Application – Interested Party**

Applicant	Armona Community Services District
Request Type	Armona Community Services District (ACSD) would like to become an Interested Party (per §1(f) of the UKB IRWMA Joint Powers Agreement) and participate in the UKB IRWMP
Location	10956 14 th Avenue, Armona, CA
Background	<p>ACSD was established in 1920 to provide community services to the residents of Armona. Located just west of Hanford and east of Lemoore, the CSD provides water, sewer, refuse services and street lighting to a population of nearly 3,500.</p> <p>ACSD is governed by a 5-member Board of Directors.</p>
Objectives/Benefit	<p>The objective for ACSD to become an Interested Party is to become more involved and be eligible for funding opportunities through the IRWMP.</p> <p>The specific benefits of ACSD participating in the IRWMP are 1) potential for funding opportunities, 2) ability to collaborate with other participants, 3) learn more about regional water management, and 4) develop potential solutions to assist DACs in the region with water, wastewater and storm water issues.</p>
Website	N/A
Contact Information	<p>Jim Maciel PO Box 486 Armona, CA 93202 (559) 707-1601 Email: jim.maciel@qualitymc.net</p> <p>Representative: Jim Maciel, President of the Board of Directors Alternate: Alternate:</p>

APPENDIX B

COMMUNITY/ DISTRICT NAME	WHAT TYPE OF REGIONAL SOLUTIONS ARE AVAILABLE FOR THIS COMMUNITY?	WHO COULD THIS COMMUNITY CONNECT TO/COLLABORATE WITH?	BENEFITS	GOVERNANCE BARRIERS & OPPORTUNITIES TO BE ADDRESSED	TECHNICAL BARRIERS & OPPORTUNITIES TO BE ADDRESSED	PILOT PROJECT
WASTEWATER OPPORTUNITIES: FULL CONSOLIDATION OR PHYSICAL CONNECTION						
Armona CSD	1. Wastewater Treatment Expansion	From an economic standpoint agencies in-close proximity decrease design complexity and costs.	1. Increased system reliability 2. Regulatory Compliance	1. Armona CSD is not within the Upper Kings IRWMA boundary.	1. Regional Board Permitting 2. Land Acquisition	Prepare a preliminary grant application for Upper Kings IRWMA seeking planning funding to design the expansion of the wastewater treatment facility.
MANAGERIAL CONSOLIDATION						
Home Garden	1. Managerial and Operations Consolidation 2. Contract administrative and operation functions	From an economic standpoint agencies in-close proximity decrease design complexity and costs. 1. City of Hanford 2. Armona CSD 3. Private Company	1. Improved Regulatory Compliance (reporting and licensing) 2. Consistent Maintenance 3. Increased water system reliability	1. Some cost may increase due to improved services. 2. A cooperative agreement would need to be developed between partnering agencies. 3. Lack of support by board members	1. Cost benefit analysis to support the best alternative.	1. Prepare a preliminary grant application for Upper Kings IRWMA seeking funds for a feasibility study to evaluate the best alternative for the consolidation or contract administrative and operator functions. 2. Prepare a Needs Assessment: Identify and define the deficiencies of Home Garden's water system operations. Develop first steps or opportunities for solutions. This pilot would require significant participation by the board and operations staff. Depending the extent of the needs assessment, it may be beyond the DAC Pilot Project's scope.

COMMUNITY/ DISTRICT NAME	WHAT TYPE OF REGIONAL SOLUTIONS ARE AVAILABLE FOR THIS COMMUNITY?	WHO COULD THIS COMMUNITY CONNECT TO/COLLABORATE WITH?	BENEFITS	GOVERNANCE BARRIERS & OPPORTUNITIES TO BE ADDRESSED	TECHNICAL BARRIERS & OPPORTUNITIES TO BE ADDRESSED	PILOT PROJECT
DRINKING WATER OPPORTUNITIES: FULL OR PHYSICAL CONNECTION						
Grangeville	Physical Connection – Water System Supply and Interconnection	<p>From an economic standpoint agencies in-close proximity decrease design complexity and costs.</p> <ol style="list-style-type: none"> 1. Grangeville 2. Armona CSD 3. Pioneer School 	<ol style="list-style-type: none"> 1. Improved water supply 2. Improved water quality 3. Increased water system reliability 4. Larger economies of scale 	<ol style="list-style-type: none"> 1. Some costs may increase due to improved service levels, water quality improvements and additional maintenance. 2. A cooperative agreement would need to be developed between partnering agencies. 3. Identification of a lead agency 4. Pipeline would be located in County road right-of-way. 5. Armona CSD is not within the Upper Kings IRWMA boundary. 6. Past lack of support by Grangeville 	<ol style="list-style-type: none"> 1. CEQA permitting 2. Costing of project and determining which agencies could be interconnected. 3. There may be some obstacles obtaining the County's support to locate pipeline within road right-of-way. 	<ol style="list-style-type: none"> 1. Prepare a preliminary grant application for Upper Kings IRWMA seeking funds for a feasibility study to evaluate a water system interconnection project. 2. Issue Resolution Evaluation. Develop list of technical questions to be researched. Prepare a summary of questions and research conducted to answer them. Stakeholders to decide on final list of questions. This pilot would require significant participation by the board and operations staff. Depending the extent of the needs assessment, it may be beyond the DAC Pilot Project's scope.
Northern Kings Sub-Region	Regional Water Supply Project Physical Connection – Water System Supply and Interconnection	<p>From an economic standpoint agencies in-close proximity decrease design complexity and costs.</p> <ol style="list-style-type: none"> 1. Lemoore 2. Hanford 3. Lemoore NAS 4. Armona 5. Corcoran 	<ol style="list-style-type: none"> 1. Improved water supply 2. Improved water quality 3. Increased water system reliability 4. Larger economies of scale 	<ol style="list-style-type: none"> 1. Identification of a lead agency 2. A cooperative agreement would need to be developed between partnering agencies. 	<ol style="list-style-type: none"> 1. Identifying viable water supplies 2. Developing long-term water supply agreements 3. Developing a cost sharing agreement. 4. Permitting 	<ol style="list-style-type: none"> 1. Prepare a preliminary grant application for Upper Kings IRWMA seeking funds for a feasibility study to evaluate a regional water supply project. 2. Prepare a Preliminary Water Supply Option Analysis. This analysis is beyond the DAC Pilot project scope.

COMMUNITY/ DISTRICT NAME	WHAT TYPE OF REGIONAL SOLUTIONS ARE AVAILABLE FOR THIS COMMUNITY?	WHO COULD THIS COMMUNITY CONNECT TO/COLLABORATE WITH?	BENEFITS	GOVERNANCE BARRIERS & OPPORTUNITIES TO BE ADDRESSED	TECHNICAL BARRIERS & OPPORTUNITIES TO BE ADDRESSED	PILOT PROJECT
OTHER						
Armona CSD City of Hanford	Apply to be included within the Upper Kings IRWMA boundary	Upper Kings IRWMA	1. Regional Solutions to water related issues 2. Access to grant funding	Prepare application to Upper Kings IRWMA to become an interested party or a member.	Prepare application materials	Prepare application material and submit request to become a member of the Upper Kings IRWMA
Stratford and other Agencies	Develop a new IRWM Region	1. City of Lemoore 2. Lemoore Naval Air Station 3. Huron 4. DACs 5. Irrigation Districts	1. Provides the potential to develop Regional Water Management Planning. 2. Provides the potential for funding.	Which agency would take the lead.	Grant Funding to Prepare an IRWMP	Develop a draft boundary and list of agencies that could participate.

