Fox Canyon Groundwater Management Agency

EXECUTIVE COMMITTEE

Full Agenda Packet
of
November 14, 2016

FOX CANYON GROUNDWATER MANAGEMENT AGENCY

A STATE OF CALIFORNIA WATER AGENCY

NOTICE OF MEETING

NOTICE IS HEREBY GIVEN that the Fox Canyon Groundwater Management Agency (FCGMA) will hold an **Executive Committee Meeting** at **9:00 a.m.** on **Monday, Novemer 14, 2016** in the **Atlantic Conference Room**, of the Ventura County Government Center, Hall of Administration Building, at **800 South Victoria Avenue, Ventura, California**.

FCGMA EXECUTIVE COMMITTEE MEETING AGENDA
November 14, 2016

Members: Chair Lynn Maulhardt
Co-Chair Charlotte Craven

A. Call to Order

B. Introductions

C. Public Comment – Audience members may speak about FCGMA-related matters not on today's Agenda.

D. Minutes – Approve the minutes from the October 3, 2016 Executive Committee meeting.

E. AMI / Water Market Pilot Discussion – Staff and Matthew Fienup of California Lutheran University, will co-present a proposed multi-purpose pilot program to test and validate data from AMI telemetry units sent to a central data collection server, and to evaluate the prospect of Water Market program within the FCGMA.

F. LPUG Allocation - Representatives from the Las Posas Users Group will present a draft allocation framework for the Las Posas Groundwater Basin.

G. Adjourn the Executive Committee Meeting – Adjourn until the next Executive Committee meeting, to be scheduled at a later date.

NOTICES

The FCGMA Board strives to conduct accessible, orderly, and fair meetings where everyone can be heard on the issues. The Board Chair will conduct the meeting and establish appropriate rules and time limitations for each item. The Board can only act on items designated as Action Items. Action items on the agenda are staff proposals and may be modified by the Board as a result of public comment or Board member input. Additional information about Board meeting procedures is included after the last agenda item.

***Administrative Record**: Material presented as part of testimony will be made part of the Agency's record, and 10 copies should be left with the Board Clerk. This includes any photographs, slides, charts, diagrams, etc.*

ADA Accommodations: *Persons who require accommodation for any audio, visual, or other disability in order to review an agenda or to participate in the Board of Directors meeting per the Americans with Disabilities Act (ADA), may request such accommodation in writing addressed to the Clerk of the FCGMA Board, 800 So. Victoria Avenue, Location #1610, Ventura, CA 93009-1610, or via telephone by calling (805) 654-2014. Any such request should be made at least 48 hours prior to the meeting so staff can make the necessary arrangements.*

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Availability of Complete Agenda Package: *A copy of the complete agenda package is available for examination at the FCGMA office during regular working hours (8:00 a.m. to 5:00 p.m. Monday through Friday) beginning five days before the Board meeting. Agenda packet contents are also posted on the FCGMA website as soon as possible, and left there for archival retrieval in case reference is needed on previously considered matters. Questions about specific items on the agenda should be directed to the Agency's Executive Officer.*

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Continuance of Items: *The Board will endeavor to consider all matters listed on this agenda. However, time may not allow the Board to hear all matters listed. Matters not heard at this meeting may be carried over to the next Board meeting or to a future Board meeting. Participating individuals or parties will be notified of the rescheduling of their item prior to the meeting. Please contact the FCGMA staff to find out about rescheduled items.*

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Electronic Information and Updates*: Our web site address is http://www.fcgma.org. Information available online includes the Board's meeting schedule, a list of the Board members and staff, general information, and various Agency forms. If you would like to speak to a staff member, please contact the FCGMA Clerk of the Board at (805) 654-2014.*

Approved & Posted: 11-8-16
At: Ventura County Government Center Main Entrance Bulletin Board, 800 S. Victoria Avenue, Ventura, CA
At: http://www.fcgma.org

FOX CANYON GROUNDWATER MANAGEMENT AGENCY

A STATE OF CALIFORNIA WATER AGENCY

MINUTES

Minutes of the Fox Canyon Groundwater Management Agency's (FCGMA) Executive Committee Meeting held **Monday, October 03, 2016** in the Pacific Conference Room, of the Ventura County Government Center, Hall of Administration, 800 South Victoria Avenue, Ventura, California.

A. Call to Order

B. Chair Maulhardt called the meeting to order at 10:02 a.m.

C. Introductions

D. In attendance were: (1) Lynn Maulhardt, FCGMA Executive Committee Chair; (2) Charlotte Craven, FCGMA Executive Committee Co-Chair; (3) Arne Anselm, Deputy Director, Water Resources (4) Kim Loeb, Groundwater Manager; (5) Alma Quezada, Groundwater Specialist; (6) Kathleen Riedel, Groundwater Specialist; (7) Keely Royas, Clerk of the Board; (8) Carol Schoen, Zone Mutual Water Co.; (9) Daryl Smith, Grower; (10) Edgar Terry, Terry Farms; (11) Matthew Fienup, CLU, Water Market Group; (12) Ian Prichard, Camrosa Water District; (13) Bryan Bondy, Calleguas Mutual Water District; (14) William A. Miller, grower.

E. Public Comments

No public comments were made.

F. Meeting Minutes

Chair Lynn Maulhardt approved the minutes from the July 15, 2016 Executive Committee Meeting with the change that Co-Chair Charlotte Craven was not in attendance.

G. AMI Discussion

Alma Quezada, Groundwater Specialist, presented the challenges and opportunities of Advanced Metering Infrastructure (AMI) and a proposed implementation approach for the Executive Committee's feedback. Ms. Quezada discussed the challenges and findings of the AMI Proof-of-Concept (POC) Program that was implemented in February 2016. The POC Program's vendors had concerns in being able to deliver a product that could meet the for the FCGMA's needs. As a result, the vendors decided to discontinue working with the Agency.

Subsequently, FCGMA staff reached out to stakeholders and learned that AMI systems were already in use with some farmers. After putting together a requirements list, three vendors were identified that could potentially meet the basic requirements to automate groundwater extraction data. Those three vendors were invited to present at a workshop before a group of growers on August 11, 2016. Two main consensus items from the stakeholders arose from the vendor

presentation workshop. First, stakeholders want flexibility in choosing a vendor rather than being restricted to a single FCGMA vendor, and secondly, stakeholders expressed a desire for the FCGMA to provide an incentive for AMI implementation.

Chair Maulhardt presented a question regarding the grower's workshop. He wanted to know how many growers attended, from what areas and what property types. A discussion ensued to answer Chair Maulhardt's question and comments were heard from: (1) Matthew Fienup, CLU, Water market Group; (2) Bryan Bondy, CMWD and (3) Carol Schoen, Zone Mutual Water Co.

They explained that it was a well-represented diversity of growers that included orchards, row crops and leasee farmers. Chair Maulhardt also asked the question whether the stakeholders wanted the flexibility to choose from the list or the ability to go outside of the list as well. Ms. Quezada stated that they wanted the flexibility to go outside of the list. The discussion continued with Chair Maulhardt, Mr. Fienup, Mr. Bondy and Ms. Schoen about where data would be stored and who would have access once collected.

Ms. Quezada stated that the Water Market Group wanted to implement a Water Market Pilot Test. One single vendor utilizing 50 wells with a $1,000 incentive per well.

Chair Maulhardt suggested hearing the next Item on the Agenda, Water Market Pilot, as it directly related to the AMI discussion.

H. Water Market Pilot

Matthew Fienup, CLU, Water Market Group, proposed a test market in the Oxnard Plain and Forebay Basins that included actual transfers and pumping allocations facilitated by an AMI component. Water Market participants will still report under the IAI as required, but would be issued a market allocation that can be transferred among the water market pilot participants. Mr. Fienup stated that AMI implementation was required for establishment of a water market.

Mr. Fienup discussed the goals of the Water Market Pilot:

-Give water users flexibility to adapt to the existing regulations.
-Incentivize water conservation.
-Explore what the preliminary market value of water is.
-Gather insight of what are the appropriate rules.
-Gather insight of what role AMI plays and how to use that for proper monitoring.
-Refine the accounting and paperwork of market transactions.

The market allocations would be equal to the amount of water pumped in the 2014-2015 year. Type and location of trades are one year temporary transfers of that market allocation. A trading desk for buyers and sellers would be located at a local non-profit organization. The term of the pilot program is the end of the current water year.

Co-Chair Craven asked what would happen if the AMI equipment were to fail. Kim Loeb, Groundwater Manager, discussed the different ways that AMI can be read. Depending on the technology, parameters could be set so when readings are viewed anything that looks out of range would indicate an inaccurate reading or malfunction. He stated that it also depends on the frequency of recordings.

Chair Maulhardt expressed his satisfaction that all four entities are working together towards a common goal and facing the current reality. He stated that the pilot concept needs to be done, but he recommended that the Water Market Pilot project proposal be done in a multi-phase design. For example, for the first phase, select 10 of the 50 water users so that errors in data could be fixed before moving to the next phase. Map out a timeline to eventually include 50 users in the pilot test. Chair Maulhardt stated that it should be the policy of the Board that the FCGMA needs to be in charge of storing the accurate data. He recommended that the Water Market Group make a proposal to FCGMA staff with phasing guidelines such as the project ultimately needs 50 wells and it is going to cost $50,000. He also stated that for the next meeting there needs to be a presentation of what the test objectives are, including what the FCGMA and growers get. Chair Maulhardt explained that the back-end needs to be ready before the test is ready to go, the Beta test needs to validate the requirement list of AMI and the trading desk will be set-up with an existing local non-profit organization subject to the approval of the board. He stated that before any water market trading can begin, the FCGMA needs to validate the AMI requirements list, the back end needs to be set up to get data and the data location is confirmed set and secure.

Comments were heard from: (1) Ian Prichard, Camrosa Water District; (2) Bryan Bondy, CMWD; (3) Carol Schoen, Zone Mutual; (4) Daryl Smith, grower.

I. Adjourn the Executive Committee Meeting

Chair Maulhardt adjourned the Executive Committee meeting at 11:40 a.m.

Submitted by:

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Keely Royas
Clerk of the Board

Las Posas Users Group
Las Posas Valley Basin Groundwater Pumping Allocation System White Paper
November 7, 2016

Introduction

This white paper describes the Las Posas Users Group's (LPUG) proposed groundwater pumping allocation system (PAS) for the Las Posas Valley Basin (LPVB), as approved by LPUG on September 28, 2016. The PAS is being developed in accordance with the LPUG Allocation System Charter dated April 27, 2016. The purpose of the white paper is to facilitate Fox Canyon Groundwater Management Agency (FGCMA) review of the proposed PAS.

Pumping Allocation System Purpose

The purpose of the PAS is to provide a means of managing LPVB groundwater pumping in a manner that will achieve sustainable groundwater management, as required by the Sustainable Groundwater Management Act (SGMA). While SGMA requires that sustainable groundwater management be achieved by 2042, the proposed PAS would achieve sustainable pumping within 10 years of implementation. The PAS addresses the allocation of the LPVB native yield, return flows, and pumping to recover stored water. Additional groundwater pumping, above and beyond those allocations described in the PAS, is addressed separately in the FCGMA's recently adopted Groundwater Supply Project Policy.

LPUG recognizes that sustainable yield may vary over time due to changes in basin replenishment activities, changes in pumping distribution, external factors[1], and uncertainty in the sustainable yield itself[2]. Thus, the PAS is purposefully designed to float up or down in response to changing sustainable yield, whether the change is caused by updated technical analyses, replenishment activities, or external factors.

[1] External factors include long-term changes in hydrology, land use, etc.
[2] Uncertainty in the sustainable yield is a result of data gaps and imperfect knowledge of the basin hydrogeology, hydrology, recharge volumes, etc.

Pumping Allocation System Objectives

Prior to developing the PAS, LPUG prepared a list of PAS objectives. The objectives include:

1. Provide a Pathway to Sustainable Groundwater Management: Consistent with SGMA, the PAS should be developed based on the sustainable yield of the basin. Allocations should be reduced as needed to achieve/maintain groundwater levels and/or provide a basis for establishing a replenishment fee that can be used to replenish the basin in lieu of allocation reductions.

2. Address Unique Characteristics of the LPVB, as Compared to Other Groundwater Basins within the FCGMA:

    a. Unexercised Water Rights: Significant areas of undeveloped land exist within the LPVB that could potentially be brought into agricultural production. In contrast, there is little undeveloped land in the other FCGMA basins. The LPVB PAS should address undeveloped land and the associated unexercised water rights.

    b. Cropping Patterns: The LPVB has a greater percentage of permanent crops (e.g. orchards and blueberries) compared to other FCGMA basins. As a result, there are different water use needs and patterns in the LPVB that require different approaches to allocating pumping as compared to the Oxnard Subbasin or Pleasant Valley Basin.

    c. Water Balance and Yield: The timing and magnitude of pumping restrictions and/or replenishment activities necessary to achieve and maintain sustainability may be different than other basins in the FCGMA.

    d. Basin Replenishment: Given the existing water infrastructure, hydrogeology, hydrology, etc., the projects that might be implemented to replenish the LPVB are not expected to be the same projects that may be implemented to replenish the other basins within the FCGMA. As such, LPVB replenishment project(s) will likely proceed according to a different schedule than other basins and may have different capacities relative to replenishment needs as compared to other basins. For example, most of the LPVB has direct access to imported water. This is in contrast with the Oxnard Subbasin and Pleasant Valley Basin, which have large areas that are not annexed to Calleguas Municipal Water District.

    e. Lack of Surface Water Diversions: In contrast with other FCGMA Basins, there are no surface water diversions for irrigation in the LPVB. Therefore, the allocation methodology covering the LPB does not need to consider this aspect, which is an important consideration in other FCGMA Basins.

3. Considers Impacts to All Groundwater Users: LPUG desires a PAS that considers the impacts to all groundwater users and attempts to balance those impacts in the most equitable manner possible. Of special note is consideration of rate setting procedures for water system operators, specifically Proposition 218 requirements that apply to Ventura County Waterworks Districts Nos. 1 and 19.

4. Respect Groundwater Rights Principles While Also Minimizing Undue Hardships: LPUG desires a PAS that respects groundwater rights principles to the maximum extent possible for all groundwater users without creating undue hardships that could lead to litigation. For example, a strict interpretation of groundwater rights could lead to undue hardship for existing low volume water users (e.g. very efficient citrus growers) or owners of undeveloped land who desire to exercise their water rights in the future.

5. Provide Certainty for Business Planning: LPUG desires as PAS that is designed to provide as much stability as possible without unduly risking the sustainable management of the basin.

6. Provide Water Use Flexibility Over Time: LPUG desires as PAS that is designed to allow groundwater users to manage their allocation over a multi-year period by allowing them to carry over unused pumping allocations for a fixed number of years.

Las Posas Valley Basin Management Areas

The GSP Emergency Regulations §354.20 provide Groundwater Sustainability Agencies (GSAs) with the flexibility to manage differentially within a groundwater basin to address differences in geology, aquifer characteristics, etc. Three management areas are proposed within the LPVB based on the basin hydrogeology (**Figure 1**):

1. Western Management Area (WMA)

2. Eastern Management Area (EMA)

3. Fairview/Epworth Gravels Aquifer Management Area

The WMA and EMA include all aquifers present therein, except that the Fairview/Epworth Gravels Aquifer is proposed to be managed separately from the remainder of the EMA[3].

[3] The Fairview/Epworth Gravels Aquifer Management Area is called out from the remainder of the EMA because it is a localized shallow aquifer that is not well connected to the other EMA aquifers. Fairview/Epworth Gravels Aquifer pumping appears to be sustainable; thus, it is very important to well owners utilizing this aquifer that the allocation system appropriately reflect the surplus condition that exists therein.

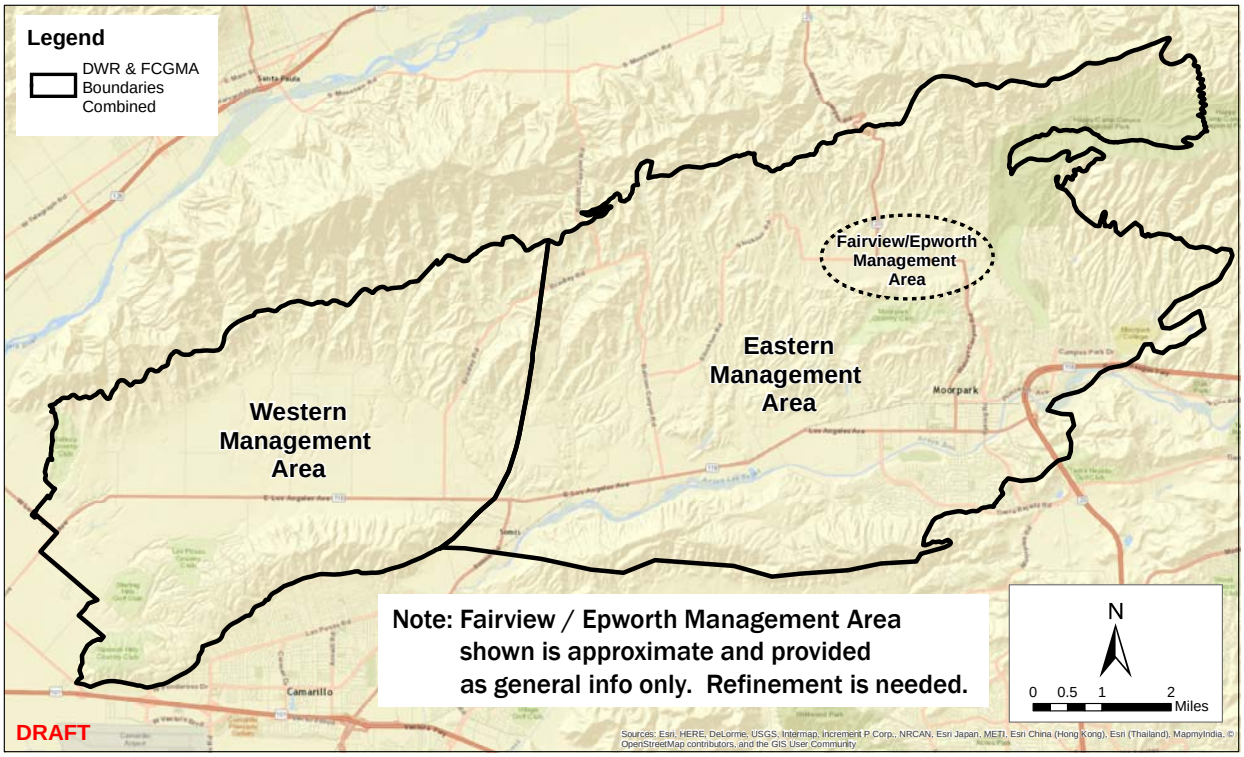

Figure 1. Proposed Las Posas Valley Basin Management Areas

LPUG proposes that the PAS be applied independently within each management area according to the sustainable yield, acreage, etc. therein. In other words, the PAS structure and rules would be identical in each management area, but the quantities would vary according to the PAS inputs for each management area.

Overall Approach to Achieving Sustainable Pumping

The proposed approach to achieving sustainable pumping is straightforward and identical to that which is commonly used adjudicated groundwater basins:

1. Establish base or initial pumping allocations (base or initial water right for adjudications);

2. Reduce the pumping allocations to match the sustainable yield (safe yield for adjudications) during an initial ramp down period; and

3. Adjust pumping allocations periodically thereafter, as needed, to keep the basin in balance.

As shown in **Figure 2**, LPUG proposes to implement the reductions necessary to achieve sustainable pumping in each management area over an initial 10-year ramp down period. The use of a 10-year ramp down provides flexibility to implement additional allocation reductions prior to the 2042 SGMA deadline for achieving sustainable groundwater management in the event that the sustainable yield is less than that which is initially assumed for the PAS.

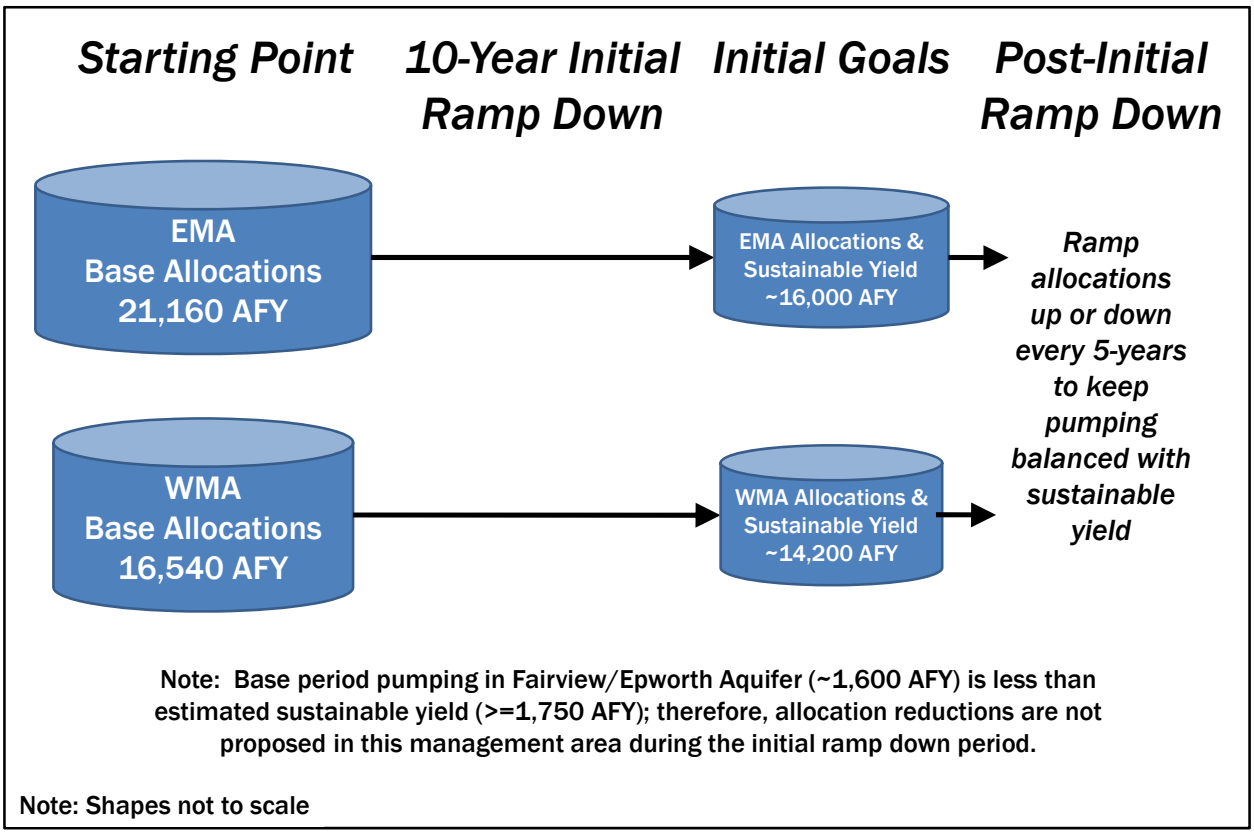

Figure 2. Base Allocations and Ramp Down to Sustainable Yield

Following the initial ramp down, allocations would be adjusted every five years to keep pumping balanced with the sustainable yield. This is necessary because the sustainable yield of each management area is subject to change over time due to changes in basin replenishment activities, changes in pumping distribution, external factors (i.e. long-term changes in hydrology, land use, etc.), and uncertainty in the sustainable yield itself (due to data gaps and imperfect knowledge of the hydrogeology, recharge volumes, etc.). Therefore, PAS is purposefully designed to float up or down after the initial ramp down period in response to changing sustainable yield. LPUG recommends that the sustainable yield of each management area be revaluated during each 5-year GSP implementation review[4] and that any necessary allocation adjustments be phased in over the subsequent 5-year period. This approach allows the FCGMA to move forward now with uncertainty in the sustainable yield while also providing the well owners certainty in terms of their allocations for the first 10 years. This is a win-win for the FCGMA and the well owners.

Base Allocations

The proposed Base Allocations for each management area are shown in **Figure 2**. With one important exception that is explained later in this white paper, the Base Allocations are simply equal to pumping during the preceding 5-year period (2009-13).[5] This approach was selected because it is commonly used in groundwater rights adjudications. The Base Allocations for each management area are simply the sum each well owners' Base Allocations. Each well owner's Base Allocation is their starting point for PAS implementation.

Sustainable Yield

For the purposes of negotiating the proposed PAS, sustainable yield estimates were developed for each management area, as shown in **Figure 2**.[6] The sustainable yield estimates were developed for preliminary planning purposes and it is understood that the sustainable yield developed for the LPVB GSP may differ from the estimates used in this white paper. It is further understood that the sustainable yield of each management area may vary over time due to changes in basin replenishment activities, changes in pumping distribution, external factors (i.e. long-term changes in hydrology, land use, etc.), and uncertainty in the sustainable yield itself (due to data gaps and imperfect knowledge of the hydrogeology, recharge volumes, etc.).

[4] GSAs are required by SGMA to complete reviews every 5 years.
[5] 2009-2013 was the most recent 5-year period with complete pumping records when allocation planning began.
[6] Developed by Bryan Bondy, PG, CHG and discussed with FCGMA Technical Advisory Group on October 30, 2015.

Allocation Pools and Sustainable Yield Apportionment

The PAS divides the sustainable yield of each management area into two pools for the purpose of addressing special considerations in each pool. The two pools are:

1. Land Owners and Mutual Water Companies
2. Ventura County Waterworks District (VCWWD) Nos. 1 and 19

The pools generally follow the principal types of native groundwater rights, absent prescription.[7, 8]

The two pools are depicted in (**Figure 3**). The sustainable yield is apportioned to each pool according to base period pumping. For example, VCWWD base period pumping in the EMA was 14% of the total; therefore, VCWWD receives 14% of the EMA sustainable yield.

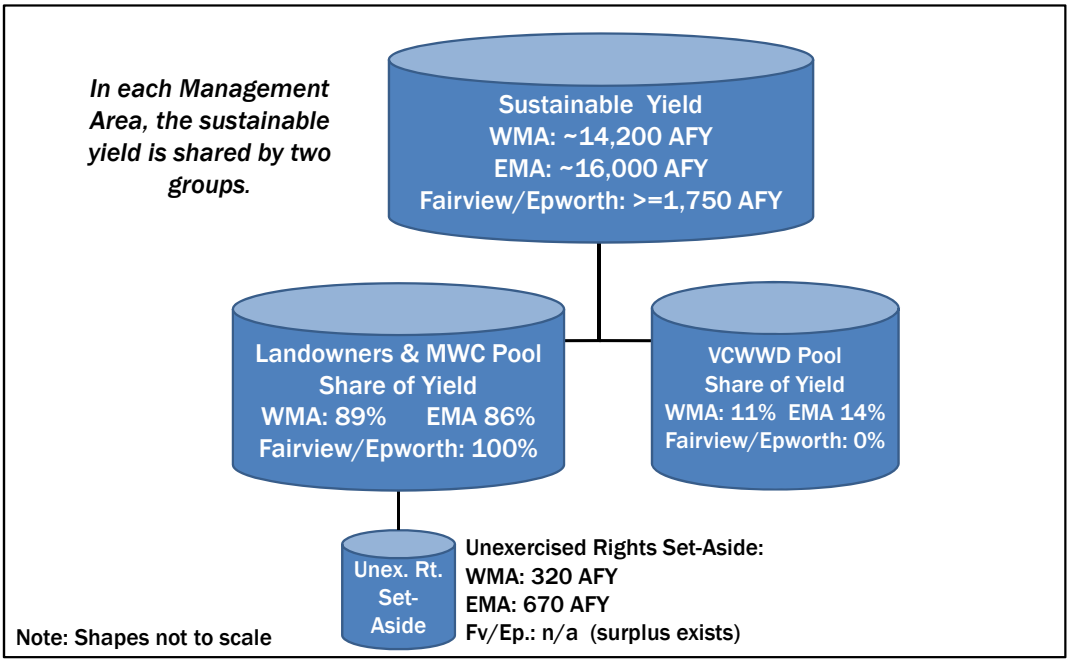

Figure 3. Sustainable Yield and Allocation Pools

In addition to the two primary pools, a subset of the yield is set aside from the Land Owner and Mutual Water Companies Pool and reserved for unexercised groundwater rights (**Figure 3**). Unexercised groundwater rights are those groundwater rights claimed by landowners who have not beneficially used groundwater underlying their property. In the LPVB, potential unexercised groundwater rights claims are primarily associated with un-irrigated land and irrigated land that has been served by an off-property source of water (principally VCWWD). The purpose of the set-aside is to accommodate a

[7] Landowners and mutual water companies are considered overliers. The Waterworks Districts are appropriators.
[8] VCWWD Nos. 1 and 19 has verbally agreed to not pursue prescriptive rights or additional rights associated with return flows (water that is distributed to retail customers that recharges the basin) if the PAS provides the districts a pro rata share of the sustainable yield based on pumping. This agreement was made with Reddy Pakala and later reaffirmed by David Sasek (both former VCWWD Directors during development of the PAS).

reasonable amount of new water use by those who might otherwise seek judicial relief if the PAS does not provide some sort of opportunity to address unexercised rights.

The amount of sustainable yield that LPUG proposes to reserve in the unexercised rights set-aside was developed based on aerial photography review and mapping of water sources to in the LPVB (**Figure 4**). Through the aerial photo review and mapping exercise, LPUG estimated that there are approximately 375 acres and 585 acres of unplanted land within the WMA and EMA, respectively, having significant potential for agricultural development. LPUG also reviewed agricultural properties served by VCWWD and estimated that there is an additional approximate 1,000 acres of agricultural land in the EMA for which overlying rights are not currently being exercised. Agricultural parcels served by VCWWD in WMA are small; therefore, many of these landowners would not likely find it financially viable to drill a well.

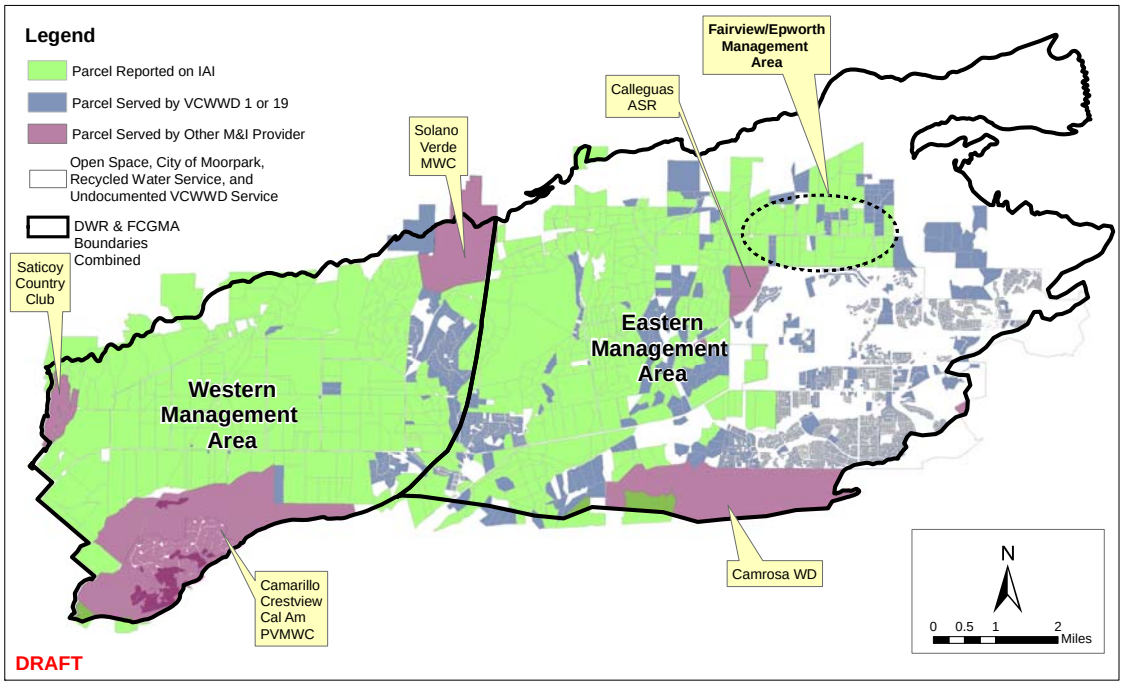

Figure 4. Primary Water Sources in the LPVB

Based on this analysis, LPUG recommends setting aside a portion of the sustainable yield from the Landowners & Mutual Water Company Pool based on an assumption that 2/3 of the unplanted acres will be planted and 10% of the EMA VCWWD agricultural customers will drill wells and terminate regular water service from VCWWD. Based on the foregoing, the recommended unexercised rights set-asides are 320 acre-feet per year (AFY) and 670 AFY for WMA and EMA, respectively.[9] Proposed rules for implementation the unexercised rights set-asides are presented later in this white paper.

[9] WMA: 250 acres x 1.27 AFY = 320 AFY; 490 acres x 1.37 AFY = 670 AFY, where 1.27 AFY and 1.37 AFY are the proposed initial agricultural minimum allocations for WMA and EMA respectively. Minimum allocations are discussed in a subsequent section.

Initial Allocation Reduction to Achieve Sustainable Pumping

As previously discussed, the Base Allocations will be reduced during an initial 10-year ramp down to achieve sustainable pumping rates in the WMA and EMA. **Figures 5 and 6** show the total Base Allocations and allocations at the end of the ramp down period for both pools and the set-aside in the WMA and EMA.

As shown in **Figures 5 and 6**, both the Base Allocations of each pool must be reduced to achieve sustainable pumping at the end of the initial ramp down period. This is accomplished by reducing base allocation of each pool each year by 1/10th of the total reduction required to achieve sustainable pumping. For example, VCCWD EMA allocations would be reduced by 2.4% each year. The reductions for existing well owners in the Landowner and Mutual Water Company Pool are necessarily slightly higher to accommodate the unexercised rights set-aside (e.g. 2.7% per year in EMA, as opposed to 2.4% per year). Individual allocations reductions within the Landowner and Mutual Water Company Pool are limited by Minimum Allocations, as described below.

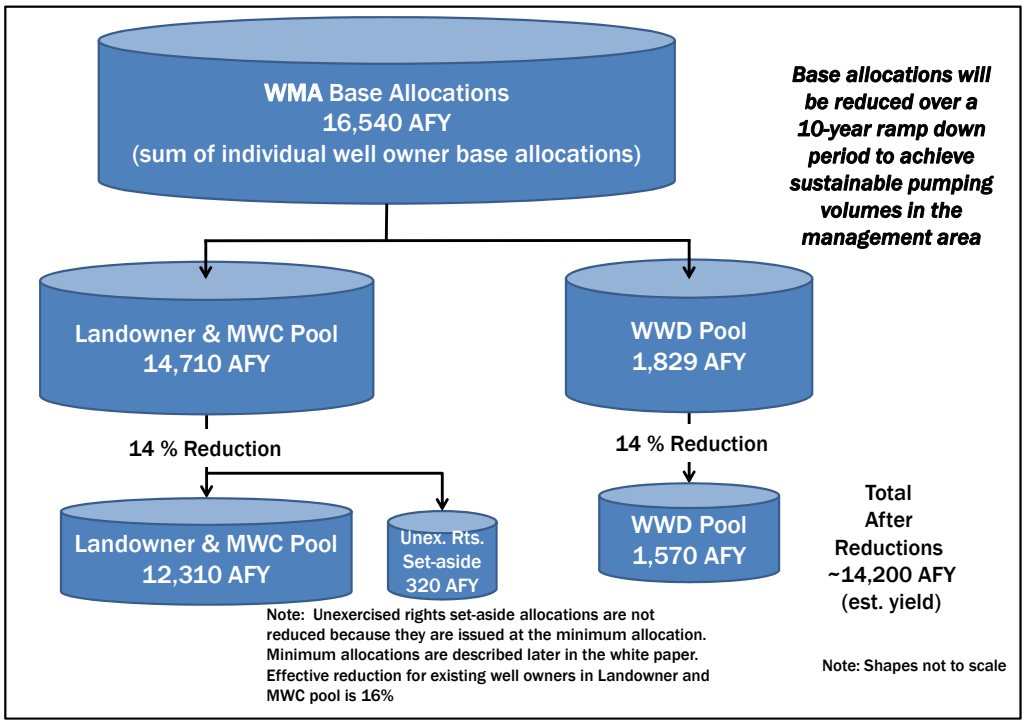

Figure 5. Western Management Area Base Allocations, Allocation Pools, and Initial Allocation Ramp Down Necessary to Achieve Sustainable Pumping

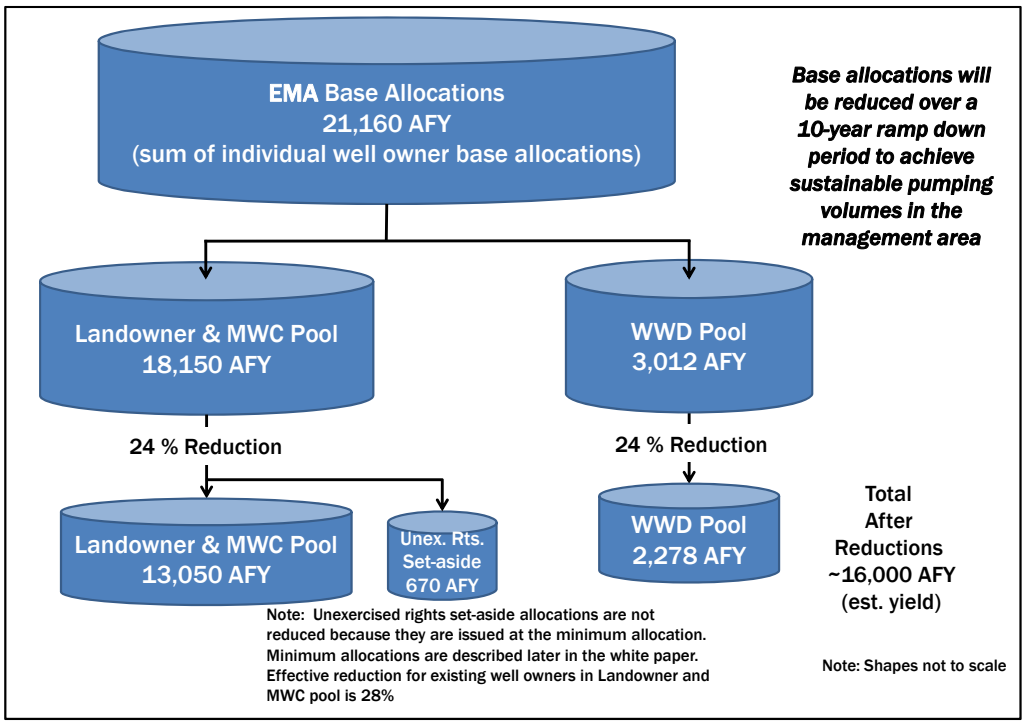

Figure 6. Eastern Management Area Base Allocations, Allocation Pools, and Initial Allocation Ramp Down Necessary to Achieve Sustainable Pumping

Minimum Allocations

Minimum allocations are were introduced into the Landowner and Mutual Water Company Pool to mitigate the impact of allocation reductions on land owners with low water use who have already made investments in water efficiency. Minimum Allocations also provide a basis for assigning allocations from the unexercised rights set-aside.

It is noted that Minimum Allocations are not necessary in the Waterworks Districts Pool because there are only two allocation holders in this pool (VCWWD Nos. 1 and 19) and because VCWWD Nos. 1 and 19 independently determine how to share their available groundwater allocations amongst their customers.[10] The introduction of the minimum allocation concept to the Landowner and Mutual Water Company Pool in no way impacts the Waterworks Pool allocations.

A Minimum Allocation, as the name implies, is the lowest allocation to which a well owner would be reduced until such time all well owners have been reduced to their respective Minimum Allocation. Minimum Allocations prevent undue hardships on existing low volume groundwater users (e.g. very

[10] VCWWD's groundwater pumping allocation belongs to VCWWD, not its customers. VCWWD's rate structure and rate tier allocations are not the same as pumping allocations under this plan. WWD rate tier allocations are set by WWD pursuant to Prop 218.

efficient citrus growers). In essence, the idea is that low volume groundwater users will not be reduced until other users in the pool have been reduced to the same level.

Minimum Allocations were developed for the three classes of well owners within the Landowner and Mutual Water Company Pool: agricultural, domestic (including small domestic water systems), and all others.

The proposed Minimum Allocations for each user class are:

1. Agricultural Well Owners[11]
    a. WMA = 1.27 AFY/Acre
    b. EMA = 1.37 AFY/Acre
    c. Acreage is based on the 2014-15 FCGMA Irrigation Allowance Index reporting.

2. Domestic / Small Domestic Water Systems: 2 AFY per parcel[12]

3. Others (includes gravel mines, DNWC domestic, CMWC, etc.): Minimum Allocation is based on the final GMA Emergency Ordinance E Temporary Extraction Allocation (TEA)[13]

Initially, if a well owner's Base Allocation is below their respective minimum allocation, the Base Allocation will be raised to the respective minimum allocation. For example, if an agricultural well owner in the WMA farms 100 acres and their Base Allocation as determined by their average 2009-2013 pumping was 100 AFY, their Base Allocation would be set at 127 AFY.

Prior to each allocation reduction, all Landowner and Mutual Water Company Pool well owners' allocations will be compared to their respective Minimum Allocations. If the reduction would cause a given well owner's allocation to be fall below the respective minimum allocation, their reduction would stop at their Minimum Allocation. For example, if an agricultural well owner in the WMA farms 100 acres, their allocation at a given point is 130 AFY, and the required reduction for the subsequent year is 5 AFY, their well owner's allocation would only be reduced to 127 AFY. **Figure 7** shows a hypothetical example to illustrate how the minimum allocations affect allocation reductions during the initial ramp down period.

[11] The agricultural well owner Minimum Allocations were calculated such that Land Owner and Mutual Water Company allocations will approach their respective minimum allocations near the end of the initial ramp down period.
[12] SGMA explicitly provides 2 AFY per parcel to domestic well owners. This is a firm Minimum Allocation – domestic well owners will never be reduced below 2 AFY per parcel.
[13] Previously approved variances to the Emergency Ordinance E TEA are recognized under this plan.

Year	Group 1 Starts At Minimum	Group 2 Reaches Minimum During Ramp Down	Group 3 Reaches Minimum Later Than Group 2	Group 4 Cumulative Allocations Issued from Unex. Rts. Set-Aside	Total
0 (Base Alloc.)	200	200	600	N/A	1,000
1	200	194.4	583.1	5	982.5
2	200	188.8	566.3	10	965.0
3	200	183.1	549.4	15	947.5
4	200	177.5	532.5	20	930.0
5	200	171.9	515.6	25	912.5
6	200	166.3	498.8	25	890.0
7	200	160.6	481.9	25	867.5
8	200	160	460.0	25	845.0
9	200	160	437.5	25	822.5
10	200	160	415	25	800.0

Hypothetical Example Parameters:

- For simplicity, Landowner & MWC Pool well owners are lumped into 4 categories
- Base Allocations = 1,000 AFY
- 20% reduction needed
- Therefore, total allocation after ten years must equal 800 AFY
- Minimum Allocations :
  - Group 1: 200 AFY
  - Group 2: 160 AFY
  - Group 3: 415 AFY
  - Group 4: Issued at minimum
- Unexercised Rights Set-Aside:
  - 25 AFY

Figure 7. Example to Illustrate Implementation of Minimum Allocations During the Initial Ramp Down Period

In **Figure 7**, the "groups" illustrate the various possible situations that could exist during the initial ramp down period. Groups 1 through 3 are existing well owners with Base Allocations. Group 1 represents those well owners whose Base Allocation is less than or equal to their respective Minimum Allocation. These well owners would start and remain at their Minimum Allocations until all other well owners reach their respective Minimum Allocations. Groups 2 and 3 include well owners whose Base Allocation exceeds their respective Minimum Allocation. Because Group 1 well owners' allocations will not be reduced initially, the Group 2 and 3 well owners' allocations will reduced to achieve the required 20% reduction and accommodate 25 AFY of new pumping allocations that will be issued for previously unexercised rights. The Group 2 well owners reach their Minimum Allocations in the eighth year of the ramp down period and would remain at their Minimum Allocations until all other well owners reach their respective Minimum Allocations. In this example, Group 3 well owners reach their Minimum Allocation at the end of the ramp down period. Group 4 represents well owners that received allocations from the unexercised rights set-aside.[14] In this example, all well owners are at their respective Minimum Allocations at the end of the ramp down period. If further reductions were needed after the ramp down period to achieve sustainability, all allocations, except those for domestic wells, would be reduced proportionally.[15]

[14] Allocations for previously unexercised rights are issued at the minimum allocation.

[15] SGMA considers domestic well owners to be de minimis extractors and provides 2 AFY per parcel. To remain consistent with SGMA, allocations for domestic wells would never be reduced below the minimum allocation of 2 AFY per parcel.

Allocation Adjustments Following the Initial Ramp Down Period to Maintain Sustainable Pumping Volumes

As discussed above, LPUG proposes to implement the reductions necessary to achieve sustainable pumping in each management area over an initial 10-year ramp down period. Following the initial ramp down, all allocations (except those for domestic wells) would be adjusted every five years to keep allowable pumping balanced with the sustainable yield. This is necessary because the sustainable yield of each management area is subject to change over time due to changes in basin replenishment activities, changes in pumping distribution, external factors (i.e. long-term changes in hydrology, land use, etc.), and uncertainty in the sustainable yield itself (due to data gaps and imperfect knowledge of the hydrogeology, recharge volumes, etc.). LPUG recommends that the sustainable yield of each management area be revaluated during each 5-year GSP implementation review. Any necessary allocation adjustments would then be phased-in over the subsequent 5-year period.

Allocation Carryover

A key objective of the PAS is to provide groundwater users with flexibility to manage variability in their water demands. The principal flexibility mechanism that LPUG envisions is the ability to carryover unused allocation for a fixed number of years. Additional flexibility may be available via the water market.

LPUG proposes that well owners have the flexibility to adjust their groundwater usage to account for the weather variability, crop rotation, etc. by averaging their groundwater usage over a five-year rolling allocation average. At the end of year five, a well owner will "true-up" their pumping over the first five years, including pumping allocations purchased or sold on the water market, measured against the sum of the five years of allocations. Penalties will be imposed if the well owner cumulatively exceeds the total allocation available for years one through five at any time or at the end of the first five year cycle, whichever occurs first. Thereafter, the "true-up" process will occur on an annual basis (e.g., years 2 through 6, years 3 through 7, etc.). **Figure 8** provides an example of how the allocation carryover works. As can be seen in the figure, any allocation that is carried over expires four years after it is accrued, thus creating the five year rolling average. It is that simple.

It is important to note that the PAS is designed to work with a water market; unused allocation may be transferred or sold on water market. It will be necessary for the water market exchange and FCGMA to either track the "age" of allocation that is traded or specify that only available current year allocation may be traded. It will also be important to specify how much of the available allocation would be eligible for sale on the water market during the first five years. LPUG's Water Market Committee is working closely with Matthew Fienup to address these details.

Inputs		
Base Alloc	100	AF
Minimum Alloc	50	AF
Ramp Down Reduction	25	%
Penalty Rate[1]	$ 1,500	

Yellow cells are Inputs. Do not change any other cells.

CURRENT YEAR ALLOCATION AND ACTIVITIES						ALLOCATION USED CURRENT YEAR					END OF YEAR BALANCES				PENALTIES[2]	
Year	Allocation	Purchased	Sold	Pumping	Net Usage	Current Yr Alloc. Used	Alloc. 1yr old used	Alloc. 2yrs old used	Alloc.3yrs old used	Alloc. 4yrs old used	Alloc. 1yr old	Alloc. 2yrs old	Alloc. 3yrs old	Alloc. 4yrs old	Penalty AF	Penalty $
1	97.5	0.0	0.0	95.0	95.0	95.0					2.5					
2	95.0	0.0	0.0	92.0	92.0	92.0	0.0				3.0	2.5				
3	92.5	0.0	0.0	82.0	82.0	82.0	0.0	0.0			10.5	3.0	2.5			
4	90.0	0.0	0.0	84.0	84.0	84.0	0.0	0.0	0.0		6.0	10.5	3.0	2.5		
5	87.5	0.0	0.0	86.0	86.0	86.0	0.0	0.0	0.0	0.0	1.5	6.0	10.5	3.0	0.0	$ -
6	85.0	0.0	0.0	90.0	90.0	85.0	1.5	3.5	0.0	0.0	0.0	0.0	2.5	10.5	0.0	$ -
7	82.5	0.0	0.0	92.0	92.0	82.5	0.0	0.0	2.5	7.0	0.0	0.0	0.0	0.0	0.0	$ -
8	80.0	0.0	0.0	80.0	80.0	80.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$ -
9	77.5	0.0	0.0	75.0	75.0	75.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	$ -
10	75.0	0.0	0.0	70.0	70.0	70.0	0.0	0.0	0.0	0.0	5.0	2.5	0.0	0.0	0.0	$ -
11	75.0	0.0	0.0	70.0	70.0	70.0	0.0	0.0	0.0	0.0	5.0	5.0	2.5	0.0	0.0	$ -
12	75.0	0.0	0.0	85.0	85.0	75.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	$ -
13	75.0	0.0	0.0	85.0	85.0	75.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	7.5	$11,250
14	75.0	0.0	0.0	80.0	80.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	$ 7,500
15	75.0	0.0	0.0	68.0	68.0	68.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	$ -
16	75.0	0.0	0.0	64.0	64.0	64.0	0.0	0.0	0.0	0.0	11.0	7.0	0.0	0.0	0.0	$ -
17	75.0	20.0	0.0	67.0	47.0	47.0	0.0	0.0	0.0	0.0	28.0	11.0	7.0	0.0	0.0	$ -
18	75.0	0.0	10.0	85.0	95.0	75.0	20.0	0.0	0.0	0.0	0.0	8.0	11.0	7.0	0.0	$ -
19	75.0	0.0	10.0	85.0	95.0	75.0	0.0	8.0	11.0	1.0	0.0	0.0	0.0	0.0	0.0	$ -
20	75.0	0.0	0.0	70.0	70.0	70.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	$ -
21	75.0	0.0	0.0	71.0	71.0	71.0	0.0	0.0	0.0	0.0	4.0	5.0	0.0	0.0	0.0	$ -
22	75.0	25.0	0.0	90.0	65.0	65.0	0.0	0.0	0.0	0.0	10.0	4.0	5.0	0.0	0.0	$ -
23	75.0	0.0	0.0	95.0	95.0	75.0	10.0	4.0	5.0	0.0	0.0	0.0	0.0	0.0	1.0	$ 1,500
24	75.0	0.0	0.0	65.0	65.0	65.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	$ -
25	75.0	0.0	0.0	65.0	65.0	65.0	0.0	0.0	0.0	0.0	10.0	10.0	0.0	0.0	0.0	$ -
26	75.0	0.0	0.0	90.0	90.0	75.0	10.0	5.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	$ -
27	75.0	0.0	0.0	81.0	81.0	75.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	1.0	$ 1,500
28	75.0	0.0	0.0	75.0	75.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$ -
29	75.0	0.0	0.0	75.0	75.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$ -
30	75.0	0.0	0.0	75.0	75.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	$ -

Notes:

(1) Penalty rate shown is for example purposes only. Not a proposed penalty rate.

(2) To provide well owners with the opportunity to true-up against their allocations over the entire *initial* five-year averaging period, no penalties would be issued until a well owner exceeds the allocation available for years one through five or until the end of year five, whichever occurs first.

Figure 8. Hypothetical Example to Illustrate Allocation Carryover

Unexercised Rights Set-Aside Implementation Rules

As discussed earlier in this white paper, a portion of the sustainable yield is set aside from the Land Owner and Mutual Water Companies Pool and reserved for landowners with unexercised groundwater rights. Unexercised groundwater rights are those groundwater rights claimed by landowners who have not beneficially used the groundwater underlying their property. In the LPVB, potential unexercised groundwater rights claims are primarily associated with un-irrigated land and irrigated land that has been served by an off-property source of water (principally VCWWD). The purpose of the set-aside is to accommodate a reasonable amount of new water use by those who might otherwise seek judicial relief if the PAS does not provide some sort of opportunity to address unexercised rights. In order to provide equity between existing and new groundwater users, any new allocations issued from the unexercised rights set-aside will be equal to the minimum allocation corresponding to the applicant's user class. The user classes and corresponding minimum allocations were described earlier in this white paper.

LPUG proposes that those desiring an allocation for unexercised rights be allowed to apply for and receive new allocations until the end of the first 5-year GSP review period or the end of the initial ramp down period, whichever occurs first. Any yield remaining in the set-aside at this time would be returned to the existing allocation holders in the Land Owner and Mutual Water Companies Pool.

Unexercised Rights Set-Aside Priorities

Consistent with the goal of providing a reasonable accommodation for those who desire to exercise previously unexercised rights, LPUG proposes that allocations be issued from the unexercised rights set-aside according to the following priorities:

1. Allocations for a new water demand served by a new well, both established after the Base Period. These landowners have the highest priority for receiving new allocations because they have already begun exercising their previously unexercised groundwater rights. Typical applicants would be landowners who drilled a well and planted previously unirrigated land after the Base Period in an area where there is no other source of water.

2. Allocations for holders of well permits approved after the Base Period for a well that would serve a new water demand. These landowners have a lower priority for receiving new allocations because they have not yet begun exercising their unexercised groundwater rights.

3. Allocations for holders of well permits approved after the Base Period for a well that would serve a water demand that existed during the Base. These landowners have a lower priority for receiving new allocations because they have not yet begun exercising their unexercised groundwater rights and are already receiving water from another source.

4. Allocation for a new water demand that would be met by a well that has a Base Allocation. Because the goal of the unexercised rights set-aside is to address unexercised rights, these landowners have the lowest priority because they were already exercising groundwater rights to a degree by pumping their existing well during the Base Period.

LPUG envisions that allocations would be issued from the set-aside in batches in priority order, starting with Priority 1 applicants. Each priority group would be given a reasonable amount of time to apply for and receive an allocation. For example, Priority 1 applicants might be given several months to submit documentation of the new water use and well. Priority 2 and 3 applicants could be given, say, one year to drill their new well. LPUG is prepared to work with FCGMA staff to develop a reservation process for each priority level.

Unexercised Rights Set-Aside Eligibility

To be eligible for an allocation from the Unexercised Rights Set-Aside, one must be a landowner (or designated representative) in the basin and must quality for one of the priority classifications listed above. For agricultural applicants, the water use on a per acre basis for any existing FCGMA accounts held by the applicant must be less than the 50th percentile of all agricultural well owners in the management area.[16,17]

Vesting of Allocations Issued from the Unexercised Rights Set-Aside

In order to vest an allocation obtained from the Unexercised Rights Set-Aside, the well owner must demonstrate the beneficial use of the allocation for a period of 10 years. During the vesting period, the well owner would not be allowed to sell the allocation in the water market. A failure to vest will result in forfeiture of the allocation.

Water Exchanges Between Management Sub-Areas

LPUG recommends prohibiting allocation transfers between well owners located in different management areas to prevent imbalances from developing that could interfere with sustainable basin management. For the same reason, replacement wells should only be allowed within the same management area as the original well. Special considerations may be needed for water systems having wells located in multiple management areas (i.e. Zone Mutual Water Company, Waterworks District No., 19, and Bell Ranch). LPUG will work with FCGMA staff to develop such considerations.

Groundwater Exports

With the exception of stored water and as necessary to facilitate the continuation of pre-existing water use patterns during base period, LPUG recommends prohibiting the exportation of groundwater outside

[16] The purpose of this restriction is to prevent water users with large Base Allocations from obtaining additional allocation for new planting. LPUG proposes to use IAI reporting of water use on a per acre basis to determine whether an applicant's water use meets the 50th percentile criterion.
[17] This criterion does not apply if the applicant has no GMA accounts in the management area.

of a management area. As the proposed FCGMA Water Market matures, this prohibition would need to be reevaluated to determine if inter-management area and/or inter-basin water market transactions involving the physical transfer of water should be allowed.

Stored Water

LPUG defines stored water as water held in storage in the LPVB as a result of direct injection, spreading, induced stream percolation, or other methods, for subsequent withdrawal and use pursuant to a Storage Agreement with the FCGMA. Pumping of stored water should be allowed, provided that existing users' rights are preserved and that the pumping does not interfere with achieving/maintaining sustainable basin management without acceptable mitigation. It is not the intent of this proposal to limit or modify operation of preexisting storage projects (i.e. Calleguas ASR Project), which will continue to operate pursuant to existing agreements so as to not materially interfere with existing water users without acceptable mitigation.

Annual Pumping Allocation System Reporting

LPUG proposes that the following annual reporting. Additional reporting may be necessary to fully comply with SGMA requirements.

1. Landowners
    a. Metered extractions for each well
    b. Parcels served by wells

2. Mutual Water Companies and Domestic Water Systems
    a. Metered extractions for each well in system
    b. Volume of groundwater delivered to each management sub-area
    c. List of parcels served

3. Waterworks District Nos. 1 and 19
    a. Metered extractions for each well in each system
    b. Estimated aggregate extractions delivered to agricultural customers by each system
    c. List of agricultural parcels served by each system
    d. Estimated aggregate extractions delivered to M&I customers by each system

4. Water Storage Projects
    a. Volume of water stored (according to project-specific reporting requirements)
    b. Volume of water extracted by each recovery well (according to project-specific reporting requirements)
    c. Any other required project-specific reporting elements (water quality, etc.)

Water Market

LPUG has developed a Water Market Committee that is working closely with Matthew Fienup to prepare recommendations for LPVB-specific water market rules that will be integrated into the overall FCGMA Water Market Group recommendations.

Advisory Committee

LPUG proposes that a formal LPVB Advisory Committee be created to work with the FCGMA to implement the PAS and address other GSP implementation matters, such as review of well permit applications, PAS variance requests, allocation transfers, annual reporting, and other matters. Conceptually, the committee could serve the Board in a manner similar to a planning commission.

Next Steps and Proposed Schedule

LPUG is prepared to work with FCGMA staff and Board members to address their comments and the remaining issues described in this white paper. A key issue that remains is the development of a variance process for the PAS. While LPUG has gone to great lengths to address as many circumstances as possible, a variance process will be needed to address unique situations that will inevitably arise during PAS setup and implementation. LPUG envisions a transparent variance process that includes an LPUG review step.

LPUG understands that the FCGMA enabling legislation provides it with the authority to implement the PAS prior to adopting and/or receiving DWR approval of the LPVB GSP. LPUG proposes that the FCGMA consider potential implementation of the PAS beginning October 1, 2018 as a replacement to Emergency Ordinance E for the LPVB.[18] LPUG is prepared to work with the FCGMA to move in this direction.

Disclaimer

It is the intent of this allocation program to preserve the security of water rights to the greatest extent possible. If this the proposed allocation program is accepted by FCGMA and incorporated into a Groundwater Sustainability Plan (GSP), except as expressly provided in the this proposal, the performance by any party pursuant to the proposed allocation program, including any party's reduction of its pumping or its groundwater use, shall not waive, reduce, increase, or otherwise affect any party's water rights in any way.

[18] The GSP regulations require annual reporting for the preceding water year (October 1 through the following September 30).

AN ORDINANCE TO ENACT A WATER MARKET PILOT PROGRAM AND ADVANCED METERING INFRASTRUCTURE SYSTEM DEMONSTRATION PROJECT

The Board of Directors of the Fox Canyon Groundwater Management Agency hereby ordains as follows:

ARTICLE 1. FINDINGS

The Board of Directors finds:

A. The Agency is in the process of developing a groundwater sustainability plan for each of the basins within its jurisdiction.
B. Each groundwater sustainability plan is required to describe the projects and management actions that the Agency has determined will achieve the sustainability goal for the basin.
C. Among the management actions being considered by the Agency is establishment of a water market to allow operators to transfer extraction allocations.
D. Water markets in other jurisdictions have been shown to provide water users with flexibility in meeting regulatory constraint on groundwater use and create incentives for groundwater conservation and development of new water sources.
E. Implementation of a water market on a temporary basis with participation limited to agricultural operators in a single groundwater basin are reasonable means of evaluating whether the program can help the Agency achieve the sustainability goals for the basins within its jurisdiction. The Oxnard Basin was identified by the Department of Water Resources as subject to critical conditions of overdraft.
F. Accurate and timely monitoring and reporting of groundwater extractions are essential components of a well-designed water market. Implementation of an advanced metering infrastructure system will provide the most effective means of evaluating a water market pilot program.
G. Under Emergency Ordinance E, currently in effect, all agricultural operators are required to report extractions from August 1 of one calendar year through July 31 of the following calendar year under an Annual Efficiency Allocation. This type of extraction allocation is determined under the Irrigation Allowance Index Method.
H. This program is intended as a pilot measure to allow the Agency to study and assess the impact of a water market and its feasibility as a groundwater management strategy and represents an opportunity to collect information, monitor results and elicit recommendations for the purpose of preparing and adopting a groundwater sustainability plan. The pilot program will result in no expansion of use of groundwater and will not

result in either a direct or reasonably foreseeable indirect physical change in the environment.

ARTICLE 2. PURPOSE

The purpose and intent of this ordinance is to establish a pilot program to evaluate the feasibility of implementing a water market in one or more of the groundwater basins within the territory of the Agency, and to encourage installation of a device on extraction facilities that will allow for remote and continuous monitoring of groundwater extractions within the Agency.

ARTICLE 3. DEFINITIONS

The following terms have the meaning set forth below:

A. Agricultural Operator means an owner or operator of a facility from which the groundwater produced is used for agricultural irrigation.
B. Advanced Metering Infrastructure (AMI) device means a smart meter or other electronic device that communicates extraction data between a groundwater extraction facility and a central system.
C. Board means the Board of Directors of the Fox Canyon Groundwater Management Agency.
D. Executive Officer means the individual appointed by the Board to administer Agency functions and his/her designee.
E. Market Allocation means the amount of pumping reported to the Agency for the period of August 1, 2014, through July 31, 2015, provided such pumping did not result in imposition of a surcharge.
F. Market participant means an agricultural operator approved by the Executive Officer for participation in the pilot program.
G. Program period means from August 1, 2016, through July 31, 2017.
H. Transfer means a lease or assignment of all or any portion of a market allocation for use during the program period.
I. Water Market Group means the advisory committee consisting of interested parties established for the purpose of developing recommendations for a water market to be incorporated into the groundwater sustainability plans to be adopted by the Agency.

ARTICLE 4. WATER MARKET PILOT PROGRAM

A. There is hereby established a one-year water market pilot program in the Oxnard Plain and Oxnard Forebay Basin whereby a market allocation may be transferred, in whole or in part, subject to the rules adopted by the Executive Officer in accordance with the provisions of this ordinance and in consultation with the Water Market Group.

B. Program Eligibility- An agricultural operator in the Oxnard Plain or Oxnard Forebay Basin may participate in the pilot program provided: (1) the owner or operator has installed the AMI device specified in article 5 of this ordinance; (2) the owner or operator is in compliance with all the terms and conditions of the participation agreement and allocation transfer agreement; and (3) the owner or operator is otherwise in compliance with all Agency requirements for timely and complete registration of extraction facilities, flowmeter testing and calibration, reporting of extractions and payment of groundwater extraction charges. No owner or operator shall be eligible for participation in the program unless and until approved by the Executive Officer.

C. Transfers Allowed - A market allocation or portion thereof may be transferred during the program period. All such transfers shall be processed by the Exchange Administrator to be established as part of the pilot program. The Executive Officer may contract with an independent entity to serve as Exchange Administrator. No transfer of market allocation shall be effective unless and until approved by the Executive Officer.

D. Irrigation Allowance Index Recalculation – An owner or operator participating in the water market pilot program shall continue to report extractions and pay surcharges in accordance with existing Agency Ordinances and Ordinance Code provisions, except that if a market allocation is transferred during the program period, the Irrigation Allowance Index (IAI) shall be recalculated as follows: (1) any portion of a market allocation transferred through the Exchange Administrator shall be counted as water applied with a surcharge imposed if the IAI as recalculated exceeds 1.0; (2) any portion of a market allocation acquired through the Exchange Administrator shall be excluded from water applied with a surcharge imposed if the IAI as recalculated exceeds 1.0. Except as expressly provided herein, a market participant shall be subject to a surcharge for inefficient use of groundwater in accordance with section 5.8.5 of the Agency Ordinance Code. A market allocation may not otherwise be used to increase extractions.

ARTICLE 5. AMI DEVICE DEMONSTRATION PROJECT

The Executive Officer is hereby authorized to carry out an automated metering infrastructure demonstration project within the Agency. As part of the authority to carry out the demonstration project under this ordinance, the Executive Officer may: (i) allow an agricultural operator to participate in the demonstration project; (ii) establish standards and specifications to ensure that devices installed as part of the demonstration project are capable of recording and transmitting extractions on a continuous basis to an advanced metering infrastructure system to be operated and maintained by the Agency; (iii) require the AMI device to be purchased and installed by the owner or operator; (iv) require that the device installed as part of the demonstration

project be reasonably accessible for inspection and testing by the Agency; and (v) provide an incentive of up to $____ for purchase and installation of an AMI device.

ARTICLE 6. INSPECTIONS

The Agency may, at any and all reasonable times, enter upon any land for the following purposes: (a) to determine the amount of groundwater extracted by a program participant; (b) to inspect any AMI device for proper installation, operation and maintenance; (c) to verify any information provided by a program participant in support of an application for water transfer or in an application for efficiency allocation; and (d) to otherwise determine compliance with this ordinance.

ARTICLE 7. SUNSET PROVISION

The pilot program established under this ordinance shall expire on July 31, 2017, except that the Agency may impose a surcharge based on groundwater extractions, transfer of market allocation, or combination thereof, during the program period.

ARTICLE 8. EFFECTIVE DATE

This ordinance shall take effect and be operative 30 days after its adoption.

AMI Cost Estimates

Option	Vendor	Ranch Systems, LLC	Western Weather Group	XiO Water Systems
Flowmeter Data Only	**Basic Field Unit**	**RS130**	**CR200X**	**Field Monitoring Unit**
	Field Unit	**$945**	**1,697.00**	**$1,620**
	Battery	included and replaceable	included	N/A - runs on AC power, battery optional
	Solar panel	included (360 degree)	included	N/A - runs on AC power, solar panel optional
	Installation	$500	TBD (assumed $500)	Any Licensed Electrician (assumed $500)
	Programming, Configuration and Web Setup	included	TBD* (initially told $590 one time fee)	None Required
	Monthly Subscription	20 ($240/year)	usually $25/month ($300/year)	
	Support	phone and email support included	TBD	Unlimited No-Cost Remote Support
	Cellular Data Plan	included in monthly subscription	Included in monthly subscription	
	Cloud Service Plan (paid monthly, includes cellular access and data storage)			$41/month ($492/year) Cloud Service Plan (paid monthly, includes cellular access and data storage)
	Software/Firmware Updates	included	Included in monthly subscription	Automatic, Included in Cloud Service Plan
	Data Hosting	included	Included in monthly subscription	Included in Cloud Service Plan
	Data Hosting - One Time Set-up Fee	N/A	TBD*	
	Transmission technology	cellular, modem replaceable	Verizon Cellular or Radio Telemetry	Cellular
	Warranty on Equipment	2 years	Datalogger 3 yrs, other parts 1 yr	1 year
	Maximum # of sensors that can be installed (including flowmeter sensor)	3+*	7	4 + Soil Moisture Sensors
	Notes:	** three ports, 2 analog/digital inputs and SDI/12 port, SDI/12 can handle multiple sensors, also A/D input can handle multiple sensors in the case of RS30-WS*		
TOTAL ANNUAL COST PER METER: (NOT INCLUDING EXTRA SENSORS)		**$1,765**	**3,087.00**	**$2,612**
Average Cost to Automate Flowmeter Data				**$2,488**

AMI Cost Estimates

Vendor Contact Information and Assumptions in Costs:

Ranch Systems, Inc. www.ranchsystems.com
37 Commercial Blvd., Suite 101, Novato, CA 94949-6112 (415) 884-2770 Contact: Daniel Howe daniel@ranchsystems.com

1. Meter does not need retrofitting, can be readily connected.
2. System has interoperability with existing sensors/probes.

Definitions:
field unit = the link between sensors and equipment in the field and the online software where users access data and set up controls.

Western Weather Group, Inc. www.westernweathergroup.com
686 Rio Lindo Ave., Chico, CA 95926 (530) 342-1700 Contact: Don Schukraft don@westernwx.com

Assumptions:
1. Meter does not need retrofitting, can be readily connected.
2. System has interoperability with existing sensors/probes.
3. Pricing shown for field units is the volume discount price for 25 or more units purchased on the same Purchase Order
4. Field unit includes environmental enclosure, datalogger, battery, solar panel and cellular communications
5. There is a wide range in the quality of sensors. Consequently one can not just compare the price of a sensor without comparing the quality and durability.
* 6. TBD - More infromation needs to be gathered on the project to make an accurate assessment on installation, support and database management
7. Prices shown are for bugetary purposes only and are subject to change

Definitions:
field unit = the link between sensors and equipment in the field and the online software where users access data and set up controls.

XiO Water Systems http://www.xiowatersystems.com
305 San Anselmo Avenue, San Anselmo, CA 94960 (415) 450-0456 Contact: Paul Sagues pauls@xioio.com

1. Meter does not need retrofitting, can be readily connected.
2. System has interoperability with existing sensors/probes.

Definitions:
Basic Field Unit = the link between sensors and equipment in the field and the online software where users access data and set up controls.