

Save Medina Lake

committee review with

Castroville Chamber of Commerce

November 3, 2015



SETTING THE STAGE,

**SAVE MEDINA LAKE IS NOT CHALLENGING
BMA'S WATER RIGHTS, GRANTED BY THE
STATE OF TEXAS, AUTHORIZING ~20,000
ACRE-FEET/YEAR FOR MUNICIPAL PURPOSES
AND ~46,000/YEAR ACRE-FEET FOR
IRRIGATION PURPOSES.**

**NOR CHALLENGING THE NEED TO MAINTAIN
A REASONABLE RIVER FLOW.**

WHO IS SAVE MEDINA LAKE?

2 years ago, a group of concerned citizens formed the Save Medina Lake committee (SML) as part of Medina Lake Conservation Society.

The fundamental question of the committee was:

Why was Medina Lake drained from 2007 to 2013, while all comparable lakes in Central Texas were not?

Today the SML committee has almost 12,000 followers on Facebook and receives over 100,000 views on many of our posts.

We are well on our way in gathering 10,000 signatures on a petition supporting our efforts.

Surface water in Texas is owned by the state and held in trust for the citizens of the state.

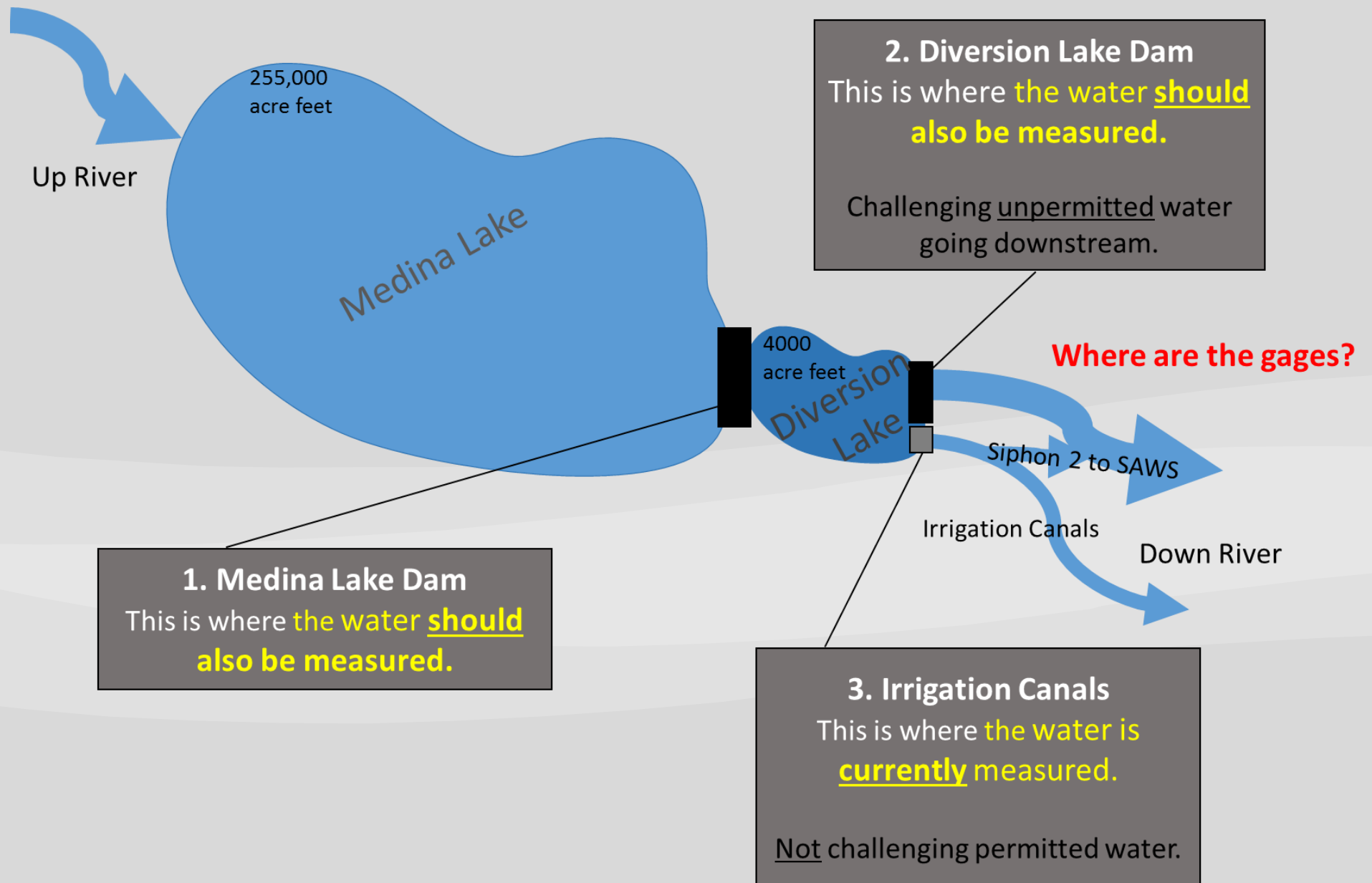
*Texas Water Code, Chapter 11,
Subchapter B*

It is our democratic right to seek influence over how the water in Medina Lake is managed.

SAVE MEDINA LAKE CONCLUSIONS

- Data analysis proves that the reason Medina Lake was drained in 2013, and not just low as other lakes in the region, is because the valve(s) at Medina Lake were not managed and were left open. The lake was drained from 100% in 2007 to 25% in 2009 to 6% in April 2013.
- The management of Medina lake has essentially not changed since the lake was built 103 years ago. Despite significant population growth, and thousands of people depending on the lake, there is NO insight or transparency. Even worse, absolutely NO data exist or is made available to the public.

There is NO public
insight into how Medina
Lake, one of the most
significant Aquifer
recharges is **MANAGED**



MEDINA LAKE DAM ISSUES

The Medina Lake Dam valve(s) were left open until April 2013 releasing a significant amount of water each year.

Although a governmental body, there is no transparency to BMA's operations.

- Medina Lake Dam valves are unmetered. No one, including BMA knows how much water is actually released from Medina Lake.
- BMA does not keep operational records on how the dam is managed.
- Unlike other water authorities, BMA does not have a website publicizing basic operational data.

BMA has not met the requirements in their Water Conservation Plan. See the next slide.

The current Drought Contingency Plan fails to consider the fact that the water released from Medina Lake dam is not measured.



BMA'S WATER CONSERVATION PLAN

MEASURE #3 | IMPROVE METERING OF WATER

Install additional meters at Medina Dam and Diversion Dam and along all major canals **to measure water in storage** and **water released** into BMA canal system. Install meters at each individual irrigator's check dam and/or turnout to measure water delivered to each individual user

Date Begin	2007		Target Date	2017
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- Medina Dam. Only 1 meter has been installed by USGS in 1999 to measure water in storage, ie. BEFORE the 2007 plan. **NO additional METER(s) INSTALLED TO MEASURE WATER RELEASED.**
- Diversion Dam. Only 1 meter to measure water released. **NO additional METER(s) INSTALLED TO MEASURE WATER STORAGE.**

DESPITE THIS, BMA CLAIMS MEASURE #3 has been completed!

MISSING WATER 2007 THRU 2009 – ESTIMATE BASED ON AVAILABLE DATA

Medina Lake should have been full vs. 2/3 full in 2010 at the start of the drought.

BMA's actions starting in 2007 led to an empty lake by 2013.

Lake Volume Changes over 2 years Nov 15, 2007 - Nov 14, 2009		
Volume in Acre Feet		Data Source
254,000	Nov 15, 2007 Water Volume	-USGS. http://waterdata.usgs.gov/tx/nwis/uv/?referred_module=sw
-80617	BMA and SAWS permit withdrawal	TCEQ Open Public Records request by LAMCOS.
-73,992	Aquifer Recharge	ATTACHMENT 2. USGS Scientific Investigations Report 2004-5209. Page 1, paragraph 6. Average 3083 acre ft/month recharge rate.
-54,000	Evaporation	ATTACHMENT 2. USGS Scientific Investigations Report 2004-5209. Page 23, Table 3. Average 74 acre ft/day evaporation rate.
139,500	InFlow	-USGS. http://waterdata.usgs.gov/tx/nwis/uv/?referred_module=sw -Measured at the USGS Pipe Creek gauge located on Medina River near the upper end of the lake -Conservative estimate based on 1 inflow. Meters do not exist on other inflows.
-121,891	Unexplained water loss for the 2 year period - Nov. 15, 2007 - Nov. 15, 2009	
63,000	Nov 14, 2009 Water Volume.	-USGS. http://waterdata.usgs.gov/tx/nwis/uv/?referred_module=sw
NOTE: No rainfall on the lake or rainfall events from streamflow were added to this calculation.		

MEDINA LAKE MANAGEMENT - HOW MUCH WATER CAN THEORETICALLY BE RELEASED FROM MEDINA LAKE?

36" Valve						
Lake % Full		100%	80%	60%	40%	20%
Gallons per Minute		265,491	251,867	234,141	211,284	172,513
Acre Feet per Minute		0.81	0.77	0.72	0.65	0.53
Acre Feet per Year	Valve 100% open	428,145	406,245	377,410	340,545	278,130
	50% open	214,073	203,123	188,705	170,273	139,065
	25% open	107,036	101,561	94,353	85,136	69,533

Note: This estimate was calculated using the manufacturer valve specifications and assumes the top of valve piping is at 974'. Accuracy is +/- 15% for unknown factors.

09/18/2015. Acre Feet per Minute calculation updated.

No records exist on how much water is actually released.

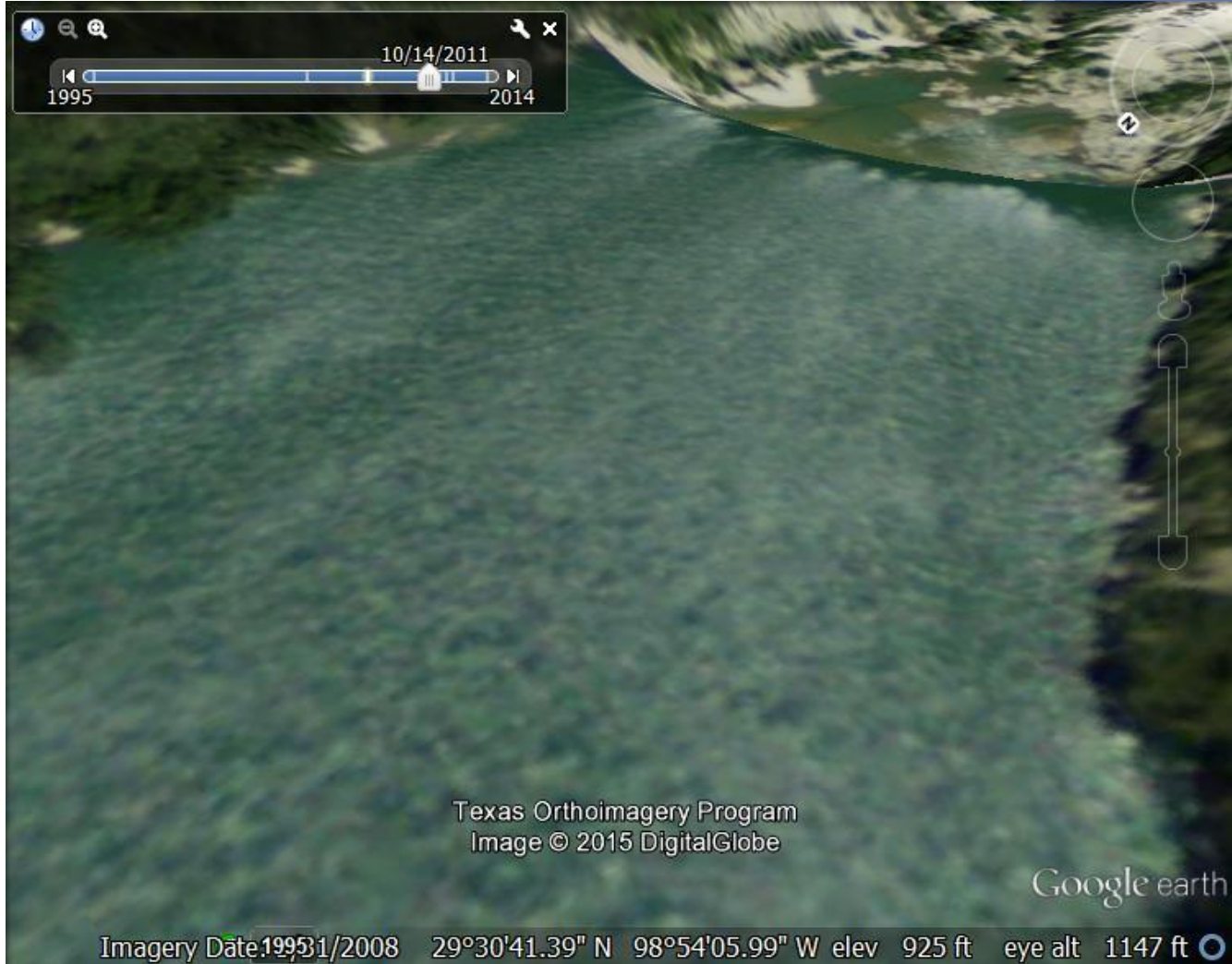
Over 200,000 acre feet can be released in 1 year from the smallest valve @ 50% open.

WATER DELIVERY EFFICIENCY FOR IRRIGATION

Amount of water available for irrigation is exponentially affected by Diversion Lake level.

Water Delivery Efficiency from Medina Lake into Canal System				
36" Valve				
If the valve is opened		25%	50%	Data Source
AND Diversion Lake is maintained at		913.5'	918.5'	
Daily (Acre Ft)	Discharge from Medina Lake	268	537	Theoretical Outflow Volume Capacity Medina Lake Dam
	Recharge loss into Aquifer from Diversion Lake	-70	-400	2007 URS Corporation report on Estimated Recharge to Edwards Aquifer from Diversion Lake
	Evaporation loss from Diversion Lake	-18	-18	25% of evaporation rate for Medina Lake. USGS Scientific Investigations Report 2004-5209. Page 23, Table 3. Average 74 acre ft./day evaporation rate.
	Discharge into Canal System	180	119	
	Water delivery efficiency	67%	22%	

MISMANAGEMENT – MAINTAINING DIVERSION LAKE NEAR OR OVER TOP OF DAM DURING THE DROUGHT PERIOD **SOURCE: GOOGLE EARTH**



**Diversion Lake
Dam
10/14/2011**

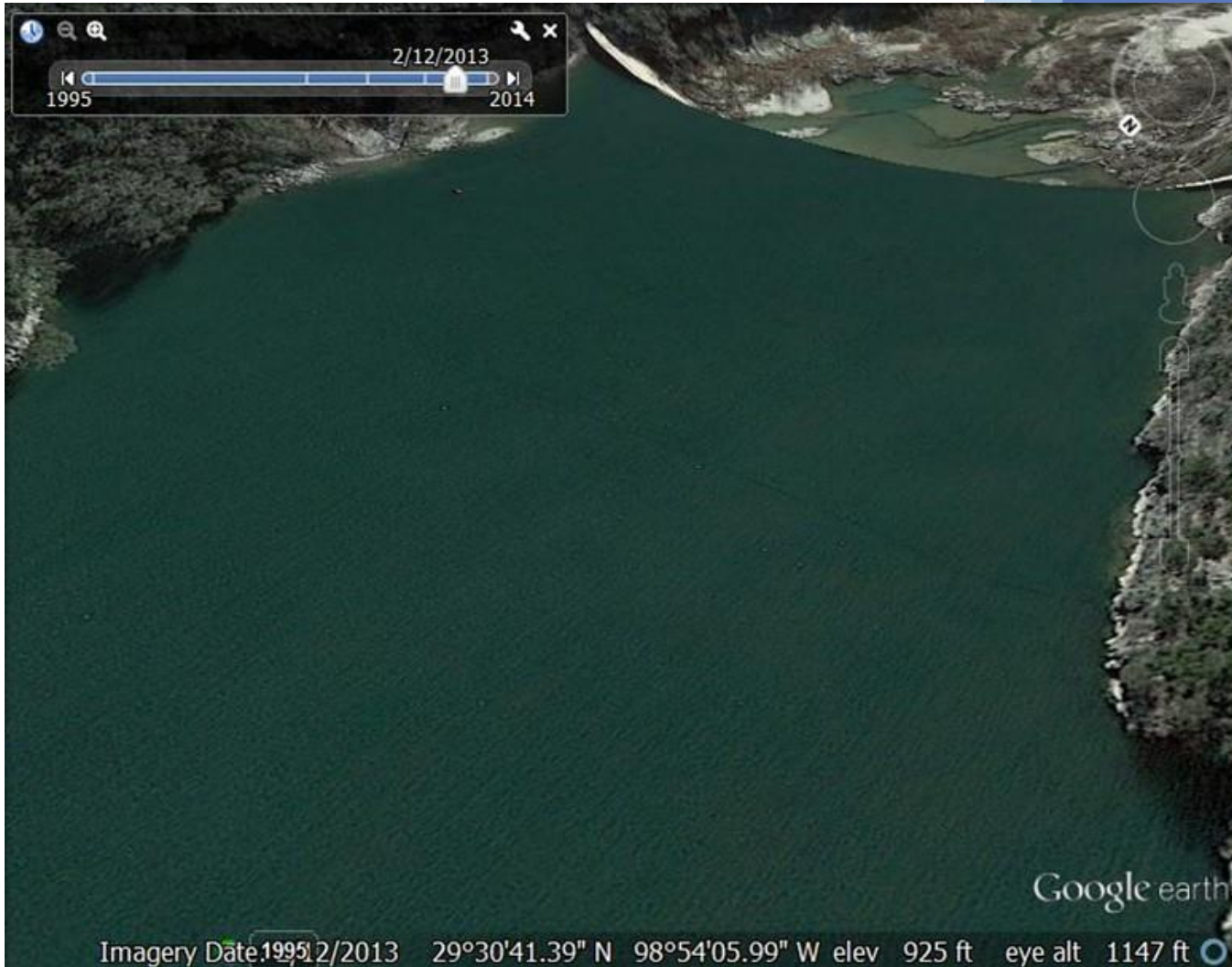
MISMANAGEMENT – MAINTAINING DIVERSION LAKE AT A HIGH LEVEL DURING THE DROUGHT PERIOD **SOURCE: GOOGLE EARTH**



**Diversion Lake
Dam
11/07/2012**

**6 months before
shutting valves
on Medina
Lake**

MISMANAGEMENT – MAINTAINING DIVERSION LAKE AT A HIGH LEVEL DURING THE DROUGHT PERIOD **SOURCE: GOOGLE EARTH**

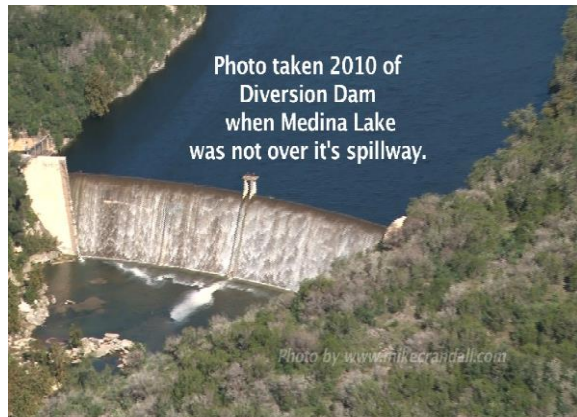


**Diversion Lake
Dam**

02/12/2013

**5 weeks before
shutting valves
on Medina Lake
Dam.**

MISMANAGEMENT – WATER OVER TOPPING DIVERSION DAM



Water overtopping Diversion Dam on 3 different dates. This should never be normal operations except during floods.



WHO DRAINED THE LAKE?

- BMA left the Medina Lake valve(s) open until April 2013, draining the lake to 6%.
- Photos and data we have indicate that Diversion Lake has been maintained at a high level which is why it frequently overtopped the dam.
- Even in the worst of the drought after the farmers were cut off from water (September 2012), Diversion Lake was maintained at a high level which resulted in Medina Lake being drained.
- According to BMA's own engineering studies approximately 10,000acft is lost every month when Diversion Lake is kept at the 918 level instead of BMA's target level of staying between 910 and 913.5 feet.
- Water was diverted to SAWS 1st quarter of 2013 (6 months after the farmers last received water), even though SAWS did not want the water.
- **Contractually**, the farmers have priority over SAWS to receive water. Income from SAWS provides the majority (\$2.5MM out of \$3MM in 2014) of BMA's revenue.
- The farmers and local community suffered for years, while the water level in Diversion Lake was kept significantly above BMA's own targets.

MEDINA LAKE SOLUTIONS

Bring transparency to BMA's operations. BMA should establish a website (after all it is 2015) and publicize key data important for the local community and irrigators.

Per BMA's Water Conservation Plan, install flow meters on Medina Lake dam valves to determine amount of water released. Install a surface level meter on Diversion Lake to ensure level is maintained between 910 and 913.5 feet.

Manage & operate the dam valves to only release enough water for the permits and always make sure the water level in Diversion lake is kept below 913.5 feet.

Develop a reasonable drought contingency plan that establishes a water conservation level that effectively recharges the aquifer, maintains a reasonable river flow, and does not allow draining the lake dry.

Require BMA to maintain operational records and file with the state.

DIVERSION LAKE DAM SOLUTIONS

Always operate Diversion Lake so the water level never exceeds 913.5 feet except during flood conditions.

Install surface level meters on Diversion dam valves to determine amount of water stored and released.

— **already covered in previous**

Keep Diversion dam valves closed, unless in flood stage.

When Diversion Lake is at 913.5 feet the flow downstream is healthy even when the valves are closed.

HOW CAN YOU HELP?

- ✓ Assist with making sure TCEQ ensures that BMA follow their own Water Conservation plan, and install meters.
- ✓ Help us achieve more insight and transparency. This is 2015. Tens of thousands of people benefit from the lake... Irrigators, local communities and businesses, recreation users, schools and county services (property taxes).
- ✓ Identify Stakeholders to partner with Save Medina Lake for improved management of lake.

The background features a solid red border at the top and bottom. Between these borders, the background is white. A series of overlapping, wavy, horizontal bands of blue color sweep across the middle of the slide, creating a sense of movement. The bands vary in opacity, with the bottom-most band being a solid, darker blue and the upper bands becoming progressively lighter and more transparent. Centered within the dark blue band is the text "Thank you!" in a white, sans-serif font.

Thank you!