Submitted by Roy Jones

185840

Resolution No.

AUDITOR 12/11/12 AM11:59

Approve the Water Bureau's Security Initiatives at Hazelwood, Washington Park, Texas St., N. Vernon Tanks, and Bull Run Watershed.

WHEREAS, the Portland City Council agreed to collaborate on Infrastructure initiatives; and

WHEREAS, the Water Bureau Security personnel have developed a security plan for the City's water system; and

WHEREAS, the Water Bureau owns several properties where a mutual benefit between the public and the City can be shared; and

WHEREAS, the Portland Water Bureau has recently acquired property with a structure at the entrance of the Bull Run Watershed which will house a Ranger who will interface with the surrounding community to provide a secure perimeter around the protected watershed of Portland's source water; and

WHEREAS, the proposed 2006/07 Water Bureau Budget reflects the addition of 6 security specialists who are more highly trained than contract staff utilized in past years; and

WHEREAS, the Water Bureau Security Plan calls for 24 hour staffing at Washington Park by trained Water Bureau Security Specialists; and

WHEREAS, the Water Bureau Budget includes upgrade and augmentation of security infrastructure and utility infrastructure repair at Washington Park; and

WHEREAS, the Water Bureau Security Plan calls for an expansion of the bureau's practice of utilizing citizens within neighborhoods adjoining the reservoirs for "passive security" purposes; and

WHEREAS, the community served by the reservoirs at Washington Park have a keen interest in the security of the reservoirs; and

WHEREAS, water utilities around the country are embracing their communities as a security resource for sensitive facilities through programs like the American Water Works Association's "Water Watchers" and others; and

WHEREAS, the Water Bureau Security Plan calls for public access to the areas around Reservoir 3 during daylight hours to increase activity around the reservoir and deter wrongdoing; and

WHEREAS, the Water Bureau Security Plan calls for public access to the areas around the Hazelwood Test Well facility; the Texas Street Tanks, and the Vernon Tanks; and

185840

WHEREAS, the public can enjoy a mutual benefit while engaging in activities which serve the public good; and

WHEREAS, employing the public as a security element is a well established, effective practice that the Water Bureau has implemented at its facilities at Mt. Tabor, and will implement at Hazelwood Test Well, Texas Street Tank, and Vernon Tank, and on the perimeter of the Bull Run Watershed; and

WHEREAS, the connection between the public and its water utility can be strengthened through these initiatives;

NOW, THEREFORE, BE IT RESOLVED that the Portland City Council supports the Water Bureau's security initiatives at Washington Park, Hazelwood, Texas Street Tank, Vernon Tank, and at the entrance to the Bull Run Watershed as described in the Water Bureau Security Plan; and

BE IT FURTHER RESOLVED that the Portland City Council recognizes the value of the Water Bureau's efforts to strengthen its relationship with the community it serves.

Adopted by the Council,

Commissioner Randy Leonard
Ty Kovatch
June 13, 2006

GARY BLACKMER
Auditor of the City of Portland
By
Deputy

453, 1456-1458
Submitted by Flo Jones

AUDITOR 12/11/12 AM11:50

185840

November 19, 2012
updated December 10, 2012

Oregon Health Authority
800 N.E. Oregon Street, suite 930
Salem, OR 97232
Sent via e-mail

Dear Ms.Shibley and Mr. Leland,

This letter addresses the Oregon Health Authority's May 17, 2012 denial of the City of Portland's request to defer projects related to the EPA LT2 "treat or cover" requirement for uncovered reservoirs. In denying Portland's request to change the compliance timeline, OHA states as justification, "the water supplier must be able to demonstrate continuing, steady progress toward compliance..." barring construction delays.

Recently we uncovered information that the City of Rochester requested and secured a 10-year reprieve from the EPA LT2 reservoir "treat or cover" requirement for their two historic open reservoirs set in city parks. The reasons outlined in their request letter are 1) financial hardship, 2) limited resources and 3) LT2 rule revision. Rochester worked with state and local public health officials and the EPA to quickly secure approval. Rochester's case makes clear that utilities are not required to "demonstrate continuing progress toward compliance" barring construction delays, and that having any timeline in place is in itself compliance, and that economic hardship and rule revision are valid reasons for deferral. Rochester has three open reservoirs, two of which are historic open reservoirs set in city parks. While Rochester is installing a synthetic cover on the one open reservoir more removed from town, that city has approval for a 10-year deferral on all work (including planning and design) on their two historic open reservoirs set in parks until 2024.

The Mayor of Rochester wrote to EPA's Lisa Jackson in September 2011 stating "At a time of severely constrained budgets and people rightly demanding that public funds be judiciously spent, this regulation imposes expenditures that are too onerous and benefits that are, at best, difficult to measure." City officials followed in December with a letter to their public health officials. You will find

details of their request arguments in the attached December 20, 2011 letter.

There are three reasons at the base of Rochester's approved 10-year deferral. These reasons apply equally to Portland.

1) **Financial hardship**

Rochester argued that their water demand has declined and water rates have risen. Water demand in Portland has declined for 26 years with steeper declines since 2008 when Portland water rates rose dramatically. Rochester states that their water rates have risen 44% since 2000. Portland water rates have risen 61% just since 2008. The Portland Water Bureau (PWB) is projecting next year's rate increase at 14.8% in large part to address the $130 million Powell Butte LT2 project and the $80 million Kelly Butte LT2 project. It is worth noting that Portland's LT2 project costs are roughly 10 times greater than Rochester's LT2 project costs, that Portland is in an even weaker financial position than Rochester and that Portland faces an even greater economic challenge funding these projects on the current, compressed timeline.

2) **Economic resources limited**

In their letters, Rochester rightly argued that "limited financial resources are better spent on making improvements to the transmission and distribution system that would reduce the number of main breaks and the associated interruption of service." The same can be said for Portland.

Rochester sought the 10-year delay so that they could pay off bond debt. Rochester argued that they have a high debt load, stating that their debt includes $15 million for LT2. Portland has a higher debt load, with the Portland Water Bureau debt alone recently surpassing the total debt for all bureaus in the City of Rochester. Portland's Annual Debt Report 2010-11 states that 75% of the $244 million in new debt taken on by Portland that one year was for water and sewer infrastructure; this is the state of financial affairs *before* PWB faces the bulk of LT2 funding (total PWB debt was at $394,780,000 by 2010/11). In 2012, the PWB issued another 25-year $76.5 million bond. According to a June 2012 City of Portland Auditor report, PWB debt service has increased 52% from fiscal years 2007 through 2011.

In his letter, the Mayor of Rochester contends, "people rightly demand public funds be judiciously spent." Remember that recently (August 2011) the Portland Water Bureau closed out a $23 million contract which completed upgrades to open reservoirs. According to a nine-year consultant study, these upgrades will keep the reservoirs safely operating until 2050.

For comparison, this is about what Rochester's entire LT2 plan will cost. Is it judicious to first pay to upgrade the reservoirs only to then pay to replace them?

3) **Rule revision**

Rochester argued that the rule revision was prompted in order to "reevaluate the effectiveness of the regulation in light of new data that brings into question the assumptions upon which the LT2 rule was promulgated." Rochester's Mayor requested that "written approval be given to the City of Rochester to suspend its compliance schedule until a final determination is made regarding the rule" arguing that this is to "ensure that scarce public funds are expended in the most productive manner possible for protecting public health."

At the time of their deferral approval, Rochester did not possess extensive disease surveillance data nor had they sampled their open reservoirs for *Cryptosporidium*. In Portland, extensive disease surveillance data clearly demonstrates that there are no public health issues associated with Portland's drinking water. As OHA is aware, the PWB participated in the American Water Works Association Research Foundation *Cryptosporidium* Study #3021 sampling 7,000 liters of water at the outlets of Portland's open reservoirs at Mt. Tabor and Washington Parks. According to the published study, Portland and all participating utilities already meet the goal of the LT2 rule. As part of their approved deferral, Rochester collects 50 liters of water to sample for *Cryptosporidium* at reservoir outlets twice per month. (See attached material.)

Rochester documented the mitigation strategies in place at their open reservoirs. Portland employs similar open reservoir mitigation strategies including isolation valves, new security equipment including cameras, sensor equipment on perimeter fencing, security guards, on-site chlorination facilities, twice per year cleaning, to name a few.

Portland's drinking water is very, very safe. There have never been any public health problems associated with Portland's open reservoirs. The EPA has documented public health problems, deaths and illnesses only with covered storage facilities, while open reservoirs have safely provided drinking water to tens of millions across the nation for over 100 years.

OHA is aware of Portland's May 27, 2012, buried tank contamination event. Among the items vandals tossed into the breached buried tank was an unopened bottle of hydrochloric acid. All source water *Cryptosporidium* outbreaks have occurred in systems whose watersheds are not protected such that they are required to install a costly chemical filtration plant.

In light of new information that confirms that EPA is not requiring continued, steady project progress, what further action or information is required by the OHA to secure approval of a 10 or even 25-year delay so that Portland is able to pay off its water bonds, limit further rate increases, and benefit from the LT2 rule revision process?

We look forward to an expeditious response to this letter so that Portland ratepayers can be spared the burden of the imminent $80 million Kelly Butte LT2 project. Citizens of Portland are committed to retaining Portland's open reservoirs as an integral part of our grand Bull Run system and will continue to work diligently in support of sound science as the LT2 rule revision process proceeds.

Sincerely,

Floy Jones for **Friends of the Reservoirs**

Stephanie Stewart for **Mt. Tabor Neighborhood Association**

Jeff Boly for **Arlington Heights Neighborhood Association**

Gary Berger for **Hillside Neighborhood Association**

Anne Dufay for **SE Uplift Neighborhood Coalition**:

North Tabor Neighborhood Association
Mount Tabor Neighborhood Association
Montavilla Neighborhood Association
Sunnyside Neighborhood Association
Buckman Neighborhood Association
Hosford Abernathy Neighborhood Association
Richmond Neighborhood Association
South Tabor Neighborhood Association
Foster Powell Neighborhood Association
Creston - Kenilworth Neighborhood Association
Brooklyn Neighborhood Association
Reed Neighborhood Association
Eastmoreland Neighborhood Association
Sellwood Moreland Neighborhood Association
Woodstock Neighborhood Association
Mount Scott Arleta Neighborhood Association
Brentwood Darlington Neighborhood Association
Ardenwald - Johnson Creek Neighborhood

Association
Kerns Neighborhood Association
Laurelhurst Neighborhood Association

Juliana Lukasik for **Central Eastside Industrial Council**

Kent Craford for **Portland Water Users Coalition Members**:

ALSCO, American Linen Division
American Property Management
Ashland Hercules Water Technologies
The Benson Hotel
BOMA Portland
Darigold
Harsch Investment
The Hilton Portland and Executive Tower
Mt. Hood Solutions
New System Laundry
Portland Bottling
SAPA Inc.
Siltronic Corp.
Sunshine Dairy Foods
Vigor Industrial
Widmer Brothers Brewing
YoCream

Regna Merritt for **Oregon Physicians for Social Responsibility**

Ron Carley for **Coalition for a Livable Future**

Sean Stevens for **Oregon Wild**

Maxine Wilkins and Michael Meo for **Eastside Democratic Club**

David Delk for **Alliance for Democracy**

Representative Alissa Keny-Guyer

Eileen Brady

Portland Business Alliance

Attachments (2)

Submitted by Flor Jo

City of Rochester
Department of Environmental Services
10 Felix Street
Rochester, New York 14608
www.cityofrochester.gov

one city Bureau of Water

185840

AUDITOR 12/11/12 AM11:56

December 20, 2011

John Felsen, Manager
Monroe County Department of Public Health
Division of Environmental Health
P.O. Box 92832
111 Westfall Road
Rochester, NY 14692-8932

RE: City of Rochester LT2 Rule Bilateral Compliance Agreement

Dear Mr. Felsen:

The City of Rochester respectfully requests your approval to amend the August 18, 2011, Bilateral Compliance Agreement (BCA) regarding compliance with the Long Term 2 Enhanced Surface Water Treatment Rule (LT2 rule). The August 18, 2011, BCA requires the City of Rochester to bring its three (3) uncovered finished-water reservoirs into compliance with the LT2 rule by December 31, 2014. We have currently completed the first leg of our BCA agreement to install a synthetic liner on Highland Reservoir at a cost of over $4 million. We are currently on schedule to complete the second leg of our LT2 compliance program to install a synthetic liner and floating cover on Rush Reservoir by December 31, 2012, at a cost of over $11 million.

The third and final leg of our compliance plan involves installing ultraviolet disinfection (UV) reactors at Cobbs Hill Reservoir and Highland Reservoir. The total expected cost of this third leg is approximately $15 million. We are specifically requesting an alteration of the milestone dates for both the Cobbs Hill Reservoir UV project and the Highland Reservoir UV project. We request approval to modify our BCA completion date for the Cobbs Hill Reservoir and the Highland Reservoir UV projects from December 31, 2014, to December 31, 2024.

We are making this request for the following reasons:

1. Like many other cities in New York, Rochester is experiencing financial hardship. The current economic recession has contributed to the city's difficult finances and the loss in population has also put pressure on the city's finances. Its population has dropped precipitously by 15% since 1990, while water consumption has decreased by 40% during the same period. We have lost commercial, industrial and residential customers. This results in fewer ratepayers paying an ever increasing share of the costs to make capital improvements to the water system. While the population decreased by 10% since 2000, the water rates have increased 44%. We have sought alternative funding sources such as congressional earmarks, EPA appropriations, and NYSDWSRF funding, but we have been unable to secure outside funding to lessen the financial hardship for the Cobbs Hill and Highland UV improvements. Due to the capital investment needs of the water system, we are carrying a very high debt load with a total principal and debt load payment of approximately $5.5 million due in 2014. This debt load includes the $15 million we have already spent on LT2ESWTR compliance projects. It does not include the $15 million we expect to spend as part of the Cobb Hill and Highland UV project.

2. The City's resources are limited and barely adequate to cover all the "typical" capital investments required to keep an old water system like Rochester's running properly. Without question, the City's highest priority is to upgrade its conduits and distribution mains. Failure to make this investment will jeopardize future system reliability, which may have serious public health implications. Over the next four years, the City has budgeted over $20 million for cleaning and lining mains, conduit replacement, and water main replacement. Other funded priorities for the city include: 1) equipment replacement at the Filtration Plant (approaching 20 years old), 2) system security, 3) SCADA upgrades, and 4) conduit and distribution vault rehabilitation. Another $15 million is budgeted for these efforts. The City believes these projects will produce measurable, documented public health benefits. The same cannot be said for the LT2 rule's UV requirement, since not one case of cryptosporidiosis has ever been linked to Rochester's drinking water. We feel our limited financial resources are better spent on making improvements to the transmission and distribution systems that would reduce the number of water main breaks and the associated interruption of service. This would also reduce the potential to incur contamination resulting from the breaks.
3. US EPA Administrator Lisa Jackson recently announced a review of the LT2 rule. Ms. Jackson was prompted to review the LT2 rule because of requests from New York City, US Senator Charles Schumer, and others to reevaluate the effectiveness of the regulation in light of new data that brings into question the assumptions upon which the LT2 rule was promulgated.

Amending our BCA milestone compliance dates will afford the City of Rochester the ability to continue to fund projects with the greatest measurable benefit to our system. Furthermore, by deferring the compliance dates for the UV improvements, we would be able to benefit from potential improvements to the regulations that may result from USEPA's review that is currently ongoing. Most of all, the City of Rochester would be afforded the ability to lessen the already heavy financial burden to its ratepayers by deferring approximately $15 million in capital expense to a date when the debt load will not be as onerous. The average annual water debt between 2011 and 2024 is $3.81 million while the 2025 debt drops to $0.44 million.

Based on local public health records, the City does not believe Cryptosporidum is a problem in its water supply. Source-water testing dating back to the 1980s has never recovered Cryptosporidium oocysts. The source water is also filtered. If an extension to our BCA is granted, the City will begin monthly testing for Cryptosporidium at both Highland and Cobbs Hill Reservoirs. If test results show Cryptosporidium is present, the City will reassess the situation with the Monroe County Department of Public Health and develop plans to address the needed improvements at Cobbs Hill and Highland Reservoirs.

We would appreciate an expeditious response to this request. We are about to commence design of the Cobbs Hill and Highland UV projects and an early indication of your response would allow us the leeway to minimize some of the early design costs that would be foregone if our milestone changes are approved.

Respectfully,

Robert L. Morrison

Robert L. Morrison
Director

CC: Paul Holahan

185840

City of Rochester
City Hall Room 308A, 30 Church Street
Rochester, New York 14614-1290
www.cityofrochester.gov

one city ROCHESTER
Thomas S. Richards
Mayor

September 12, 2011

The Honorable Lisa Jackson
Administrator
Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Jackson:

The City of Rochester, New York, is seeking clarification on the EPA's position regarding uncovered finished-water reservoirs. My interest stems from your response of August 19, 2011, to the Honorable Charles E. Schumer's letter of July 20, 2011, where you write "the EPA will review the LT2 rule and evaluate whether there are alternate ways to manage risk while assuring equivalent or improved public health protection."

As a result of the LT2 rule, the City is now in the process of making modifications to its three uncovered finished-water reservoirs in order to comply with this regulation. This multi-year, multi-million-dollar project includes reservoir lining, reservoir covering and installation of ultraviolet reactors at a cost of $25,000,000.

At a time of severely strained budgets and people rightly demanding that public funds be judiciously spent, this regulation imposes expenditures that are too onerous and benefits that are, at best, difficult to measure. Implementation of the LT2 rule also comes at a time when the City needs to make major investments in its aging infrastructure by implementing already-identified system upgrades with clearly quantifiable benefits, such as transmission and distribution pipe renewal, as well as pressure improvements in the high-elevation service area and lead service pipe abatement.

The City of Rochester has provided its citizens and customers high-quality water for 135 years without experiencing any water-related disease outbreaks. Furthermore, there has not been a single confirmed case of *Cryptosporidium* or *Giardia* attributable to the City's water supply system.

The City has been and remains committed to delivering safe water to all its customers. However, since EPA's review of the LT2 rule may identify more cost-effective ways to protect public health than currently required, I request that a moratorium on the implementation of this regulation's requirements specific to uncovered finished-water reservoirs be put into effect immediately and written approval be given to the City of Rochester to suspend its compliance schedule until a final determination is made regarding the rule. I believe this will ensure that scarce public funds are expended in the most productive manner possible for protecting public health.

Sincerely,

Thomas S. Richards
Mayor

Phone: 585.428.7045 Fax: 585.428.6059 TTY: 585.428.6054 EEO/ADA Employer

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185840

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF THE ADMIN.
2011 DEC -5 AM 11:05

NOV 30 2011

OFFICE OF WATER

The Honorable Thomas S. Richards
Mayor of Rochester
City Hall Room 308A
30 Church Street
Rochester, New York 14614

copy: DES
cms: Mayor

Dear Mayor Richards:

Thank you for your September 12, 2011, letter in which you seek clarification of the U.S. Environmental Protection Agency's (EPA) position on uncovered finished water reservoirs and request an immediate moratorium on implementation of the federal Long Term 2 Enhanced Surface Water Treatment Rule requirements as they relate to the city of Rochester. To effect this change, I understand that you are seeking our written approval to suspend your city's LT2 compliance obligations pending the EPA's regulatory review of the LT2 rule.

The LT2 rule requirements are still in effect. The rule is important for drinking water quality and public health protection. The provision that requires drinking water systems either to cover their finished water reservoirs or to treat the water leaving uncovered reservoirs before distribution to consumers is intended to protect against the potential for recontamination of treated drinking water with disease causing organisms, specifically *Cryptosporidium*, *Giardia* and viruses.

Many public water systems have already taken action to protect their drinking water as required by the rule, and many others are on a path to do so in the near future. In the 1970s, there were an estimated 700 uncovered reservoirs in the United States. In 2006, at the time the LT2 rule was promulgated, the number of uncovered reservoirs had been reduced to 81. Since then, public water systems have taken steps to cover, decommission or treat the water before distributing it to consumers at an additional 38 reservoirs. Today, only 43 uncovered finished water reservoirs are still in use, and all are under enforceable schedules to meet the LT2 rule's cover or treat requirements. Of those 43 reservoirs, most are currently undergoing construction or have schedules to complete construction during the next few years.

In her August 19, 2011, letter to U.S. Senator Charles E. Schumer, Administrator Lisa Jackson said that the EPA will review the LT2 rule and evaluate whether there are alternate ways to manage risk while ensuring equivalent public health protection. As you know, the EPA has committed to reviewing the LT2 rule as part of the agency's *Final Plan for Periodic Retrospective Review of Regulations.* In addition, the LT2 rule is among more than 70 rules that the EPA must review under the Safe Drinking Water Act's next review cycle to be completed by 2016. Under the Safe Drinking Water Act, the EPA must review existing national primary drinking water regulations at least every six years and revise them as appropriate. Additionally, the Safe Drinking Water Act specifies that any rule revision must maintain or provide for greater public health protection.

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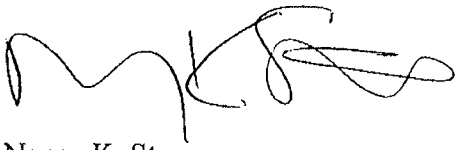
The EPA will conduct a thorough review of the LT2 rule. As part of the review, the EPA will assess and analyze new data and information regarding occurrence, treatment, analytical methods, health effects and risk from *Cryptosporidium*, *Giardia* and viruses to evaluate whether there are new or additional ways to manage risk while ensuring equivalent or improved public health protection. Science will drive our ultimate decision.

The rule review process does not provide a basis to modify the city's LT2 compliance obligations. However, there may be specific, articulable facts that warrant compliance schedule adjustments. Many public water systems face multiple challenges in managing, maintaining and operating those systems. Infrastructure construction projects can also present challenges. It is entirely appropriate for primacy agencies to consider these system specific facts when evaluating a request to adjust a compliance schedule. If a schedule adjustment is appropriate, the public water system should have in place robust interim measures to ensure public health protection, and those interim measures should remain in effect until that system comes into compliance with the rule.

During the spring of 2012, the EPA intends to hold a public meeting to focus on the uncovered reservoir issue. The city of Rochester is invited to present information, which the EPA would be happy to consider as part of its regulatory review process. We at the EPA look forward to continuing to work with the city of Rochester and other stakeholders.

In the meantime, I thank you for sharing your concerns. The EPA appreciates your city's commitment to delivering safe water to its customers. If you have questions, please feel free to contact me or your staff may call Sarah Hospodor-Pallone, Deputy Associate Administrator for Intergovernmental Relations, at (202) 564-9601.

Sincerely,



Nancy K. Stoner
Acting Assistant Administrator

5

185840

City of Rochester
Department of Environmental Services
10 Felix Street
Rochester, New York 14608
www.cityofrochester.gov

onecity Bureau of Water

January 9, 2012

John Felsen, Manager
Division of Environmental Health
Monroe County Department of Public Health
P.O. Box 92832
111 Westfall Road
Rochester, NY 14692-8932

RE: City of Rochester, NY, PWS ID: NY2704518
Bilateral Compliance Agreement

Dear Mr. Felsen:

The City of Rochester respectfully requests your approval to amend the August 18, 2011, Bilateral Compliance Agreement (BCA) regarding compliance with the Long Term 2 Enhanced Surface Water Treatment Rule (LT2 rule). The August 18, 2011, BCA requires the City of Rochester bring its three (3) uncovered finished-water reservoirs into compliance with the LT2 rule by December 31, 2014. We have currently completed the first leg of our BCA agreement to install a synthetic liner on Highland Reservoir at a cost of over $4 million. We are currently on schedule to complete the second leg of our LT2 compliance program to install a synthetic liner and floating cover on Rush Reservoir by December 31, 2012, at a cost of over $11 million.

The third and final leg of our compliance plan involves installing ultraviolet disinfection (UV) reactors at Cobbs Hill Reservoir and Highland Reservoir. The total expected cost of this third leg is approximately $15 million. We are specifically requesting an alteration of the milestone dates for both the Cobbs Hill Reservoir UV project and the Highland Reservoir UV project. We request approval to modify our BCA completion date for the Cobbs Hill Reservoir and the Highland Reservoir UV projects from December 31, 2014, to December 31, 2024.

For reasons described in our December 20, 2011, correspondence we request revisions to the following milestones as detailed below.

Highland Reservoir Ultraviolet Disinfection Project

Milestone Item No.	Original Milestone Date	Revised Milestone Date	Milestone Action
H	November 30, 2011	April 30, 2021	Hire/Retain UV Design Consultant

I	October 31, 2012	April 30, 2022	Submission of UV Plans to DOH
J	January 31, 2013	July 31, 2022	Award Highland UV Construction Contract
K	February 28, 2013	September 30, 2022	Begin Highland UV Construction
L	January 31, 2014	September 30, 2023	Place Highland UV into Service

Cobbs Hill Reservoir Ultraviolet Disinfection Project

Milestone Item No.	Original Milestone Date	Revised Milestone Date	Milestone Action
A	November 30, 2011	November 30, 2021	Hire/Retain UV Design Consultant
B	February 28, 2013	February 28, 2023	Submission of UV Plans to DOH
C	July 31, 2013	July 31, 2023	Award Cobbs Hill UV Construction Contract
D	December 31,2013	September 30, 2023	Begin Cobbs Hill UV Construction
E	December 31, 2014	December 31, 2024	Place Cobbs Hill UV into Service

If these suggested revisions meet with your approval, the City is prepared to sign a new Compliance Agreement that reflects these new milestone dates.

Please feel free to call upon me to discuss this letter at any time.

Sincerely,

Robert L. Morrison
Director
Rochester Water Bureau

CC: D. Rowley, NYSDOH
P. Holahan

185840

City of Rochester
Department of Environmental Services
10 Felix Street
Rochester, New York 14608
www.cityofrochester.gov

one city Bureau of Water

March 16, 2012

John Felsen, Manager
Division of Environmental Health
Monroe County Department of Public Health
P.O. Box 92832
111 Westfall Road
Rochester, NY 14692-8932

RE: City of Rochester, NY, PWS ID: NY2704518
Bilateral Compliance Agreement

Dear Mr. Felsen:

The City of Rochester respectfully requests your approval to amend the August 18, 2011, Bilateral Compliance Agreement (BCA) regarding compliance with the Long Term 2 Enhanced Surface Water Treatment Rule (LT2 rule). The August 18, 2011, BCA requires the City of Rochester bring its three (3) uncovered finished-water reservoirs into compliance with the LT2 rule by December 31, 2014. We have currently completed the first leg of our BCA agreement to install a synthetic liner on Highland Reservoir at a cost of over $4 million. We are currently on schedule to complete the second leg of our LT2 compliance program to install a synthetic liner and floating cover on Rush Reservoir by December 31, 2012, at a cost of over $11 million.

The third and final leg of our compliance plan involves installing ultraviolet disinfection (UV) reactors at Cobbs Hill Reservoir and Highland Reservoir. The total expected cost of this third leg is approximately $15 million. The City, with assistance from MCDPH and NYSDOH, prepared a *Cryptosporidium* and *Giardia* Action Plan (CGAP) that describes the monitoring, sampling and testing of water discharging from both reservoirs that the City will conduct, and the actions to be taken in case the results show elevated counts of cysts or oocysts.

The CGAP was presented to and approved by the EPA earlier this week. In view of this, the City of Rochester is specifically requesting an alteration of the milestone dates for both the Cobbs Hill Reservoir UV project and the Highland Reservoir UV project. We request approval to modify our BCA completion date for the Cobbs Hill Reservoir and the Highland Reservoir UV projects from December 31, 2014, to December 31, 2024. The CGAP document is attached to this letter.

For reasons described in our December 20, 2011, correspondence we request revisions to the following milestones as detailed below.

4

Highland Reservoir Ultraviolet Disinfection Project

Milestone Item No.	Original Milestone Date	Revised Milestone Date	Milestone Action
H	November 30, 2011	April 30, 2021	Hire/Retain UV Design Consultant
I	October 31, 2012	April 30, 2022	Submission of UV Plans to DOH
J	January 31, 2013	July 31, 2022	Award Highland UV Construction Contract
K	February 28, 2013	September 30, 2022	Begin Highland UV Construction
L	January 31, 2014	September 30, 2023	Place Highland UV into Service

Cobbs Hill Reservoir Ultraviolet Disinfection Project

Milestone Item No.	Original Milestone Date	Revised Milestone Date	Milestone Action
A	November 30, 2011	November 30, 2021	Hire/Retain UV Design Consultant
B	February 28, 2013	February 28, 2023	Submission of UV Plans to DOH
C	July 31, 2013	July 31, 2023	Award Cobbs Hill UV Construction Contract
D	December 31,2013	September 30, 2023	Begin Cobbs Hill UV Construction
E	December 31, 2014	December 31, 2024	Place Cobbs Hill UV into Service

If these suggested revisions meet with your approval, the City is prepared to sign a new Compliance Agreement that reflects these new milestone dates.

Please feel free to call upon me to discuss this letter at any time.

Sincerely,

Robert L. Morrison

Robert L. Morrison
Director, Rochester Water Bureau

CC: David Rowley, NYSDOH
Paul Holahan, City of Rochester

018281

Submitted by Flor Jones

AUDITOR 12/11/12 AM11:57

185840

City of Rochester, New York

Department of Environmental Services

Bureau of Water

CITY OF ROCHESTER *CRYPTOSPORIDIUM* AND *GIARDIA* ACTION PLAN

Paul M. Holahan
Environmental Services Commissioner

Robert L. Morrison
Water Bureau Director

March 2012

185840

City of Rochester *Cryptosporidium* and *Giardia* Action Plan

Introduction

The purpose of this document is to provide guidance for intra- and inter-agency action and coordination in response to the presence of *Giardia* cysts or *Cryptosporidium* oocysts in water leaving the City of Rochester's (City) Highland reservoir or Cobbs Hill reservoir.

This *Cryptosporidium* and *Giardia* Action Plan (CGAP) outlines potential responses to test results that show any elevated concentrations of cysts or oocysts in water leaving these reservoirs. The CGAP is required under the City's Bilateral Compliance Agreement (BCA), in accordance with the Long Term 2 Enhanced Surface Water Treatment Rule (LT2 rule), as a condition for the City to postpone the BCA completion date from December 31, 2014, to December 31, 2024.

The CGAP has been tailored to match Rochester's uniquely efficient system design, robustly redundant operational features and consistently high water quality.

Background

Since 1876 the City of Rochester customers have relied upon the pristine waters of two of the Finger Lakes, Hemlock Lake and Canadice Lake, for their drinking water supply. These lakes and surrounding 61 square miles of watershed are "upland" in the hills of Livingston and Ontario counties, about 30 miles south of Rochester.

Over the system's 136-year history, watershed protection has been the City's first treatment barrier to assure drinking water quality. The cornerstone of this effort was the City's ownership of approximately 7,000 acres in the watershed, including the entire shorelines of both lakes. In 2010 the City sold this watershed property to the New York State Department of Environmental Conservation (DEC). The preservation of the watershed controlling runoff into the lakes was a principal consideration in the significant investment by the State and continues to be an operational focus of both the State and the City.

Rules and regulations govern the use of the watershed land restricting public access at the north end (where the intake pipe is located) and limiting activities that might have deleterious effects on the water quality. State DEC and City Water Bureau personnel continue to observe land use and look for any potential threats of pollution or contamination to the lakes.

The fact that no *Giardia* cysts or *Cryptosporidium* oocysts were recovered during the City's LT2-rule monitoring supports the value of the City's watershed protection efforts. Moreover, not one single confirmed incident of giardiasis or cryptosporidiosis has ever been attributable to the City's water system.

Rochester's drinking water system is one of the most reliable systems in the world because of its source water redundancy (Hemlock Lake or Lake Ontario), abundant system storage (over 230 million gallons) and extraordinary operational flexibility.

The City supplements its Hemlock Lake water supply with Lake Ontario water purchased from the Monroe County Water Authority (MCWA). Each system by itself is capable of meeting the city's maximum demand. The two supply systems are located 45 miles apart. This significant geographical separation makes failure (be it an accident or a malevolent act) at one location very unlikely at the other.

The Hemlock Lake and Lake Ontario water treatment plants both employ filtration and disinfection. A third filtration plant on Lake Ontario, about 18 miles east of the existing one, currently under construction and slated to be in service in 2013, will add yet another level of dependability.

Highland and Cobbs Hill reservoirs are located within the city and provide ample reserve capacity to shut down and drain each reservoir for inspection, maintenance or repairs. Highland reservoir has a capacity 26 million gallons and has been in service for 136 years. Cobbs Hill reservoir, with a capacity of 144 million gallons, has been in service for 104 years. In the past, each reservoir has been removed from service for inspection, cleaning and repair work without any diminution in water quality or quantity delivered into the system.

Significant improvements were made to Highland reservoir in 2010, including installing a synthetic liner, as well as reconfiguring the reservoir inlet piping to provide better circulation that results in enhanced water quality.

A third reservoir in the town of Rush, also in service for 136 years, provides 63 million gallons of additional balancing storage. This reservoir will be lined and covered in 2012 as part of the City's ongoing program to achieve compliance with the LT2 rule.

Considering that the city's average daily water demand is 20 million gallons, there is sufficient storage capacity to last for several days in case of an emergency. Multiple connections to the MCWA distribution system that are normally closed can be readily opened to provide additional supply, thus increasing the overall reliability of the system.

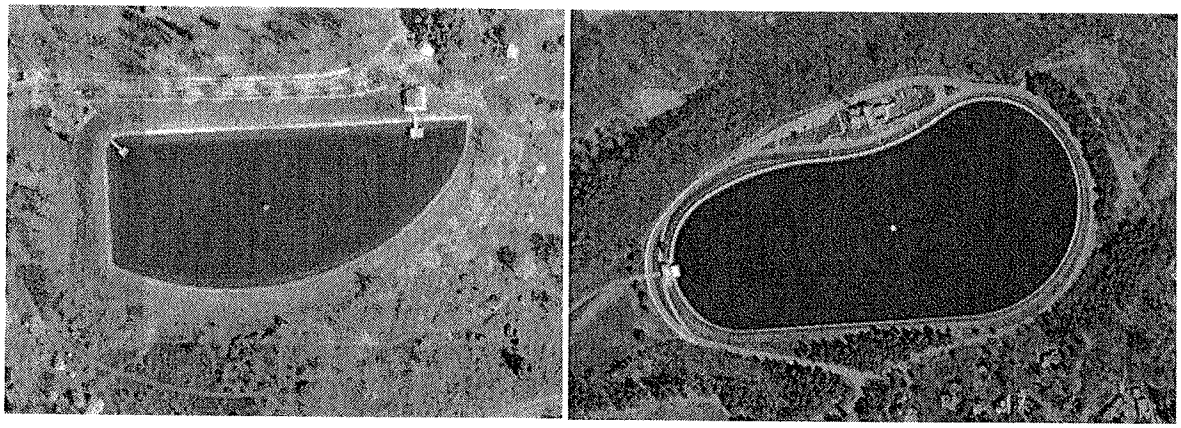
Attachment A shows a schematic of the City's water system including the Hemlock Lake and Lake Ontario supply sources, as well as the treatment, transmission and storage facilities in between the two lakes. Attachment E provides a skeletonized block diagram depicting the salient features of the supply system and the interaction among its various components.

Located in parkland settings and surrounded by eminently residential and light commercial areas, Highland and Cobbs Hill reservoirs are protected from industrial

contamination. Sitting atop the two highest peaks in the city with no neighboring land above them precludes any storm water runoff from emptying into the reservoir bowls.

Chlorine is added at the reservoir outlet lines. Continuous chlorine residual monitoring and frequent laboratory testing for turbidity, total coliform and *E coli* ensure the safety of the drinking water. See Attachment G for a full monthly report of all sampling, testing, monitoring and related activities.

Aerial photographs of the two City reservoirs are shown below. For additional photos see Attachment D.



Highland and Cobbs Hill Reservoirs

Because of redundancy in source waters and ample system storage, the City is able to operate with one or both reservoirs bypassed. Piping and valving reconfigurations to automate the shutdown and bypassing of the reservoirs have already been made at Highland reservoir and will be made at Cobbs Hill reservoir within the next two years. Operationally, this means that a reservoir can be quickly removed from service in the event of a contamination episode.

Expeditious shutdown and bypassing of the reservoirs, in addition to a long-established water main isolation and flushing strategy, make for a rapid and effective means of disposing to waste any water of questionable quality that might enter the distribution system from either reservoir. Also, pumping from the Lake Ontario supply source would ensure that the customers receive safe water should such an episode occur.

City Water Bureau personnel assigned to the storage facilities conduct daily inspections of the reservoirs (see Attachment F), as well as all appurtenant equipment and instrumentation. Periodic Engineering assessment of the structures (including underwater inspection) assures the proper operation of the system.

Access to the reservoirs by the public or wildlife is restricted and monitored. A perimeter fence surrounds each reservoir to prevent direct access by the public. Video

surveillance cameras are strategically positioned at each reservoir and monitored 24 hours a day by City staff. Bird wiring installed at both reservoirs serves as a deterrent for geese, ducks and other fowl and has proven to be remarkably effective in preventing avian intrusion.

In addition to the safeguards in place at the supply source and storage reservoirs, the following annual inspection, maintenance, repair and replacement programs provide the necessary means to avert any water quality degradation within the distribution piping:

- Water main replacement and rehabilitation (practically all the transmission and trunk mains have an interior cement liner to impede corrosion and iron bacteria, while 65% of all the smaller distribution mains are also lined).
- Water main flushing (to remove corrosion products and maintain adequate chlorine residuals).
- Valve exercising and verification (to provide adequate isolation and prevent dead-end conditions).
- Leak detection and control (8.7 breaks/year/100 miles of main as opposed to the national average of 27 breaks/year/100 miles*).

Since water entering each reservoir has been filtered and disinfected at the treatment plant and has not been exposed to the elements on its 30-mile route into the City's service area, the City infers that any elevated counts, in either cysts or oocysts, must be related to circumstances within or adjacent to Highland and Cobbs Hill reservoirs. Therefore, the focus of the CGAP is on operations and water quality at these reservoirs.

To monitor the concentration of *Giardia* cysts and *Cryptosporidium* oocysts during the BCA-completion postponement period, the City will collect 50-L samples twice a month at each reservoir outlet. Samples will be tested by a certified laboratory using EPA Method 1623: *Cryptosporidium* and *Giardia* in Water by Filtration/IMS/FA (EPA 815-R-05-002, Dec. 2005). At the conclusion of each year of testing, the City will provide the EPA and the NYSDOH with a technical memorandum describing any proposed changes to the CGAP.

**From EPA's August 15, 2002, Distribution System Issue Paper entitled, New or Repaired Water Mains, published by the USEPA Office of Water/Office of Ground Water and Drinking Water.*

Cryptosporidium and *Giardia* Action Plan

Guidelines for Inter-Agency Notifications and Coordination

"No Action" Level: 0-3 *Giardia* Cysts/50 L or 0-1 *Cryptosporidium* Oocysts/50 L detected in water leaving either Highland reservoir or Cobbs Hill reservoir

- Highland and Cobbs Hill monitoring results will be emailed by the City's contract laboratory to distribution list included as Attachment B.
- NYSDOH, MCDPH and City staff will routinely review water quality and disease/syndromic surveillance data for parameters listed in Attachment C.
- Continue routine sanitary surveys (Attachment C) of reservoir facilities by City staff.

Action Level 1: 4-7 *Giardia* Cysts/50 L or 2-4 *Cryptosporidium* Oocysts/50 L detected in water leaving either Highland reservoir or Cobbs Hill reservoir

- Follow steps in "No Action" Level above.
- The City's contract laboratory will immediately contact by email and phone the City's Manager of Water Production and Treatment when concentrations of cysts or oocysts meet Action Level 1 conditions.
- The Manager of Water Production and Treatment will contact by email and phone the key individuals for the involved agencies (MCDPH, Water Bureau, NYSDOH) as indicated in Attachment B.
- City staff will assemble all available relevant water quality (Attachment C), water system operations, meteorological data and protozoan data (*Giardia* and *Cryptosporidium*). NYSDOH and MCDPH will provide relevant disease/syndromic surveillance information for the period surrounding the sampling date. These data will be assembled and reviewed by staff at the City, MCDPH and NYSDOH.
- City staff will immediately collect repeat sample from reservoir outlet for *Giardia* and *Cryptosporidium* analysis.
- City staff will also assemble and review information concerning operations at the Hemlock Filtration Plant and at Rush reservoir.
- As soon as possible after notification, City staff will confer with MCDPH and the NYSDOH to determine if any further action is warranted. Further action could include:
    - No further action;
    - More frequent and expanded *Giardia* and *Cryptosporidium* monitoring to include samples from inlet and outlet structures and within reservoir bowl;
    - Expanded turbidity, total coliform and *E. coli* monitoring to include samples from inlet and outlet structures and within reservoir bowl;
    - Expedited sample processing times;

- Sanitary survey of reservoir facilities by City and MCDPH staff;
- Shutdown reservoir; or
- Escalation to Action Level 2.

Action Level 1: De-escalation Plan

If results from two successive sampling events indicate that *Giardia* or *Cryptosporidium* concentrations have dropped below 3 cysts/50 L or 1 oocysts/50 L:

- All available relevant water quality, water system operations, meteorological data and disease/syndromic surveillance information for the period surrounding the sampling date (taking into account the incubation period for *Giardia* or for *Cryptosporidium*) will again be reviewed by City and MCDPH staff. If data indicate there is no need for continued response actions, Action Level 1 will be rescinded or modified, as appropriate.

Action Level 2: >7 *Giardia* Cysts/50 L or >4 *Cryptosporidium* Oocysts/50 L detected in water leaving either Highland reservoir or Cobbs Hill reservoir

- Follow steps in Action Level 1 above.
- The City's contract laboratory will immediately contact by email and phone the City's Manager of Water Production and Treatment when concentrations of cysts or oocysts meet Action Level 2 conditions.
- The Manager of Water Production and Treatment will contact by email and phone the key individuals for the involved agencies (Water Bureau, MCDPH, NYSDOH) as indicated in Attachment B.
- The City will immediately start weekly monitoring for *Giardia* and *Cryptosporidium* at inlet and outlet structures and within the reservoir bowl. Samples will also be collected daily for total coliform, E. coli and turbidity at inlet and outlet structures and within the reservoir bowl. The first samples will be collected within 24 hours of notification. To the extent practicable, sample turnaround time will be expedited.
- City staff will assemble all available relevant water quality (Attachment C), water system operations, meteorological and protozoan data (*Giardia* and *Cryptosporidium*). NYSDOH and MCDPH will provide relevant disease/syndromic surveillance information for the period surrounding the sampling date. These data will be assembled and reviewed by staff at the City, MCDPH and NYSDOH.
- In deciding if additional actions are warranted, the data will be evaluated with respect to historic seasonal and temporal trends.
- MCDPH and City staff will conduct a sanitary survey of the impacted reservoir to qualitatively assess and document possible issues associated with existing sanitary barriers. This will include but not be limited to documenting:

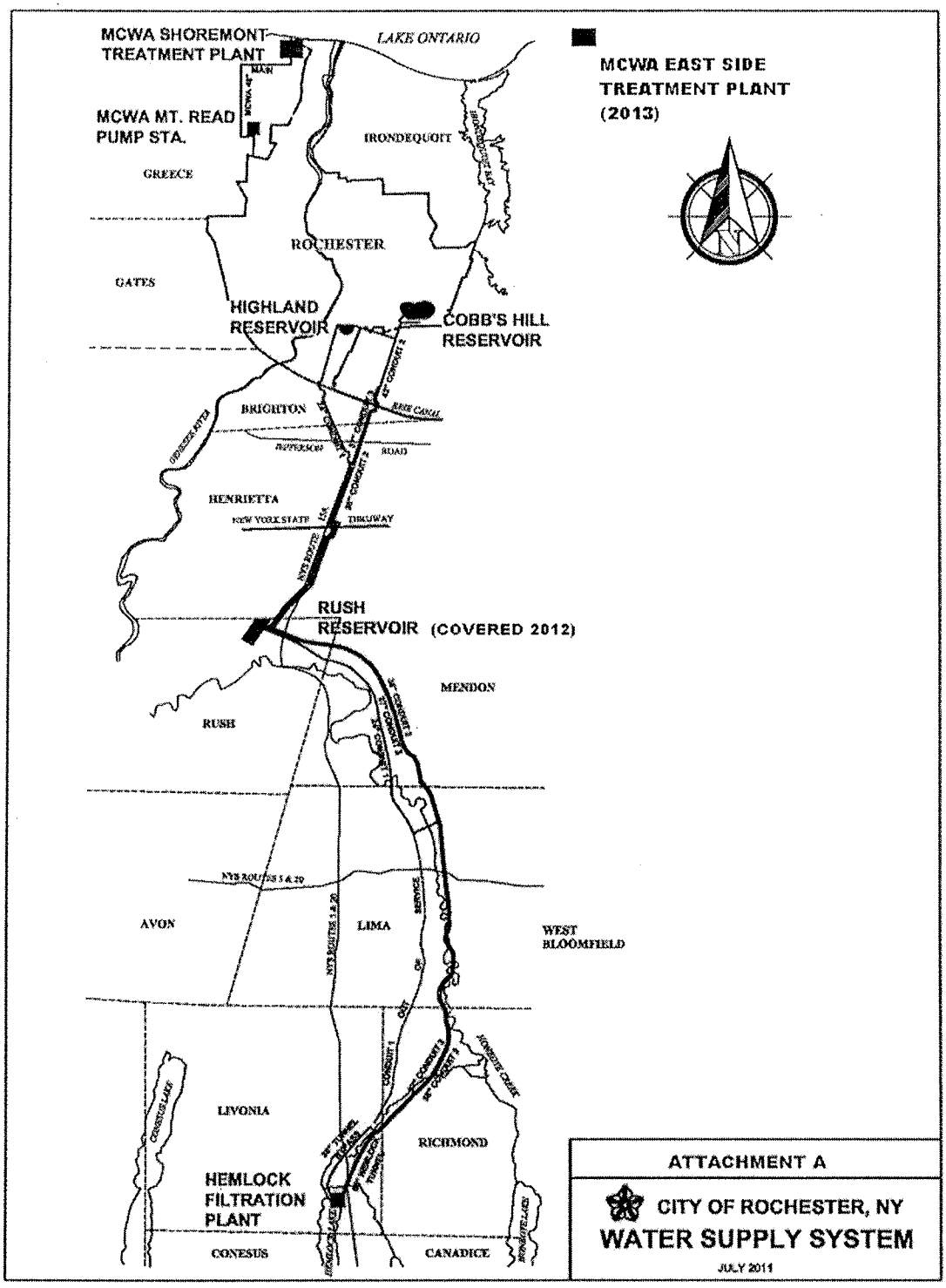
- Evidence of increased presence of waterfowl, birds and other wildlife;
- Evidence of increased fecal matter in/near the affected reservoir;
- Visual inspection of wiring, fencing and other barriers to wildlife
- Senior staff at the City, MCDPH and NYSDOH will confer as soon as possible. Based on consideration of all available relevant information and data, senior staff will decide: (1) whether to bypass the affected reservoir; (2) whether to notify the public and/or health care provider organizations; (3) whether to undertake any other response actions; (4) whether to escalate to a boil-water advisory for the affected reservoir's service area; (5) the form, content and mechanism for effectively and rapidly communicating with the public; and (6) whether there are potential concerns or issues with the existing conditions at the reservoirs that might have contributed to the elevated levels of *Giardia* and *Cryptosporidium;* (7) whether to collect *Giardia* and *Cryptosporidium* samples from distribution system locations.

Action Level 2: De-escalation Plan for either Highland reservoir or Cobbs Hill reservoir

If results from two successive sampling events indicate that *Giardia* or *Cryptosporidium* concentrations have dropped to No Action levels of 0-3 *Giardia* cysts/50 L or 0-1 *Cryptosporidium* oocysts/50 L, de-escalation may occur as follows:

- All available relevant water quality, water system operations, meteorological data and disease/syndromic surveillance information for the period surrounding the sampling date (taking into account the incubation period for *Giardia* or for *Cryptosporidium*) will again be reviewed by City and MCDPH staff. If data indicate there is no need for continued response actions, Action Level 2 will be rescinded or modified, as appropriate.
- Any parties notified of the alert will be informed that the alert has been rescinded (e.g., via the HAN).

Attachment A



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Attachment B

Distribution List for Action Plan

Paul Holahan (City of Rochester – Environmental Services Commissioner)

Robert Morrison (City of Rochester – Water Bureau Director)

Leonard Schantz (City of Rochester – Production and Treatment Manager)

David Rowley, P.E. (NYSDOH – Senior Sanitary Engineer)

John Frazer, P.E. (MCDPH – Associate Public Health Engineer)

Kenneth Naugle, P.E. (MCDPH – Senior Public Health Engineer)

Attachment C

Water Quality, Water System and Disease/Syndromic Surveillance Parameters to be reviewed

A. Water Quality and Water System Parameters

- *Cryptosporidium* and *Giardia* test results for reservoirs.
- Meterological data for the period in question.
- Reservoir operational data, including flows, chlorine residual (In, Out), algae counts, pre- and post-chlorine total coliform and *E. coli* test results and turbidity data. The table below summarizes sampling frequency for each parameter.

Frequency	Parameter	Locations	Comment
Continuous	Free chlorine, conductivity, flows	Reservoir Outgoing water	Cl calibration checked daily, conductivity weekly and flow annually
Daily	Turbidity, free chlorine	Reservoir Incoming and Outgoing water	Daily Operator grab sample checks
Weekdays	Total coliform, *E. coli,* Heterotrophic Plate Count bacteria, pH, conductivity	Reservoir Incoming and Outgoing water	Samples tested at City's ELAP certified laboratory
Weekly during summer	Microscopic algae counts	Reservoir Outgoing water	Total cell count using inverted microscope
Data are archived in a database to facilitate statistical analyses, e.g. trend analysis.			

- Available test results from distribution system at coliform sample sites and at fire houses with chlorine/conductivity sensors.
- Operational records for Hemlock Filtration Plant and Rush reservoir.
- Customer Complaints.
- Source water data.
- Protocol for collecting samples within the reservoir bowl can include surface samples as well as samples collected at different depths within the water column.

B. **Disease/Syndromic Surveillance Parameters**

- Giardiasis and cryptosporidiosis Surveillance Data by MCDPH staff using EDSERV.
- Clinical Lab Surveillance Data.

C. **Base Elements of Sanitary Survey**

- Documentation of wildlife activity, such as birds and waterfowl, entering the reservoir.
- Documentation of any fecal matter near the reservoir.
- Inspection of bird wiring, fencing and other barriers to wildlife.

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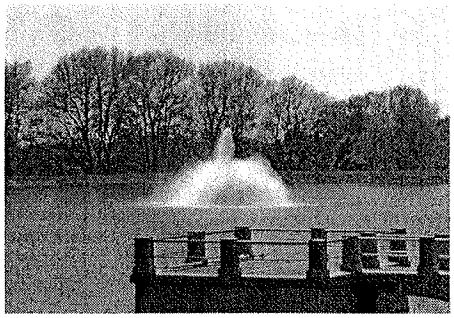
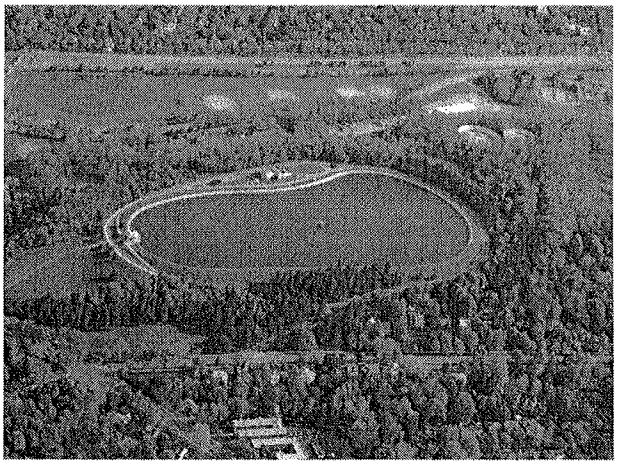
Attachment D

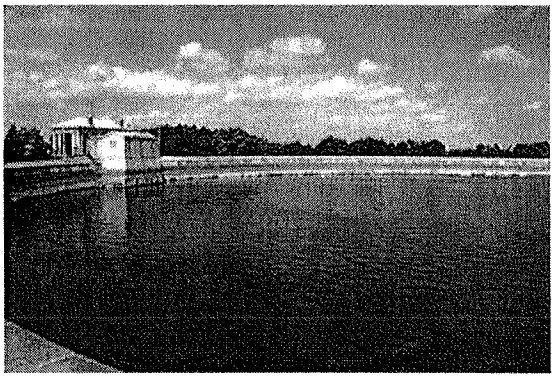
Reservoir Photos

Highland Reservoir



Cobbs Hill Reservoir





Attachment E

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Attachment F

Sample Daily Reservoir Inspection Notes

Date	Time	Reservoir	ID	Comments
02-06-12	09:45	Highland	RC	Leaf mass in east corner. Slight algae growth. Two bird wires down.
	10:30	Cobbs Hill	RC	Expansion joint for electric lights-first pole east of Radio Center. Two bird wires down. Floating trash east side (cleaned).
02-07-12	08:30	Cobbs Hill	RC	Good
	09:30	Highland	RC	Good
02-08-12	08:30	Cobbs Hill	RC	Four ducks east end.
	09:30	Highland	RC	Good
02-09-12	08:30	Cobbs Hill	RC	Good
	09:30	Highland	RC	Good
02-10-12	08:20	Cobbs Hill	RC	Good
	09:30	Highland	RC	Good
02-11-12	08:00	Cobbs Hill	RC	Good
	09:15	Highland	RC	Algae getting darker & thicker.
02-12-12	08:30	Cobbs Hill	RC	Good
	09:30	Highland	RC	Good. Same as yesterday.
02-13-12	08:00	Cobbs Hill	RC	Good
	10:30	Highland	KM	Good. Same as yesterday
02-14-12	13:00	Highland	KM	Sycamore seeds at west end and floating at east end. Starting to plug the screens.
	16:00	Cobbs Hill	RC	Good
02-15-12	09:00	Cobbs Hill	RC	Good
	10:30	Highland	RC	Seeds floating east end.

185840

Attachment G

WATER PRODUCTION OPERATIONS

January 2012 MONTHLY REPORT

018581

185840

City of Rochester
Bureau of Water
10 Felix Street
Rochester, New York 14607

March 30, 2012

Attn.: Mr. Paul Holahan, Commissioner – Department of Environmental Services

Re.: **Long Term 2 Enhanced Surface Water Treatment Rule**
Bilateral Compliance Agreement – Revision #4
City of Rochester (PWS # 2704518) – New York

BILATERAL COMPLIANCE AGREEMENT

Gentlemen:

The Long Term 2 Enhanced Surface Water Treatment Rule (LT-2), (Federal Register, Part 141.714) requires that all uncovered finished water storage facilities meet one of the following requirements no later than April 1, 2009:

1. Install a cover;
2. Install treatment to achieve 2-log cryptosporidium inactivation;
3. Be on a state approved compliance schedule for achieving one the first two requirements.

The New York State Department of Health (NYSDOH), the Monroe County Department of Public Health (MCDOPH), and the City of Rochester have been actively engaged in developing a realistic time frame for compliance with LT2. At this time, MCDOPH and NYSDOH require the City of Rochester to formally agree to an enforceable compliance schedule to ensure compliance with LT-2.

Based on the project schedule developed by City of Rochester staff, and logistics of the improvements required, the project has been divided into three sections, based on the City's three existing uncovered finished water storage facilities; Highland, Cobbs Hill, and Rush Reservoirs. The following compliance dates have been established for each reservoir:

Highland Reservoir:

Milestone Item No.:	Milestone Date:	Milestone Action:
A.	April 1, 2009	Hire / Retain Consultant
B.	November 1, 2009	Submit Plans to DOH
C.	April 30, 2010	Award Highland Construction Contract
D.	May 24, 2010	Begin Phase I Construction: *Structural Modifications*
E.	August 2, 2010	Begin Phase II Construction: *Liner Improvements*
F.	August 30, 2010	Complete Phase I Construction
G.	February 1, 2011	Complete Phase II Construction
H.	April 30, 2021	Hire / Retain UV Design Consultant

Highland Reservoir: *(Continued)*

Milestone Item No.:	Milestone Date:	Milestone Action:
I.	April 30, 2022	Submission of UV Plans to DOH
J.	July 31, 2022	Award Highland UV Construction Contract
K.	September 30, 2022	Begin Highland UV Construction
L.	September 30, 2023	Place Highland UV into Service

Cobbs Hill Reservoir:

Milestone Item No.:	Milestone Date:	Milestone Action:
A.	November 30, 2021	Hire / Retain UV Consultant
B.	February 28, 2023	Submit UV Plans to DOH
C.	July 31, 2023	Award Cobbs Hill UV Construction Contract
D.	September 30, 2023	Begin Cobbs Hill UV Construction
E.	December 31, 2024	Place Cobbs Hill UV into Service

Rush Reservoir:

Milestone Item No.:	Milestone Date:	Milestone Action:
A.	March 31, 2010	Hire / Retain Design Consultant
B.	December 13, 2010	Submit Plans to DOH
C.	April 30, 2011	Award Rush Construction Contract
D.	May 31, 2011	Begin Rush Liner & Floating Cover Construction
E.	October 1, 2012	Complete Liner & Floating Cover Construction
F.	October 31, 2012	Place Rush into Service

Please note that any alteration to the Milestone Items, Milestone Dates, and/or Milestone Actions listed above requires approval by MCDOPH and NYSDOH, and the execution of a new **Compliance Agreement** reflecting the modified items. Should the City of Rochester fail to meet these compliance dates, it will be subjected to enforcement action and penalties as deemed necessary by MCDOPH and NYSDOH.

In entering into this compliance agreement, the City of Rochester agrees to fully implement all sampling and action items outlined in the Cryptosporidium Giardia Action Plan (CGAP) attached to this BCA for the duration of the compliance agreement period (through 2024).

The undersigned parties agree to this **Bilateral Compliance Agreement**.

Paul Holahan, Commissioner
City of Rochester
Department of Environmental Services

Dated: March 30 2012

John Felsen, Manager
Monroe County Department of Public Health
Division of Environmental Health

Dated: March 30, 2012

David Rowley, P.E., Western Region Water Supply Field Coordinator
New York State Department of Health
Western Region Field Office

Dated: March 30, 2012

Attachment(s):

1. City of Rochester Cryptosporidium and Giardia Action Plan (CGAP) - March 2012

Bilateral Compliance Agreement (BCA) Document Amendment(s):

1. Original Agreement - March 25, 2009
2. Revision # 1 - December 29, 2009
3. Revision # 2 - March 11, 2011
4. Revision # 3 - August 18, 2011
5. Revision # 5 - March 30, 2012

4

End.

Moore-Love, Karla

185840

From: Lawrence Hudetz [hudechrome@gmail.com]
Sent: Wednesday, December 12, 2012 8:56 AM
To: Moore-Love, Karla
Subject: RoseMarie Opp/please place in appropriate records.
Attachments: December 12, 2012 Place in record on reservoirs.doc; LT2 letter to Administrator Jackson 10.13.11-1.pdf; Dec. 12, 2012 letter for the record on emergency ord..doc

Karla,
There are so many items concerning water today.
I found it somewhat overwhelming as to responding, so would appreciate your placing in the proper records.

I have attempted to put the Reservoir issues/items in one letter along with the Congressional letter to EPA.

The other letter is regarding the earlier emergency ordinances with a request to change the status to allow public awareness and input.

I believe that Nancy Newell will be contacting you this morning to have items pulled.
If she cannot reach you, I request that those than can be pulled for discussion be, as some people are planning to testify.

Thank you so much for your assistance.
It is comforting for us to have you as our council clerk.
Sincerely,
RoseMarie Opp

hudechrome@gmail.com

Please Place my comments into appropriate records. Dec. 12, 2012
Re: City Council Hearing on Dec. 12, 2012
Item # 1456, 1457,
Item # 1453, 1456 – 1457

185840

Apparently all these items have to do with the Reservoirs in our city, one with Mt. Tabor and primarily the focus of items are on the Washington Park Reservoir.

First, these Reservoirs have been placed on the National Historic Register and that should mean something, however, our council has ignored the importance of them and sees fit to destroy them and change them forever by moving towards corporate designed systems.
The Bull Run Water System has served us extremely well for 100 years, is gravity fed, and only needs to be maintained well as it is truly sustainable.

I am placing in the record an October 13, 2011 letter by our Congressional delegation to Lisa Jackson, Administrator of EPA.
In the letter, they write that they reacted with considerable enthusiasm to the news that EPA is reviewing its LT2 rule and specifically considering new or innovative alternatives to covering reservoirs. They discuss our unique water characteristics of Portland's Bull Run watershed. They ask to consider delaying implementation of the LT2 requirement to cover reservoirs.

Delay is the request and delay the council needs to do today instead of moving forward on projects. We all know that New York has been granted a huge time frame of delay and it is unconscionable that our council will not do the same. In my opinion, our PWB and city council have been hell bent on destroying the treasure and asset of our community by fast tracking and putting us into so much debt as to lead to others being able to come into our community to claim our water assets. This path PWB and including the council who have repeatedly refused to listen to the businesses and citizens of our city can very likely lead to privatization and loss of our water rights. Our Portland Water Bureau is already acting like a corporation favoring corporate interests instead of public interests here.

The Citizens of Portland's Water have repeatedly asked for a Waiver. Council has refused. The Variance, which is the avenue, Leonard and Council preferred as it is temporary and has allowed them to continue to give out contracts for projects has not been in the best interests of the community. A Waiver would put a stop to projects not needed, debt and water rate increases and to degrading our water quality. Council should ask for the Waiver.

Evidently our council is more interested in assisting corporations, what are we to think if for years we have been in council, pleading and they go instead against the public interest? Are they really more interested in what? In their political careers rather than the health of the community, financial and otherwise?

Open reservoirs as stated many times is the healthy choice, not the closed storage tanks. Radon prevalent in our area needs those open reservoirs for radon to dissipate rather than come into our workplaces and homes. Respect and preserve the Reservoirs. They are the heart of our city. Council has been given every opportunity to do so with the EPA review, congressional delegation requesting a delay on this matter and the New York success with their requests. Everything points to that the Council should stop today 12/12/12 and refuse to accept moving forward with these items.

Sincerely,
RoseMarie Opp

Enclosed: Congressional letter

185840

Congress of the United States
Washington, DC 20510

October 13, 2011

The Honorable Lisa Jackson
Administrator
Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Administrator Jackson:

We are writing to ask that as your agency reviews the Long Term 2 Enhanced Surface Water Treatment (LT2) Rule, you include an assessment of the unique circumstances relevant to the City of Portland's drinking water system. The City of Portland is wrestling with the immense cost and uncertain benefits of covering its water reservoirs, and would appreciate every possible degree of cooperation and flexibility from the Environmental Protection Agency in addressing this issue.

To place this request in context, you might recall that the City sought flexibility regarding the requirement to treat drinking water for Cryptosporidium two years ago. You and your team were extremely helpful and worked with Portland to institute a testing regimen for Cryptosporidium that would provide sufficient evidence for regulators to consider a variance from those requirements. The City tested 17,000 liters of water and found zero Cryptosporidium. Thank you so much for your agency's support in this process. You have now transferred responsibility for this issue to the State of Oregon.

In regard to the issue of reservoir covering, however, the City made a similar request for a waiver or variance, but your agency indicated that there was no path for a waiver or other form of flexibility. As disappointing as this was, given the enormous cost and uncertain benefits of covering the City's reservoirs, the City had to accept the finality of your agency's determination.

Thus, we reacted with considerable enthusiasm to the news that EPA is reviewing its LT2 rule and specifically considering new or innovative alternatives to covering reservoirs.

In light of that news, we request that your team thoroughly explore whether there are more cost-effective ways to counter the risks of contaminated water, taking into full account the unique and extraordinary water supply characteristics of Portland's Bull Run watershed and other attributes of Portland's drinking water system.

In addition, we respectfully request that while your agency's review is underway, you consider delaying implementation of the LT2 requirement to cover reservoirs, for water systems whose unique circumstances could warrant alternatives to protecting public health.

Finally, it would be of great help if your team could create a working dialogue with the City of Portland as you conduct this review. They stand ready to provide all possible information relevant to this issue.

We thank you for your attention to this matter that is so important to local communities and look forward to working with you on it.

Respectfully yours,

Jeffrey A. Merkley
United States Senate

Ron Wyden
United States Senate

Earl Blumenauer
United States Congress

Kurt Schrader
United States Congress

Peter DeFazio
United States Congress

Submitted by Floy Jones

AUDITOR 12/11/12 AM11:59

PUBLIC HEALTH DIVISION
Drinking Water Program
John A. Kitzhaber, MD, Governor

Health

800 NE Oregon Street, #640
Portland, OR 97232-2162
Phone 971-673-0405
FAX 971-673-0694
TTY-Nonvoice 971-673-0375

185840

May 17, 2012

David Shaff, Administrator
Portland Water Bureau
1120 SE 5th Avenue
Portland, OR 97204

Dear David:

This letter responds to your February 10, 2012 request for a delay to the Portland Water Bureau (PWB) compliance schedule for meeting the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) requirements for uncovered finished water reservoirs. PWB must complete two projects to comply; PWB proposes delaying the eastside project 8.5 years and the westside project 5.5 years.

Background

LT2 and EPA

LT2 requires all public water systems that store treated ("finished") water in uncovered reservoirs to either cover the facilities or treat the effluent to achieve inactivation and/or removal of 99.99% of viruses, 99.9% of *Giardia* and 99% of *Cryptosporidium*. Water systems had to either meet this requirement or be on an approved compliance schedule no later than April 1, 2009.

PWB chose to provide covered reservoirs rather than treat the effluents of existing reservoirs and so notified the Environmental Protection Agency (EPA), the Primacy agency for the LT2 rule at the time. PWB would comply by constructing covered reservoirs and, upon completion, disconnecting PWB's five uncovered reservoirs. Further, PWB proposed dates for disconnecting the Mt. Tabor and Washington Park uncovered reservoirs to the EPA: the three reservoirs on Mt. Tabor would be disconnected by December 31, 2015, and the two in Washington Park would be disconnected by December 31, 2020.

On March 25, 2009, PWB submitted to EPA additional detail regarding interim milestone deadlines as part of PWB's proposed compliance schedule. The schedule reiterated the original completion dates proposed by PWB to no longer

rely on uncovered finished drinking water reservoirs. In a memo to Commissioner Leonard also dated March 25, 2009 (the date of PWB's proposed compliance schedule to EPA), PWB stated that the compliance schedule option being proposed by PWB to EPA "allows some projects to be built concurrently without interfering with operations and customer service." Two days later, EPA accepted and approved the schedule as submitted by PWB.

Thus, the completion dates which PWB is subject to are the dates PWB proposed to EPA.

Prior to LT2 requiring this action, PWB expressed its clear intent to cover its uncovered reservoirs on numerous occasions. For example, PWB wrote a letter to EPA September 18, 2002 describing proposed action to improve PWB's lead (Pb) control program, essential to minimize exposure to this potent neurotoxin. In this letter, PWB cited covering or replacing the existing uncovered reservoirs as the primary long-term strategy to reduce lead exposure through drinking water, and stated an anticipated date of July, 2006 for covering or replacing all uncovered reservoirs.

LT2 and OHA
On July 8, 2009, EPA granted the Oregon Health Authority (OHA) Interim Primacy for the LT2 rule, and OHA continues to have Interim Primacy over LT2.

As the lead enforcement agency, OHA has discretion under state statutes and rules to extend formal compliance schedules, and has done so on occasion at the request of water suppliers. If a water supplier requests an extension to an agreed-upon compliance schedule, OHA thoroughly reviews the request to determine if a delay is necessary and thus an extension is warranted under the circumstances.

More specifically, the water supplier must be able to demonstrate continuing, steady progress toward compliance, and that specific, unforeseen circumstances outside the water supplier's control have caused the delay. Examples of such circumstances have included delays in construction due to weather, contractors, equipment availability, supply delivery, or unexpected geologic conditions; delays in necessary state or federal project funding; and delays in permitting and approvals by other governmental agencies. In all cases, OHA re-evaluates interim public health risk and mitigation measures required in the compliance agreement to assure that public health is protected during the unavoidable delay.

Prior PWB Request

OHA followed the practice outlined above when, on June 8, 2010, PWB requested a modification from OHA of one of the interim milestone deadlines in the original LT2 compliance schedule. PWB's request included demonstration of continuing, steady progress towards compliance, and articulated the specific circumstances that caused the need for a delay. OHA approved this interim milestone modification on June 15, 2010. We noted then and do again today that PWB did not request any change to its ultimate compliance date, and the date of disconnecting the reservoirs from the water system remained unchanged.

Current PWB Request

PWB now requests a modification that results in project delays of 8.5 years and 5.5 years based on unchanged circumstances, and an apparent multi-year suspension of effort toward regulatory compliance. Figure 1 below is reproduced from PWB's current request to OHA:

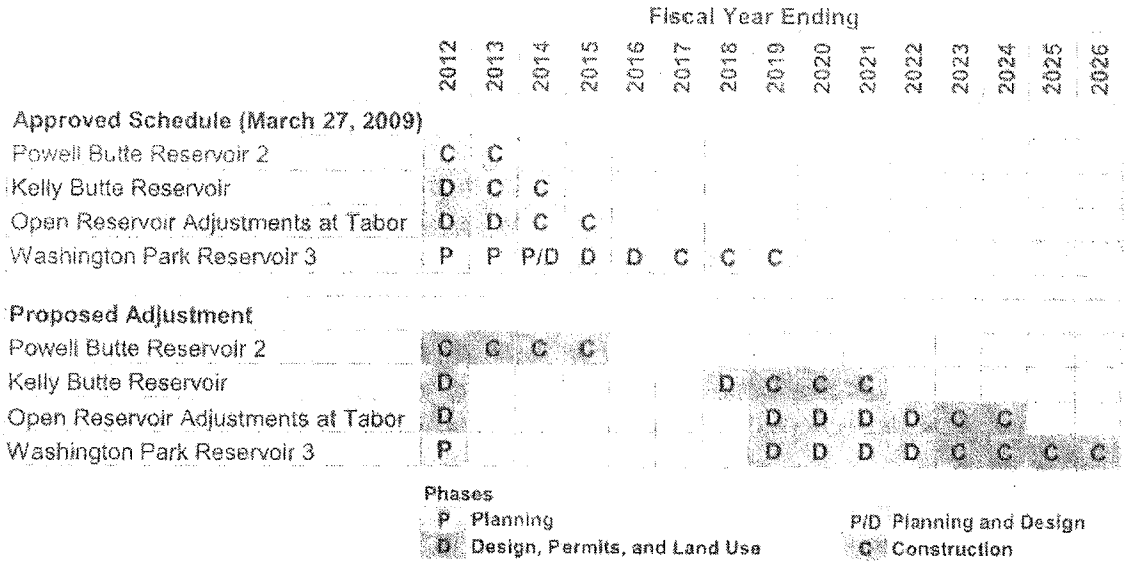

Figure 1. Time Line Showing Approved Schedule and Proposed Adjustment for Major Projects[a]

[a]Small supporting system improvement and transmission projects are shown in the detailed schedule available as Attachment B

Benefits of Covered Reservoirs

EPA has long stated that storage of treated drinking water in uncovered reservoirs can lead to significant water quality degradation and increased health risks to consumers (See, *e.g.*, Uncovered Finished Water Reservoirs Guidance Manual,

EPA, April 1999; Federal Register, January 5, 2006, pp 713-715). The LT2 requirement to cover or treat water from uncovered reservoirs is intended to protect against the potential for recontamination of treated water by disease-causing organisms such as viruses, *Giardia* and *Cryptosporidium*. Such recontamination can occur from a wide variety of sources, including bird and animal wastes, human activity, algal growth, insects and airborne deposition. Uncovered reservoirs have also been known to cause water quality degradation such as increases in turbidity, bacteria growth, particulates, disinfection by-products, taste and odor problems, and nitrification of chloraminated water. Over the years, a number of specific contamination incidents associated with Portland's uncovered reservoirs have been reported by PWB and the local media.

Nationally, most uncovered reservoirs were constructed between the late 1800s and the early 1940s. Since then, it has been the standard of practice within the drinking water industry to cover newly constructed finished drinking water reservoirs, as indicated in the Ten State Standards, US Public Health Service standards, American Water Works Association policy, EPA regulations, as well as Oregon construction standards. According to EPA's Uncovered Finished Water Reservoir Guidance Manual, 750 uncovered reservoirs were in use across the United States in the mid-1970s, with the number falling to approximately 300 by 1992. According to EPA, the number dropped to 81 by 2006. In 2012, only 38 uncovered reservoirs remain in the US, including 5 in Portland. Uncovered reservoir projects in two other Oregon communities are complete and a third Oregon community will complete its project this year.

Public Health and Security Co-Benefits

In addition to the risks associated with uncovered reservoirs identified above, there are also important co-benefits to covering or replacing uncovered reservoirs. Because uncovered reservoirs allow for atmospheric exchange with the water, the associated water chemistry changes can interfere with optimizing corrosion control treatment. This interference may result in higher concentrations of lead (Pb) in water at the tap. In addition, the chlorine on which PWB depends to treat its water can dissipate in uncovered reservoirs, depleting disinfectant residuals in the distribution system intended to protect against bacterial regrowth and recontamination. Finally, uncovered reservoirs present security risks for intentional contamination of or damage to the water supply.

Conclusion

PWB requests a delay in complying with the federal uncovered finished water reservoir requirement. However, PWB's request does not identify any specific circumstances not previously known to PWB when PWB a) proposed its compliance schedule in 2009, or b) proposed its interim milestone modification in 2010. Further, the proposed timing appears to reflect a suspension of effort to comply with the mandated regulation, rather than continuing, steady progress toward regulatory compliance.

Thus, PWB's compliance schedule approved by EPA on March 27, 2009, with the interim milestone modification approved by OHA on June 15, 2010, remains in effect.

We are mindful of the technical and economic challenges communities face in providing safe drinking water to their consumers. OHA remains committed to working with PWB as you work steadily to comply with regulatory requirements.

Sincerely,

Dave Leland, PE, Manager
Drinking Water Program

DEL:dw

Submitted by Ron Jones

AUDITOR 12/11/12 AM11:58

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WASHINGTON PARK RESERVOIRS HISTORIC STRUCTURES REPORT

Reservoir Nos. 3 and 4

City of Portland Water Bureau

December 2010

CASCADE DESIGN PROFESSIONALS, INC.

THE OFFICE OF ROBERT DORTIGNACQ, AIA

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EXECUTIVE SUMMARY

The Washington Park Reservoirs structures and buildings are nationally significant as part of an early design for a city's open water system. The system is historically significant for its initial construction and subsequent additions involving monumental civic undertakings, for the exemplification of early concrete engineering construction technology, and for its architectural design. As recognition of their historic importance, the buildings, structures, and site were nominated to the National Register of Historic Places as the Washington Park Reservoirs Historic District on January 15, 2004. Generally, those features within the district boundary that date from the initial construction in 1894 through construction and additions dating to 1951 are considered historic contributing.

This report focuses on the historic and architectural nature of the facilities, as defined in the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings. While the treatment Standards are designed to be applied to all historic resource types included in the National Register of Historic Places – buildings, sites, structures, districts, and objects – the Guidelines apply to buildings and site amenities, such as stairs, walkways, etc., only.

As stated in the Secretary of the Interior's Standards, "Work that must be done to meet accessibility requirements, health and safety requirements, or retrofitting to improve energy efficiency is usually not part of the overall process of protecting historic buildings; rather, this work is assessed for its potential impact on the historic building." The Water Bureau interprets "health and safety requirements" to include compliance with the Environmental Protection Agency (EPA) new drinking water rule, issued in January 2006, under the Safe Drinking Water Act called the Long Term 2 Enhanced Surface Water Treatment Rule, (LT2). The Water Bureau's responsibility to the public and to comply with Federal laws for drinking water and structural/seismic safety may override aesthetic concerns expressed herein.

Concerns such as facility security, ability to perform after a natural or man-made disaster, maintenance concerns or vulnerability to operational failure are beyond the scope of this report.

From a historic perspective, the historic resources in the Washington Park Reservoirs Historic District are, for the most part, in good condition. The structures and buildings were carefully designed and were built for durability and low maintenance. Those considerations have allowed the structures to age gracefully. The facilities are used on a day to day basis. Very few original construction components have been lost or removed. There have been some minor modifications to the facilities to allow continued safe and environmentally responsible operation. In many cases, these alterations, such as new electronic measuring or pipe controls, supplement the historic resources instead of replacing them. Most of the significant prior deterioration, which included the decorative concrete finishes on the two gate houses and structural damage at the pump house, has been repaired previously. Some components have recently been renovated, such as site stairs and reservoir basin and wall repairs. Other components, such as roofing and paving, may now be in serviceable condition but are noted to be replaced shortly. Still other features may be advised to be replaced for restoration purposes.

The Portland Water Bureau contracted with Cascade Design Professionals, Inc. and Robert Dortignacq, historic architect, in early 2010 to develop a Reservoirs Historic Structures Report (RHSR), in order to provide expert advice on the condition, maintenance, rehabilitation and preservation of the historic features within the Washington Park Reservoirs Historic District.

The work on this RHSR included a review of existing historic research and documentation of the features, review of prior alterations, visual observations to physically determine the condition of the resources, assessment of the findings, and development of recommendations for preservation. Recommendations for preservations could change with respect to cost, schedule, and/or scope depending on implementation of Reservoirs Program for LT2. A Tabular Summary (included at the end of this section) was developed and includes preservation recommendations that are noted sufficiently to define the overall scope of the project, uncover significant unknowns, and provide a basis for establishing a construction planning budget. They are not defined to a construction bid level in nature, but rather are intended to provide a comprehensive, overall condition assessment of the historic features, and to provide a strategy for their continued preservation. Specific repair methods and development of rehabilitation construction documents were not part of this project scope.

The history and significance of the district and its context have been well-researched and documented, and therefore, that information is not repeated in this report. Instead a condensed statement of history and significance is provided for the user's reference. In addition, a Construction and Materials Reference Guide discussing the type of deterioration and typical remedial treatment for the different materials used in the district has been specifically developed, and is included in the appendix. A brief bibliography is also included for further reference. As the sole owner and operator of the facilities, the Portland Water Bureau has an extensive library documenting the initial construction, prior projects, and maintenance, as well as photographs.

The Reservoirs Historic Structures Report (RHSR) includes the analysis of historic resources as identified in the Washington Park Reservoirs Historic District National Register nomination. The buildings, structures, and objects included in this analysis are those noted as "contributing" according to the historic district National Register nomination. A total of eleven (11) historic resources were reviewed; five (5) contributing buildings, four (4) contributing structures (each reservoir and its dam), and two (2) objects (fountains).

Reservoir 3

Gatehouse 3
36 Weir Building
Site (Reservoir Structure and Dam, Site Wall [Parapet Wall] Assembly, Stairway, Walkways)

Reservoir 4

Gatehouse 4
Pump House 1
Generator Building
Fountain Structures

Site (Reservoir Structure and Dam, Site Wall [Parapet Wall] Assembly, Walkways, Stairways, Valve Tunnels)

Several historic resources that were not included in the 2004 nomination are also discussed: the access stairways between the reservoirs, related tunnels, access and connecting drives, stairs and paths, and the site improvement remains of the former caretaker's cottage.

This report discusses the components of these resources, e.g., the doors, windows, and structure, by similar construction groupings for ease of identity and recommendations. The Historic District boundary, including structures and other features, is shown on the Site Plan in Figure 1 in the Introduction.

A Technical Memorandum was issued in the performance of this work. Technical Memorandum No.1 (TM1) presented a review of background information, results of site visits and staff interviews, and an assessment of the condition of each reservoir component and bulleted recommendations for the preservation treatment of the various reservoir components. TM1 has been edited into this Final Report, along with the cost estimate and Tabular Summary.

In conjunction with preparation of the Technical Memorandum and Final Report, progress meetings were held with stakeholders and the neighborhood association. A 'Conditions Workshop' was held with Portland Water Bureau staff and stakeholders to review report findings, recommendations, and alternatives. The Condition Analysis and Recommendations are organized by reservoir, then by subcomponent to facilitate use of the report. The report is provided in a loose leaf binder and in electronic format to further allow ease of use and periodic updating of preservation projects.

The Tabular Summary below is a condensed version of the main report following its organization. It contains an abbreviated version of the observations and recommendations, as well as a prioritization, cost estimate, and mechanic skill level judgment. The Summary uses abbreviations to facilitate sorting according to Structure and Component. The Structure (first column) is identified by its affiliated Reservoir, such as "GH3" for Gatehouse at Reservoir 3. The Component (second column) for each structure is further abbreviated by using letters from the component, such as "CONC" for concrete walls, floor and roof. The third and fourth columns briefly describes the work and recommended treatment. For some recommendations there may be alternative, but equally acceptable solutions. Those are labeled as sub items, e.g.: A.1, A.2. A detailed explanation of the observations and recommendations is found in the main body of the RHSR. The fifth column notes the assigned priority, Short (less than 5years), Long (5-10 years), or Maintenance level. The sixth column notes the estimated cost for the anticipated work including ten percent contingency. The seventh and final column assigns a construction skill (practitioner) level for each recommendation that ranges from 'A', an historic preservation specialist, to 'C', a qualified contractor or PWB staff.

Please Note: As work is completed on these facilities, appropriate documentation should be provided.

Structure	Component	Observation	Recommendation	S	L	M	Cost	Contractor Skill Level [2]
RESERVOIR 3 GATEHOUSE 3								
GH3	CONC	Wall surface spalling; deteriorated and exposed reinforcing; some hairline cracks	Option A.1: Clean concrete exterior; test for water absorption; install cementitious patching, apply breathable sealer; retain below waterline wall as is	X			$35,000	A
GH3	CONC	Roof drain prone to clogging; some leakage	Option A.2: Install new interior drainlines; provide overflow to one line	X			$5,000	B
GH3	CONC	Roofing deteriorated	Option A.3a: Provide new membrane roof	X			$19,000	C
			Option A.3b: Provide new elastomeric coating at roof deck and interior of parapet	X			$10,000	C
			Option A.4a: Provide new elastomeric coating at roof coping	X			$8,000	B
			Option A.4b: Provide new standing seam coping at parapet and its interior side		X		$25,000	B
			Option A.5: Preserve existing Ransome floor lights			X	-	-
GH3	BALC	Non-historic balcony	Option A.1: Maintain deck until it needs major repair or is no longer necessary			X	-	-
GH3	DOOR	Non-original doors	Option A.1: Maintain existing metal door assembly; preserve existing cast iron sill			X	-	-
			Option A.2: Replace doors and frame; preserve existing cast iron sill		X		$12,000	B
GH3	WIND	Wood members weathered; operable - not operating	Option A.1: Preserve wood windows; provide minor repairs		X		-	-
GH3	INT	Metal stair has rust	Option A.1: Maintain metal stairway, wood cabinet, and existing historic mechanical equipment intact			X	-	-
			Option A.2: Provide limited interpretive tours, develop portable signage and graphic		X		$4,000	-

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Structure	Component	Observation	Recommendation	S	L	M	Cost	Contractor Skill Level [2]
			Option A.3: Provide additional documentation, inventory and photographs of existing historic mechanical equipment		X		$4,000	A
GH3	STEP	Spalling on lower steps	Option A.1: Preserve, patch and repair entry steps, clean concrete surfaces, patch tests, patch spalled areas		X		$4,000	B
		Portions of original plaza missing	Option A.2: Preserve remains of original plaza and sidewalk, restore missing portions; coordinate work with adjacent site paving		X		$10,000	B
RESERVOIR 3								
36 WEIR BUILDING								
WB3	CONC	Exterior walls and roofing in good condition; small roof drain prone to clogging	Option A.1: Clean concrete exterior, test for water absorption, apply breathable sealer, if needed			X	$8,000	A
			Option A.2: Consider a cementitious or concrete finish coating		X		$20,000	A
			Option A.3: Revise existing roof drain; provide free standing roof drain, or revise the drain	X			$4,000	B
WB3	DOOR	Door and frame in fair condition; need repainting; exterior light rusty	Option A.1: Maintain existing non-original door			X	-	-
			Option A.2: Replace current door when worn out		X		$2,000	B
			Option A.3: Replace current light fixture when worn out		X		$1,000	C
WB3	WIND	Non-historic window in good condition	Option A.1: Maintain existing non-original window			X	-	-
			Option A.2: Replace current window when worn out		X		$1,500	B

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