OhioEPA
State of Ohio Environmental Protection Agency

Northwest District Office

347 North Dunbridge Rd.
Bowling Green, OH 43402-9398

TELE: (419) 352-8461 FAX: (419) 352-8468
www.epa.ohio.gov

Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

OH2001003 CHRISTI WATER SYSTEM INC 53 08/12/09

OH2001003852071 1

Defiance County
Christi Water System
Community Water System
PWS ID#: OH2001003
LEAD / COPPER

57 violation

ACTION REQUIRED

February 10, 2010

Mr. Terry Beilhartz, President
Christi Water System, Inc.
200 Perry Street
Defiance, Ohio 43512

Re: Notice of Violation for Failure to Perform Water Quality Monitoring & Make Corrosion Control Recommendation and Source Water Treatment Recommendation

Dear Mr. Beilhartz:

Ohio EPA records indicate that the Christi Water System, Inc. exceeded the lead action level of 15 µg/l in the tap water monitoring during the June – September 2002 monitoring period. The 90th *percentile concentration for Christi Water System, Inc. was 70.8 µg/l during the 2002 –* 2004 compliance period.

The following items remain overdue:

- **Water Quality Parameter Monitoring – Originally Due April 10, 2003**
- **Source Water Treatment Recommendation – Originally Due April 10, 2003**
- **Corrosion Control Recommendation – Originally Due July 10, 2003**

Because the lead action level was exceeded, the Christi Water System must still take the following actions:

- Conduct Water Quality Parameter Monitoring **(Complete by April 30, 2010, report due May 10, 2010);**
- *Complete Corrosion Control Recommendation and Source Water Treatment* Recommendation along with detail plans if required **(Due July 31, 2010);**

We suggest a meeting with you to discuss your required actions as soon as possible.

Deadlines and supplemental forms and information for the required actions listed below are included in the enclosures to this letter.

Required actions:

1. ***Water Quality Parameter & Entry Point Monitoring (OAC rules 3745-81-87 and 88)***

By April 30, 2010, collect samples for Water Quality Parameters and Lead and Copper in the distribution system and at the entry point to the distribution. The Water Quality Parameter and Lead and Copper Report (EPA Form 5108) must be submitted to Ohio EPA by May 10, 2010. See the enclosure entitled "Water Quality Parameter and Lead and Copper Monitoring" for details.

2. ***Corrosion Control Recommendation (OAC rules 3745-81-81 and 3745-81-82)***

By July 31, 2010, submit a Corrosion Control Recommendation to this office. At a minimum, the Recommendation must include:

- a cover letter,
- a diagram of your water treatment facilities highlighting any proposed changes, and
- a written recommendation for corrosion control that evaluates the effectiveness of:

  - alkalinity and pH adjustment,
  - calcium hardness adjustment, and
  - addition of a phosphate- or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

Additional guidance, called *Lead and Copper Rule Guidance Manual, Volume II: Corrosion Control Treatment* (document No. PB-93-101533), can be obtained by calling the National Technical Information Service at 1-800-553-NTIS.

3. ***Source Water Treatment Recommendation (OAC rules 3745-81-80 and 3745-81-83)***

By July 31, 2010, submit a Source Water Treatment Recommendation (Recommendation) to this office. The Recommendation must evaluate whether or not treatment is needed to reduce the levels of lead and copper in the source water at the entry point to the distribution system. The levels of lead and copper in the source water should be determined by taking a sample at the entry point to the distribution system after flushing the tap at that location. It is suggested that this sample be taken at the same time the water quality samples are taken. The instructions for entry point monitoring for lead and copper are included in the enclosure entitled "Water Quality Parameter and Lead and Copper Monitoring."

Depending upon the results of the entry-point water monitoring it may be determined that source water treatment is required to minimize lead or copper levels in the water being delivered to the user's tap (distribution system). Options for source water treatment include: ion exchange, reverse osmosis, lime softening and coagulation/filtration. The Recommendation must include an evaluation of the options for treatment and whether or not treatment is needed.

4. ***Detail Plan Submittal (OAC rule 3745-91-02)***

If significant changes to your water system are needed to implement the Corrosion Control Recommendation and/or Source Water Treatment Recommendation (typically installation of treatment), detail plans for those changes are due at the same time as the Corrosion Control Recommendation and/or Source Water Treatment Recommendation (July 31, 2010).

The detail plans must be prepared and signed by an engineer with a professional engineer's (P.E.) license. Because of the relationship between the detail plans and both the Corrosion Control Recommendation and Source Water Treatment Recommendation, you may wish to consider having your engineer prepare your Corrosion Control Recommendation and Source Water Treatment Recommendation as well.

If you have any questions concerning the requirements in this letter or need to request technical assistance, please feel free to contact me at (419)-373-3152.

Sincerely,

Larry Gamble
Division of Drinking and Ground Waters

/lb

pc: Defiance County Health Department
Toni Buchanan, DDAGW-CO
Todd Kelleher, CAS, DDAGW-CO
DDAGW-NWDO File with enclosures

Deadlines

To find the deadlines relevant to your system, review the first table on page 1 of your letter to find the "Monitoring Period." Then use the deadlines in whichever table below corresponds to that Monitoring Period.

Original Monitoring Period: ***June 1 through September 30, 2002***

Activity	**Deadlines**
Water Quality Parameters (WQP) and Additional Lead & Copper Monitoring	April 30, 2010
WQP and Lead/Copper report (Form 5108) to Ohio EPA	May 10, 2010
Corrosion Control Recommendation (CCR)	July 31, 2010
Source Water Treatment Recommendation (SWTR)	July 31, 2010
Detail Plans	July 31, 2010

Water Quality Parameter and Lead & Copper Monitoring

Instructions and Form 5108

Water Quality Parameter and Lead & Copper Monitoring

I. Water Quality Parameters

All water systems that exceed the lead or copper action level must also monitor water quality parameters in the distribution system and at each entry point to the distribution system in accordance with Ohio Administrative Code rule 3745-81-87. **Water samples must be collected and analyzed for water quality parameters during the same compliance period the water system exceeded the lead or copper action level. Christi Water System failed to perform this; therefore sampling must take place according to the revised schedule outlined in this correspondence.** Water quality parameter monitoring consists of flushing the tap, then collecting and analyzing water samples for:

- pH
- temperature
- alkalinity
- calcium
- conductivity
- orthophosphate (required only when a phosphate compound is used)
- silica (required only when a silicate inhibitor is used)

Temperature and pH must be measured on site at the time the sample is collected.

A. Distribution System Samples

Each distribution system site must be sampled **TWICE** at least one week apart. The number of distribution sites at which a water system must take water quality parameter samples depends on the number of people served, as shown:

Population Served	*Number of Sites*
> 100, 000	25
10,001 - 100,000	10
3301 - 10,000	3
501 - 3300	*2*
< 501	*1*

Tap samples shall be representative of water quality throughout the distribution system taking into account the number of persons served, the different sources of water, the different treatment methods employed by the system, and seasonal variability. This tap sampling is not required to be conducted at taps targeted for routine lead and copper sampling.

B. Entry Point Samples

Each entry point to the distribution system must be sampled **TWICE** at least one week apart for Water Quality Parameters.

Samples collected at the entry point(s) to the distribution system shall be from locations representative of each water source after treatment. If your system draws water from more than one water source and the sources are combined before distribution, monitor at each sampling point during periods of normal operating conditions, that is, when water is representative of all sources being used.

II. Entry Point Monitoring for Lead and Copper

A. Monitoring

Water systems that exceed the lead or copper action level must also monitor for lead and copper at each entry point to the distribution system. **Water samples for lead and copper analyses should be collected during the same compliance period that the water system exceeded the action level. Christi Water System failed to perform this; therefore sampling must take place according to the revised schedule outlined in this correspondence.** *Flush the sampling location before collecting the sample.*

B. Source Water Treatment Determination

Source water treatment may be required based on the results of the entry point monitoring for lead and copper. Ohio EPA will make this determination based on the following:

Source Water Treatment Guidelines	Entry Point Monitoring Results	
	Lead (µg/l)	Copper (µg/l)
Not necessary	≤ 5	≤ 200
Optional	5 - 10*	200 - 800
Recommended	10 - 15	800 - 1300**
Required	> 15	> 1300

** Source water treatment is recommended if the corrosion control treatment is at or near optimal and the lead action level is still exceeded.*

*** If the copper action level is exceeded, source water treatment may be required when corrosion control treatment is unlikely to reduce copper levels to less than the action level.*

III. Reporting

Use EPA form 5108 for reporting both water quality parameters and entry point lead and copper results. Attach laboratory analytical results with pertinent data.

Ohio EPA
Division of Drinking and Ground Waters

WATER QUALITY PARAMETER MONITORING REPORT
from both Distribution System (DS) and Entry Point (EP) sites
and Entry Point Lead and Copper Monitoring Report

PWS Name		PWSID	County
Street or Box		Phone	Population
City	Zip Code	Sampling required for monitoring period:	

Return completed report to the DDAGW division at your Ohio EPA district office no later than 10 days after the end of the monitoring period. Keep a copy in your records for at least 12 years.

Analysis of	Laboratory Name	Cert. No.
Lead and Copper		
Water Quality Parameters		

NOTICE: This report is required under Revised Code Sections 6109.04 and 6109.12. Non-compliance may result in civil penalties up to a maximum of $25,000 per violation under Sections 6109.31 and 6109.33.

Sample Date	Sample Location	Type of Site		Acidity pH	Temperature °C	Alkalinity mg/L	Calcium mg/L	Conductivity • mho/cm	Orthophosphate mg/L	Silica mg/L	Lead • g/L	Copper • g/L
		DS	EP									

Summary of Water Quality Parameter Monitoring

Number of distribution system sites required ____ Number of DS samples analyzed ____ (at least two per DS site)

~~Number of entry points to distribution system~~ ____ ~~Number of EP samples analyzed~~ ____ ~~(at least two per EP)~~

~~**Summary of Lead and Copper Monitoring at Entry Points to the Distribution System**~~

~~Number of entry points~~ ____ ~~Number of EP lead and copper samples analyzed~~ ____ ~~(at least one sample per EP)~~

I certify under penalty of law that I have personally examined and am familiar with the data submitted in this report; that the data in this report is true, accurate, and complete; and that I am aware that falsification thereof could result in the imposition of fines and penalties on me and/or this public water system.

Printed Name of Person in Responsible Charge of Monitoring	Signature of Person in Responsible Charge of Monitoring	Date

WATER QUALITY PARAMETERS

All water systems which exceed the lead or copper action level must also monitor water quality parameters in the distribution system and at each entry point to the distribution system in accordance with the Ohio Administrative Code rule 3745-81-87. **Water samples must be collected and analyzed for water quality parameter during the same monitoring period that the water system exceeded the lead or copper action level.** Water quality parameter monitoring consists of flushing the tap, then collecting and analyzing water samples for each of the following parameters:

pH
temperature
alkalinity
calcium
conductivity
orthophosphate (sampling is required only when a phosphate compound is used)
silica (sampling is required only when a silicate inhibitor is used)

The number of distribution system sites at which a water system must take water quality parameter samples depends on the number of people served as follows:

Population Served	Number of Sites
>100,000	25
10,000-100,000	10
3,300-10,000	3
501-3,300	2
25-500	1

Each distribution system site must be sampled <u>twice</u> during the monitoring period.

In addition to the distribution system sites, each entry point to the distribution system must also be sampled twice for water quality parameters.

Water quality parameter analyses results must be reported on EPA form 5108.

LEAD AND COPPER ENTRY POINT MONITORING

Water systems which exceed the lead or copper action level must also monitor for lead and copper at each entry point to the distribution system. Water samples for lead and copper analyses should be collected from each entry point during the same monitoring period that the water system exceeded the lead or copper action level. The sampling location should be flushed before collecting the sample. The analyses results must be reported on EPA form 5108, usually along with the water quality parameter analyses.

Desktop Evaluation Short Form for Small and Medium PWS Treatment Recommendations

A. *PWS General Information:*

1. **PWS Identification No.** _____
2. **Contact person:**
   Name _____
   Mailing Address _____
   _____
   _____
   Telephone _____ Fax _____
3. **Population served** _____
4. **Person responsible for preparing this form:**
   Name _____
   Signature _____
   Telephone _____

B. *PWS Technical Information:*

1. **Monitoring Results:**
   Sampling dates: From _____ To _____

First-Flush Tap Monitoring Results:

Lead:

Minimum concentration	=	_____	mg/L
Maximum concentration	=	_____	mg/L
90th percentile	=	_____	mg/L

Copper:

Minimum concentration	=	_____	mg/L
Maximum concentration	=	_____	mg/L
90th percentile	=	_____	mg/L

Point-of-Entry Tap Monitoring Results:

	Points of Entry				
	1	2	3	4	5
Lead Concentration in mg/L:	___	___	___	___	___
Copper Concentration in mg/L:	___	___	___	___	___
pH:	___	___	___	___	___
Temperature, °C:	___	___	___	___	___
Alkalinity, mg/l as $CaCO_3$:	___	___	___	___	___
Calcium, mg/l as Ca:	___	___	___	___	___
Conductivity, μmho/cm @ 25 °C:	___	___	___	___	___
Phosphate, mg/L as P:	___	___	___	___	___
Silicate, mg/L as SiO_2:	___	___	___	___	___

1. Monitoring Results (continued):

Water Quality Parameter Distribution System Monitoring Results:

Indicate whether field or laboratory measurement.

		Field	Lab
pH	minimum = _____ maximum _____	_____	_____
alkalinity:	minimum = _____ mg/L as $CaCO_3$ maximum = _____ mg/L as $CaCO_3$	_____	_____
temperature:	minimum = _____ °C maximum = _____ °C	_____	_____
calcium:	minimum = _____ mg/L as Ca maximum = _____ mg/L as Ca	_____	_____
conductivity:	minimum = _____ μmho/cm @ 25° C maximum = _____ μmho/cm @ 25° C	_____	_____
orthophosphate: (if phosphate-based inhibitor is used)	minimum = _____ mg/L as P maximum = _____ mg/L as P	_____	_____
silica: (if silica-based inhibitor is used)	minimum = _____ mg/L as SiO_2 maximum = _____ mg/L as SiO_2	_____	_____

2. Existing Conditions:

Is treatment used? yes _____ no _____

Identify water source(s):

Source No. 1 _____

Source No. 2 _____

Source No. 3 _____

If treatment is used, is more than one source used at a time?

yes _____ no _____

Identify treatment processes used for each source:

Process	No. 1	No. 2	No. 3
Presedimentation	_____	_____	_____
Aeration	_____	_____	_____
Chemical mixing	_____	_____	_____
Flocculation	_____	_____	_____
Sedimentation	_____	_____	_____
Recarbonation	_____	_____	_____

2. Existing Conditions (continued):

Identify treatment processes used for each source:

Process	No. 1	No. 2	No. 3
2nd Stage mixing	____	____	____
2nd Stage flocculation	____	____	____
2nd Stage sedimentation	____	____	____
Filtration:			
Single medium	____	____	____
Dual media	____	____	____
Multi-media	____	____	____
GAC cap on filters	____	____	____
Disinfection:			
Chlorine	____	____	____
Chlorine dioxide	____	____	____
Chloramines	____	____	____
Ozone	____	____	____
Granular Activated Carbon	____	____	____

List chemicals normally fed:

List chemicals sometimes fed:

3. Present Corrosion Control Treatment:

None ____

Inhibitor ____

Date initiated _____

Present dose _____

Range in Residual in Distribution System:

Maximum _____ mg/L Minimum _____ mg/L

Brand name _____

Type _____

Has it been effective? Please comment on your experience.

pH/alkalinity adjustment _____

pH Target _____

Alkalinity Target _____ mg/L $CaCO_3$

Calcium adjustment _____

Calcium Target _____ mg/L $CaCO_3$

4. Water Quality:

Complete the table below for typical untreated and treated water quality data. Copy this form as necessary for additional sources. Include data for each raw water source, if surface supplies are used, and finished water quality information (point of entry) from each treatment plant. If wells are used, water quality information from each well is acceptable, but not necessary, if several wells have similar data. Four groundwater supplies, include a water quality summary from each wellfield of grouping of wells with similar quality.

Include available data for the following:

Parameter	Untreated Supply	Treated Water (point of entry)
pH, units		
Alkalinity, mg/L as $CaCO_3$		
Conductivity, μmho/cm @ 25° C		
Total dissolved solids, mg/L		
Calcium, mg/L Ca		
Hardness, mg/L as $CaCO_3$		
Temperature, °C		
Chloride, mg/L		
Sulfate, mg/L		

5. Distribution System:

Does the distribution system contain lead service lines?

Yes _____ No _____

If your system has lead service lines, mark below the approximate number of lines which can be located from existing records.

None _____ Some _____ Most _____ All _____

Is the distribution system flushed?

None _____ Some _____ Most _____ All _____

6. Historical Information:

Is there a history of water quality complaints?

Yes _____ No _____

If yes, then answer the following:

Are the complaints documented? Yes _____ No _____

Mark the general category of complaints below. Use:

1 for some complaints in this category

2 for several complaints in this category

3 for severe complaints in this category

Categories of complaints:

Taste and odor _____

Color _____

Sediment _____

Other (specify) _____

Have there been any corrosion control studies?

Yes _____ No _____

If yes, please indicate:

Date(s) of study From _____ To _____

Study conducted by PWS personnel? Yes _____ No _____

Brief results of study were:

(optional) Study results attached? Yes _____ No _____

Were treatment changes recommended? Yes _____ No _____

If yes:

Were treatment changes implemented? Yes _____ No _____

Have corrosion characteristics of the treated water changed? Yes _____ No _____

If yes, how has change been measured?

General observation _____

Coupons _____

Frequency of complaints _____

Other _____

Briefly indicate, if other:

7. Treatment Constraints:

Optimal corrosion control treatment means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations. Please indicate below which constraints to treatment will apply to your PWS. Use the following code:

1 Some constraint = Potential Impact but Extent is Uncertain

2 Significant constraint = Other Treatment Modifications Required to Operate Option

3 Severe constraint = Additional Capital Improvements Required to Operate Option

4 Very severe constraint = Renders Option Infeasible

Constraint	Treatments			
	pH/Alkalinity Adjustment	Calcium Adjustment	Inhibitor	
			PO_4	Si
A. Regulatory				
SOCs / IOCs				
SWTR: Turbidity				
Total Coliforms				
SWTR / GWDR: Disinfection				
Disinfection Byproducts				
Lead and Copper Rule				
Radionuclides				
B. Functional				
Taste & Odor				
Wastewater Permit				
Aesthetics				
Operational				
Other				

8. Desktop Evaluation:

Briefly summarize the review of the corrosion control literature that pertains to your PWS. A report or summary can be appended to this form if preferred.

Were other similar facilities located which are experiencing successful corrosion control?

Yes _____ No _____

If yes, identify their corrosion control treatment method.

None _____

pH/Alkalinity adjustment _____

Calcium adjustment _____

Inhibitor _____

Phosphate based _____

Silica based _____

9. Recommendations:

The corrosion control treatment method being proposed is:

pH/Alkalinity adjustment _____

Target pH is _____ units

Target alkalinity is _____ mg/L as $CaCO_3$

Calcium adjustment _____

Target calcium concentration is _____ mg/L Ca

Inhibitor _____

Phosphate based _____

Brand name _____

Target dose _____ mg/L

Target residual is _____ mg/L orthophosphate as P

Silica based _____

Brand name _____

Target dose _____ mg/L

Target residual is _____ mg/L as SiO_2

Rationale for the proposed corrosion control treatment is:

Discussed in the enclosed report _____

Briefly explained below _____

List your proposed operating guidelines:

Parameter	Operating Range

Briefly explain why these guidelines were selected.

10. **Please provide any additional comments that will assist in determining optimal *corrosion control treatment for your* PWS.**