Drinking Water Board Packet

September 1, 2015

Agenda

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Alan Matheson
Executive Director

DIVISION OF DRINKING WATER
Kenneth H. Bousfield, P.E.
Director

DRINKING WATER BOARD MEETING

September 1, 2015 - 1:30 pm
Davis Conference Center – Zephyr Room
1651 North 700 West
Layton, Utah 84041

Ken Bousfield's Cell Phone #: (801) 674-2557

1. Call to Order – Chairman Hansen

2. Roll Call – Ken Bousfield

3. Approval of the Minutes:
   A. July 10, 2015
   B. August 20, 2015

4. Financial Assistance Committee Report
   A. Status Report – Michael Grange
   B. Project Priority List – Michael Grange
   C. SRF Applications
      i. FEDERAL:
         a) Elsinore Town – Gary Kobzeff
         b) Fillmore City – Julie Cobleigh

5. Authorization to Proceed with Rulemaking Actions:
   A. Request to Adopt Amendments to R309-550-10, *Facility Design and Operation: Transmission and Distribution Pipelines, Water Hauling* – Bernie Clark
   B. Request to Begin Rulemaking to Amend R309-520, *Facility Design and Operation: Disinfection* – Bernie Clark
   C. Request to Begin Rulemaking to Amend R309-500-6, *Facility Design and Operation: Plan Review, Operation and Maintenance Requirements, Plan Approval Procedure* – Bernie Clark

6. Rural Water Association Report – Dale Pierson

7. Directors Report
    A. Gold King Mine spill report
    B. Tax Review Commission meetings report
    C. Water Development Commission meeting report
    D. Public Fee Hearing

8. Other

9. Next Board Meeting:

Date:	Friday, November 13, 2015
Time:	1:00 pm
Place:	Multi Agency State Office Building Room 1015 195 North 1950 West Salt Lake City, Utah 84116

10. Adjourn

In compliance with the American Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Dana Powers, Office of Human Resources, at: (801) 499-2117, TDD (801) 903-3978, at least five working days prior to the scheduled meeting.

Agenda Item 3(A)

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
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Department of
Environmental Quality

Alan Matheson
Executive Director

DIVISION OF DRINKING WATER
Kenneth H. Bousfield, P.E.
Director

DRINKING WATER BOARD MEETING
July 10, 2015 - 1:00 pm
Multi Agency State Office Building – Room 1015
195 North 1950 West
Salt Lake City, Utah 84116

DRAFT MINUTES

1. Call to Order – Chairman Hansen

Paul Hansen, Board Chairman, called the meeting to order at 1:06 pm.

2. Roll Call – Ken Bousfield

Board Members present: Paul Hansen, Betty Naylor, Tage Flint, Brad Johnson and David Stevens.
Roger Fridal joined the meeting at 1:23 pm as item 4(C)(ii)(a) was being presented .

Board Members excused: Brett Chynoweth, David Sakrison, and Mark Stevens.

Division Staff present: Ken Bousfield, Michael Grange, Bernie Clark, Tammy North, Heather Bobb and Marianne Booth.
Director Alan Matheson also joined the meeting at 1:33 pm.

3. Approval of the Minutes:

A. May 8, 2015

- Betty Naylor moved to approve the minutes. David Stevens seconded. The motion was carried unanimously by the Board.

4. Financial Assistance Committee Report

A. Status Report – Michael Grange

Michael Grange, the Construction Assistance Section Manager with the Division of

Drinking Water (DDW, the Division), reported that the State SRF fund currently has a deficit of $770,000, however over the course of the next year the Division is expecting an additional $6.2 million to come into the fund, for a total of $5.5 million to be available for funding of projects.

Michael also reported that the Federal SRF fund currently has just over $41 million and over the course of the next year the Division is expecting an additional $15 million to come into the fund, for a total of approximately $56 million to be available for funding of projects.

Michael did note that there is still a wide disparity between the House and the Senate so the expected additional funding is only an estimated amount.

There were a couple of questions on projects that are at or nearing their 1 year mark and Michael informed the Board that those projects are moving forward and working on getting their loans closed.

B. Project Priority List – Michael Grange

Michael Grange proposed that 2 new projects be added to the project priority list. The first is Hooper Water, with 6.6 points, and a project consisting of replacement of ductile iron pipe within their distribution system. The second is Helper City, with 17 points, and a project that consists of the continuing replacement of their distribution system, which up until now has been mainly funded by the Community Impact Board (CIB).

- Paul Hansen moved to approve the updated project priority list. Tage Flint seconded. <u>The motion was carried unanimously by the Board.</u>

C. SRF Applications

i. STATE:

a) Helper City – Michael Grange

Representing Helper City was Ed Chavez, Mayor; Gary Harwood, City Councilman; and Chad Brown of Franson Civil Engineers.

Michael Grange informed the Board that Helper City is requesting $3.5 million to replace approximately 5.3 miles of 8 inch and 12 inch water lines in their system. He went on to explain that since 2012 Helper has replaced about 2/3 of the distribution line in their system with funding from CIB, and this proposed project will replace the remaining water lines in their system. The 2013 local MAGI for Helper City was $41,307, or 102% of State MAGI. Their current water bill is $39.92, or 1.16% of their local MAGI. The proposed base funding would increase their water bill to $82.86 or 2.41% of the local MAGI, qualifying them to be considered for additional subsidization. The Financial Assistance Committee (FAC) recommends that the Board authorize a $3.5 million construction loan at 0% interest for 30 years to Helper City, with $1,050,000 in principal forgiveness, resulting in a repayable loan amount of $2,450,000, through the State SRF program.

There was discussion between the Board, Division Staff, and those representing Helper. In response to questions regarding this project using a large amount of the State SRF, Michael Grange, informed the Board that the FAC came to that decision due to the fact that this is an on-going project and to fund it through the Federal program would impose a number of new restrictions and added costs that are not believed to be beneficial or necessary. It was also noted that CIB recommended that Helper try to acquire funding elsewhere instead of continuing to use CIB funding and that Helper is not "shopping rates".

- David Stevens moved to authorize a $3.5 million construction loan at 0% interest for 30 years, with $1.05 million in principal forgiveness, resulting in a repayable loan amount of $2.45 million, through STATE SRF funds, to Helper City. Tage Flint seconded. The motion was carried unanimously by the Board.

ii. FEDERAL:

a) Hooper Water – Michael Grange

Representing Hooper Water was Dan White of Gardner Engineering; Cole Allen, District Recorder; and Alex Buxton, Zions Bank Public Finance Advisor.

Michael Grange informed the Board that the Hooper Water Improvement District (Hooper) is requesting $5,423,000 in assistance to replace over 3 miles of 18 inch and 16 inch iron ductile pipe, as well as 1200 customer meters in their system and will contribute $500,000 in additional funds to complete the project. Hooper, West Haven and West Point, have a local MAGI of $58,733 or 145% of the State MAGI. The proposed funding would increase their water bill to 1.13% of the local MAGI, therefore Hooper does not qualify for additional subsidization. At the direction of the FAC, Hooper was offered and accepted the opportunity to take part in the Divisions' water rate study with the incentive of a 0.5% interest rate reduction. The FAC recommends that the Board authorize a $5,423,000 construction loan at 2.76% interest of fee for 20 years to Hooper Water Improvement District.

There was discussion between the Board, Division Staff, and those representing Hooper that they understood the additional requirements attached to the Federal program funding. Hooper also mentioned that Rich Peterson, Environmental Engineer with the Division, had informed them that if they could contribute additional funding up front, it would lower their interest rate. Hooper stated that it would contribute an additional $120,000, for a total of $620,000 in order to drop their interest rate to 2.62%.

- Tage Flint moved to authorize a $5.303 million loan at 2.62% interest or fee for 20 years to the Hooper Water Improvement District. Roger Fridal seconded. The motion was carried unanimously by the Board.

iii. OTHER:

a) Oak City – Michael Grange

Michael Grange informed the Board that Oak City has withdrawn their application for the previously requested, but tabled, $400,000 in financial assistance that was intended to fund

drilling of a new well, construction of a new well house, replacement of an existing well chlorination facility, and installation of a new 30,000 gallon chlorine contact time clear well.

❖ Paul Hansen noted the arrival of Alan Matheson, Executive Director of the Department of Environmental Quality and thanked him for his support. Alan took a moment to thank the Board, on behalf of DEQ and the Governor, for taking care of precious public resources that are entrusted to them and for providing for essential water services in Utah's communities.

5. Authorization to Proceed with Rulemaking Actions:

A. Request to Adopt Amendments to R309-510*, Facility Design and Operation: Minimum Sizing Requirements* – Tammy North

Tammy North, Environmental Engineer with the Division, reminded the Board that on May 8, 2015 they authorized the Division to start the rulemaking process for changes to R309-510, which came about as a result of the recent legislative audit. The changes made include the clarifications to the requirements and the procedures for reduction requests, as well as further defining what constitutes a recreational home. A public comment period was held from June 1, 2015 to July 1, 2015 and a joint letter from Sandy City, Metropolitan Water District/Salt Lake City, as well as a separate letter from Alta City were received. The Division felt that their comments had been adequately addressed with the existing changes and sent response letters to both entities. No additional changes were made to the rule. The Division recommends that the Board adopt the amendment to R309-510 and authorize staff to make the amended rule effective July 15, 2015.

- Roger Fridal moved to adopt the amendments to R309-510 and authorize staff to make the amended rule effective on July 15, 2015. David Stevens seconded. The motion was carried unanimously by the Board.

B. Request to Adopt Changes to Proposed Amendments to R309-500*, Facility Design and Operation: Plan Review, Operation and Maintenance Requirements* – Bernie Clark

Bernie Clark, Environmental Scientist with the Division reminded the Board that on January 9, 2015 they authorized the Division to start the rulemaking process for changes to R309-500. A public comment period was held from February 1, 2015, to March 1, 2015, during which several comments were received. The Board then authorized the Division to make changes to the proposed rule amendment on May 8, 2015, and another public comment period was held from June 1, 2015 to July 1, 2015, during which no comments were received. The Division recommends that the Board adopt the change in proposed rule R309-500 and authorize staff to make the rule change effective July 15, 2015.

- Betty Naylor moved to adopt the change in proposed rule R309-500 and authorize staff to make the rule change effective on July 15, 2015. Roger Fridal seconded. The motion was carried unanimously by the Board.

C. Request to Begin Rulemaking to Amend R309-550-10*, Facility Design and Operation: Transmission and Distribution Pipelines – Water Hauling* – Bernie Clark

Bernie Clark informed the Board that the Division had identified an error in section 10 of rule R309-550, and is requesting authorization to begin the rule making process to correct it. Bernie then informed the Board that the change would involve moving the sentence "all proposals for water hauling shall be submitted to and approved by the director", from paragraph 2 to the top of the rule section, which would then cover all community and non-community systems as well as emergencies. If authorized, the Division would file the amended rule with Division of Administrative Rules for publication in the Utah Bulletin and a public comment period would commence from August 1, 2015 to August 31, 2015. Division staff recommends the Board authorize them to begin the rulemaking process and file the proposed rule amendment for publication in the Utah Bulletin.

- Tage Flint moved to authorize staff to begin the rulemaking process and file the proposed rule amendment for R309-550-10 for publication in the Utah Bulletin. David Stevens seconded. The motion was carried unanimously by the Board.

6. Information Regarding Proposed Rulemaking Action:

A. Anticipated Request for Authorization to Amend R309-520, *Facility Design and Operation: Disinfection* – Bernie Clark

Bernie Clark informed the Board that Division staff anticipates requesting authorization to begin the rule making process to amend R309-520's general disinfection requirements that apply to all forms of disinfection, including updating and clarifying the chlorination requirements, at the September 1, 2015 Board meeting.

7. Rural Water Association Report – Dale Pierson

Dale Pierson, Executive Director of the Rural Water Association of Utah (RWAU), started by thanking the Board for their time. He then informed them of a drought mitigation effort that RWAU is undertaking with the Division of Drinking Water, Department of Emergency Management, Division of Water Rights, Department of Water Resources, as well as others in the field, such as water rights attorneys; and hopes to come back to the Board with some recommendations on emergency planning for drinking water systems.

Dale Pierson also updated the Board on the "non-public system drinking water rule" that Curt Ludvigson, Development Specialist for RWAU, has been working on with John Chartier, P.E., District Engineer with DEQ. He reported that the expectation is that the 6 County area, Sanpete, Sevier, Piute, Wayne, Millard, and Juab, will adopt it by the end of summer 2015.

Terry Smith, Management Technician with RWAU, reported that he has been putting together some presentations and documents to assist water systems in the tracking of their annual water usage. He also reported that he has built a water rate model that systems can use to determine their revenue based on the water rate. He is currently assisting Price City, Goshen City, and Kanosh with water rate studies using this model, and also has plans to assist Helper. Terry then informed the Board that he is also currently assisting Pat Creek Ranch near Moab with a water conservation plan.

Brian Pattee, Compliance Circuit Rider with RWAU, reported that he is continuing to work with CAP (State enforcement list) and ETT (EPA enforcement list) systems given to him by Division staff. He also informed the Board that though on paper these systems may look horrible, the issues on the report frequently involve resolved deficiencies. He further stated that most of the operators in the State are very good at addressing deficiencies. He also informed the Board that he will be assisting systems in getting their cross connection control programs put together and implemented.

8. Greendale Water Company – Michael Grange

Michael Grange started by reminding the Board that Greendale Water Company (Greendale) applied for financial assistance from the Board in April of 2013, at which time they intended to build a new water treatment plant. At the July 12, 2013 meeting the Board authorized a $1.145 million construction loan with 3.92% interest or fee for 20 years to Greendale. After identifying a potential treatment process and receiving bids in excess of the authorized loan, Greendale returned to the Board and on May 8, 2015 the Board authorized an additional $245,000 and extended the term, resulting in a $1.390 million construction loan with 3.92% interest or fee for 30 years.

Michael also informed the Board that since the authorization a couple of issues have come to light. The first issue being that Greendale is a privately owned non-profit water company, and typically SRF loans to private companies require collateral, in the form of water rights or other real property owned by the water system equal in value to the loan, that is pledged as security. However as Greendale is built on Forest Service land and operated under Forest Service Special Permit the Company has no real property to use as collateral and the actual water rights value has not been adequately established. The second issue is that there are some within the Greendale service area that have expressed dissatisfaction and concerns about the project.

Paul Hansen, Board Chairman, requested that the presentation of the items for Greendale be rearranged.

C. Project Need – Michael Grange

Michael Grange informed the Board that because Greendale is a privately owned water company it is only eligible for financial assistance under the Federal SRF program. He then quoted from the Federal Register that a project must “address present or prevent future violations of health based drinking water standards including projects needed to maintain compliance with national primary drinking water standards,” and “projects needed to replace aging infrastructure are eligible if they are needed to maintain compliance or further the public health protection objectives of the safe drinking water act”; furthermore the following project categories are eligible for assistance: treatment projects “installation or upgrade of facilities to improve the quality of drinking water to comply with primary or secondary standards.” Michael then stated that based on this language and information provided on their application, Division staff determined that Greendale’s project met the criteria to receive financial assistance from the Federal SRF program and the Board authorized a $1.39 million construction loan at 3.92% for 30 years to Greendale on May 8, 2015.

B. Water User’s Issues – Dustin Bambrough

Dustin Bambrough thanked the board for the opportunity to share some of the water user's concerns over this project with them and provided the Board with a handout. Dustin then gave the Board some background on his and other water user's dealings and problems with Greendale. He then reminded the Board that they required, in their May 22, 2015 letter, "that the Greendale water company hold a public meeting to determine if the public continues to support the project," record the vote, and any comments. Dustin reported to the Board that 56% were in favor of the increased funding, but 62% were opposed to the 30 year term. He then stated that Greendale has informed them that as users they can pay their portion of the assessment in 20 years instead of 30 years, but does not have confidence that Greendale can handle a complicated repayment plan such as that.

Paul Hansen noted that it is never the intent of the Board to mandate payments must go for a full 30 years, it is simply an opportunity that the Board provides to give flexibility to those receiving financial assistance; therefore the Board will leave the handling of the repayment options to the Greendale Board and its shareholders.

A. Collateral Issue – Eric Johnson

Eric Johnson, Special Financing Counsel to Greendale, began by informing the Board that Greendale has water rights to just over 72 acre feet, but as there hasn't been any comparable market sales in a long time and because it is located on Forest Service land by permit, it is difficult to determine exactly what the value of that water right may be. He then explained that because the company is a non-profit, it also holds no real value; and though the new construction would have the value of its purchase price, it again is on Forest Service land by permit which can be cancelled at any time, nullifying any real value. Eric did point out, however, that without the water rights, the properties, which are valued in excess of $50 million, would lose at least ½ of their value.

D. Legal Issues – Bill Prater

Bill Prater, Bond Counsel for the Board, informed the Board, that when they lend money to a private water company, it is underwritten, just like a bank would, with a loan agreement, a promissory note, and collateral. He then reported that as he sees this issue, Division staff is struggling because normally they have the value of systems water rights to determine collateral, and in this case they do not, therefore staff would like direction from the Board.

E. Greendale Water Company Board – Craig Collett

Those representing the Greendale Board were:

- DeArmon Batty, President, representing the Flaming Gorge Acres HOA
- Troy Gale, Vice President, representing the Flaming Gorge Pines HOA
- Kevin Clegg, Member, representing the Flaming Gorge Resort
- Brent Feltch, representing the Flaming Gorge Acres Coporation
- Craig Collett, Manager of the Greendale Water Company

DeArmon Batty thank the Board for their time with regards to this issue and provided them with handouts. DeArmon informed the Board that Greendale has been operating for 43 years and that their Board is made up of 5 members, balanced as 50% commercial interest and 50%

homeowner (HOA) interest. He then stated that Greendale bills each of the 5 individual entities, and then leaves it up to them as to how they assess their businesses or members as they see fit.

DeArmon then referred the Board to a letter from Kenneth G. Anderton, P. G., Attorney at Law, in which he states

> *"legally the board is entitled to make decisions independent of the entities and the customers it serves. In the case of the loan application to the Drinking Water Board, it has generously involved all of its customers and have listened to their comments at public hearings. I am informed that there may be a few people who are serviced by the water company who disagree with the Boards decision to move forward with the loan and the building of the new treatment plant. These individuals have had an opportunity to express their opinions in public hearings and otherwise. I do not believe they have legal standing to object at this point in time to the board going forward with the loan process and the building of any new treatment plant."*

DeArmon went on to inform the Board that Greendale has come up with $250,000 of their own funding and have used that to pay for the pilot study, engineering permits, water sampling tests, etc, and requests that they regard this as indication of Greendale's commitment to the project. He also noted that the Flaming Gorge HOA has put another $100,000 in reserve.

DeArmon then referred the Board to the letter from Lesa Asay, Daggett County Assessor, in which the lot valuations for the Flaming Gorge Pines and Flaming Gorge Acres HOA's are

- $58,000 for up to .50 acre lot improved with a water share
- $29,000 per acre for a lot that is vacant/no water share

After discussion between the Board members it was determined that as the State will still hold the Greendale Water Company's water rights as collateral and the valuation letter from Daggett County, though not a traditional water right appraisal, is still a valid opinion of the County that the water right represents a $29,000 value.

- Tage Flint moved to proceed with the Greendale Water Company's previously authorized construction loan with the conditions that: a) the loan term remain at 30 years as already approved, and b) that based on the uniqueness of this application their collateral is sufficient to secure the loan. Roger Fridal seconded. <u>The motion was carried unanimously by the Board.</u>

9. Chairman's Report

In the interest of time this item was skipped.

10. Directors Report

A. Utah Tax Review Commission

Ken Bousfield, Director of DDW, reported that the Utah Tax Review Commission is a body appointed by Legislature and has recently been focused on "earmarks" from the State's sales tax revenues, of which the Division gets a 1/16 of 1% that is used for the State SRF program. He then reported that there are questions as to whether the State should have earmarks from State sales tax revenues. Ken reported that Senator Lyle Hilliard, a member of the Commission, made supporting comment relative to DDW's use of sales tax funds for a project in his district. Ken then reported that the Division will make another presentation to the Commission on August 27, 2015 and will report on the results of that meeting at the September 1, 2015 Board meeting.

B. Natural Resources, Agriculture, and Environment Interim Committee and C. Revenue and Taxation Interim Committee

Ken reported that these two meetings were held on the same day and at the same time and focus on large water districts and their usage of property tax monies to pay off their loans. He then reported that no decisions came out of either of these meetings, but there were a lot of questions answered by those testifying before the Committees.

Ken also took a moment to report on a June 29, 2015 meeting that took place in the Governor's Office involving the Division of Drinking Water, Water Rights, Water Quality, and Water Resources which Alan Matheson, Michael Grange and he attended

11. Next Board Meeting:

Date: Tuesday, September 1, 2015
Time: 1:30 pm
Place: The Davis Conference Center
Zephyr Room
1651 North 700 West
Layton, Utah 84041

12. Other

Dale Pierson reminded the Board that they were all invited to attend the full RWAU Fall Conference in Layton in addition to their Board meeting that will take place there.

13. Adjourn

Paul Hansen adjourned the meeting at 3:26 pm.

In compliance with the American Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Dana Powers, Office of Human Resources, at: (801) 499-2117, TDD (801) 536-4414, at least five working days prior to the scheduled meeting.

Agenda Item 3(B)

State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Alan Matheson
Executive Director

DIVISION OF DRINKING WATER
Kenneth H. Bousfield, P.E.
Director

DRINKING WATER BOARD MEETING
Thursday, August 20, 2015 – 11:00 am
Multi Agency State Office Building – Arches North Conference Room
195 North 1950 West
Salt Lake City, Utah 84116
Teleconference – 1-877-820-7831 – Pin#: 878776#

DRAFT MINUTES

1. **Call to Order – Chairman Hansen**

Paul Hansen, Board Chairman called the meeting to order at 11:00 am.

2. **Roll Call – Ken Bousfield**

Board Members present: Paul Hansen, Betty Naylor, Brett Chynoweth, and Roger Fridal. David Sakrison joined the meeting at approximately 11:15 am, being present for all motions made by the Board.

Board Members excused: Tage Flint, Brad Johnson, David Stevens, and Mark Stevens.

Division Staff present: Ken Bousfield, Michael Grange, and Marianne Booth.

3. **Kane County Water Conservancy District Bond Restructuring – Michael Grange**

Representing Kane County was John Crandall of George K. Baum and Company, Mike Noel, General Manager for Kane County Water Conservancy District (KCWCD), and Randy Brown, Finance Manager for KCWCD.

Michael Grange, Construction Assistance Section Manager with the Division of Drinking Water (DDW, the Division), informed the Board that KCWCD has requested approval to consolidate and refinance a number of high interest rate bonds and sell them on the public market in order to obtain a lower interest rate and improve their financial standing. The bonds to be refinanced were all purchased by the United States Department of Agriculture – Rural Development, no bonds purchased by the Drinking Water Board are included in the refinance request. However, in order to get a favorable interest rate on the refinanced

bonds; KCWCD requested that the Drinking Water Board take a subordinate position on its bonds.

There was discussion between the Board, Division Staff, and those representing Kane County regarding the parity of the loan and the move a subordinated position. Michael Grange stated that this had been discussed with Bill Prater, DWB Bond Counsel, and that the Board has taken a subordinate position in the past dependent upon the circumstances surrounding the request. John Crandall noted that Kane County would fully fund the debt service reserve account and as they are a water conservancy district they also have the unique ability to implement an emergency levy; according to State Code 17B-2A-1006 that requires Truth in Taxation procedures, but not a public vote; which the indenture of the bond would obligate them to do if needed to provide for debt repayment. Randy Brown also noted that Kane County has a current property tax levy for up to 0.1 mil and KCWCD is currently levying only 0.06 mil, leaving 0.04 mil which could still be levied if needed.

- Betty Naylor moved to authorize the bond restructuring which involves moving the Board's loan to a subordinate position on its bonds with Kane County with the acknowledgement that Kane County has: 1) a fully funded debt service reserve fund, 2) they have 0.04 mil of a current 0.1 mil property tax levy available, and 3) they also have the ability to implement an emergency levy. Roger Fridal seconded. The motion was carried unanimously by the Board.

4. **Logan City Bond Restructuring – Michael Grange**

Representing Logan City was Matt Dugdale of George K. Baum and Company, and Rich Anderson, Finance Director for Logan City.

Michael Grange informed the Board that Logan City's current indenture allows the combined revenue from the water system, wastewater system, and solid waste system to be used as a repayment source for debt incurred by any of the systems individually. Logan City will be restructuring their indenture and separating the various revenue streams to reflect that the water system revenue will be the sole repayment source for debt incurred by the water system, including bonds purchased by the Drinking Water Board. He noted that this will not affect any of their dedicated revenue to repay the Drinking Water Board loans.

There was discussion between the Board, Division Staff, and those representing Logan City regarding the history of the combined fund, the current legal requirements to segregate those funds, and the large sewer system project which will also require that the funds be separated. It was also noted that this would require that the City draft a new master indenture and that the Board would have a senior pledge of the water system revenues with the same terms as the current indenture.

- Roger Fridal moved to authorize the Bond Restructuring for Logan City to a single revenue source. Brett Chynoweth seconded. The motion was carried unanimously by the Board.

5. **Next Board Meeting:**

Date:	Tuesday, September 1, 2015
Time:	1:30 pm
Place:	The Davis Conference Center Zephyr Room 1651 North 700 West Layton, Utah 84041

6. **Other**

7. **Adjourn**

- Betty Naylor moved to adjourn the meeting.

Paul Hansen adjourned the meeting at 11:45 am.

In compliance with the American Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Dana Powers, Office of Human Resources, at: (801) 499-2117, TDD (801) 903-3978, at least five working days prior to the scheduled meeting.

Agenda Item 4(A)

DIVISION OF DRINKING WATER

STATE LOAN FUNDS

AS OF July 31, 2015

SUMMARY	
Total State Fund:	$4,863,557
Total State Hardship Fund:	$1,481,300
Subtotal:	$6,344,858

LESS AUTHORIZED	Less:		
	Authorized Loans & Closed loans in construction:	$3,948,000	*(see Page 2 for details)*
	Authorized Hardship:	$1,992,588	
	Subtotal:	$5,940,588	
	Total available after Authorized deducted	**$404,269**	
PROPOSED	**Proposed Loan Project(s):**	**$0**	*(see Page 2 for details)*
	Proposed Hardship Project(s):	**$0**	
	Subtotal:	**$0**	
AS OF:			
July 31, 2015	**TOTAL REMAINING STATE LOAN FUNDS:**	**$915,557**	
	TOTAL REMAINING STATE HARDSHIP FUNDS:	**-$511,288**	

Total Balance of ALL Funds: **$404,269**

Projected Receipts Next Twelve Months:			
and Sales Tax Revenue			
Annual Maximum Sales Tax Projection	**$3,587,500**		
Less State Match for 2016 Federal Grant	($1,560,000)		
Less Appropriation to DDW	$0		
Less Administration Fees	($150,800)		
SUBTOTAL Sales Tax Revenue including adjustments:		$1,876,700	
Payment:			
Interest on Investments (Both Loan and Hardship Accounts)		$42,000	
Principal payments		$3,284,054	**Receive 80% in January**
Interest payments		$895,926	
Total Projections:		$6,098,680	

Total Estimated State SRF Funds Available through 8-01-2016	**$6,502,949**

DIVISION OF DRINKING WATER
STATE LOAN FUNDS
PROJECTS AUTHORIZED BUT NOT YET CLOSED
AS OF July 31, 2015

Community	Loan #	Cost Estimate	Date Authorized	Date Closed/Anticipated	Authorized Funding Loan	Grant	Total
Daggett Co - Dutch John 0% int 30 yrs	3S216	1,020,000	Jan-15		510,000	510,000	1,020,000
Corinne grant	3S221	70,000	May-15			70,000	70,000
Plymouth Town 3.49% int 30 yrs	3S217	880,000	May-15		880,000		880,000
Helper City 0% int 30 yrs	3S230	3,500,000	Jul-15	Sep-15	2,450,000	1,050,000	3,500,000
Subtotal Loans and Grants Authorized					3,840,000	1,630,000	5,470,000
PLANNING LOANS / GRANTS IN PROCESS							
Henrieville Town 0% int 5 yrs	3S189P	36,000	Jun-13	Sep-13	36,000		36,000
Coalville pl loan 5 yrs 0% int	3S186P	32,000	Jul-13	Sep-13	32,000		32,000
Mendon City pl loan 5 yrs 0% int	3S222P	40,000	May-15	Aug-15	40,000		40,000
Hanksville	3S199P	40,000	Jul-14	Jul-14		40,000	40,000
Glen Canyon-Big Water Town	3S200P	40,000	Jul-14	Jul-14		6,495	6,495
Wendover City	3S207P	38,500	Nov-14	Feb-15		38,500	38,500
Grand Water & Sewer	3S212	48,000	Jan-15	Feb-15		48,000	48,000
Moroni Municpal Water System	3S213P	40,000	Dec-14	Feb-15		40,000	40,000
Springdale Town	3S214P	40,000	Jan-15	Mar-15		40,000	40,000
Cedarville-Montwell SSD	3S219P	65,000	May-15	Jun-15		65,000	65,000
LaVerkin City	3S223P	40,000	Jun-15	Jun-15		40,000	40,000
Junction Town	3S224P	40,000	Jun-15	Jun-15		40,000	40,000
					108,000	357,995	465,995
CLOSED LOANS (partially disbursed)							
Paunsaugunt Cliffs SSD emergency	3S209P	17,000	Dec-14	Dec-14		4,593	4,593
							0
Subtotal Planning Loans/Grants Auth					0	4,593	4,593
Total authorized or closed but not yet funded					$3,948,000	$1,992,588	$5,940,588
PROPOSED PROJECTS for Sept 2015							
							0
							0
							0
							0
Total Proposed Projects					0	0	0

DIVISION OF DRINKING WATER
STATE LOAN FUNDS
AS OF July 31, 2015

	5235 Loan Funds	5240 Interest (use for Grants)	Total
Cash:	$4,863,557	$1,481,300	$6,344,858
Less:			
Loans & Grants authorized but not yet closed (schedule attached)	(3,948,000)	(1,987,995)	(5,935,995)
Loans & Grants closed but not fully disbursed (schedule attached)	0	(4,593)	(4,593)
Proposed loans & grants	0	0	0
Administrative quarterly charge for entire year	(150,800)		(150,800)
Appropriation to DDW	0		0
	0		0
FY 2015 Federal SRF 20% match of $9,229,000	(1,560,000)		(1,560,000)
	(795,243)	**(511,288)**	**(1,306,531)**
Projected repayments during the next twelve months			
Thru 08-01-2016			
Principal	3,284,054		3,284,054
Interest		895,926	895,926
Projected annual investment earnings on invested cash balance		42,000	42,000
Sales Tax allocation thru Aug-01-2016	3,587,500		3,587,500
Total	**$6,076,311**	**$426,638**	**$6,502,949**
* All interest is added to the Hardship Fee account.			

DIVISION OF DRINKING WATER

FEDERAL SRF

AS OF July 31, 2015

FIRST ROUND FUND	
1997 thru 2015 SRF Grants	
Net Federal SRF Grants:	$151,240,641
Total State Matches:	$33,374,100
Closed Loans:	-$184,614,741
Total Grant Dollars:	**$0**

FEDERAL SECOND ROUND FUND	
Principal Repayments	
Principal (P):	$39,865,237
Interest (I):	$10,868,358
Total P & I:	**$50,733,595**

Earnings on Invested Cash Balance	
Total:	**$1,151,116**

Hardship Fund	
Total:	**$3,056,937**

SUMMARY	
Total Federal State Revolving Fund:	$51,884,711
Total Federal Hardship Fund:	$3,056,937
Subtotal:	$54,941,648

LESS AUTHORIZED & PARTIALLY DISBURSED		
Less:		
Authorized & Partially Disbursed Closed Loans:	$13,686,917	*(see Page 2 for details)*
Authorized Federal Hardship:	$1,767,871	
Subtotal:	$15,454,788	

PROPOSED		
Proposed Federal Project(s):	**$2,686,856**	*(see Page 2 for details)*
Proposed Federal Hardship Project(s):	**$45,000**	
Subtotal:	**$2,731,856**	

AS OF:		
July 31, 2015	**TOTAL REMAINING LOAN FUNDS:**	**$35,510,938**
	TOTAL REMAINING HARDSHIP FUNDS:	**$1,244,066**

Total Balance of ALL Funds after deducting proposed actions: $36,755,004

Projected Receipts thru July 31, 2016		
2015 Fed SRF Grant	$5,625,000	
2015 State Match	$1,500,000	
Interest on Investments	$268,800	
Principal Payments	$5,925,246	**Receive 60% in January**
Interest	$1,344,471	
Hardship & Technical Assistance fees	$353,754	
Total:	$15,017,270	

Total Estimated Federal SRF Funds Available through: 7/31/2016 **$51,772,275**

DIVISION OF DRINKING WATER
FEDERAL STATE REVOVING FUND

PROJECTS AUTHORIZED BUT NOT YET CLOSED
AS OF July 31, 2015

COMMUNITY	Project			Authorized Date	Closing Date Scheduled	Authorized From Loan Funds (1st or 2nd Round)			Hardship Fund
	Total Project	Terms	Loan #			Loan	Forgiveness	Total	
White Hills Wtr Co	1,047,000	1% int, 30 yr	3F226	Jul-14	Aug-15	519,000		519,000	518,000
West Erda Improvement District	1,622,600	0% int, 30 yr	3F233	Nov-14		883,000	739,600	1,622,600	
Liberty Pipeline	699,000	2.83% 20 years (LOF $6,990)	3F236	May-15		699,000		699,000	
Hooper Water Impr District	5,923,000	2.26% 20 yrs (LOF $53,030)	3F237	Jul-15		5,303,000		5,303,000	
								0	
					TOTAL CONSTRUCTION AUTHORIZED:	**$ 7,404,000**	**$ 739,600**	**$ 8,143,600**	**$ 518,000**
COMMITTED PLANNING ADVANCES / AGREEMENTS or PARTIALLY DISBURSED CLOSED 2ND ROUND AGREEMENTS:									
					Date Closed				
								0	0
Rural Water Assn of Utah	124,758	5 yr contract for Development Specialist	Ongoing	Nov-12	Jan-13			0	372,776
Cedar Point - Big Plains	83,000	0.0% 5 yrs $42,000 PF Aquafer study	3F224P	May-14			0	0	83,000
Central Iron County WCD	100,000	0.0% 5 yrs $50,000 PF Aquafer study	3F230	Nov-14			0	0	100,000
Eureka	694,095	Principal forgiveness	3F235	May-15	Jun-15			0	694,095
Forest Glen Plat A HOA	1,438,986	0% int, 30 yrs	3F222	Feb-14	Dec-14	650,000	288,986	938,986	
Greendale Water Company		3.92% hgf, 20 yrs	3F213	Jul-13	Jul-15	890,000		890,000	
Kane Co WCD-Johnson	1,401,020	1.93% int, 30 yrs	3F165	Mar-11	Dec-11	974,000	149,000	1,123,000	
Taylor West Weber Water Improvement Di	7,636,391	2.26% int, 30 yr	3F234	Feb-15	Apr-15	2,591,331	0	2,591,331	
		.							
					TOTAL PLANNING AUTHORIZED:	**$5,105,331**	**$437,986**	**$5,543,317**	**$1,249,871**
				TOTAL CONSTRUCTION & PLANNING:				**$13,686,917**	**$1,767,871**
				AVAILABLE PROJECT FUNDS:					**$38,197,794**
				AVAILABLE HARDSHIP FUNDS:					**$1,289,066**
PROPOSED PROJECTS FOR SEPT 2015:									
Greenwich	131,300	Wasn't ready for Sept Board	3F240			131,300		131,300	
Fillmore City	2,555,556	2.45% int, 20 yrs	3F239			2,555,556		2,555,556	
Elsinore Planning	45,000		3S229						45,000
					TOTAL PROPOSED PROJECTS FOR THIS MEETING:	**$2,686,856**	**$0**	**$2,686,856**	**$45,000**
*RWAU hardship grant is being disbursed monthly									
				TOTAL FUNDS AFTER PROPOSED PROJECTS ARE FUNDED:					**$35,510,938**
				TOTAL FUNDS AFTER PROPOSED HS PROJECTS ARE FUNDED:					**$1,244,066**
NOTES OF LOAN CLOSINGS SINCE LAST BOARD MEETING:									
Total Recent Loan Closings						**$0**	**$0**	**$0**	**$0**

DIVISION OF DRINKING WATER
FEDERAL SRF LOAN FUNDS
AS OF July 31, 2015

	Loan Funds 1st Round	Loan Payments 2nd Round Principal	Loan Payments 2nd Round Interest	Loan Payments Hardship Fund	TOTAL
Federal Capitalization Grants and State 20% match thru 2015	$184,614,741				
Earnings on Invested 1st Round Funds			1,151,116		
Repayments (including interest earnings on 2nd round receipts)		39,865,237	10,868,358	3,056,937	239,556,389
Less:					
Closed loans and grants	-184,614,741				-184,614,741
SUBTOTAL of Funds Available	**$0**	**$39,865,237**	**$12,019,474**	**$3,056,937**	**$54,941,648**
Loans & Grants authorized but not yet closed or fully disbursed	-5,363,600	-7,885,331	-437,986	-1,767,871	-15,454,788
SUBTOTAL of Funds Available less Authorized	**-$5,363,600**	**$31,979,906**	**$11,581,488**	**$1,289,066**	**$39,486,860**
Future Estimates:					
Proposed Loans/Grants for current board package	-2,686,856			-45,000	-2,731,856
SUBTOTAL of Funds Available less Proposed Loans & Grants	**-$8,050,456**	**$31,979,906**	**$11,581,488**	**$1,244,066**	**$36,755,004**
PROJECTIONS THRU July-2016					
	0				
2016 SRF Capitalization Grant (Loan Portion)	5,625,000				
2016 SRF Capitalization State Match	1,500,000				
Projected repayments & revenue during the next twelve months		5,925,246	1,344,471	353,754	7,623,470
Projected annual investment earnings on invested cash balance		240,000	12,000	16,800	268,800
TOTAL	**-$925,456**	**$38,145,152**	**$12,937,959**	**$1,614,621**	**$51,772,275**

Agenda Item 4(B)

Project Priority List
Presented to the Drinking Water Board
September 1, 2015

DRINKING WATER BOARD
PACKET FOR PROJECT PRIORITY LIST

There are two new projects being added to the Project Priority List:

Greenwich is being added to the Project Priority List with 18.3 points. Their project consists of a new chlorination building.

Fillmore City is being added to the Project priority List with 25.5 points. Their project consists of water line replacement.

FINANCIAL ASSISTANCE COMMITTEE RECOMMENDATION:

The Drinking Water Board approve the updated Project Priority List.

July 20, 2015

Utah Federal SRF Program

Project Priority List

										Authorized
					Total Unmet Needs:		**$236,141,396**	**Total Needs, incl. Recent funding**	**$254,963,387**	**$223,063,081**
	date	type	%Green	Priority Points	System Name	County	Pop.	ProjectTitle	Project Total	Request DWB	Funds Authorized
N				25.5	Fillmore City	Millard	2,260	Water Line Replacement	$2,555,556	2,555,556	
N				18.5	Ticaboo Utility Imp Dist	Garfield	83	New well pump and pump house	$707,071	707,071	
N				18.4	Dutch John	Daggett	185	Tank repair, treatment upgrades, meters	$361,313	331,313	
N				18.3	Greenwich	Piute	67		$131,300	131,300	
N				17.0	Helper City	Carbon	2,201	Replace Distribution System	$3,535,354		
N				10.7	Plymouth	Box Elder	411	.5-MG tank	$880,303	880,303	
N				6.6	Hooper Water Improvement District	Weber	19,726	Water Line Replacement	$6,195,503	6,183,702	
A				82.6	West Erda	Tooele	158	Connect West Erda and Tooele Airport to Erda Acres	$1,801,331.00	1,801,331	$1,622,600
A				50.9	Eureka City	Juab	669	Waterline, meters, 2 generators	$7,417,246.00	701,106	
A				50.0	Boulder Farmstead	Garfield	226	Water line, spring upgrades and chlorination	$2,000,000	$2,000,000	$2,000,000
N				22.9	Taylor West Weber ID	Weber	6,927	3-MG tank, transmission line, new well	$7,233,375	7,144,664	$7,636,391
A				22.5	White Hills Water	Utah	419	Water line replacement, tank rehab, new PRV	$1,047,168	1,047,168	$1,037,000
A				13.7	Greendale	Daggett	500	New water treatment system, 50,000-gal tank	$1,384,444	$1,144,444	$1,145,000
A				8.9	Herriman	Salt Lake	24,000	New 3 MG tank and pump station	$8,325,000	$5,000,000	$4,682,000
N				4.8	Liberty Pipeline Company	Weber	2,504	New Well	$743,954	$698,647	$699,000

N = **New Application**
A = **Authorized**
P = **Potential Project- no application**

E= **Energy Efficiency**
W= **Water Efficiency**
G= **Green Infrastructure**

I= **Environmentally Innovative**

GREEN PROJECTS

EMERGENCY FUNDING

N				100	Trenton Town	Cache	466	Spring Re-development	$401,150.00	$241,150	
N				100	Marble Hills	Box Elder	250	Pump replacement	$152,167.00	$28,170	

POTENTIAL PROJECTS

P				125.2	Soldier Summit SSD-2nd home sub	Utah	33	Water line upgrade	$530,303	$530,303	
P				36.4	Santa Clara (on hold)	Washington	8,000	Water line upgrades	$6,419,202	$6,354,202	
P				35.0	CUWCD-Utah Valley	Utah		Treatment plant upgrades	$39,369,500	$36,950,000	
P				24.4	Jordan Valley WCD	Salt Lake	82,500	Treatment	$3,200,000		

Utah Federal SRF Program

Project Priority List

July 20, 2015

Total Unmet Needs: **$236,141,396** **Total Needs, incl. Recent funding** **$254,963,387** **Authorized** **$223,063,081**

	date	type	%Green	Priority Points	System Name	County	Pop.	ProjectTitle	Project Total	Request DWB	Funds Authorized
P				20.0	Pinon Forest	Duchesne	n/a	New system- residents haul water	$21,247,000		
P				17.9	Wendover	Tooele	1,600	Water line upgrades	$833,000		
P				17.5	Draper City	Salt Lake	15,000	Storage and distribution upgrades	$35,789,000		
P				17.1	East Zion SSD	Kane	49	Water line	$128,876	$128,876	
P				16.4	Eastland SSD	San Juan	60	New well for back up purposes	$500,000		
P				16.4	Neola	Duchesne	840	Waterline upgrades, storage, source improvements	$3,607,592	$3,607,592	
P				15.3	Newton Town	Cache	799	Spring rehabilitation, water line upgrades	$1,581,500		
P				15.3	South Rim Water	Tooele	264	Well equipment and house, new tank	$600,000		
P				15.2	Midvalley Estates Water Company	Iron	700	Source, storage, distribution	$500,000		
P				15.1	Syracuse	Davis	25,200	Water line upgrades	$1,589,756	$1,589,756	
P				14.7	Central Waterworks Co.	Sevier	450	Storage and distribution upgrades	$1,400,000		
P				14.0	Herriman	Salt Lake	18,431	Booster Pump, water line	$2,050,000		
P				13.7	Cornish Town	Cache	300	Connect to Lewiston, rehab well	$1,226,263		
P				13.7	Morgan City	Morgan	3,250	Water line upgrades	$692,026		
P				13.5	Riverdale	Weber	8,200	New well and tank, water line upgrades	$2,050,000		
P				13.3	Richfield City	Sevier	7,111	System repairs	$2,722,000		
P				13.0	Uintah City	Weber	1,300	Treatment	$1,063,000		
P				12.8	Centerfield	Sanpete	1,200	New tank, upgrade water lines	$3,600,000		
P				12.6	Enterprise	Washington	1,500	New tank, upgrade water lines	$1,917,100		
P				12.6	Price River	Carbon	7,659	New tank, water lines, treatment	$2,750,000		
P				11.6	Manila Culinary Water Co.	Utah	2,450	Treatment and water line upgrades	$700,000		
P				11.6	Jordan Valley WCD	Salt Lake	82,500	Flouride facility, well equipping	$3,694,000	$2,000,000	
P				11.4	Pineview West Water Company	Weber	115	Telemetry system	$25,000		
P				11.4	North Ogden City	Weber	15,000	Water line upgrades	$746,000	$746,000	
P				11.3	Farmington	Davis	15,000	New well, new tank, water line replacement	$2,830,000		
P				10.7	Ogden City	Weber	77,000	Source rehabilitation, treatment plant upgrades	$26,500,000		
P				10.7	High Valley Water Company	Summit	850	Water line upgrades	$1,000,000		
P				10.3	City of Monticello	San Juan	2,000	Storage and distribution upgrades	$1,200,000		
P				9.8	Gorgoza	Summit	4,200	Waterline upgrades	$1,000,000		
P				9.7	Moutain Regional SSD	Summit	6,700	Transmission line	$600,000		
P				9.7	Benson Culinary Water District	Cache	743	New tank, water line replacement	$500,000		
P				9.3	Mapleton City	Utah	7,300	Replace distribution lines	$15,339,560		
P				9.2	Greendale Water Co.	Daggett	500	Treatment system	$800,000		
P				9.1	Center Creek	Wasatch	200	Pump house and pump	$80,000		

July 20, 2015

Utah Federal SRF Program

Project Priority List

											Authorized
				Priority Points	Total Unmet Needs:		$236,141,396		Total Needs, incl. Recent funding	$254,963,387	$223,063,081
	date	type	%Green		System Name	County	Pop.	ProjectTitle	Project Total	Request DWB	Funds Authorized
P				8.4	Nibley City	Cache	4,300	New tank	$1,270,355		
P				8.3	Hurricane	Washington	8,000	Water line replacement and new tank	$5,047,899		
P				7.6	Harmony Farms Water User Assoc.	Washington	300	Water line Replacement	$3,000		
P				6.8	Hooper Water Improvement District	Weber	16,520	Storage, water lines, treatment	$2,887,000		
P				6.7	Centerville City	Davis	16,000	Replacement well, water line upgrades	$2,965,000		
P				6.1	Marble Hill Water Company	Box Elder	250	New storage tank	$225,000		
P				4.5	Peterson Pipeline Association	Morgan	450	Source, storage, distribution	$1,700,000		
P				4.5	Perry City	Box Elder	4,603	Source, storage, distribution	$4,782,220		
P				3.9	Wolf Creek Country Club	Weber	2,000	Water line	$180,000		
P				3.4	Highland City	Utah	15,066	New well houses	$650,000		

Agenda Item 4(C)(i)(a)

Elsinore Town
Presented to the Drinking Water Board
September 1, 2015

DRINKING WATER BOARD
PACKET FOR PLANNING ADVANCE

APPLICANT'S REQUEST

Elsinore Town is requesting a Planning Advance in the amount of $45,000 to prepare a Capital Facility Plan.

STAFF COMMENTS

Elsinore Town would like to complete a Capital Facility Plan for their culinary water system. The scope will include demographic growth projections, future build-out area determination, preliminary layout, system hydraulic modeling, source condition summary, source capacity analysis, storage condition summary, storage analysis, electrical efficiency analysis, future needs development, impact fee analysis and related work.

The local MAGI for Elsinore Town is $27,356, which is approximately 68% of the State's $40,489 MAGI. The average monthly water bill for Elsinore Town is $31.76, which is 1.39% of the local MAGI. Based on this information, Elsinore Town qualifies for grant due to their local MAGI being below 80% of the State's MAGI.

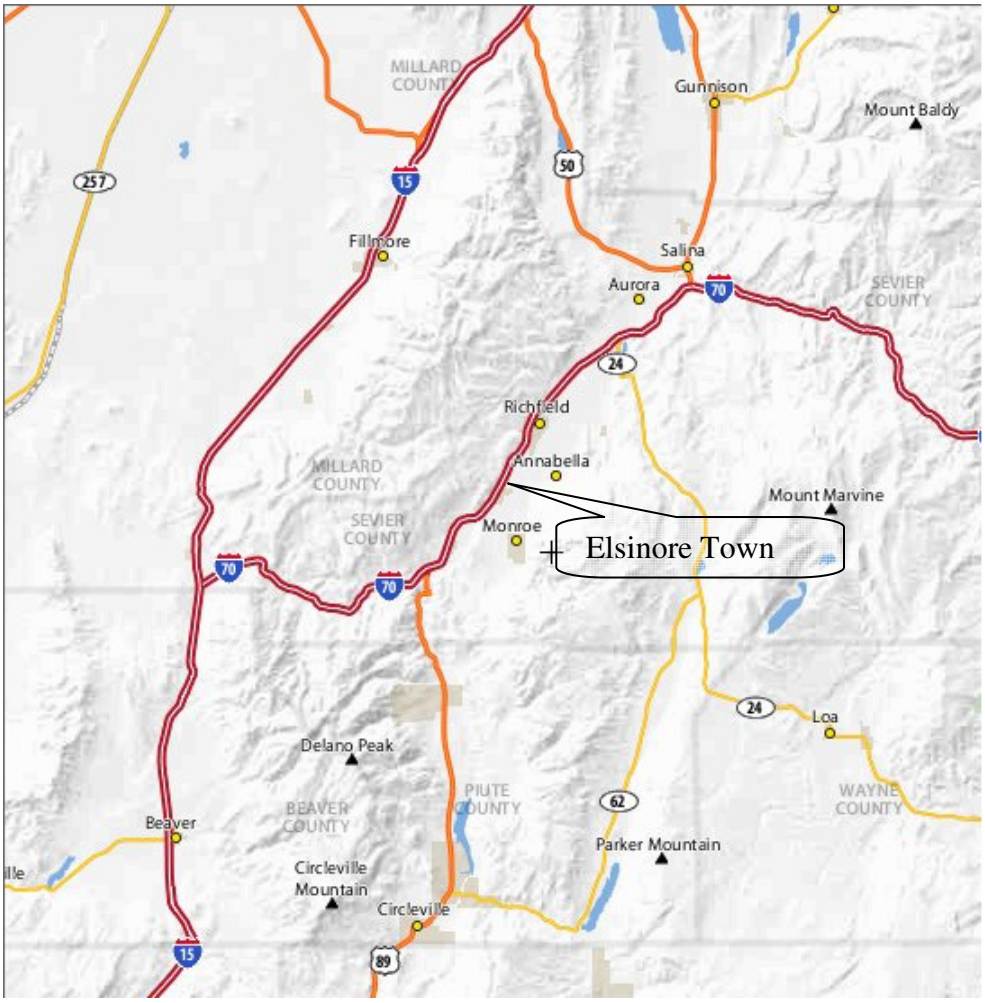
FINANCIAL ASSISTANCE COMMITTEE RECOMMENDATION:

The Drinking Water Board authorize a $45,000 planning grant to Elsinore Town to fund a Capital Facility Plan.

APPLICANT'S LOCATION:

Elsinore Town is located in Sevier County.

MAP OF APPLICANT'S LOCATION:



PLANNING DESCRIPTION/SCOPE OF WORK:

Elsinore Town would like to complete a Capital Facility Plan for their culinary water system. The scope will include demographic growth projections, future build-out area determination, preliminary layout, system hydraulic modeling, source condition summary, source capacity analysis, storage condition summary, storage analysis, electrical efficiency analysis, future needs development, impact fee analysis and related work.

Elsinore Town's culinary system revenue from user fees is not quite enough to pay for system expenses. They are essentially breaking even on a year to year basis. They need to find ways to improve efficiency and update connection and impact fees to create a better financial situation. A new rate structure will be developed.

IMPLEMENATION SCHEDULE:

Apply to DWB for Planning Funds:	June 2015
Division Funding Authorization:	September 2015
Completion of Planning Study:	November 2015

COST ESTIMATE:

Capital Facility Plan:	$45,000
Total Planning Cost:	$45,000

COST ALLOCATION:

The cost allocation proposed for the project is shown below.

Funding Source	Cost Sharing	Percent of Project
DWB Grant:	$45,000	100%
System Contribution:	$0	0%
Total Amount:	$45,000	100%

CONTACT INFORMATION:

APPLICANT:	Elsinore Town 35 West Main Street Elsinore, Utah 84724 Phone: 435-527-3306
PRESIDING OFFICIAL & CONTACT PERSON:	Kevin Moore, Mayor 35 West Main Street Elsinore, Utah 84724 Phone: 435-527-3306
TREASURER/RECORDER:	Jeane Wood Phone: 435-527-3306
CONSULTING ENGINEER:	Darin Robinson Jones & DeMille Engineering 1535 South 100 West Richfield, Utah 84701 Phone: 435-896-8266 Email: darin@jonesanddemille.com

DRINKING WATER BOARD FINANCIAL ASSISTANCE EVALUATION

SYSTEM NAME: Elsinore
COUNTY: Sevier
PROJECT DESCRIPTION: Planning

FUNDING SOURCE: State SRF

0 % Loan & 100 % Grant

ESTIMATED POPULATION:	845	NO. OF CONNECTIONS:	447 *	SYSTEM RATING:	APPROVED
CURRENT AVG WATER BILL:	$31.76 *			PROJECT TOTAL:	$45,000
CURRENT % OF AGI:	1.39%	FINANCIAL PTS:	59	LOAN AMOUNT:	$0
ESTIMATED MEDIAN AGI:	$27,356			GRANT AMOUNT:	$45,000
STATE AGI:	$40,489			TOTAL REQUEST:	$45,000
SYSTEM % OF STATE AGI:	68%				

	@ ZERO % RATE	@ RBBI MKT RATE		AFTER REPAYMENT PENALTY & POINTS
	0%	4.25%		0.00%
SYSTEM				
ASSUMED LENGTH OF DEBT, YRS:	5	5		5
ASSUMED NET EFFECTIVE INT. RATE:	0.00%	4.25%		0.00%
REQUIRED DEBT SERVICE:	$0.00	$0.00		$0.00
*PARTIAL COVERAGE (15%):	$0.00	$0.00		$0.00
*ADD. COVERAGE AND RESERVE (10%):	$0.00	$0.00		$0.00
ANNUAL NEW DEBT PER CONNECTION:	$0.00	$0.00		$0.00
O & M + FUNDED DEPRECIATION:	$98,950.00	$98,950.00		$98,950.00
OTHER DEBT + COVERAGE:	$90,156.25	$90,156.25		$90,156.25
REPLACEMENT RESERVE ACCOUNT:	$8,553.75	$8,553.75		$8,553.75
ANNUAL EXPENSES PER CONNECTION:	$442.19	$442.19		$442.19
TOTAL SYSTEM EXPENSES	$197,660.00	$197,660.00		$197,660.00
TAX REVENUE:	$0.00	$0.00		$0.00
RESIDENCE				
MONTHLY NEEDED WATER BILL:	$36.85	$36.85		$36.85
% OF ADJUSTED GROSS INCOME:	1.62%	1.62%		1.62%

* Equivalent Residential Connections

Agenda Item 4(C)(i)(b)

Fillmore City
Presented to the Drinking Water Board
September 1, 2015

DRINKING WATER BOARD
BOARD PACKET FOR CONSTRUCTION LOAN

APPLICANT'S REQUEST:

Fillmore City is requesting financial assistance in the amount of $2,152,000 to replace approximately 26,000 linear feet of old, leaking water lines. The total project cost is expected to be $2,552,000 and they will contribute $400,000 towards the project. They scored 25.5 points on the project priority list.

STAFF COMMENTS:

Fillmore City recently completed a Culinary Water Master Plan. Within this plan, each of the components of the culinary water system were analyzed for current and 20 year demands. Distribution system improvements were identified in the plan based on hydraulic needs. This project involves replacing approximately 26,000 linear feet of old distribution and transmission water lines.

The local MAGI for Fillmore City is $37,861, which is 94% of the State MAGI. The average residential water bill for Fillmore City, including secondary irrigation, is approximately $31 per month, which is 0.99% of local MAGI. With a full loan at the calculated interest rate of 2.45% for 20 years, the City would need to increase their average water bill to approximately $33/ERC which is 1.04% of their local MAGI. Based on this information, the City does not qualify for additional subsidization.

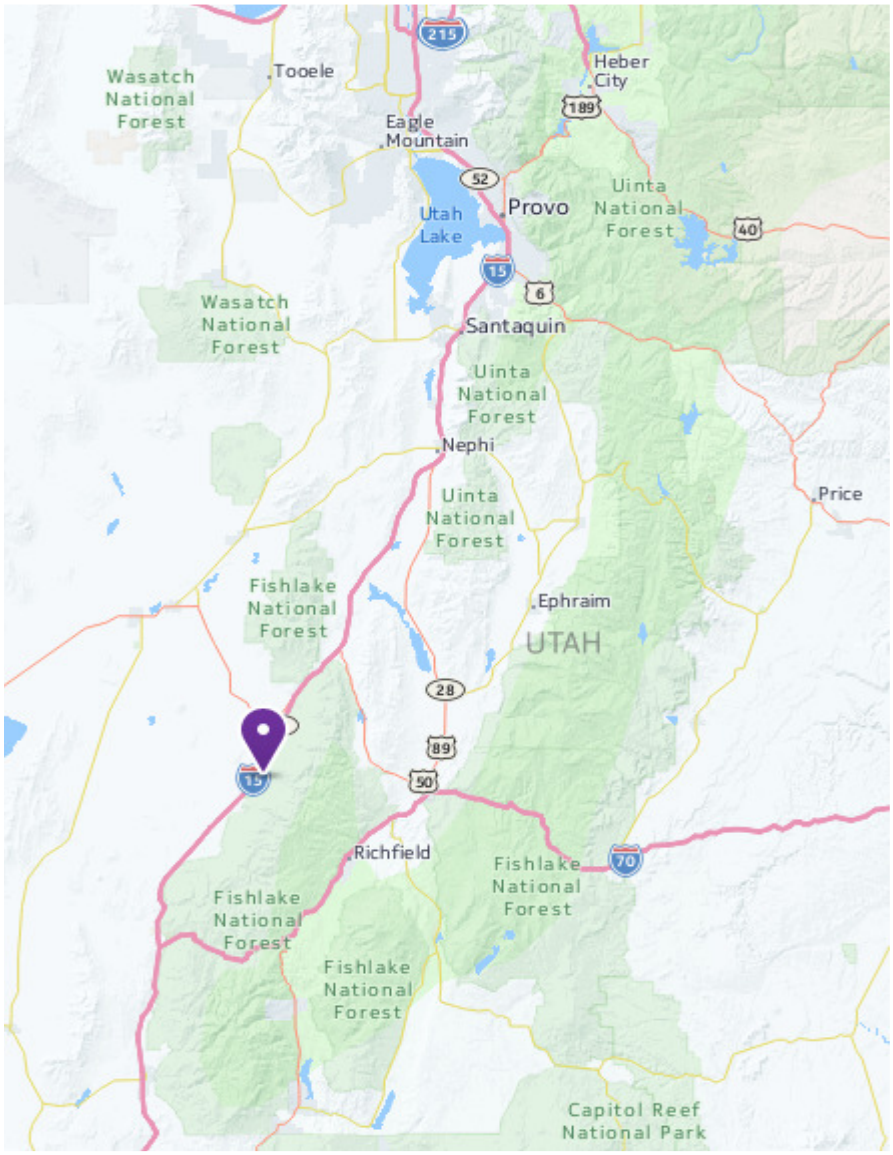
FINANCIAL ASSISTANCE COMMITTEE RECOMMENDATION:

The Drinking Water Board authorize a loan of $2,152,000 at 2.45% interest for 20 years to Fillmore City.

APPLICANT'S LOCATION:

Fillmore City is located in Millard County.

MAP OF APPLICANT'S LOCATION:



PROJECT DESCRIPTION:

The project involves the replacement of approximately 12,000 linear feet of 8-inch water line with 12-inch water line, going from the storage tank to the City. In addition, approximately 14,000 linear feet of 4 and 6-inch water line will be replaced with 8 and 10-inch water line within the distribution system.

POPULATION GROWTH:

According to the Utah State Governor's Office of Planning and Budgeting, the anticipated growth rate for Fillmore City is approximately 1.92% per year over the next 40 years

	Year	Population
Current:	2015	2,260
Projected:	2060	6,253

IMPLEMENTATION SCHEDULE:

Apply to DWB for Construction Funds:	July 2015
SRF Committee Conference Call:	July 2015
DWB Funding Authorization:	September 2015
Advertise Environmental Assessment:	January 2015
Complete Design:	January 2016
Plan Approval:	February 2016
Advertise for Bids:	February 2016
Bid Opening:	March 2016
Loan Closing:	April 2016
Begin Construction:	April 2016
Complete Construction:	October 2016
Receive Operating Permit:	October 2016

COST ESTIMATE:

Legal and Bonding	$20,000
Administrative	$10,000
Environmental	$25,000
Engineering	$300,000
Construction	$1,891,300
Contingency	$284,180
Loan Origination Fee	$21,520
Total Project Cost	**$2,552,000**

COST ALLOCATION:

The cost allocation proposed for the project is shown below.

Funding Source	Cost Sharing	Percent of Project
DWB Loan (2.45%, 20-yrs)	$2,152,000	84%
Local Contribution	$400,000	16%
Total Amount	$2,552,000	100%

ESTIMATED ANNUAL COST OF WATER SERVICE:

Operation and Maintenance plus Depreciation: $229,985
Existing DW Debt Service: $184,406
Replacement Reserve Account: $25,745
Annual Cost/ERC: $353.63
Monthly Cost/ERC: $33/ERC (includes irrigation bill)
Cost as % MAGI: 1.04%

APPLICANT:	Fillmore City 75 West Center Fillmore, Utah 84631
PRESIDING OFFICIAL & CONTACT PERSON:	Eugene Larsen 75 West Center Fillmore, Utah 84631 435-743-5233 recorder@fillmorecity.org
CONSULTING ENGINEER:	Robert Worley Sunrise Engineering Inc. 25 East 500 North Fillmore, UT 84631 rworley@sunrise-eng.com 435-743-6151

DRINKING WATER BOARD FINANCIAL ASSISTANCE EVALUATION

SYSTEM NAME: Fillmore
COUNTY: Millard
PROJECT DESCRIPTION: Water Line Replacement

FUNDING SOURCE: Federal SRF

100 % Loan & 0 % P.F.

ESTIMATED POPULATION:	2,260	NO. OF CONNECTIONS:	1672 *	SYSTEM RATING:	APPROVED
CURRENT AVG WATER BILL:	$31.38 *			PROJECT TOTAL:	$2,552,000
CURRENT % OF AGI:	0.99%	FINANCIAL PTS:	52	LOAN AMOUNT:	$2,152,000
ESTIMATED MEDIAN AGI:	$37,861			PRINC. FORGIVE.:	$0
STATE AGI:	$40,489			TOTAL REQUEST:	$2,152,000
SYSTEM % OF STATE AGI:	94%				

	@ ZERO % RATE	@ RBBI MKT RATE		AFTER REPAYMENT PENALTY & POINTS
	0%	4.48%		2.45%
SYSTEM				
ASSUMED LENGTH OF DEBT, YRS:	20	20		20
ASSUMED NET EFFECTIVE INT. RATE:	0.00%	4.48%		2.45%
REQUIRED DEBT SERVICE:	$107,600.00	$165,150.88		$137,393.47
*PARTIAL COVERAGE (15%):	$0.00	$0.00		$0.00
*ADD. COVERAGE AND RESERVE (10%):	$10,760.00	$16,515.09		$13,739.35
ANNUAL NEW DEBT PER CONNECTION:	$70.79	$108.65		$90.39
O & M + FUNDED DEPRECIATION:	$229,985.00	$229,985.00		$229,985.00
OTHER DEBT + COVERAGE:	$184,406.25	$184,406.25		$184,406.25
REPLACEMENT RESERVE ACCOUNT:	$24,255.50	$27,133.04		$25,745.17
ANNUAL EXPENSES PER CONNECTION:	$262.35	$264.07		$263.24
TOTAL SYSTEM EXPENSES	$557,006.75	$623,190.26		$591,269.24
TAX REVENUE:	$0.00	$0.00		$0.00
RESIDENCE				
MONTHLY NEEDED WATER BILL:	$31.26	$34.56		$32.97
% OF ADJUSTED GROSS INCOME:	0.99%	1.10%		1.04%

* Equivalent Residential Connections

$20,000

R309-700-5

Fillmore
Millard
July 15, 2015

TABLE 2
FINANCIAL CONSIDERATIONS

		POINTS	
1. COST EFFECTIVENESS RATIO (SELECT ONE)			
A. Project cost $0 to $500 per benefitting connection		16	
B. $501 to $1,500		14	
C. $1,501 to $2,000		11	X
D. $2,001 to $3,000		8	
E. $3,001 to $5,000		4	
F. $5,001 to $10,000		1	
G. Over $10,000		0	
	$1,526		
2. CURRENT LOCAL MEDIAN ADJUSTED GROSS INCOME (AGI) (SELECT ONE)			
A. Less than 70% of State Median AGI		19	
B. 71 to 80% of State Median AGI		16	
C. 81 to 95% of State Median AGI		13	X
D. 96 to 110% of State Median AGI		9	
E. 111 to 130% of State Median AGI		6	
E. 131 to 150% of State Median AGI		3	
F. Greater than 150% of State Median AGI		0	
	94%		
3. PROJECT FUNDING CONTRIBUTED BY APPLICANT (SELECT ONE)			
a. Greater than 25% of project funds		17	
b. 15 to 25% of project funds		14	X
c. 10 to 15% of project funds		11	
c. 5 to 10% of project funds		8	
d. 2 to 5% of project funds		4	
e. Less than 2% of project funds		0	
	15.7%		
4. ABILITY TO REPAY LOAN			
4. WATER BILL (INCLUDING TAXES) AFTER PROJECT IS BUILT RELATIVE TO LOCAL MEDIAN ADJUSTED GROSS INCOME (SELECT ONE)			
a. Greater than 2.50% of local median AGI		16	
b. 2.01 to 2.50% of local median AGI		12	
c. 1.51 to 2.00% of local median AGI		8	
d. 1.01 to 1.50% of local median AGI		3	X
e. 0 to 1.00% of local median AGI		0	
	1.05%		
5. SPECIAL INCENTIVE POINTS Applicant: (Mark all that apply)			
A. has a replacement fund receiving annual deposits of 5% of the system's drinking water budget been established, and has already accumulated a minimum of 10% of said annual DW budget in this reserve fund.		5	X
B. Has a replacement fund equal to at least 15% or 20% of annual DW budget.		5	
C. Is creating or enhancing a regionalization plan		16	
D. Has a rate structure encouraging conservation		6	X
TOTAL POINTS FOR FINANCIAL NEED		52	
TOTAL POSSIBLE POINTS FOR FINANCIAL NEED		100	

Fillmore

PROPOSED BOND REPAYMENT SCHEDULE

100 % Loan & 0 % P.F.

PRINCIPAL	$2,152,000.00	ANTICIPATED CLOSING DATE	15-Nov-15
INTEREST	2.45%	FIRST P&I PAYMENT DUE	15-Sep-16
TERM	20	REVENUE BOND	
NOMIN. PAYMENT	$137,393.47	PRINC. FORGIVE.:	$0.00

YEAR	BEGINNING BALANCE	DATE OF PAYMENT	PAYMENT		PRINCIPAL	INTEREST	ENDING BALANCE	PAYM NO.
2015	$2,152,000.00		($8,787.33)	*	$0.00	($8,787.33)	$2,152,000.00	0
2016	$2,152,000.00		$137,724.00		$85,000.00	$52,724.00	$2,067,000.00	1
2017	$2,067,000.00		$137,641.50		$87,000.00	$50,641.50	$1,980,000.00	2
2018	$1,980,000.00		$137,510.00		$89,000.00	$48,510.00	$1,891,000.00	3
2019	$1,891,000.00		$137,329.50		$91,000.00	$46,329.50	$1,800,000.00	4
2020	$1,800,000.00		$137,100.00		$93,000.00	$44,100.00	$1,707,000.00	5
2021	$1,707,000.00		$137,821.50		$96,000.00	$41,821.50	$1,611,000.00	6
2022	$1,611,000.00		$137,469.50		$98,000.00	$39,469.50	$1,513,000.00	7
2023	$1,513,000.00		$137,068.50		$100,000.00	$37,068.50	$1,413,000.00	8
2024	$1,413,000.00		$137,618.50		$103,000.00	$34,618.50	$1,310,000.00	9
2025	$1,310,000.00		$137,095.00		$105,000.00	$32,095.00	$1,205,000.00	10
2026	$1,205,000.00		$137,522.50		$108,000.00	$29,522.50	$1,097,000.00	11
2027	$1,097,000.00		$136,876.50		$110,000.00	$26,876.50	$987,000.00	12
2028	$987,000.00		$137,181.50		$113,000.00	$24,181.50	$874,000.00	13
2029	$874,000.00		$137,413.00		$116,000.00	$21,413.00	$758,000.00	14
2030	$758,000.00		$137,571.00		$119,000.00	$18,571.00	$639,000.00	15
2031	$639,000.00		$137,655.50		$122,000.00	$15,655.50	$517,000.00	16
2032	$517,000.00		$137,666.50		$125,000.00	$12,666.50	$392,000.00	17
2033	$392,000.00		$137,604.00		$128,000.00	$9,604.00	$264,000.00	18
2034	$264,000.00		$136,468.00		$130,000.00	$6,468.00	$134,000.00	19
2035	$134,000.00		$137,283.00		$134,000.00	$3,283.00	$0.00	20
			$2,738,832.17		$2,152,000.00	$586,832.17		

*Interest Only Payment

Fillmore

DWB Loan Terms		
Local Share (total):	$	400,000
Other Agency Funding:	$	-
DWB Grant Amount:	$	-
DWB Loan Amount:	$	2,152,000
DWB Loan Term:		20
DWB Loan Interest:		**2.45%**
DWB Loan Payment:	$	137,393

DW Expenses (Estimated)		
Proposed Facility Capital Cost:	$	2,573,520
Existing Facility O&M Expense:	$	229,985
Proposed Facility O&M Expense:	$	229,985
O&M Inflation Factor:		**1.0%**
Existing Debt Service:	$	147,525

DW Revenue Sources (Projected)		
Beginning Cash:	$	-
Existing Customers (ERC):		1,672
Projected Growth Rate:		**1.0%**
Impact Fee/Connection Fee:	$	710
Current Monthly User Charge:	$	27.88
Needed Average Monthly User Charge:	$	29.47

DW Revenue Projections

Yr	Growth Rate (%)	Annual Growth (ERC)	Total Users (ERC)	User Charge Revenue	Impact Fee Revenue	Property Tax Revenue	Total Revenue	DWB Loan Repayment	DWB Loan Reserves	Remaining Principal	Principal Payment	Interest Payment	Existing DW Debt Service	O&M Expenses	Total Expenses	Debt Service Ratio
0	1.0%	17	1,672	559,400	12,070	-	571,470	**-**	**-**	2,152,000	-	-	147,525	229,985	377,510	-
1	1.0%	17	1,689	597,281	12,070	-	609,351	**137,724**	**13,739**	2,067,000	85,000	52,724	147,525	229,985	528,973	1.33
2	1.0%	17	1,706	603,293	12,070	-	615,363	**137,642**	**13,739**	1,980,000	87,000	50,642	147,525	232,285	531,191	1.34
3	1.0%	17	1,723	609,304	12,070	-	621,374	**137,510**	**13,739**	1,891,000	89,000	48,510	147,525	234,608	533,382	1.36
4	1.0%	17	1,740	615,316	12,070	-	627,386	**137,330**	**13,739**	1,800,000	91,000	46,330	147,525	236,954	535,548	1.37
5	1.0%	17	1,757	621,328	12,070	-	633,398	**137,100**	**13,739**	1,707,000	93,000	44,100	147,525	239,323	537,688	1.38
6	1.0%	18	1,775	627,693	12,780	-	640,473	**137,822**	**13,739**	1,611,000	96,000	41,822	147,525	241,717	540,802	1.40
7	1.0%	18	1,793	634,058	12,780	-	646,838	**137,470**	**13,739**	1,513,000	98,000	39,470	147,525	244,134	542,868	1.41
8	1.0%	18	1,811	640,424	12,780	-	653,204	**137,069**	**13,739**	1,413,000	100,000	37,069	147,525	246,575	544,908	1.43
9	1.0%	18	1,829	646,789	12,780	-	659,569	**137,619**	**13,739**	1,310,000	103,000	34,619	147,525	249,041	547,924	1.44
10	1.0%	18	1,847	653,154	12,780	-	665,934	**137,095**	**13,739**	1,205,000	105,000	32,095	147,525	251,531	549,891	1.46
11	1.0%	18	1,865	659,520	12,780	-	672,300	**137,523**		1,097,000	108,000	29,523	147,525	254,047	539,094	1.47
12	1.0%	19	1,884	666,239	13,490	-	679,729	**136,877**		987,000	110,000	26,877	147,525	256,587	540,988	1.49
13	1.0%	19	1,903	672,958	13,490	-	686,448	**137,182**		874,000	113,000	24,182	147,525	259,153	543,859	1.50
14	1.0%	19	1,922	679,677	13,490	-	693,167	**137,413**		758,000	116,000	21,413	147,525	261,744	546,682	1.51
15	1.0%	19	1,941	686,396	13,490	-	699,886	**137,571**		639,000	119,000	18,571	147,525	264,362	549,458	1.53
16	1.0%	20	1,961	693,468	14,200	-	707,668	**137,656**		517,000	122,000	15,656	147,525	267,005	552,186	1.55
17	1.0%	19	1,980	700,187	13,490	-	713,677	**137,667**		392,000	125,000	12,667	147,525	269,675	554,867	1.56
18	1.0%	20	2,000	707,260	14,200	-	721,460	**137,604**		264,000	128,000	9,604	147,525	272,372	557,501	1.58
19	1.0%	20	2,020	714,332	14,200	-	728,532	**136,468**		134,000	130,000	6,468	147,525	275,096	559,089	1.60
20	1.0%	20	2,040	721,405	14,200	-	735,605	**137,283**		-	134,000	3,283	147,525	277,847	562,655	1.61
									Total Paid in Debt Service =		2,152,000	595,620				

Agenda Item 5(A)

RULE ADOPTION OF AMENDMENT TO R309-550-10

On July 10, 2015, the Drinking Water Board authorized Division staff to initiate the rulemaking process to amend rule R309-550-10, *Facility Design and Operation: Transmission and Distribution Pipelines - Water Hauling*.

The proposed amendment would require all Public Water Systems, Community and Non-community alike, to submit water hauling proposals to the Director of the Division of Drinking Water for approval. In the current rule, only Non-community Public Water Systems must submit water hauling proposals to the Director for approval.

The 30-day comment period was held from August 1, 2015, through August 31, 2015. No comments were received. Therefore, no changes are needed to the proposed amendment.

Two versions of the amendment to R309-550-10 are attached:

- **The Division of Administrative Rules (DAR) Version:** DAR maintains the official version of rules and oversees the rulemaking process. In the DAR format, new words are underlined and deleted words are stuck out. First sentences are indented but not full paragraphs.

- **The Division of Drinking Water (DDW) Version:** In addition to the DAR version, DDW provides a separate version of the rule to the public. The rule content of the DDW version is the same as the DAR version. However, the DDW version is formatted for easier reading (with paragraph indentation) and contains DDW's interpretations of the rule (in the form of guidance paragraphs). The guidance paragraphs are not part of the official rule.

Staff Recommendation: Division staff recommends that the Board adopt the amendment to R309-550-10 and authorize the staff to make the amended rule effective on September 10, 2015.

R309-550-10. Water Hauling.

Proposals for water hauling shall be submitted to, and approved by, the Director.

(1) Community Water Systems.

Water hauling is not an acceptable permanent source for drinking water distribution in Community Water Systems.

(2) Non-community Systems.

The Director may allow water hauling for Non-Community Public Water Systems by special approval if:

(a) consumers can not otherwise be supplied with good quality drinking water; or,

(b) the nature of the development, or ground conditions, are such that the placement of a pipe distribution system is not justified.

~~Proposals for water hauling shall be submitted to, and approved by, the Director.~~

(3) Emergencies.

Water hauling may be a temporary means of providing drinking water in an emergency. Water systems shall notify the Division as soon as possible of such emergencies.

Guidance: ~~The g~~Guidelines for water hauling are ~~contained in the bulletin entitled "Recommended Procedures for Hauling Culinary Water"~~ available from the Division.

KEY: drinking water, transmission and distribution pipelines, connections, water hauling
Date of Enactment or Last Substantive Amendment: November 10, 2014
Notice of Continuation: March 13, 2015
Authorizing, and Implemented or Interpreted Law: 19-4-104

R309-550-10. Water Hauling.

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(b) the nature of the development, or ground conditions, are such that the placement of a pipe distribution system is not justified.

[~~Proposals for water hauling shall be submitted to, and approved by, the Director.~~]

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Water hauling may be a temporary means of providing drinking water in an emergency. Water systems shall notify the Division as soon as possible of such emergencies.

KEY: drinking water, transmission and distribution pipelines, connections, water hauling
Date of Enactment or Last Substantive Amendment: November 10, 2014
Notice of Continuation: March 13, 2015
Authorizing, and Implemented or Interpreted Law: 19-4-104

Agenda Item 5(B)

PROPOSED SUBSTANTIVE CHANGES
TO
RULE R309-520

Rule R309-520, *Facility Design and Operation: Disinfection*, was last amended on August 28, 2013. The Division of Drinking Water wants to make substantive changes primarily to R309-520-6, *General*, and R309-520-7, *Chlorine*, to improve the clarity of the rule requirements.

The proposed changes to R309-520 include the following:

- The general disinfection and chlorination requirements of the rule are revised to make the rule easier to use and understand and include the following types of revisions:
    - Replace overly general requirements subject to multiple interpretations with specific requirements.
    - Group similar requirements together in categories that have natural affinities.
    - Replace inaccurate terms with accurate terms.
    - Revise titles to more accurately reflect the content of the paragraphs.
    - Number previously un-numbered paragraphs so that references to specific requirements can be found without reading large blocks of text containing multiple requirements.
- Specific revisions include the following:
    - R309-520-6(1), *Continuous Disinfection*, is rewritten to focus on ground water sources that don't meet microbiological standards and are not influenced by surface water and therefore do not require filtration treatment.
    - R309-520-6(3), *Required Disinfection*, is a new title that reflects the emphasis on required disinfection of ground water and surface water sources instead of primary and secondary disinfectants.
    - R309-520-6(4), *Point of Application and CT*, is a new title to more accurately reflect the subject of the revised section. The focus of the section is no longer microbiological treatment, which is adequately covered in other rules. The focus is now on the application point of disinfectants and achieving disinfection CT.
    - R309-520-7, *Chlorine*, is revised throughout to move requirements that apply to all forms of disinfection, not simply chlorination, to R309-620-6, *General*.
    - R309-520-7, *Chlorine*, is revised throughout to delete references to calcium and sodium hypochlorite, which reflects the availability of new hypochlorite compounds not based on calcium and sodium.
    - R309-520-7(2), *Additional Requirements for Gas Chlorinators*, is revised to clearly distinguish which requirements apply to 150-pound gas cylinders and which apply to one-ton gas cylinders.
    - R309-520-7(2)(b), *Gas Scrubbers*, is revised to clarify that the installation of gas scrubbers applies only to facilities using one-ton gas cylinders and not the smaller 150-pound gas cylinders.
    - R309-520-7(2)(d), *Ventilation*, is revised to add the requirement that the ventilation system in areas housing one-ton gas cylinders must be separate from the ventilation system for the rest of the treatment plant so that a leak in the chlorine room would not spread chlorine gas throughout the plant.
    - R309-520-7(3), *Additional Requirements for Hypochlorite Systems*, is revised to

require emergency eyewash stations and safety showers for water systems using concentrated hypochlorite solutions in containers greater than 55 gallons, and to permit water systems using the solutions in smaller quantities or at remote locations to provide alternative eyewash methods and not to have safety showers.

- R309-520-7(3), *Additional Requirements for Hypochlorite Systems*, is revised to require water systems to take steps to avoid the use of hypochlorite solutions that have degraded in strength.
- R309-520-7(3)(d), *Hypochlorite Tablets*, requires water systems to consider the quality of the water to be treated before selecting chorine tablets for disinfection.

Two versions of the R309-520 revision are enclosed:

- **The Division of Administrative Rules (DAR) Version:** DAR maintains the official version of rules and oversees the rulemaking process. The official rulemaking document for the R309-520 amendment is in the specific format required by DAR. The DAR format does not contain indentation, uses strikeouts for deleted words, and underlines added words.

- **The Division of Drinking Water Version:** In addition to the DAR version, DDW provides a separate version of the rule to the public. The rule content of the DDW version is the same as the DAR version. However, the DDW version is formatted for easier reading (with indentation) and contains DDW's interpretations of the rule (in the form of guidance paragraphs). The guidance paragraphs are not part of the official rule.

Staff Recommendation: Staff believes that the above mentioned changes are substantive and asks the Board to authorize the staff to start the rulemaking process and file the proposed rule amendment for publication in the Utah State Bulletin.

R309-520. Facility Design and Operation: Disinfection.

R309-520-1. Purpose.

This rule specifies requirements for facilities that disinfect public drinking water. It is to be applied in conjunction with ~~R~~rules R309-500 through R309-550~~Series 500~~, Drinking Water Facility Construction, Design, and Operation~~, namely, R309-500 through R309-550~~. Collectively, these Rules govern the design, construction, and operation and maintenance of public drinking water system facilities. These Rules are intended to assure that such facilities are reliably capable of supplying adequate quantities of water that consistently meet applicable drinking water quality requirements and do no harm to general public health.

R309-520-2. Authority.

This rule is promulgated by the Drinking Water Board as authorized by Title 19, Environmental Quality Code, Chapter 4, Safe Drinking Water Act, Subsection 104(1)(a)(ii) of the Utah Code and in accordance with Title 63G, Chapter 3 of the same, known as the Administrative Rulemaking Act.

R309-520-3. Definitions.

Definitions for certain terms used in this rule are given in R309-110 but may be further clarified herein.

R309-520-4. Primary Disinfectants.

Primary disinfection is the means to provide adequate levels of inactivation of pathogenic microorganisms within the treatment process. The effectiveness of chemical disinfectants is measured as CT, a function of disinfectant residual concentration and contact time~~a function of the concentration and time of contact, a "CT" value in units such as mg/L-min~~. The effectiveness of UV disinfection is determined through validation testing of each model and specific configuration of UV reactor proposed in the design, as described in R309-520-8.

~~Only f~~Four disinfectants: chlorine ~~(i.e., gas, hypochlorite solution, and hypochlorite tablets)~~, ozone, ultraviolet light, and chlorine dioxide are approved ~~herein~~ as ~~allowable~~ primary disinfectants of drinking water.

Guidance: Iodine disinfection is no longer allowed because of adverse health implications for the public.

R309-520-5. Secondary Disinfectants.

Secondary disinfection ~~is the means to~~ provides an adequate disinfectant residual in the distribution system to maintain ~~a chemical barrier and to control bacteriological~~ the quality of treated water by controlling microbiological contamination.

~~The effectiveness of s~~Secondary chemical disinfection is ~~measured through~~ achieved by maintaining a detectable disinfectant residual throughout the distribution system. Allowable secondary disinfectants are chlorine ~~(gas, hypochlorite solution, and hypochlorite tablets)~~ and chloramine.

R309-520-6. General.

(1) Continuous Disinfection

(a) Continuous disinfection is required of all ground water sources that do not otherwise continuously meet microbiological standards ~~of bacteriologic quality~~. Intermittent or batch disinfection, such as adding hypochlorite tablets or concentrated hypochlorite solution to a tank~~commonly used for disinfecting new water tanks, waterlines, well casings, etc.~~, is not acceptable for ongoing operation if continuous disinfection is required~~drinking water delivery service~~. ~~Surface water sources, and ground water sources under direct influence (UDI) of surface water, shall be disinfected as a part of the treatment requirements for conventional surface water treatment or alternative surface water treatment.~~

(b) Disinfection is not an acceptable remedy to physical deficiencies or sources susceptible to surface water influence. Disinfection shall not be used to mask ongoing contamination and shall not be used as a substitute for correcting deficiencies.~~inadequate drinking water system facilities. Systems that practice source disinfection, and whose sources are exclusively ground water sources, as defined in R309-505-8, shall meet the requirements of R309-105-10(1), Chemical Addition~~.

(c) Where continuous disinfection is required, the design shall provide a means to isolate or service the disinfection equipment without allowing untreated water to enter the distribution system. If the untreated water is to be discharged, it shall not cause environmental or property damage.

~~Guidance: Temporary disinfection of a water source newly discovered as failing bacteriological water sampling result standards may be prudent public health policy. However, permanent disinfection is not regarded as a satisfactory resolution of the situation. That is, disinfection cannot be used to simply mask ongoing bacteriological contamination of a water source. The root cause of the failed bacteriological water quality at the source must be rectified.~~

(2) ANSI/NSF Standard 60 Certification

All chemicals added to drinking water, including chlorine (i.e., gas, hypochlorite solution, hypochlorite tablets, granules, and powder), chloramines, and chemicals used to generate hypochlorite solutions and chlorine dioxide, ~~added to drinking water supplied by a public water system~~ shall be certified as complying with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals.

Guidance: ***Third-party organizations, such as NSF, UL, and the Water Quality Association, are accredited to provide product certification to ANSI/NSF Standard 60.***

Hypochlorite tablets for swimming pools are not approved for use in drinking water. Swimming pool grade hypochlorite tablets contain chemicals to retard the photodecomposition of hypochlorite and typically lack approval for use in drinking water.

~~***Hypochlorite tablets for swimming pools are not approved for drinking water. The swimming pool grade hypochlorite tablets contain additional chemicals, intended to retard the photodecomposition of hypochlorite in swimming pools, and typically lack approval for use in drinking water. Sodium chloride (NaCl) used for on-site hypochlorite generation, as well as water softener resin regeneration, shall be certified as complying with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals. Ammonia gas (often termed agricultural ammonia) used in the ammonification process for on-site choramine disinfectant generation shall be certified as complying with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals.***~~

(3) Required Disinfection~~Appropriate Use of Primary and Secondary Disinfectants~~

(a) Surface water, or groundwater under the direct influence of surface water, shall be filtered by conventional surface water treatment or alternative surface water treatment methods and disinfected to meet the requirements of R309-200-7.

(b) ~~Only ground water~~Where microbiological treatment is required for a ground water source that is not under the influence of surface water, disinfection without filtration may be considered adequate. ~~can be adequately disinfected with primary disinfectants, or primary and secondary disinfectants, alone. Surface waters, as well as ground water under the direct influence of surface water, require conventional surface water treatment or alternative surface water treatment methods.~~

(4) Point of Application and CT~~Required Disinfectant Dose and Contact Time~~

~~Minimum cyst and virus reductions for that approved primary chemical disinfectants must achieve are specified in R309-200-5(7)(a), Disinfection, and reiterated in R309-200-7(2), namely 4-log virus removal or inactivation, 3-log Giardia lamblia cyst removal or inactivation, and 2-log Cryptosporidium removal or inactivation for water sources in bin 1 classification per R309-215-15(11)(c). Minimum doses and contact times for primary chemical disinfectants are standardized as "CT" values as defined in R309-110-4, Definitions.~~A combination of disinfectant residual and contact time is defined as disinfection CT in R309-110-4. The following requirements apply to disinfectant point of application and CT:

(a) Consideration shall be given to the contact time of the disinfectant in water with relation to pH, ammonia, taste-producing substances, temperature, biological quality, and other pertinent factors.

(b) Where possible, the design shall minimize the formation of disinfection byproducts.

(c) Treatment of ground water sources shall provide sufficient CT to achieve a minimum of 4-log virus inactivation and/or removal.

(d) Point of application of disinfectants shall be at a location that will achieve the required disinfection CT prior to the first service connection.

(5) Site Selection

Disinfection installations shall be sited to permit convenient ~~year-round~~ access during the operation period. These installations shall ~~initially~~ be sited with due consideration of possible danger to nearby population and of possible jeopardy from seismic fault zones.

Guidance: Public water systems ~~shall~~ should work closely with local fire ~~suppression authorities~~ code officials to evaluate ~~public~~ hazards associated with ~~on-site use of~~ chorine gas~~, especially,~~ when subdivisions or other populations ~~newly~~ encroach upon previously remote facilities or when new geologic hazards are identified.

R309-520-7. Chlorine.

(1) General Requirements for all Chlorination Installations.

(a) Chemical Types.

Disinfection by chlorination shall be accomplished by gaseous chlorine or ~~liquid solutions of calcium hypochlorite or sodium~~ hypochlorite solutions. Hypochlorite solutions can be purchased, generated on site, or prepared by dissolving solids.

Guidance: For small supplies requiring less than four pounds per day, liquid hypochlorite feed systems are advised.

(b) Feed Equipment.

Solution-feed gas type chlorinators, direct-feed gas type chlorinators or hypochlorite liquid feeders of a positive displacement type shall be provided. Solution-feed gas type chlorinators are preferred. Use caution when selecting direct-feed gas type chlorinators.~~However, for small supplies requiring less than four pounds per day, liquid hypochlorite feed systems are advised.~~

(c) Chlorine Feed Capacity.

~~The design of each chlorinator shall permit:~~

(i) The capacity of the chlorine feed equipment shall be sized to provide at least 2 mg/L during peak demand.

(i~~i~~) ~~the chlorinator capacity to be such that a free chlorine residual of at least 2 mg/l can be maintained in the system after 30 minutes of contact time during peak demand.~~ The feed equipment shall ~~be of such design that it will~~ operate accurately over ~~a~~ the design feeding range ~~of 0.2 mg/l to 2 mg/l~~.

(ii~~i~~) ~~assurance that a detectable residual, either combined or free, can be maintained~~ The feed equipment shall be designed to maintain a detectable residual at all times, at all points within the intended area in the distribution system.

(d) Automatic Proportioning.

Automatic proportioning chlorinators shall be required where the rate of flow of the water to be treated or chlorine demand of the water to be treated is not reasonably constant.

Guidance: Chlorine gas chlorinators that respond to a 4-20 milliamp signal from an electronic flow meter are recommended for flow-proportioning. Chlorine gas chlorinators that respond to on-line chlorine residual concentration feedback signal are recommended for dose-proportioning.

(e) Injector~~/~~, Eductor, or ~~d~~Diffuser.

(i) ~~Location. The chlorine solution injector/diffuser shall be compatible with the point of application to provide a~~Chlorine shall be added at a point that allows rapid and thorough mixing ~~with all the water being treated~~. The center of a pipeline is the preferred application point.

(ii) ~~Equipment. Each injector selected shall be appropriate to~~The selection of equipment shall consider the ~~intended~~ point of application~~,~~ ~~with particular attention given to~~ the quantity of chlorine to be added, ~~the maximum injector water flow,~~ the size and flow of the chlorine solution line, the back pressure of the to-be-treated water flow, and the ~~injector~~ equipment operating pressure~~, and the size of the chlorine solution line. Gauges for measuring water pressure at the inlet and outlet of each injector shall be provided~~.

(iii) ~~Protection.~~ A suitable ~~screen~~ strainer to prevent small debris from clogging ~~a~~ chlorine feed equipment ~~injector~~ shall be provided ~~on each water feed line~~. Provision for flushing ~~of~~ the ~~screen~~ strainer is required.

(f) ~~Contact Time and~~ Disinfection Point of Application for Surface Water.

The design of plants treating surface water or ground water under the direct influence of surface water shall make provisions to add chlorine at various process points as needed.

Guidance: Consider adding chlorine to raw water, settled water, filtered water, and water entering the distribution system.

~~(i) Due consideration shall be given to the contact time of the chlorine in water with relation to pH, ammonia, taste producing substances, temperature, biological quality, and other pertinent factors.~~

~~(ii) Where possible, the design shall minimize the formation of chloro-organic compounds. At plants treating surface water or ground water under the direct influence of surface water, provisions shall be made for applying chlorine to raw water, applied water, filtered water, and water entering the distribution system.~~

~~(iii) When treating ground water, provisions shall be made for applying chlorine to at least a reservoir inlet or transmission pipeline which will provide sufficient contact time.~~

~~(iv) Care must be taken to assure that the point of application will, in conjunction with the pipe and tank configuration of the water system, allow required CT values to be achieved prior to the first consumer connection.~~

(g) Minimization of Chlorinated Overflow.

~~The chlorinator and associated water delivery facilities shall be designed so as to~~ The design shall minimize the release of chlorinated water into the environment, for example, the discharge of chlorinated water from tank overflows. Such releases must comply with rules of Division of Water Quality that pertain~~s~~ to discharge o~~r~~f pollution.

(h) ~~Feed Water Piping~~Prevention of Cross Connections.

(i) ~~The chlorinator water supply piping shall be designed to~~ The design shall prevent contamination of the treated water supply by make-up water of lesser quality.

(ii) ~~At all facilities treating surface water, pre-chlorination and post-chlorination systems shall be independent where pre-chlorination chlorine solution make-up water is not finished water.~~ All chlorine solution make-up water shall be at least of equal quality to the water receiving the chlorine solution. At surface water treatment facilities, pre-chlorination

and post-chlorination processes shall be independent to prevent cross connections where pre-chlorination make-up water is not finished water.

(i) Flow Measurement.

The design of the chlorination system ~~design~~ shall ~~have~~ provide a means to measure the flow rate of treated water~~, which is critical to operation of flow-proportioned disinfectant~~ as a basis for dosing.

Guidance: In most circumstances, a commercial flow meter will be necessary to satisfy this requirement. In unusual circumstances, for example, where the availability of electrical power may be problematic, an exception-to-rule may be warranted to allow the use of a calibrated staff gauge or a calibrated v-notch weir, in an appropriate hydraulic structure such as a surface water intake box or a spring collection box outlet wall.

(j) Residual Testing Equipment.

The water system shall have ~~C~~chlorine residual test equipment~~, in accordance with the analytical methods in "Standard Methods for the Examination of Water and Wastewater," shall be provided and shall be~~ capable of measuring residuals to the nearest 0.1 mg/~~l~~L in the range below 0.5 mg/~~l~~L, to the nearest 0.3 mg/~~l~~L between 0.5 mg/~~l~~L and 1.0 mg/~~l~~L and to the nearest 0.5 mg/~~l~~L above 1.0 mg/~~l~~L.

Guidance: Automatic chlorine residual recorders ~~shall~~ should be provided where the chlorine demand varies appreciably over a short period of time. The N,N-Diethyl-p-phenylendiamine (DPD) method of chlorine residual or other EPA-approved method determination is recommended.

(k) Standby and Backup Equipment.

(i)A spare parts kit shall be provided and maintained for all chlorinators to repair parts subject to wear and breakage. If there could be a large difference in feed rates between routine and emergency dosages, multiple gas metering tubes shall be provided, at least one for each dose range, to assure accurate control of the chlorine feed under both routine and emergency conditions.

(ii) Where chlorination is required for disinfection of a water supply, standby equipment of sufficient capacity shall be available to replace the largest unit in the event of its failure.

(iii) Standby power shall be available, during power outages, for operation of chlorinators where disinfection of the water supply is required unless operation of the chlorinator does not require power.

(l) Heating, Lighting, Ventilation.

Chlorinator ~~houses~~buildings shall be heated, lighted and ventilated as necessary to assure proper operation of the equipment and safety of the operators ~~and to facilitate its serviceability~~.

~~(m) Bypass-to-Waste Capability of Chlorine Disinfection Systems.~~

~~A chlorinator bypass, with appropriate turn-out of un-chlorinated water, shall be provided to allow the flow to waste for periods when the chlorination system is not operational. This is necessary to prevent un-chlorinated water from entering the distribution system. The flow to waste shall be designed such that it does not result in unintended consequences such as flooding or property damage.~~

~~(n) Isolation Capability.~~

~~Chlorinator isolation plumbing shall be provided such that each chlorinator can be removed from the process train (e.g., during maintenance, power outage, other shutdown, etc.) without allowing otherwise unchlorinated water to bypass the unit and be delivered to the public for consumption.~~

(m) Incompatible Chemicals.

The design shall ensure that incompatible chemicals that may damage or deteriorate chlorination facilities are stored separately from chlorination equipment and chemicals.

(2) Additional Requirements for Gas Chlorinators.

(a) Automatic Switch over.

Automatic Switch over of chlorine cylinders shall be provided~~, where necessary, to assure~~ if continuous disinfection is required.

~~(b) Injector and Eductor.~~

~~Each injector or eductor shall be selected for the point of application with particular attention given to the quantity of chlorine to be added, the maximum injector or eductor water flow, the total discharge back pressure, the injector operating pressure, and the size of the chlorine solution line. Gauges for measuring water pressure at the inlet and outlet of each injector shall be provided.~~

(~~c~~b) Gas Scrubbers.

~~Gas chlorine facilities shall conform with the Uniform Fire Code, Article 80 and the Uniform Building Code, Chapter 9 as they are applied by local jurisdictions in the~~

~~state.~~ One-ton chlorine cylinder operating areas shall be equipped with a gas scrubber per the International Fire Code capable of treating the release of chlorine gas from the largest single cylinder at its maximum flow rate. Furthermore, local toxic gas ordinances shall be complied with if they exist.

(~~d~~c) Heat.

The design of the chlorination room shall assure that the temperature in the room will n~~ot ever~~ fall below 32 degrees F or th~~e at~~ temperature required for proper operation of the chlorinator, whichever is greater.

Guidance: Chlorinator rooms ~~shall~~ should be heated to 50 degrees F, and be protected from room temperatures in excess of 70-80 degrees F. Where space heaters are used, the cylinders ~~shall~~ should be protected from direct heat. Care ~~must~~ should be taken to avoid chlorine condensation in feed lines caused by the feed equipment being cooler than the chlorine cylinder.

(~~e~~d) Ventilation.

(i) Chlorination equipment rooms which contain chlorine cylinders, tanks, equipment and gaseous chlorine lines under pressure shall have at least one exhaust fan~~. and shall be constructed and equipped such that:~~

Guidance: For the safety of the operators, chlorination facility shall not be located in a vault that has inadequate ventilation or in a location that is considered a confined space.

(i~~i~~) ~~c~~Chlorine room exhaust fan(s), when operating, shall provide at least one complete room air change per minute.~~;~~

(ii~~i~~) ~~c~~Chlorine room ~~ventilating~~ exhaust fan(s) shall take suction inside the chlorine room near the floor, as far as practical from the door and air inlet, and discharge air outside of the building away from air inlets.~~exhaust air out of the room with the point of discharge so located as not to contaminate air inlets of any other rooms or any structures;~~

(i~~ii~~v) ~~c~~Chlorine room air ~~entryways~~ inlets shall be through wall louvers near the ceiling.~~;~~

~~(iv) chlorine room air entryway louvers and air exit-way louvers (e.g., on outside faceplate of any floor level exhaust fan) shall have air-tight closure;~~

(~~i~~v) ~~s~~Separate switches for the chlorine room fans and lights shall be located~~outside of the chlorine room~~ near the entrance to the room~~,~~ and

shall be protected from vandalism.~~; and~~ The switches shall be located outside the chlorine room if housed in a water treatment plant.

~~***Guidance: For chlorinators which lack proper security, switches may be located just inside the door. A signal light indicating fan operation shall be provided at each entrance when the fan can be controlled from more than one point.***~~

~~(v) vents from feeders and storage discharge above grade to the outside atmosphere.~~

(vi) The ventilation system for one-ton chlorine cylinder operating areas shall be designed to operate independently from the ventilation system for the rest of the treatment plant. One-ton chlorine cylinder operating areas shall be designed to maintain negative pressure per the International Fire Code.

(~~f~~e) ~~Feeder~~ Chlorine Vent Line.

The chlorine vent line ~~hose from the feeder~~ shall discharge ~~to the~~ outside, ~~atmosphere~~ above grade, at a point least susceptible to vandalism, and shall have the end covered with a No. 14 mesh non-corrodible screen.

(~~g~~f) Housing.

(i)~~Adequate h~~ Housing shall be provided for ~~the~~ chlorination equipment and ~~for storing the chlorine (see R309-520-10(1)(l) above)~~ storage to ensure proper function and security.

(ii) Chlorine cylinders shall not be stored in direct sunlight or exposed to excessive heat.

(~~h~~g) Housing at Water Treatment Plants.

A separate ~~room, referred to as the~~ chlorine room, for chlorine cylinders and feed equipment, shall be provided at all water treatment plants with multiple processes and operating areas. ~~Chlorine gas feed and storage shall be enclosed in the chlorine room and separated from other operating areas. The chlorine room shall have:~~

(i) The chlorine room shall have shatter resistant inspection window(s) installed in an interior wall ~~and~~ preferably located so that an operator may read the weighing scales without entering the chlorine room.~~,~~

(ii) ~~construction such that a~~All openings between the chlorine room and the remainder of the plant ~~are~~ shall be sealed.~~, and~~

(iii) ~~o~~Outward-opening doors shall be equipped with panic bars to allow~~facilitate a means of easy and~~ rapid exit ~~to the building exterior~~.

(iv) ~~f~~Floor drains ~~shall be~~are discouraged but, where provided, ~~these floor drains~~ shall discharge to the outside of the building and shall not be connected to other internal or external drain systems.

(v) Chlorine feed lines shall not carry pressurized chlorine gas beyond the chlorine room. Only vacuum lines may be routed to other portions of the building outside the chlorine room. Any openings for these lines must be adequately sealed.

~~***Guidance: The room location shall be on the prevailing downwind side of the building away from entrances, windows, louvers, walkways, etc.***~~

(vi) The design of operating areas for one-ton cylinders shall allow full and empty cylinders to be stored in separate areas.

(~~i~~h) Cylinder Security.

~~Full and empty~~ Chlorine cylinders ~~of liquefied chlorine gas and ammonia gas~~ shall be ~~stored in rooms, separate from each other, and shall be:~~

~~(i) isolated from operating areas;~~

~~(ii)~~ restrained in position to prevent upset~~. from accidental bumping, seismic event or other such circumstance;~~

~~(iii) stored in areas not in direct sunlight or not exposed to excessive heat.~~

~~(j) Feed Line Routing.~~

~~Chlorine feed lines shall not carry pressurized chlorine gas beyond the chlorinator room. Only vacuum lines may be routed to other portions of the building outside the chlorine room. Any openings for these lines must be adequately sealed.~~

(~~k~~i) Weighing Scales.

Scales shall be provided for determining chlorine cylinder weight. Scales shall be of a corrosion resistant material and shall be placed in a location remote from any moisture. Scales shall be accurate enough to indicate loss of weight to the nearest one pound for 150 pound cylinders and to the nearest 10 pounds for one ton cylinders.

(~~l~~j) Pressure Gauges.

Pressure gauges shall be provided on the inlet and outlet of each chlorine eductor. ~~injector. Water pressures at the inlet and outlet of each chlorine injector shall be accurately measured. The preferred location is on the water feed line immediately before the inlet of the chlorine injector and at a point on the water main just ahead of chlorine injection. These locations shall give accurate pressure readings while not being subjected to corrosive chlorinated water.~~

~~***Guidance: In lieu of gauges located directly at risk of corrosion in the chlorinated solution, the inlet pressure may be gauged on the injector make-up waterline immediately ahead of chlorine entrainment and the outlet pressure may be gauged in the treated water flow immediately upstream of the injectors before the flow has been dosed with the corrosive hypochlorite solution (i.e., said measured pressure is assumed to be equivalent to the pressure immediately downstream of the injector).***~~

~~(m) Injector Protection.~~

~~A suitable screen to prevent small debris from clogging a chlorine injector shall be provided on the water feed line. Provision for flushing of the screen is required.~~

~~(n) Chlorine Vent Line Protection.~~

~~A non-corrodible fine mesh (No. 14 or finer) screen shall be placed over the discharge ends of all vent lines. All vent lines shall discharge to the outside atmosphere above grade and at locations least susceptible to vandalism.~~

(~~o~~k) Gas Masks.

(i) Where chlorine gas in one-ton cylinders is handled, ~~R~~respiratory protection equipment, meeting the requirements of the National Institute for Occupational Safety and Health (NIOSH) ~~-~~shall be available ~~where chlorine gas in one-ton cylinders is handled,~~ and shall be stored at a convenient location, but not inside any room where chlorine is used or stored. The units shall use compressed air, have at least a 30 minute capacity, and be compatible with units used by the fire department responsible for the plant.

(ii) Where ~~smaller~~ 150 pound chlorine cylinders are used, ~~suitable gas masks~~ a respirator recommended by the National Institute for Occupational Safety and Health must be ~~provided~~available.

(~~p~~l) Chlorine Leak Detection and Repair.

(i) A bottle of Ammonium Hydroxide, 56% ammonia solution, shall be available for chlorine leak detection.~~;~~

(ii) ~~w~~Where one-ton ~~containers~~ cylinders are used, a leak repair kit approved by the Chlorine Institute shall be provided.

(iii)- Continuous chlorine leak detection equipment is required for one-ton cylinders~~recommended~~.

(iv) Where a continuous leak detector is provided, it shall be equipped with both an audible alarm and a warning light to ensure operator safety.

(3) Additional Requirements for Hypochlorite Systems.

~~Disinfection by free chlorine shall be accomplished with stock hypochlorite solutions, hypochlorite solution produced by an on-site generator, or hypochlorite solutions prepared from hypochlorite tablets.~~

~~Guidance: Non-NSF-certified, over-the-counter household bleach is not approved for "normal" use in drinking water principally because of contaminant trace metals in these products.~~

(a) General Requirements.

(i) Emergency Eyewash and Safety Showers.

Emergency eyewash stations and safety showers shall be provided at all hypochlorite installations where concentrated hypochlorite solutions, containing 5% or greater available chlorine by volume, are handled in containers greater than 55 gallons. Where hypochlorite solutions are used at remote locations or in quantities of 55 gallons or less on site, safety showers are not required and alternative emergency eyewash may be provided.

(ii) Storage of Liquid Hypochlorite to Prevent Decay.

Storage and injection areas shall be designed to minimize the decay in strength of concentrated hypochlorite solutions from excessive heat or direct sunlight.

(iii) Feed Equipment – Chemical Addition.

Hypochlorite feed equipment shall generally conform with R309-525-11, Chemical Addition.

Guidance: Hypochlorite feed equipment should conform with the following regulations as applicable R309-525-11(6) for storage and safe handing; with R309-525-11(7) for feeder design, location, and control; with R309-525-11(8) for feeder appurtenances such as pumps, day

tanks, bulk storage tanks, and feed lines; and R309-525-11(9) for make-up water supply and protection.

(iv) Feed Equipment - Certification

The hypochlorite feed equipment for drinking water treatment shall be certified to meet ANSI/NSF Standard 61.

(~~a~~b) Concentrated ~~Sodium~~ Hypochlorite Solutions.

~~(i) The concentrated sodium hypochlorite solutions used for drinking water treatment shall be certified as meeting the ANSI/NSF Standard 60.~~ The water system shall provide an operational means to avoid the injection of significantly decayed hypochlorite solutions, for example by keeping records on site of the delivery date of the hypochlorite solution.

Guidance: Non-NSF-certified, over-the-counter household bleach is not approved for normal use in drinking water principally because of trace metal contamination.

~~(ii) Emergency eyewash stations or showers shall be provided at all hypochlorite installations where concentrated (e.g., above 5.25% strength) hypochlorite solutions are handled for dilution by operators or other personnel.~~

~~***Guidance: Where concentrated solutions of hypochlorite are used directly for water treatment (e.g., many small systems take suction for a diaphragm chemical feeder pump directly from carboys of concentrated hypochlorite solution), only eye wash devices are required although deluge showers are recommended.***~~

~~(iii) The storage and injection areas shall be designed to minimize the decay of the strength of the concentrated hypochlorite solution over time, such as minimize excessive heat or direct sunlight.~~

~~***Guidance: The strength of the concentrated hypochlorite solution decreases over time, especially during unfavorable temperature conditions. This affects the dosage needed to achieve effective disinfection. The operator shall keep records of the delivery date of the stock solution, and avoid direct sunlight or heat in the stock solution storage area.***~~

(~~b~~c) On-Site Generation of Hypochlorite Solutions ~~Generation~~.

(i) The on-site hypochlorite generation systems used for drinking water treatment shall be certified as meeting the NSF/ANSI Standard 61.

(ii) Manufacturer recommendations for safety with respect to equipment and electrical power ~~and other considerations for the ANSI/NSF Standard 61 certified on-site chlorine generation system~~ shall be followed.

(iii) The make-up water used in on-site generation shall be of drinking water quality.

(iv) The hydrogen gas generated in the electrolytic cell of the on-site generation system shall be vented upward to the outside of the building in a dedicated, unobstructed line.

~~***Guidance: The on-site generation systems typically produce dilute (e.g. 0.8% as Cl_2) solutions of sodium hypochlorite. They generally consist of (i) a potable water supply, (ii) ion exchange cartridges or cylinders for water supply water softening, (iii) a granular sodium chloride vat for passive dissolution of sodium chloride into a saturated sodium chloride brine, (iv) a transfer pump at the vat to deliver concentrated sodium chloride brine to the electrolytic chlorine generation unit, and (v) on-site storage vessels for the dilute hypochlorite solution from the electrolytic chlorine generation unit. The electrolytic cell in on-site chlorine generation systems typically has considerable power input which may pose peculiar operator hazards.***~~

(~~c~~d) ~~Calcium~~ Hypochlorite Tablets.

(i) Before selecting a hypochlorite tablet disinfection process, water hardness, solubility of hypochlorite tablets, water temperature, and other water quality factors shall be taken into consideration.~~The calcium hypochlorite tablets, granules, and powder forms, used for drinking water treatment shall be certified as meeting ANSI/NSF Standard 60.~~

~~***Guidance: The calcium hypochlorite systems typically consist of an eroder chamber that is filled with tablets with once-through or recirculating dissolution water, and a below-unit holding tank for the resultant dilute (e.g., 0.1%, as Cl_2) solution of calcium hypochlorite tablets.***~~

(ii) The ~~calcium~~ hypochlorite dissolution ~~systems~~equipment for drinking water treatment shall be certified as meeting the ANSI/NSF Standard 61. ~~The Director may grant an exception to this requirement on a case by case basis.~~

(iii) The design shall allow the ~~calcium~~ hypochlorite tablets to be stored in accordance with the manufacturer's safety guidelines ~~by the vendor or manufacturer, for example,~~ and in their original containers in a cool, dry, well-ventilated area. The ~~calcium~~ hypochlorite tablets shall not be stored

near combustible materials ~~and~~ or acids to avoid fire or the release of toxic gases.

~~***Guidance: Addition of undissolved hypochlorite tablets directly to drinking water is not an appropriate, ongoing practice.***~~

~~***Guidance: It is recommended that, before selecting the hypochlorite tablet disinfection system, the solubility of calcium hypochlorite tablets in water, water temperature, water hardness, and other water quality factors shall be taken into consideration. Calcium hypochlorite tablet dissolution systems shall not be predicated on production of near-saturated calcium hypochlorite solutions. Slight variations in water temperature or water quality may result in crystallization of calcium hypochlorite from solution with attendant diminishment of the actual concentration of hypochlorite in solution that equipment has been programmed to deliver to the treated water.***~~

~~(d) Hypochlorite Feed Equipment~~

~~(i) Hypochlorite feed equipment shall generally conform with R309-525-11, Chemical Addition; with R309-525-6 for storage and safe handing; with R309-525-7 for feeder design, location, and control; with R309-525-8 for feeder appurtenances such as pumps, day tanks, bulk storage tanks, and feed lines; and R309-525-9 for make-up water supply and protection.~~

~~(ii) The hypochlorite feed equipment for drinking water treatment shall be certified meeting the ANSI/NSF Standard 61. The Director may grant an exception to this requirement on a case by case basis.~~

R309-520-8. Ultraviolet Light.

(1) General Requirements

This rule shall apply to the public drinking water systems that use ultraviolet (UV) disinfection for inactivation of ~~Cryptosporidium~~ *Cryptosporidium*, ~~Giardia~~ *Giardia*, and virus. The Director may reduce the requirements of monitoring and reporting on a case by case basis for the water systems that use UV as ancillary means of disinfection and do not claim credit for UV disinfection, or for water systems using UV without a SCADA system and treating less than 30 gallons per minute.

Terminology used in this rule is based on the definitions in the EPA Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule (2006 Final UVDGM).

(a) Water systems using surface water or ground water under the influence of surface water shall not use UV as the sole means of disinfection. For these types of water systems, at least one alternative primary disinfectant must be used for virus disinfection, and a secondary disinfectant shall be provided to maintain a disinfectant residual in the distribution system.

(b) The following requirements apply to the water systems that wish to receive credit for UV disinfection:

(i) The water system shall submit a UV plan which clearly identifies the dose monitoring strategy, such as the UV intensity setpoint approach, the calculated dose approach or an alternative approach.

(ii) The water system shall identify the goals for the UV facility as part of a comprehensive disinfection strategy, including target pathogens, target log inactivation, and corresponding required UV dose per Table 215-5 in R309-215-15(19)(d).

(iii) The water system shall submit a UV reactor validation report in accordance with R309-520-8(2), to the Director for review prior to obtaining approval for installation of UV facility.

(iv) The water system must demonstrate that the reactor is delivering the required UV dose using a validated dose monitoring system and continue to comply with the monitoring and reporting requirements specified in R309-215-15(19) and (20).

(2) Validation Testing

Validation testing must conform to the guidelines in Chapter 5 Validation of UV Reactors of the EPA Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule (2006 Final UVDGM).

The Director may accept a validation report that was conducted based on the 2003 draft UV Disinfection Guidance Manual on a case-by-case basis.

(a) Each model and specific configuration of UV reactor must undergo off-site, full-scale validation testing by an independent third party test facility prior to being approved for use. The validation testing shall be conducted in qualified test facilities that are deemed acceptable by NSF, EPA, or the Director.

(b) Validation testing results shall provide data, including calculations and tables or graphical plots, on dose delivery by the UV reactor under design conditions of flow rate, UV transmittance (UVT), UV intensity, lamp status, power ballast setting, as well as consideration of lamp aging and lamp fouling. The validation report shall demonstrate that the monitoring algorithm is valid over the range

expected with the application. The data is used to define the dose monitoring algorithm for the UV reactor and the operating conditions that can be monitored by a utility to ensure that the UV dose required for a given pathogen inactivation credit is delivered.

(c) The UV reactor validation report shall include:

(i) Description of the reactor and validation test set-up, including general arrangement and layout drawings of the reactor and validation test piping arrangement.

(ii) Description of the methods used to empirically validate the reactor.

(iii) Description of the dose monitoring equation for the reactor to achieve the target pathogen inactivation credit and related graphical plots showing how the equation was derived from measured doses obtained through validation testing under varying test conditions.

(iv) Range of validated conditions for flow, UVT, UV dose, and lamp status.

(v) Description and rationale for selecting the challenge organism used in validation testing, and analysis to define operating dose for pathogen inactivation credit.

(vi) Tabulated data, analysis, and ~~Q~~quality assurance/quality control (QA/QC) measures during validation testing.

(vii) A licensed professional engineer's third party oversight certification indicating that the testing and data analyses in the validation report are conducted in a technically sound manner and without bias.

(viii) The validation report shall be accompanied with completed Checklists 5.1 through 5.5 included in the EPA Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule (2006 Final UVDGM).

(3) Design Criteria

(a) A water system considering UV disinfection shall gather sufficient water quality data prior to design. The water samples shall be representative of the source water to be treated by the UV facility. Frequent testing may be required if significant variation or seasonal trending in water quality is expected.

(b) The following water quality parameters shall be considered in UV facility planning:

(i) UV Transmittance or UV Absorbance

(ii) Calcium

(iii) Alkalinity

(iv) Hardness

(v) Iron

(vi) Manganese

(vii) Turbidity

(viii) pH

(ix) Oxidation-Reduction Potential (ORP)

(x) Particle content and algae

(c) The design flow rate and UVT used to size the UV system shall be selected to provide the required dose at least 95 percent of the time, accounting for seasonal variations of flow and UVT combinations. Specifying a matrix of flow and UVT conditions for the UV reactors may be necessary.

(d) The water system may consider increasing the delivered dose beyond the required UV dose listed in Table 215-5 in R309-215-15(19)(d) to provide flexibility and conservatism.

(e) UV reactor inlet and outlet configurations shall meet the validated hydraulic distribution of flow conditions or be more hydraulically conservative. This can be achieved using one of the following approaches:

(i) The inlet and outlet configuration shall meet one of the conditions specified in Section 3.6.2 of the 2006 Final UVDGM.

(ii) Computational fluid dynamics (CFD)-based modeling may be used to demonstrate that the given conditions of inlet and outlet piping with the UV installation provides equal or greater dose delivery. The CFD modeling shall be conducted at the minimum and maximum values of the validated range of flow, UVT, and lamp status.

(f) The UV disinfection system shall be capable of applying the required design dose with a failed or out-of-service reactor. The design shall account for an on-line backup UV reactor or an operating scheme to apply the design dose with one reactor out of service.

(g) It shall be possible to isolate each reactor for maintenance.

(h) Signals and alarms shall be provided for the operation of the UV facility for the parameters necessary for dose monitoring algorithm, such as low UV dose, high flow rate, low UVT, UVT monitoring failure, UV sensor failure, off specification event, Ground Fault Interrupt (GFI), high water temperature, and low water level.

(i) All materials used in constructing or coating the UV reactors that come in contact with water shall be certified NSF Standard 61 - Drinking Water System Components – Health Effects.

(j) Any chemicals used in the cleaning of the UV reactor components in contact with the drinking water such as quartz sleeves shall be certified as meeting the ANSI/NSF Standard 60 – Drinking Water Treatment Chemicals – Health Effects.

(k) A flow or time delay shall be provided to permit a sufficient time for tube warm-up, per manufacturer recommendations, before water flows from the unit upon start up. The flow or time delay shall be included in the design so they do not result in excessive off specification conditions.

(l) To ensure a continuous supply of power, a backup power supply of sufficient capacity shall be provided for the UV disinfection system. If power quality problems, such as frequent power interruptions or brownouts, or remote location with unknown power quality, ~~is~~ are anticipated, power conditioning equipment, such as uninterruptible power supply (UPS), shall be included in the design.

(m) The design shall include a redundant disinfection mechanism that will apply an approved primary disinfectant to achieve the CT or log removal/inactivation required for compliance if a UV facility is off specification or offline within a maximum response time of 15 minutes. One example of such response is to shut down the off- specification UV train and either bring a parallel UV train on line or initiate a back-up primary disinfection system within 15 minutes, so the continuous duration of an off- specification event is limited to no more than 15 minutes.

(n) UV disinfection units rated at 30 gallons per minute or less shall be certified as meeting the ANSI/NSF Standard 55, Class A, or other equivalent or more stringent validation or certification standards that are deemed acceptable by the Director.

(o) The dose monitoring approach used for UV facility must be reviewed and accepted by the Director. Typically the calculated dose approach is suitable for large systems or systems with significant flow variation, and the UV intensity setpoint approach is for small systems or systems with fixed flow rate. The dose monitoring approaches need to be consistent with the guidelines stated in the 2006 Final UVDGM.

(p) If Programmable Logic Controller (PLC) or SCADA interface is used for UV reactor's process control, the programming shall be in accordance with the validated dose monitoring algorithm and the validated conditions. The algorithm shall use inputs of flow, UV intensity sensor readings, lamps status, and/or UVT equal to or more conservative than values measured during the operation of the UV system. If the measured UVT is above the validated range, the maximum validated UVT shall be used as the input to the dose algorithm. If the measured flow rate is below the validated range, the minimum validated flow rate shall be used as the input to the dose algorithm. If the dose algorithm uses relative lamp output determined from the UV intensity sensor readings as an input, the relative lamp output shall be based on the measured UVT, even if it exceeds the maximum validated UVT.

(q) The UV reactor's PLC or microprocessor shall be programmed to record off specification events for the following conditions:

(i) Delivered UV dose less than the required dose,

(ii) Flow greater than the validated range,

(iii) UVT less than the validated range,

(iv) Lamp status outside the validated range,

(v) Failure of UV sensors, flow meters, or on-line UVT monitors used in the dose calculation. Laboratory measurements of UVT may be used temporarily in the program until the on-line UVT monitor is repaired.

(4) Operation and Maintenance

The operation and maintenance tasks and the frequency of performing them can be specific to the UV equipment installed. The water systems with approved UV installations shall follow the manufacturer's recommendation or the operation & maintenance guidelines stated in Section 6.2 through 6.5 of the *2006 Final UVDGM*.

(a) Startup testing.

(i) The UV reactor manufacturer must provide a site-specific operation and maintenance manual, which shall include the procedure for starting up and shutting down the UV treatment system.

(ii) Provide schedules and performance standards for start-up testing and initial operation. Schedules shall include anticipated start-up date and proposed testing duration. Performance standards shall reference applicable regulations and specific equipment capabilities.

(iii) Operators shall receive site-specific training on the operation of the UV disinfection system.

(b) An incident plan shall be developed to address lamp breakage and release of mercury, response to alarms, power supply interruptions, activation of standby equipment, failure of systems, etc.

(c) To verify that the UV reactors are operated within the validated limits, selected parameters shall be monitored. The routine operation and maintenance shall include the monitoring and calibration requirements listed in R309-215-15(19) and (20) and are in accordance with the monitoring and reporting protocol approved by the Director. For very small UV systems, the Director may consider granting exception to allow reduced monitoring and reporting on a case-by-case basis.

R309-520-9. Ozone.

(1) General Requirements

(a) Ozone is approved as a primary disinfectant, but is not approved as a secondary disinfectant for the distribution system because of its rapid decomposition in aqueous solution. A different disinfectant approved for secondary disinfection must be used if a minimum disinfection residual is required in the distribution system. Ozone may also be used for taste and odor control, oxidation of inorganic and organic compounds and for enhanced performance of other water treatment processes such as microflocculation and filtration. Some of the requirements of this section may not be applicable if ozone is used only for reasons other than primary disinfection.

(b) Pilot studies or bench scale studies shall be conducted for all surface waters unless there is sufficient data available from other studies performed on the same water source. The studies shall determine the initial ozone demand, the rate of ozone decay, the minimum and maximum ozone dosages for the range of water conditions for disinfection "CT" compliance, and the ozone dosage required for other desired benefits. Pilot studies or bench scale studies shall take into account the seasonal and other variations of the source water. Plans for pilot studies or

bench scale studies shall be reviewed and accepted by the Director prior to commencement of the studies.

(2) Ozone Generation

(a) The ozone system shall be designed with backup capability such that required inactivation can be achieved with one generator out of service.

(b) The ozone generators shall be housed in an enclosed temperature controlled building for protection. Adequate ventilation shall be provided in the building, and be capable of providing six or more air changes per hour when needed in case of an ozone leak.

(c) The ozone generators shall be of the medium or high frequency type.

(d) The power supply units for the ozone generators shall have a backup electrical power source, normally an emergency generator, or the system shall have an alternate primary disinfection system that may be used in case of an electrical power outage.

(e) The ozone generators shall be water-cooled with a maximum increase in cooling water temperature of 10 ^{o}F (5.6 ^{o}C). If necessary, the cooling water shall be treated to minimize corrosion, scaling, and microbiological fouling of the water side of the tubes. A closed-loop cooling water system may be used to assure proper water conditions are maintained. The power supply units to the ozone generators may also be water cooled.

(f) The ozone generators shall comply with Section 3705 of Chapter 37, "Ozone Gas Generators," of the 2006 International Fire Code.

(3) Ozone Generator Feed Gas

(a) Feed gas may be air, vaporized high purity liquid oxygen, or oxygen enriched air. Oxygen may be generated on-site or delivered in bulk. Oxygen-enriched air is typically generated on-site.

(b) The design of the feed gas system must ensure that the maximum dew point of the feed gas of -76 ^{o}F (-60 ^{o}C) is not exceeded at any time.

(c) Liquid Oxygen Feed Gas Systems

(i) Liquid oxygen storage tanks shall be sized to provide a minimum of a 7-day supply to the ozone generators at the maximum operating rate.

(ii) There shall be two or more vaporizers to convert liquid oxygen to the gaseous form. Vaporizers must be capable of maintaining oxygen flow at the minimum design air temperature with one unit on standby.

(iii) Liquid oxygen storage tanks and system shall comply with Chapters 40, "Oxidizers," of the 2006 International Fire Code.

(d) Air or Oxygen Enriched Air Feed Gas Systems

(i) There shall be two or more air compressors to supply air. The capacity of the compressors shall be such that the demand during maximum ozone production and for other compressed air uses at the treatment plant can be met when the largest compressor is out of service.

(ii) Entrainment separators, refrigeration dryers, desiccant dryers, and filters shall be used as necessary to provide a sufficiently dried, dust-free, and oil-free feed gas to the ozone generators. Multiple units of this equipment shall be used so that the ozone generation is not interrupted in the event of a breakdown.

(4) Ozone Contactors

(a) An ozone contactor shall consist of two or more chambers to provide for introduction of ozone into the water and contact time. In a water treatment plant, ozone may be introduced in the raw water, or ozone may be introduced later in the process, such as to settled water after solids have been removed. An ozone contactor must be a closed vessel that is kept under less than atmospheric pressure to prevent escape of ozone gas. The materials of construction must be ozone-resistant to prevent premature failure of the contactor.

(b) Ozone gas may be injected into the water under positive pressure through bubble diffusers using porous-tube or dome diffusers. Alternatively, ozone gas may be injected into the water using side stream injection. This is where ozone gas is drawn into the side stream using negative pressure, which is generated in a pipe section with a venturi.

(c) An ozone contactor shall be designed to achieve a minimum transfer efficiency of 85 percent.

(d) Multiple sampling points shall be provided in an ozone contactor to enable sampling of treated water for purposes of determining an accurate measure of the concentration to be used in the "CT" disinfection calculation.

(e) A recommended minimum disinfection contact time is ten minutes.

(f) Ozone contactors shall have provision for cleaning, maintenance, and drainage of the contactor. Each contactor chamber shall be equipped with an access hatchway or other means of entry.

(g) An ozone contactor shall have an emergency off-gas pressure/vacuum relief system to prevent damage to the unit.

(h) A system must be provided for worker safety at the end of the ozone contactor for compliance with OSHA standards. Specifically, ozone levels in the gas space above treated water that has exited the contactor must not exceed the established OSHA 8-hour exposure limit of 0.1 ppm. This system may be an ozone residual quenching system where a chemical is used to destroy remaining ozone in the water, or this system may be a monitoring system that provides sufficient time to lower the residual ozone level in the water by natural decay to an acceptable level. Any chemical used to quench residual ozone shall comply with ANSI/NSF Standard 60.

(5) Off-Gas Destruction Units

(a) A system for treating the final off-gas from each ozone contactor must be provided in order to meet safety standards. Systems using thermal destruction or catalytic destruction may be used. At least two units shall be provided which are each capable of handling the entire off-gas flow.

(b) Exhaust blowers shall be provided in order to draw off-gas from the contactor into the destruction units.

(c) Provisions must be made to drain water from condensation in the off-gas piping and to protect the destruction units and piping from moisture and other impurities that may cause damage.

(d) The maximum allowable ozone concentration in the gas discharge from a destruction unit is 0.1 ppm by volume. Provisions may be made for temporary transient concentration spikes that may exceed this limit.

(6) Piping and Connections

(a) Because ozone is a strong oxidant, consideration shall be given to piping materials used in ozone service. Generally, only low carbon 304L and 316L stainless steel shall be used for ozone gas service.

(b) Connections on piping used for ozone service shall be welded where possible. Threaded connections shall be avoided for ozone gas piping because of their

tendency to leak. Connections with meters, valves, or other equipment shall be made with flanged joints with ozone-resistant gaskets.

(c) A positive-closing 90-degree turn isolation valve, or other equivalent means, shall be provided in the piping between an ozone generator and a contactor to prevent moisture from reaching the ozone generator during shutdowns.

(7) Instrumentation and Monitoring

(a) A flow meter shall be provided to measure the flow rate of the water being treated. A temperature gauge or transmitter shall also be provided to measure the temperature of the water being treated. The pH shall also be measured to indicate changes in the water being treated.

(b) An ozone gas analyzer, a flow meter, and a temperature measurement shall be provided on the gaseous ozone feed line going to the ozone injection point.

(c) Ozone aqueous residual analyzers shall be provided to measure the ozone residual concentration in the water being treated in order to determine "CT" credit.

(d) An ozone gas analyzer shall be provided on the gas discharge of each ozone destruction unit, or combined vent gas discharge, to determine the exiting ozone concentration.

(e) Ambient ozone monitors shall be installed in the vicinity of the ozone generators, the ozone contactors, the ozone destruction units, and other areas where ozone gas may accumulate.

(f) A continuous dew point monitor shall be provided on the feed gas line to the ozone generators.

(g) Instrumentation such as pressure gauges, temperature gauges, flow meters, and power meters shall be provided as necessary to monitor the feed gas system, ozone generators, power supply units, and cooling water to protect the equipment and monitor performance.

(8) Alarms and Shutdowns

(a) An ambient ozone monitor shall be provided.

(b) The design shall include alarms and shutdowns.

(9) Safety

(a) Training shall be provided to the operators of ozone systems by the manufacturers of the ozone equipment, or other professionals with experience in ozone treatment, to promote the safe operation of the systems.

(b) Appropriate signs shall be installed around ozone and liquid oxygen equipment to warn operators, emergency responders, and others of the potential dangers.

(c) A means shall be provided, such as portable purge air blowers and portable monitors, to reduce residual ozone levels in an ozone contactor or other equipment to safe levels prior to entry for repair, maintenance, or emergency.

(10) Operation and Maintenance

(a) An ambient ozone monitor shall activate an alarm when the ozone level exceeds 0.1 ppm. Because the natural ozone levels can exceed 0.1 ppm under certain atmospheric conditions, it is permissible to set the alarm level at a slightly higher level to avoid nuisance alarms. Ozone generator shutdown shall occur when ambient levels exceed 0.3 ppm in the vicinity of an ozone generator or a contactor. Operators of the water treatment system may set the alarm level and the shutdown level lower at their discretion. It is recommended that an ozone ambient monitor activates a local audible alarm and/or flashing light warning, in addition to an alarm at the operator control system panel.

(b) There shall be an alarm/shutdown to prevent the dew point of the feed gas exceeding the maximum of -76 ^{o}F (-60 ^{o}C).

(c) Alarms and shutdowns shall be programmed based on the pressure gauges, temperature gauges, flow meters, and power meters, to protect the feed gas system, ozone generators, power supply units, and cooling water system.

R309-520-10. Chlorine Dioxide.

~~The p~~Public water systems must take into consideration that chlorine dioxide and its byproducts may have similar effects as chloramines ~~and the impact~~ on sensitive populations. Chlorine dioxide shall not be intentionally used as a secondary disinfectant. The water system must monitor the chlorine dioxide residuals and byproducts in the distribution system. If the chlorine dioxide residual ~~enters~~in the distribution system ~~and may results in impact on~~may affect sensitive populations, the public water system shall notify the public of the change~~. and/or the schedule for the change, particularly notification to s~~ Sensitive populations ~~such as~~ include hospital~~s~~ and kidney dialysis ~~facilities serving dialysis~~ patients. Sensitive industries include ~~and~~ fisheries.

(1) Pre-design Proposal

Proposals for the use of chlorine dioxide shall be discussed with the Division prior to the preparation of final plans and specifications. A water system must submit a detailed written proposal to the Director for review, including:

(a) The make, model, and specifications for proposed chlorine dioxide generator

(b) References of other U.S. potable water installations of the proposed unit

(c) Information on the operational and maintenance training program

(d) The expected total applied dosage of chlorine dioxide and other disinfectants as well as the points of application for all disinfectants and the type and amount of residuals and by-products expected in the distribution system

Guidance: It is recommended that the plans, specifications, operating procedures, and emergency response plans be reviewed by a certified safety consultant. Individuals which meet these requirements ~~shall~~ should maintain and supervise safety programs and procedures.

(2) Chlorine dioxide generators

(a) Chlorine dioxide generation shall be designed to be efficient compared to industry standard, and production of excess chlorine shall be minimized.

Guidance: Concentrations of chlorine dioxide and chlorite in the plant effluent need to be considered in design and operation to avoid exceeding the MRDL and MCL respectively.
Guidance: Typically a well run generator can operate at more than 95% yield ($[ClO_2]/ \{[ClO_2] + [ClO_2^-] + 67.45/83.45[ClO_3^-]\}$). Maximizing yield will minimize chlorite demand and the possibility of exceeding the chlorite MCL. Discharge of free chlorine from the generator can typically be limited to less than 2% by weight. Free chlorine can contribute to DBP formation.

(b) The generator shall not produce a solution with chlorine dioxide concentration more than 6,000 mg/L to minimize the explosion hazard.

(c) The design shall include capability to measure concentrations of chlorine dioxide, chlorite, chlorate, and free chlorine of the solution leaving the generator.

(d) The chlorine dioxide generator shall be equipped with a chlorine dioxide analyzer to measure the strength of the solution leaving the generator.

(e) Generators which use solid chlorite will not be allowed.

(3) Chlorine Dioxide Feed and Storage System

(a) Chlorine Dioxide Feed system.

(i) Use fiberglass reinforced vinyl ester plastic (FRP) or high density linear polyethylene (HDLPE) tanks with no insulation.

(ii) If centrifugal pumps are used, provide Teflon packing material. Pump motors must be totally enclosed, fan-cooled, equipped with permanently sealed bearings, and equipped with double mechanical seals or other means to prevent leakage.

(iii) Provide chlorinated PVC, vinyl ester or Teflon piping material. Do not use carbon steel or stainless steel piping systems.

(iv) Provide glass view ports for the reactor if it is not made of transparent material.

(v) Provide flow monitoring on all chemical feed lines, dilution water lines, and chlorine dioxide solution lines.

(vi) Provide a means to verify calibrated feed flow to each application feed point.

(vii) Control air contact with chlorine dioxide solution to limit potential for explosive concentrations building up within the feed facility.

(viii) All chlorite solutions shall have concentrations less than 30%. Higher strength solutions are susceptible to crystallization and stratification.

(b) Chlorine Dioxide Storage and Operating Area. The following requirements apply to the chlorite storage and chlorine dioxide day tank area.

(i) The chlorine dioxide facility shall be physically located in a separate room from other water treatment plant operating areas.

(ii) The chlorine dioxide area shall have a ventilation system separate from other operating areas.

(iii) Provision shall be made to ventilate the chlorine dioxide facility area and maintain the ambient air chlorine dioxide concentrations below the Permissible Exposure Limit (PEL).

(A) The ventilating fan(s) take suction near the floor, as far as practical from the door and air inlet, with the point of discharge so located as not to contaminate air inlets of any rooms or structures.

(B) Air inlets are provided near the ceiling.

(C) Air inlets and outlets shall be louvered.

(D) Separate switches for the fans are outside and near the entrance of the facility.

Guidance: Chlorine dioxide has a permissible exposure limit (PEL) in air based on 8 hour work day of 0.1 ppm and a short term exposure limit (STEL) of 0.3 ppm. The odor threshold of chlorine dioxide is about 0.1 ppm. Special measures are needed to protect treatment plant personnel.

(iv) The area housing chlorine dioxide facility shall be constructed of non-combustible materials such as concrete.

(v) There shall be an ambient air chlorine dioxide sensor in the vicinity of the chlorine dioxide operating area. The ambient air chlorine dioxide readouts and alarm or warning light shall be audible and visible in the operating area and on the outside of the door to the operating area. The design shall include distinguishing audible alarms that are triggered by the ambient air chlorine dioxide sensor readings.

(vi) There shall be observation windows through which the operating area can be observed from outside the room to ensure operator safety.

(vii) Manual switches to the light in the operating area shall be located outside the door to the room.

(viii) There shall be an emergency shower and eyewash outside and close to the door to the operating area.

(ix) An emergency shutoff control to shut flows to the generator shall be located outside the operating area.

(x) The design shall minimize the possibility of chlorite leaks.

(xi) The chlorite tank and chlorine dioxide solution tank shall be vented to the outdoors away from any operating areas.

(xii) Gaseous chlorine feed to the chlorine dioxide generator shall enter the chlorine dioxide facility area through lines which can only feed to vacuum.

(xiii) The floor of the chlorine dioxide facility area shall slope to a sump.

(xiv) There shall not be any open drains in the chlorine dioxide operating area.

(xv) Provide secondary containments with sumps for chlorine dioxide storage, and chlorine dioxide solutions which can hold the entire volume of these vessels. This containment shall prevent these solutions from entering the rest of the operating area.

(xvi) Provide wash-down water within the operating area.

(xvii) The operating area shall be designed to avoid direct exposure to sunlight, UV light, or excessive heat.

(4) Other Design Criteria

(a) Provide secondary containment, a sump, wash-down water, and a shower and eyewash at the bulk delivery transfer point.

(b) Finished water shall be used for chlorine dioxide generation.

(c) The finished water line to the chlorine dioxide generator shall be protected with a high hazard assembly.

(d) Provide a water supply near the storage and handling area for cleanup.

(e) The parts of the chlorine dioxide system in contact with the strong oxidizing or acid solutions shall be of inert material.

(f) The design shall provide the capability to shut off the chlorine dioxide operation remotely, i.e., from a location that is outside of the chlorine dioxide operating area.

(5) Operation and Maintenance

(a) Do not store or handle combustible or reactive materials, such as acids, reduced metals, or organic material, in the chlorine dioxide operating area.

(b) Store chemicals in clean, closed, non-translucent containers.

(c) Personal protective equipment and first aid kits shall be stored at a nearby location that is outside the chlorine dioxide facility area.

(d) The temperature of the chlorine dioxide operating area shall be maintained between 60 and 100 °F.

(e) After delivery allow chlorite solutions to equalize with the ambient temperature of the operating area to avoid stratification.

(f) The Operating and Maintenance manual shall include operator safety and emergency response procedures. Personnel shall have ongoing training for operator safety and emergency response procedures.

(g) All wastes shall be disposed of in accordance to any existing solid and hazardous waste regulations.

(h) The operating area shall be inspected daily for chlorite spills and solid chlorite buildup. The daily inspections shall be logged.

(i) Chlorite leaks and solid chlorite buildup shall be cleaned up and disposed of immediately.

(j) Solid chlorite shall be washed down before removal.

Guidance: Solid chlorite is an explosion hazard. Solid chlorite ~~shall~~ should be handled with care.

(k) The ventilation system in the chlorine dioxide facility area shall be operated to maintain the ambient air chlorine dioxide concentrations below the Permissible Exposure Limit (PEL).

(l) Audible alarms shall be programmed to alert water treatment plant personnel when the ambient air chlorine dioxide sensor in the vicinity of the chlorine dioxide operating area detects the chlorine dioxide concentration above the Permissible Exposure Limit (PEL) and the Short Term Exposure Limit (STEL).

R309-520-11. Chloramines.

Proposals for the use of Chloramines as a disinfectant shall be discussed with the Division prior to the preparation of final plans and specifications.

Guidance: Chloramines are a much weaker oxidant than free chlorine, ozone or chlorine dioxide and therefore the "CT" values for inactivation of Giardia cysts by chloramines are extremely high and may not be achievable for some systems. Chloramines may be utilized only

for secondary disinfection, as necessary to maintain required disinfectant residual concentrations in water entering, or throughout, the distribution system. Chlorine may be added prior to ammonia in producing chloramines, or ammonia prior to chlorine, or even ammonia and chlorine added concurrently. The order of application of chlorine and ammonia to form chloramines is important and source waters must be evaluated to determine which method is most effective.

KEY: drinking water, primary disinfectants, secondary disinfectants, operation and maintenance
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R309. Environmental Quality, Drinking Water.
R309-520. Facility Design and Operation: Disinfection.
R309-520-1. Purpose.

This rule specifies requirements for facilities that disinfect public drinking water. It is to be applied in conjunction with [~~R~~]rules R309-500 through R309-550[~~Series 500~~], Drinking Water Facility Construction, Design, and Operation[~~, namely, R309-500 through R309-550~~]. Collectively, these Rules govern the design, construction, and operation and maintenance of public drinking water system facilities. These Rules are intended to assure that such facilities are reliably capable of supplying adequate quantities of water that consistently meet applicable drinking water quality requirements and do no harm to general public health.

R309-520-2. Authority.

This rule is promulgated by the Drinking Water Board as authorized by Title 19, Environmental Quality Code, Chapter 4, Safe Drinking Water Act, Subsection 104(1)(a)(ii) of the Utah Code and in accordance with Title 63G, Chapter 3 of the same, known as the Administrative Rulemaking Act.

R309-520-3. Definitions.

Definitions for certain terms used in this rule are given in R309-110 but may be further clarified herein.

R309-520-4. Primary Disinfectants.

Primary disinfection is the means to provide adequate levels of inactivation of pathogenic micro[~~-~~]organisms within the treatment process. The effectiveness of chemical disinfectants is measured as CT, a function of disinfectant residual and contact time[~~a function of the concentration and time of contact, a "CT" value in units such as mg/L-min~~]. The effectiveness of UV disinfection is determined through validation testing of each model and specific configuration of UV reactor proposed in the design, as described in R309-520-8.

[~~Only f~~]Four disinfectants: chlorine [~~(i.e., gas, hypochlorite solution, and hypochlorite tablets)~~], ozone, ultraviolet light, and chlorine dioxide are approved [~~herein~~]as [~~allowable~~]primary disinfectants of drinking water.

R309-520-5. Secondary Disinfectants.

Secondary disinfection [~~is the means to~~] provides an adequate disinfectant residual in the distribution system to maintain [~~a chemical barrier and to control bacteriological~~] the quality of treated water by controlling microbiological contamination.

[~~The effectiveness of s~~]Secondary chemical disinfection is [~~measured through~~] achieved by maintaining a detectable disinfectant residual throughout the distribution system. Allowable secondary disinfectants are chlorine [~~(gas, hypochlorite solution, and hypochlorite tablets)~~] and chloramine.

R309-520-6. General.

(1) Continuous Disinfection.

(a) Continuous disinfection is required of all ground water sources that do not otherwise continuously

meet microbiological standards[~~of bacteriologic quality~~]. Intermittent or batch disinfection, such as adding hypochlorite tablets or concentrated hypochlorite solution to a tank[~~commonly used for disinfecting new water tanks, waterlines, well casings, etc.~~], is not acceptable for ongoing operation if continuous disinfection is required.[~~drinking water delivery service. Surface water sources, and ground water sources under direct influence (UDI) of surface water, shall be disinfected as a part of the treatment requirements for conventional surface water treatment or alternative surface water treatment.~~]

(b) Disinfection is not an acceptable remedy to physical deficiencies or sources susceptible to surface water influence. Disinfection shall not be used to mask ongoing contamination and shall not be used as a substitute for correcting deficiencies.[~~inadequate drinking water system facilities. Systems that practice source disinfection, and whose sources are exclusively ground water sources, as defined in R309-505-8, shall meet the requirements of R309-105-10(1), Chemical Addition.~~]

(c) Where continuous disinfection is required, the design shall provide a means to isolate or service the disinfection equipment without allowing untreated water to enter the distribution system. If the untreated water is to be discharged, it shall not cause environmental or property damage.

(2) ANSI/NSF Standard 60 Certification.

All chemicals added to drinking water, including chlorine (i.e., gas, hypochlorite solution, hypochlorite tablets, granules, and powder), chloramines, and chemicals used to generate hypochlorite solutions and chlorine dioxide, [~~added to drinking water supplied by a public water system~~] shall be certified as complying with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals.

(3) Required Disinfection[~~Appropriate Use of Primary and Secondary Disinfectants~~].

(a) Surface water, or groundwater under the direct influence of surface water, shall be filtered by conventional surface water treatment or alternative surface water treatment methods and disinfected to meet the requirements of R309-200-7.

(b) [~~Only ground water~~]Where microbiological treatment is required for a ground water source that is not under the influence of surface water, disinfection without filtration may be considered adequate.[~~can be adequately disinfected with primary disinfectants, or primary and secondary disinfectants, alone. Surface waters, as well as ground water under the direct influence of surface water, require conventional surface water treatment or alternative surface water treatment methods.~~]

(4) Point of Application and CT[~~Required Disinfectant Dose and Contact Time~~].

[~~Minimum cyst and virus reductions for that approved primary chemical disinfectants must achieve are specified in R309-200-5(7)(a), Disinfection, and reiterated in R309-200-7(2), namely 4-log virus removal or inactivation, 3-log Giardia lamblia cyst removal or inactivation, and 2-log Cryptosporidium removal or inactivation for water sources in bin 1 classification per R309-215-15(11)(c). Minimum doses and contact times for primary chemical disinfectants are standardized as "CT" values as defined~~

~~in R309-110-4, Definitions.~~]A combination of disinfectant residual and contact time is defined as disinfection CT in R309-110-4. The following requirements apply to disinfectant point of application and CT:

(a) Consideration shall be given to the contact time of the disinfectant in water with relation to pH, ammonia, taste-producing substances, temperature, biological quality, and other pertinent factors.

(b) Where possible, the design shall minimize the formation of disinfection byproducts.

(c) Treatment of ground water sources shall provide sufficient CT to achieve a minimum of 4-log virus inactivation and/or removal.

(d) Point of application of disinfectants shall be at a location that will achieve the required disinfection CT prior to the first service connection.

(5) Site Selection.

Disinfection installations shall be sited to permit convenient [~~year-round~~] access during the operation period. These installations shall [~~initially~~] be sited with due consideration of possible danger to nearby population and of possible jeopardy from seismic fault zones.

R309-520-7. Chlorine.

(1) General Requirements for all Chlorination Installations.

(a) Chemical Types.

Disinfection by chlorination shall be accomplished by gaseous chlorine or [~~liquid solutions of calcium hypochlorite or sodium~~] hypochlorite solutions. Hypochlorite solutions can be purchased, generated on site, or prepared by dissolving solids.

(b) Feed Equipment.

Solution-feed gas type chlorinators, direct-feed gas type chlorinators or hypochlorite liquid feeders of a positive displacement type shall be provided. Solution-feed gas type chlorinators are preferred. Use caution when selecting direct-feed gas type chlorinators.[~~However, for small supplies requiring less than four pounds per day, liquid hypochlorite feed systems are advised.~~]

(c) Chlorine Feed Capacity.

[~~The design of each chlorinator shall permit:~~]

(i) The capacity of the chlorine feed equipment shall be sized to provide at least 2 mg/L during peak demand.

(ii) [~~the chlorinator capacity to be such that a free chlorine residual of at least 2 mg/l can be maintained in the system after 30 minutes of contact time during peak demand.~~]The feed equipment shall [~~be of such design that it will~~] operate accurately over [~~a~~] the design feeding range[~~ of 0.2 mg/l to 2 mg/l~~].

(iii) [~~assurance that a detectable residual, either combined or free, can be maintained~~] The feed equipment shall be designed to maintain a detectable residual at all times, at all points within the intended area in the distribution system.

(d) Automatic Proportioning.

Automatic proportioning chlorinators shall be required where the rate of flow of the water to be treated or chlorine demand of the water to be treated is not reasonably constant.

(e) Injector[~~/~~], Eductor, or [d]Diffuser.

(i) [~~Location. The chlorine solution injector/diffuser shall~~

~~be compatible with the point of application to provide a~~]Chlorine shall be added at a point that allows rapid and thorough mixing[~~with all the water being treated~~]. The center of a pipeline is the preferred application point.

(ii) [~~Equipment. Each injector selected shall be appropriate to~~]The selection of equipment shall consider the [~~intended~~] point of application, [~~with particular attention given to~~] the quantity of chlorine to be added, [~~the maximum injector water flow,~~] the size and flow of the chlorine solution line, the back pressure of the to-be-treated water flow, and the [~~injector~~]equipment operating pressure[~~, and the size of the chlorine solution line. Gauges for measuring water pressure at the inlet and outlet of each injector shall be provided~~].

(iii) [~~Protection.~~]A suitable [~~screen~~]strainer to prevent small debris from clogging [~~a~~]chlorine feed equipment[~~injector~~] shall be provided[~~ on each water feed line~~]. Provision for flushing [~~of~~] the [~~screen~~]strainer is required.

(f) [~~Contact Time and~~] Point of Application for Surface Water.

The design of plants treating surface water or ground water under the direct influence of surface water shall make provisions to add chlorine at various process points as needed.

[~~(i) Due consideration shall be given to the contact time of the chlorine in water with relation to pH, ammonia, taste producing substances, temperature, biological quality, and other pertinent factors.~~

~~(ii) Where possible, the design shall minimize the formation of chloro-organic compounds. At plants treating surface water or ground water under the direct influence of surface water, provisions shall be made for applying chlorine to raw water, applied water, filtered water, and water entering the distribution system.~~

~~(iii) When treating ground water, provisions shall be made for applying chlorine to at least a reservoir inlet or transmission pipeline which will provide sufficient contact time.~~

~~(iv) Care must be taken to assure that the point of application will, in conjunction with the pipe and tank configuration of the water system, allow required CT values to be achieved prior to the first consumer connection.~~]

(g) Minimization of Chlorinated Overflow.

[~~The chlorinator and associated water delivery facilities shall be designed so as to~~]The design shall minimize the release of chlorinated water into the environment, for example, the discharge of chlorinated water from tank overflows. Such releases must comply with rules of Division of Water Quality that pertain[~~s~~] to discharge o[~~r~~]f pollution.

(h) [~~Feed Water Piping~~]Prevention of Cross Connections.

(i) [~~The chlorinator water supply piping shall be designed to~~] The design shall prevent contamination of the treated water supply by make-up water of lesser quality.

(ii) [~~At all facilities treating surface water, pre-chlorination and post-chlorination systems shall be independent where pre-chlorination chlorine solution make-up water is not finished water.~~] All chlorine solution make-up water shall be at least of equal quality to the water receiving the chlorine solution. At surface water treatment facilities, pre-chlorination and

post-chlorination processes shall be independent to prevent cross connections where pre-chlorination make-up water is not finished water.

(i) Flow Measurement.

The design of the chlorination system [~~design~~]shall [~~have~~]provide a means to measure the flow rate of treated water[~~, which is critical to operation of flow-proportioned disinfectant~~] as a basis for dosing.

(j) Residual Testing Equipment.

The water system shall have [~~C~~]chlorine residual test equipment[~~, in accordance with the analytical methods in "Standard Methods for the Examination of Water and Wastewater," shall be provided and shall be~~] capable of measuring residuals to the nearest 0.1 mg/[~~l~~]L in the range below 0.5 mg/[~~l~~]L, to the nearest 0.3 mg/[~~l~~]L between 0.5 mg/[~~l~~]L and 1.0 mg/[~~l~~]L and to the nearest 0.5 mg/[~~l~~]L above 1.0 mg/[~~l~~]L.

(k) Standby and Backup Equipment.

(i) A spare parts kit shall be provided and maintained for all chlorinators to repair parts subject to wear and breakage. If there could be a large difference in feed rates between routine and emergency dosages, multiple gas metering tubes shall be provided, at least one for each dose range, to assure accurate control of the chlorine feed under both routine and emergency conditions.

(ii) Where chlorination is required for disinfection of a water supply, standby equipment of sufficient capacity shall be available to replace the largest unit in the event of its failure.

(iii) Standby power shall be available, during power outages, for operation of chlorinators where disinfection of the water supply is required unless operation of the chlorinator does not require power.

(l) Heating, Lighting, Ventilation.

Chlorinator [~~houses~~]buildings shall be heated, lighted and ventilated as necessary to assure proper operation of the equipment and safety of the operators[~~ and to facilitate its serviceability~~].

[~~(m) Bypass-to-Waste Capability of Chlorine Disinfection Systems.~~

~~A chlorinator bypass, with appropriate turn-out of un-chlorinated water, shall be provided to allow the flow to waste for periods when the chlorination system is not operational. This is necessary to prevent un-chlorinated water from entering the distribution system. The flow to waste shall be designed such that it does not result in unintended consequences such as flooding or property damage.~~

~~(n) Isolation Capability.~~

~~Chlorinator isolation plumbing shall be provided such that each chlorinator can be removed from the process train (e.g., during maintenance, power outage, other shutdown, etc.) without allowing otherwise unchlorinated water to bypass the unit and be delivered to the public for consumption.~~]

(m) Incompatible Chemicals.

The design shall ensure that incompatible chemicals that may damage or deteriorate chlorination facilities are stored separately from chlorination equipment and chemicals.

(2) Additional Requirements for Gas Chlorinators.

(a) Automatic Switch over.

Automatic Switch over of chlorine cylinders shall be provided[~~,~~

~~where necessary, to assure~~] if continuous disinfection is required.

[~~(b) Injector and Eductor.~~

~~Each injector or eductor shall be selected for the point of application with particular attention given to the quantity of chlorine to be added, the maximum injector or eductor water flow, the total discharge back pressure, the injector operating pressure, and the size of the chlorine solution line. Gauges for measuring water pressure at the inlet and outlet of each injector shall be provided.~~]

([~~c~~]b) Gas Scrubbers.

[~~Gas chlorine facilities shall conform with the Uniform Fire Code, Article 80 and the Uniform Building Code, Chapter 9 as they are applied by local jurisdictions in the state.~~]One-ton chlorine cylinder operating areas shall be equipped with a gas scrubber per the International Fire Code capable of treating the release of chlorine gas from the largest single cylinder at its maximum flow rate. Furthermore, local toxic gas ordinances shall be complied with if they exist.

([~~d~~]c) Heat.

The design of the chlorination room shall assure that the temperature in the room will not[~~ever~~] fall below 32 degrees F or the[~~at~~] temperature required for proper operation of the chlorinator, whichever is greater.

([~~e~~]d) Ventilation.

(i) Chlorination equipment rooms which contain chlorine cylinders, tanks, equipment and gaseous chlorine lines under pressure shall have at least one exhaust fan.[~~and shall be constructed and equipped such that:~~]

(ii) [~~c~~]Chlorine room exhaust fan(s), when operating, shall provide at least one complete room air change per minute[~~,~~].

(iii) [~~c~~]Chlorine room [~~ventilating~~]exhaust fan(s) shall take suction inside the chlorine room near the floor, as far as practical from the door and air inlet, and discharge air outside of the building away from air inlets.[~~exhaust air out of the room with the point of discharge so located as not to contaminate air inlets of any other rooms or any structures;~~]

(i[~~ii~~]v) [~~c~~]Chlorine room air [~~entryways~~]inlets shall be through wall louvers near the ceiling[~~,~~].

[~~(iv) chlorine room air entryway louvers and air exit-way louvers (e.g., on outside faceplate of any floor level exhaust fan) shall have air-tight closure;~~]

([~~i~~]v) [~~s~~]Separate switches for the chlorine room fans and lights shall be located[~~outside of the chlorine room~~] near the entrance to the room[~~,~~] and shall be protected from vandalism.[~~; and~~] The switches shall be located outside the chlorine room if housed in a water treatment plant.

[~~(v) vents from feeders and storage discharge above grade to the outside atmosphere.~~]

(vi) The ventilation system for one-ton chlorine cylinder operating areas shall be designed to operate independently from the ventilation system for the rest of the treatment plant. One-ton chlorine cylinder operating areas shall be designed to maintain negative pressure per the International Fire Code.

([~~f~~]e) [~~Feeder~~]Chlorine Vent Line.

The chlorine vent line[~~hose from the feeder~~] shall discharge [~~to the~~]outside, [~~atmosphere~~]above grade, at a point least susceptible to vandalism, and shall have the end covered with a No. 14 mesh non-corrodible screen.

([~~g~~]f) Housing.

(i) [~~Adequate h~~]Housing shall be provided for[~~the~~]chlorination equipment and [~~for storing the chlorine (see R309-520-10(1)(l) above)~~]storage to ensure proper function and security.

(ii) Chlorine cylinders shall not be stored in direct sunlight or exposed to excessive heat.

([~~h~~]g) Housing at Water Treatment Plants.

A separate [~~room, referred to as the~~] chlorine room, for chlorine cylinders and feed equipment, shall be provided at all water treatment plants with multiple processes and operating areas.[~~— Chlorine gas feed and storage shall be enclosed in the chlorine room and separated from other operating areas. The chlorine room shall have:~~]

(i) The chlorine room shall have shatter resistant inspection window(s) installed in an interior wall [~~and~~] preferably located so that an operator may read the weighing scales without entering the chlorine room[~~,~~].

(ii) [~~construction such that a~~]All openings between the chlorine room and the remainder of the plant [~~are~~]shall be sealed[~~, and~~].

(iii) [~~o~~]Outward-opening doors shall be equipped with panic bars to allow[~~facilitate a means of easy and~~] rapid exit[~~ to the building exterior~~].

(iv) [~~f~~]Floor drains [~~shall be~~]are discouraged but, where provided, [~~these floor drains~~] shall discharge to the outside of the building and shall not be connected to other internal or external drain systems.

(v) Chlorine feed lines shall not carry pressurized chlorine gas beyond the chlorine room. Only vacuum lines may be routed to other portions of the building outside the chlorine room. Any openings for these lines must be adequately sealed.

(vi) The design of operating areas for one-ton cylinders shall allow full and empty cylinders to be stored in separate areas.

([~~i~~]h) Cylinder Security.

[~~Full and empty~~]Chlorine cylinders [~~of liquefied chlorine gas and ammonia gas~~] shall be [~~stored in rooms separate from each other, and shall be:~~

~~(i) isolated from operating areas;~~

~~(ii)~~]restrained in position to prevent upset.[~~from accidental bumping, seismic event or other such circumstance;~~

~~(iii) stored in areas not in direct sunlight or not exposed to excessive heat.~~]

[~~(j) Feed Line Routing.~~

~~Chlorine feed lines shall not carry pressurized chlorine gas beyond the chlorinator room. Only vacuum lines may be routed to other portions of the building outside the chlorine room. Any openings for these lines must be adequately sealed.~~]

([~~k~~]i) Weighing Scales.

Scales shall be provided for determining chlorine cylinder weight. Scales should be of a corrosion resistant material and should be placed in a location remote from any moisture. Scales shall be

accurate enough to indicate loss of weight to the nearest one pound for 150 pound cylinders and to the nearest 10 pounds for one ton cylinders.

([~~l~~]j) Pressure Gauges.

Pressure gauges shall be provided on the inlet and outlet of each chlorine eductor.[~~injector. Water pressures at the inlet and outlet of each chlorine injector shall be accurately measured. The preferred location is on the water feed line immediately before the inlet of the chlorine injector and at a point on the water main just ahead of chlorine injection. These locations should give accurate pressure readings while not being subjected to corrosive chlorinated water.~~]

[~~(m) Injector Protection.~~

~~A suitable screen to prevent small debris from clogging a chlorine injector shall be provided on the water feed line. Provision for flushing of the screen is required.~~

~~(n) Chlorine Vent Line Protection.~~

~~A non-corrodible fine mesh (No. 14 or finer) screen shall be placed over the discharge ends of all vent lines. All vent lines shall discharge to the outside atmosphere above grade and at locations least susceptible to vandalism.~~]

([~~o~~]k) Gas Masks.

(i) Where chlorine gas in one-ton cylinders is handled, [~~R~~]respiratory protection equipment, meeting the requirements of the National Institute for Occupational Safety and Health (NIOSH) shall be available [~~where chlorine gas in one-ton cylinders is handled,~~] and shall be stored at a convenient location, but not inside any room where chlorine is used or stored. The units shall use compressed air, have at least a 30 minute capacity, and be compatible with units used by the fire department responsible for the plant.

(ii) Where [~~smaller~~]150 pound chlorine cylinders are used, [~~suitable gas masks~~]a respirator recommended by the National Institute for Occupational Safety and Health must be [~~provided~~]available.

([~~p~~]l) Chlorine Leak Detection and Repair.

(i) A bottle of Ammonium Hydroxide, 56% ammonia solution, shall be available for chlorine leak detection[~~;~~].

(ii) [~~w~~]Where one-ton [~~containers~~]cylinders are used, a leak repair kit approved by the Chlorine Institute shall be provided.

(iii) Continuous chlorine leak detection equipment is required for one-ton cylinders[~~recommended~~].

(iv) Where a continuous leak detector is provided, it shall be equipped with both an audible alarm and a warning light to ensure operator safety.

(3) Additional Requirements for Hypochlorite Systems.

[~~Disinfection by free chlorine shall be accomplished with stock hypochlorite solutions, hypochlorite solution produced by an on-site generator, or hypochlorite solutions prepared from hypochlorite tablets.~~]

(a) General Requirements.

(i) Emergency Eyewash and Safety Showers.

Emergency eyewash stations and safety showers shall be provided at all hypochlorite installations where concentrated hypochlorite solutions, containing 5% or greater available chlorine by volume, are handled in containers greater than 55 gallons. Where hypochlorite

solutions are used at remote locations or in quantities of 55 gallons or less on site, safety showers are not required and alternative emergency eyewash may be provided.

(ii) Storage of Liquid Hypochlorite to Prevent Decay.

Storage and injection areas shall be designed to minimize the decay in strength of concentrated hypochlorite solutions from excessive heat or direct sunlight.

(iii) Feed Equipment – Chemical Addition.

Hypochlorite feed equipment shall generally conform with R309-525-11, Chemical Addition.

(iv) Feed Equipment – Certification.

The hypochlorite feed equipment for drinking water treatment shall be certified to meet ANSI/NSF Standard 61.

([~~a~~]b) Concentrated [~~Sodium~~] Hypochlorite Solutions.

The water system shall provide an operational means to avoid the injection of significantly decayed hypochlorite solutions, for example by keeping records on site of the delivery date of the hypochlorite solution.

[~~(i) The concentrated sodium hypochlorite solutions used for drinking water treatment shall be certified as meeting the ANSI/NSF Standard 60.~~

~~(ii) Emergency eyewash stations or showers shall be provided at all hypochlorite installations where concentrated (e.g., above 5.25% strength) hypochlorite solutions are handled for dilution by operators or other personnel.~~

~~(iii) The storage and injection areas shall be designed to minimize the decay of the strength of the concentrated hypochlorite solution over time, such as minimize excessive heat or direct sunlight.~~]

([~~b~~]c) On-Site Generation of Hypochlorite Solutions[~~Generation~~].

(i) The on-site hypochlorite generation systems used for drinking water treatment shall be certified as meeting the NSF/ANSI Standard 61.

(ii) Manufacturer recommendations for safety with respect to equipment and electrical power[~~and other considerations for the ANSI/NSF Standard 61 certified on-site chlorine generation system~~]shall be followed.

(iii) The make-up water used in on-site generation shall be of drinking water quality.

(iv) The hydrogen gas generated in the electrolytic cell of the on-site generation system shall be vented upward to the outside of the building in a dedicated, unobstructed line.

([~~c~~]d) [~~Calcium~~] Hypochlorite Tablets.

(i) Before selecting a hypochlorite tablet disinfection process, water hardness, solubility of hypochlorite tablets, water temperature, and other water quality factors shall be taken into consideration.[~~The calcium hypochlorite tablets, granules, and powder forms, used for drinking water treatment shall be certified as meeting ANSI/NSF Standard 60.~~]

(ii) The [~~calcium~~] hypochlorite dissolution [~~systems~~]equipment for drinking water treatment shall be certified as meeting the ANSI/NSF Standard 61.[~~The Director may grant an exception to this requirement on a case by case basis.~~]

(iii) The design shall allow the [~~calcium~~]hypochlorite tablets to be stored in accordance with the manufacturer's safety guidelines [~~by the vendor or manufacturer, for example,~~]and in their original containers in a cool, dry, well-ventilated area. The [~~calcium~~] hypochlorite tablets shall not be stored near combustible materials [~~and~~]or acids to avoid fire or the release of toxic gases.

~~[(d) Hypochlorite Feed Equipment.~~

~~(i) Hypochlorite feed equipment shall generally conform with R309-525-11, Chemical Addition; with R309-525-6 for storage and safe handing; with R309-525-7 for feeder design, location, and control; with R309-525-8 for feeder appurtenances such as pumps, day tanks, bulk storage tanks, and feed lines; and R309-525-9 for make-up water supply and protection.~~

~~(ii) The hypochlorite feed equipment for drinking water treatment shall be certified meeting the ANSI/NSF Standard 61. The Director may grant an exception to this requirement on a case by case basis.~~]

R309-520-8. Ultraviolet Light.

(1) General Requirements.

This rule shall apply to the public drinking water systems that use ultraviolet (UV) disinfection for inactivation of [~~Cryptosporidium~~]*Cryptosporidium*, [~~Giardia~~]*Giardia*, and virus. The Director may reduce the requirements of monitoring and reporting on a case by case basis for the water systems that use UV as ancillary means of disinfection and do not claim credit for UV disinfection or for water systems using UV without a SCADA system and treating less than 30 gallons per minute.

Terminology used in this rule is based on the definitions in the EPA Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule (2006 Final UVDGM).

(a) Water systems using surface water or ground water under the influence of surface water shall not use UV as the sole means of disinfection. For these types of water systems, at least one alternative primary disinfectant must be used for virus disinfection, and a secondary disinfectant shall be provided to maintain a disinfectant residual in the distribution system.

(b) The following requirements apply to the water systems that wish to receive credit for UV disinfection:

(i) The water system shall submit a UV plan which clearly identifies the dose monitoring strategy, such as the UV intensity setpoint approach, the calculated dose approach or an alternative approach.

(ii) The water system shall identify the goals for the UV facility as part of a comprehensive disinfection strategy, including target pathogens, target log inactivation, and corresponding required UV dose per Table 215-5 in R309-215-15(19)(d).

(iii) The water system shall submit a UV reactor validation report in accordance with R309-520-8(2), to the Director for review prior to installation of UV facility.

(iv) The water system must demonstrate that the reactor is delivering the required UV dose using a validated dose monitoring system and continue to comply with the monitoring and reporting requirements specified in R309-215-15(19) and (20).

(2) Validation Testing.

The Director may accept a validation report that was conducted based on the 2003 draft UV Disinfection Guidance Manual on a case-by-case basis.

(a) Each model and specific configuration of UV reactor must undergo off-site, full-scale validation testing by an independent third party test facility prior to being approved for use. The validation testing shall be conducted in qualified test facilities that are deemed acceptable by NSF, EPA, or the Director.

(b) Validation testing results shall provide data, including calculations and tables or graphical plots, on dose delivery by the UV reactor under design conditions of flow rate, UV transmittance (UVT), UV intensity, lamp status, power ballast setting, as well as consideration of lamp aging and lamp fouling. The validation report shall demonstrate that the monitoring algorithm is valid over the range expected with the application. The data is used to define the dose monitoring algorithm for the UV reactor and the operating conditions that can be monitored by a utility to ensure that the UV dose required for a given pathogen inactivation credit is delivered.

(c) The UV reactor validation report shall include:

(i) Description of the reactor and validation test set-up, including general arrangement and layout drawings of the reactor and validation test piping arrangement.

(ii) Description of the methods used to empirically validate the reactor.

(iii) Description of the dose monitoring equation for the reactor to achieve the target pathogen inactivation credit and related graphical plots showing how the equation was derived from measured doses obtained through validation testing under varying test conditions.

(iv) Range of validated conditions for flow, UVT, UV dose, and lamp status.

(v) Description and rationale for selecting the challenge organism used in validation testing, and analysis to define operating dose for pathogen inactivation credit.

(vi) Tabulated data, analysis, and [~~Q~~]quality assurance/quality control (QA/QC) measures during validation testing.

(vii) A licensed professional engineer's third party oversight certification indicating that the testing and data analyses in the validation report are conducted in a technically sound manner and without bias.

(viii) The validation report shall be accompanied with completed Checklists 5.1 through 5.5 included in the EPA Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule (2006 Final UVDGM).

(3) Design Criteria

(a) A water system considering UV disinfection shall gather sufficient water quality data prior to design. The water samples shall be representative of the source water to be treated by the UV facility. Frequent testing may be required if significant variation or seasonal trending in water quality is expected.

(b) The following water quality parameters shall be considered in UV facility planning:

(i) UV Transmittance or UV Absorbance

(ii) Calcium
(iii) Alkalinity
(iv) Hardness
(v) Iron
(vi) Manganese
(vii) Turbidity
(viii) pH
(ix) Oxidation-Reduction Potential (ORP)
(x) Particle content and algae

(c) The design flow rate and UVT used to size the UV system shall be selected to provide the required dose at least 95 percent of the time, accounting for seasonal variations of flow and UVT combinations. Specifying a matrix of flow and UVT conditions for the UV reactors may be necessary.

(d) The water system may consider increasing the delivered dose beyond the required UV dose listed in Table 215-5 in R309-215-15(19)(d) to provide flexibility and conservatism.

(e) UV reactor inlet and outlet configurations shall meet the validated hydraulic distribution of flow conditions or be more hydraulically conservative. This can be achieved using one of the following approaches:

(i) The inlet and outlet configuration shall meet one of the conditions specified in Section 3.6.2 of the 2006 Final UVDGM.

(ii) Computational fluid dynamics (CFD)-based modeling may be used to demonstrate that the given conditions of inlet and outlet piping with the UV installation provides equal or greater dose delivery. The CFD modeling shall be conducted at the minimum and maximum values of the validated range of flow, UVT, and lamp status.

(f) The UV disinfection system shall be capable of applying the required design dose with a failed or out-of-service reactor. The design shall account for an on-line backup UV reactor or an operating scheme to apply the design dose with one reactor out of service.

(g) It shall be possible to isolate each reactor for maintenance.

(h) Signals and alarms shall be provided for the operation of the UV facility for the parameters necessary for dose monitoring algorithm, such as low UV dose, high flow rate, low UVT, UVT monitoring failure, UV sensor failure, off specification event, Ground Fault Interrupt (GFI), high water temperature, and low water level.

(i) All materials used in constructing or coating the UV reactors that come in contact with water shall be certified NSF Standard 61 - Drinking Water System Components - Health Effects.

(j) Any chemicals used in the cleaning of the UV reactor components in contact with the drinking water such as quartz sleeves shall be certified as meeting the ANSI/NSF Standard 60 - Drinking Water Treatment Chemicals - Health Effects.

(k) A flow or time delay shall be provided to permit a sufficient time for tube warm-up, per manufacturer recommendations, before water flows from the unit upon start up. The flow or time delay shall be included in the design so they do not result in excessive off specification conditions.

(l) To ensure a continuous supply of power, a backup power supply of sufficient capacity shall be provided for the UV disinfection

system. If power quality problems, such as frequent power interruptions or brownouts, or remote location with unknown power quality, [~~is~~]are anticipated, power conditioning equipment, such as uninterruptible power supply (UPS), shall be included in the design.

(m) The design shall include a redundant disinfection mechanism that will apply an approved primary disinfectant to achieve the CT or log removal/inactivation required for compliance if a UV facility is off specification or offline within a maximum response time of 15 minutes. One example of such response is to shut down the off-specification UV train and either bring a parallel UV train on line or initiate a back-up primary disinfection system within 15 minutes, so the continuous duration of an off- specification event is limited to no more than 15 minutes.

(n) UV disinfection units rated at 30 gallons per minute or less shall be certified as meeting the ANSI/NSF Standard 55, Class A, or other equivalent or more stringent validation or certification standards that are deemed acceptable by the Director.

(o) The dose monitoring approach used for UV facility must be reviewed and accepted by the Director. Typically the calculated dose approach is suitable for large systems or systems with significant flow variation, and the UV intensity setpoint approach is for small systems or systems with fixed flow rate. The dose monitoring approaches need to be consistent with the guidelines stated in the 2006 Final UVDGM.

(p) If Programmable Logic Controller (PLC) or SCADA interface is used for UV reactor's process control, the programming shall be in accordance with the validated dose monitoring algorithm and the validated conditions. The algorithm shall use inputs of flow, UV intensity sensor readings, lamps status, and/or UVT equal to or more conservative than values measured during the operation of the UV system. If the measured UVT is above the validated range, the maximum validated UVT shall be used as the input to the dose algorithm. If the measured flow rate is below the validated range, the minimum validated flow rate shall be used as the input to the dose algorithm. If the dose algorithm uses relative lamp output determined from the UV intensity sensor readings as an input, the relative lamp output shall be based on the measured UVT, even if it exceeds the maximum validated UVT.

(q) The UV reactor's PLC or microprocessor shall be programmed to record off specification events for the following conditions:

(i) Delivered UV dose less than the required dose,

(ii) Flow greater than the validated range,

(iii) UVT less than the validated range,

(iv) Lamp status outside the validated range,

(v) Failure of UV sensors, flow meters, or on-line UVT monitors used in the dose calculation. Laboratory measurements of UVT may be used temporarily in the program until the on-line UVT monitor is repaired.

(4) Operation and Maintenance

The operation and maintenance tasks and the frequency of performing them can be specific to the UV equipment installed. The water systems with approved UV installations should follow the manufacturer's recommendation or the operation and maintenance guidelines stated in Section 6.2 through 6.5 of the 2006 Final UVDGM.

(a) Startup testing.

(i) The UV reactor manufacturer must provide a site-specific operation and maintenance manual, which shall include the procedure for starting up and shutting down the UV treatment system.

(ii) Provide schedules and performance standards for start-up testing and initial operation. Schedules shall include anticipated start-up date and proposed testing duration. Performance standards shall reference applicable regulations and specific equipment capabilities.

(iii) Operators shall receive site-specific training on the operation of the UV disinfection system.

(b) An incident plan shall be developed to address lamp breakage and release of mercury, response to alarms, power supply interruptions, activation of standby equipment, failure of systems, etc.

(c) To verify that the UV reactors are operated within the validated limits, selected parameters shall be monitored. The routine operation and maintenance shall include the monitoring and calibration requirements listed in R309-215-15(19) and (20) and are in accordance with the monitoring and reporting protocol approved by the Director. For very small UV systems, the Director may consider granting exception to allow reduced monitoring and reporting on a case-by-case basis.

R309-520-9. Ozone.

(1) General Requirements.

(a) Ozone is approved as a primary disinfectant, but is not approved as a secondary disinfectant for the distribution system because of its rapid decomposition in aqueous solution. A different disinfectant approved for secondary disinfection must be used if a minimum disinfection residual is required in the distribution system. Ozone may also be used for taste and odor control, oxidation of inorganic and organic compounds and for enhanced performance of other water treatment processes such as microflocculation and filtration. Some of the requirements of this section may not be applicable if ozone is used only for reasons other than primary disinfection.

(b) Pilot studies or bench scale studies shall be conducted for all surface waters unless there is sufficient data available from other studies performed on the same water source. The studies shall determine the initial ozone demand, the rate of ozone decay, the minimum and maximum ozone dosages for the range of water conditions for disinfection "CT" compliance, and the ozone dosage required for other desired benefits. Pilot studies or bench scale studies shall take into account the seasonal and other variations of the source water. Plans for pilot studies or bench scale studies shall be reviewed and accepted by the Director prior to commencement of the studies.

(2) Ozone Generation.

(a) The ozone system should be designed with backup capability such that required inactivation can be achieved with one generator out of service.

(b) The ozone generators shall be housed in an enclosed temperature controlled building for protection. Adequate ventilation shall be provided in the building, and be capable of

providing six or more air changes per hour when needed in case of an ozone leak.

(c) The ozone generators shall be of the medium or high frequency type.

(d) The power supply units for the ozone generators shall have a backup electrical power source, normally an emergency generator, or the system shall have an alternate primary disinfection system that may be used in case of an electrical power outage.

(e) The ozone generators shall be water-cooled with a maximum increase in cooling water temperature of 10 degrees F (5.6 degrees C). If necessary, the cooling water should be treated to minimize corrosion, scaling, and microbiological fouling of the water side of the tubes. A closed-loop cooling water system may be used to assure proper water conditions are maintained. The power supply units to the ozone generators may also be water cooled.

(f) The ozone generators shall comply with Section 3705 of Chapter 37, "Ozone Gas Generators," of the 2006 International Fire Code.

(3) Ozone Generator Feed Gas.

(a) Feed gas may be air, vaporized high purity liquid oxygen, or oxygen enriched air. Oxygen may be generated on-site or delivered in bulk. Oxygen-enriched air is typically generated on-site.

(b) The design of the feed gas system must ensure that the maximum dew point of the feed gas of -76 degrees F (-60 degrees C) is not exceeded at any time.

(c) Liquid Oxygen Feed Gas Systems.

(i) Liquid oxygen storage tanks shall be sized to provide a minimum of a 7-day supply to the ozone generators at the maximum operating rate.

(ii) There shall be two or more vaporizers to convert liquid oxygen to the gaseous form. Vaporizers must be capable of maintaining oxygen flow at the minimum design air temperature with one unit on standby.

(iii) Liquid oxygen storage tanks and system shall comply with Chapters 40, "Oxidizers," of the 2006 International Fire Code.

(d) Air or Oxygen Enriched Air Feed Gas Systems.

(i) There shall be two or more air compressors to supply air. The capacity of the compressors shall be such that the demand during maximum ozone production and for other compressed air uses at the treatment plant can be met when the largest compressor is out of service.

(ii) Entrainment separators, refrigeration dryers, desiccant dryers, and filters shall be used as necessary to provide a sufficiently dried, dust-free, and oil-free feed gas to the ozone generators. Multiple units of this equipment shall be used so that the ozone generation is not interrupted in the event of a breakdown.

(4) Ozone Contactors.

(a) An ozone contactor shall consist of two or more chambers to provide for introduction of ozone into the water and contact time. In a water treatment plant, ozone may be introduced in the raw water, or ozone may be introduced later in the process, such as to settled water after solids have been removed. An ozone contactor must be a closed vessel that is kept under less than atmospheric pressure to prevent escape of ozone gas. The materials of construction must

be ozone-resistant to prevent premature failure of the contactor.

(b) Ozone gas may be injected into the water under positive pressure through bubble diffusers using porous-tube or dome diffusers. Alternatively, ozone gas may be injected into the water using side stream injection. This is where ozone gas is drawn into the side stream using negative pressure, which is generated in a pipe section with a venturi.

(c) An ozone contactor shall be designed to achieve a minimum transfer efficiency of 85 percent.

(d) Multiple sampling points shall be provided in an ozone contactor to enable sampling of treated water for purposes of determining an accurate measure of the concentration to be used in the "CT" disinfection calculation.

(e) A recommended minimum disinfection contact time is ten minutes.

(f) Ozone contactors shall have provision for cleaning, maintenance, and drainage of the contactor. Each contactor chamber shall be equipped with an access hatchway or other means of entry.

(g) An ozone contactor shall have an emergency off-gas pressure/vacuum relief system to prevent damage to the unit.

(h) A system must be provided for worker safety at the end of the ozone contactor for compliance with OSHA standards. Specifically, ozone levels in the gas space above treated water that has exited the contactor must not exceed the established OSHA 8-hour exposure limit of 0.1 ppm. This system may be an ozone residual quenching system where a chemical is used to destroy remaining ozone in the water, or this system may be a monitoring system that provides sufficient time to lower the residual ozone level in the water by natural decay to an acceptable level. Any chemical used to quench residual ozone shall comply with ANSI/NSF Standard 60.

(5) Off-Gas Destruction Units.

(a) A system for treating the final off-gas from each ozone contactor must be provided in order to meet safety standards. Systems using thermal destruction or catalytic destruction may be used. At least two units shall be provided which are each capable of handling the entire off-gas flow.

(b) Exhaust blowers shall be provided in order to draw off-gas from the contactor into the destruction units.

(c) Provisions must be made to drain water from condensation in the off-gas piping and to protect the destruction units and piping from moisture and other impurities that may cause damage.

(d) The maximum allowable ozone concentration in the gas discharge from a destruction unit is 0.1 ppm by volume. Provisions may be made for temporary transient concentration spikes that may exceed this limit.

(6) Piping and Connections.

(a) Because ozone is a strong oxidant, consideration shall be given to piping materials used in ozone service. Generally, only low carbon 304L and 316L stainless steel should be used for ozone gas service.

(b) Connections on piping used for ozone service should be welded where possible. Threaded connections should be avoided for ozone gas piping because of their tendency to leak. Connections with meters, valves, or other equipment should be made with flanged joints

with ozone-resistant gaskets.

(c) A positive-closing 90-degree turn isolation valve, or other equivalent means, shall be provided in the piping between an ozone generator and a contactor to prevent moisture from reaching the ozone generator during shutdowns.

(7) Instrumentation and Monitoring.

(a) A flow meter shall be provided to measure the flow rate of the water being treated. A temperature gauge or transmitter shall also be provided to measure the temperature of the water being treated. The pH shall also be measured to indicate changes in the water being treated.

(b) An ozone gas analyzer, a flow meter, and a temperature measurement shall be provided on the gaseous ozone feed line going to the ozone injection point.

(c) Ozone aqueous residual analyzers shall be provided to measure the ozone residual concentration in the water being treated in order to determine "CT" credit.

(d) An ozone gas analyzer shall be provided on the gas discharge of each ozone destruction unit, or combined vent gas discharge, to determine the exiting ozone concentration.

(e) Ambient ozone monitors shall be installed in the vicinity of the ozone generators, the ozone contactors, the ozone destruction units, and other areas where ozone gas may accumulate.

(f) A continuous dew point monitor shall be provided on the feed gas line to the ozone generators.

(g) Instrumentation such as pressure gauges, temperature gauges, flow meters, and power meters shall be provided as necessary to monitor the feed gas system, ozone generators, power supply units, and cooling water to protect the equipment and monitor performance.

(8) Alarms and Shutdowns.

(a) An ambient ozone monitor shall be provided.

(b) The design shall include alarms and shutdowns.

(9) Safety.

(a) Training shall be provided to the operators of ozone systems by the manufacturers of the ozone equipment, or other professionals with experience in ozone treatment, to promote the safe operation of the systems.

(b) Appropriate signs shall be installed around ozone and liquid oxygen equipment to warn operators, emergency responders, and others of the potential dangers.

(c) A means shall be provided, such as portable purge air blowers and portable monitors, to reduce residual ozone levels in an ozone contactor or other equipment to safe levels prior to entry for repair, maintenance, or emergency.

(10) Operation and Maintenance.

(a) An ambient ozone monitor should activate an alarm when the ozone level exceeds 0.1 ppm. Because the natural ozone levels can exceed 0.1 ppm under certain atmospheric conditions, it is permissible to set the alarm level at a slightly higher level to avoid nuisance alarms. Ozone generator shutdown shall occur when ambient levels exceed 0.3 ppm in the vicinity of an ozone generator or a contactor. Operators of the water treatment system may set the alarm level and the shutdown level lower at their discretion. It is required that an ozone ambient monitor activates a local audible alarm and/or

flashing light warning, in addition to an alarm at the operator control system panel.

(b) There shall be an alarm/shutdown to prevent the dew point of the feed gas exceeding the maximum of -76 degrees F (-60 degrees C).

(c) Alarms and shutdowns shall be programmed based on the pressure gauges, temperature gauges, flow meters, and power meters, to protect the feed gas system, ozone generators, power supply units, and cooling water system.

R309-520-10. Chlorine Dioxide.

[~~The p~~]Public water systems must take into consideration that chlorine dioxide and its byproducts may have similar effects as chloramines [~~and the impact~~] on sensitive populations. Chlorine dioxide should not be intentionally used as a secondary disinfectant. The water system must monitor the chlorine dioxide residuals and byproducts in the distribution system. If the chlorine dioxide residual [~~enters~~]in the distribution system [~~and may results in impact on~~]may affect sensitive populations, the public water system shall notify the public of the change.[~~ and/or the schedule for the change, particularly notification to s~~]Sensitive populations [~~such as~~] include hospital[~~s~~] and kidney dialysis [~~facilities serving dialysis~~] patients. Sensitive industries include[~~ and~~] fisheries.

(1) Pre-design Proposal.

Proposals for the use of chlorine dioxide shall be discussed with the Division prior to the preparation of final plans and specifications. A water system must submit a detailed written proposal to the Director for review, including:

(a) The make, model, and specifications for proposed chlorine dioxide generator

(b) References of other U.S. potable water installations of the proposed unit

(c) Information on the operational and maintenance training program

(d) The expected total applied dosage of chlorine dioxide and other disinfectants as well as the points of application for all disinfectants and the type and amount of residuals and by-products expected in the distribution system

(2) Chlorine dioxide generators

(a) Chlorine dioxide generation should be designed to be efficient compared to industry standard, and production of excess chlorine shall be minimized.

(b) The generator shall not produce a solution with chlorine dioxide concentration more than 6,000 mg/L to minimize the explosion hazard.

(c) The design shall include capability to measure concentrations of chlorine dioxide, chlorite, chlorate, and free chlorine of the solution leaving the generator.

(d) The chlorine dioxide generator shall be equipped with a chlorine dioxide analyzer to measure the strength of the solution leaving the generator.

(e) Generators which use solid chlorite will not be allowed.

(3) Chlorine Dioxide Feed and Storage System

(a) Chlorine Dioxide Feed system.

(i) Use fiberglass reinforced vinyl ester plastic (FRP) or high density linear polyethylene (HDLPE) tanks with no insulation.

(ii) If centrifugal pumps are used, provide Teflon packing material. Pump motors must be totally enclosed, fan-cooled, equipped with permanently sealed bearings, and equipped with double mechanical seals or other means to prevent leakage.

(iii) Provide chlorinated PVC, vinyl ester or Teflon piping material. Do not use carbon steel or stainless steel piping systems.

(iv) Provide glass view ports for the reactor if it is not made of transparent material.

(v) Provide flow monitoring on all chemical feed lines, dilution water lines, and chlorine dioxide solution lines.

(vi) Provide a means to verify calibrated feed flow to each application feed point.

(vii) Control air contact with chlorine dioxide solution to limit potential for explosive concentrations building up within the feed facility.

(viii) All chlorite solutions shall have concentrations less than 30%. Higher strength solutions are susceptible to crystallization and stratification.

(b) Chlorine Dioxide Storage and Operating Area. The following requirements apply to the chlorite storage and chlorine dioxide day tank area.

(i) The chlorine dioxide facility shall be physically located in a separate room from other water treatment plant operating areas.

(ii) The chlorine dioxide area shall have a ventilation system separate from other operating areas.

(iii) Provision shall be made to ventilate the chlorine dioxide facility area and maintain the ambient air chlorine dioxide concentrations below the Permissible Exposure Limit (PEL).

(A) The ventilating fan(s) take suction near the floor, as far as practical from the door and air inlet, with the point of discharge so located as not to contaminate air inlets of any rooms or structures.

(B) Air inlets are provided near the ceiling.

(C) Air inlets and outlets shall be louvered.

(D) Separate switches for the fans are outside and near the entrance of the facility.

(iv) The area housing chlorine dioxide facility shall be constructed of non-combustible materials such as concrete.

(v) There shall be an ambient air chlorine dioxide sensor in the vicinity of the chlorine dioxide operating area. The ambient air chlorine dioxide readouts and alarm or warning light shall be audible and visible in the operating area and on the outside of the door to the operating area. The design shall include distinguishing audible alarms that are triggered by the ambient air chlorine dioxide sensor readings.

(vi) There shall be observation windows through which the operating area can be observed from outside the room to ensure operator safety.

(vii) Manual switches to the light in the operating area shall be located outside the door to the room.

(viii) There shall be an emergency shower and eyewash outside and close to the door to the operating area.

(ix) An emergency shutoff control to shut flows to the generator

shall be located outside the operating area.

(x) The design shall minimize the possibility of chlorite leaks.

(xi) The chlorite tank and chlorine dioxide solution tank shall be vented to the outdoors away from any operating areas.

(xii) Gaseous chlorine feed to the chlorine dioxide generator shall enter the chlorine dioxide facility area through lines which can only feed to vacuum.

(xiii) The floor of the chlorine dioxide facility area shall slope to a sump.

(xiv) There shall not be any open drains in the chlorine dioxide operating area.

(xv) Provide secondary containments with sumps for chlorine dioxide storage, and chlorine dioxide solutions which can hold the entire volume of these vessels. This containment shall prevent these solutions from entering the rest of the operating area.

(xvi) Provide wash-down water within the operating area.

(xvii) The operating area shall be designed to avoid direct exposure to sunlight, UV light, or excessive heat.

(4) Other Design Criteria.

(a) Provide secondary containment, a sump, wash-down water, and a shower and eyewash at the bulk delivery transfer point.

(b) Finished water shall be used for chlorine dioxide generation.

(c) The finished water line to the chlorine dioxide generator shall be protected with a high hazard assembly.

(d) Provide a water supply near the storage and handling area for cleanup.

(e) The parts of the chlorine dioxide system in contact with the strong oxidizing or acid solutions shall be of inert material.

(f) The design shall provide the capability to shut off the chlorine dioxide operation remotely, i.e., from a location that is outside of the chlorine dioxide operating area.

(5) Operation and Maintenance.

(a) Do not store or handle combustible or reactive materials, such as acids, reduced metals, or organic material, in the chlorine dioxide operating area.

(b) Store chemicals in clean, closed, non-translucent containers.

(c) Personal protective equipment and first aid kits shall be stored at a nearby location that is outside the chlorine dioxide facility area.

(d) The temperature of the chlorine dioxide operating area shall be maintained between 60 and 100 degrees F.

(e) After delivery allow chlorite solutions to equalize with the ambient temperature of the operating area to avoid stratification.

(f) The Operating and Maintenance manual shall include operator safety and emergency response procedures. Personnel shall have ongoing training for operator safety and emergency response procedures.

(g) All wastes should be disposed of in accordance to any existing solid and hazardous waste regulations.

(h) The operating area should be inspected daily for chlorite spills and solid chlorite buildup. The daily inspections shall be logged.

(i) Chlorite leaks and solid chlorite buildup should be cleaned up and disposed of immediately.

(j) Solid chlorite should be washed down before removal.

(k) The ventilation system in the chlorine dioxide facility area shall be operated to maintain the ambient air chlorine dioxide concentrations below the Permissible Exposure Limit (PEL).

(l) Audible alarms shall be programmed to alert water treatment plant personnel when the ambient air chlorine dioxide sensor in the vicinity of the chlorine dioxide operating area detects the chlorine dioxide concentration above the Permissible Exposure Limit (PEL) and the Short Term Exposure Limit (STEL).

R309-520-11. Chloramines.

Proposals for the use of Chloramines as a disinfectant shall be discussed with the Division prior to the preparation of final plans and specifications.

KEY: drinking water, primary disinfectants, secondary disinfectants, operation and maintenance
Date of Enactment or Last Substantive Amendment: August 28, 2013
Notice of Continuation: March 13, 2015
Authorizing, and Implemented or Interpreted Law: 19-4-104

Agenda Item 5(C)

PROPOSED SUBSTANTIVE RULE CHANGES
TO
R309-500-6

Changes to Rule R309-500 became effective on July 15, 2015. Based on the feedback received during a recent meeting among the Director of the Division of Drinking Water, the Southwest District Engineer, and several public water systems from Washington County, the Division wants to refine this rule to allow water systems eligible for R309-500-6(3)(b) waivers to cover multiple water line projects, typically the addition of new subdivisions in rapidly growing areas, by actively tracking new water line projects and submitting an annual waiver request to the Division.

Instead of obtaining individual waivers prior to construction of each water line project, at the end of each year, an eligible water system would be able to submit an annual list of waiver-eligible projects constructed during the previous calendar year. Such multi-project after-the-fact waivers would reduce the burden on public water systems to obtain individual waivers and reduce review time for the Division, while assuring accountability and compliance with the notification requirements of the waiver rule by the water systems.

The proposed revisions include the following:

- Revise R309-500-6(3)(b), *Eligibility for Plan Submittal Waivers*, to permit public water systems that are eligible for Plan Submittal Waivers based on water line size and system population to request after-the-fact waivers for multiple water line projects by submitting required information about the projects to the Director.
- In the Division of Drinking Water (DDW) version of the rule, add guidance to R309-500-6(3)(b) that informs water systems that water line projects that require an exception to drinking water rules are not eligible for after-the-fact waivers.
- Revise R309-500-6(4)(a)(i) to list the basic information required to be included in the project description of all water line projects for which waivers are requested. This information is required for individual waivers requested before construction and for multiple-project waivers submitted after construction.
- Revise R3090-500-6(4), *Using Plan Submittal Waivers*, to add a new paragraph (b) to describe the process required for using after-the-fact waivers, including what must be submitted, when it must be submitted, how it must be submitted, and what records must be kept during the year while the projects are being constructed.
- In the DDW version of the rule, add guidance to R309-500-6(4)(b) to notify water systems that the Division has a template for recording projects included in after-the-fact waivers and informing water systems that water line projects included in after-the-fact waivers are not subject to a monetary penalty for construction without prior plan approval.

Two versions of the proposed amendment to R309-500-6 are attached:

- The Division of Administrative Rules (DAR) Version: DAR maintains the official version of rules and oversees the rulemaking process. The official rulemaking document for the R309-500-6 amendment is in the specific format required by DAR. In the DAR format new words are underlined and deleted words are stuck out. First sentences are indented but not full paragraphs.

- The Division of Drinking Water (DDW) Version: In addition to the DAR version, DDW provides a separate version of the rule to the public. The content of the DDW version is the same as the DAR version. However, the DDW version is formatted for easier reading (with paragraph indentation) and contains DDW's interpretations of the rule (in the form of guidance paragraphs). The guidance paragraphs are not part of the official rule.

Staff Recommendation: Division staff believes that the above substantive amendment is necessary and asks the Board to authorize the staff to start the rulemaking process and to file the proposed amendment to R309-500-6 for publication in the Utah State Bulletin.

R309-500-6. Plan Approval Procedure.

(1) Project Notification.

The Division shall be notified prior to the construction of any "public drinking water project" as defined in R309-500-5(1) above. The notification may be prior to or simultaneous with submission of construction plans and specifications as required by R309-500-6(2) below. Notification shall be made on a form provided by the Division.

Guidance: In addition to the Project Notification Form, new public water systems should submit a New Public Water System Supplemental Form to the Director.

(2) Pre-Construction Requirements.

All of the following shall be accomplished before construction of any public drinking water project begins:

(a) Plans and specifications for a public drinking water project shall be submitted to the Division at least 30 days prior to the date on which action is desired.

Guidance: Review of complicated projects, especially water treatment facilities, may require more than 30 days and should be submitted well in advance of the date on which action is desired.

(b) Required submittals may include engineering reports, hydraulic analyses of the existing system and additions, local requirements for fire flow and duration, proximity of sewers and other utilities, water consumption data, supporting information, evidence of rights-of-way and reference to any previously submitted master plans pertinent to the project, a description of a program for keeping existing water works facilities in operation during construction so as to minimize interruption of service, etc.

(c) Plans and specifications submitted shall be complete and sufficiently detailed for actual construction. Plans and specifications shall also adequately identify and address any conflicts or interferences.

Guidance: It is recommended that an inspector familiar with these rules be retained to observe all construction.

(d) Drawings that are illegible or of unusual size will not be accepted for review.

(e) The plans and specifications shall be stamped and signed by a licensed professional engineer as required by Section 58-22-602(2) of the Utah Code.

(f) If construction or the ordering of substantial equipment has not commenced within one year of Plan Approval, a renewal of the Plan Approval shall be obtained prior to proceeding with construction.

(3) Eligibility for Plan Submittal Waivers.

In lieu of submitting plans and specifications for Plan Approval and obtaining Operating Permits, public water systems may request Plan Submittal Waivers for two types of water line projects (excluding booster pump stations) after first becoming eligible to request the waivers. The Director will issue written notification that a public water system is eligible to request the Plan Submittal Waivers described in R309-500-6(3)(a) and (3)(b) if the information provided is acceptable.

(a) Water Line Projects Included in an Approved Master Plan. To become eligible to request this type of waiver, a public water system must submit standard installation drawings, which meet the requirements in R309-550, and a master plan, which is supported by a hydraulic analysis, to the Director for approval.

(b) Water Line Projects Included in (i) through (iii) below. To become eligible to request this type of waiver, a public water system must submit the following in writing to the Director: standard installation drawings that meet the requirements of R309-550, the name of the professional engineer responsible for design of the entire water system, and the name of the professional engineer responsible for oversight of the hydraulic analysis for the entire water system.

(i) Water lines less than or equal to 8 inches in diameter in water systems providing water to a population less than 3,300;

(ii) Water lines less than or equal to 12 inches in diameter in water systems providing water to a population between 3,300 and 50,000; or

(iii) Water lines less than or equal to 16 inches in diameter in water systems providing water to a population greater than 50,000.

Public water systems eligible for Plan Submittal Waivers per R309-500-6(3)(b) may request an after-the-fact Plan Submittal Waiver for multiple water line projects by submitting the required information to the Director annually per R309-500-6(4)(b).

Guidance: When a project requires an exception to a rule, it will not be eligible for an after-the-fact waiver and must be submitted to the Division with an exception request prior to construction.

(4) Using Plan Submittal Waivers.

(a) Plan Submittal Waivers Prior to Construction.
After becoming eligible to request Plan Submittal Waivers per R309-500-6(3), a public water system must complete the following when requesting a Plan Submittal Waiver for an individual water line project prior to construction:

(~~a~~i) Submit a complete Project Notification Form describing the project, including pipe length, diameter, material, and joint type; project location; number of new service connections; whether minimum separation requirements between water lines and sewer lines in R309-550-7 will be met for the proposed water line project; and specifying which Plan Submittal Waiver, R309-500-6(3)(a) or R309-500-6(3)(b), is being requested;

(~~b~~ii) For projects that will have a hydraulic impact, submit a certification of hydraulic analysis by a professional engineer per R309-511-6(1) indicating that the design will not result in unacceptable pressure and flow conditions (including fire flow if fire hydrants are installed);

(~~c~~iii) Submit a certification by a professional engineer, who is responsible for the design and construction of the project or has been designated by the water system in writing as the professional engineer directly responsible for the design of the entire water system, indicating that design and construction will meet the requirements of R309-500 through 550, that proper flushing and disinfection will be completed according to the appropriate ANSI/AWWA standard, that satisfactory bacteriological sample results will be obtained prior to placing the facilities into service, and that the water system will receive a copy of as-built or record drawings;

(~~d~~iv) Obtain a written Plan Submittal Waiver, in lieu of Plan Approval, from the Director prior to the start of construction; and

(~~e~~v) Comply with the conditions in R309-500-6(4)(~~c~~a)(iii) prior to placing the new facilities into service.

Guidance: A template for Certification of Hydraulic Analysis & Plan Submittal Waiver Conditions is available from the Division for use by the water system or its agent.

(b) After-the-Fact Plan Submittal Waivers.
After becoming eligible to request Plan Submittal Waivers per R309-500-6(3)(b), a public water system may choose to obtain an after-the-fact waiver for multiple water line projects by complying with the following requirements:

(i) Water systems shall submit a single copy of each item listed above in R309-500-6(4)(a)(i) through (iii) to the Director by January 31 of each year.

(ii) The single Project Notification Form and the required certifications shall include the information required per R309-500-6(4)(a)(i) for each water line project completed during the previous calendar year that has not received a Plan Submittal Waiver.

(iii) Water systems shall maintain an up-to-date record tracking the water line project information required per R309-500-6(4)(a)(i) through (iii) for each project completed during the year that has not received a Plan Submittal Waiver but will be included in the annual after-the-fact waiver request. Water systems shall make the water line project tracking record available for Division review upon request.

Guidance: A template for tracking and summarizing the qualified water line projects constructed during a calendar year is available from the Division for use by the water system or its agent requesting after-the-fact Plan Submittal Waivers.

Projects that are eligible for and obtain after-the-fact Plan Submittal Waivers, or are documented and tracked by public water systems in preparation of requesting after-the-fact Plan Submittal Waivers in accordance with this rule, are not subject to the penalty fee.

KEY: drinking water, plan review, operation and maintenance requirements, permits
Date of Enactment or Last Substantive Amendment: July 15, 2015
Notice of Continuation: March 13, 2015
Authorizing, and Implemented or Interpreted Law: 19-4-104

R309-500-6. Plan Approval Procedure.

(1) Project Notification.

The Division shall be notified prior to the construction of any "public drinking water project" as defined in R309-500-5(1) above. The notification may be prior to or simultaneous with submission of construction plans and specifications as required by R309-500-6(2) below. Notification shall be made on a form provided by the Division.

(2) Pre-Construction Requirements.

All of the following shall be accomplished before construction of any public drinking water project begins:

(a) Plans and specifications for a public drinking water project shall be submitted to the Division at least 30 days prior to the date on which action is desired.

(b) Required submittals may include engineering reports, hydraulic analyses of the existing system and additions, local requirements for fire flow and duration, proximity of sewers and other utilities, water consumption data, supporting information, evidence of rights-of-way and reference to any previously submitted master plans pertinent to the project, a description of a program for keeping existing water works facilities in operation during construction so as to minimize interruption of service, etc.

(c) Plans and specifications submitted shall be complete and sufficiently detailed for actual construction. Plans and specifications shall also adequately identify and address any conflicts or interferences.

(d) Drawings that are illegible or of unusual size will not be accepted for review.

(e) The plans and specifications shall be stamped and signed by a licensed professional engineer as required by Section 58-22-602(2) of the Utah Code.

(f) If construction or the ordering of substantial equipment has not commenced within one year of Plan Approval, a renewal of the Plan Approval shall be obtained prior to proceeding with construction.

(3) Eligibility for Plan Submittal Waivers.

In lieu of submitting plans and specifications for Plan Approval and obtaining Operating Permits, public water systems may request Plan Submittal Waivers for two types of water line projects (excluding booster pump stations) after first becoming eligible to request the waivers. The Director will issue written notification that a public water system is eligible to request the Plan Submittal Waivers described in R309-500-6(3)(a) and (3)(b) if the information provided is acceptable.

(a) Water Line Projects Included in an Approved Master Plan. To become eligible to request this type of waiver, a public water system must submit standard installation drawings, which meet the requirements in R309-550, and a master plan, which is supported by a hydraulic analysis, to the Director for approval.

(b) Water Line Projects Included in (i) through (iii) below. To become eligible to request this type of waiver, a public water system must submit the following in writing to the Director: standard installation drawings that meet the requirements of R309-550, the name of the professional engineer responsible for design of the entire

water system, and the name of the professional engineer responsible for oversight of the hydraulic analysis for the entire water system.

(i) Water lines less than or equal to 8 inches in diameter in water systems providing water to a population less than 3,300;

(ii) Water lines less than or equal to 12 inches in diameter in water systems providing water to a population between 3,300 and 50,000; or

(iii) Water lines less than or equal to 16 inches in diameter in water systems providing water to a population greater than 50,000.

Public water systems eligible for Plan Submittal Waivers per R309-500-6(3)(b) may request an after-the-fact Plan Submittal Waiver for multiple water line projects by submitting the required information to the Director annually per R309-500-6(4)(b).

(4) Using Plan Submittal Waivers.

(a) Plan Submittal Waivers Prior to Construction.

After becoming eligible to request Plan Submittal Waivers per R309-500-6(3), a public water system must complete the following when requesting a Plan Submittal Waiver for an individual water line project prior to construction:

([~~a~~]i) Submit a complete Project Notification Form describing the project, including pipe length, diameter, material, and joint type; project location; number of new service connections; whether minimum separation requirements between water lines and sewer lines in R309-550-7 will be met for the proposed water line project; and specifying which Plan Submittal Waiver, R309-500-6(3)(a) or R309-500-6(3)(b), is being requested;

([~~b~~]ii) For projects that will have a hydraulic impact, submit a certification of hydraulic analysis by a professional engineer per R309-511-6(1) indicating that the design will not result in unacceptable pressure and flow conditions (including fire flow if fire hydrants are installed);

([~~c~~]iii) Submit a certification by a professional engineer, who is responsible for the design and construction of the project or has been designated by the water system in writing as the professional engineer directly responsible for the design of the entire water system, indicating that design and construction will meet the requirements of R309-500 through 550, that proper flushing and disinfection will be completed according to the appropriate ANSI/AWWA standard, that satisfactory bacteriological sample results will be obtained prior to placing the facilities into service, and that the water system will receive a copy of as-built or record drawings;

([~~d~~]iv) Obtain a written Plan Submittal Waiver, in lieu of Plan Approval, from the Director prior to the start of construction; and

([~~e~~]v) Comply with the conditions in R309-500-6(4)([~~c~~]a)(iii) prior to placing the new facilities into service.

(b) After-the-Fact Plan Submittal Waivers.

After becoming eligible to request Plan Submittal Waivers per R309-500-6(3)(b), a public water system may choose to obtain an after-the-fact waiver for multiple water line projects by complying with the following requirements:

(i) Water systems shall submit a single copy of each item listed above in R309-500-6(4)(a)(i) through (iii) to the Director by January

31 of each year.

(ii) The single Project Notification Form and the required certifications shall include the information required per R309-500-6(4)(a)(i) for each water line project completed during the previous calendar year that has not received a Plan Submittal Waiver.

(iii) Water systems shall maintain an up-to-date record tracking the water line project information required per R309-500-6(4)(a)(i) through (iii) for each project completed during the year that has not received a Plan Submittal Waiver but will be included in the annual after-the-fact waiver request. Water systems shall make the water line project tracking record available for Division review upon request.

KEY: drinking water, plan review, operation and maintenance requirements, permits
Date of Enactment or Last Substantive Amendment: July 15, 2015
Notice of Continuation: March 13, 2015
Authorizing, and Implemented or Interpreted Law: 19-4-104

This form is used for tracking the information of water line projects by public water systems in preparation for the after-the-fact Plan Submittal Waiver request per R309-500-6(4)(b). The information in this form shall be up to date. The water systems shall make this form available to DDW for review any time during the year.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Year	Construction Period (Month or Date)	Water Line Project Name	Project Location	Subdivision Name (if applicable)	# of Added ERCs (if applicable)	Pipe Length & Diameter	Pipe Material & Joint Type	# of New Fire Hydrants	# of PRVs	Meet the Min. Separation Req'ts?	If Not, Exception to Rule Obtained?	Name of Hydraulic Analysis PE	Acceptable Flow and Pressure per Hydraulic Analysis?	Name of PE Certifying Waiver Conditions	Waiver Conditions Are Met?	Notes

Agenda Item 6

Rural Water Association of Utah

7/1/2014 - 6/30/2015 Fiscal Contract Report

technicalassistance

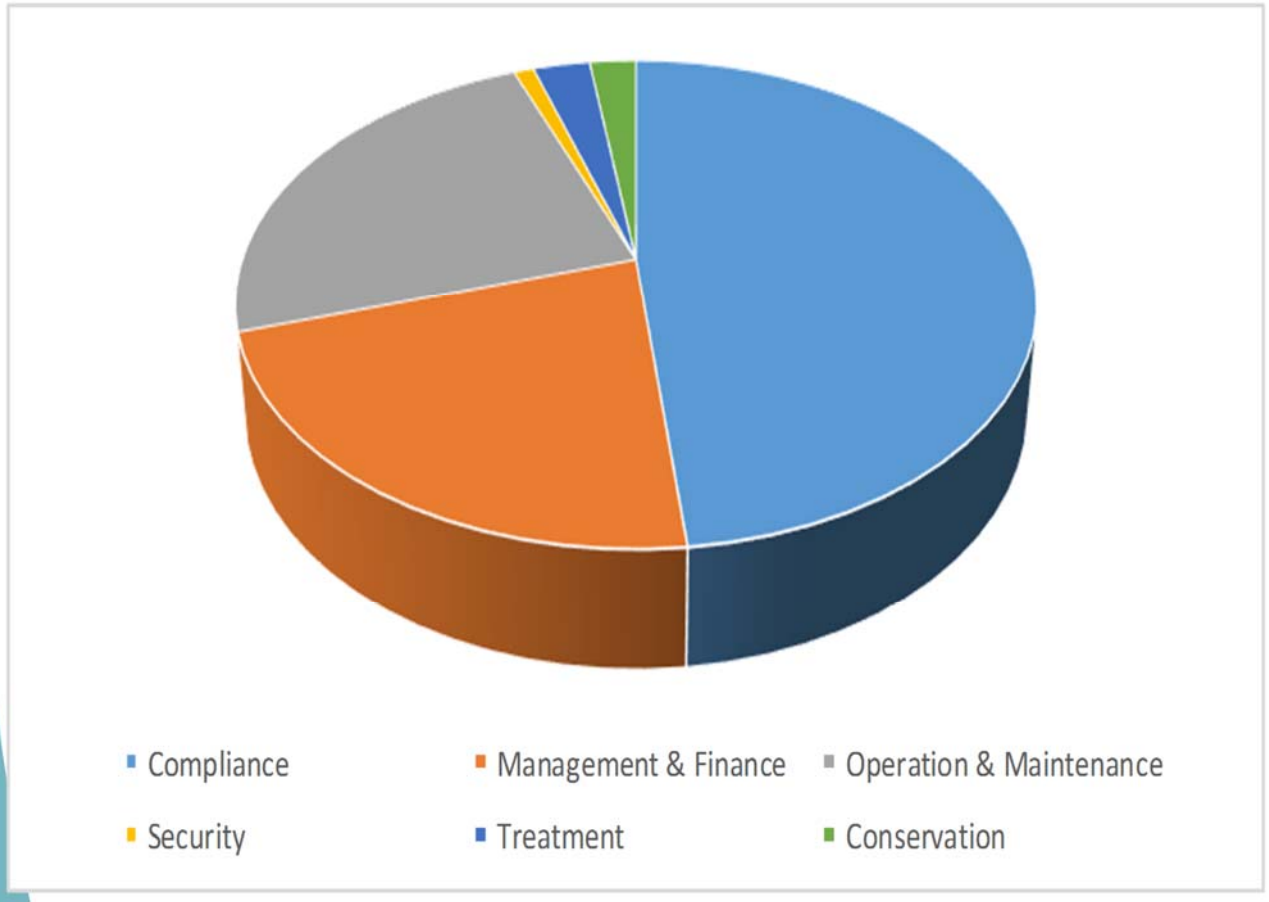
Terry Smith *Management Technician*: 7/1/2014—6/30/2015

Curtis Ludvigson *Development Specialist*: 7/1/2014—6/30/2015

Brian Pattee *Compliance Circuit Rider*: 7/1/2014—6/30/2015

water is life

2980 Total Hours Technical Assistance &Training



technicalassistance

Rural Water Association of Utah

7/1/2014 - 6/30/2015 Fiscal Contract Report

270 Total Systems Contacted

AMERICAN LEGION	FOUNTAIN GREEN CITY	Metro Water	SKYLINE MTN SSD
ANGELL SPRINGS SSD	FRANCIS TOWN WATER	MIDVALLEY EST WTR CO	SMITHFIELD CITY
ANNABELLA	FREMONT WATER WORKS	MIDWAY CITY	SNAKE CREEK MUTUAL WTR
ANTELOPE ISLAND SP	FRUITLAND SSD	MILFORD CITY	SNOWBASIN WATER
ANTIMONY TOWN	Garfield County	Millard County	SOUTH COVE WATER
ARROWHEAD INC	GENOLA TOWN	MILLVILLE CITY	SOUTH DUCHESNE CUL WTR
AUSTIN COM SSD	GLEN CANYON SSD	MINERSVILLE TOWN WATER	SOUTH JORDAN CITY
AXTELL COM SERVICE DIST	GLENDALE TOWN CORP	MONA CITY	SOUTH ROBINSON SPRINGS
BEAVER CITY	GLENWOOD TOWN	MONROE CITY	SOUTH WILLARD WTR CO
Beaver County	GOASLIND SPRING WTR	Morgan County	SPANISH FORK CITY
BEAVER CREEK INN	GOSHEN TOWN	MORONI CITY	SPRING CITY
BICKNELL TOWN	Grand County	MOUNTAIN REGNL WTR SSD	SPRING CREEK WTR USERS
BLM Tanker Base	GREEN HILLS WTR/SWR DIST	MOUNTAIN VIEW SSD	SPRINGDALE TOWN
BONA VISTA WID	GREEN RIVER CITY	MT PLEASANT CITY	SPRINGVILLE CITY
Box Elder County	GREENDALE WATER CO	MURRAY CITY WTR/SWR	ST GEORGE CITY
BRIAN HEAD TOWN	GREENWICH WTR ASSOC	MUTTON HOLLOW ID	STANSBURY PARK ID
BRIGHAM CITY	GUNNISON CITY	NEOLA WATER/SEWER DIST	STERLING TOWN
Bryce Canyon City	Gunnison Valley High School	Nephi City	STOCKTON TOWN
Cache County	HANNA WTR/SWR DIST	NEPHI CITY WATER	STORM HAVEN WATER CO
Carbon County	HARMONY FARMS WTR USRS	NEW HARMONY TOWN	SUMMIT CO SA #6 & #8
CEDAR CITY	HATCH TOWN	NEWTON TOWN	SUMMIT CO SERV AREA #3
CEDAR HIGHLANDS SUBD	HEBER CITY	NIBLEY CITY	Summit County
CEDAR HILLS CITY	HELPER CITY	NORTH LOGAN CITY	SUMMIT SSD
Cedar View/Montwell SSD	HENRIEVILLE TOWN	NORTH SALT LAKE	SUMMIT WATER DISTRIB CO
CENTER CREEK WTR SYS	HIDDEN CREEK	OAK CITY	SUNRISE ENGINEERING
CENTRAL CUL WATER	Hildale	OAK HAVEN	SUNSET PARK WATER
Central Iron County WCD	HINCKLEY TOWN	oak springs H.W. reststop 21019	SWISS ALPINE MTN WTR CO
CENTRAL UT WCD-DUCH VLY	HOLDEN TOWN	OAKLEY CITY	SYRACUSE CITY
CHARLESTON WCD	HONEYVILLE CITY	OGDEN CITY WTR	TABBY MOUNTAIN ESTATES
CHURCH WELLS SSD	HOOVER'S CAFE	OLD MEADOW WATER CO	TABIONA TOWN
CIRCLE 4 FARMS	HOYTSVILLE PIPE WTR CO	ORDERVILLE TOWN	TEASDALE SSD
CLARKSTON TOWN	hunter/granger water district	PACK CREEK RANCH	THOMPSON SSD
CLINTON CITY	HUNTSVILLE TOWN	Palisades Water System	TIBBLE FORK OWNER ASSOC
COMMUNITY WATER SYSTEM	HURRICANE CITY	PANGUITCH CITY	TOOELE CITY
CORINNE CITY	HYRUM CITY	PARAGONAH TOWN	Tooele County
COVE FORT CHEVRON	Iron County	PAROWAN CITY	TOQUERVILLE TOWN
COVE SSD	IVINS CITY	PENNEY'S CAFÉ	TORREY TOWN WATER
Cove Water Works	JBS Swift in Hyrum	PERRY CITY	TRENTON TOWN CORP
COVERED BRIDGE CANYON	JENSEN WID	PINE VALLEY IRRIG CO	TROPIC TOWN
CROSS HOLLOW HILLS	JOHNSON WATER DIST	PINECREST PIPELINE OPER CO	TURKEY PLANT (MORONI)
DANIELS SUMMIT ESTATES	JORDAN VALLEY WCD	PINNACLE H-OWNERS ASSOC	UPPER COUNTRY WATER
Davis County	JOSEPH TOWN	Piute County	UPPER WHITTAMORE OWNRS
DAYSTAR ADVENT ACADEMY	Juab County	POWDER MOUNTAIN W/S ID	UTAH COUNTY
DELLE AUTO TRUCK STOP	JUNCTION TOWN	PRICE CITY	VA Hospital
DELTA CITY	KANARRAVILLE TOWN	PRICE RIVER WATER ID	VERNAL CITY
Deseret Land & Livestock	Kane County	PROVIDENCE CITY	VERNON WATERWORKS
DESERET OASIS SSD	KANOSH TOWN	RAINBOW RANCHOS WTR CO	VIRGIN TOWN
DIAMOND VALLEY ACRES	KAYENTA WATER USERS	RED CANYON RV PARK	WALES TOWN
Duchesne City	KINGSTON TOWN	Red Hawk Ranch HOA	Wasatch County
Duchesne County	KOOSHAREM WTR SYSTEM	RED ROCK CAFE	Wasatch Resorts
EAGLE MOUNTAIN TOWN	lake front estates	REDMOND TOWN	WASHINGTON CITY
EASTLAND SSD	LAKE VIEW SUBDIV	RICHFIELD CITY WATER	Washington County
ELBERTA	LAKETOWN CITY	RICHMOND CITY	WATERPRO (Draper Irrig)
ELK RIDGE CITY	LAKEVIEW WATER CO	RIVER HEIGHTS CITY	Wayne County
ELSINORE TOWN CORP	LAVERKIN CITY	RUBY'S INN	WEBER BASIN WCD
ELWOOD TOWN	LEAMINGTON TOWN	SALEM CITY	Weber County
Emery County	LEEDS DOMESTIC WATER	SALINA CITY	WELLINGTON CITY
ENOCH CITY	LEHI CITY WATER	SALT LAKE CO SA #3	WELLSVILLE CITY
ENTERPRISE CITY	LEVAN TOWN	San Juan County	WEST BOUNTIFUL CITY
EPHRAIM CITY	LEWISTON CITY	Sanpete County	WEST ERDA ID
ESCALANTE CITY	LOA WATERWORKS	Sanpete County CRMP	WHITE HILLS SUBD
ESCALANTE VLY HOUSING	LOGAN CITY	Sanpete County Planning	WILLARD BAY ST PARK
EUREKA CITY	LYNNDYL WATER	SANTA CLARA CITY	WILLARD CITY
Fairfield Town	MANTI CITY	SARATOGA SPRINGS	WILLOW CREEK OWNERS
FAIRVIEW CITY	MANTUA TOWN	SCIPIO TOWN	WILLOW CREEK WATER CO
FILLMORE CITY	MARYSVALE TOWN	SCOFIELD TOWN	WOODS CROSS CITY
	MAYFIELD TOWN	Sevier County	ZION VIEW WTR CO
	MENDON CITY WATER	SIGURD TOWN WATER	ZOLLINGER WAREHOUSE

Rural Water Association of Utah

7/1/2014 - 6/30/2015 Fiscal Contract Report

operator certification

Starting Date	Location
08/28/2014	Layton
10/29/2014	Provo
11/05/2014	Ogden
02/27/2015	St. George
04/01/2015	Ogden
04/08/2015	Provo

water is life

174 Total Systems Trained

American land & leisure
American Water
AMPAC
Ashley Valley
Ashley Valley W&S
ATK
Blanding
BLM
Bona Vista Water
Bountiful City
Brian Head Town
Brigham City Corporation
Brigham City Public Works
bryce canyon national park
Bureau of Reclamation
Canyonlands National Park
Capitol Reef National Park
Castle Valley SSD
CEDAR CITY CORP.
Cedar Hills
Cedarview Montwell SSD
Centerfield City
Centerville City
Central Utah WCD
Central Valley Town
Central Weber Sewer
Church of Jesus Christ of LDS
Circle Four Farms
City of Hurricane
City of Monticello
Clearfield City
Clinton City Corp.
Coalville City
Copperton ID
Croyden Pipeline
Daggett Water
Davis & Weber Canal
Davis County Health
Dean/Fluor
Delta
Dinosaur NM-NPS
Draper City
EGCWpipeline Co
Elsinore Town
Ephraim
Fairview
Farmington City
Farr West
Fayette
Girl Scouts of Utah
Golden Spike NHS
Gorgoza Mutual Water
Goshen
Grantsville City
Hatch Mott Macdonald
Heber City Public Works
Henefer
Herriman City
Highland City
Hinckley Town, Inc.
Holcim
Hooper Water ID
Housing Authority - SL County
Hyde Park City
Hyrum City
Individual
Johnson Water District
Jordan Valley WCD
Jordanelle SSD
Kanab City
Kane County
Kearns ID
Kennecott
KOOSHAREM TOWN
LaVerkin City
LDS Church
Lehi City
Lewiston City Corp
Lindon
Logan
Lyndyl water
Mapleton City
Materion Natural Resources
MayfieldTown
Metro Wtr Dist
Midvale City Corp
Midvalley
Midvalley Estates
Milford
Moab City
Moroni Turkey Processing
Mt. Pleasant City
Mt. Regional
Murray City
Mutton Hollow Imp Dist
National Park Service
Natural Bridges NM
Nibley City
North Logan City
North Ogden City
North Salt Lake
NPS Bullforg
NPS DINO
NPS/ Glen Canyon NRA
Oakley
Ogden City
Olympus Academy
Payson City
Perry City
Perry Willard Regional
Pinnicle Homeowners Assn.
Plain City
Plain City Sewer
Pleasant View City
Price City
Price River Water ID
Probiotic Solutions
Provo
Questar
Richfield City
Riverton
Roy City Water
Salina City
Salt Lake City
Salt Lake VA Medical Ctr
Santa Clara City
Saratoga Springs
Simplot
SLC Water Recl
Snyderville Basin WRD
South Davis WD
South Jordan City
South Salt Lake
South Valley Sewer District
South Valley WRF
Spanish Fork City
Springville
St George Regional WRF
St George WWT
summit county
Sunset City
Swiss Alpine Water Co.
Syracuse
Tabiona
The Dannon Company, Inc
Timpanogos SSD
Tooele City Corp
Tooele City WRF
Toquerville City
Town of Fredonia
Town of Garden City
Town of Hideout
Town of Stockton
Tridell Lapoint WID
Twin Oaks Local District
US Forest Service
US Magnesium, LLC
USDA Forest Service
Utah State University
Utah Youth Village
Wash. Co. WCD
Washington City
Washington Terrace
Waypoint Academy
WCWCD
Wellington City
West Bountiful City
West Point City
Woods Cross City

Agenda Item 7(B)

The Consequences if Drinking Water Earmarks are Eliminated and Not Replaced with Equivalent General Funds

Loss of Drinking Water Construction Funds

- DDW would lose $3.6 Million in construction funds from Sales Tax monies (this money is also used as State Match for federal construction monies)
- The State would lose an additional $7.5 Million per year in federal construction funds
- With the loss of both State and federal construction funds, "small water systems" (systems serving less than 3,300 year-round residents) would not have available funding to accommodate: **growth, federal water quality mandates, replacement of aging infrastructure, and responses to emergency caused damaged infrastructure.**
- The Division of Drinking Water would lose $2.5 Million in federally funded operating funds [federal Safe Drinking Water Act: Title XIV Section 1452 (a) (3) (g) and (k)]
- The Division of Drinking Water would lose an additional $895,000 in federal Public Water System Supervision (PWSS) grant operating funds
- The State would lose Primacy (State authority to implement the federal Safe Drinking Water Act) [federal Safe Drinking Water Act Title XIV Section 1413]

Loss of Primacy

- EPA would implement the federal Safe Drinking Water Act in Utah, [federal Safe Drinking Water Act: Title XIV Section 1452 (a) (1) (F)] including:
    - Water quality, monitoring and **enforcement**
    - Contracted site inspections
- With EPA implementation the following State provided services would be lost:
    - Technical Assistance
    - Source Water Protection
    - Engineering Plan Review
    - Operator Certification
    - Cross Connection Control
    - Emergency Response

Safe and reliable drinking water is essential for all residents of the State and would be seriously hampered if the Earmarks are not replaced.

Agenda Item 7(D)

DEQ PUBLIC NOTICE

The Utah Department of Environmental Quality has completed a draft of the 2017 fiscal year Fee Schedule for the Department.

The public comment for the Draft Fee Schedule will commence on Tuesday, August 11, 2015 with a notification being published in the Salt Lake Tribune and the Deseret News. The comment period will end on September 10, 2015 at 5:00 p.m. A public hearing has been scheduled to receive oral comment on the Draft Fee Schedule on Thursday, September 10, 2015, beginning at 1:00 p.m in the DEQ Board Room 1015, at the Utah Department of Environmental Quality, 195 North 1950 West, Salt Lake City, Utah.

Written comments must be received no later than 5 p.m. on September 10, 2015, and should be addressed to:

Craig Silotti
Utah Department of Environmental Quality
Office of Support Services 4th Floor
195 North 1950 West
P.O. Box 144810
Salt Lake City, Utah 84114-4810

A copy of the Draft Fee Schedule is available for review between the hours of 8 a.m. and 5 p.m., Monday through Friday, at the following address:

Department of Environmental Quality
1st Floor Reception Desk
195 North 1950 West
Salt Lake City, Utah 84116

In addition, a copy of the Draft Fee Schedule is available on UDEQ's website at:
http://www.deq.utah.gov/FeesGrants/fees/fee_schedules.htm

For further details or questions concerning the Draft Fee Schedule, contact Laurie Leib at the Department of Environmental Quality, 801-536-4440.

In compliance with the Americans with Disabilities Act, individuals needing special accommodations (including auxiliary communicative aids and services) during this hearing should notify Human Resources, 801-499-2117, 195 North 1950 West, 4th Floor, Salt Lake City, Utah, at least three working days prior to the hearing.