2008:

Background

Historically the Klamath Basin was considered to have abundant water and affordable power. That began to change in 1987 when an ESA filing to list the Lost River and Short Nosed Sucker fish as endangered/threatened. The Coho salmon on the Klamath River was also added to the Endangered Species List. This began the competition for water where specific levels of Upper Klamath Lake had to be met and specific flows in the Klamath River had to be maintained. In 2001 the precipitation and snow pack were low enough that delivery of water to the Project from Upper Klamath Lake and the Klamath River were curtailed until August.

Following 2001 the Bureau of Reclamation implemented programs collectively known as "the water bank" (2002-2007). Initially the water bank purchased water from irrigators to supplement the Klamath River flows. Following Biological Opinions, the lake levels and river flows took precedence and the irrigators received what was left over, when there was any.

The Water User Mitigation Plan (WUMP) was the replacement for the water bank.

The WUMP agreement was signed on September 26, 2008. This allowed Reclamation to obligate $3.7 million, but as the 2008 water year was virtually over and there was no need for a water supplementation program in 2008, the funds were rolled over to 2009.

Benchmarks

This was a formative year for KWAPA with little activity other than the following points.

a) Technical Capability:
   - The KWAPA Board of Directors proceeded with the process of selecting an Executive Director. Hollie Cannon was selected for the position of Executive Director in late March 2009 and reported to work part time on April 1st.

b) Fiscal sustainability
   - KID, KDD, and TID each contributed $10,000 for KWAPA start-up funding.
   - WUMP Agreement signed to provide grant funds for administration of the program.

c) Professional Conduct

d) Dispute resolution (excerpts from minutes)
   - October 29, 2008: "Mr. Lesley advised that the WUMP program is for Klamath Project shortages, not to meet water requirements outside the Project."
   - October 29, 2008: "Mr. Bair advised the Board members he had signed the WUMP contract because it had to be signed before September 30, 2008…"

e) Flexibility

f) Innovative solutions

2009:

Water Supply Availability

- Reclamation delayed irrigation due to shortage of potentially 80-100 TAF.
- KID did not begin charging the system until approximately April 12th.

Policy Development

On April 1, 2009 the process of setting policy for the WUMP for 2009 was well on the way before the Executive Director started working. Below are a few excerpts from the KWAPA meeting minutes prior to April 1st.

1) February 5, 2009: "Belinda Stewart has been in touch with new Klamath Area Manager, Sue Fry, discussing the WUMP funds and KWAPA's need for clarification on certain requirements of the contract."
2) February 5, 2009: "Bureau agreed to solicit bids for groundwater pumping/ storage, and KWAPA will choose from those bids to write and carry out those contracts"

The board questioned whether the priority was on adding water to the system, or contracting for "paper water" that would not enhance the water supply. The board is still struggling with this concept in 2015.

Chairman Bair proposed policy statements/criteria. Following discussion,

3) March 23, 2009: payment for groundwater pumping in California set at $80 per acre foot and for Oregon set at $65 per acre foot.
4) The Board specified that groundwater would be contracted for 7 thousand acre feet (TAF) from independent pumpers, 14 TAF from Copic Bay, 14 TAF from Mid-Basin and 14 TAF from TID.
    a. TID requested a volume contract so that the district will be able to be flexible and manage their district while managing the pumping contract.
    b. Reclamation reiterated that groundwater had to be at "lowest-negotiated" cost; therefore bids are a "must". Board may set a maximum to pay from grant funds.
    c. OWRD recommended a mitigation program for domestic and municipal wells harmed through WUMP groundwater pumping activity. Board wanted more information before committing any funds to "mitigation".
    d. Unusually heavy spring precipitation made pumping supplemental groundwater unnecessary.
    e. Since a program was not necessary, KWAPA developed a bid policy for future groundwater supplementation to ensure acquiring at "least cost per acre foot".

Policy Implementation

In June 2009 the contracts for groundwater pumping were sent out. Shortly after that Reclamation announced there would be full Project supply from surface water sources and no WUMP supplementation would be needed.

The Project had a slightly delayed start up in 2009. The water numbers for 2009 are as follows

1) Forecast Project supply from surface water sources 400,000
2) Actual Project diversions 388,288
3) WUMP supplemental supply provided.....0
4) Deliveries to Refuge.....23,306

Successes and Problems of Acquisition

1) Quantity of water options acquired : Reclamation announced full water supply before KWAPA was finished contracting for groundwater pumping, therefore the amount actually contracted does not accurately reflect the amount that would have been available had KWAPA completed the contracting process. It is anticipated KWAPA would have been able to provide the full 49,000 acre feet planned by the Board.
2) Every aspect of the 2009 program could have been improved if KWAPA had been adequately staffed.
3) There is no record in the KWAPA office concerning whether Reclamation completed the process to solicit bids. There is no justification in the minutes why the Board set the fixed price as they did. It is estimated the average cost of producing an acre foot of groundwater in 2009 would have been $11.57.
4) In addition, two of the KWAPA board members (John Crawford and Bill Heiney) are also TID board members. It seems there should have been a declaration of potential conflict of interest by them concerning the setting of price and volume of water that would be a huge financial benefit to TID. Potential gross income from groundwater pumping of $1,120,000 would have a cost of production of $161,980.
5) The WUMP Agreement is not well written which made it difficult to identify specific WUMP goals

Benchmarks

a. Technical Capability

- The Board of Directors lack grants administration knowledge.
- At the time of beginning work for KWAPA (April 2009), Hollie Cannon had very little knowledge of administration of federal grant funds.
- Lack of staff to properly administer grant funds.
  - In November 2009 the KWAPA Board approved hiring of an administrative assistant, to be shared with KWUA.
- Hollie had GIS skills which were important in arriving at the point of contracting. KWAPA was very limited at the time in the ability to communicate with contractors, monitor performance and bookkeeping.
- Reclamation assisted with the application process.

Hollie asked the board for their priorities for KWAPA so he could work towards building KWAPA capacity to complete what they desired. Here are the priorities identified by the board.

1) Power –

- Robertson-Bryan Proposal to develop the capability to purchase and deliver to irrigator's power purchased on the spot market.
  - Discussed the proposal pros and cons, and whether KWAPA is ready to move forward with such a large project. The fee would be $500,000 to get set up to purchase spot market power which could bring down the cost of power to around 7 cents per kilowatt hour.

- Director John Crawford said this type of a project may not be mutually beneficial for Oregon and California power users at this point in time. He suggested that an alternate to hiring a consultant would be to have Executive Director learn as much as he could about power options and educate the Board as he learns. He suggested doing this in-house rather than use an expensive consultant.
- Work with Robertson-Bryan towards securing an allocation of WAPA power.

- Hollie Cannon to gain more information about load shaping and power demand analysis.
- Tulelake Backscatter Solar Site Feasibility – The Board stated they felt the potential for this specific project may be tapped out by others, but identifying other similar projects in the area should be pursued.
- Wholesale Power Market – KWUA pursuing as a piece of the KBRA, however KWAPA will track the progress and seek opportunities when available.

2) Renewable Feasibility Studies - Hollie worked with a consultant to identify potential projects KWAPA can pursue. Some suggestions were:
   - Biomass using juniper wood harvested locally,
   - Solar
   - Pumped Storage

3) Water Issues - Hollie recommended the following additional water related projects:
   - Water Supply Forecasting – MBK Engineers proposal. Conference call with MBK Engineers on June 10, 2009 with a result that Dave Cacka and Earl Danosky no longer felt this was a good project.
   - Water Demand Forecasting – MBK Engineers to formulate a model.
   - Authorized RFP for Feasibility Study of Buck Lake Storage Project – up to 30,000 AF storage capacity with streamflow enhancement of Spencer Creek and Klamath River.
   - Value of Water Report – The Board did not authorize this project as they stated MBK Engineers had already completed this report.

b. Fiscal sustainability
- Bureau of Reclamation authorized $3.75 million for the WUMP program for 2008. None of those funds were spent and they rolled over to the 2009 year. There was to be a further $3.0 million allotted for 2009, but the Bureau of Reclamation re-directed $1.0 million of that leaving KWAPA with $2.0 million.
- WUMP budget and operating plan outlined that payment for pumping declines over time and eventually will terminate.

c. Professional conduct (conflict of interest)
- Two of the KWAPA board members (John Crawford and Bill Heiney) are also TID board members. It seems there should have been a declaration of potential conflict of interest by them concerning the setting of price and volume of water that would be a huge financial benefit to TID.
- Lack of work space – shared office space with Klamath Water Users Association

d. Dispute resolution

- May 5, 2009: Greg Addington suggested KWAPA think about the protocol for how KWUA[2] and KWAPA will work together into the future. Suggests creating a business plan for the two entities to show where we want to go separately and together. (This is still a problem as this was never completed and the two organizations relationships have struggled to resolve how we work together.)

- August 4, 2009: Greg Addington to communicate where to divide the responsibility of KWUA from KWAPA in ongoing power negotiations. (Again, he did not follow through with this.) Greg working on including California use of BPA power in the legislation that enables KBRA.

- Proposal was received from Robertson Bryan, Inc. for "Strategic Consulting" to develop a business plan for 1-2 years, 3-5 years, and 5+ years set of goals and path to ensure meeting those goals.

e. Partnerships

- Hollie Cannon appointed on the Natural Resource Advisory Committee (NRAC)
- KWAPA will partner, in name only, with KWUA in the PacifiCorp rate case. KWUA is the intervenor.

f. Flexibility

- In May 2009 the issue whether WUMP funds could be used for a power program was discussed.

g. Innovative solutions

- Sustainable Northwest approached KWAPA for a project that could utilize $62,000 of grant funds from NFWS. Hollie proposed:

  - Mitigating the effects of reduced irrigation water supply such as developing alternative crops, low water use crops, cover crops for idled lands, etc. This would also help to prevent soil erosion.
  - Oil seed crops for use in manufacturing biofuels.
  - Utilize OIT students in a summer intern program in collaboration with Klamath Soil and Water Conservation District to identify district and farm system modifications to reduce energy consumption while maintaining or improving water conservation improvements.
    - Board thought water and energy conservation proposal had the most direct link to KWAPA mission and that collaboration with Off-Project might be an option as well.
  - Dan Keppen proposed KWAPA continue the Houston Engineering water supply forecasting work for agricultural applications. The project would update water forecasting models.

[2] Klamath Water Users Association is the political action organization for its members. In 2010 all KWAPA member districts were also KWUA members. Some of the KWAPA board members were also members of the KWUA board.
KWUA is a 501 C-4 organization and is not authorized to receive benefit from Federal Grant funds. It is evident from the KWAPA meeting minutes that KWUA was concerned that it be in control of KWAPA. Some directors viewed the WUMP funds as an opportunity to reduce the cost of KWUA through shared facilities, such as office space, etc.

2010:

Water Supply Availability

- During February, the forecast for the amount of Project deliveries from Upper Klamath Lake continued to worsen.
- At the meeting on April 6, 2010 the water supply for the Project was forecast to be 150,000 acre feet with a startup date of mid-May.
- The shortage was in the neighborhood of 250,000 acre feet[3].

Policy Development

- In October 2009 Reclamation instructed the Board to contract for groundwater "at the least cost" in four blocks for the 2010 irrigation season. They believed multiple blocks allowed competition by providing bidders on later blocks to under-bid previous blocks. Bidders in 2nd – 4th blocks would be bidding to make it into the program rather than to exclude themselves from the program.
- KWAPA was instructed to advertise for sealed bids from Project well owners to compete for 15,000 acre foot blocks of groundwater produced. The idea of this plan was to break the "cartel" of well owners that had formerly forced Reclamation to pay exceedingly high prices for groundwater produced.
    - Well owners had formed two groups, the Mid Basin Pumpers and the Lower Copic Bay Pumpers (sometimes also called Lower Basin).
    - A third group was the wells owned by Tulelake Irrigation District (TID).
    - There were also some well owners who did not belong to any group and were known as the "independent pumpers".

In previous years Reclamation had allocated contracts for water to each of the four groups. The contracting done by KWAPA in 2009 was along the lines of allocating water to each group as controlled by the "cartel". Examination of Reclamation records of the Water Bank prior to 2009 will show the prices paid for water pumped. Numerous well owners stated that contract pumping for Reclamation paid all the cost of their construction of their wells, plus provided a handsome profit. TID received exceptional benefit, as the State of California paid for their wells to be constructed, therefore TID did not have any construction cost to recover.

- There was $3.7 million available (this amount would only pay for pumping approximately 60,000 acre feet if the bid process were kept in place).
- Concern that paying only the cost of pumping would establish a precedent that sets the value of water. It was understood that a very high price had been established for pumping water for Reclamation and well owners were concerned this precedent was being broken down.

- A need for a plan to implement land idling along with groundwater pumping was discussed.

The Board met on March 16th to review the draft policies developed by staff for the revised groundwater and land idling programs. Staff was instructed to begin advertising for the

[3] Full Project supply is considered to be 390,000 acre feet of water diverted from Upper Klamath Lake and the Klamath River.

programs as soon as possible. At this time the policy was not complete and the additional $2 million in funding proposed from Reclamation was not authorized. The contracts for programs contained a clause stating that payment of funds was contingent on receiving said funds from Reclamation.

On March 23, 2010 the KWAPA Board approved a groundwater pumping policy and contract. A decision was made "to begin paying for power costs on March 25th, 2010 with the anticipation of delivering water on April 1, 2010." Also a Land Idling Policy and contract were adopted. A statement in the minutes of this meeting: "it was stated that the KWAPA land idling program is not to compensate for no water deliveries but to reduce the overall demand on surface water."

The Executive Director was concerned how to satisfy the requirement in the WUMP contract that "options will be acquired at the lowest negotiated rate". Depending on the crop and type of soil, a higher per acre land idle bid may yield a lower cost per acre foot than a lower per acre bid. There are fields in the Project with a high enough water table that almost no irrigation is needed. Therefore contracting for such a field to be idled does not yield any water savings, the field owner does not irrigate, gets paid for not irrigating, yet still harvest a crop. The Board discussed contracting with NRCS to calculate water savings based on crop and soil type or having Reclamation do the water saving calculation as had been done since 2001.

Obligation of KWAPA to include the East Side of the Project in the WUMP was assigned to KWAPA in Mod 5, signed by KWAPA on July 13, 2010. Discussions about a program for the East Side were ongoing from April. From the beginning of the discussion of including the East Side, there was tension between the KWAPA Board and irrigators from the East Side. This was exacerbated by the personalities involved and the feeling that the East Side was going to get some of the money designated for the West Side. The purpose of including the East Side in the WUMP was not clearly defined or explained by Reclamation to all parties. Therefore the expectations of the people on the East Side were in conflict with staff's understanding of the WUMP.

Mod 5 lists the additional Obligation to WUMP as $2 million. There is nothing in Mod 5 as to how much was designated for the East Side. It is abundantly clear from the KWAPA Board meeting minutes that KWAPA understood that Reclamation had designated $500,000 for the East Side. That allocation was not challenged by the East Side until around two years later. It was the desire of the KWAPA Board that Horsefly Irrigation District (HID) and Langell Valley Irrigation District (LVID) each be given their share of the funds and administer a program for their districts. This worked OK with HID, but did not work with LVID. After several attempts to work out the management of the program by LVID, the KWAPA Board instructed the Executive Director to work directly with the landowners in LVID. Part of the controversy with LVID had to do with a disagreement between LVID and the East Malone contractors. It was decided that East Malone would be considered separately and to not be part of LVID.

Policy Implementation

- KWAPA initially went out for bids for three blocks of 15,000 acre feet of groundwater pumping. Of the combined blocks, the low bid was $40 per acre foot and the highest bid was $187.50 per acre foot. There were 21 bids for $100 per acre foot. The majority of those bids were from the same geographic area (Copic Bay).
    - The Executive Director noticed there were so many similar bids, in addition to comments by some well owners who stated they were told to bid $100. The Executive Director asked KWAPA attorney Bill Ganong to research the issue of collusion.
    - The Board of Directors held an executive session on February 2, 2010 to discuss a memo produced by Mr. Ganong concerning the price fixing as defined by the Sherman Act.
    - Executive Director informed the Board that under the three block bid policy, there would not be enough water produced to close the water supply gap with the money available to KWAPA.
- At the Board meeting on March 9, 2010 the Board rejected all groundwater bids (this action ended any further discussion concerning price fixing and consideration by the Executive Director that a complaint that the Sherman Act was violated).
    - At this time, Reclamation also announced additional funds were likely to be provided to address the 2010 drought.
    - The Board made the determination that KWAPA would contract for pumping as much water as possible at a price of the actual cost of power plus $10 per acre foot.
- The due date for submitting land idling applications was extended to April 14th from April 12th.
    - The reason for the extension of two days was that those expecting to receive RMA crop insurance must state they intend to irrigate if water is available. Therefore to be eligible for RMA crop insurance, they cannot have submitted an application for land idling as that would prove they did not intend to irrigate at the time of submitting the RMA crop insurance. Moving the land idling deadline back two days would enable a land owner to receive both the crop insurance payment and the KWAPA land idling payment.
- In the meeting of April 22, 2010 the Bureau of Reclamation presented the results of their mapping of the applications for Land Idling and a ranking of each applicant by cost per acre foot using a model developed by Reclamation.
- The Board discussed contracting with Shasta View Irrigation District (SVID) and Malin Irrigation District (MID) to idle land in those districts as a block. It was proposed that KWAPA contract with those districts rather than with individual landowners.
    - There was considerable discussion how to justify contracting with SVID and MID if the Board had to skip a lower bid to contract with SVID and MID.
    - The contract would be for a price per acre for the district to not receive surface water.

- KWAPA would make payments which SVID and MID would then use to pay for groundwater pumping/land idling in those districts.
- An undocumented conversation with the Chairman of MID is that the groundwater pumping was paid the same as the KWAPA program, with left over funds being divided equally between the acres that received no irrigation, which amounted to around $400 per acre.
- At the April 27, 2010 Board meeting a decision was made to accept all Land Idling bids up to and including $220 per acre. This is the amount bid by both SVID and MID. There was concern there may not be funds to pay for all applications to that bid, but it did solve the problem of justification for skipping a lower bid in favor of SVID and MID.

- At the May 4, 2010 Board meeting the funding available for groundwater pumping was $4,336,817 and for Land Idling $2,413,183. This amount was short $756,106 of the commitments made by the Board.
- A date of June 1st was set as the last day to accept groundwater pumping applications. A review of the list of contracted wells found that total pumping capacity was about 600 CFS. The total flow pumped at any one time would never reach the total pumping capacity.
- At this time, there was great concern for the effect on groundwater levels of pumping groundwater for irrigation. In previous years of groundwater pumping there had been complaints from domestic well owners. It was anticipated there would soon be domestic well complaints in 2010. It was the desire of the Board to mitigate the impact of irrigation pumping of groundwater, but how was the debate.

On September 15, 2010 WUMP Modification 6 was signed. The Mod provided funding, secured through a bill introduced by Oregon State Senator Merkley,[4] to fund a variety of additional programs and activities to help with the 2010 drought. The problem is that by coming in mid-September, the opportunity to acquire water was past. The Land Idling 2 program[5] (LI 2) resulted in paying those who did not receive water and or would forgo further use of water. The program was funded so late in the irrigation season that few landowners actually avoided further irrigation. Most had already stopped irrigation for the year. The second land idling program that was offered in 2010 cemented in the minds of the landowners that WUMP was about payment for lack of water to the farms, rather than "providing water for fish and wildlife habitat".

As the board was developing policy for the LI 2, there was a lot of discussion concerning where to draw lines. Some land had irrigated for the first time in early July. The board chose July 10th as the cutoff date to qualify for the LI 2 program. If a landowner irrigated for the first time on July 9th, they were not eligible for the program, if they irrigated on July 11th they were. One of the board members wanted Tulelake lease lands to qualify for the LI 2 program. The KBAO Manager had previously stated that land owned by the Federal Government was not eligible for the program. An irrigator took it upon herself and the interest of her family business to argue the

[4] As the implications of the severity of the 2010 drought were being considered, it was estimated by KWUA that $25,000,000 would be needed. By Mod 5 Reclamation increased "total estimated amount of the agreement" to $41,250,000.

[5] Land Idle 2 paid landowners who were impacted by the 2010 drought but had not participated in the existing WUMP programs in 2010. There were two categories of eligibility. The first were those who had not received irrigation water at the program implementation date and would agree to not receive any irrigation water for the remainder of the irrigation season. The second were those who had not received irrigation water until after July 11th and would agree to forgo any further irrigation after the implementation date and through the remainder of the irrigation season. Those who received no water were paid $180.00 per acre and those who received partial water received $90.00 per acre.

point with the KBAO manager. The Manager reversed her decision and Tulelake lease land was allowed to apply for the LI 2 program. It was over these lands in the program that led to the two lawsuits. An explanation of those lawsuits follows:

> In the fall of 2010, the Klamath Water and Power Agency was awarded funds by the United States, Department of Interior, Bureau of Reclamation, to provide financial assistance to farmers who did not receive irrigation water during 2010, and who were not included in the initial 2010 Land Idling Assistance Program. The Bureau and KWAPA entered into Water User Mitigation Program Contract Modification 006, which added funds to the WUMP program for this supplemental assistance program. KWAPA's Board of Directors adopted a Policy and Contract providing in part that assistance payments would be made to farmers of parcels of land that were not irrigated after November 1, 2009, or before October 31, 2010. Applications were processed beginning approximately November 1, 2010, and Contracts were prepared and signed in late November 2010. Payments were made on or about December 30, 2010. During the first several months of 2011, a landowner who had applied to the program notified KWAPA that KWAPA had made payments to some farmers who received irrigation water in 2010 or late 2009 and, therefore, did not meet the criteria of the program.
>
> KWAPA then identified and notified those farmers that did not qualify for the Program, and requested that they refund the payments received by them to KWAPA. Most who received payments they were not entitled to cooperated with KWAPA and either returned the un-negotiated check, or reimbursed KWAPA for the funds paid to them. Two farmers, Fred Simon and Walker Brothers, doing business as Tally Ho Farms, refused to refund the payments received by them.
>
> KWAPA then filed two suits in the Circuit Court of the State of Oregon for the County of Klamath, one suit against Mr. Simon, and one suit against Walker Brothers/Tally Ho Farms, to recover the payments made to them. During the litigation process, a question arose as to whether water applied to refuge land owned by the United States during the winter and leased to the farmers during the summer was "irrigation," or was water applied for refuge waterfowl purposes.
>
> It was KWAPA's position that the sum of $213,552 was improperly paid to Walker Brothers/Tally Ho Farms. Walker Brothers disagreed, contending that some of the land for which they received payment was not "irrigated" and qualified for payment. The parties entered into mediation, and agreed to settle KWAPA's claim for the sum of $89,120. Said amount was paid to KWAPA before December 15, 2012.
>
> Mr. Simon received payment from KWAPA in the sum of $52,078.50 under the program for land that had been flooded during the winter of 2009-2010. He contended that the subject land was leased from the Bureau of Reclamation; that he had no knowledge of its use or irrigation prior to April 2010; and that it was not irrigated during the term of his lease, which commenced approximately April 1, 2010. Ultimately, Mr. Simon agreed to repay the sum of $42,078.50 to KWAPA. KWAPA agreed to settle for that amount because the cost of pursuing the case to trial against Mr. Simon would exceed the

$10,000 difference between the amount initially paid to Simon and the amount offered by Simon. Mr. Simon repaid said amount to KWAPA prior to December 1, 2015.

After receipt of the settlement funds, both cases were dismissed with prejudice.

At the September 24th meeting the board extended the deadline for submitting land idling application to October 15th and the last day to apply water and participate in the program to be September 30th. Policy for the program was approved at the October 18th meeting.

At the October 5th meeting there was discussion of a proposal that TID wells pump until November 15th to provide water for the Refuge. No actions taken.

Successes and Problems of Acquisition

Issues that were discussed extensively in 2010 and every year a program was implemented, and never resolved, revolved around equity and what the program produced. These issues are listed below.

1) Why contract for B land idling when B land does not have an expectation of a water allocation, therefore B land does not have anything to give up?
2) Why contract to pump B land wells, as they will pump their wells to get a crop even if there is not WUMP funding?
3) Water contracted to be pumped from wells supplying A land should be water dedicated to B land.

It was decided by consensus of the Board that KWAPA would pay for groundwater pumping even if surface water was not turned on.

Successes in acquisition:

- Groundwater pumping 107,505 acre feet pumped directly by KWAPA GW pumping contracts (including groundwater pumping in SVID and MID paid from funds provided SVID and MID)
- Land Idling #1 total acres on West Side 18,426.88
- Land Idling #2 total acres on West Side 14,864.33
- East Side Land Idling (includes HID, LVID and East Malone) 7,135.06 acres.
- Board minutes of 8-4-2010 stated that 15,000 acre feet would be delivered to the Lower Lake Refuge. Before the WUMP program commenced, the allocation for the Refuge was 0. Because of WUMP programs, the Refuge received 10,858 acre-feet of water in 2010.

Problems in acquisition:

- Because the drought emergency was KWAPA's first experience of implementing an actual program and the magnitude of the program, the policy was developed "on the fly". The policy setting for 2010 began with concerns of a conspiracy to defraud the government and evolved into how to stretch the limited funds to enable farmers to survive the season. Other problems were

not enough staff and lack of training of staff. HID, SVID and MID should have been treated as sub-recipients, but were treated as contractors like a landowner.

- In 2010 KWAPA was not set up in the ASAP system for transferring WUMP funds. There was a long delay from the time a well owner pumped water to payment. That problem was solved when KWAPA was admitted to the ASAP system.
- Contractor compliance with terms and conditions could not be verified in several instances.

Suggestions on how the process could be better managed:

- Need an analysis of the program for effectiveness and efficiency.
- Clearly defined contractual objectives between KWAPA and Reclamation
- Adequate staffing
- Less micro management by the Board of Directors
- Better expectations of Board conduct to avoid conflict of interest
- Staff reading water and power meters (incidence of errors in well owner meters readings was high)
- Need staff GIS capabilities developed.
- Reimbursement of funds was very slow. KWAPA bookkeeper had to estimate what payments to irrigators would be and request funds based on that estimate for timeliness of payment funds. Reconciliation to actual payment was required afterwards. This process allows for more errors. KWAPA should be reimbursed for expenses using the ASAP process.

Successes

KWAPA demonstrated that it has achieved the goal of "Task 1" (page 2 of the cooperative agreement). In addition, the 2010 program provided five times more water than identified in the cooperative agreement for 2010.

The implementation of a WUMP program of this magnitude was not envisioned for KWAPA at this stage of its development of capabilities. In spite of the fact that KWAPA had no previous experience in administering Federal grant funds or with implementing a water supplementation program, the program policies were in place and implemented in time for the Klamath Project farmers to make cropping decisions. Supplemental funds, supplied by modification #6, came late in the irrigation season causing a huge increase in work load late in the drought emergency. KWAPA was able to implement the supplemental programs and develop studies for betterment of future programs.

The impact of the WUMP program on the Klamath Basin in 2010 is much more than the numbers indicate. For example, the amount of groundwater pumped would indicate the irrigation of 50,000 to 60,000 acres. The acreage assumption does not take into account the additional acreage that was irrigated in April and May, before limited flows of surface water were made available. Many crops received groundwater early and finished on surface water. The early use of groundwater averted stunting of crops from lack of water.

Problems

- Regarding the Ground Water Pumping Program, problems arose with reconciling power bill and water meter reading that were taken different days.
- Need a more defined method of verifying claims made on land idling applications.
- The board made numerous policy "adjustments" creating confusion for irrigators.
- KWAPA was on the "reimbursement" program rather than being authorized to request funds via ASAP. This was very problematic as KWAPA did not have funds to cover payments while waiting for reimbursement. At times, it would take up to 3 weeks to receive funds. Therefore, KWAPA staff had to estimate the reimbursement amount. Significant adjustments were required after the fact resulting in difficult reconciliation. When transfers of reimbursements were delayed there were occasions when vendors were not paid on time and the possibility that KWAPA payroll would not be met in a timely manner.

Concerns

- The magnitude of groundwater pumping is not sustainable.
- Perception of the public that WUMP is mitigation for non-delivery of water.

Ideas proposed but not accepted by Board

- Reclamation authorized spending WUMP funds for studying alternate crops and deficit irrigation. Board wants a "library" of existing reports on deficit irrigation to locate gaps that should be studied.
    - This study was never conducted because the KWAPA Board could not come to a decision how to initiate said study.

Benchmarks

a) Technical capability
    - The 2010 program year began with 1 ½ persons on staff. KWAPA relied on Reclamation technical support. Reclamation performed a lot of the GIS mapping, for which KWAPA staff is grateful.
    - Inadequate staffing continued to be a major problem. Management proposed to the KWAPA Board that a GIS technician be hired for a period of one year. This position was identified and funded in modification #6.
    - Work load continued to be a problem as KWAPA began development of the WUMP 2011 program while continuing the studies and programs funded through modification #6.

b) Fiscal sustainability
    - A program of this magnitude is only fiscally sustainable if federal funding is continued. The 2010 program did not generate any source of local funding.
    - When transfers of reimbursements were delayed there were occasions when vendors were not paid on time and the possibility that KWAPA payroll would not be met in a timely manner.
    - Need additional segregation of duties for adequate internal controls.
    - Audit finds were lenient due to KWAPA infancy.

c) Professional conduct (conflict of interest)

- Staff performed in a very professional manner. Several of the KWAPA board of directors could not put aside their personal, home district and KWUA interests to represent the interests of the KWAPA organization. They signed an oath of office to uphold the Board Policy Manual that they adopted. yet did not always abide by it.
    - Supporting the KWAPA Director: Numerous times the Director asked for the board of director's specific goals and priorities for KWAPA to best serve their needs. Strategic planning would have identified the path for setting the vision, goals and objectives to ensure that implementing supplementation programs and identifying additional studies were supportive of the board.
    - Public accountability: The board of directors manual stated they will place the needs of the public above their own ambitions or individual member districts.
    - Monitoring finances: The board of directors was responsible for looking into the financial future and the ability to fund future plans. The board did not identify how to fund KWAPA for sustainability without federal funds.
    - Duty of loyalty: Several of the board members did not stand up for the KWAPA board approved policies when discussing issues within their individual districts or among irrigators or when discussing organizational decisions with KWUA.

d) Dispute resolution

- Most disputes were handled at the staff level. Some issues, where the board adopted policies that were not clear, were taken to the board for policy definition. Two disputes resulted in law suits. Both law suits were settled out of court. (See Policy Implementation section above for description.)
    - After receipt of the settlement funds, both cases were dismissed with prejudice.

e) Partnerships

- KWAPA worked closely with Reclamation, OWRD, CDWR, districts and KWUA.

f) Flexibility

- KWAPA was the model of flexibility. Through March and April there were weekly board meeting where policies were adapted as the water supply picture kept changing. KWAPA was flexible to the point of changing the due date for Land Idling applications to accommodate the due date for crop insurance.

g) Innovative solutions

- The groundwater program began as a repeat of the same old thing as years before. But as the water shortage became more acute, the board devised the cost of power plus $10 per acre foot as a way to make limited funds go further. Implementing the Domestic and Municipal Groundwater Mitigation program was innovative in that more groundwater could be pumped without causing complaints from the public also using groundwater for domestic and municipal uses.

		Groundwater Acre-Feet	Groundwater Program Cost		Land Idling Acres	Land Idling Acre-Feet	Land Idling (DM) Program Cost	(MBK) Consulting Services Water Supply Evaluation & 2011 Water Forecasting
2010	Westside	101,587	$2,261,265.66	Westside	33,291.21	66,582.42	$6,084,885.14	$11,960.50
	Eastside	5,918	$94,214.44	Eastside	7,135.06	15,968.26	$917,578.19	

2011:

Water Supply Availability

- Project shortage
  - 2011 developed into a year of adequate water with no supplementation necessary. This allowed KWAPA to focus on the less time critical but important functions of the WUMP program.

  - Refuge shortage – A tour was taken of the Refuge to look for coordination opportunities for the benefit to fish and wildlife.

Goals and objectives

The ***Groundwater Utilization Study*** was conducted by GeoSystems Analysis, Inc. to document well owners 2010 experiences using groundwater for irrigation, their perception of the Groundwater Pumping Program, and any ideas the irrigator had for future consideration for better utilization of groundwater in the Project.

The study included a survey of private and irrigation district (district) well owners to determine their experiences using groundwater for irrigation and their perceptions of the Program. The goals of the study were to:

- Understand the experience of Program participants by interviewing well owners and lessees and irrigation district personnel.
- Analyze the results of the survey to identify successes and problems.
- Identify ideas for future consideration to improve and avoid future problems with the use of groundwater for irrigation in the Project.

Survey participants included 48 private well owners with 76 contracted wells who pumped over 47,000 af of groundwater and five irrigation districts with 14 contracted wells that pumped over 28,000 af. The survey represented 69% of the well owners who participated in the Program, 71% of the wells contracted in the Program, and 76% of the groundwater pumped in 2010. Generally, surveyed well owners thought the 2010 Groundwater Pumping Program was successful and most said they would participate again, even if they disagreed with the reasons for the reduction in available surface water and/or the use of groundwater for irrigation.

For private well owners, the primary problems associated with using groundwater for irrigation were logistical, such as needing to move water up-gradient from the well and coordinating ditch or canal use with other irrigators; hydrogeological problems included decreases in well yield and decline in static groundwater level. Some well owners also experienced mechanical problems (i.e. broken pumps), water loss during conveyance, and decreased water quality (i.e. salinity, clarity).

In 2010, successful strategies employed for irrigating with private well water included installing irrigation system improvements to lower pumping costs, reusing tail-water, and conveying water to more distant or up-gradient fields. Some well owners also effectively coordinated irrigation schedules with neighbors to minimize water loss and maximize water use. Innovative techniques

were employed, such as using various types of dams to back up water in ditches to irrigate field up-gradient from wells.
Six irrigation districts had district-owned wells contracted in the 2010 groundwater program and five of those districts provided responses to the survey questions: Tulelake Irrigation District, ADY Improvement Company, Klamath Basin Improvement District, Pioneer District Improvement Company, and Pine Grove Irrigation District.

Problems experienced by the irrigation districts were generally unique to each district and included inadequate well yield in some and excess water in district canals in another, caused, possibly, by private well owners pumping more water than they used. There were problems for some districts with possible impacts of their pumping on nearby domestic and irrigation wells and problems for some with extra labor required to clear aquatic vegetation from ditches when the high-clarity groundwater facilitated its growth.

Additional features or modifications some districts would like to make to their systems (if there was unlimited time and money), included piping or lining ditches to prevent water loss and reduce maintenance (e.g. vegetation removal from ditches), variable frequency drives on well pumps, meters to monitor water removal from ditches, and extension of the conveyance network to fields not currently served by existing canals and ditches.

Suggestions compiled from all of the well owner responses to ease access to groundwater and increase efficiency of groundwater use included:

- Develop a well-efficiency ranking algorithm to determine the most and least efficient wells in the Project and assign priority in the program to the more efficient wells.
- Irrigation system infrastructure improvements including:
    - Additional wells, expansion of the conveyance network, and pressurized conveyance structures to increase irrigable acreage with groundwater.
    - Canal, ditch, and lateral lining or pipe installation to reduce water losses from evaporation and seepage and reduce labor required for maintenance.
    - Larger-capacity, more size-appropriate, or variable frequency drive pumps on well, lift, and booster stations to increase power efficiency and reduce labor costs.
    - Meters to measure water taken from ditches and better gates to improve water accounting.
    - Tail-water return pipes on drains for improved water use efficiency
- Improve communication about Program information, timing, and coordination with other programs (e.g. Land Idling Program).
- Increase groundwater use efficiency.
    - Restrict the use of flood irrigation and allowable conveyance distance from well to field to reduce evaporative and seepage losses.
    - Require variable frequency drive pumps and better water accounting.
    - Calculate water reimbursement on water applied, not water pumped.
- Reduce the economic burden of using groundwater for well owners by increasing the water reimbursement; providing a source of additional funding for new well construction, irrigation system upgrades, and unforeseen well maintenance costs; and offering agricultural power rates to irrigators to reduce pumping costs.

GeoSystems Analysis, Inc. recommended the development of a groundwater management plan (GWMP) for the Basin to minimize the effects of groundwater use and address concerns about the sustainability of using groundwater for irrigation.

The ***Groundwater Use Efficiency Analysis*** was a study which aimed to identify how the existing supplemental irrigation wells can be used more efficiently and effectively to benefit the Project as a whole. MBK Engineering was selected as the consultant, through an RFP process, to do this study. The initial phase of this study was to develop the GIS data necessary to evaluate existing groundwater use patterns and analyze the potential for a greater benefit from that resource. It is anticipated that the GIS data developed will be sufficient to hand off to the Irrigation Districts of the Project to enable them to become GIS capable. The completion date of this study was set for November 15, 2011, but KWAPA extended the completion date to December 31, 2011. The reason for the extension was that work being done for the On-Project Plan complements this study nicely and it was KWAPA's judgment that the extension in time would produce a much better product.

This project was closely coordinated with other work conducted within the Klamath Basin including development of the On Project Plan, Oregon Water Resources Department (OWRD), U.S. Geological Survey (USGS) modeling efforts, and Reclamation Drought Plan efforts. As data was gathered, it was organized into a file structure (GIS Library) and documented in a Data Summary Table.

Task 1 was to build a sustainable GIS system. This was the first step by KWAPA in evaluating, developing, and using GIS data as a tool to manage responsibilities, to assess options for aligning water demand and supply, and for completing ongoing responsibilities under the KBRA. At a future date KWAPA will need to evaluate the expected level of technical support and funding required to assist with meeting refined objectives.

MBK Engineers short term recommendations:

- KWAPA do additional coordination with the irrigation districts and Reclamation to review the spatial accuracy of district boundaries. District boundaries within the Klamath Project were digitized based on historical quad maps and the water supply contract maps which dated back to the early 1900's. The difference in technology and availability of aerial imagery is likely to account for discrepancies noticed. These boundaries may need to be adjusted to physical feature, such as the Lost River, based on its intended purpose for data management, analysis, and creation of maps. Additional coordination is needed with Reclamation to better document and identify the district map layers and other Project features.
- KWAPA and irrigation districts should evaluate the need to develop district-specific GIS data. Define KWAPA's role in developing and managing the GIS data on behalf of individual districts and the technology needed to serve the districts.
- A standard set of attributes for the data should be determined, populated, and stored in a similar format for each irrigation district-specific dataset.
- A global positioning system (GPS) device should be utilized to collect location data at district facilities. Incorporate this in the GIS Library.
- KWAPA should maintain the county tax lot data as received from the counties on an annual basis.
- Continue to coordinate with OWRD in regards to updating water right information, including PODs and POUs. Establish an annual updating procedure and process to identify new water rights within the On Project Plan Area (OPPA) and incorporate them into the GIS Library.

- Identify drought-permitted wells and frequency of temporary authorization.
- Obtain the background data for the USGS modeling efforts upon availability.

Longer term recommendations:

- Assess the consistency of data, the level of effort required, and the ease of use in making decisions about whether specific wells or fields should be enrolled in the common database structure. Decide whether the methods meets KWAPA's needs or other technology solutions should be investigated, including an improved database or web-based technologies, to more efficiently manage and share data.
- Evaluate alternative methods and technologies for sharing GIS data to address the most common GIS data uses. Evaluate the level of effort being expended by KWAPA to manage and share the GIS geodatabase versus an alternative technology to determine the fiscal value of the potential solutions.
- Develop a "GIS Needs Assessment" document clearly defining KWAPA's GIS goals and objectives, and establish milestones for achieving.

Tasks 2 was to integrate data and ideas of water users to propose a more efficient and effective irrigation system. Task 3 was to provide specific recommendations and to document Task 2 findings. Previous reports were reviewed, existing rules and regulations were evaluated and potential changes identified, wells were identified and ranked, and identification of projects for improved integration of groundwater into the surface water system was completed. This work did not include an evaluation or analysis of the groundwater resource itself. It was to evaluate and analyze areas to improve on the coordinated use of groundwater with the surface water system.

Recommendations for Task 2 and 3:

- Investigate with the Watermaster the most effective means to demonstrate the need to authorize the use of supplemental groundwater rights in Oregon.
- Investigate methods to ease or facilitate water right transfers within a district or OPPA.
- Coordinate with and provide technical support to OWRD to execute timely Governor-declared drought.
- Improve communication between irrigators and district personnel.
- Rank wells within various regions of the OPPA to assist in sustainable groundwater management and impact avoidance.

Policy development

Although KWAPA did not anticipate the necessity for the program in 2011, it was a requirement of the WUMP contract to have a contingency plan in place.

Therefore a policy was developed for contracting for 20,000 acre feet of groundwater to be provided in case Reclamation projections of surface water supply fell short of the Klamath Project's needs.

Policy implementation

While implementing the program was not needed, KWAPA received 29 applications for a total of 28,831.88 intended acre feet of water.

KWAPA scoring for intended placement of water were:

- 23 Direct to Field with a score of 100 (16,844.38 Acre Feet)
- 1 Lateral with short distance with a score of 75 (225 Acre Feet)

- 5 Into Canal with a score of 50 (11,762.50 Acre Feet)

Received 18 signed contracts:

- 15 with score of 100 (9,797.58 Acre Feet)
  - 10 Oregon – 6,848.58
  - 5 California – 2,949
- 1 with score of 75 (225 Acre Feet)
- 2 with score of 50 (6,500 Acre Feet) Oregon

Scoring of the applications was based on:

1) Location of the well. California Department of Water Resources and the Oregon Water Resources Department reviewed the location of the wells proposed for the program and assigned a score of 0 to 100 (0 being undesirable and 100 desirable). The score was their opinion whether the amount of water proposed to be pumped from the well would cause interference with neighboring wells and the groundwater recharge at that location.
2) Placement of water. How the water enters the Project is based on a decline scale where direct application from the well to the field would receive the highest score. A well discharging into a drain would receive the lowest score. The scoring was as follows:
   a) Direct application from the well to a field would receive 100 points.
   b) Discharge into a lateral where delivery is a short distance, would receive 75 points.
   c) Discharge into a major canal would receive 50 points.
   d) Discharge into a secondary canal (Canals C, E, F, M and N) would receive 50 points.
   e) Discharge into a drain would receive 25 points.

Payment would be a flat rate per acre foot provided according to the pumping contract. The basic structure of the flat rate would be based on the average kWh to produce an acre foot of water in 2010 of 200 kWh. Oregon On-Project rate (effective April 17, 2011) was **$.04447** per kWh. For owners of wells located in Oregon, the rate would have been the 2011 rate shock rate per kWh times 200 plus $10 per acre foot of water. California Energy charge was **$.10281** per kWh. For owners of wells located in California the rate would have been the tariff power rate per kWh times 200 plus a price for water per acre foot to be set by the Board $10 per acre foot.

Contract with Oregon Water Resources Department (OWRD):

- Technical assistance with the Domestic and Municipal Well Mitigation Program:
  - Assistance in determining boundaries of the area where the level of groundwater aquifer was likely impacted by the use of irrigation wells in the Klamath Project
  - Review applications and other materials
  - Provide recommendations to KWAPA as to whether the well qualifies for the financial assistance provided by the plan
  - Provide suggested construction recommendations (lowering pumps, drilling new well, etc.)
- Groundwater Use Investigation
  - Determination of successes and problems encountered during 2010 when extensive use of irrigation wells with the Klamath Project occurred. KWAPA will use this information to develop a plan for future use of groundwater to supplement surface water supplies.
    - OWRD will hire an Assistant Watermaster for one year.
    - Complete groundwater place of use mapping.

Ideas proposed but not accepted by Board

- It was suggested that the refuge store water on the refuge until after April 15, 2011 and pump it off after irrigation begins. However, the refuge manager stated the refuge cannot absorb the amount of excess flow quickly. Also while in storage, 50% of the water would be lost to evaporation before it could be pumped back to the Project.
    - The Board felt that the cost of pumping vs the amount of water was not justified for the benefit that would be realized.
- The Soil and Water Conservation asked KWAPA to provide some matching funds for their grant application for "Pasture Renovator/Aerator.
- There were several tasks per the KBRA that KWAPA was to be responsible for but that the Board did not approve this year:
    - Complete analysis of historical data (pre-2001 data) to document how water was used and the correlation to weather. Bill Ganong stated that this information would be included in the Drought Plan.
    - Emergency Response Plan – KWAPA was to be the coordinating agency for development of this plan that would address issues such as a dike break.
- Klamath County GIS requested funding for their DSS website as proposed by Houston Engineering. Cost was estimated at $4,600. The Board took no action on this request.
- Cecil Lesley (former KBAO GOTR) suggested that KWAPA take over the "operation and maintenance" of reserved works.
- Modification 9 – KWAPA Executive Director proposed several items to the board of directors that were never approved to begin studying:
    - Dryland oil seed crops
    - Feasibility study of combined storage and community system
- Modification 10 – Executive Director proposed to create a Data Center that would collect and analyze Reclamation and Districts flow data. It would allow for real time inflow to the districts to assist them in determining short term water management decisions.

Successes

- The Refuge received 28,083 acre-feet of water.

Problems

- One problem in implementing groundwater pumping policies such as 2010 and 2011 is the different power rates for California. Tariff rates were being increased incrementally each year following the expiration of the 50 year contract the Project irrigators had with Pacific Power. The two states did not reach full tariff rates at the same time, therefore when KWAPA agreed to pay power costs and use a "flat rate" it had to be different for California. Different contract payment terms as well were required due to this fact.
- Eastside had funds allocated in Modification 5 for 2010 but not for 2011. How to allocate the funds between Langell Valley Irrigation District and Horsefly Irrigation District was not defined. KWAPA attorney requested the grant officer to respond to the Eastside allocation issue in January of 2011 and as of August 31, 2011 there was still no response from her. Later there were several letters exchanged between KWAPA attorney Bill Ganong and Reclamation solicitor Steve Palmer.
- The KWAPA attorney stated that he was of the opinion that the Reclamation GOTR does not have authority to instruct KWAPA to take action.

- Tulelake Irrigation District wrote a letter to KWAPA Board asking them to reconsider allowing a late application for the program as this irrigator was left off their mailing list. Because KWAPA had done plenty of additional notifications the board did not approve the request. Problem is that the TID board members did not stand up for the policies that had been approved by them in the community.
- KWAPA did not have clear direction from Reclamation or even the KWAPA attorney regarding certain issues, such as opinion on Area K lease lands or TID lease lands in the number of allowed district votes for KWAPA Board elections.
- KWAPA had requested communication with the grant officer on the 2010 Land Idling problems that were resulting in legal actions. Grants officer did not respond until after the Klamath Basin Area Office Director, Jason Phillips, was contacted.

Concerns

- Need a more defined method of verifying land idling claims.
- Lack of staff available to do Domestic & Municipal Well program inspections.
- Need to address the conflict of interests further (Board, Staff, Policies, Contracts, etc.)

Benchmarks

a. Technical Capability
   - KWAPA attempted to hire a GIS specialist but did not receive any qualified applicants. Therefore, the KWAPA administrative assistant began training in GIS.

b. Fiscal sustainability
   - Modifications 7 through 11 were provided during 2011.
   - KWAPA is still not sustainable without federal funds.

c. Professional conduct (conflict of interest)
   - The Board of Directors received grants administration training conducted by Porter Group. One of the topics presented was conflict of interest.

d. Dispute resolution
   - There were issues with slow responses from the Reclamation grants officer for approvals and/or clarification on issues.

e. Partnerships
   - Due to lack of immediate available funds, Klamath Water Users Association (KWUA) paid MBK Engineers for the forecasting of irrigation water supply until KWAPA was able to reimburse KWUA.
   - Rather than Reclamation continuing to contract with California Department of Water Resources and Oregon Water Resources Department for monitoring of wells, it was recognized that there could be some efficiencies if KWAPA took over the contracts for well inspections, technical inspections and evaluations for the Domestic & Municipal Well Mitigation Program applications.

f. Flexibility
   - While the Agreement only required KWAPA to be able to provide up to 20,000 acre-feet, the board felt there could be a higher need and therefore made a policy to provide for up to 40,000 acre-feet.

g. Innovative solutions
   - A joint KWUA and KWAPA board training was conducted in January 2011 with a facilitator to discuss 1) Forward Planning, and 2) "One Voice". While there may have been good intentions to find a path for moving forward, the discussion became bogged down by the "stinky fish" and solutions were not identified.

	Domestic & Municipal Well Mitigation Program	Groundwater Utilization Study	OWRD Assistant Watermaster	Groundwater Use Analysis	(MBK) Consulting Services Water Supply Evaluation & 2011 Water Forecasting
2011	$447,534.94	$44,998.99	$138,523.71	$35,890.56	$11,970.00