TRUCKEE MEADOWS WATER AUTHORITY
DRAFT MINUTES OF THE FEBRUARY 17, 2016
MEETING OF THE BOARD OF DIRECTORS

The Board of Directors met on Wednesday, February 17, 2016, at Sparks Council Chambers, 745 4th Street, Sparks, Nevada. Chair Martini called the meeting to order at 10:02 a.m.

1. ROLL CALL

Members Present: Jenny Brekhus, Naomi Duerr, Vaughn Hartung, Jeanne Herman, Neoma Jardon Geno Martini, and Ron Smith*.

A quorum was present.

Member Smith left at 10:28 a.m.

2. PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Member Herman.

3. PUBLIC COMMENT

There was no public comment.

4. APPROVAL OF THE AGENDA

Member Duerr stated agenda item #12 was addressed through Michael Pagni's, TMWA Legal Counsel, staff report and requires no further discussion.

Upon motion by Member Duerr, second by Member Jardon, which motion duly carried by unanimous consent of the members present, the Board approved the agenda with the proposed amendment.

5. APPROVAL OF THE JANUARY 20, 2016 MINUTES

Upon motion by Member Hartung, second by Member Jardon, which motion duly carried by unanimous consent of the members present, the Board approved the January 20, 2016 minutes.

6. DISCUSSION AND ACTION ON ADOPTION OF RESOLUTION NO. 237: A RESOLUTION DESIGNATED BY THE SHORT TITLE "2016 REFUNDING BOND RESOLUTION" AUTHORIZING THE ISSUANCE BY THE AUTHORITY OF ITS "TRUCKEE MEADOWS WATER AUTHORITY, WATER REVENUE REFUNDING BONDS, SERIES 2016," FOR THE PURPOSE OF DEFRAYING WHOLLY OR IN PART THE COST OF REFUNDING CERTAIN OUTSTANDING BONDS; PROVIDING THE FORM, TERMS, AND CONDITIONS OF THE BONDS AND THE SECURITY THEREFOR; PROVIDING FOR THE COLLECTION AND DISPOSITION OF REVENUES DERIVED FROM THE OPERATION OF THE AUTHORITY'S WATER SYSTEM; PLEDGING SUCH REVENUES TO THE PAYMENT OF THE BONDS; PROVIDING OTHER COVENANTS, AGREEMENTS, DETAILS AND OTHER MATTERS RELATING THERETO

Jeff Tissier, TMWA Chief Financial Officer (CFO), introduced the financing team: Jennifer Stern and Ryan Henry, Bond Counsel with Sherman & Howard, and Thomas Toepfer, Financial Advisor with Public Financial Management, who serves as TMWA's independent financial advisory firm. Mr. Tissier noted we have a good opportunity for significant savings. TMWA received defeasance calculations prepared by senior book runner Morgan Stanley, which indicates TMWA may have $28 million in gross savings on $148 million in bonds to be refunded. The net present value of the savings are approximately $20 million based on existing interest rates.

Member Brekhus asked how Morgan Stanley is doing as an investment bank. Mr. Tissier replied they are doing very well, are well capitalized, and partially owned by Bank of Tokyo.

Member Brekhus pointed out there was not only the $148 million of the 2006 bonds, but we included potentially the $202 million of the 2007s, potentially fixing out tax exempt commercial paper, and potentially pushing out terms of the debt. Mr. Tissier replied that is correct, but the 2007 bonds will not be included. He pointed out the Board will be presented with the 5-year funding plan at the March meeting and reported because of conservation measures and related reduction in water demands, water sales revenues in 2016 are expected to be diminished by $7 million with the likelihood that we may not see any significant rebound in most of the water demands, thereby decreasing unrestricted cash reserves and impairing the cash flow of the organization, which underpins the request for extending out certain maturities of the 2006 bonds.

Mr. Tissier referred to the graph he provided to the Board, showing the maturities of the 2006 bonds and asked the Board permission to extend out some of the maturities.

Member Brekhus asked Ms. Stern how often she sees Bond resolutions written this loose and broad for terms on execution, and the frequency in which negotiated sales are requested. Ms. Stern replied it is quite common to have both the flexibility and negotiated sales, and corrected that it does not include the 2007 or 2015 for refunding it only includes the 2006 bonds and commercial paper for refunding.

Member Brekhus remarked following the merger, staff assured the Board there would not be a need to raise rates and now the Standing Advisory Committee (SAC) has been discussing this topic. Mr. Tissier replied yes, the TMWA SAC discussed it at their last meeting, but in a very general sense.

Mr. Tissier confirmed when they refund the 2006 bonds, we will harvest around $28 million in savings, and due to diminished water sale revenues it has put TMWA into a difficult situation. Mr. Tissier added staff will review and modify the 2017-2021Capital Improvement Plan (CIP) for any nonessential projects, much like we did during the recession, and outline strategies to extend out certain 2006 maturities. If water sale revenues return, TMWA can also aggressively pursue redemptions of commercial paper.

Mr. Tissier, as the outgoing CFO, noted when TMWA asked for conservation goals of 10 percent reduction, our customers responded with 16 to 20 percent reductions, which resulted in much greater reductions in demand, water sale revenues were impaired, and the resulting outcome is significantly reduced revenues putting the organization under fiscal stress if demands do not return. There were a lot of comments (rhetoric) made by other people who do not sit on this board who wanted to see more aggressive conservation and were trying to implore on other people to do more; be cautious of what you ask. This agency knows what it is doing.

Member Jardon disagreed it was just rhetoric; the community going above and beyond was commendable. She understands from the fiscal perspective and concerns it puts on TMWA from an operational perspective, but from a usage standpoint, she hopes the people conserving stay the course during this time of drought. Mr. Tissier appreciated her comments, but this is an example of the sensitivity to the organization when they call for conservation – the communication has to be balanced, because we do not want to have a large rate increase.

Chair Martini responded that we have to be careful with what we ask from the community; ask for conservation and we conserve well but in some way have to pay for it.

Member Hartung noted it was the right thing to do at the time, but the consequence is that it decreased revenues; restructuring the debt in order to offset the loss in revenue is a good thing. Mr. Tissier stressed that it will give us more time to repair the fiscal positon of TMWA.

Member Brekhus commented she takes exception that this will save money in immediate years where cash flow is low, but anytime debt is pushed out it equates to cost in the long term. She would like there to be forefront discussion on the potential of a rate increase at this point. Mr. Tissier replied we will reduce some of our savings, but the flexibility has to come with extending out certain 2006 bond maturities to avoid rate shock.

Mr. Tissier stated she and the Board have to trust him on this recommendation.

Member Brekhus asked if Mr. Tissier will be coming to the Board in the next 6 months asking for a rate increase. Mr. Tissier replied not in the next six months, but will be come back with the 5-year funding plan next month and in the meantime staff will pursue spending reductions operationally as well as in the capital spending with the goal to build financial flexibility back into TMWA. If we don't do this, it will not be a pretty picture.

Member Brekhus mentioned she understands rate setting is part of being on the Board, but would like to know where we are and what is going to happen. Mr. Tissier recommended waiting and seeing what happens with our water sale revenues over the next few months and the impact on the 5-year funding

plan. When the refunding bond sale is completed and savings realized, then we can move forward with an informed decision.

Member Duerr asked since revenues could be cyclical depending on external factors, i.e. the weather, should higher coverage ratios be considered to account for these variables. Mr. Tissier replied they will make those proposals when they present the 5-year funding plan. Mr. Tissier noted it was a Board adopted policy in Aug 2003 that required a 1.50x coverage ratio with developer fees excluded; TMWA's budget is designed to pay operating and maintenance (O&M) expenses, rehabilitative capital projects and our debt service through rates.

Member Jardon asked about the timeline for the refunding, she stated she trusts Mr. Tissier with his recommendations, and he has done a commendable job carrying TMWA through the recession and drought; TMWA is one of the most fiscally prudent organizations in the region. Mr. Tissier replied we are looking to go to market and price on March 22nd, but looking at moving it up since interest rates are favorable. Finally, the financial result of the consolidation of the water utilities was very successful and the current conditions are not due to the consolidation.

Member Hartung said we do not have the cash flow needed, and we need to find a way to get it. Mr. Tissier agreed that is why they do 5-year funding plans.

Mr. Toepfer presented the estimated true interest cost of the proposed refunding at about 3.5 percent, a low rate.

Member Herman noted they also have to consider the assets TMWA holds which are substantial and puts us in a good position.

Member Brekhus said she is reluctantly supporting the motion to approve extending certain maturities of the refunding bonds since the debt is being extended out, but she is not confident and it raises planning questions. Mr. Tissier agreed with Member Brekhus' comments, but it is not a desire rather a necessity.

Upon motion by Member Jardon, second by Member Hartung, which motion duly carried by unanimous consent of the members present, the Board adopted Resolution No. 237, a resolution designated by the short title "2016 refunding bond resolution" authorizing the issuance by the authority of its "Truckee Meadows Water Authority, Water Revenue Refunding Bonds, Series 2016," for the purpose of defraying wholly or in part the cost of refunding certain outstanding bonds; providing the form, terms, and conditions of the bonds and the security therefor; providing for the collection and disposition of revenues derived from the operation of the authority's water system; pledging such revenues to the payment of the bonds; providing other covenants, agreements, details and other matters relating thereto.

7. DISCUSSION AND ACTION ON ADOPTION OF RESOLUTION NO. 238: A RESOLUTION TO APPROVE THE WATERSMART: WATER AND ENERGY

EFFICIENCY GRANT FOR MUNICIPAL LARGE WATER SERVICE METER RETROFIT PROGRAM

Laine Christman, TMWA Resource Economist, presented the proposed water and energy efficiency grant to be submitted to the Bureau of Reclamation (BOR) in order to provide funding for the non-metered multi-family service meter retrofit program. The funding would allow for them to retrofit the meters within a 3-year timeframe as opposed to 5-6 years if we do not receive the grant. Staff has requested the maximum amount of $1 million with a $2.5 million match from TMWA.

Member Hartung inquired about the $1 million grant and TMWA financing $2.5 million, asking if we will regain the funds once the meters have been retrofitted; understanding this is the direction the Board has given, do we know what the water usage is and will there be a benefit to making this switch. Mr. Foree replied no we do not know the water usage, and it is developer funded through the meter retrofit fund which has assets of approximately $1.8 million currently; TMWA rate payers do not pay for this meter retrofit program.

At this point, there was discussion regarding cost savings, benefits, and the amount of water used by multi-family residential customers. It was noted that multi-family residential customers probably do not pay more rather they will pay less. Staff has analyzed water usage and we do not have a lot of information on how much water is used, but anticipate about 30 percent reduction in water usage – projected revenues in 2016 did not look like there would be a significant impact. Mr. Tissier added of the 121,000 service connections, there are only 142 unmetered multi-unit services and it would not really impact revenues.

Member Duerr stated in order to qualify for $1 million grant, BOR perception is this is improving the efficiency of water management and promoting conservation. Mr. Christman agreed.

Andy Gebhardt, TMWA Director of Customer Relations, conveyed there will be 30 percent reduction in usage not revenue; customers will become aware of leaks in order to save water and result in efficient operation of the system.

Member Jardon asked when the grant will be approved. Mr. Christman replied they will know in about one month whether TMWA received the grant.

Member Brekhus inquired if condominiums are included in the multi-family customer class. Mr. Gebhardt replied yes, if it is one service connection to multi-properties. She confirmed developer fees pay for this retrofit program. Mr. Gebhardt replied developers pay a meter retrofit fee to retrofit old systems per acre foot of demand. Mr. Erwin added since 1989, legislation imposed a condition the utility retrofit all flat-rate customers to meters, which retrofit was not to be paid for with funds from then existing customers; developers began contributing cash in lieu of an equivalent amount of water rights for every acre foot of demand for a will-serve commitment. Since 1995 when the program began, approximately $45-50 million has been collected to pay out to retrofit all necessary meter and metering facilities on single-family residences and now it is the remaining multi-family residences.

Member Brekhus asked what TMWA proposes to do with the funds once the program has been completed. Mr. Erwin replied that for the Board to decide – eliminate the fee or change its purpose.

Member Hartung said all of our agencies have inherited issues and this is one of those types of issues, and thanked staff for clarification of the funding.

Member Duerr thanked staff for seeking grant funds so rate payers do not have to pay for its entirety.

Upon motion by Member Hartung, second by Member Jardon, which motion duly carried by unanimous consent of the members present, the Board adopted Resolution No. 238, a resolution to approve the WaterSMART: Water and Energy Efficiency Grant for Municipal Large Water Service Meter Retrofit Program.

8. INFORMATIONAL STATUS REPORT ON THE PUBLIC OUTREACH REGARDING THE SPECIAL USE PERMIT FOR THE MT. ROSE WATER TREATMENT PLANT

John Enloe, TMWA Director of Natural Resources, reported the public outreach efforts made by staff was substantial. Mr. Enloe stated they responded to every call, email and social media post regarding the Mt. Rose Water Treatment Plant and the feedback has been very positive.

Upon inquiry by Member Brekhus regarding continuing with the project since TMWA's fiscal position has changed, who the beneficiaries are, and if TMWA's liability to domestic well owners is a statutory obligation, Mr. Foree responded the project will continue. Mr. Enloe added both domestic well owners and TMWA will benefit. The Board should understand that TMWA has liability, based on the domestic well mitigation program specific to the area the Board adopted at the close of the merger, with domestic well owners and the domestic well mitigation program. If we did nothing and water levels continue to decline, domestic well owners will come to TMWA for assistance.

Member Brekhus stated that since no new policies have been put in place are we seeing any new wells in the area. Mr. Enloe replied if they are in proximity to a water distribution system they are required to hook up, but if they are in areas where there is no distribution system, they are entitled to drill a well.

9. WATER SUPPLY UPDATE

Bill Hauck, TMWA Senior Hydrologist, presented the current status of the Truckee River flows and snowpack levels, and projected precipitation. Please see *Attachment A*.

Member Hartung asked what the elevation at Lake Tahoe is and what TMWA's share of the reservoirs is. Mr. Hauck replied Lake Tahoe is at 6222.1 feet, about 9/10 a foot below of the natural rim, and of all the reservoirs, TMWA owns half the storage rights in Donner Lake and all the storage rights in Independence Lake, and a 2 percent share in Boca Reservoir, but under the Truckee River Operating Agreement (TROA) we are allowed to utilize storage capacity in all the reservoirs, including federally owned reservoirs.

Mr. Hauck confirmed we could have approximately 39,000 acre feet (AF) in storage leading into summer 2016. The latest forecast showed Apr-July runoff is about 102 percent above average. On

November 30, 2015 we had 17,500 AF, but now under TROA the storage account to date from December 1, 2015 has increased 5,162 AF. Currently, we have over 24,600 AF of reserves, a 40 percent increase.

Member Jardon asked about percent increase of projections. Mr. Hauck recapped that we had approximately 27,000 AF going into summer 2015 and this coming summer we will have almost 40,000 AF.

Member Brekhus inquired again the basis for the drought plan is the 8-year drought of record plus one year and within the 9 years where one year the reservoirs fill up, are we in that year now. Mr. Hauck agreed there was one good snowpack year during the 8-year drought period. Mr. Foree added the 'fill' year Member Brekhus is referencing occurred closer to the end of the drought period, but during drought periods the reservoirs may not fill entirely.

Member Brekhus added she is trying to understand at what point in time we are in unchartered waters and what the plan is. She is looking to the 2016-2035 Water Resource Plan for other planning scenarios, which is not obvious.

10. PRESENTATION ON RIVER OPERATIONS UNDER THE TRUCKEE RIVER OPERATING AGREEMENT

Mr. Hauck provided a historical perspective of all parties involved in the implementation of TROA, operations pre- and post-TROA, and the status of drought reserves. Please see *Attachment B*.

Member Hartung asked what the Floriston Rates are and if any fines are levied when they cannot be met. Mr. Hauck replied it remains 400 cubic feet per second (cfs) in the winter and 500 cfs in the summer and no one is fined when rates are not met -- rather the river is then operated under the Doctrine of Prior Appropriation, first in time, first in right.

Member Duerr confirmed drought storage will double over 5-years. Mr. Hauck replied yes, since we are using less than what we are able to store, and it does not turn over since we are still in a drought.

Mr. Hauck confirmed the implementation of TROA impacts the river flows and TMWA's ability to generate power, but we are able to credit store water, which greatly improves our upstream storage amounts.

Member Duerr referred to the water levels plateauing in 15 years in Mr. Hauck's 20-year projection. Mr. Hauck clarified it is plateauing under the hypothetical situation of repeating 2015 hydrology over 20 years that is reflected.

Member Brekhus said assuming TROA is implemented at this time which she is uncertain will occur; the message that can be shared with the public is even if 2015 water year is repeated, the water level in the reservoirs will increase this summer. Mr. Hauck confirmed TROA has been implemented, and that assumption is true because additional storage is spread out in the surface area of the reservoirs. He reiterated running 2015 hydrology back-to-back for the next 20 years is a scenario statistically highly

improbable; he put TROA to the test and the model did not fail, which shows we have a reliable water supply for the 20 year planning horizon even under very extreme drought conditions.

Member Brekhus confirmed the demand assumption of increased demand based on population is per capita water use decreasing. Mr. Hauck replied yes.

Mr. Hauck added the other scenario presented projections using data from the 1987-94 drought, repeated for 20 years (back to back 8 year droughts) yielded better results for drought storage; accruing, and continuing to add, over 80,000 AF of drought reserves.

Mr. Hauck introduced Shane Coors, Principle at Precision Water Resources Engineering and RiverWare modelling consultant for the Bureau of Reclamation for about 15 years, to speak to how the RiverWare model is used to help manage upstream water supplies. RiverWare is the platform for all the water supply planning runs; they built the RiverWare model as it is used today and customized to the Truckee River.

Mr. Coors explained in detail how his company developed the Truckee River model using RiverWare software which not only TMWA uses, but other entities use as well even in other areas such as the Colorado River Basin. He mentioned that RiverWare is a generalized water resources modelling software platform and elaborated on the Truckee River Model as well as the increased operational flexibility of water supply management with the implementation of TROA. Please see *Attachment C.*

Member Hartung asked if they receive data regarding the reservoir elevation. Mr. Coors replied yes, they pull data every day; river flows, stages at reservoirs and snowpack information.

Member Brekhus asked if access to storage is easily accessible unlike on Colorado River and TROA did not take into account groundwater for drought storage. Mr. Coors replied yes, the storage we are referring to is easily accessible and no, groundwater is independent of TROA.

Member Jardon asked what the river flows are expected to be in August. Mr. Hauck replied we would see average Truckee River flows through August, based on the latest forecast.

Chair Martini stated there will be a closed door legal session after we adjourn the meeting.

11. DISCUSSION, POSSIBLE DIRECTION TO STAFF AND ACTION ON THE ADOPTION OF THE 2016-2035 WATER RESOURCE PLAN

Member Duerr recommended, in order to give it the attention it was due, this agenda item be heard in part today and continued onto the next meeting since there was plenty to discuss requiring the Board to fully consider the recommendations and actions prior to approval.

Chair Martini expressed his frustration that at every meeting we are postponing agenda items requiring action because of continuous questioning and interruptions, which does not allow for us to complete the business at hand. He continued this agenda item until the next meeting

Member Brekhus apologized for belaboring topics with her questions, but emphasized she has a responsibility as a member on the Board. Chair Martini noted he did not address any one Board member, but reiterated the point that we are unable to complete our agendas which is disrespectful to everyone.

Upon motion by Member Brekhus, second by Member Jardon, which motion duly carried by unanimous consent of the members present, the Board approved deferring discussion, possible direction to staff and action on the adoption of the 2016-2035 Water Resource Plan to the next meeting.

13. DISCUSSION AND POSSIBLE DIRECTION TO STAFF ON SCHEDULING FUTURE STRATEGIC PLANNING WORKSHOPS AND POSSIBLE TOPICS FOR DISCUSSION AT WORKSHOPS

Mr. Foree referred to the summary report of the Strategic Planning Workshop and deferred to the Board on how they would like to move forward with the items listed in the summary.

Following discussion regarding the outstanding items identified during the Strategic Planning Workshop, it was decided to focus on the 2016-2035 Water Resource Plan at the next meeting and subsequently schedule the remaining items over a course of several meetings to discuss them, and to possibly have a discussion regarding impacts of Storey County in our area as a future agenda item or to schedule a special meeting.

14. GENERAL MANAGER'S REPORT

Mr. Foree referred to the report and would answer any questions.

15. PUBLIC COMMENT

There was no public comment.

16. BOARD COMMENTS AND REQUESTS FOR FUTURE AGENDA ITEMS

Chair Martini apologized for his comments and did not mean to be derogatory, but remains frustrated. However, he takes responsibility as well. He hopes they can make progress in a more timely fashion.

17. ADJOURNMENT

With no further discussion, Chair Martini adjourned the meeting at 12:03 p.m.

Approved by the TMWA Board of Directors in session on _____.

Sonia Folsom, Recording Secretary

Member Smith was present for agenda items 1 thru 6 only.

TRUCKEE MEADOWS WATER AUTHORITY

Quality. Delivered.

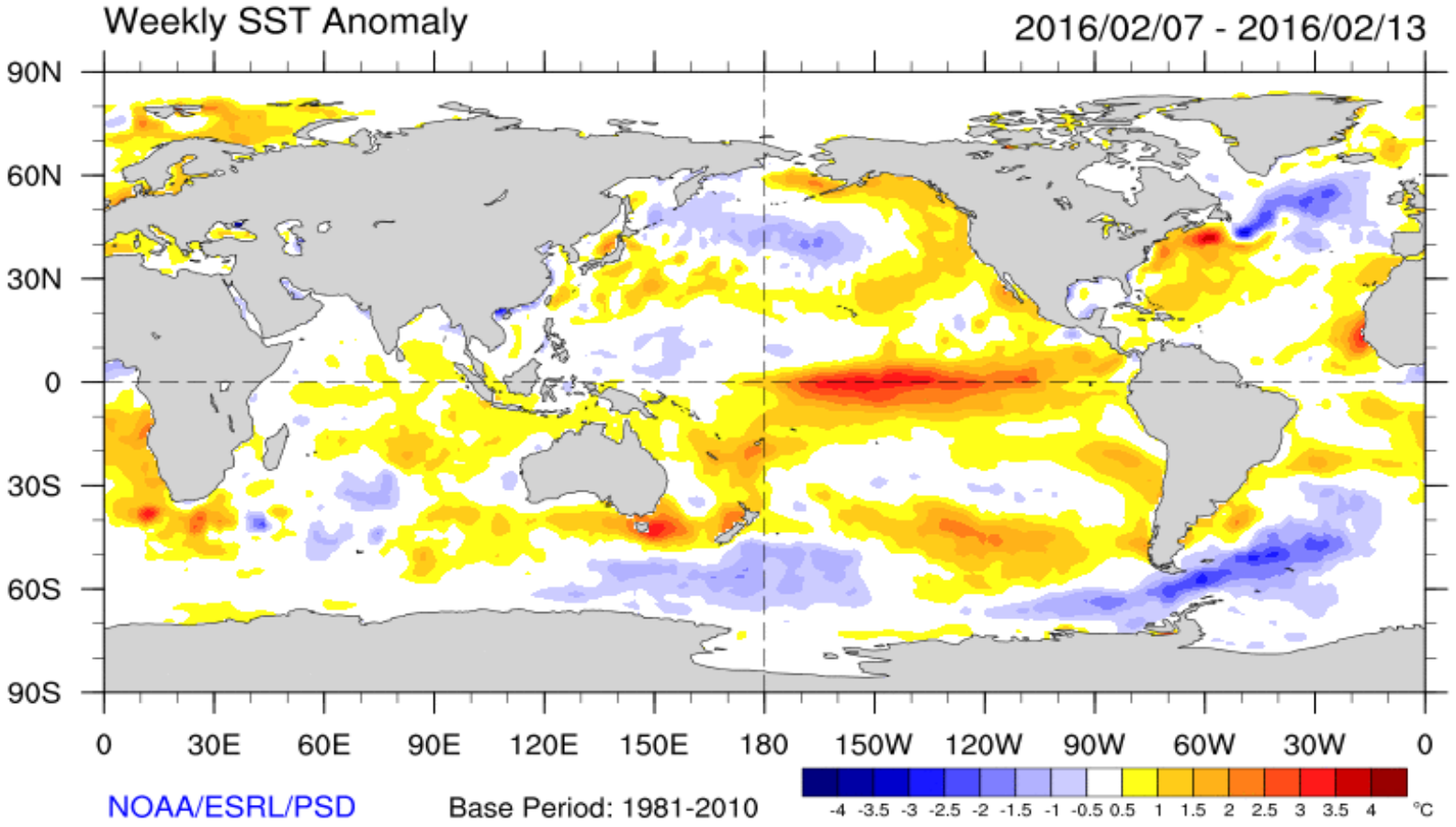
Water Supply Update and Preliminary Forecast for 2016

Bill Hauck, Senior Hydrologist

TMWA Board of Directors Meeting

February 17, 2016

Strong El Nino Pattern Continues



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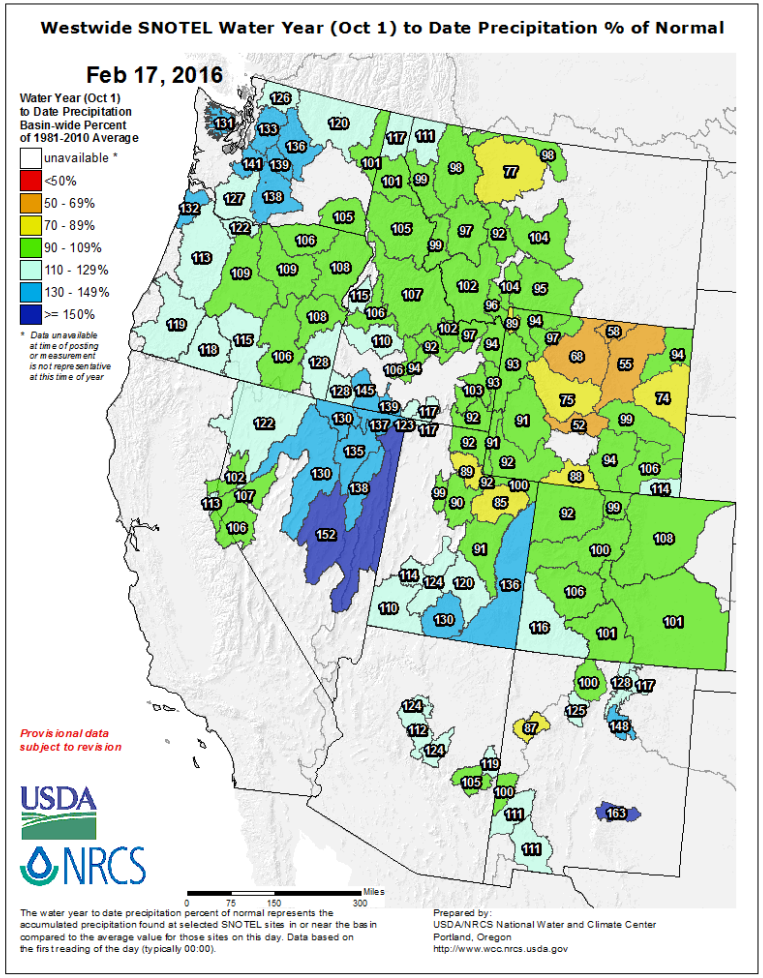
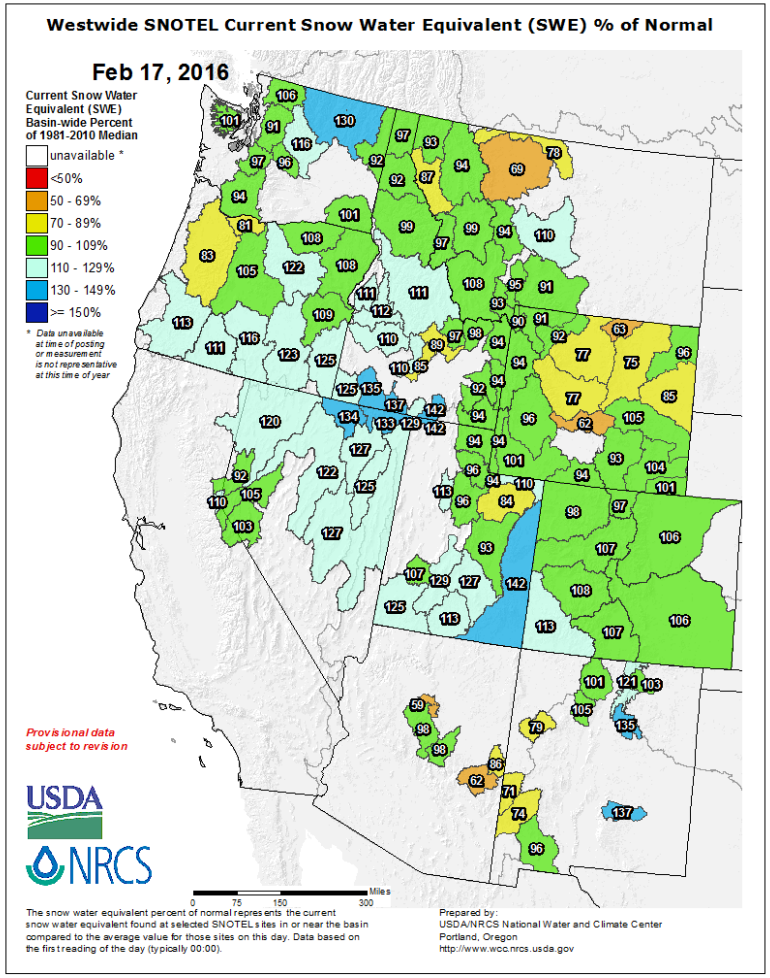
Quality. Delivered.

Sierra Nevada Snowpack Conditions





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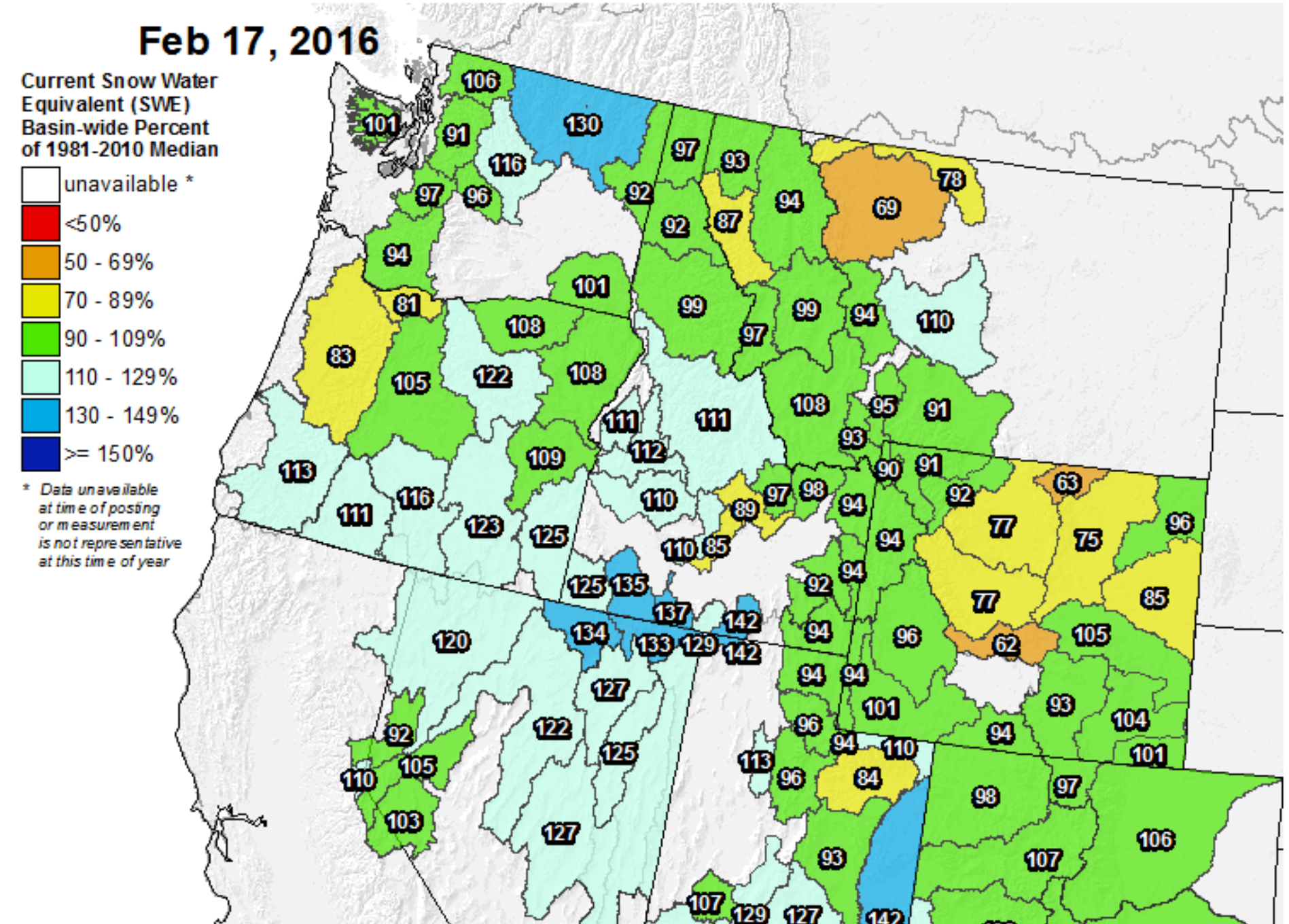
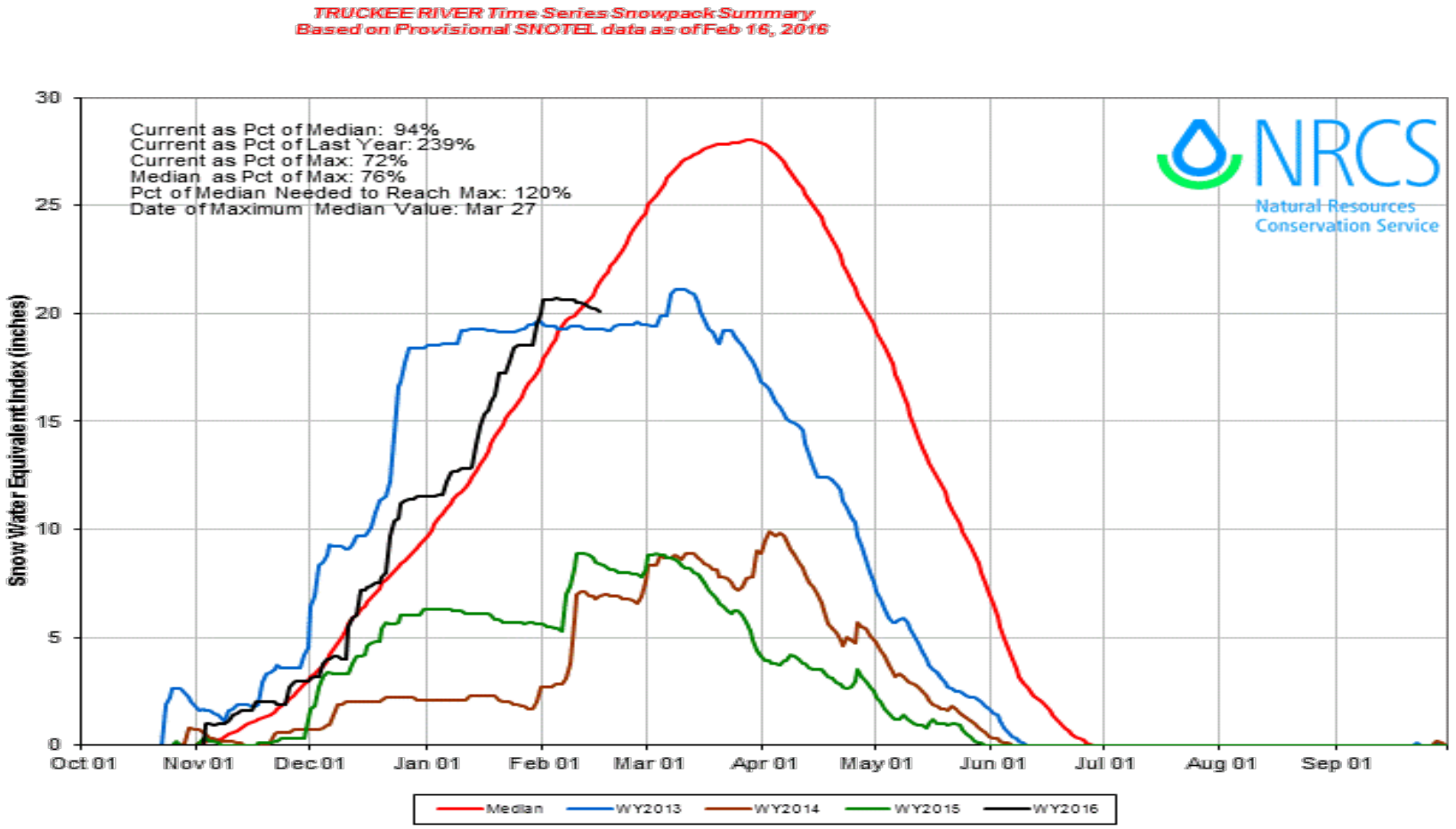
Quality. Delivered.

Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal



Truckee River Basin Snowpack Comparison (2013-2016)



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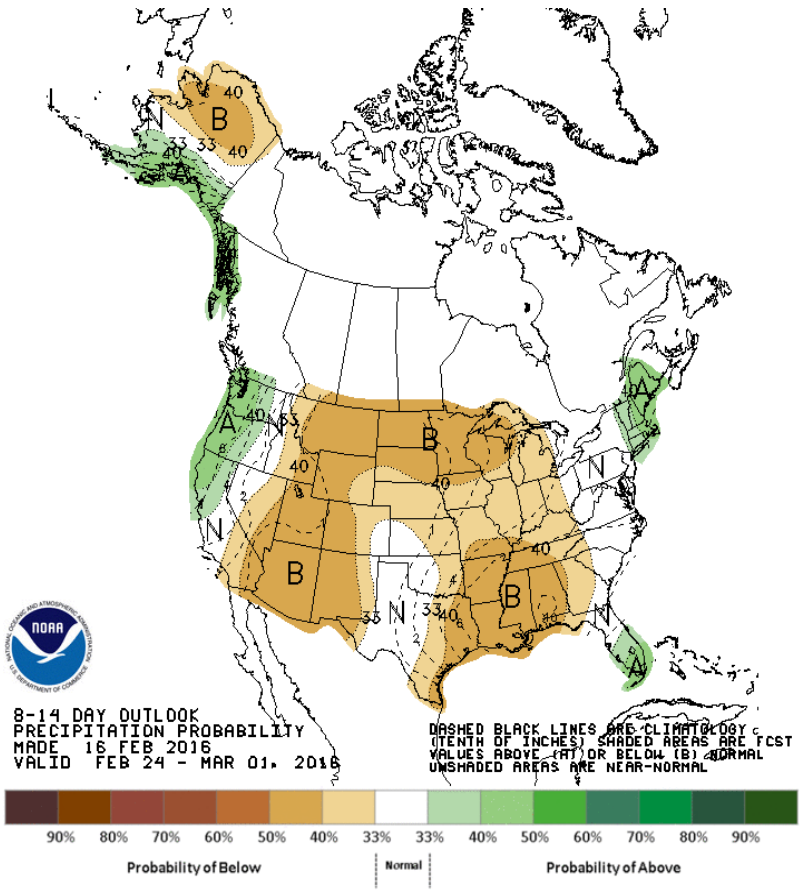
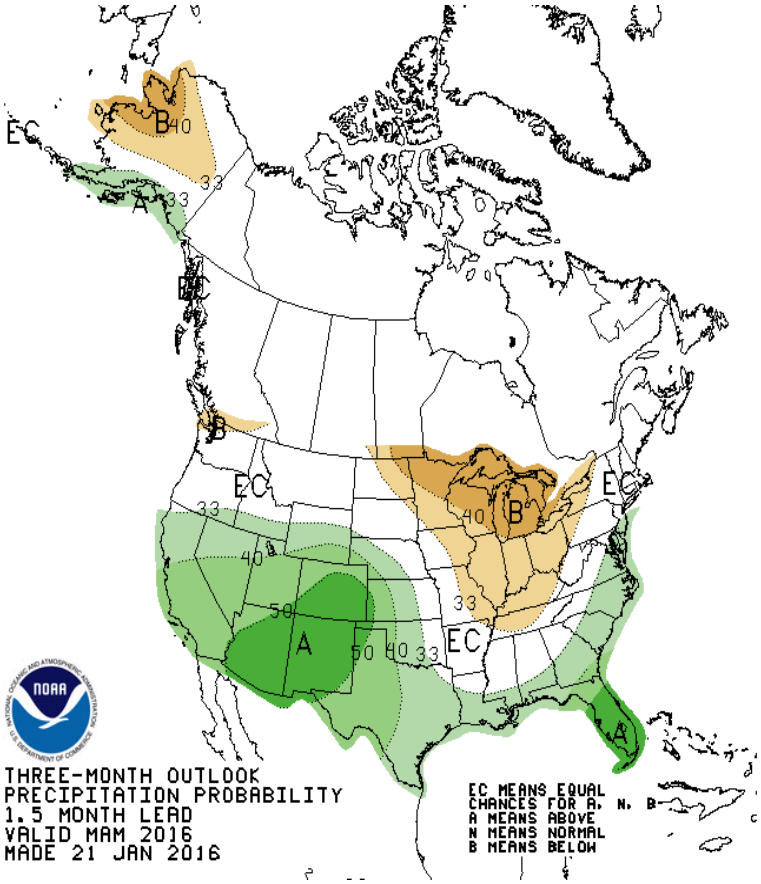
NOAA Climate Prediction Center (precipitation outlook)





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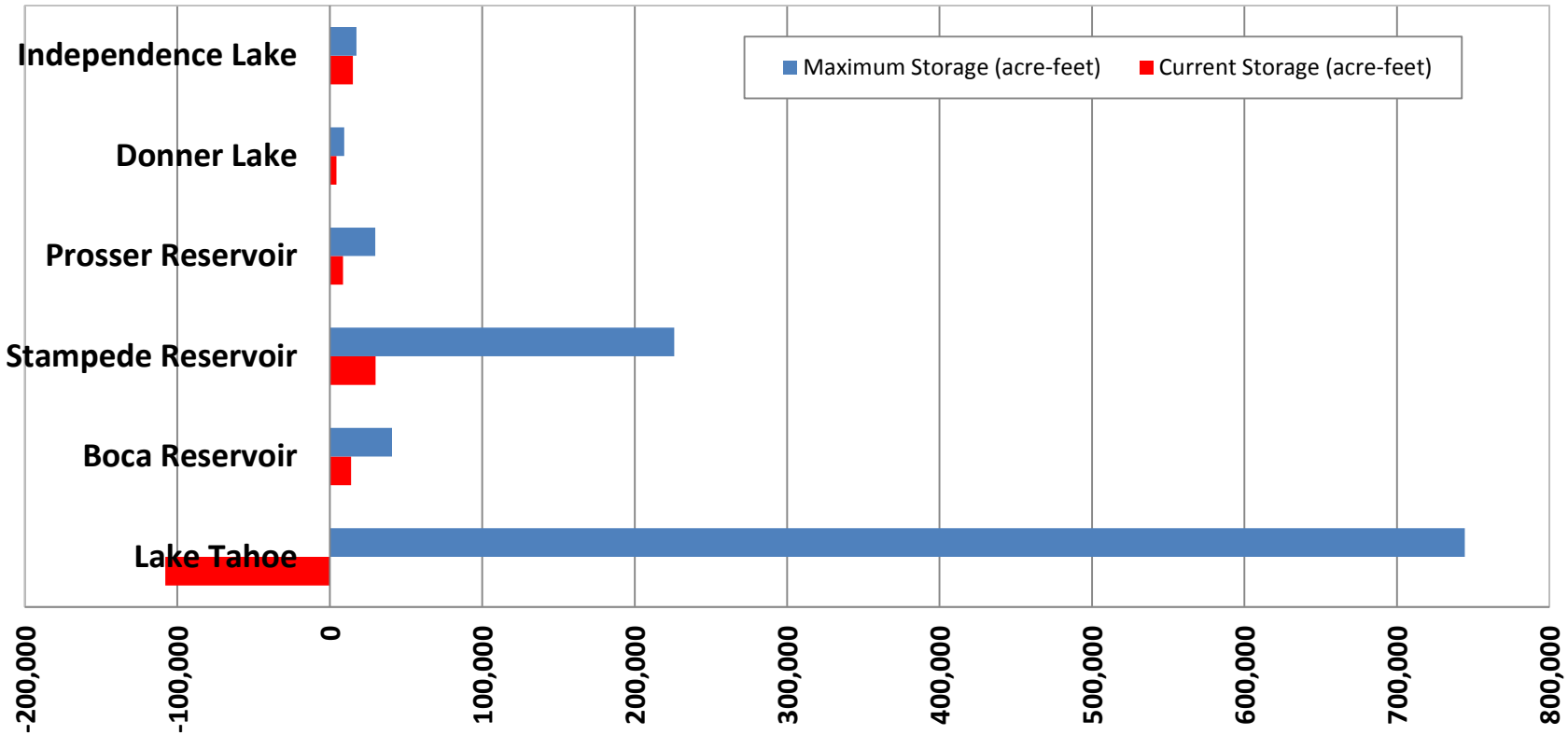
Quality. Delivered.

Truckee River Reservoir Storage as of February 17, 2016



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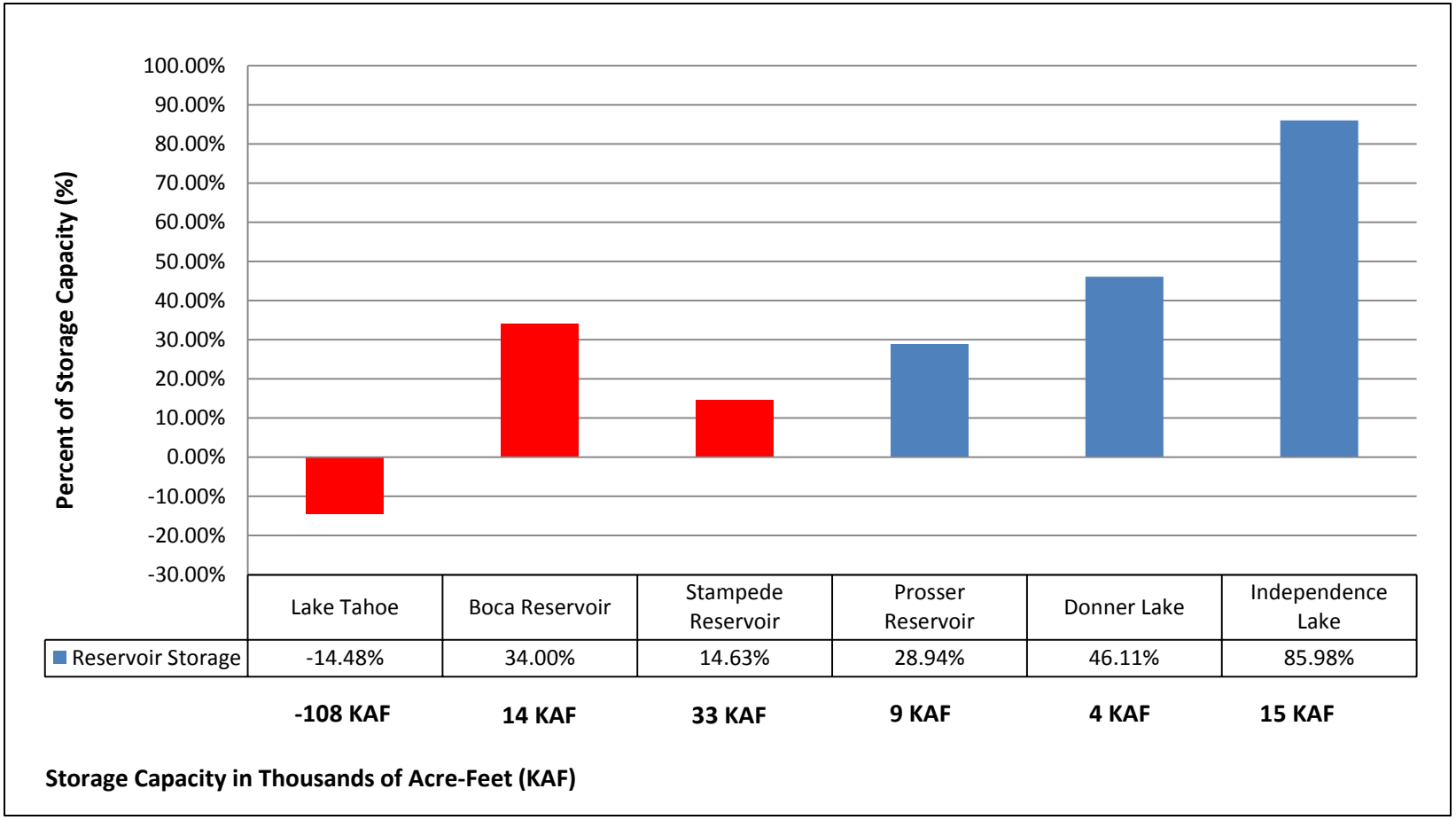
Truckee River Reservoir Storage Comparison (2/17/16)



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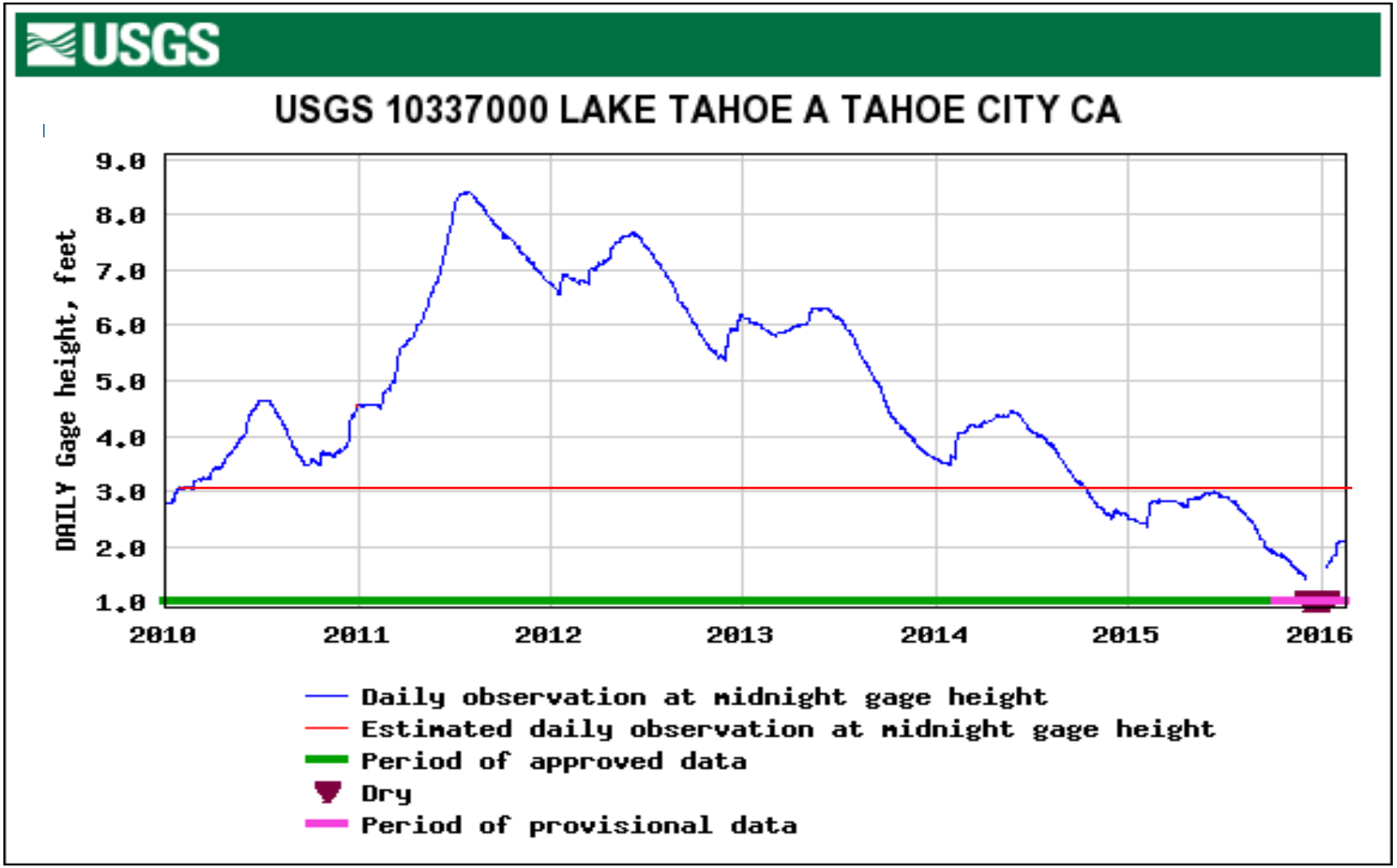

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USDA NRCS Streamflow Runoff Forecast (Feb 1, 2016)

- Truckee River at Farad (Apr-Jul) @ 102% avg.

- Lake Tahoe Rise (Apr-High) @ 99% avg.

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Quality. Delivered.

TMWA Reservoir Storage Account Summary

2/12/2016	ACCOUNT STORAGE (acre-feet)				
RESERVOIR	**FirmMICred**	**NonFirmMICred**	**waPOSW**	**WAEDS**	**TOTAL STORAGE (acre-feet)**
Tahoe	0	0	0	0	0
Donner	0	0	2,205	0	2,205
Martis	0	0	0	0	0
Prosser	0	0	0	0	0
Boca	0	0	0	0	0
Stampede	0	0	2,373	5,030	7,403
Independence	0	132	14,840	0	14,972
Total	0	132	19,418	5,030	24,580
Nov 30 Value					17,521
Percent of Nov 30 Value					140.3%

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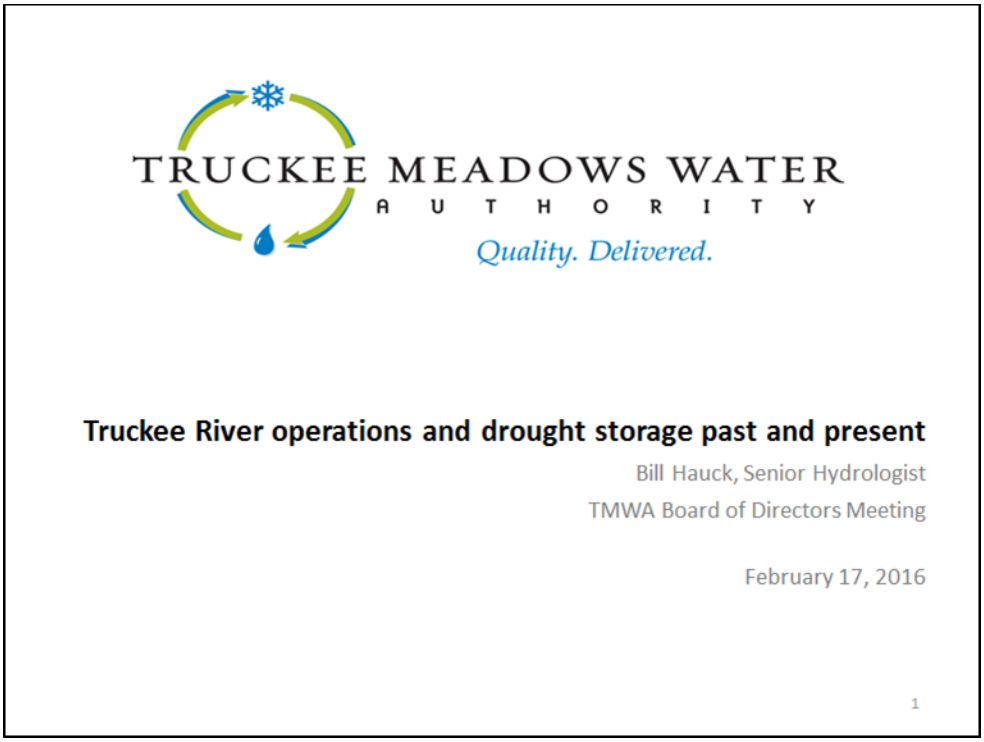
Quality. Delivered.

Water Supply Summary

- To-date the month of February has been warm and dry
- Beginning to lose some ground
- Snowpack currently below average in Truckee Basin (92%)
- Quick moving storm moving through area (expected to help)
- Latest streamflow runoff forecast 102% average (Truckee)
- Normal Truckee River flows *still* projected through August
- TMWA upstream drought storage in GREAT SHAPE regardless

TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.


TRUCKEE MEADOWS WATER
AUTHORITY
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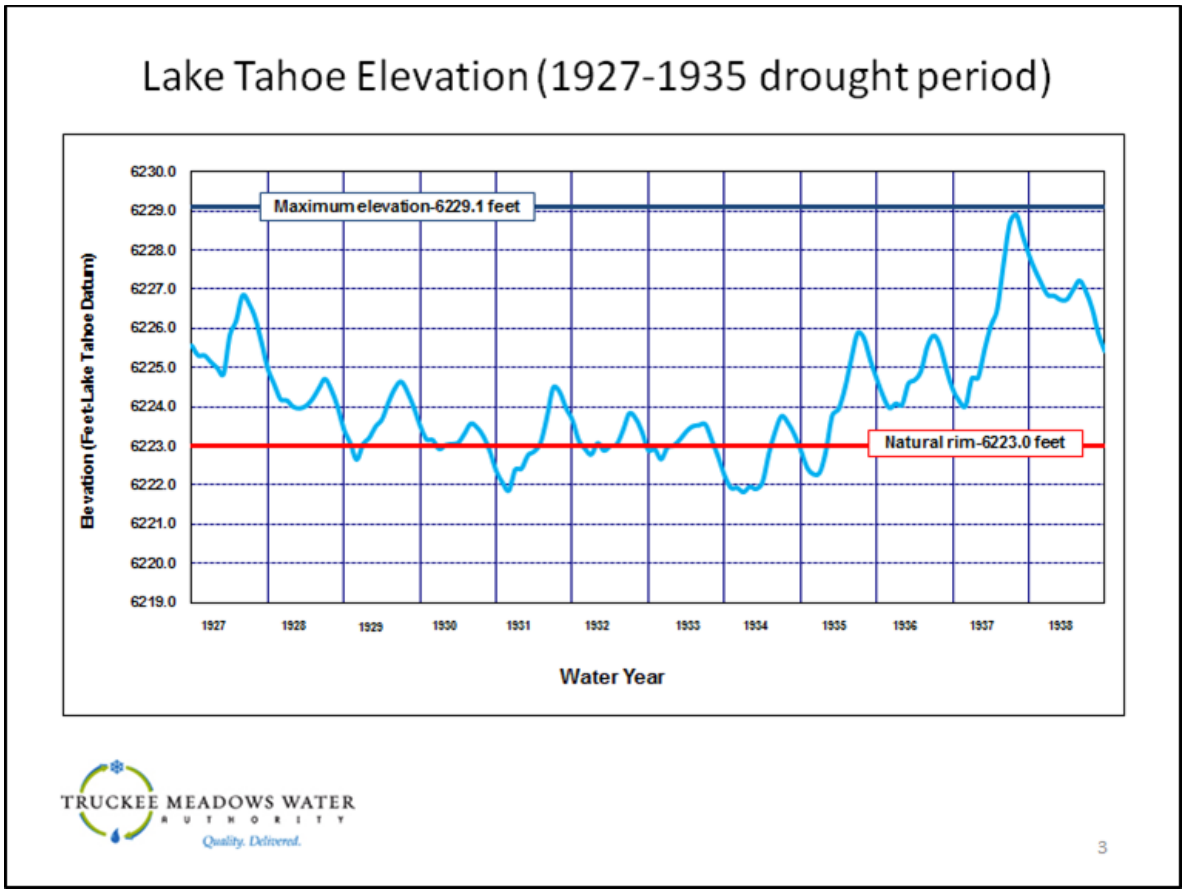
Truckee River operations and drought storage past and present
Bill Hauck, Senior Hydrologist
TMWA Board of Directors Meeting
February 17, 2016
1

Lake Tahoe Dam (completed in 1913)

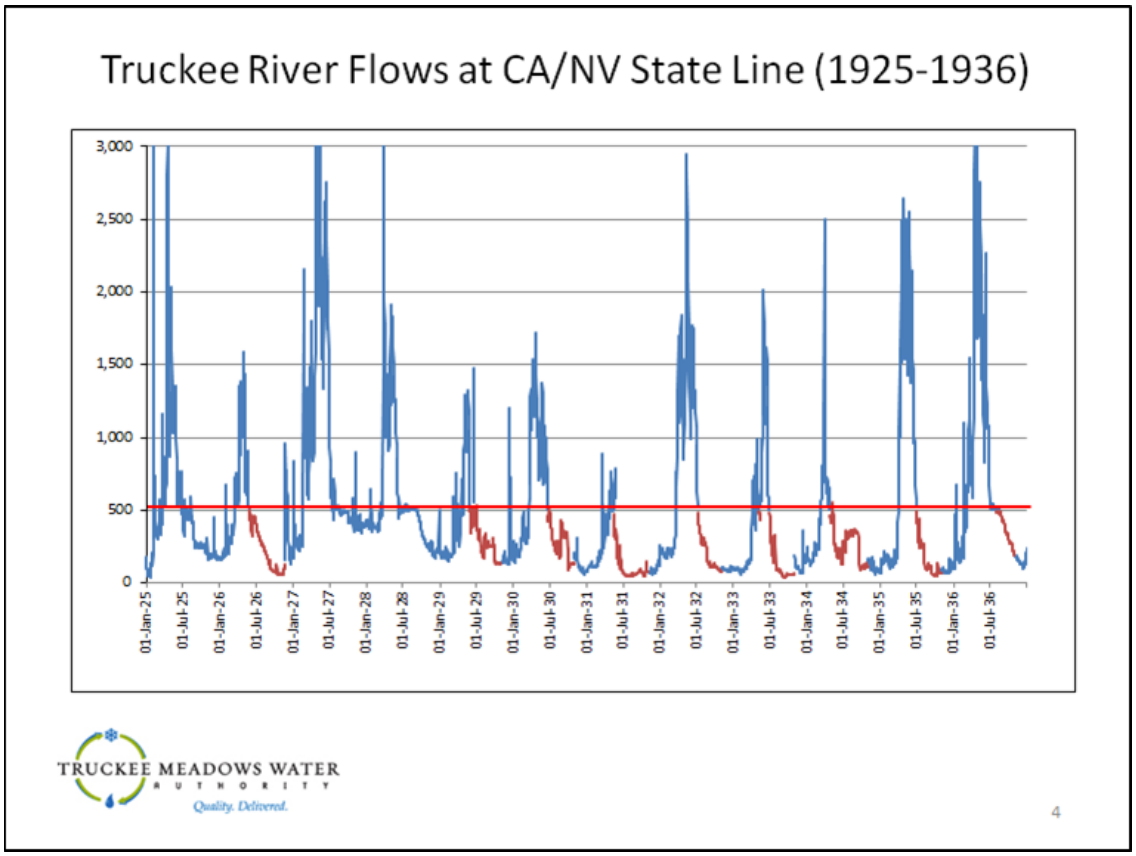
TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.

2

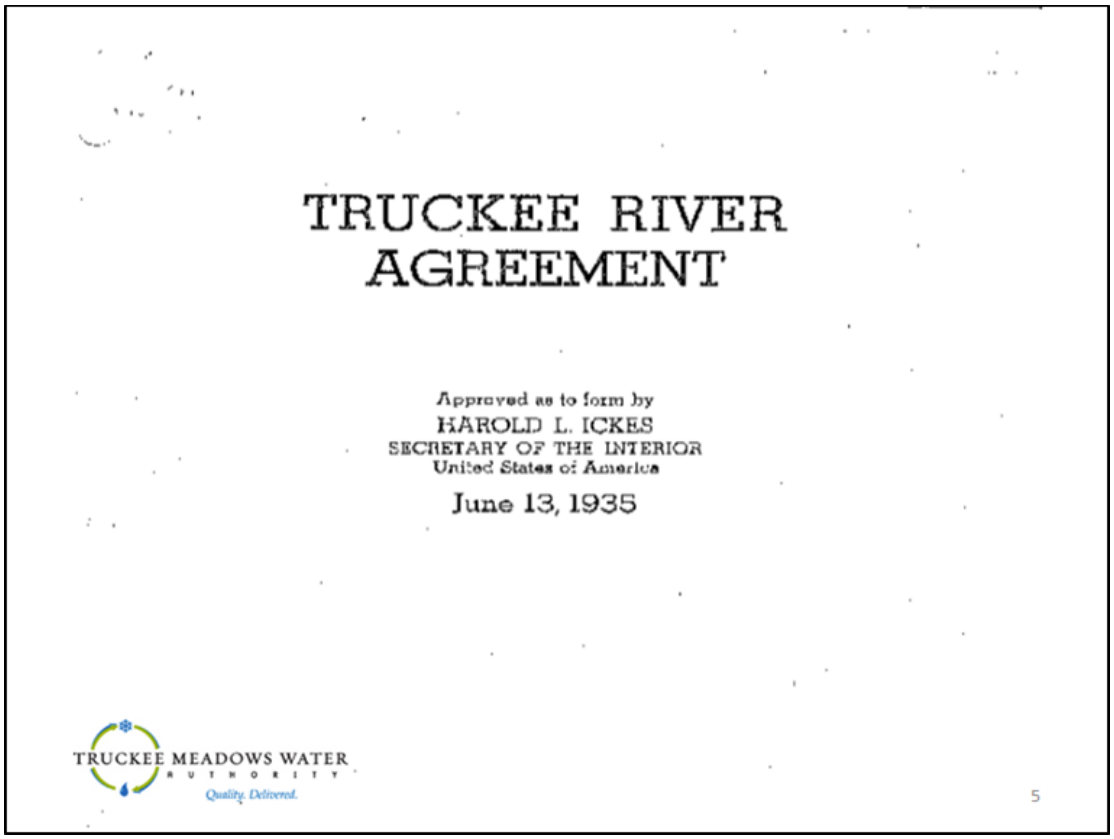
- During the drought of the late 1920's through the mid 1930's there just wasn't enough water to meet the needs of all the downstream users on the Truckee River
- Lessons were learned
- Even with Lake Tahoe Dam there just wasn't enough water in the Truckee River to go around



- The required rates of flow at the CA/NV state line or Floriston Rates were inconsistent at best and were not being met on a regular basis anytime Lake Tahoe was close to or below the elevation of its natural outlet



- The Truckee River kept going dry sometimes early or in the midst of the irrigation season over and over
- The community (in particular the ranchers and farmers in the Truckee Meadows) realized that more upstream storage was in order to help keep the river flowing during the irrigation season



- Thus began negotiations between the major water right holders on the Truckee River in order to see what could be done about creating more reliable flows and how the river could be operated better
- The result of those negotiations was the 1935 Truckee River Agreement which REQUIRED the construction of Boca Reservoir AND ***modified*** the Floriston Rates or the required rates of flows at the CA/NV state line
- Reduced Floriston Rates were now in effect during the winter months when the elevation of Lake Tahoe was below a certain threshold

- The dam impounded 40,800 acre-feet of water and was meant to supplement releases from Lake Tahoe and stabilize flows in the Truckee River
- Because Sierra Pacific Power Company owned a small reservoir in the Little Truckee River in the vicinity at the time of construction, this storage was incorporated into the planned capacity of Boca
- So 800 acre-feet or just about 2% of the storage in Boca is considered POSW or privately owned stored water of TMWA

Independence Lake Dam (completed in 1939)

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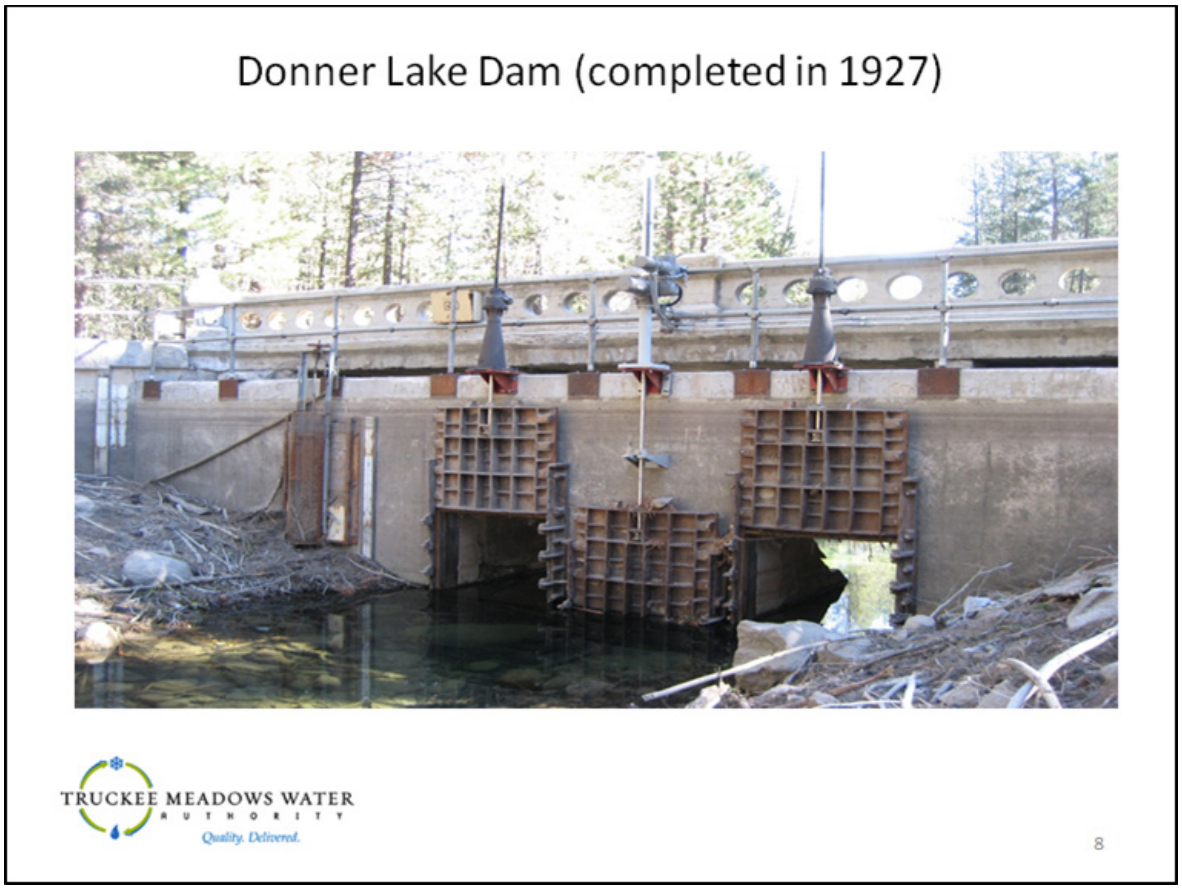
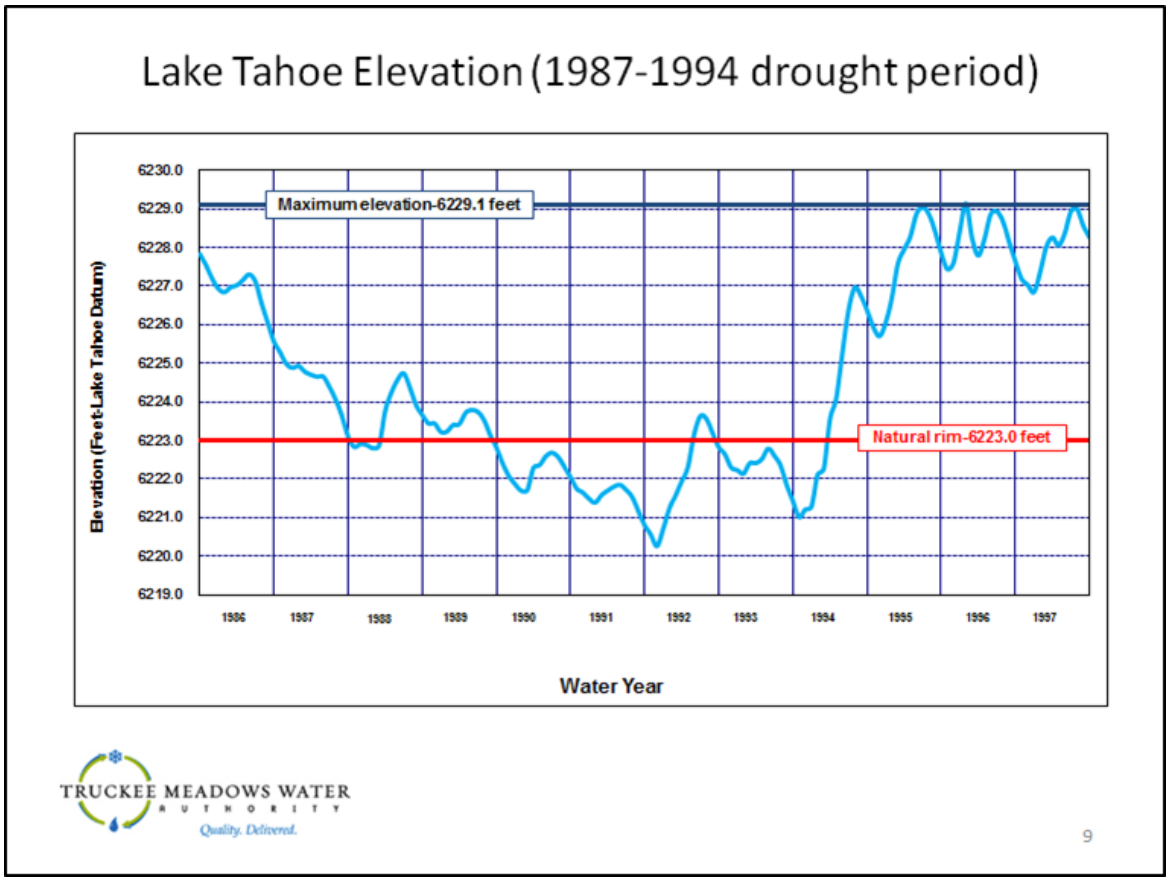
Quality. Delivered.

7

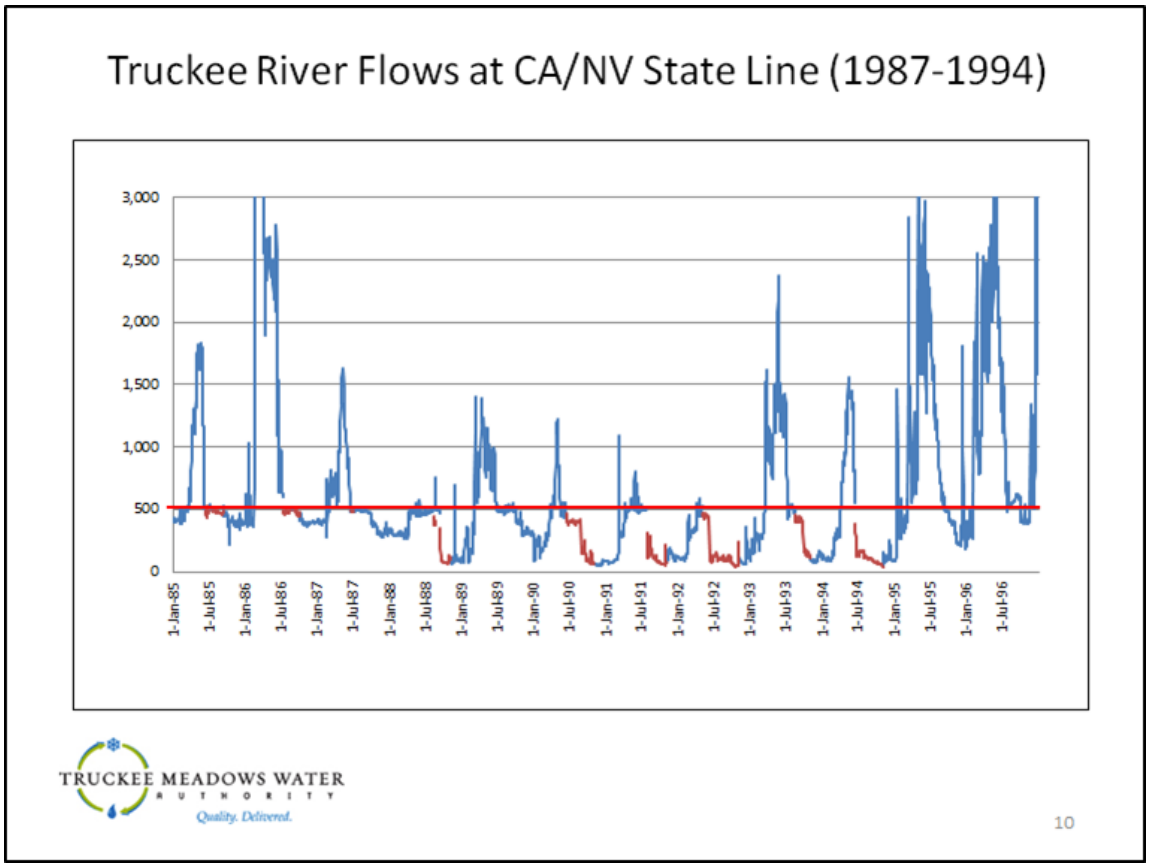
- In 1937 Sierra Pacific Power Co. purchased Independence Lake dam and the associated water rights
- And in 1939 rebuilt the dam to its current storage capacity of 17,500 acre-feet
- The water was to be used for hydropower and M&I purposes



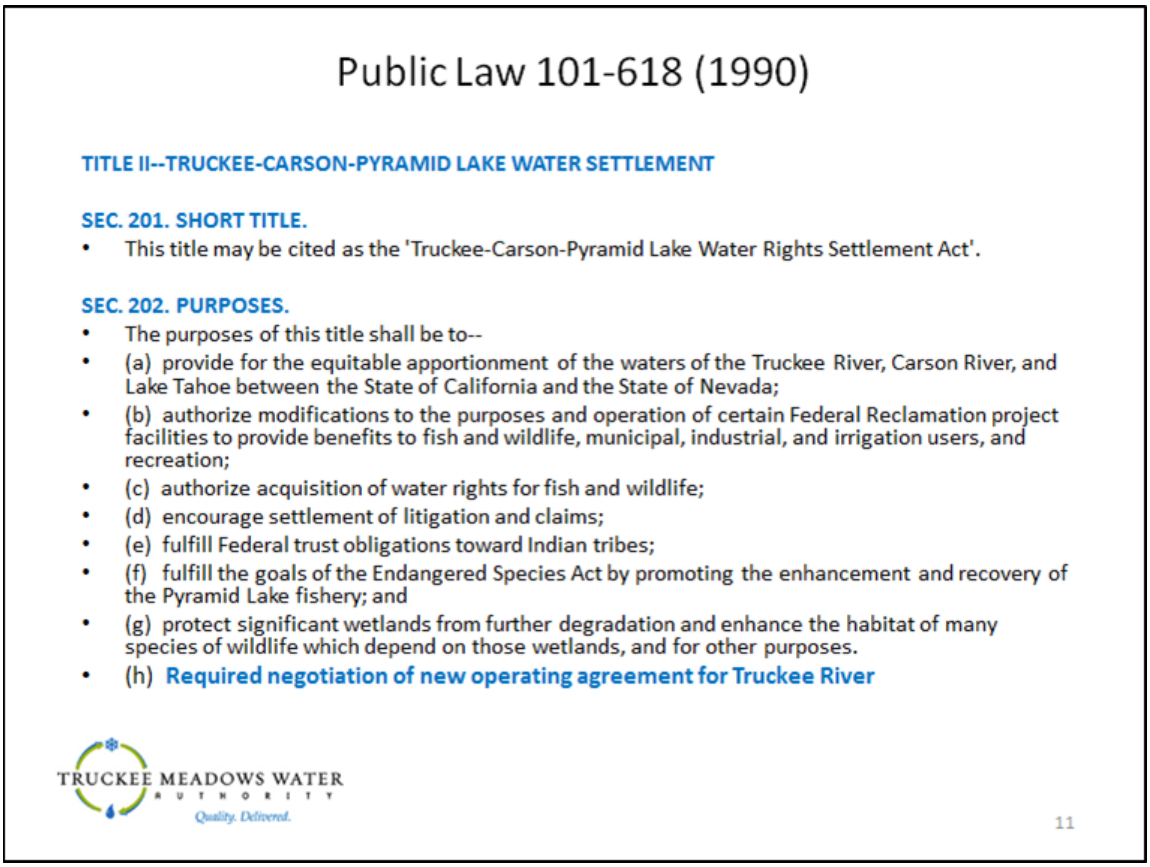
- In 1943 Sierra Pacific Power Co. and TCID as tenants in common purchased the Donner Lake Dam and water rights to the top 11.8 feet of the lake (9,500 acre-feet) of storage
- For almost 50 years those two (2) small dams (which were able to impound tremendous amounts of water) were more than adequate as the communities back-up water supply that was used in dry years to enhance river flows and meet M&I demand, and to also to keep Sierra's power hydro plants generating as much electricity as possible
- They ***were more than adequate*** until the next major drought the region experienced that is, the 1987-1994 drought period (which is still the drought of record and the standard for our planning purposes)



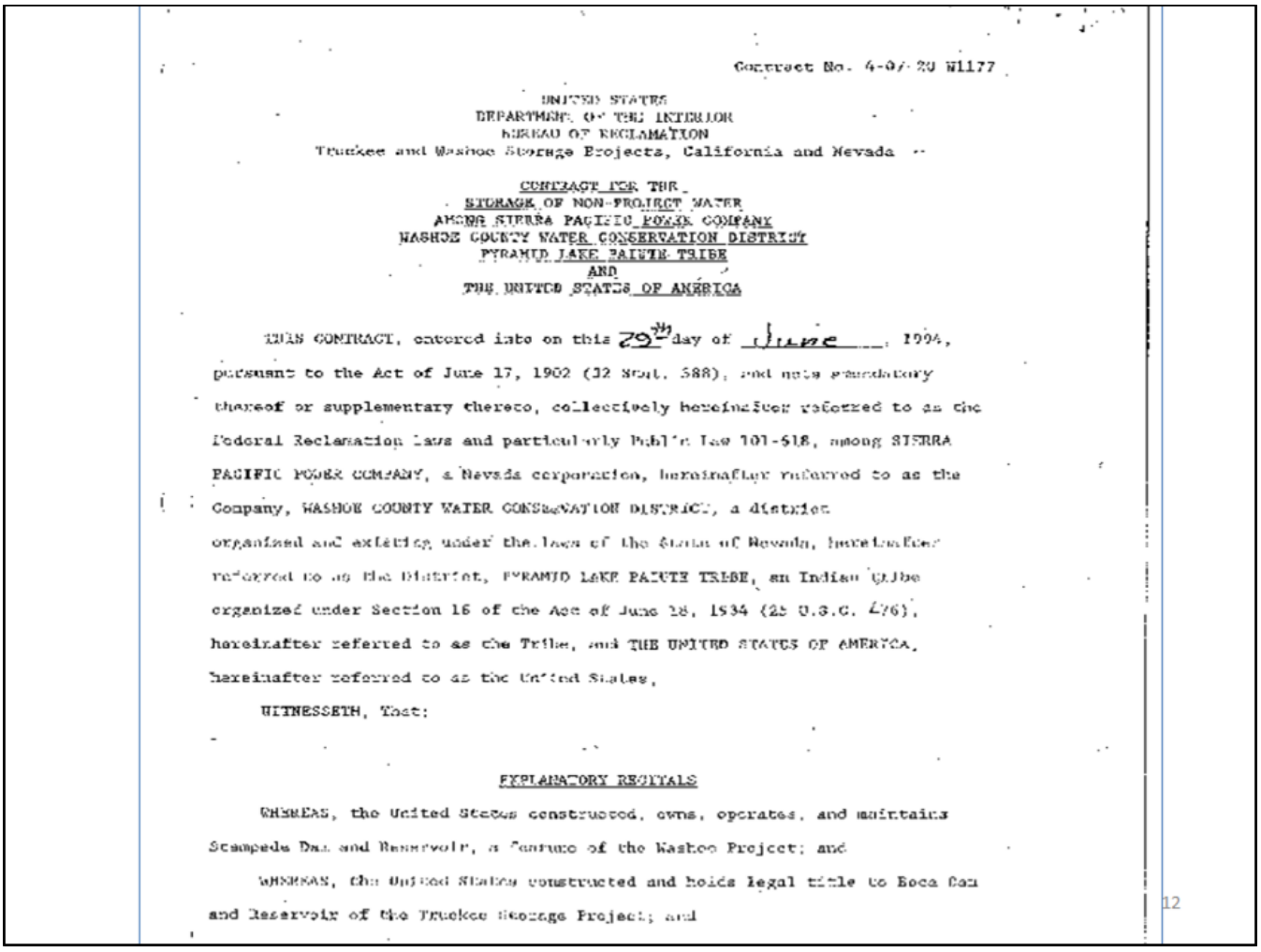
- Both Donner and Independence lakes were an integral part of this region's water supply during the 1987-1994 drought (particularly during the summer peak demand months) when Lake Tahoe was near or below its natural outlet elevation



- Although Sierra was able to get by with the upstream drought reserves from Independence and Donner lakes, groundwater production and demand-side management, it was too close a call for some executives at Sierra Pacific ***and there were major concerns***
- Demands on the river by this point in time had also seen a major shift away from hydropower and agriculture to municipal and industrial and fish and wildlife purposes
- AND the players on the river had seen a shift as well (a new big player on the block was the PLPT)
- This prompted Sierra Pacific Power Company to begin discussions with the Pyramid Lake Pauite Tribe on how they could operate the river better to meet the objectives of both parties and settle outstanding claims and counter claims
- The result of these negotiations was an agreement which was officially called the PRELIMINARY SETTLEMENT AGREEMENT (PSA) which was signed by both parties in 1989



- In 1990 Congress passed and the president signed into law Public Law 101-618
- This was called the “Truckee Carson Pyramid Lake Water Rights Settlement Act” which incorporated and RATIFIED the terms of the PRELIMINARY SETTLEMENT AGREEMENT
- PURPOSES OF (SEE ABOVE)
- AND ALSO REQUIRED the negotiation of a NEW OPERATING AGREEMENT for the Truckee River
- We know this as the Truckee River Operating Agreement or TROA



Contract No. 4-07-20-W1177

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Truckee and Washoe Storage Projects, California and Nevada

CONTRACT FOR THE
STORAGE OF NON-PROJECT WATER
AMONG SIERRA PACIFIC POWER COMPANY
WASHOE COUNTY WATER CONSERVATION DISTRICT
PYRAMID LAKE PAIUTE TRIBE
AND
THE UNITED STATES OF AMERICA

THIS CONTRACT, entered into on this 29th day of June, 1994, pursuant to the Act of June 17, 1902 (32 Stat. 388), and acts amendatory thereof or supplementary thereto, collectively hereinafter referred to as the Federal Reclamation Laws and particularly Public Law 101-618, among SIERRA PACIFIC POWER COMPANY, a Nevada corporation, hereinafter referred to as the Company, WASHOE COUNTY WATER CONSERVATION DISTRICT, a district organized and existing under the laws of the State of Nevada, hereinafter referred to as the District, PYRAMID LAKE PAIUTE TRIBE, an Indian Tribe organized under Section 16 of the Act of June 18, 1934 (25 U.S.C. 476), hereinafter referred to as the Tribe, and THE UNITED STATES OF AMERICA, hereinafter referred to as the United States,

WITNESSETH, That:

EXPLANATORY RECITALS

WHEREAS, the United States constructed, owns, operates, and maintains Stampede Dam and Reservoir, a feature of the Washoe Project; and

WHEREAS, the United States constructed and holds legal title to Boca Dam and Reservoir of the Truckee Storage Project; and

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- And in the interim period (until the new operating agreement could be negotiated and approved by the courts)
- ***BECAUSE*** the parties knew that it may take some time to come to an agreement they all could live with
- An ***INTERIM STORAGE AGREEMENT*** was hammered out
- The AGREEMENT became effective in June 1994 and provided SPPCo. the opportunity to store water (POSW) upstream in two federally owned reservoirs
- This AGREEMENT ended up being in place for OVER 25 YEARS as TROA negotiations and ensuing legal challenges at seemingly every corner ran their course

Interim Storage Contract (June 29, 1994-November 30, 2015)

The Secretary of the Interior authorized the use Boca and Stampede for the storage of Non-Project Water to fulfill the purposes of Public Law 101-618

- DOI entered into a contract with SPPCo. to store water in those reservoirs for M&I purposes when excess capacity was available
- It was an important first step in the utility being able to acquire additional drought storage after 1987-1994 drought

3 ways to get water from Donner and Independence lakes into either Boca or Stampede:

- Independence Lake water could be released directly into Stampede and/or Boca
- POSW from Independence or Donner Lake could be released to support Floriston Rates in lieu of a release for that purpose from Boca in exchange for an equivalent amount of water in Boca
- POSW from Independence or Donner Lake could be released in lieu of a release from Stampede Reservoir for benefit of Cui-ui or LCT in exchange for an equivalent amount of Stampede water storage

Could also move water from Boca to Stampede by storing in Stampede, water which was required to be passed through both Stampede and Boca, by releasing an equivalent amount of water stored in Boca

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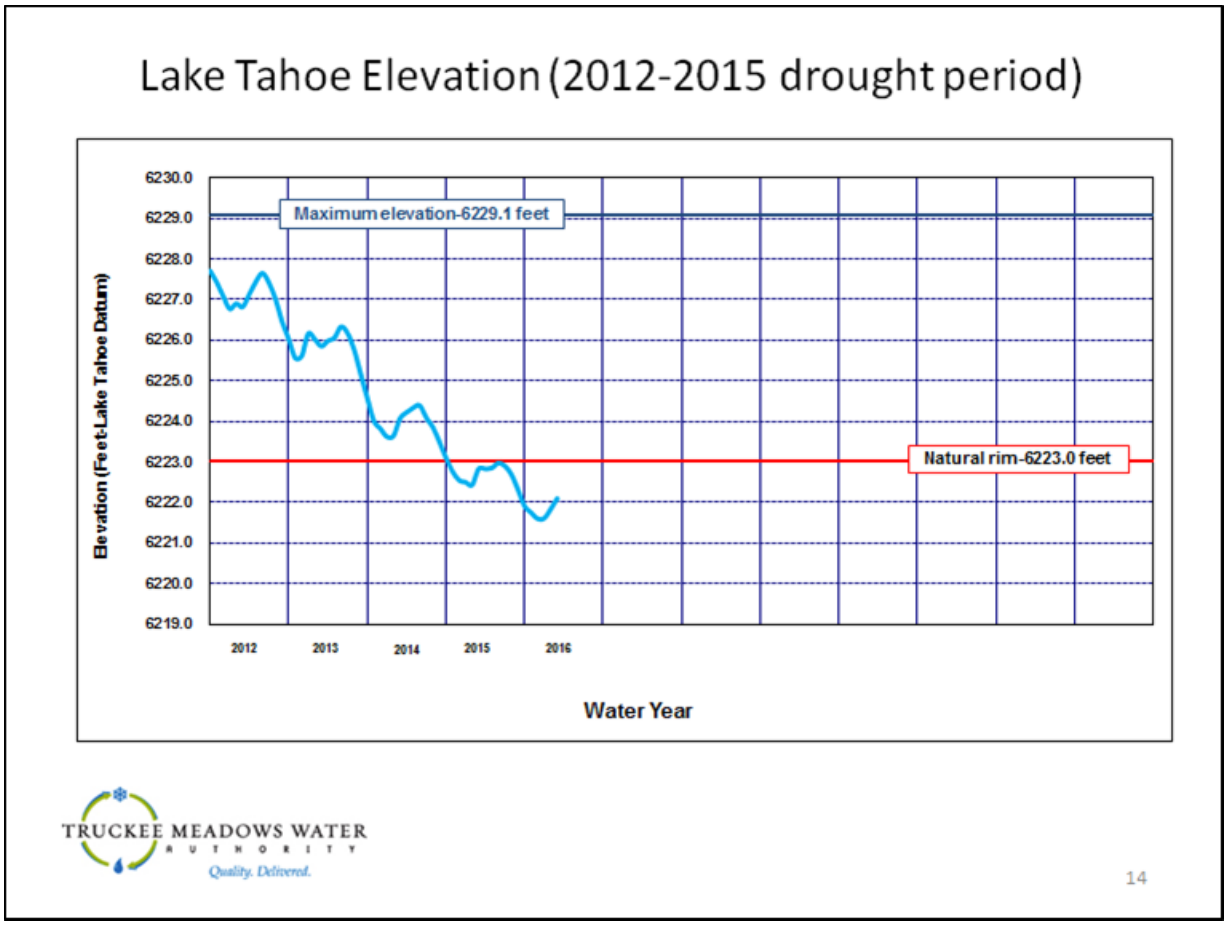
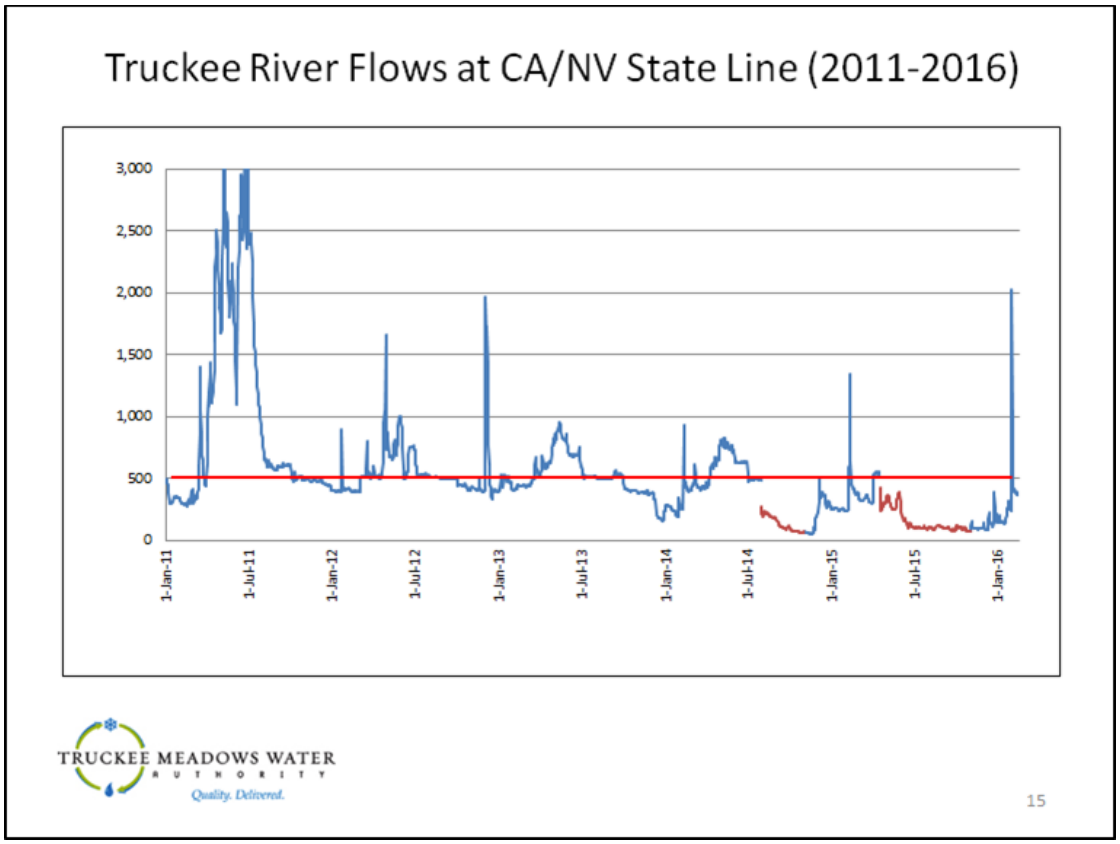
- Any Non-Project water in excess of 5,000 AF got converted into Fish Credit Water which was used for the benefit of Cui-ui or LCT of Pyramid Lake
- TMWA's Non-Project Water could be retained in storage and carried over from year to year until it was needed
- TMWA could use all of the water stored pursuant to the contract to supply the demands of customers any time Floriston Rates weren't being met AND water available under our Orr Ditch Decree water rights was not sufficient to meet those demands OR under emergency conditions



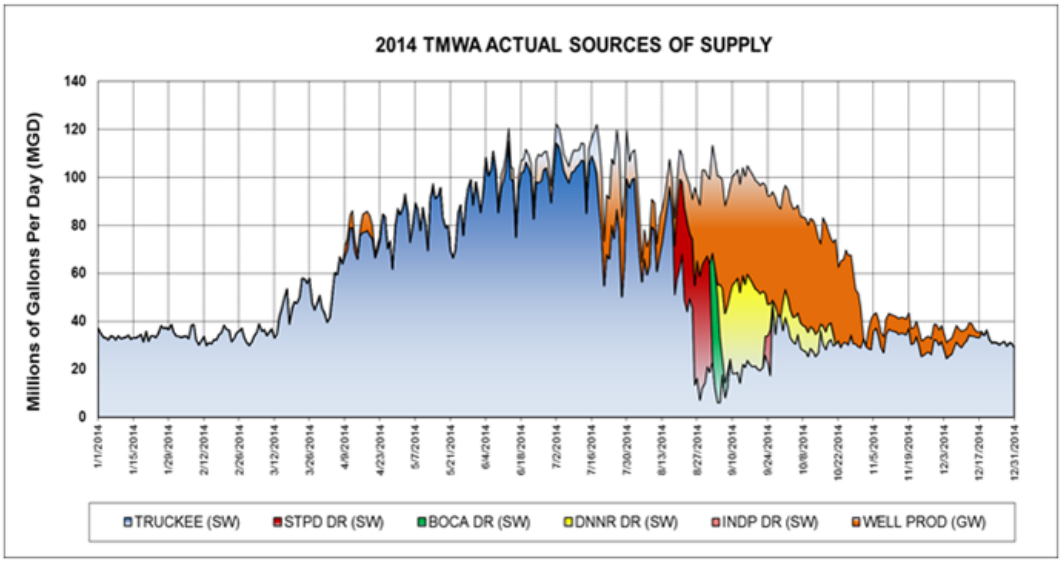
- And just like the two previous significant droughts of last century, when the elevation of Lake Tahoe approaches its natural rim (as you can see in particular the last two years), Floriston Rates begin falling short
- Unfortunately that means low river flows right on the midst of our peak customer demand season



- Flows at the CA/NV state line seem to drop off right when we need them the most
- In 2014 Floriston Rates could no longer be met after July 29th
- And April 16th in 2015 set a new record for the earliest Floriston Rates were unable to be met, in the 100 years since they have been in existence (an idea of how dry 2015 really was)
- AND although the Interim Agreement had its shortcomings in certain years by limiting how much water we could carry-over into the following year and having to turn Credit Water over to the PLPT in the midst of a drought

*IT **PAID OFF BIG TIME*** for us in both 2014 and 2015 as DROUGHT RESERVES were needed to meet customer demand, in addition to the aggressive groundwater pumping and the demand-side management practices we deployed (asking for a 10% reduction in outdoor watering in 2014 then *at least a* 10% reduction in 2015 as conditions worsened

2014 Sources of Supply and Drought Reserves



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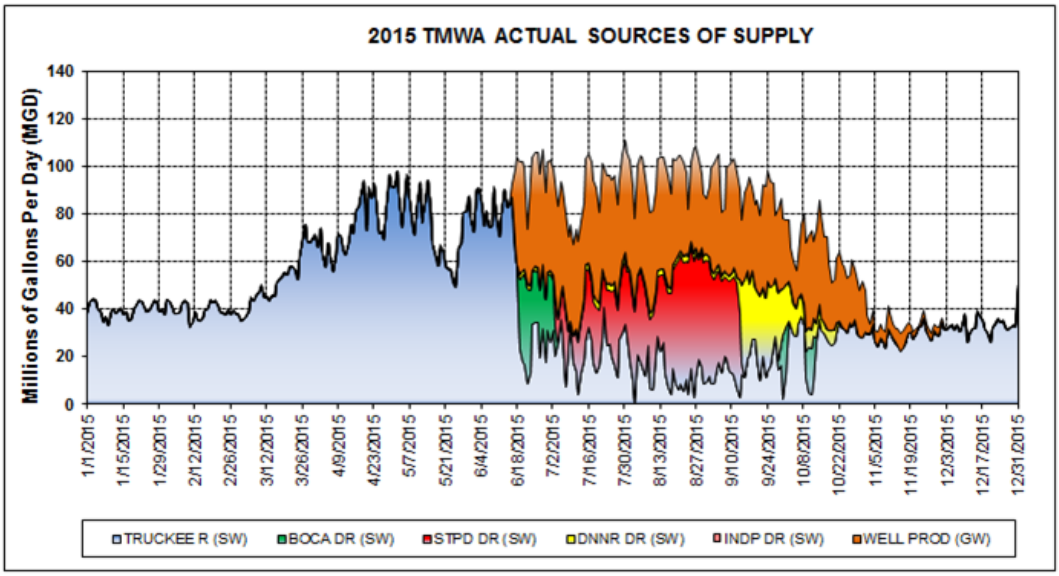
16

- Used POSW from both Stampede Reservoir and Boca Reservoir and then Donner Lake to create a water supply for our customers beginning in the middle of August
- We ended up using 4,900 acre-feet of POSW or upstream drought reserves in 2014 because surface water flows had diminished

2015 Sources of Supply and Drought Reserves



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17

- And then had to do the same thing in 2015 (only a full 2 months earlier)
- Where we ended up using 11,700 acre-feet of upstream drought reserves or POSW to meet customer demand

The Truckee River Operating Agreement

TROA
Truckee River Operating Agreement

- Immediately superseded the Interim Storage Agreement on December 1, 2015
- The same mechanics used under the ISA can be used in TROA to move water from one reservoir to another
- Allows us to do all the things we did under the ISA (only quite a bit more), with added security that our drought reserves won't turn over in the middle of a drought situation

TRUCKEE MEADOWS WATER AUTHORITY
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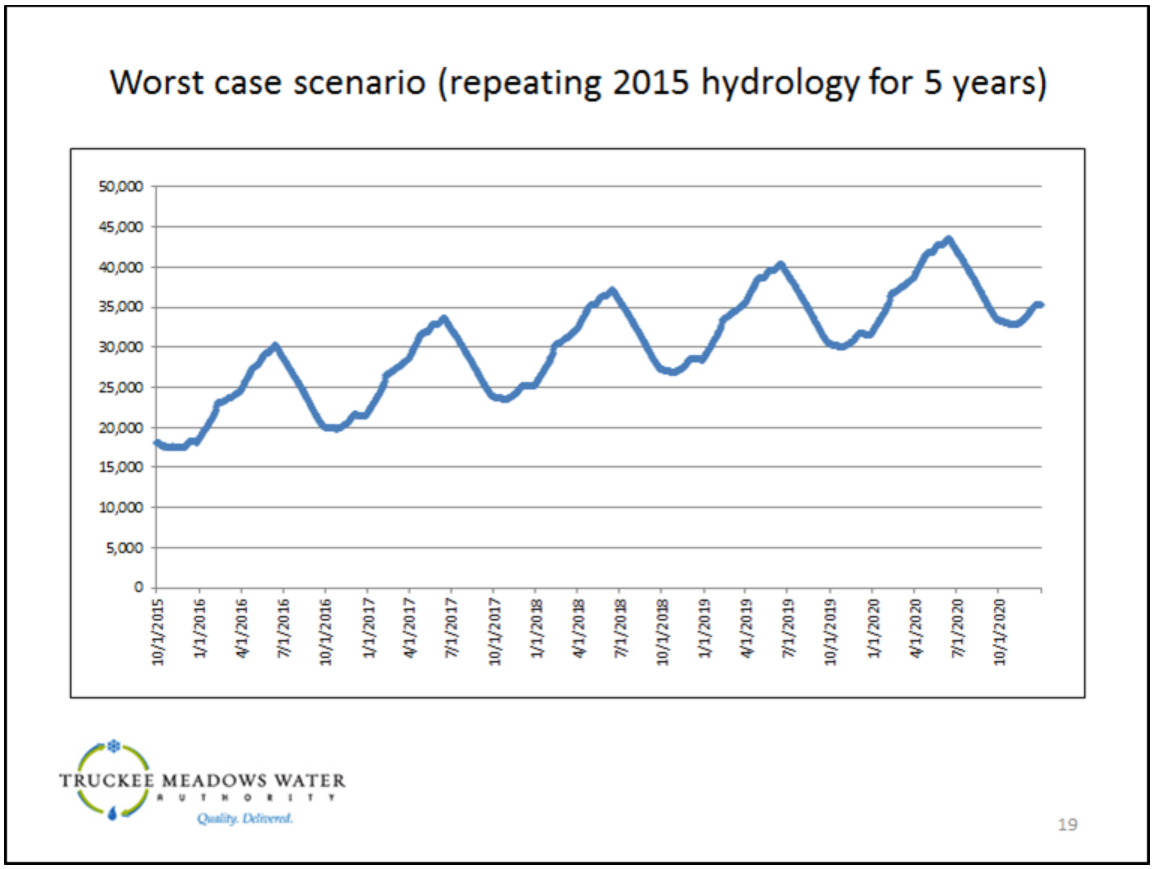
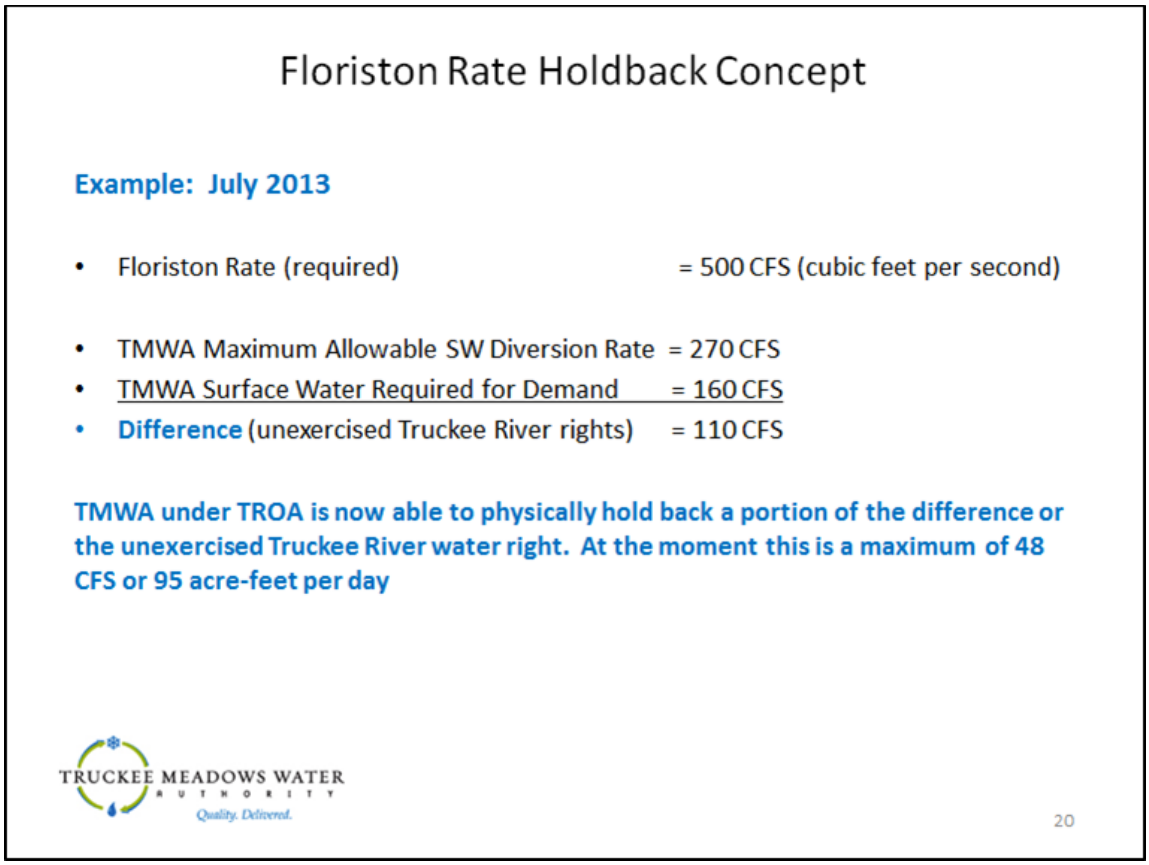
18

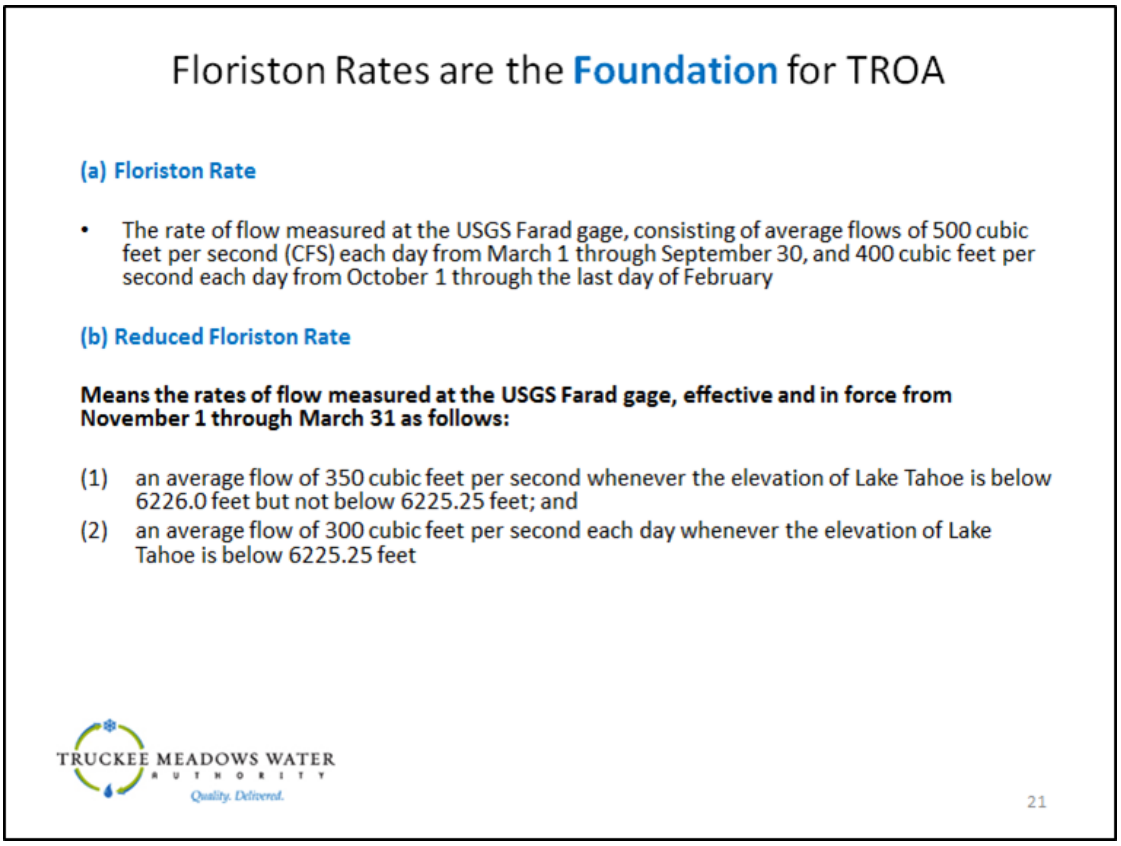
- TROA which became effective and was OFFICIALLY IMPLEMENTED ON December 1
- Allows us to do quite a bit more than the Interim Storage Contract did
- AND gives us a MORE SECURE water supply
- Under TROA, whenever a drought situation exists we can continue to build up drought storage and carry over as much water into the following year as reservoir space, water rights and the given hydrology allow
- We are in fact able to carry it over from year to year and continue building up drought storage (even though we are using a portion each year to meet demand)



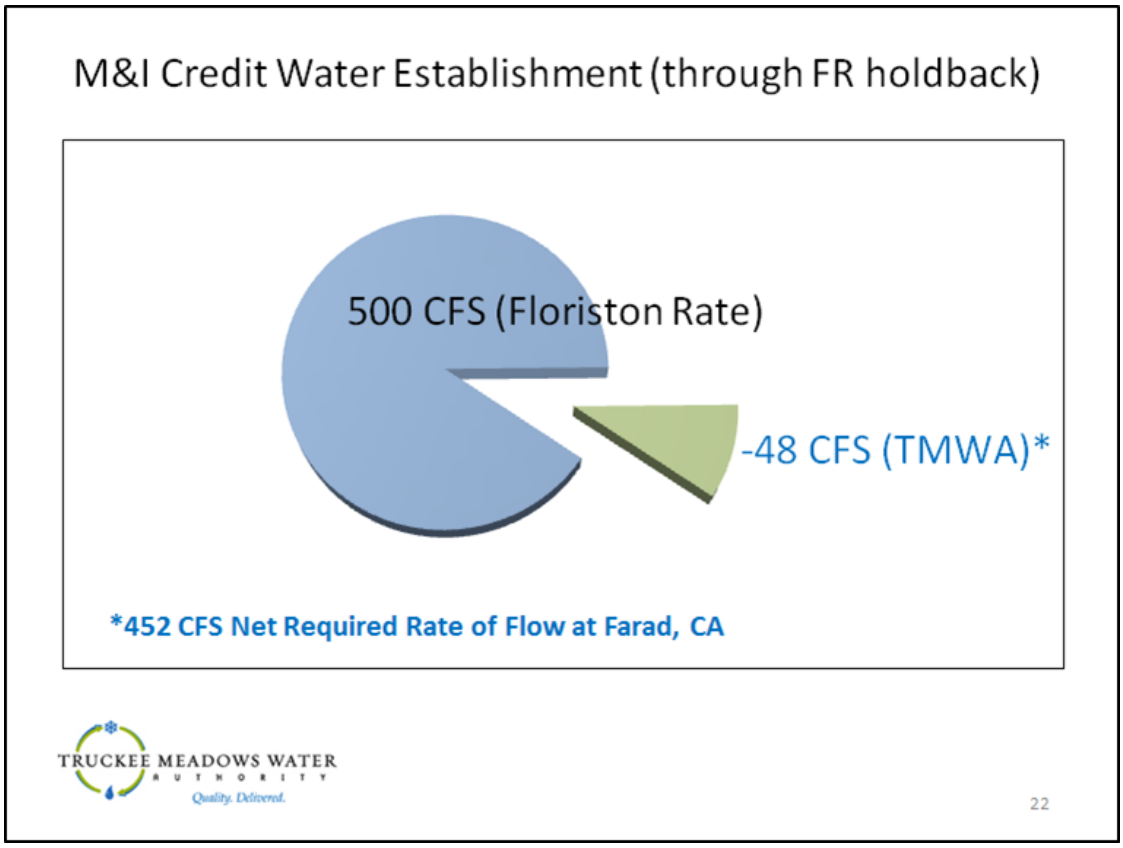
- The results of the water supply planning study in September (which used a repeat of 2015 hydrological conditions for 5 years) suggest that even as dry as it was, that there is still more water in the system than TMWA needs to meet demand (because of the way we conjunctively manage all of our different sources of supply) in a drought (i.e. Truckee River water, groundwater reserves and upstream drought reserves)
- This graph shows TMWA's cumulative upstream drought reserves continue to increase through the 5 year water supply planning run using a repeat of 2015 hydrology
- That coordinated approach we take in managing our sources of supply so that we are using the right bucket of water at the right time in order to make a water supply for our customers enables us to optimize our water resources
- AND It is through these practices that we are in effect able to continue to net credit store even in the driest year on record, over and over again because we are using less water than we have a right to divert from the system (even using a repeat of 2015 hydrology)
- Under TROA, besides the ways previously mentioned to move (or restore) POSW from Donner and Independence lakes into federally owned reservoirs like Stampede and Boca
- We can use what is called Floriston Rate Holdback to establish Credit Water just about anywhere upstream that water is being released



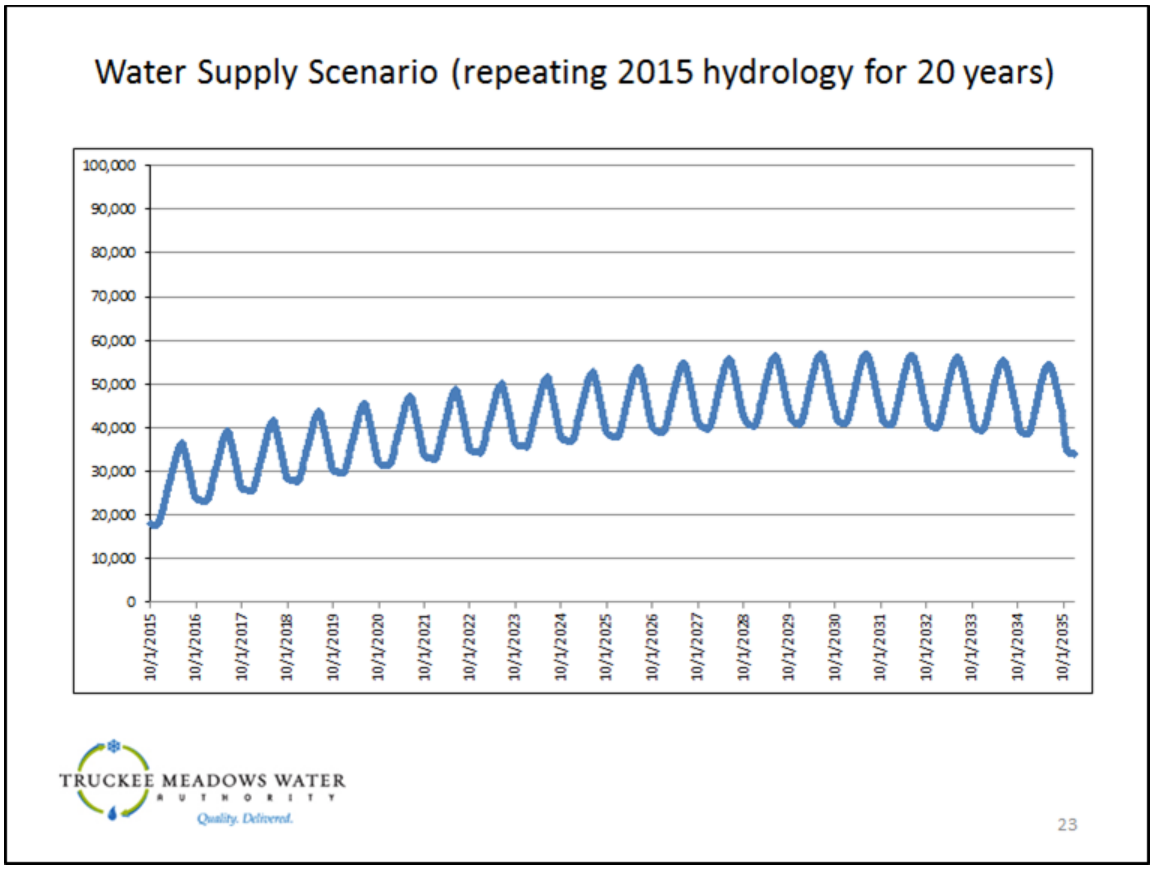
- This is the mechanism which allows TMWA to build up credit storage throughout the water supply planning run
- The Floriston Rates (or the required rates of flow at the CA/NV state line) which have been in place for over 100 years now on the Truckee River have not been replaced under TROA
- In fact they are the underlying basis for how TROA works and how TMWA is able to continue to build up drought storage
- TMWA owns a significant amount of high priority converted agricultural rights along with important Decreed rights that can be used to make a water supply
- TMWA filed applications (to change the point of diversion, the place and the manner of use) with the NV State Engineer to be able to store a portion of our unexercised Truckee River water rights in upstream reservoirs
- TMWA filed on 18,600 acre-feet of water rights (which we were not using to meet customer demand) and was granted the right to store the consumptive use fraction of those rights (62.5%) for or a maximum of 11,600 acre-feet annually
- The 110 CFS (difference) is water that TMWA has a right to divert but up until now had no way to utilize (NOW we can hold back a portion of that in upstream reservoirs for use at a later date)



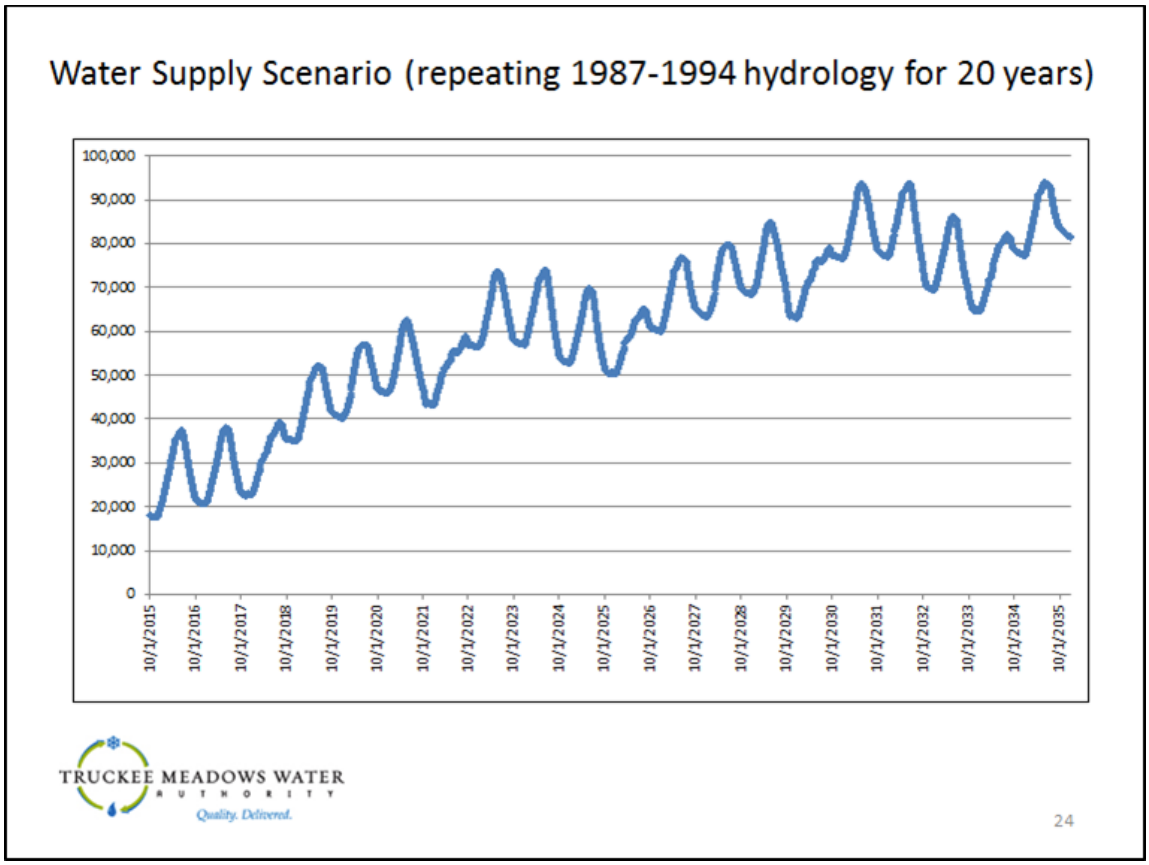
- AND as Floriston Rates are the FOUNDATION for TROA operations
- BEING ABLE to use your TRUCKEE RIVER water rights **"how and when you want to"** in order to best meet your objectives is the whole idea for the PSA and later TROA



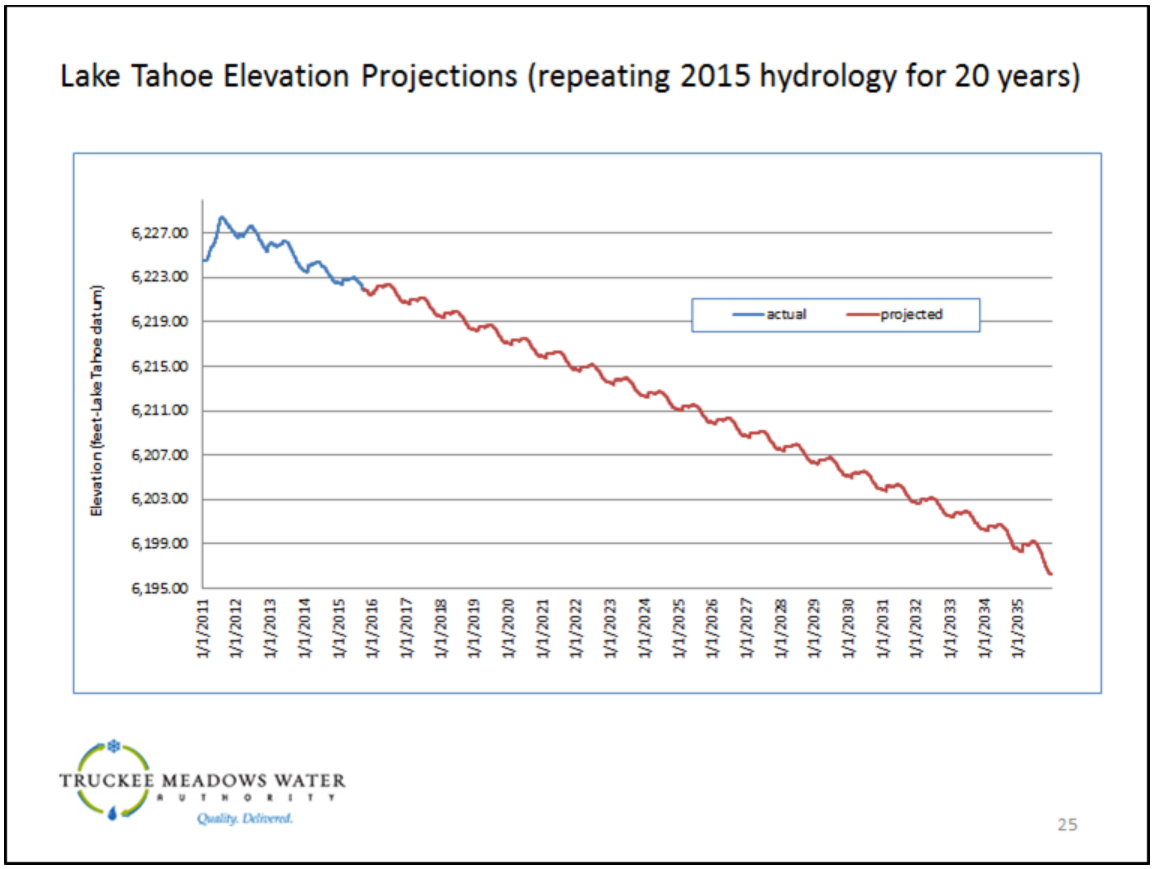
- So, if hydrological conditions allow AND there is sufficient space in upstream reservoirs to do so, TMWA has the ability to physically *CREDIT STORE* an additional 11,600 acre-feet each year
- This is of course in addition to POSW stored in Donner and Independence Lakes which can also be moved into federal reservoirs if conditions allow
- So, on a daily basis we can physically HOLD BACK (by closing the gates) a maximum of 48 CFS (as conditions allow) from the REQUIRED Floriston Rate at the time
- TMWA can exercise this option whenever water is being released to support Floriston Rates from just about any reservoir upstream (like Stampede, Boca, Prosser or Lake Tahoe) as WELL AS OTHER PARTIES like the City of Fernley, RENO, SPARKS and WASHOE COUNTY as **Joint Parties**
- And until we get to a point where we need more surface water than is available to us on an annual basis, we will be accruing and building up our inventory of drought reserves on an annual basis
- TROA does not CREATE additional water in the system….the system was long ago FULLY appropriated and anything that wasn't under the 1944 ORR DITCH DECREE has recently been granted to the TRIBE



- To follow-up the water supply planning analysis performed in September an "even more extreme" approach was undertaken by running a repeating 2015 hydrology through the model for a period of 20 years (by any standard a worse than worst case scenario) to put TROA to the test
- The results described in Chapter 3 of the latest draft of the 2015-2035 Water Resources Plan show that even under these statistically improbable conditions that TMWA would continue to build up reserves until about 15 years into the run (year 2030), and then drought storage would level off and then begin to slowly decline
- By the end of the 20 year planning run TMWA would still have in excess of 30,000 acre-feet of upstream drought reserves in place however
- ***This occurs despite*** a repeat of 2015 hydrological conditions for 20 years AND increasing customer demand (based on figures from the WRP) AND a very conservative estimate for additional groundwater development over the run period



- Another water supply planning run was performed as well which simulated a repeat of the 1987-1994 drought over and over for a period of 20 years
- The results of this model run were even more positive and showed that under TROA upstream drought reserves would continue to accrue over the planning period and reach over 80,000 acre-feet at the end of the 20 year run
- AND just to illustrate the ***extreme nature of these water supply planning runs*** (the severe hydrological conditions thrown at TROA) we need look no further than the historic elevation of Lake Tahoe to validate this fact

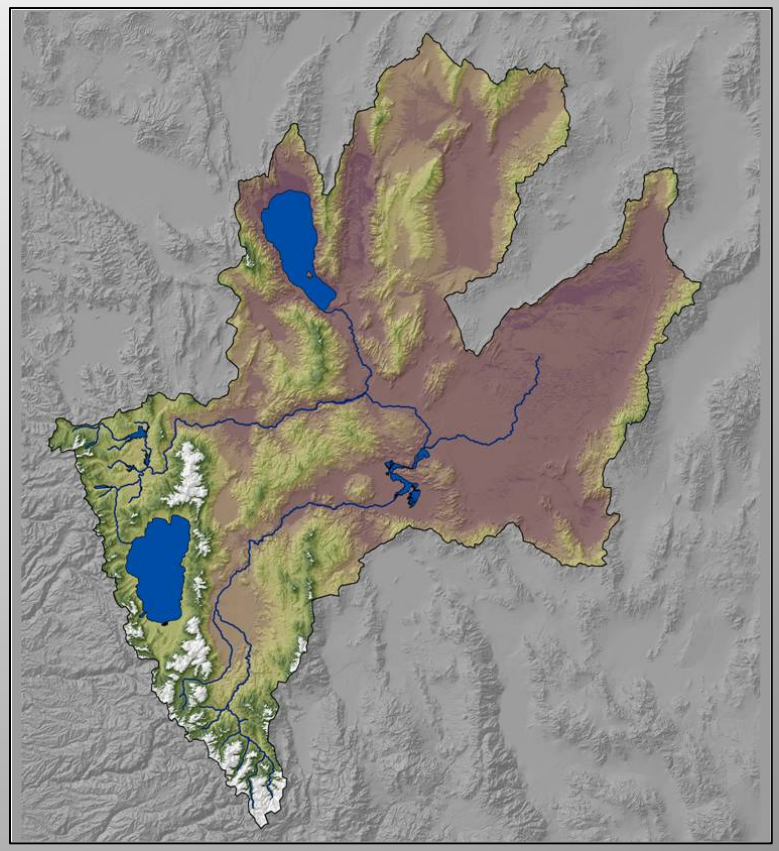


- The blue line represents actual elevations over the past four years AND the red line represents the model output over the 20 year period
- The LOWEST that Lake Tahoe has ever been in recorded history (over 115 years of record-keeping) was 2 ¾ feet below the natural outlet (-2.74' to be exact)
- The hydrology that was run through the model (a repeat of actual 2015 hydrology for 20 years) in order to test the resiliency of the region's water supply under TROA shows that Lake Tahoe would be **26.7 feet below** its natural outlet elevation by the end of the 20 year water supply planning simulation
- This is almost 24 feet below the lowest elevation in the last 115 years
- These runs were performed in an effort to expose weaknesses in TROA and the region's upstream drought supply
- In each case the reason why TROA is such a big deal to TMWA and the community is abundantly clear

TROA

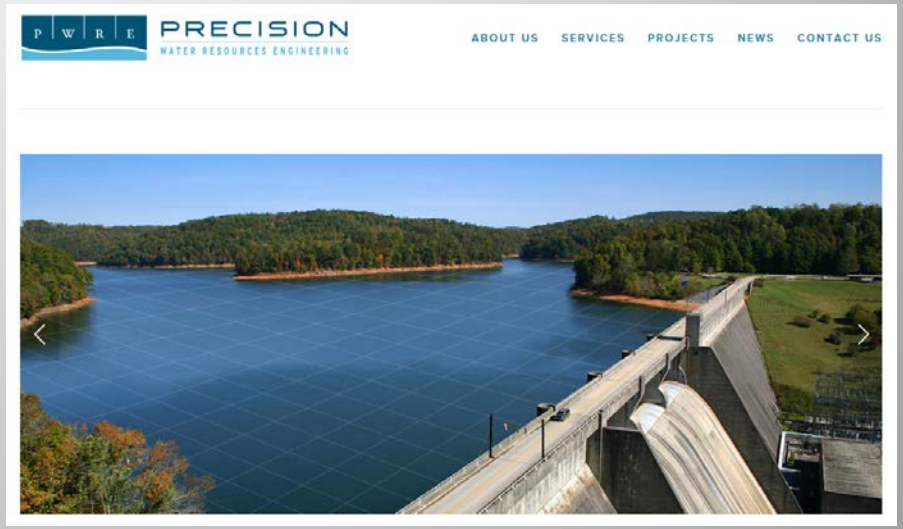
RiverWare Modeling and TMWA Impacts

TMWA Board of Directors Meeting
February 17th, 2016



Shane Coors, PE
Precision Water Resources Engineering
www.precisionwre.com

Precision Water Resources Engineering
Loveland, CO



- Started in 2008
- Clients and Projects in
  - Truckee River Basin
  - Colorado River Basin
  - Arkansas River Basin
  - Bureau of Reclamation HDB (database)
- State-of-the-art Water Management Software (RiverWare)
- Seven water resources engineers
- Lots of RiverWare experience

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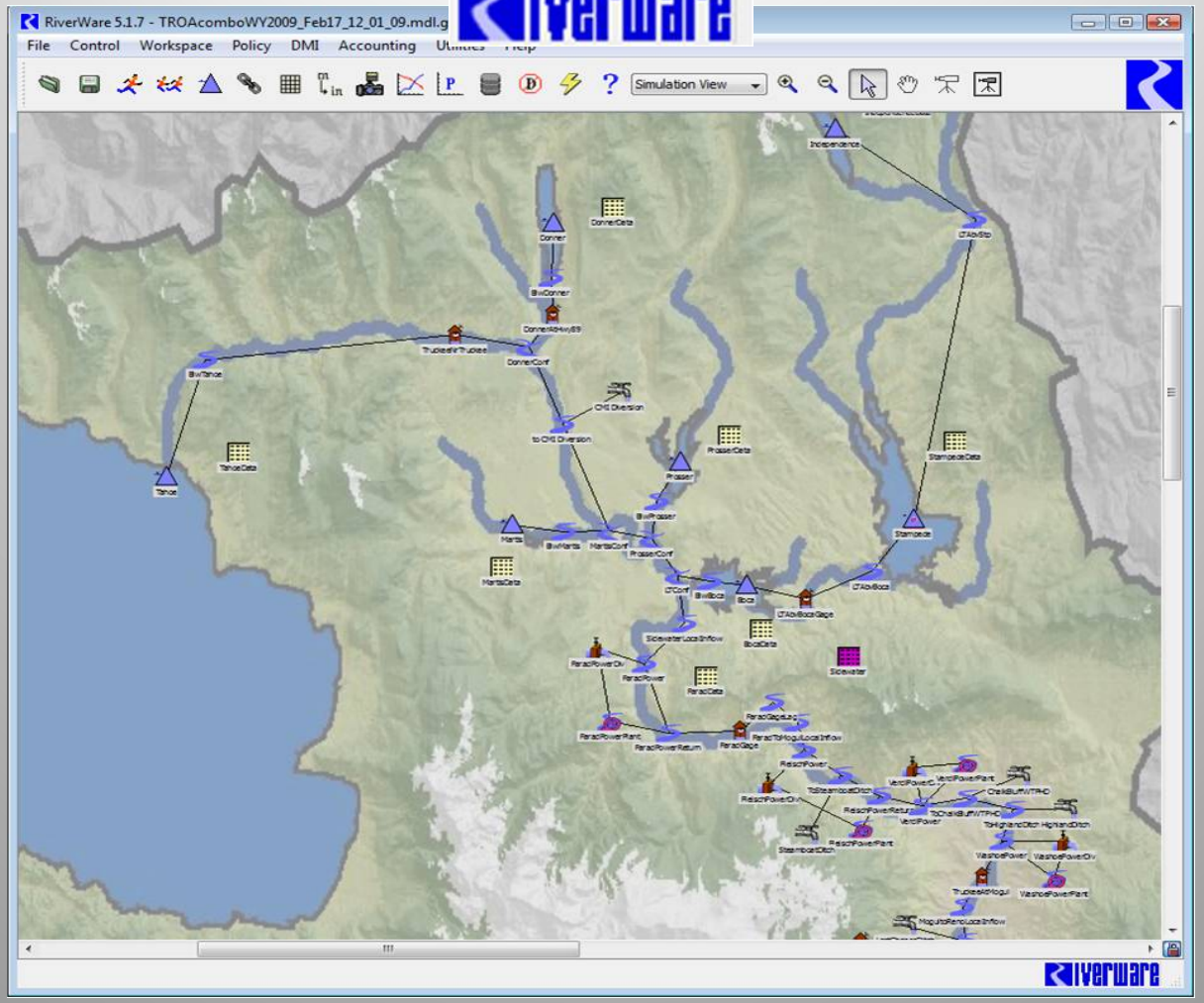
PRECISION WATER RESOURCES ENGINEERING

RiverWare© Basics



Truckee Carson RiverWare Model Collaborative Development

- TROA Implementation Coordination Committee (oversight)
  - Bureau of Reclamation
  - Truckee Meadows Water Authority
  - Pyramid Lake Paiute Tribe
  - State of California (DWR)
  - State of Nevada
  - Federal Watermaster
- Monthly worksessions with all parties to discuss implementation of TROA into the model for ~10 years

Truckee Carson TROA Model Technical Details

- Daily timestep RiverWare© model
- Simulates all reservoir operations and diversions/uses in the basin according to TROA policy
- Facilitates scheduling of each party's operations within TROA
- Performs complete daily water accounting according to TROA policy
- Forecasts system conditions to the end of the calendar year

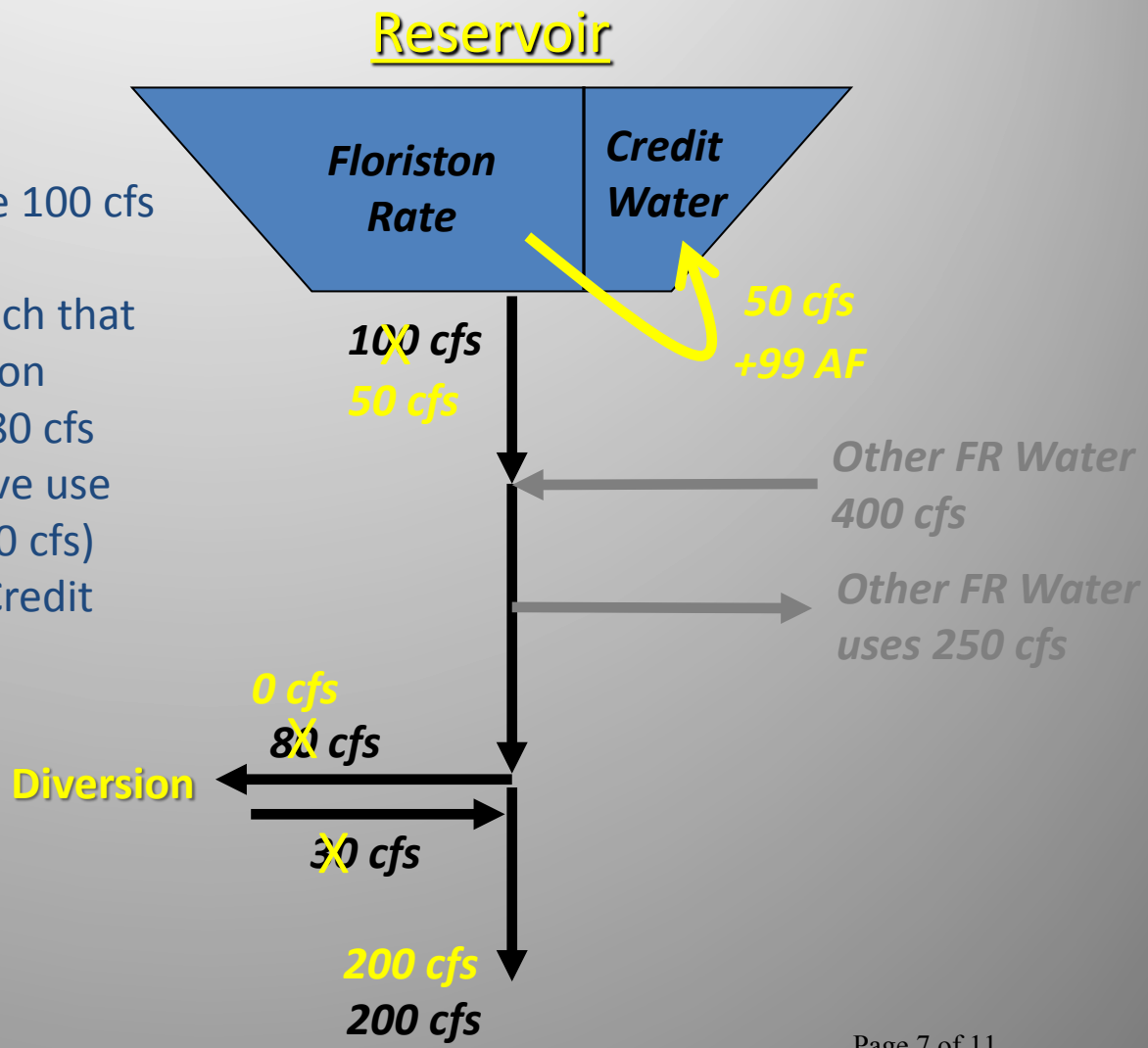
Purpose of TROA

To improve operational flexibility and efficiency of Truckee River Reservoirs while satisfying water rights in conformance with existing decrees

Credit Water Establishment

Establishment Process

- Reservoir is scheduled to release 100 cfs for the Floriston Rate
- Other sources and uses occur such that 250 cfs is available at the diversion
- Diverter foregoes full diversion 80 cfs
- Reservoir holds back consumptive use portion of foregone diversion (50 cfs)
- Transfer from Floriston Rate to Credit Water in Reservoir (50 cfs)
- Net zero effect below Diversion



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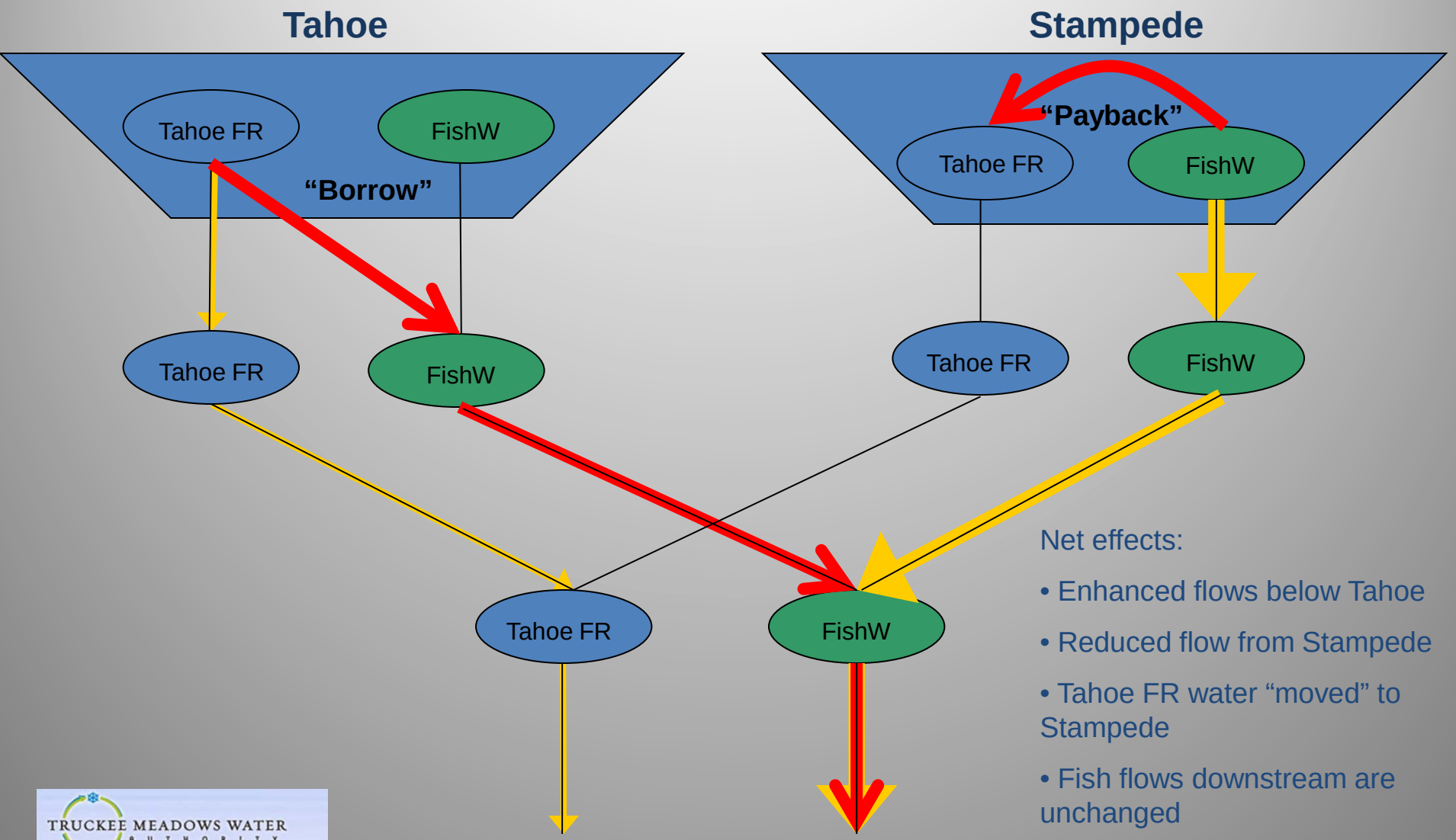
TROA Exchange (TROA 8S)



Net effects:

- Enhanced flows below Tahoe
- Reduced flow from Stampede
- Tahoe FR water "moved" to Stampede
- Fish flows downstream are unchanged

TRUCKEE MEADOWS WATER AUTHORITY
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TROA Impacts on TMWA

- TROA allows TMWA to more completely exercise its water rights
- Under TROA, TMWA can credit store ~11,600 afa in upstream reservoirs.
- Because of the relative seniority of TMWA's water rights, and the 12 month season, these rights are almost always exercised even in the driest of years
- In 70% of years there is sufficient inflow to Boca, Stampede, and Prosser to complete TMWA's full entitlement between November and March

2015 Water Year

- Farad Natural Flow……..~135 kaf
- TMWA system demand…….. ~70 kaf
- Divertible Surface Water (FR)…… ~50 kaf
- Groundwater…….. ~16 kaf
- Independence Lake Inflow…….. 3 kaf
- ½ Donner Lake Inflow …….. 2.6 kaf
- Available Credit Storage…….. 11.6 kaf
- **SUM OF SOURCES…….. ~86 kaf**

Questions ?