

TRUCKEE MEADOWS WATER AUTHORITY
MINUTES OF THE FEBRUARY 15, 2017
MEETING OF THE BOARD OF DIRECTORS

The Board of Directors met on Wednesday, February 15, 2017, at Sparks Council Chambers, 745 4th Street, Sparks, Nevada. Acting Chair Hartung called the meeting to order at 10:01 a.m.

1. ROLL CALL

Members Present: Jenny Brekhus, Alternate Member Kristopher Dahir, Naomi Duerr, Vaughn Hartung, Jeanne Herman, Neoma Jardon, and Ron Smith.

Member Absent: Geno Martini

A quorum was present.

2. PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Bill Hauck, TMWA Senior Hydrologist.

3. PUBLIC COMMENT

There was no public comment.

4. APPROVAL OF THE AGENDA

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

5. APPROVAL OF THE MINUTES OF THE JANUARY 18, 2017 MINUTES

Upon motion by Member Smith, second by Member Dahir, which motion duly carried by unanimous consent of the members present, the Board approved the December 21, 2016 minutes.

6. WATER SUPPLY UPDATE

Bill Hauck, TMWA Senior Hydrologist, reported the recent storms are one of the best starts to the water year in recent history. Mr. Hauck stated the precipitation and snowpack levels are measured at more than

160% of the average, Lake Tahoe is almost 3.2 feet above the natural rim (more than 50% full) and is expected to fill in 2017, precautionary releases began at Lake Tahoe, and Stampede and Lahontan reservoirs, and normal river flows are projected for several years.

Acting Chair Hartung confirmed if there were no more rain/snow storms, it would still be about 160% of normal and if there was any danger if the level at Lake Tahoe exceeded its maximum level. Mr. Hauck replied with some melt off, ground absorption, there would still be significant snowpack by the end of March; and everyone is taking preemptive measures at all the lakes and reservoirs, and about 2,500 cubic feet per second can be released from Lake Tahoe.

Alternate Member Dahir inquired if there are any concerns with the dams. Mr. Hauck replied no, TMWA dams are in good condition, however there is high run-off at Donner Lake which staff is monitoring. Mark Foree, TMWA General Manager, added staff issued a precautionary statement to Donner Lake front property owners regarding the potential for flooding. Andy Gebhardt, TMWA Director of Operations and Water Quality, reported staff worked well with the Town of Truckee Fire and Police departments to ensure residents were communicated with appropriately to take precautions.

Acting Chair Hartung asked about the ability to release water at Donner Lake and if there was concern for an increase in melt off as well as any liabilities if Donner Lake flooded. Mr. Hauck replied 500 cubic feet per second (cfs) can be released when the lake is full and no, there are no concerns. Pat Nielson, TMWA Director of Distribution, Maintenance and Generation, added TMWA crew are going up to Donner Lake daily to ensure there are no issues. Michael Pagni, TWMA General Counsel, replied there was some potential for exposure related to flooding.

7. DISCUSSION AND POSSIBLE ACTION AND DIRECTION TO STAFF REGARDING 2017 LEGISLATIVE ACTIVITIES, CURRENT BILLS, AND TMWA RECOMMENDED POSITIONS ON LEGISLATIVE PROPOSALS

John Zimmerman, TMWA Water Resources Manager, informed the Board that the TMWA Legislative Subcommittee met on February 10 to review the staff recommendations on positions on proposed bills. The legislative subcommittee approved all recommended positions. Staff is continuing to track bill draft requests (BDRs) as they become bills and will continue to update both the TMWA legislative subcommittee and Board.

Acting Chair Hartung commented on how well the presentation made by TMWA to the Senate Natural Resources and Assembly Natural Resources, Agriculture and Mining committees was received.

Mr. Foree agreed it went very well and they are invited every session to present on Water Day.

Steve Walker, TMWA Lobbyist, added many legislators told him how informative the presentation was. Mr. Walker noted that Chair Heidi Swank asked why TMWA did not have an aggressive conservation program much like Southern Nevada. He informed her that the cui-ui fish drives the conservation program and water saved does not create a resource.

Member Duerr asked if there was a policy of using conserved water for growth. Mr. Foree replied no, the Truckee River Operating Agreement (TROA) does not allow it and all conserved water is either preserved in upstream reservoirs or flows into the Truckee River and to Pyramid Lake.

Mr. Walker and Mr. Pagni provided an overview of the bills introduced since the January 18 meeting and actions taken by the TMWA Legislative Subcommittee on February 10.

Discussion revolved around AB107, sealing records of tenants who are evicted, which may be an issue for TMWA regarding payment of bills.

Member Brekhuis noted that in the City of Reno approximately 50% of residents are renters and this bill may be problematic. Mr. Walker replied it would more likely be amended since Nevada has a loose eviction law.

Discussion continued regarding AB113, making accommodations for nursing mothers, with Member Jardon questioning the position of Neutral and not Support. Mr. Pagni replied because it creates a cause of action for employees.

Member Smith recommended it be changed to Support.

Mr. Pagni discussed AB193, BDR 40-716, which would require fluoridation of the water supply in Washoe County. Specifically it would obligate TMWA to fluoridate its water supply and is similar to the bill that was introduced in 2009. Under existing law water can only be fluoridated if the voters approve that by a majority vote in an election. Mr. Pagni noted that voters in Washoe County had voted on this issue in 2002, and 58% voted against fluoridation. AB193 mandates, from the state, that the State Board of Health would require TMWA to fluoridate its water supply. He noted staff conducted a preliminary fiscal impact analysis to fluoridate the supply; to rehabilitate the surface water plants and all 83 wells. Preliminary estimates are about \$67 million for capital improvements and \$3 million for operating expenses and would translate to about 8.8% increase in customer rates. Mr. Pagni requested a position from the Board.

Acting Chair Hartung clarified that this bill mandates the changes to TMWA's system and circumvents the public voting process. Mr. Pagni replied yes.

Member Smith inquired if the 8.8% increase would be on top of the proposed 3% rate adjustment. Mr. Pagni replied that is correct.

Member Duerr inquired who was responsible for writing up the fiscal note, would the rehabilitation occur at the central treatment plant and not at the wells, and where is the water treated. Mr. Pagni replied TMWA is responsible for the fiscal note. Mark Foree, TMWA General Manager, added as the bill is written, it would require TMWA to fluoridate at all sources, including the 83 wells, which drives the majority of the capital costs.

Member Duerr stated she is neutral on the fluoridation model, which has a positive impact on public health, and would like to learn more about the fiscal note. Mr. Foree remarked that TMWA hired a third-party consultant to provide the estimate based on the bill language, which would require all sources to have fluoridation facilities.

Member Hartung noted it would be futile to require TMWA to fluoridate its water if it was not provided to all customers.

Member Jardon expressed her concern about the fiscal note, but more importantly circumventing the vote of the people, as it exists today, the majority said no. Mr. Walker noted in 2009, the bill was amended to say “you can fluoridate as long as you go back to people”, which passed the Senate, but not the House. He noted the Board should expect amendments during the legislative session.

Discussion followed regarding TMWA’s water supply, 80% surface water and 20% wells, that the majority of the costs would be associated with the wells, and if the ratio changed during a period of drought. Mr. Foree replied the majority of the cost would be associated with the wells, and the ratio has been up to approximately 20% in recent non-drought years and possibly more in drought years, and can change depending on operational circumstances.

Member Herman stated she is against fluoridation and supports the voters. She inquired what the cost would be to remove the fluoride before it returns to the river, and expressed her doubts that the PLPT would approve. Mr. Pagni replied the fiscal note prepared was for TMWA to put the fluoride in, but not the cost if fluoride needs to be removed before it returns to the river. Those costs would need to be prepared by TMWRF.

Member Dahir pointed out TMWA has improved its water operations at a cost in the past, but the issue is the State circumventing the voters. Clark County voted to fluoridate its water supply at a significant cost and has found it beneficial. Mr. Pagni noted in 1999 the Clark County fiscal impact was about \$4 million because majority of their water supply comes from surface water sources and far less expensive.

Acting Chair Hartung asked Mr. Pagni to explain how the Clark County bill was written in 1999. Mr. Pagni explained the wording on the ballot and that sources indicated the wording confused the voters.

Member Brekhus opposed the States preemption on local control and authority, and objected to the use of the water system as a medical delivery system. She appealed to Member Smith that Truckee Meadows Water Reclamation Facility (TMWRF) consider a fiscal note.

Member Smith noted the main obstacle is agreement by the PLPT, and objected to lowering the population cap from 700,000 to 100,000 and it needs to be put to a vote of the people.

Member Brekhus suggested that the Board position should be to let the voters decide. Mr. Pagni confirmed the law currently requires the vote of the people.

Member Jardon advised Board position should be to watch and convey their concerns to the bill sponsors.

Acting Chair Hartung asked if the Board can vote on the bill today and give direction to staff to provide information to customers. Mr. Pagni replied the Board could give direction today. Mr. Foree added that TMWA should provide information to the customers as soon as possible.

Mr. Walker suggested the Board can oppose unless amended.

Public Comment

Kevin Dick, Washoe County District Health Chief, provided comment on the fluoridation bill AB 193 and provided supporting documentation (see *Attachment*). Mr. Dick requested the Board not oppose the bill.

Member Duerr asked for Mr. Dick to explain the cost estimate and if the 15% of water supply was set by state law. Mr. Dick replied there were different approaches for fluoridating the TMWA system that was conducted in the study; provisions in the bill states if less than 15% of the water supply comes from wells, fluoridation is not required; the wells do not need fluoridation for a period during a drought; and 15% is stipulated in the Nevada Revised Statutes (NRS) and AB193.

Member Duerr stated she would like to review of the cost estimate to see if it is possible to reduce it and bring it to the vote of the people. Her recommendation would be to continue to watch; if the people vote to fluoridate, it would be worth the investment.

Mr. Dick mentioned he is looking forward to his meeting with TMWA to review the cost estimate study.

Member Dahir clarified since this is a medical issue, if the voters agreed, would all costs have to be paid by TMWA or could the District Health Department offer some financial assistance. Mr. Dick replied they do not have the financial capability to support the rehabilitation costs.

Acting Chair Hartung pointed out even if the fiscal cost was reduced by half, it would still result in a total of 7.5%, which includes the proposed 3% rate adjustment.

Mr. Foree emphasized the bill as written, would require TMWA to install fluoridation at all sources of supply.

Member Jardon cited three reasons to oppose the bill as written: expense, preemption of local authority and circumventing the vote of the people.

Member Brekhus agreed with Member Jardon's motion; many of her constituents are opposed to putting fluoride in the water and she will support them by also opposing AB 193. She pointed out that the Board of Health District should have presented their case locally a year ago, since it is a local issue, to discuss the question of fluoridating water in Washoe County, and coinciding with rate setting is untimely.

Acting Chair Hartung noted some people are allergic to fluoride and that may need to be considered. He stated that he personally knew of at least one person that said they were allergic to Fluoride. Mr. Dick replied he would like to be put in touch with that individual and stated that there are about 25 allergens in toothpaste products which have been confused with people being allergic to fluoride.

Member Dahir stated he would like to watch this bill only because the voters should decide, and the Board should support their decision.

Member Brekhus recommended getting this issue put on a ballot through Washoe County Commissioners.

Mr. Gebhardt informed the Board that emailed highlights from Board meetings can be provided in an E-Newsletter to inform the public. Mr. Foree suggested to the Board that staff can also put the information in the bill insert as well and Mr. Gebhardt confirmed it would be the same language as in the board meeting highlights.

Upon motion by Member Jardon, second by Member Brekhus, which motion duly carried by unanimous consent of the members present, the Board approved to not support AB 193, unless amended, and to include the board position in the bill insert and public communications.

Upon motion by Member Brekhus, second by Member Herman, which motion duly carried by unanimous consent of the members present, the Board approved to change the TMWA legislative subcommittee's position on AB113 from Watch, to Watch and Support.

8. DISCUSSION AND ACTION ON APPOINTMENT OR REAPPOINTMENT OF FOUR PERSONS TO THE BOARD OF TRUSTEES OF THE WESTERN REGIONAL WATER COMMISSION CONSISTING OF ONE TMWA BOARD MEMBER EACH FROM: THE RENO CITY COUNCIL, SPARKS CITY COUNCIL, WASHOE COUNTY BOARD OF COMMISSIONERS, AND ONE PERSON TO REPRESENT TMWA AS SUCCESSOR TO SOUTH TRUCKEE MEADOWS GENERAL IMPROVEMENT DISTRICT, FROM THE FOLLOWING LIST OF ELIGIBLE PERSONS: JENNY BREKHUS, JEANNE HERMAN, NEOMA JARDON, BOB LUCEY, RON SMITH, FOR TWO-YEAR TERMS ENDING MARCH 31, 2019

Member Duerr requested clarification on item 4 in the staff report regarding the "South Truckee Meadows General Improvement District (STMGID) or its successor shall appoint one trustee from its membership." Mr. Pagni reported Section 25 of the Western Regional Water Commission (WRWC) Act does not have that language of its membership with respect to its appointments by Sun Valley General Improvement District and STMGID, only that they have to be an elected official.

Member Duerr asked if the agenda item has been adequately noticed and the appointment can be made from the pool of all elected officials. Mr. Pagni replied it is adequately noticed with respect to the pool on the agenda, but if she wished to consider other elected officials not on the agenda, they would have to bring it back for consideration at a future meeting.

Member Brekhus noted Commissioner Lucey is the representative of the former STMGID customers, but all the members on the TMWA Board could also be appointed in this place.

Upon motion by Member Hartung, second by Member Smith which motion duly carried by unanimous consent of the members present, the Board voted to reappoint Bob Lucey to the Western Regional Water Commission representing the successor to the South Truckee Meadows General Improvement District.

Upon motion by Member Hartung, second by Member Brekhus which motion duly carried by unanimous consent of the members present, the Board voted to reappoint Ron Smith to the Western Regional Water Commission as the TMWA Board's representative from the Sparks City Council.

Member Brekhus commented she would like to continue serving on the WRWC.

Member Jardon remarked she is interested in serving on the WRWC.

Upon motion by Member Smith, second by Member Dahir which motion duly carried by five to two vote of the members present, with Members Brekhus and Duerr dissenting, the Board voted to appoint Neoma Jardon to the Western Regional Water Commission as the TMWA Board’s representative from the Reno City Council.

Upon motion by Member Hartung, second by Member Smith which motion duly carried by unanimous consent of the members present, the Board approved to reappoint Jeanne Herman to the Western Regional Water Commission as the TMWA Board’s representative from the Washoe County Board of Commissioners.

Acting Chair Hartung called for a recess at 11:49 a.m.

The TMWA Board meeting resumed at 11:55 a.m.

Acting Chair Hartung proposed to hear agenda item 10 before agenda item 9.

10. DISCUSSION AND ACTION ON ADOPTION OF RESOLUTION NO. 248: A RESOLUTION DESIGNATED BY THE SHORT TITLE “2017 REFUNDING BOND RESOLUTION” AUTHORIZING THE ISSUANCE BY THE AUTHORITY OF ITS “TRUCKEE MEADOWS WATER AUTHORITY, WATER REVENUE REFUNDING BONDS, SERIES 2017,” 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

Michele Sullivan, TMWA Chief Financial Officer, introduced Jennifer Stern, Bond Counsel, who was present, and Thomas Toepfer, Public Financial Management (PFM) Senior Managing Consultant, who was on the phone, to answer any questions Board Members may have on the agenda item. Ms. Sullivan requested the Board adopt Resolution No. 248 for the 2017 Refunding Bond, which will refund a \$202 million 2007 Revenue Bond outstanding. Over \$32 million in the debt reserve fund will be used to pay the bond down during the refunding, and staff expects to receive a premium and end up with a principal balance of \$152 million; which is a \$15 million, or 7.4%, present value savings. TMWA’s debt policy states that if more than 3% savings can be achieved, refunding needs to be considered. She stated the ratings presentations with Moody’s and Standard and Poor’s went well, and the ratings will be received by the end of the month.

Acting Chair Hartung inquired what TMWA's ratings are currently. Ms. Sullivan replied AA. Acting Chair Hartung commented that the refunding was the fiscally responsible thing to do, given the current situation.

Member Brekhus asked if the 2007 Bond of \$202 million was from the original acquisition of TMWA, if \$32 million was unrestricted cash and what the payment structure for the refunding was. Ms. Sullivan replied yes, they were advanced refunded in 2007; no, \$32 million is restricted cash and on the release of the restriction will be used to pay down the debt; and the payment structure is level debt service. Mr. Toepfer replied the existing bonds are being paid at about \$23.6 million per year in debt service for years 2020-2030, during which the principal is paid; no principal, only interest (\$9.5 million), is paid for the three years prior to 2020; with the refunding, TWMA expects an annual savings in debt service payments of \$4 million for years 2020-2030.

Upon motion by Member Smith, second by Member Dahir which motion duly carried by unanimous consent of the members present, the Board adopted Resolution No. 248: A resolution designated by the short title "2017 refunding bond resolution" authorizing the issuance by the authority of its "Truckee Meadows Water Authority, Water Revenue Refunding Bonds, Series 2017," 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.

9. PRESENTATION OF FINANCIAL PERFORMANCE FOR FIRST HALF FISCAL YEAR 2017

Tabitha Carlisle, TMWA Financial Controller, presented on the first half FY 2017 financial performance. Ms. Carlisle referred to Attachment A-1, and noted water sales were higher than budget due to a dry summer; total operating revenues are \$5.4 million more than the revised budget with hydroelectric revenues \$0.1 million higher than budgeted due to high river flows. Operating spending was \$2.3 million under budget with a \$0.5 million decrease in power being the main contributor. Ms. Carlisle noted it is mid-year and expect to see these operating costs expended by end of the fiscal year. She also noted TMWA received the last portion of the Truckee River Operating Agreement (TROA) grant from the Bureau of Reclamation for \$1.2 million and the Contribution from Others of \$1.2 million was from Scannell Properties for their payment of costs related to the Truckee Canyon Water Treatment Plant Expansion.

Member Brekhus inquired about the Truckee Canyon Water Treatment Plant Expansion, where it was located and if it was oversized for future development. Scott Estes, TMWA Director of Engineering, replied no, it was not oversized for future development. The contribution from Scannell Properties was part of the new business process, which added new demand to the system by developing the Fed Ex

property and because the existing system did not have a back-up well and only had a total capacity of 50 gallons per minute (gpm). Mr. Foree added it was a special project for the Fed Ex property and the satellite water system includes an arsenic treatment facility, and TMWA inherited it as part of the merger.

Ms. Carlisle continued with providing an overview of the cash flow; \$19.8 million over budget, but quite a few capital improvement projects have not been spent as many have been delayed by weather; higher water sales than budgeted; and about \$4.4 million in commercial paper was redeemed due water rights (will-serve) sales.

Acting Chair Hartung inquired when staff expects to have all three hydro plants online. Mr. Nielson replied the Verdi Plant is online, but there have been significant delays at the Fleisch (penstock replacement) and Washoe Hydro (replacement of the spill structure) plants due to the snow and rain, which have created very difficult construction conditions.

Member Dahir inquired if staff anticipate presenting project updates soon. Ms. Sullivan replied staff is working on updating the Capital Improvement Plan (CIP), which will be presented at the March meeting.

Ms. Carlisle provided an overview of net-position compared to prior year, indicating a \$2.9 million gain in 2015 regarding the payment for TROA, which will not be a repeated event.

Member Brekhus asked whether staff is considering placing commercial paper in a more long-term stable instrument, requested an overview of 2018-2023 revenues, debt as a percentage for each year and the debt refunding plan over the 5-year period, and inquired if the financial advisors approve the use of commercial paper. Ms. Sullivan replied her concerns can be addressed when staff presents the tentative budget, but the concept with commercial paper is a balance of how much cash is invested with how much is borrowed; and yes, TMWA's financial advisors approve commercial paper because it is paid down with will-serve sales.

Acting Chair Hartung commended PFM on their great efforts working with TMWA.

11. DISCUSSION AND ACTION REGARDING APPOINTMENT OF, AND POSSIBLE APPROVAL OF CONTRACT WITH, TAMI FRUHWIRTH AS TMWA'S OMBUDSMAN

Mr. Gebhardt presented the ombudsman contract for Board approval.

Upon motion by Member Herman, second by Member Smith, which motion duly carried by unanimous consent of the members present, the Board approved the contract with Tammy Fruhwirth as TMWA's ombudsman.

12. GENERAL MANAGER'S REPORT

Mr. Foree had nothing further to report.

13. PUBLIC COMMENT

There was no public comment.

14. BOARD COMMENTS AND REQUESTS FOR FUTURE AGENDA ITEMS

There were no board comments.

15. ADJOURNMENT

With no further discussion, Acting Chair Hartung adjourned the meeting at 12:16 p.m.

Approved by the TMWA Board of Directors in session on March 15, 2017.

Sonia Folsom, Recording Secretary



April 2, 2015

STATEMENT ON THE EVIDENCE SUPPORTING THE SAFETY AND EFFECTIVENESS OF COMMUNITY
WATER FLUORIDATION

On behalf of the Centers for Disease Control and Prevention (CDC), I am pleased to provide a statement on the evidence regarding the safety and benefits of community water fluoridation. For the record, this statement is not testimony for or against any specific legislative proposal.

Good oral health is an important part of good overall health and an essential part of our everyday lives. Diet, sleep, psychological status, social interaction, school, and work are all affected by impaired oral health. Over the past several decades, there have been major improvements in the nation's oral health that have benefitted most Americans.¹

However, profound disparities in oral health status remain for some population subgroups, such as the poor, the elderly, and many members of racial and ethnic minority groups.¹ Tooth decay is one of the most common chronic diseases among American children with 1 of 4 children living below the federal poverty level experiencing untreated tooth decay.² Untreated decay can cause pain, school absences, difficulty concentrating, and poor appearance—all contributing to decreased quality of life and ability to succeed.³

Tooth decay and its complications are preventable, and several preventive and early treatment options are safe, effective, and economical. The CDC leads national efforts to improve oral health by using proven strategies such as community water fluoridation and school-based dental sealant programs that prevent oral diseases.

An Effective Intervention

Community water fluoridation is "the controlled addition of a fluoride compound to a public water supply to achieve a concentration optimal for dental caries prevention."¹ The process of adding fluoride to public water systems in the United States began in 1945 in Grand Rapids, Michigan. Soon after, dramatic declines in dental caries were noted among school children in Grand Rapids compared with school children from surrounding areas. Since then, community water fluoridation has been adopted by communities across the country, providing the cornerstone of caries prevention in the United States.¹ In 2012, more than 210 million people, or 74.6% of the U.S. population served by public water supplies, drank water with optimal fluoride levels to prevent tooth decay.⁴

Water fluoridation is beneficial for reducing and controlling tooth decay and promoting oral health across the lifespan. Evidence shows that water fluoridation prevents tooth decay by providing frequent and consistent contact with low levels of fluoride, ultimately reducing tooth decay by 25% in children and adults.⁵⁻⁸ Additional evidence shows that schoolchildren living in communities

where water is fluoridated have, on average, 2.25 fewer decayed teeth compared to similar children not living in fluoridated communities.⁹

The safety and benefits of fluoride are well documented and have been reviewed comprehensively by several scientific and public health organizations. The U.S. Public Health Service; the United Kingdom's National Institute for Health Research, Centre for Reviews and Dissemination, at the University of York; and the National Health and Medical Research Council, Australia have all conducted scientific reviews by expert panels and concluded that community water fluoridation is a safe and effective way to promote good oral health and prevent decay.¹⁰⁻¹² The U.S. Community Preventive Services Task Force, on the basis of systematic reviews of scientific literature, issued a strong recommendation in 2001 and again in 2013, for community water fluoridation for the prevention and control of tooth decay.^{9,13}

A Cost-saving Intervention

Although other fluoride-containing products such as toothpaste, mouth rinses, and dietary supplements are available and contribute to the prevention and control of dental caries, community water fluoridation has been identified as the most cost-effective method of delivering fluoride to all members of the community regardless of age, educational attainment, or income level.^{14,15} Analyses have also shown that water fluoridation provides additional benefits across the lifespan beyond what is gained from using other fluoride-containing products.^{8,11,16}

By preventing tooth decay, community water fluoridation has been shown to save money, both for families and the health care system.^{7,17} The return on investment (ROI) for community water fluoridation varies with size of the community, increasing as community size increases, but, as noted by the U.S. Community Preventive Services Task Force, community water fluoridation is cost-saving even for small communities.^{17,18} The estimated annual ROI for community water fluoridation, excluding productivity losses, ranged from \$5.03 in small communities of 5,000 people or less, to \$31.88 in large communities of 20,000 or more people.⁷ The estimated ROI for community water fluoridation including productivity losses was \$6.71 in small communities and \$42.57 in large communities.¹⁹

A study of a community water fluoridation program in Colorado used an economic model to compare the program costs associated with community water fluoridation with treatment savings achieved through reduced tooth decay. The analysis, which included 172 public water systems, each serving populations of 1,000 individuals or more, found that 1 year of exposure to fluoridated water yielded an average savings of \$60 per person when the lifetime costs of maintaining a restoration were included.²⁰ Analyses of Medicaid claims data in 3 other states (Louisiana, New York, and Texas), have also found that children living in fluoridated communities have lower caries related treatment costs than do similar children living in non-fluoridated communities; the difference in annual per child treatment costs ranged from \$28 to \$67.²¹⁻²³

A Safe Intervention

Expert panels consisting of scientists from the United States and other countries, with expertise in various health and scientific disciplines, have considered the available evidence in peer-reviewed literature and have not found convincing scientific evidence linking community water fluoridation with any potential adverse health effect or systemic disorder such as an increased risk for cancer,

Down syndrome, heart disease, osteoporosis and bone fracture, immune disorders, low intelligence, renal disorders, Alzheimer disease, or allergic reactions.^{9,11}

Documented risks of community water fluoridation are limited to dental fluorosis, a change in dental enamel that is cosmetic in its most common form. Changes range from barely visible lacy white markings in milder cases to pitting of the teeth in the rare, severe form. In the United States, most dental fluorosis seen today is of the mildest form, affecting neither aesthetics nor dental function.²⁴ Fluorosis can occur when young children—typically less than 8 years of age, whose permanent teeth are still forming under the gums—take in fluoride from any source.^{9,11}

Conclusion

In the seminal report, *Oral Health in America: A Report of the Surgeon General*, Surgeon General David Satcher observed a “‘silent epidemic’ of dental and oral diseases [...] with those suffering the most found among the poor of all ages.”¹ The report affirms that community water fluoridation is “an inexpensive means of improving oral health that benefits all residents of a community, young and old, rich and poor alike.” Because of its contribution to the dramatic decline in tooth decay over the past 70 years, CDC named community water fluoridation 1 of 10 great public health achievements of the 20th century.¹⁴

Katherine Weno, DDS, JD
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References

1. US Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000.
2. Dye BA, Li X, Thornton-Evans G. Oral Health Disparities as Determined by Selected Healthy People 2020 Oral Health Objectives for the United States, 2009–2010. NCHS data brief no. 104. Hyattsville, MD: National Center for Health Statistics; 2012.
<http://www.cdc.gov/nchs/data/databriefs/db104.htm>. Accessed February 17, 2015.
3. Guarnizo-Herreno CC, Wehby GL. Children's dental health, school performance, and psychosocial well-being. *J Pediatr*. 2012;161:1153-9.
4. Centers for Disease Control and Prevention. 2012 Water Fluoridation Statistics website.
<http://www.cdc.gov/fluoridation/statistics/2012stats.htm>. Accessed February 17, 2015.
5. Koulourides T. Summary of session II: fluoride and the caries process. *J Dent Res*. 1990;69(Spec Iss):558.
6. Featherstone JD. Prevention and reversal of dental caries: role of low level fluoride. *Community Dent Oral Epidemiol*. 1999;27:30-40.
7. Truman BI, Gooch BF, Sulemana I, et al. Reviews of evidence on interventions to prevent dental caries, oral and pharyngeal cancers, and sports-related craniofacial injuries. *Am J Prev Med*. 2002(1S):21-54.
8. Griffin SO, Regnier E, Griffin PM, Huntley V. Effectiveness of fluoride in preventing caries in adults. *J Dent Res*. 2007;86:410-415.

9. Community Preventive Services Task Force. Guide to Community Preventive Services: Preventing Dental Caries: Community Water Fluoridation website. <http://www.thecommunityguide.org/oral/fluoridation.html>. Accessed February 17, 2015.
10. Public Health Service. Review of fluoride: benefits and risks. Report of the Ad Hoc Subcommittee on Fluoride of the Committee to Coordinate Environmental Health and Related Programs. Washington, DC: US Department of Health and Human Services; 1991. <http://www.health.gov/environment/ReviewofFluoride/default.htm>. Accessed February 17, 2015.
11. McDonagh MS, Whiting PF, Bradley M, et al.. *A Systematic Review of Public Water Fluoridation*. University of York, York: NHS Centre for Reviews and Dissemination; 2000. http://www.york.ac.uk/inst/crd/CRD_Reports/crdreport18.pdf. Accessed February 17, 2015.
12. Australian Research Centre for Population Oral Health. The use of fluorides in Australia: Guidelines. *Aust Dent J*. 2006;51:195-199.
13. Community Preventive Services Task Force. Guide to Community Preventive Services: Preventing Dental Caries: Community Water Fluoridation website (2000 archived review). http://www.thecommunityguide.org/oral/fluoridation_archive.html. Accessed February 17, 2015.
14. Centers for Disease Control and Prevention. Achievements in public health, 1900-1999: fluoridation of drinking water to prevent dental caries. *MMWR*. 1999;48(41):933-940.
15. Burt BA, ed. Proceedings for the workshop: cost-effectiveness of caries prevention in dental public health, Ann Arbor, Michigan, May 17--19, 1989. *J Public Health Dent*. 1989;49(special issue):331-337.
16. Slade GD, Sanders AE, Do L, Roberts-Thompson K, Spencer AJ. Effects of fluoridated drinking water on dental caries in Australian adults. *J Dent Res*. 2013;92:376-82.
17. Griffin SO, Jones K, Tomar SL. An economic evaluation of community water fluoridation. *J Public Health Dent*. 2001;61:78-86.
18. Ran T, Chattopadhyay S. Economic evaluation of community water fluoridation: a Community Guide systematic review (working paper).
19. Griffin S, Jones K, Tomar S. Unpublished data, January 2015.
20. O'Connell JM, Brunson D, Anselmo T, Sullivan PW. Costs and savings associated with community water fluoridation programs in Colorado. *Prev Chronic Dis*. 2005. http://www.cdc.gov/pcd/issues/2005/nov/05_0082.htm. Accessed February 17, 2015.
21. Water fluoridation and costs of medicaid treatment for dental decay—Louisiana, 1995–1996. *MMWR*. 1999;48(34):753-7.
22. Kumar JV, Olubunmi A, Melnik TA. Geographic Variation in Medicaid Claims for Dental Procedures in New York State: Role of Fluoridation Under Contemporary Conditions. *Public Health Reports*. 2010;125:647-654.
23. Texas Department of State Health Services. *Water fluoridation costs in Texas: Texas Health Steps (EPSDT-MEDICAID)*. Austin, TX: Texas Department of State Health Services; 2000. www.dshs.state.tx.us/dental/pdf/flstudy.pdf. Accessed March 10, 2015.
24. Beltrán-Aguilar ED, Barker L, Dye BA. Prevalence and severity of dental fluorosis in the United States, 1999-2004. NCHS Data Brief no. 53. Hyattsville, MD: National Center for Health Statistics; 2010. <http://www.cdc.gov/nchs/data/databriefs/db53.pdf>. Accessed February 17, 2015.

COMMUNITY WATER FLUORIDATION AND ORAL HEALTH IN NEVADA

**TRENDS (2001-2010) IN UNTREATED DECAY AND MEAN
DMFT INDICES BETWEEN 3 COHORTS OF
ADOLESCENTS LIVING IN FLUORIDATED (CLARK
COUNTY) AND NON-FLUORIDATED (WASHOE AND "ALL-
OTHERS") COMMUNITIES IN NEVADA**

**RACIAL DIFFERENCES IN UNTREATED DECAY AND
MEAN DMFT SCORES OF NEVADA MIDDLE AND HIGH
SCHOOL STUDENTS LIVING IN FLUORIDATED AND NON-
FLUORIDATED COMMUNITIES**

**GENDER DIFFERENCES IN UNTREATED DECAY AND
MEAN DMFT SCORES AMONG ADOLESCENTS 13-18
YEARS OF AGE LIVING IN FLUORIDATED AND NON-
FLUORIDATED COMMUNITIES IN NEVADA**



Presenters

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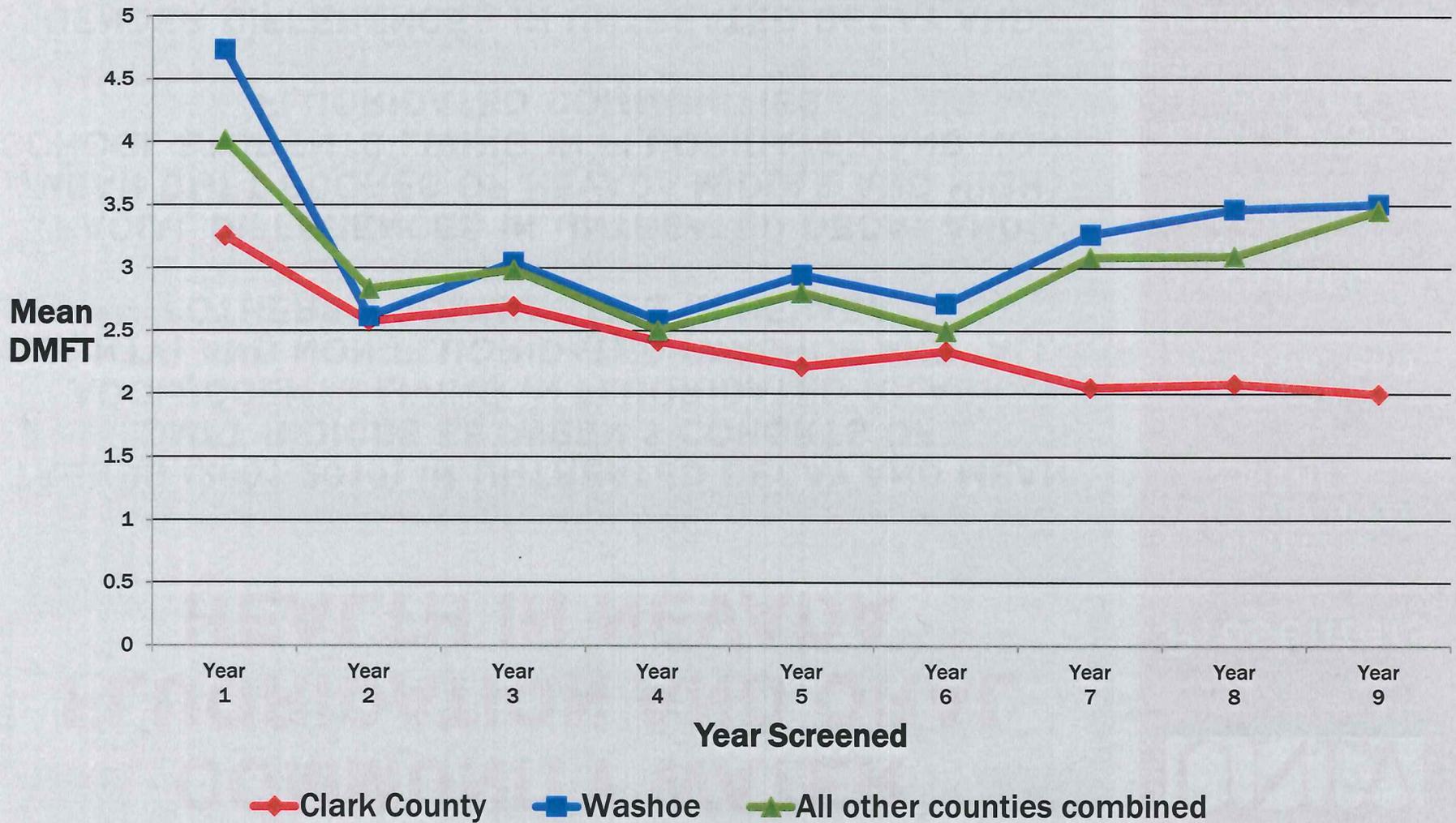
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**Connie Mobley,
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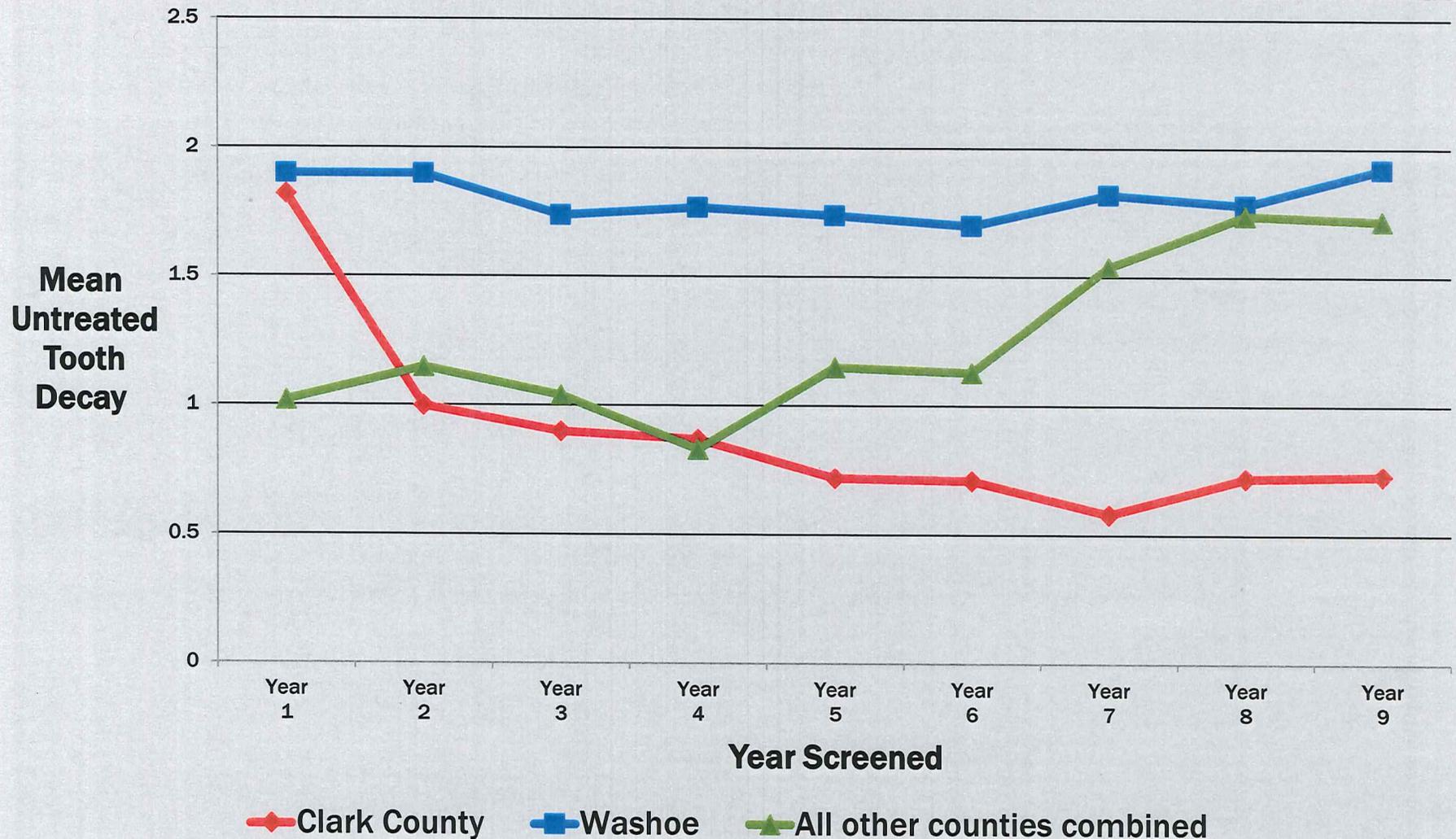
**UNLV School of
Dental Medicine**



OVERALL TRENDS MEAN DMFT INDICES 2001-2010



OVERALL TRENDS UNTREATED TOOTH DECAY (2001-2010)



COMPENDIUM

National and International Organizations That Recognize the Public Health Benefits of Community Water Fluoridation for Preventing Dental Decay

Academy of Dentistry
International Academy of General Dentistry
Academy for Sports Dentistry
Alzheimer's Association
America's Health Insurance Plans
American Academy of Family Physicians
American Academy of Nurse Practitioners
American Academy of Oral and Maxillofacial Pathology
American Academy of Orthopaedic Surgeons
American Academy of Pediatrics
American Academy of Pediatric Dentistry
American Academy of Periodontology
American Academy of Physician Assistants
American Association for Community Dental Programs
American Association for Dental Research
American Association for Health Education
American Association for the Advancement of Science
American Association of Endodontists
American Association of Oral and Maxillofacial Surgeons
American Association of Orthodontists
American Association of Public Health Dentistry
American Association of Women Dentists
American Cancer Society
American College of Dentists
American College of Physicians—
American Society of Internal Medicine
American College of Preventive Medicine
American College of Prosthodontists
American Council on Science and Health
American Dental Assistants Association
American Dental Association
American Dental Education Association
American Dental Hygienists' Association
American Dietetic Association
American Federation of Labor and Congress of Industrial
Organizations
American Hospital Association
American Legislative Exchange Council
American Medical Association
American Nurses Association
American Osteopathic Association
American Pharmacists Association
American Public Health Association
American School Health Association
American Society for Clinical Nutrition
American Society for Nutritional Sciences
American Student Dental Association
American Water Works Association
Association for Academic Health Centers
Association of American Medical Colleges
Association of Clinicians for the Underserved
Association of Maternal and Child Health Programs
Association of State and Territorial Dental Directors
Association of State and Territorial Health Officials
Association of State and Territorial Public Health Nutrition
Directors
British Fluoridation Society
Canadian Dental Association
Canadian Dental Hygienists Association
Canadian Medical Association
Canadian Nurses Association
Canadian Paediatric Society
Canadian Public Health Association
Child Welfare League of America
Children's Dental Health Project
Chocolate Manufacturers Association
Consumer Federation of America
Council of State and Territorial Epidemiologists
Delta Dental Plans Association
FDI World Dental Federation
Federation of American Hospitals
Hispanic Dental Association
Indian Dental Association (U.S.A.)
Institute of Medicine
International Association for Dental Research
International Association for Orthodontics
International College of Dentists
March of Dimes Birth Defects Foundation
National Association of Community Health Centers
National Association of County and City Health Officials
National Association of Dental Assistants
National Association of Local Boards of Health
National Association of Social Workers
National Confectioners Association
National Dental Assistants Association
National Dental Association
National Dental Hygienists' Association
National Down Syndrome Congress
National Down Syndrome Society
National Foundation of Dentistry for the Handicapped
National Head Start Association
National Health Law Program
National Healthy Mothers, Healthy Babies Coalition
Oral Health America
Robert Wood Johnson Foundation
Society for Public Health Education
Society of American Indian Dentists
Special Care Dentistry
Academy of Dentistry for Persons with Disabilities
American Association of Hospital Dentists
American Society for Geriatric Dentistry
The Children's Health Fund
The Dental Health Foundation (of California)
U.S. Department of Defense
U.S. Department of Veterans Affairs
U.S. Public Health Service
Health Resources and Services Administration (HRSA)
Centers for Disease Control and Prevention (CDC)
National Institute of Dental and Craniofacial Research
(NIDCR)
World Federation of Orthodontists