Water Utility Authority

Technical Customer Advisory Committee

AGENDA

Members

David Brookshire	Mike Hightower
Cassandra D'Antonio	Elaine Hebard
Amy Ewing	Laura McCarthy
Laurie Firor	Ege Richardson
Moises Gonzales	

Thursday, August 6, 2015	**4:00 PM**	**City Hall – 3rd Floor Conference Room 304**

1.	Call to Order – Note presence of quorum	4:00-4:05
2.	Approval of Agenda	4:00-4:05
3.	Approval of July 9, 2015 Action Summary	4:00-4:05
4.	KAFB Fuel Spill Cleanup Status Report	4:05-4:45
5.	Water Resources Management Strategy Status Report	4:45-5:30
6.	NM First Town Hall Recommendations Middle Rio Grande Regional Water Plan Alternatives	5:30-5:50
7.	Public Comment	5:50-5:55
8.	Final Comments or Questions	5:55-6:00
9.	Adjournment	6:00

NOTICE TO PERSONS WITH DISABILITIES: If you have a disability and require special assistance to participate in this meeting, please contact the Water Utility Authority Office, Suite 5012, Albuquerque/Bernalillo County Government Center, phone 768-2500 or by the TTY 1-800-659-8331, as soon as possible prior to the meeting date.

Technical
Customer Advisory Committee

ACTION SUMMARY

July 9, 2015

Members Present:
David Brookshire
Cassandra D'Antonio
Amy Ewing
Laurie Firor
Mike Hightower
Elaine Hebard
Ege Richardson

Members Excused:
Moises Gonzales
Laura McCarthy

Water Authority Staff Present:
Frank Roth, Senior Policy Manager
John Stomp, Chief Operations Officer
Katherine Yuhas, Water Conservation Officer
Rick Shean, Water Quality Hydrologist
David Morris, Public Affairs Manager

Consultants Present:
David Jordan, INTERA Inc.
Annelia Tinklenberg, INTERA Inc.
Steve Shultz, CH2M
F. Lee Brown, UNM Professor Emeritus of Economics and Public Administration
Mary Davis Hamlin

Item 1 – Call to Order - Note presence of quorum
The meeting was called to order at 4:05 pm by Chair Amy Ewing.

Item 2 – Approval of Agenda
Mike Hightower made a motion to approve the agenda. David Brookshire seconded the motion. The motion passed on a 7-0 vote.

For:	7	Brookshire, D'Antonio, Ewing, Firor, Hightower, Hebard, Richardson
Against:	0	
Excused:	2	Gonzales, McCarthy

Item 3 – Approval of June 11, 2015 Action Summary
Laurie Firor made a motion to approve the action summary. David Brookshire seconded the motion. The motion passed on a 7-0 vote.

For:	7	Brookshire, D'Antonio, Ewing, Firor, Hightower, Hebard, Richardson
Against:	0	
Excused:	2	Gonzales, McCarthy

Item 4 – Water Resources Management Strategy Scenario Planning
David Jordan reviewed the four steps of the Decision Analysis process. He described the criteria used for the proposed evaluation categories. The categories included long term sustainability and resiliency, implementability, timing, quality of life, and environmental protection.

Annelia Tinklenberg provided an overview of the economic module that will address the cost, timing, and implementability components. The purpose of the economic module is to develop a structured approach for cost evaluation to effectively rank supply alternatives. She also described the module's inputs and outputs.

Item 5 – Public Comment
Michael Jensen was present and made comments.

Item 6 – Final Comments or Questions
The next meeting will be on August 6, 2015.

Item 7 – Adjournment
The meeting concluded at 5:53 pm.

KAFB Fuel Spill History

- **1951-53** – Kirtland Air Force Base (KAFB) Bulk Fuels Facility (BFF) constructed
- **1975** – Handling of aviation gasoline containing the additive ethylene dibromide (EDB) discontinued
- **1999** – KAFB notified NMED of soil contamination from underground piping leak, and ceased use of piping
- **2001** – KAFB notified NMED of groundwater contamination with dissolved fuel constituents
- **2003** – Soil vapor extraction (SVE) begins to vacuum contaminants from soil
- **2007** – Fuel (light non-aqueous phase liquid, LNAPL) discovered floating on groundwater
- **2009** – Water level rise begins to submerge LNAPL within aquifer
- **2014-15** – Inter-agency partnership, additional interim measures
- **2015** – Groundwater cleanup begins

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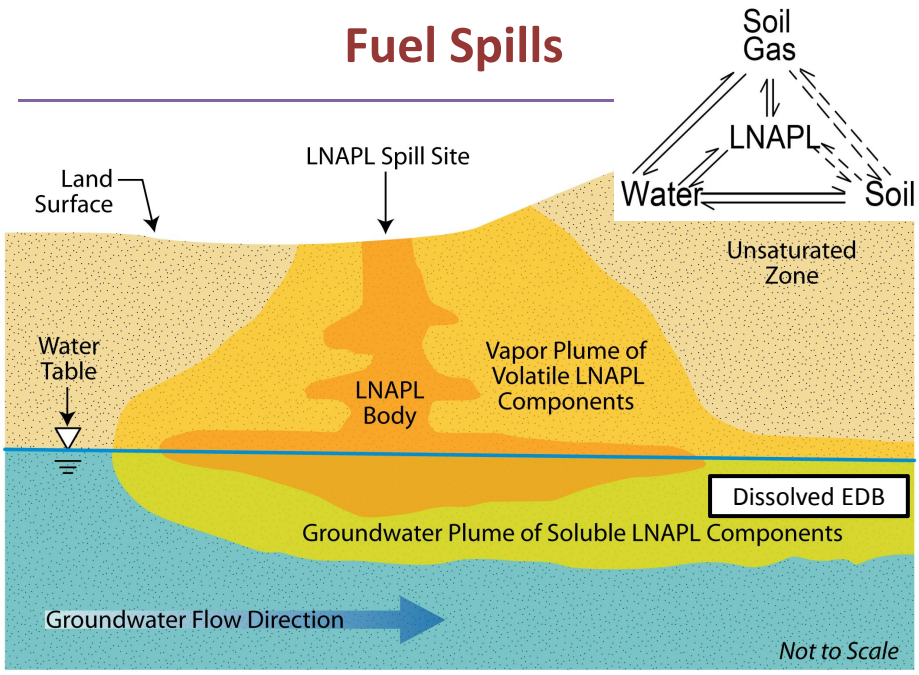
A Partnership for Success

A collaborative technical team is solving the complex hydrogeologic and engineering challenges posed by fuel spill

US Army Corps of Engineers

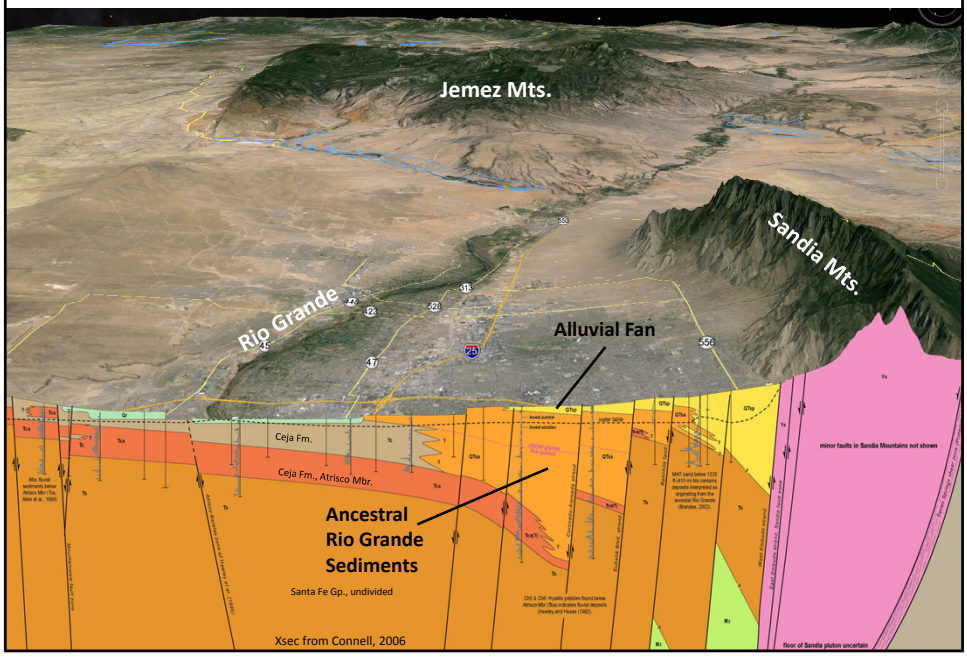
3

Fuel Spills

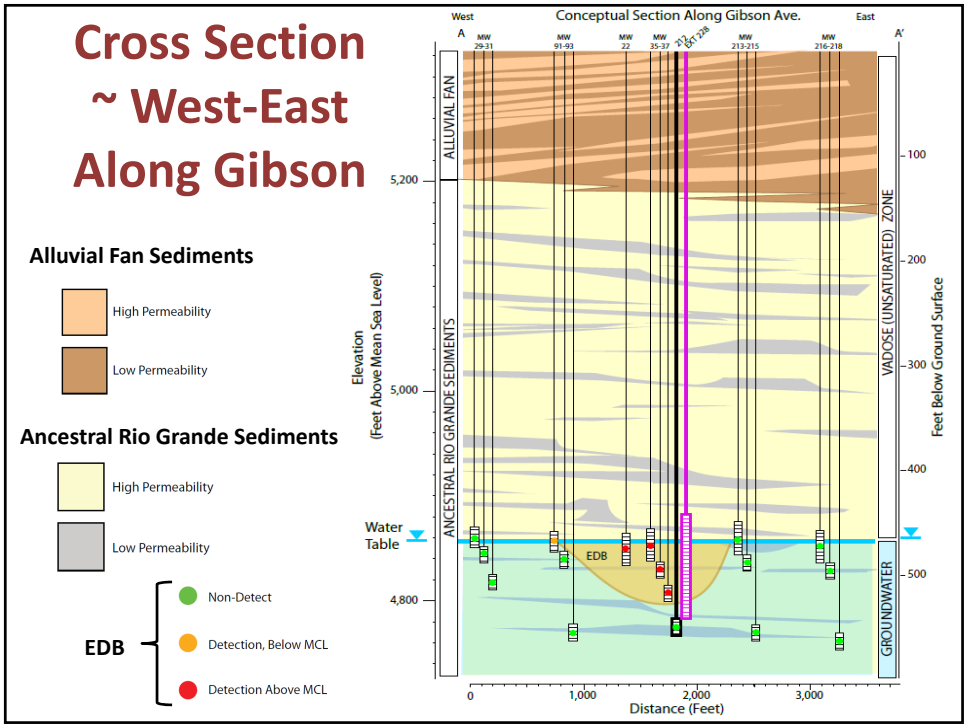


Adapted from Delin et al., 1998, USGS Fact Sheet FS-084-98

Middle Rio Grande Basin



Cross Section ~ West-East Along Gibson



Regulatory Basis

The New Mexico Environment Department (NMED) has been granted primacy by the U.S. Environmental Protection Agency to administer:

- The Safe Drinking Water Act (SDWA) program; and
- The Resource Conservation and Recovery Act (RCRA) program

Public water systems, such as the ABC Water Utility Authority, Kirtland AFB and the VA Hospital, must deliver water to consumers that meets SDWA standards.

Kirtland AFB must comply with their RCRA Hazardous Waste Permit, including the Corrective Action Process.

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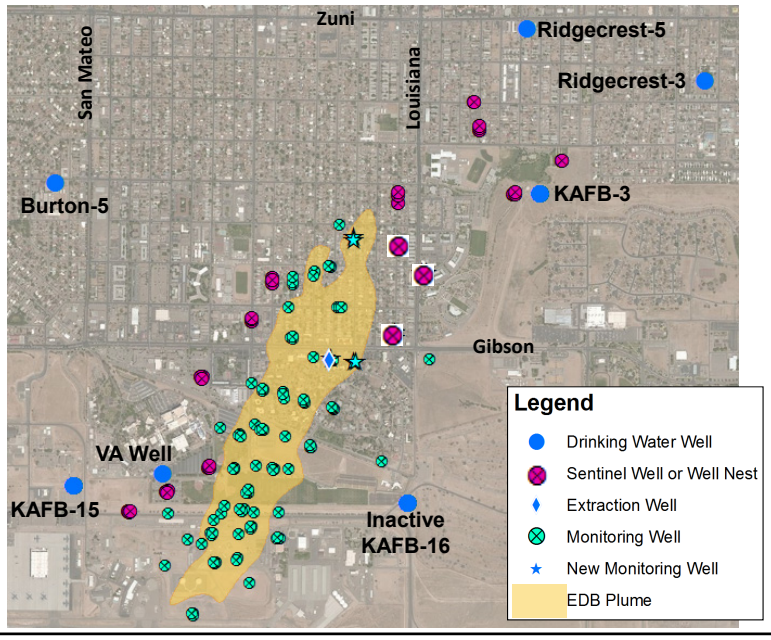
Monthly Testing of Drinking Water Shows No Contamination

8

Protecting Drinking Water Wells



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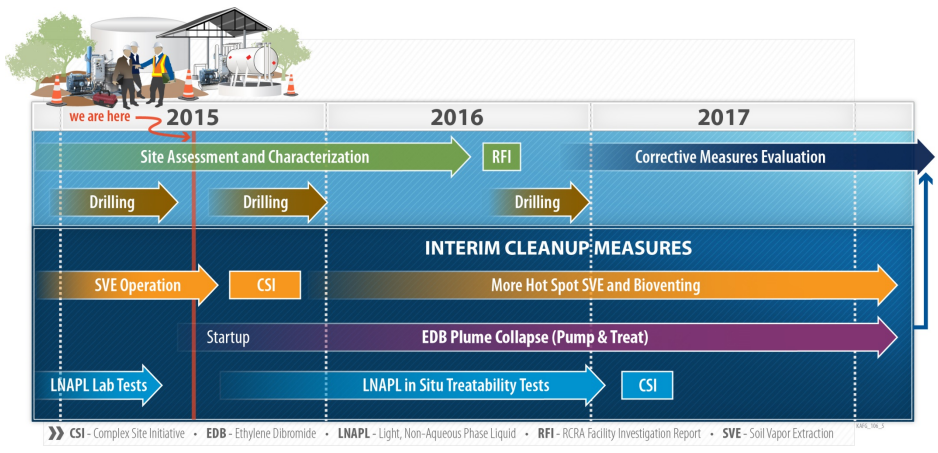
RCRA Corrective Action Timeline 2015-17



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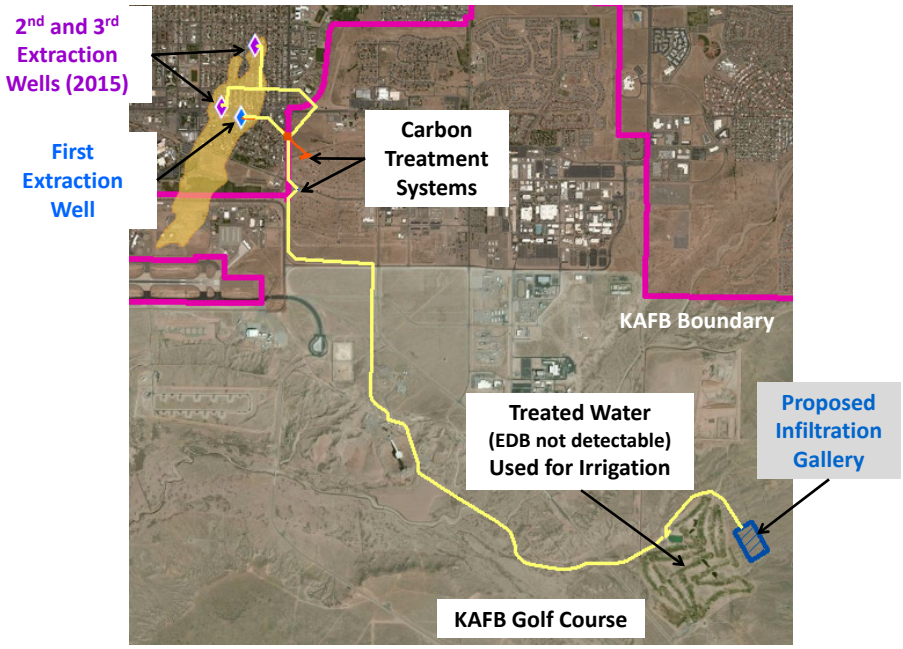
Collapsing the EDB Plume



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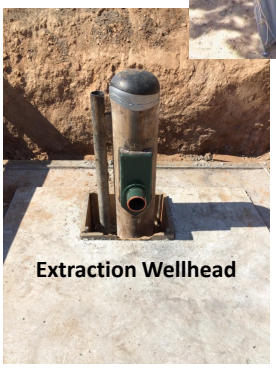
Groundwater Pump-and-Treat System Construction

Fusing Double-Walled Groundwater Pipeline

Control Wire Installation



Extraction Wellhead

Treatment Process Tanks

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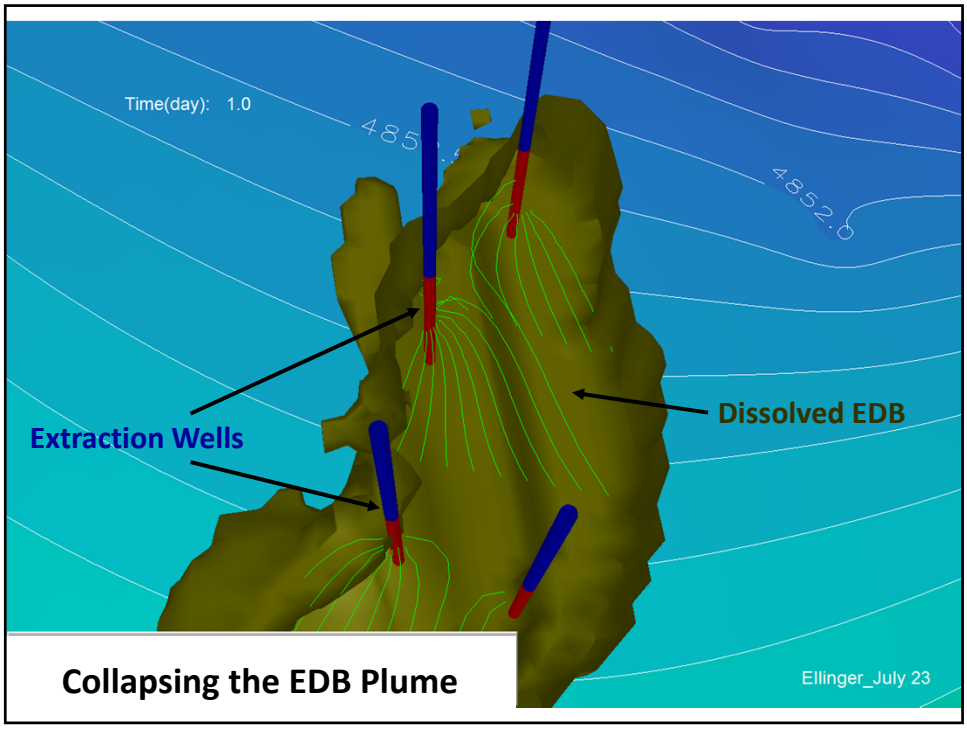
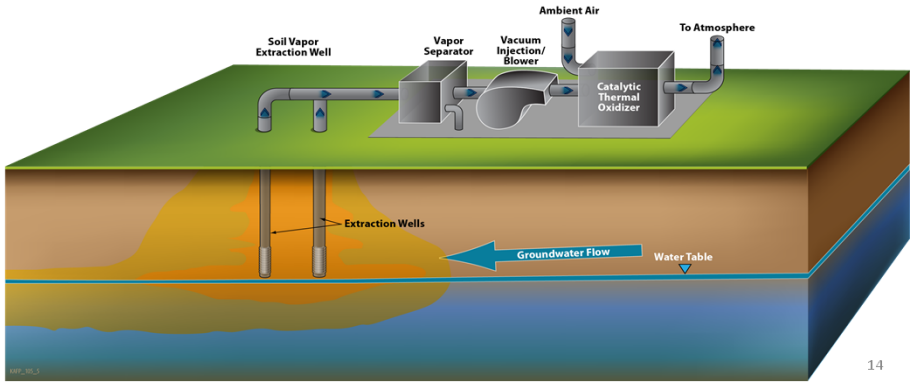


Soil Vapor Extraction

- More than 560,000 gallons of fuel recovered by SVE
- Vapor is treated in accordance with City of Albuquerque Air Quality Permit requirements
- SVE rebound and bio-respiration testing recently completed



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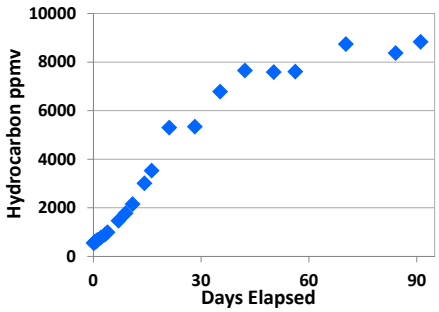
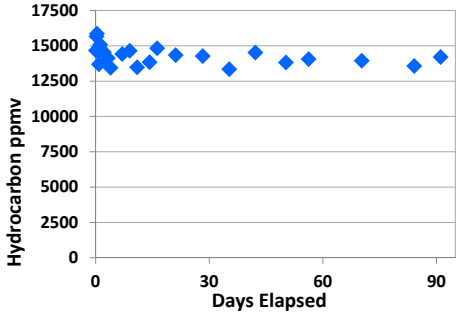
SVE Shutdown Rebounding Testing

SVMW-03 at 250 ft below ground surface



Hydrocarbon concentrations increased (rebounded)

SVMW-03 at 300 ft below ground surface

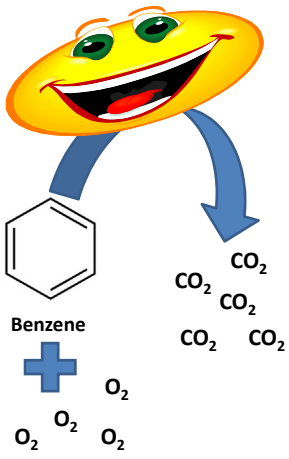


Hydrocarbon concentrations remained stable

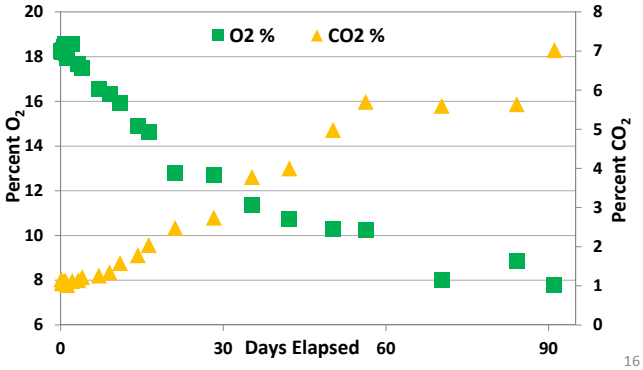
Soil Bio-Respiration Testing

Naturally occurring soil bacteria are present throughout subsurface

Bacteria consume O_2, produce CO_2 as they biodegrade or "eat" fuel



SVMW-03 at 250 ft below ground surface



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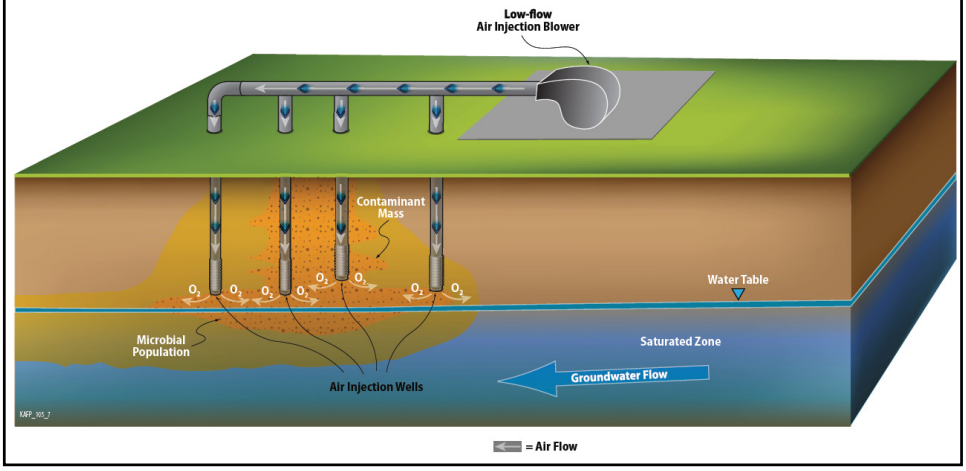
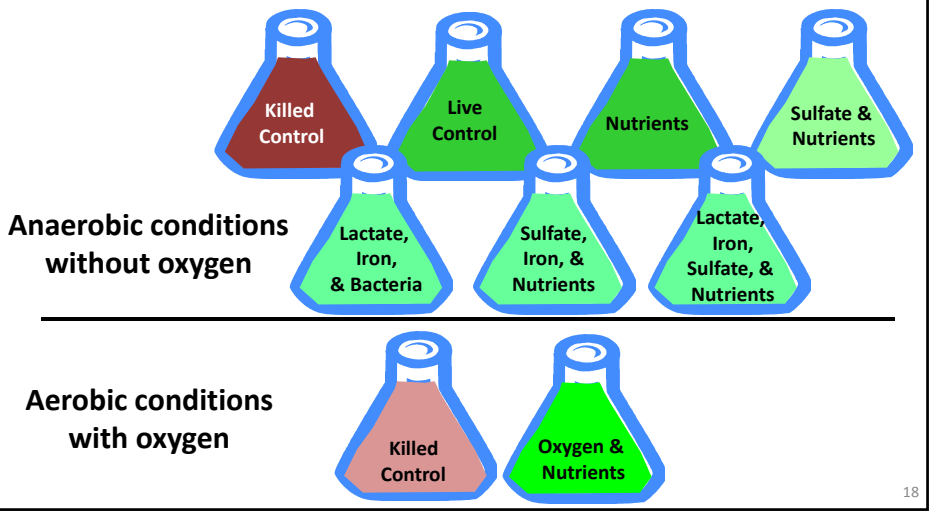
Bio-Venting

- Air is injected into the vadose zone to deliver oxygen to soil bacteria to help them biodegrade contaminants



Laboratory Microcosm Testing

Identify potential technologies to biodegrade EDB



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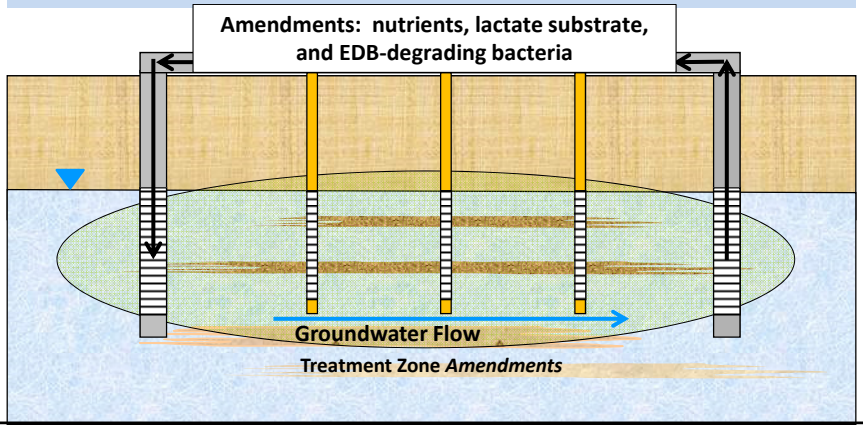
Anaerobic Biodegradation Pilot Test

Groundwater Recirculation

- Pump groundwater - Add amendments
- Inject amended water up-gradient to create recirculation cell to support anaerobic biodegradation EDB



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Recap

- Drinking water supply wells show no contamination
- EDB groundwater plume not migrating towards KAFB-3 and Ridgecrest-3
- Extraction of EDB to collapse the plume began June 2015
- Evaluating SVE testing data to identify areas needing further SVE, and areas suitable for transitioning to bio-venting
- Designing an in-situ anaerobic pilot test to clean up LNAPL

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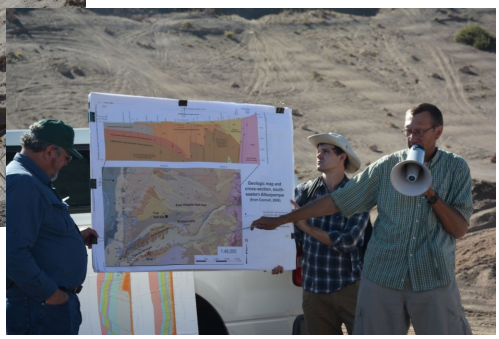
Upcoming Events

- **Public Field Trip – October 2015**
- **Public Meeting – November 17, 2015**



How do I get more information?

Contact NMED:

Dennis McQuillan,
KAFB project technical lead
dennis.mcquillan@state.nm.us
505-827-2140

Jill Turner,
KAFB project communications lead
jill.turner@state.nm.us
505-222-9548

NMED Website and Listserv: http://www.nmenv.state.nm.us/

Contact the Air Force:

Air Force Civil Engineer Center
Office of Public Affairs
2261 Hughes Ave, Ste 155
Joint Base San Antonio-Lackland TX 78236-9853
(210) 925-0956 or (866) 725-7617
Email: afcec.pa@us.af.mil

Air Force BFF-specific spill website: www.kirtlandjetfuelremediation.com

Kirtland AFB website at http://www.kirtland.af.mil in the Environmental Issues section for Public Records.

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Water Resource Management Strategy Recommendations Status - August 2015

POLICY	RECOMMENDATION/SUB-POLICY	TIME FRAME	2015 STATUS
A - Update and Maintain a Water Budget	Policy A.1 The Authority shall acquire or develop a flexible interactive model of the water budget that can evaluate simultaneous multiple scenarios including alternative hydrologic and climatic conditions and forecasts, water supply and demand. The interactive model should be developed using the best available science and should be updated as relevant scientific information is available.	Completed	The model has been developed and continues to be refined to evaluate climate scenarios, water supply alternatives and costs.
A - Update and Maintain a Water Budget	Policy A. 1 Recommendation 1 - The development and use of the interactive water budget model should utilize annually updated population projections and projections of development patterns for forecasting future demand to predict water supply, conservation, and water rights needs.	Completed	The Authority did not receive the grant from the BOR applied for in 2014, but work continues weekly with Authority staff and consultants to develop an update to the Water Resources Management Strategy that will consider water resource needs for the Authority for the next 100 years.
A - Update and Maintain a Water Budget	Policy A.1 Recommendation 2 - The Authority should establish a water budget scientific task force to study and provide recommendations on water budget for the Authority.	Completed	Completed. The Scientific Task Force completed their review of the model and their refinements and comments have been addressed in model updates.
A - Update and Maintain a Water Budget	Policy A.2 - The water budget and the scientific scenarios analyzed shall be compiled into a report and presented to the Authority on an annual basis. The Authority shall review the water budget and consider policies consistent with its five-year goals and one-year objectives for the water resources management program.	2017	The water budget and scenarios will be presented in the Water Resources Management Strategy update.
A - Update and Maintain a Water Budget	Policy A.3 - To the extent possible, all future water budgets and alternatives shall be developed within the framework of the regional water budget accepted by the Authority.	Completed	The water budget model was developed using data from the Upper Rio Grande Impact Assessment, the Upper Rio Grande Water Operations Model, the Middle Rio Grande Regional Water Plan, the New Mexico First Town Hall on Water and the Mid-Region Council of Governments Futures 2040 Metropolitan Transportation Plan.
B - Balance Demand with Renewable Supply by Using San Juan- Chama Water as the Primary Source of Supply	Policy B. Recommendation 1 - The Authority should develop a program to determine the safe yield of the regional ground water supplies when the San Juan-Chama Drinking Water Project is operational. The program should be completed working in collaboration with research institutions.	Completed	Safe yield is no longer a term favored by hydrogeologists but the Authority is working on management of the groundwater reserve as part of the work on the water budget model. This includes identifcation and management of both a working reserve and a safety reserve.
B - Balance Demand with Renewable Supply by Using San Juan- Chama Water as the Primary Source of Supply	Policy B. Recommendation 2 - The Authority should utilize a combination of renewable supplies including the deep aquifer where recharged by the river, surface water, industrial and municipal effluent, impaired groundwater and recycled water.	Completed	In 2014, 60% of the Authority's water supply came from surface water. Studies by the USGS show that water levels in the service area continue to rise - in some areas by as much as 40 feet. The aquifer is expected to continue to rise through approximately 2035.
B - Balance Demand with Renewable Supply by Using San Juan- Chama Water as the Primary Source of Supply	Policy B. Recommendation 3 - The Authority should match the various sources of supply with the needs of different users while considering the end use and water quality.	Completed	Northside reuse was 2,793 acre-feet and Southside irrigation reuse was 628 acre-feet and reuse at the reclamation plant was 450 acre-feet.
B - Balance Demand with Renewable Supply by Using San Juan- Chama Water as the Primary Source of Supply	Policy B. Recommendation 4 - The Authority should recycle and reuse as much water as possible while promoting the use of storm water for irrigation and aquifer recharge.	Ongoing	This policy is on-going. The Authority uses recycled and reuse water as much as possible (see above). The use of storm water for irrgation and aquifer recharge is being investigated. We have discussed the idea of storm water for recharge with AMAFCA and others, but the OSE currently has a policy that requires that storm water dams/reservoirs need to be completed evacuated within 96-hours. This may allow for some recharge, but additional time would be needed to maximize this effort. There are also Rio Grande Compact and water rights issues with using storm water for recharge, but there may be times that this is appropriate and we need to be prepared for that. The US Geological Survey is working a on study for the Water Authority to identify areas where excess runoff could be captured and used to recharge the aquifer.

Water Resource Management Strategy Recommendations Status - August 2015

POLICY	RECOMMENDATION/SUB-POLICY	TIME FRAME	2015 STATUS
B - Balance Demand with Renewable Supply by Using San Juan- Chama Water as the Primary Source of Supply	Policy B. Recommendation 5 - The Authority should take all the necessary steps to protect its water rights.	Ongoing	Protecting our existing water rights and permits is one of our primary objectives including both native (ground water and surface water) and San Juan-Chama. Providing a sustainable water supply into the future requires that we protect and preserve our rights to use ground water, surface water and reuse water.
B - Balance Demand with Renewable Supply by Using San Juan- Chama Water as the Primary Source of Supply	Policy B. Recommendation 6 - The Authority should utilize the results of the water budget modeling analysis to predict the quantity and timing of additional renewable water supplies to meet future demands.	2017	The water budget model is being used to plan for water resource needs through 2125 given a range of climate change scenarios. This planning includes developing plans for when new supplies will be needed and when initiation of projects will be needed so that water supplies are available when needed.
C - Establish and Maintain a Groundwater Drought Reserve	Policy C. Recommendation 1 - The Authority should proceed to implement an aquifer storage and recovery (ASR) program beginning with the necessary pilot studies and permitting phase such that the program can be implemented when the San Juan-Chama Drinking Water Project is operational.	Ongoing	The full scale permit for Bear Canyon was obtained in August 2014. Bear Canyon operated from October 2014 - March 2015. Approximately 500 acre-feet were recharged during that time period. The Webster well project has been put on hold as the Water Authority evaluates treating high arsenic water at the drinking water plant. The Large Scale ASR Project to evaluate direct injection and vadose zone wells is proceeding with finalizing the design and preparing the appropriate demonstration permit application. We anticipate submitting the application in the Fall/Winter 2015.
C - Establish and Maintain a Groundwater Drought Reserve	Policy C. Recommendation 2 - The Authority should identify areas of natural recharge and protect lands which are recharge windows and corridors.	Ongoing	This is an on-going effort based on the study completed by the Bureau of Reclamation many years ago. The recharge areas are the La Cueva, Calabacillas, and Tijeras Arroyo in Bernalillo County and other arroyos outside the jurisdiction of the Water Authority. To date, no detrimental changes have occurred in these areas.
C - Establish and Maintain a Groundwater Drought Reserve	Policy C. Recommendation 3 - Water levels in the aquifer should be reported to the Authority Board on an annual basis once the Drinking Water Project is operational.	Ongoing	The USGS continues to monitor water levels in the aquifer with transducers and hand measurements. Their data through 2014 shows water levels rising in the aquifer by as much as 40 feet in those areas of the aquifer where the cone of depression was the deepest. In addition, the USGS is developing use of InSAR a technique that measures changes in the land surface based on satellite radar. The USGS is also planning to purchase a gravity meter which will allow them to measure changes in groundwater storage in the aquifer based on changes in gravity. Water levels are presented to the Water Authority Board when presentations regarding the WRMS updates are provided which are at least once per year.
C - Establish and Maintain a Groundwater Drought Reserve	Policy C. Recommendation 4 - The Authority should complete the necessary hydrologic studies to update the analysis in the Value of Water Study to determine the appropriate timeframe for the drought reserve taking into account potential hydrologic and climatic changes.	2017	Climate change scenarios have been added to the water budget model based on the Upper Rio Grande Impact Assessment predictions for future climate. Nine scenarios of water supply and demand are being developed from this data to aid in planning for future water needs. The update to the Value of Water Study is underway of which the primary focus will be the ground water reserve and the use and management of it.
C - Establish and Maintain a Groundwater Drought Reserve	Policy C. Recommendation 5 - The Authority should take all necessary steps to protect and enhance the ground water drought reserve.	Ongoing	Ongoing. See USGS monitoring data above.
D - Update and Maintain the Water Conservation Strategy	Policy D. Recommendation 1 - The water conservation goal should be reviewed every three years along with all new water conservation programs to determine if progress is being made on implementing new programs and reducing water consumption.	2024	The water conservation plan is reviewed every year to ensure that sufficient progress is being made toward the conservation goal. The new water conservation plan adopted in May 2013 set a conservation goal of 135 GPCD by 2024. GPCD at the end of 2014 was 134, so that goal was reached ten years early. Use for calendar year 2015 is predicted to be under the use for 2014.

Water Resource Management Strategy Recommendations Status - August 2015

POLICY	RECOMMENDATION/SUB-POLICY	TIME FRAME	2015 STATUS
D - Update and Maintain the Water Conservation Strategy	Policy D. Recommendation 2 - The Authority should encourage water conservation through economic credits or incentives.	Completed	Completed. Extensive rebate program is in place. UNM graduate student is currently analyzing water use by rebate recipients to determine most effective programs. New programs that have been approved will be implemented in July 2010. New programs to target outdoor water use efficiency, commercial water use and tree care/irrigation were implemented in 2011 and 2012. Toilet rebates were reduced to $100 per toilet on January 1, 2014 to allow more money to be used for outdoor initiatives.
D - Update and Maintain the Water Conservation Strategy	Policy D. Recommendation 3 - The Authority's water resources and conservation programs should continue to provide education, metering, accounting for the various water uses and customer classes, and drought contingency plans.	Completed	Completed. Information is provided on bills, through community classes (WaterSmart classes, xeriscape classes, drip irrigation, focus groups, neighborhood meetings) and through TV and radio ads and interviews.
D - Update and Maintain the Water Conservation Strategy	Policy D. Recommendation 4 - The Authority should adopt and implement drought management measures as necessary to reduce demand during droughts.	Completed	Completed. The new Drought Management Strategy was adopted in 2012. Information is provided on bills, through community classes (WaterSmart classes, DroughtSmart classes, xeriscape classes, water conservation plan focus group meetings) and through TV and radio ads and interviews.
D - Update and Maintain the Water Conservation Strategy	D.5 The Authority should utilize the per account methodology for reporting overall water use reductions in addition to reductions by customer class.	Completed	Completed. The per account methodology is used to analyze savings in the water conservation report generated at the beginning of each calendar year. Along with numerous other metrics to track water usage both indoors and outdoors across various customer classes to assist in designing specific conservation programs. In addition, the New Mexico Office of the State Engineer (OSE) has developed a standardized methodology for gallons per capita per day (gpcd) calculations, which is a standardized tool for water use reporting. This methodology will be used by the OSE to track municipal water use over time and manage the State's water resources into the future. The Authority will be using the OSE methodology for mandated water use reporting in connection with the San Juan-Chama Drinking Water Project.
E - Support Regional Water Resources Planning and Management	Policy E.1 The Authority shall continue its proactive role to ensure that the necessary technical investigations are completed efficiently and expeditiously and that they result in the use of an improved quantitative model for water rights administration in the Middle Rio Grande.	Completed	The USGS continues to monitor water levels and water quality in a nest of sentinel wellsdrilled for the Water Authority in 2013. USGS will begin modeling efforts in 2015 in the area of the Jet Fuel Spill, by discretizing the regional basin model and making smaller grid cells in the area of focus for more accurate simulations of regional groundwater flow to the nearby production wells. The Water Authority has a three year agreement with the USGS to cooperate on water resources projects and studies.
E - Support Regional Water Resources Planning and Management	Policy E.2 The Authority is committed to seek common solutions within a regional context. The Authority shall work cooperatively with others in the Middle Rio Grande Valley to implement the accepted Regional Water Plan.	Ongoing	This is an ongoing effort. Water Authority staff attend meetings of numerous regional planning groups so that we may work cooperatively to manage the water resources of the Middle Rio Grande.
E - Support Regional Water Resources Planning and Management	Policy E.3 The Authority shall work with federal agencies including the Bureau of Reclamation, Corps of Engineers and Bureau of Land Management, the State Engineer and the Interstate Stream Commission to find common solutions for water management on the Rio Chama and the Rio Grande.	Ongoing	The Water Authority continues to work with all these agencies on water management solutions. We have regularly scheduled meetings with the various entities to discuss water management issues on the Rio Chama and Rio Grande.
E - Support Regional Water Resources Planning and Management	Policy E.4 The Authority shall prepare for a basin adjudication in the Middle Rio Grande. In addition, the Authority shall seek alternative legal strategies (negotiated settlements) in addition to the traditional adjudication process.	2020	We continue to prepare for an adjudication, but have not started the process of discussing alternative means for the adjudication. To date, no work has been accomplished related to developing alternative strategies.

Water Resource Management Strategy Recommendations Status - August 2015

POLICY	RECOMMENDATION/SUB-POLICY	TIME FRAME	2015 STATUS
F - Pursue the Conjunctive Management of Available Water Resources	Policy F.1 To the extent practicable, eliminate the use of high-quality water from the deep aquifer for irrigation of parks, golf courses, and other large turf applications. Use reclaimed wastewater, surface water, and shallow ground water for irrigation and nonpotable uses. Use of shallow ground water will be augmented with enhanced recharge as necessary to protect shallow ground-water levels.	Ongoing	628 acre-feet of reuse water were used in 2014. This amounts to 1.46 GPCD. This amount will be expanded whenever possible, but additional connections require cooperation by the users. We will continue to work with them to encourage connections.
F - Pursue the Conjunctive Management of Available Water Resources	Policy F.2 The Authority will favor the use of reclaimed water where economically feasible and protective of human health and the environment. The Authority will take action to ensure the appropriate use of nonpotable supplies to meet nonpotable needs. This may include providing economic incentives as necessary to encourage the use of reclaimed water.	Ongoing	This is an on-going effort and we coordinate new developments to ensure that reuse water is used where appropriate. We currently provide a economic incentive by charging 80% of the potable rate.
F - Pursue the Conjunctive Management of Available Water Resources	Policy F.3 Use pumping from the deep aquifer to meet seasonal peak demands and as a drought reserve. Provide for methods to store available surface water in the aquifer and to recover it from storage.	Ongoing	USGS water level studies indicate that water levels are rebounding as use of groundwater decreases due to the DWP. In addition, the Authority is pursuing three options for aquifer storage and recovery: 1) Bear Canyon infiltration, 2) deep aquifer injection and vadose zone injection at the DWP, and 3) injection and recovery from our existing wells. Additional ASR projects will be developed and implemented over time.
G - Develop and Implement Long-Term Water Acquisition Plan	Policy G. Recommendation 1 - The Authority should seek legislation to allow for water leasing and banking on a local, regional and interstate basis.	Completed	We have worked with the NM State Legislature on developing and implementing water leasing and banking, but have not been able to get anything implemented. Municipalities and the Water Authority will need to work together to develop stronger relationships to allow for this type of legislation to move forward.
G - Develop and Implement Long-Term Water Acquisition Plan	Policy G. Recommendation 2 - The Authority should continue to acquire water rights in the Middle Rio Grande on a voluntary basis. As a condition of sale, the Authority should seek to prohibit additional water uses on the property. When considering acquisition, the Authority should strive to integrate agricultural and environmental values in the transfer to and from areas.	Ongoing	We continue to purchase water rights on a voluntary basis. We have attempted to incorporate the language as proposed, but have had some resistance because it is difficult for the Water Authority to enforce.
G - Develop and Implement Long-Term Water Acquisition Plan	Policy G. Recommendation 3 - The Authority should investigate and enter into agreements for short-term leases in times when wet water is available to offset the needs for purchasing and acquiring water rights during times of drought and for aquifer recharge.	Ongoing	This is an on-going effort and no short-term leases have been entered into.
G - Develop and Implement Long-Term Water Acquisition Plan	Policy G. Recommendation 4 - The Authority should stay active in evaluating other rights transfer in the Middle Rio Grande and should take proactive stances when necessary.	Ongoing	We continue to stay active in water rights purchases and transfers in the MRG. We have at times protested transfers where approvpriate.
G - Develop and Implement Long-Term Water Acquisition Plan	Policy G. Recommendation 5 - The Authority should protect and enhance its storage rights in Abiquiu and should pursue and file the necessary applications to appropriate flood flows including spills at Elephant Butte or other surface flows that may be available for storage in Abiquiu.	Completed	The Water Authority is working to secure permanent easements for storage in Abiquiu reservoir including the opportunity to store native water in the future. The OSE rejected the Water Authority's 2001 application to appropriate flood flows and it is currently in State District Court.
G - Develop and Implement Long-Term Water Acquisition Plan	Policy G. Recommendation 6 - The Authority should investigate the potential of desalination as a future water supply considering financial, energy and environmental factors.	Completed	The Water Authority has a contract in place to evaluate the possibility of brackish water use as part of a broad spectrum of water supply options for the future. The results of this work will be incorporated into the WRMS update.
G - Develop and Implement Long-Term Water Acquisition Plan	Policy G. Recommendation 7 - The Authority should develop a program to examine the feasibility and impacts of very deep aquifer (greater than 3,000 feet below ground surface) pumping.	Completed	Deep water is generally brackish water - see above.

Water Resource Management Strategy Recommendations Status - August 2015

POLICY	RECOMMENDATION/SUB-POLICY	TIME FRAME	2015 STATUS
G - Develop and Implement Long-Term Water Acquisition Plan	Policy G. Recommendation 8 - The Authority should examine the need for additional short and long-term storage.	Ongoing	Given the current drought and the restrictions on permit 4830, additional storage closer to Albuquerque would be beneficial to allow for use during critical low flow periods. In addition, the we are looking at expanding storage capability at Abiquiu Reservoir. With the projected shift in precipitation, more storage is needed to provide the maximum flexibility in water operations.
H - Implement the Water Quality Protection Plan and Policies	Policy H. Recommendation 1 - The Authority should continue to provide high-quality drinking water and discharge treated effluent that meets or exceeds federal and state standards.	Ongoing	The Water Authority continues to meet our SDWA compliance and regularly exceeds those standards. With respect to our NPDES permit, we have had two violations this year and three last year as compared to more then 20 just five years ago. We are working hard to rehabilitate the Southside Water Reclamation Plant (SWRP) with a goal to eliminate violations.
H - Implement the Water Quality Protection Plan and Policies	Policy H. Recommendation 2 - The Authority should be proactive in identifying potential water quality threats to surface and ground water resources and should implement programs to the extent possible to protect the water resources in the Middle Rio Grande.	Ongoing	The Water Protection Advisory Board (WPAB) and Policy Implementation Committee continue to oversee and administer, respectively, the City, County and Water Authority Water Quality Protection Policy and Action Plan (WQPPAP). The WPAB released in its 2014 report (issued in early 2015) to the City, County and Water Authority, listed "Top Areas of Focus for Water Quality Protection." Included were the Kirtland Air Force Base Spill, stormwater quality, and watershed health, which the board surveys for the Albuquerque Basin and Middle Rio Grande through regular updates provided by regional topic experts, regulators and decision makers.
H - Implement the Water Quality Protection Plan and Policies	Policy H. Recommendation 3 - The Authority should consider the occurrence, fate and potential treatment of emerging contaminants in current and future water supplies and should actively participate in research which will become more important as the availability of water resources becomes more constrained.	Ongoing	The Water Authority has participated in research related to emerging contaminants in the drinking water. The results of that work was published on the Water Authority's website.
I - Equitably Incorporate the Costs of Providing a Safe and Sustainable Water Supply into Water Rates	Policy I. Recommendation 1 - The Authority should encourage water conservation by considering increasing water rates and implementing steeply increasing block rates, including a very low rate for low water use customers and increasing to very high rates for large water users. Surcharges for excess use could vary by customer class, targeting water classes that have not achieved water conservation goals.	Completed	The Authority works with rate consultants to ensure a rate structure that provides equity both within and between classes and generations while encouraging conservation. A revenue rate increase of 5% took effect beginning fiscal year 2016 and another will take effect in fiscal year 2018. The conservation tiers will remain the same to continue to send a strong price signal to customers as their use increases during the irrigation season. In fiscal year 2016, the low use discount was adjusted to only apply to the outdoor portion of the customer's water bill rather than the entire bill.
I - Equitably Incorporate the Costs of Providing a Safe and Sustainable Water Supply into Water Rates	Policy I. Recommendation 2 - The Authority should implement policy changes to increase the cost of service principals to include a scarcity value of water. Current legal restrictions place limits on how much revenue a utility can recover prevents rates high enough to induce water conservation. The Authority should investigate whether opportunity cost or scarcity value could be included in its cost calculations, allowing it to set rates high enough to cover these components of the total cost of delivered water.	Completed	The scarcity value of water is not a cost of service principal that the public utility industry can implement as part of the rates.
I - Equitably Incorporate the Costs of Providing a Safe and Sustainable Water Supply into Water Rates	Policy I. Recommendation 3 -Water rates should include a “lifeline” feature so that low income and low usage households are not overly burdened.	Completed	In July 2015, the rebate for customers using less than 150% of the class average during the irrigation season was altered so that the rebate is only on the outdoor portion of the customer's use. The Authority also offers a low income assistance program to its customers. All customers who receive low income assistance credit are offered a free water conservation audit each year if they are receiving surcharges on their bill due to high use.

Water Resource Management Strategy Recommendations Status - August 2015

POLICY	RECOMMENDATION/SUB-POLICY	TIME FRAME	2015 STATUS
I - Equitably Incorporate the Costs of Providing a Safe and Sustainable Water Supply into Water Rates	Policy I. Recommendation 4 - The Authority should review the water bill periodically so that the actual water usage is the focus of the bill with a specific statement about the benefits of conserving water. The water bill should state the Authority's water conservation goals.	Completed	Completed - the water bills have been reformatted on a number of occasions and we are always trying to improve the information provided to our customers
I - Equitably Incorporate the Costs of Providing a Safe and Sustainable Water Supply into Water Rates	Policy I. Recommendation 5 - The Authority should review and evaluate the water and sewer rate structure biannually and should continue the water rate stabilization fund to offset the need for rate increases when revenue fluctuates due to weather and other factors.	Completed	The water and sewer rates are evaluated biannually and we have implemented the rate stabilization fund.
I - Equitably Incorporate the Costs of Providing a Safe and Sustainable Water Supply into Water Rates	Policy I. Recommendation 6 - The Authority should continue to offer financial aid for costs associated with connecting water and sewer infrastructure to qualified low income customers. The Authority should consider establishing a revolving fund to assist these customers.	Completed	We continue to provide this service.
J - Protect Valued Environmental and Cultural Resources of the Region	Policy J. Recommendation 1 - The Authority should work with local, state and federal agencies to protect the areas of natural infiltration and recharge from development. These areas should be designated as open space for agricultural, environmental, aesthetic, recharge potential and water quality.	Ongoing	This is a long-term effort and the Water Authority is one partner.
J - Protect Valued Environmental and Cultural Resources of the Region	Policy J. Recommendation 2 - The Authority should encourage the State to recognize instream flows as a beneficial use and should acknowledge and quantify the riparian use of water within the Authority's management area.	Completed	We have attempted to work with the State Legislature and the OSE in recognizing instream flows. There has been significant resistance to this idea from agricultural groups and it is doubtful that this will happen in the near future.
J - Protect Valued Environmental and Cultural Resources of the Region	Policy J. Recommendation 3 - The Authority should consider the impacts on environmental and cultural resources and take appropriate steps to mitigate unavoidable effects considering the Rio Grande ecosystem in its entirety.	Completed	Current activity has consisted of completing the required habitat restoration facilities from the Authority Biological Opinion. This required substantial compliance steps including NEPA and ESA consultation as well as communicating with and cooperating with numerous entities. This will continue as we now operate the habitat restoration projects.
J - Protect Valued Environmental and Cultural Resources of the Region	Policy J. Recommendation 4 - The Authority should encourage agricultural, historical, educational and cultural programs that aim to educate the public on the value of water conservation and best management practices for irrigation, environmental and cultural water-related resources.	Completed	The Authority's education program incorporates all these concepts into their classroom presentations and most notably with the new day-long RIO field trips to the Rio Grande Nature Center for fourth-graders. In addition, these concepts were discussed as part of the focus group meetings to develop the update to the water conservation plan.
J - Protect Valued Environmental and Cultural Resources of the Region	Policy J. Recommendation 5 - The Authority should participate and support the Endangered Species Act Collaborative Program and other programs that promote habitat restoration and initiatives to recover endangered species in the Middle Rio Grande.	Ongoing	Current activity includes participation in the ESA Collaborative Program including taking a lead role in program implementation.
J - Protect Valued Environmental and Cultural Resources of the Region	Policy J. Recommendation 6 - The Authority should implement the proposed mitigation programs for the Drinking Water Project including ongoing monitoring and reporting.	Completed	Completed - current activity for monitoring includes fish monitoring for the diversion works and fish passage structure, and egg monitoring/collection activities in May. We report on that activity and related mitigation activity in an annual report to the Fish and Wildlife Service.
J - Protect Valued Environmental and Cultural Resources of the Region	Policy J. Recommendation 7 - The Authority should work cooperatively with federal, state and local entities to promote environmental and recreational opportunities on the Rio Chama and the Rio Grande.	Ongoing	Current activity includes periodically taking San Juan – Chama water at times to support recreational and sport fishery requirements on the Chama River.
J - Protect Valued Environmental and Cultural Resources of the Region	Policy J. Recommendation 8 - The Authority should work with the City and County in acquiring and retaining river related open space in the region and assist with programs to enhance aquifer recharge and protect wildlife habitat.	2020	Consultation with Open Space and Bernalillo County has occurred. The acquisition of lands would like likely be expensive and complicated.

Water Resource Management Strategy Recommendations Status - August 2015

POLICY	RECOMMENDATION/SUB-POLICY	TIME FRAME	2015 STATUS
K - Preserve and Enhance the Quality of Life in the Region	Policy K. Recommendation 1 - The Authority should work with the City and County to ensure that current and future public spaces and recreation spaces are water efficient.	Ongoing	In 2014, overall water use for parks and golf courses increased compared to 2013. The Water Authority has met with parks to discuss the issues at individual parks and to work together to find solutions to problems of water waste created by parks.
K - Preserve and Enhance the Quality of Life in the Region	Policy K. Recommendation 2 - The Authority should adopt policies, where appropriate, to require water conservation in public spaces. Existing public spaces should be retrofitted for water conservation.	Ongoing	The irrigation budget program continues to be a very successful way to engage large turf customers in partnerships to reduce water use. APS has formed a Water and Energy Conservation Task Force in which the Water Authority participates. In 2014, all customers except Parks and Golf continued to reduce their water use. Parks and Golf water use increased in 2014 and audit staff are working with them to address this issue.
K - Preserve and Enhance the Quality of Life in the Region	Policy K. Recommendation 3 - The Authority should work with the City and County to provide incentives to employers through the use of industrial revenue bonds, planning activities, and support of recruitment and training services as a technique for achieving new employment opportunities in accordance with adopted policies including the Planned Growth Strategy.	Completed	The Water Authority has worked with the City and County in implementing components of the Planned Growth Strategy.
L - Link Land Use Planning with Water Management	Policy L. Recommendation 1 - The Authority should continue the current no-net-expense policy. Developments outside of the service area should provide water rights or funding for the purchase of new water rights as a condition of service in accordance with the no-net-expense policy.	Completed	Since the adoption of the Water and Sewer System Expansion Ordinance in 2007, all development agreements have to comply with ordinance requirements of no-net-expense and the Water Supply Charge.
L - Link Land Use Planning with Water Management	Policy L. Recommendation 2 - The Authority should work with the City and County to update the Albuquerque/Bernalillo County Comprehensive Plan and/or other plans and ensure that system expansion is concurrent with infrastructure service levels and that the extension of facilities and services be phased in an efficient and orderly manner through adjacent pressure zones to the service area boundary.	Completed	Complete - All Authority policies are consistent with the Comprehensive Plan and Rank 2 Plans. The System Expansion Ordinance requires that new development conforms to the provisions of applicable comprehensive plans and/or adopted planning documents or policies.
L - Link Land Use Planning with Water Management	Policy L. Recommendation 3 - The Authority should ensure that it's capital planning process is based on the City and County growth and development master plans so that land use and infrastructure policies are consistent.	Ongoing	This is an on-going effort and we coordinate new development with the City and County.
L - Link Land Use Planning with Water Management	Policy L. Recommendation 4 - The Authority should support the increase of urban building densities and infill development consistent with adopted land use plans as higher density development can reduce outdoor water usage and other environmental benefits.	Ongoing	The Authority supports increased densities in defined centers and corridors to reduce outdoor water demand.
L - Link Land Use Planning with Water Management	Policy L. Recommendation 5 - The Authority should encourage the City, County and State to adopt Building Code and low water use landscaping standards for all new construction.	Ongoing	Bernalillo County adopted additional water conservation standards for new construction in 2010, but the City did not. The Authority supports updating water conservation standards for new construction at the State level.
L - Link Land Use Planning with Water Management	Policy L. Recommendation 6 - The Authority should encourage conservation oriented economic development that focuses on minimized water usage.	Ongoing	As part of the update to the water conservation plan, the Authority met with business leaders to gather ideas and information on incentivizing water conservation efforts for area businesses. Each year, water conservation programs are reviewd and adjusted to best meet the needs of our customers. The recent update to the Treebate program offers businesses up to $500 per year for tree care and the purchase of new trees.
L - Link Land Use Planning with Water Management	Polciy L. Recommendation 7 - The Authority should request that member governments take water supply availability and cumulative impacts into account when making land use development decisions and that member governments adopt policies integrating land use, transportation, economic development and other planning efforts with water resource management.	Completed	The Water Authority participated in the recently completed MRCOG 2040 Plan on transportation needs which included water resource management and climate variability planning.

Water Resource Management Strategy Recommendations Status - August 2015

POLICY	RECOMMENDATION/SUB-POLICY	TIME FRAME	2015 STATUS
L - Link Land Use Planning with Water Management	Policy L. Recommendation 8 - The Authority should continue its review process so that each new industrial, commercial, residential and municipal development is reviewed to ensure ongoing availability of adequate water supplies.	Completed	The Authority encourages that new development occur within its service area or develop to ensure that system expansion is concurrent with infrastructure service levels and that the extension of facilities and services be phased in an orderly manner through adjacent pressure zones to the service area boundary. Any development outside the service area will be required to pay a Water Supply Charge.
M - Encourage and Facilitate Public Involvement and Support	Policy M. Recommendation 5 -The Authority should develop and maintain a water education curriculum for schools to teach children the importance, value and appropriate use of water in the region.	Completed	In the 2014-2015 academic year, all fourth grades in public schools in Albuquerque were offered a RIO field trip. All but two classes accepted and attended. 6,326 students and 1,163 adults attended the RIO field trips. They were extremely well received and make a big impact on students. The Water Authority was able to continue classroom presentations, puppet shows and tours of the water reclamation plant along with the field trips.
M - Encourage and Facilitate Public Involvement and Support	Policy M. Recommendation 2 - The Authority should develop an adult education program to encourage a more complete awareness of the full range of water related subjects and to encourage voluntary water conservation programs.	Completed	Adult education programs continue to be offered on xeriscaping, efficient landscape irrigation, drip system installation and rainwater harvesting. In 2015, a new class is being offered "WaterSmart Gardening". This course is being taught by staff of the Desert Oasis Teaching Garden at Albuquerque Academy and customers who attend receive a $20 credit on their water bill. The Authority has returned to offering the $20 credit for customers who attend the other classes also as the free tree was not as much of an incentive as the credit. In addition, the Authority added tours of the water reclamation plant for our adult customers on weekends in the fall and spring. Response was overwhelming and we had to add a second weekend of tours in both the fall and spring. The Authority has implement its new customer outreach program, called Customer Conversations, as part of an ongoing effort to engage its customers and generate input regarding utility's plans and programs.
M - Encourage and Facilitate Public Involvement and Support	Policy M. Recommendation 3 - The Authority should consider preparing public service announcements on all aspects of water resources management and should continue the public marketing campaigns.	Completed	The Authority provides TV, radio, and newspaper advertising on its “Water by the Numbers” and time-of-day watering restrictions. It also provides PSAs on sprinkler shutdown for fall, frozen-pipe prevention, pharmaceutical abatement, and Fats, Oils and Grease abatement. In 2014, the Authority contracted with a new advertising agency to develop new campaigns around trees, leak detection and general conservation awareness.
M - Encourage and Facilitate Public Involvement and Support	policy M. Recommendation 4 - The Authority should continue to partner with real estate, design, building and construction industry groups to educate their membership concerning water conservation means and methods.	Completed	The Authority continues to work with and educate all of these entities.
M - Encourage and Facilitate Public Involvement and Support	Policy M. Recommendation 5 - The Authority should consider interactive tools to engage the public on efficient water resources management such as self assessment water calculator, a water audit tool for the website, or a computerized version of the water budget that details water levels in the aquifer, enabling users to individually participate in water management scenarios.	Completed	These have not proven to be tools that interest our customers so our online efforts have been focused around bill payment so we can reach customers with our messaging when they pay their bill.

Agenda Item #6

NM First Town Hall on Water Planning, Development & Use
April 2014

Purpose of the Town Hall

With record drought and extremely dry conditions in much of the state, water is perhaps the most critical policy issue in New Mexico. The economy, health, environment and overall population suffer without enough clean, available water. The April 2014 town hall harvested the wisdom of citizens, inviting them to focus on outlining a balanced water policy for our unique state.

Attended by over 300 people, the town hall brought together citizens from 31 New Mexico counties. Participants came from urban, rural and tribal communities, and included business leaders, industrial water users, environmental advocates, researchers, municipal water planners, farmers and ranchers, government professionals, elected officials and students. Participants then divided into small groups, during which they assessed New Mexico's opportunities and barriers for effective water policy. They prioritized those issues into discreet recommendations. All participants reviewed and refined the work of the other groups.

Recommendation Summary

The town hall produced a platform of 15 consensus recommendations, garnering support from a strong majority of the participants. Almost all the recommendations achieved 85 percent support or higher. The recommendations fell into six major themes. The list below offers a high-level summary. The detailed report can be downloaded from http://nmfirst.org/library.htm

***Really* Plan for the Future**

Rec 1: Improve state and regional water plans.
Rec 2: Make our water supply resilient and flexible.
Rec 3: Plan for extreme droughts.

Keep Watersheds and Ecosystems Healthy

Rec 4: Restore watersheds.
Rec 5: Protect against wildfire and water source loss.
Rec 6: Reduce endangered species conflicts.

Address Legal and Management Issues

Rec 7: Advance shortage-sharing agreements.
Rec 8: Improve water rights management.
Rec 9: Improve adjudication process.

Pursue New Sources of Water

Rec 10: Capture precipitation.
Rec 11: Assess brackish water sources.
Rec 12: Clarify brackish/produced water process.

Improve Water Funding Practices

Rec 13: Invest water dollars wisely.
Rec 14: Expand water funding sources.

Protect Water Quantity and Quality

Rec 15: Conserve water and protect against contamination.

Implementation

Full Report: http://nmfirst.org/library.htm

NM First Town Hall Recommendations April 15-16 2014

- Improve state and regional water plans (97%) (Policy E)
- Restore watersheds (97%)
  (To be considered in WRMS update alternatives)
- Make our water supply resilient and flexible (95%)
  (Policies A, B, C and D)
- Advance shortage-sharing agreements (94%) (Policy E)
- Plan for extreme droughts (91%) (Policies A and C)
- Assess brackish water sources (91%) (Policy G)
- Capture precipitation (90%) (Policies B, D, E and G)

Albuquerque Bernalillo County
Water Utility Authority

NM First Town Hall Recommendations April 15-16 2014

- Invest water dollars wisely (88%) (Policy A)
- Expand water funding sources (88%)
  (Not under Water Authority jurisdiction)
- Conserve water and protect against contamination (88%)
  (Policies C and H)
- Improve water rights management (88%) (Policies E, F and G)
- Clarify brackish/produced water processes (86%) (Policy G)
- Protect against wildfire and water source loss (83%)
  (To be considered in WRMS update alternatives)
- Improve adjudication process (80%) (Policy G)
- Reduce endangered species conflicts (78%) (Policy J)

Albuquerque Bernalillo County
Water Utility Authority

Middle Rio Grande Regional Water Plan Update
Steering Committee Recommended Strategies

The Steering Committee created a table of the Recommended Strategies. This covered the nine broad categories and a total of 43 subcategories that had been identified during development of the previous Mid Region Water Plan. The Committee then worked as a group to assess the Effectiveness of the current Plan Recommended Strategies, using its collective knowledge base to assess what had been achieved over the past ten years. The Committee scored each item on a scale of 1 to 5, with 5 being most effective. The Committee then reviewed each of the current Plan Recommended Strategies using its collective knowledge base to identify what it felt to be the priority level of each Recommended Strategy. The same 1 to 5 scoring level was used with 5 being the highest priority.

Water Plan Preamble, Mission & Goals

Preamble
The development and implementation of the Regional Water Plan is intended to support policies, programs and projects that meet the goals of the plan. Recognizing the limited resource and consistent overuse of the region's water, the following mission and supporting goals are established for the regional water plan.

Mission
Balance Water Use with Renewable Supply

Goals
- Ensure that the Mission is fulfilled through fair, open and inclusive public planning and implementation processes
- Preserve Water for a Healthy Native Rio Grande Ecosystem
- Preserve Water for the Region's Agricultural, Cultural, and Historical Values
- Preserve Water for Economic and Urban Vitality
- Preserve Water for the Qualities of Life Valued by Residents in the Region
- Develop Broad Public and Official Awareness of Water Facts and Issues, Especially the Limited Nature of Water Resources
- Conserve Water
- Promote a System of Water Laws and Processes that Support the Regional Water Plan and its Implementation
- Provide Appropriate Water Quality for Each Use
- Manage Water Demand Consistent with the Stated Mission

Recommendations to Meet Region's Future Demands by Category
1. Urban and Rural Conservation Activities
2. Water Resources Planning and Management
3. Water Monitoring and Measurement
4. Agriculture
5. Water Quality
6. Bosque and Other Riparian Habitats
7. Water Storage to Reduce Evaporative Losses
8. Desalination
9. Public Education

Middle Rio Grande Regional Water Plan Alternatives Update – Urban and Rural Conservation Activities (Policies B, C, I, J, K and L)

- Urban water pricing
- Treated Effluent Reuse
- Outdoor Conservation Programs
- Conservation Incentives
- Rainwater Harvesting
- Greywater Reuse
- Growth of Parks and Golf Courses
- Establish a Domestic Well Policy
- Conversion to Low Flow Appliances
- Recognize Urban and Economic Vitality in the Region

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Middle Rio Grande Regional Water Plan Alternatives Update – Water Resources Planning and Management (Policies B, E, F and G)

- Adjudication and water rights settlement
- Conjunctive Use Management
- Funding Source for Water Activities
- Elephant Butte Loss Accounting
- Water Resources Database
- Watershed Management Plans
- Storm Water Management Plans
- Active Administration
- Soil and Vegetation Management
- Comprehensive, Integrated and Continued Water Planning
- Cooperative Regional Water Management
- Water Banking
- Land Use Management and Planning
- Regional Water Planning Program

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Middle Rio Grande Regional Water Plan Alternatives Update – Water Storage to Reduce Evaporative Losses / Desalination and Transfer of Water (Policies A, B, C, F and G)

- Implement upstream surface water storage
- Water Modeling
- Implement upstream aquifer storage and recovery
- Implement aquifer storage and recovery for drought
- Develop new water supplies through desalination
- Investigate potential for importing water
- Undeclared water

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Middle Rio Grande Regional Water Plan Alternatives Update – Agriculture and Water Monitoring and Measurement (Not under the jurisdiction of the Water Authority)

- Establish a local marketing infrastructure
- Upgrade agricultural conveyance systems
- Level irrigated fields
- Acequia Efficiency Program
- Measure all water uses

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Middle Rio Grande Regional Water Plan Alternatives Update – Water Quality (Policy H)

- Mitigate septic tank impacts
- Improve water quality sampling and testing (storm water and river water)
- Protect water from contamination

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Middle Rio Grande Regional Water Plan Alternatives Update – Bosque and Other Riparian Habitats (Policy J)

- Riparian habitat restoration
- River restoration
- Constructed wetlands
- Vegetation removal products

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Middle Rio Grande Regional Water Plan Alternatives Update – Public Education (Policy M)

- Develop a water education curriculum for public schools
- Implement adult education programs

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MRGRWP Steering Committee Recommended Strategies

Project Complete Y = Yes N = No S = started	Effectiveness 1 = not effective 5 = very effective	Priority 1 = low priority 5 = high priority	Alternative name	Category (Chapter 10 Section)	Steering Committee Discussion Comments
Y	4	5	R1-5—Urban Water Pricing (A-21)	10.2.1 Urban and Rural Conservation Activities	This has been very effective in the communities that have implemented.
S	3	5	R1-7—Treated Effluent Re-use (A-27)	10.2.1 Urban and Rural Conservation Activities	This alternative has two parts, injection of the treated water or irrigation with the water. Irrigation much easier than injection
Y	4	4	R1-2—Outdoor Conservation Programs (A-18, A-22)	10.2.1 Urban and Rural Conservation Activities	Very effective in some regions and not at all in other regions. We should try and prioritize this in regions not doing it already.
Y	4	4	Conservation incentives (local gov't incentives to conserve)	10.2.1 Urban and Rural Conservation Activities	
S+	2	3	R1-3—Rainwater Harvesting (A-44)	10.2.1 Urban and Rural Conservation Activities	There are some prohibitions on this (can't harvest from land, but any roof capture is allowed – stormwater runoff belongs to the state). Change the name of this alternative to clarify that this is rooftop harvesting so that it is not in conflict with ISC or EPA). Particularly not effective for large parking lots or commercial locations
N	1	1	R1-6—Greywater Reuse (A-24)	10.2.1 Urban and Rural Conservation Activities	Not cost effective for home owners to do run the double plumbing needed. Then additional cost to treat the water makes it even more costly
Y	5	1	R1-8—Growth of Parks and Golf Courses	10.2.1 Urban and Rural Conservation Activities	This was written such that water use on golf courses and parks be reduced by 80%. This has been effective and done in many places, or limited growth of new parks.
Y	3		R1-1—Establish a Domestic Well Policy (A-61)	10.2.1 Urban and Rural Conservation Activities	SC agreed that the issue is important and public education has increased, but since it is not enforced it has not had the successful impact it could have. The policy is good and the SC likes it, just needs more enforcement. Reducing domestic wells from 3 acre-ft to 1 ac-ft often had little effect since most people didn't use 3 ac-ft domestically (unless they were actually irrigating land with this right)
Y	5		R1-4—Conversion to Low Flow Appliances (A-18)	10.2.1 Urban and Rural Conservation Activities	
			R1-9—Recognize Urban and Economic Vitality in the Region (Goal D)	10.2.1 Urban and Rural Conservation Activities	**GOAL**
N	1	5	R2-1—Adjudication and Water Rights Settlement (A-71)	10.2.2 Water Resources Planning and Management	Consensus that this was important, but not happening.
Y	4	5	R2-2—Conjunctive Use Management (A-144)	10.2.2 Water Resources Planning and Management	Surface water/ground water distinction – ABQ has seen great response to this – water table increasing since GW pumping has decreased.
Y	2	5	R2-3—Funding Source for Water Activities (A-59, A-58)	10.2.2 Water Resources Planning and Management	Dedicated and reliable funds for water projects - This created the Water Trust Board – but there is disagreement over how effective this has been.
N	1	5	R2-4—Elephant Butte Loss Accounting (A-51)	10.2.2 Water Resources Planning and Management	Evap losses from Elephant Butte is actually part of the Socorro region water balance – but since this is a basin wide issue, it also concerns this region. This is a limitation of region based planning. This alternative included surfactant to reduce evap, etc. move storage north. Lots of group uncertainty over this alternative – this isn't dealing with reducing losses, but just increasing accounting on losses.
Y	3	5	R2-6—Water Resource Database (A-73)	10.2.2 Water Resources Planning and Management	
S	3	5	R2-7—Watershed Management Plans (A-66, A-33)	10.2.2 Water Resources Planning and Management	Laura McCarthy work on this issue is important – watershed management is good for fire protection (and less devastating impacts from fire runoff). Lacking funding. More science is needed (ISC has 5 yr Santa Fe study on this that is ongoing).
S /	3	5	R2-9—Storm Water Management Plans (A-34)	10.2.2 Water Resources Planning and Management	This is very effective in ABQ but not in other regions but there was discussion that this wasn't helping other areas such as Valencia County etc.
S	2	4	R2-5—Active Administration (A-143)	10.2.2 Water Resources Planning and Management	
N / S-	3	4	*Soil and Vegetation Management (A-33)*	10.2.2 Water Resources Planning and Management	

MRGRWP Steering Committee Recommended Strategies

Project Complete Y = Yes N = No S = started	Effectiveness 1 = not effective 5 = very effective	Priority 1 = low priority 5 = high priority	Alternative name	Category (Chapter 10 Section)	Steering Committee Discussion Comments
Y	2	4	R2-8—Comprehensive, Integrated, and Continued Water Planning (A-53)	10.2.2 Water Resources Planning and Management	
S	2	4	R2-10—Cooperative Regional Water Management (A-67)	10.2.2 Water Resources Planning and Management	Mechanism to create larger programs by pooling resources (disagreement over priority on this one – some people think this will never happen)
S	1	4	R2-11—Water Banking (A-67A)	10.2.2 Water Resources Planning and Management	The conservancy has a water bank. It won't help until adjudication is finished.
S	1	3	R2-12—Land Use Management and Planning (includes Growth Management A-52, A-30, In-fill Density A-28, and Conjunctive Management A-144)	10.2.2 Water Resources Planning and Management	Water use restrictions based on type of development. Plans can be too small in reach, not covering a large enough community/area/region
Y			Regional Water Planning Program (A-58)	10.2.2 Water Resources Planning and Management	
S	2	5	R3-1—Measure All Water Uses (A-7, A-8, A-73)	10.2.3 Water Monitoring and Measurement	On-farm measurement not complete, but other uses are pretty well metered. Retrofit existing infrastructure a high priority. We need data to manage the supply and understand use.
N	2	5	R4-3—Establish a Local Marketing Infrastructure (A-11)	10.2.4 Agriculture	Current alt focuses on low water use crops, which is not very feasible. A regional sorting shed needed to bring small AG members to come together would be more effective. Feasibility studies are already done.
Y / N dirt ditches	2	3	R4-1—Upgrade Agricultural Conveyance Systems (A-9)	10.2.4 Agriculture	Lining ditches reduces recharge to the shallow aquifer (so water can be gained, but the cost is high for some)– more analysis is needed to determine benefits (see work by Oad and Kristof). Some turnout upgrades have happened for MRGCD.
Y	5	3	R4-2—Level Irrigated Fields (A-10)	10.2.4 Agriculture	85% of fields over 2 acres have been laser leveled (possibly more). More affordable technology
N	2	3	R4-4—Acequia Efficiency Programs (A-60)	10.2.4 Agriculture	
			R4-5—Recognize Agricultural Traditions in the Region (Goal C)	10.2.4 Agriculture	**GOAL**
Y	3	4	R5-1—Mitigate Septic Tank Impacts (A-26, A-47)	10.2.5 Water Quality	Valencia County study (Master plan) looked at these impacts. Homes with septic have increased inspection (Bern. Co. and NMED regulations). Started in Bern. Co. but not in the other counties or in rural areas (where it is not appropriate)
Y	4	4	R5-2—Improved Water Quality Sampling and Testing (A-47)	10.2.5 Water Quality	Stormwater monitoring has increased. River water quality monitored for ESA/BO. Reporting this monitoring could be improved in a consolidated place for the different entities
Y	4	4	R5-3—Protect Water from Contamination (A-47, A-50-*Well Head Protection*)	10.2.5 Water Quality	Improved reporting would be helpful for the AG community. Sediment is also a contaminant concern that can be often overlooked in testing and reporting
S	1	4	R6-1—Riparian Habitat Restoration (A-1, A-2)	10.2.6 Bosque and Other Riparian Habitats	1,000 acres of 30,000 have been restored (creating minnow habitat). Bosque del Apache has been seeing improvements in available water with non-native removal
S	3	4	R6-3—River Restoration (A-63)	10.2.6 Bosque and Other Riparian Habitats	Restoring natural flow patterns, flood banks, etc. Lot of ESA work has happened towards this.
S	2	3	R6-2—Constructed Wetlands (A-36)	10.2.6 Bosque and Other Riparian Habitats	Valle del Oro project and other projects in Metro ABQ, but not happening in other areas. C
			Vegetation Removal Products	10.2.6 Bosque and Other Riparian Habitats	Create market for removed material
			R6-4—Recognize the Importance of Healthy Native Ecosystems of the Rio Grande and its Tributaries (Goal B)	10.2.6 Bosque and Other Riparian Habitats	**GOAL**
N	1	4	R7-1—Implement Upstream Surface Water Storage (A-45)	10.2.7 Water Storage to Reduce Evaporative Losses	Reauthorize reservoir storage. Utton center study from 5-7 years ago looked at this (but not favorable). Lots of red tape to implement this, can't build new reservoirs. Favorable idea, but difficult to implement

MRGRWP Steering Committee Recommended Strategies

Project Complete Y = Yes N = No S = started	Effectiveness 1 = not effective 5 = very effective	Priority 1 = low priority 5 = high priority	Alternative name	Category (Chapter 10 Section)	Steering Committee Discussion Comments
Y	4	4	R7-4—Water Modeling (A-38, A-143, A-144)	10.2.7 Water Storage to Reduce Evaporative Losses	URGWOM
S	2	3	R7-2—Implement Upstream Aquifer Water Storage (A-46)	10.2.7 Water Storage to Reduce Evaporative Losses	Aquifer storage is happening in several places, but not neccesarily upstream
S	2	3	R7-3—Implement Aquifer Storage and Recovery for Drought (A-46)	10.2.7 Water Storage to Reduce Evaporative Losses	Take surplus surface flows and inject. The wording of “Drought” and “Upstream” are misleading on these alternatives.
N	1	1	R8-1—Develop New Water Supplies through Desalination (A-39)	10.2.8 Desalination and Transfer of Water	Sandoval Co. investigated this option, but it was not economical
N	1	1	R8-2—Investigate the Potential for Importing Water (A-69)	10.2.8 Desalination and Transfer of Water	
Y	5	1	R8-3—Undeclared Water (A-39, A-69, A-143)	10.2.8 Desalination and Transfer of Water	This was done
Y	4	4	R9-1—Develop a Water Education Curriculum for Schools (A-56)	10.2.9 Public Education	ABQ and Rio Rancho has good progress on this, more needed in other communities
Y	4	4	R9-2—Implement Adult Public Education Programs	10.2.9 Public Education	
N	1	1	*Weather Modification (A-42)*	10.2.9 Public Education	
S	0	0	*Vegetation Management (A-40)*	10.2.9 Public Education	*Duplication of other alts*

Emails from Elaine Hebard

From: Elaine Hebard [mailto:ehebard@yahoo.com]
Sent: Monday, July 06, 2015 12:27 PM
To: Roth, Frank J.; Stomp, John M.; Yuhas, Katherine M.; David Jordan
Subject: Re: Review of water resources planning scenarios

Hello,

I have two, hopefully quick, questions.

In the materials, can be found the quote, "The Working Reserve is projected to grow until 2035-2040 due to conservation, the Drinking Water Project and other actions." Further, it says that the "Working Reserve set at full in 2035 – 2040." The graphic with the working and safety reserves shows a substantial portion of the predevelopment level has been dewatered. While I understand that you're still working on the quantification, my question is, what is "full"?

My second question is with respect to the "Triangle" and base case scenario. Both show pumping to be about 25 kaf. Since it is roughly double that amount, why is pumping so depicted in the graphics?

Thank you in advance for your response.

Elaine

From: Elaine Hebard <ehebard@yahoo.com>
To: "Roth, Frank J." <FRoth@abcwua.org>; "Stomp, John M." <JStomp@abcwua.org>; "Yuhas, Katherine M." <kyuhas@abcwua.org>; David Jordan <djordan@intera.com>
Sent: Tuesday, June 23, 2015 12:33 AM
Subject: Re: Review of water resources planning scenarios

Dear all,

Thanks very much for my very own private briefing! I didn't expect that, thinking that the two TCAC members who missed the June meeting would meet with us four new members at the same time.

That said, I have a basic question about the supply / demand scenarios. I understand that the two supplies are surface water and groundwater, and that because of the use of the former (and conservation), the need to obtain new supplies has been extended. The difference in results is due to the amount of surface water available. Such a result is admirable!

My question is about the groundwater supply. Is that being defined as the 155,000 af of water permits that the ABCWUA was granted by the OSE?

If not, what is the definition of the groundwater supply? Or, if so, then the cost analysis should include the water rights which will be necessary to offset river depletions, right? Given that the ABCWUA did not have sufficient water rights and return flow credits in 2014 to offset depletions, I don't understand how the ABCWUA won't need to purchase water rights until some 20 years hence, or ever as was mentioned today.

One of the assumptions used in both Lee's analysis and the model is that the Working Reserve is projected to grow until 2035-2040. While this appears to be an important assumption, I don't understand how it was determined. I think that it would be helpful to explain such assumptions to the TCAC.

I know that you have been running various scenarios, but wondered if even lower demand projections have been modeled? What does it look like if gpcd is dropped to 125 or 100? I asked about the source

of the projections because the ISC has prepared ones for the region which differ from MRCOG and GPS (BBER).

Bernalillo County Population Projections

	2010	2020	2030	2040	2050	2060
GPS	662,564	780,244	886,564	970,371		
MTP	675,548			987,080		
ISC High	656,267	745,322	846,835	926,946	1,010,371	1,096,253
ISC Low	656,267	721,894	779,645	834,220	884,274	928,487

Sources
GPS = New Mexico County Population Projections July 1, 2010 to July 1, 2040, Geospatial & Population Studies Group, UNM. Released November 2012.
MTP = Futures 2040 Metropolitan Transportation Plan, Table EX-1: Population Projections by County, 2040 MTP Trend Scenario (2012 rather than 2010)
ISC - ISC / Poster Enterprises,
2014

Finally, I know that you've run a long-term drought scenario but it wasn't clear from these materials how that fits in with the low supply/high demand scenario. Or does it?

And last but not least, the attached includes the citation for the water balance from the California Update which I mentioned (as well as my attempt to turn it into one for the MRG using Dr. Thomson's data).

Thanks again,

Elaine

Response to Elaine Hebard Emails

Response to Elaine e-mail dated June 23, 2015

Paragraph 2 regarding supplies available

There are at five different supplies that the Water Authority as follows:

1. Ground Water
2. Surface Water – DWP
3. Surface Water - Non-potable
4. Industrial Effluent non-potable reuse
5. Municipal Effluent non-potable reuse

Paragraph 3 regarding ground water supplies

The ground water supply is the aquifer and the amount that is pumped varies from year to year to a maximum of the permitted amount of 155,000 acre-feet in a year.

Paragraph 4 regarding the need to purchase additional native water rights

The depletions caused by ground water pumping are required to be offset with return flows, native water rights or release of San Juan-Chama water. The release of San Juan-Chama water last year was part of the amount the Water Authority was required to store in advance of the DWP coming on-line. In other words, the release was planned for and required by the OSE to provide as offsets and the Water Authority set aside 120,000 acre-feet for that purpose.

The amount of water rights needed depends on the amount of return flow, native water rights and the availability of San Juan-Chama water for a given year. Over the last six years since implementation of the DWP, the amount of river effects has reduced more than 10,000 acre-feet per year and will continue to reduce over time such that return flows along with existing native rights will be sufficient to offset the depletion that year.

Paragraph 5 regarding the working reserve

The working reserve has been determine using the OSE model simulations of the aquifer rising over time. John Shoemaker or Greg Gates can provide more insight into the workings of the OSE model and how this has been determined. We can have more of a discussion at the upcoming TCAC meetings.

Paragraph 6 regarding water conservation scenarios

We have used the 135 gpcd current usage/goal at the water conservation figure for the baseline. All additional savings due to a new water conservation target will be compared to this so as to show what the savings and impact on future needs.

Paragraph 7 regarding drought scenario

Yes, long-term drought was included from the Bureau assessment.

Response to Elaine e-mail dated July 6, 2015

Paragraph 2 regarding working reserve

Full as it relates to the gas tank analogy is depicted to be the estimated level at which the amount of recharge that is projected to continue from implementation of the DWP through 2035-2040. It may correlate in the model to a specific elevation in the aquifer, but we will be using the actual levels in the aquifer as a means to show how it will go up and down into the future. The ground water monitoring network completed in cooperation with the USGS along with the Water Authority's wells will be the method in which aquifer levels will be determined annually. We have more work to do on this.

Paragraph 3 regarding base case ground water pumping

The ground water shown on the 1997 and again in the 2007 graphic is supposed to be around 50,000 to 60,000 acre-feet which is what was determined to the amount of recharge that is induced from the Water Authority's pumping. It was meant to be a long-term average and not a specific year in particular but also to show when additional supplies would be needed. I don't know where you see the 25,000 acre-feet figure.