



ANNUAL WATER REPORT 2012

Date: June 24, 2013

Introduction

The City of Langley (City) provides water for residents and businesses within the City limits. This report is provided to City Council for their information, and in fulfillment of the City's obligations under the Provincial Drinking Water Protection Act and associated regulations, as well as the terms and conditions of the City's Water System Operating Permit. Enforcement of the regulations and issuance of water system permits is the responsibility of the Fraser Health Authority's Drinking Water Officer.

Water Supply

The City receives its water supply from the Coquitlam Lake reservoir. The water is supplied through the Greater Vancouver Water District (GVWD)'s trunk watermain. There is a primary ozone disinfection station at the Coquitlam reservoir and a secondary chlorination disinfection station at Clayton hill area in the City of Surrey. The City relies on Metro Vancouver staff for the quality of water delivered to the City. The City distribution system is connected to the trunk GVWD main at Fraser Highway and 200 Street.

Storage

The City has one water reservoir to serve our present and future water demand. Should there be a disruption in the supply of water from the GVWD, there is adequate water capacity in the reservoir to serve our City for extended periods of time. The reservoir is equipped with an automatic shut off valve, which will close if flow is disrupted, including seismic events. The intention behind this design is that water is retained in the reservoir for domestic and firefighting use. Because the reservoir was constructed in two separate cells, our crews can clean and maintain one cell at a time, and still have sufficient clean water for our residents.

Distribution System

The City is divided into two pressure zones. These zones split in the area of 53rd Avenue with the northern zone being supplied by gravity from the Clayton reservoir in Surrey at all times. The southern zone, which is at a higher elevation than the northern zone, is supplied directly from our reservoir and a booster pump station pressurizes the southern zone as needed. In the event that the available water pressure drops in the northern zone, automatic control valves located along 53rd Avenue open allowing water from the reservoir to supply the



northern sector of the City. The City reservoir is also supplied by the Clayton reservoir from the GVWD trunk main.

The City of Langley owns 102 km of water mains, 4564 metered service connections, 1054 valves, 94 blow off valves, 2 air valve, 14 zone valves, 536 fire hydrants, 14 sampling stations, 3 pressure reducing valves, and one reservoir with four pumps and a diesel generator. See attached plan of the City of Langley- Water Distribution System and Aater Sample Test Stations.

The type of water pipes that were installed in the City of Langley in the past was predominately Asbestos Cement (AC). Since 1980, all replacement water pipe has been PVC or Ductile Iron (DI) pipe when replacing old AC pipe, depending on the soil conditions. Currently the City network consists of 60% AC mains, 30% PVC mains and 10% DI mains.

In 2012, the City replaced 200m of corroded ductile iron pipe with PVC.

Maintenance Program

The City schedules flushing and cleaning all water mains every 2 years. The GVWD (northern) pressure zone and 80% of the reservoir (southern) pressure zone were flushed in 2012.

There are 92 dead ends in the City's water distribution system, most of them in cul-de-sacs and all of them have blow-off valves. The City schedules the flushing of dead end mains annually, or more often as needed.

If the City receives a complaint with regards to the quality of the water (i.e. dirty water), the City will investigate and resolve the situation as quickly as possible. If the problem persists, the City will flush the watermain and if required, will have the water tested by an independent laboratory.

In 2012, the City purchased an automated valve exerciser which has been used for our valve exerciser program.

Backup Water Supply

The City of Langley has an agreement with the Township of Langley that will allow us to open a valve, which are located on the municipal boundaries, when our main source is down with a watermain break or earthquake. This source is from various areas of the Township and there is enough water to last until repairs are done to ours or the GVWD's mains. The City operations staff has met with the Township of Langley operations staff to ensure regular operation of these valves to ensure emergency operability.

Water Sampling & Testing Program

Water sampling is being done every Tuesday of the week, 52 times a year. The City has 14 sampling stations located throughout the City used for taking water samples for the GVWD (see attached plan), including one at the reservoir. Every week each location is sampled for chlorine residual, Ecoli, HPC, temperature, total coliform, and turbidity. The City samples from each station and the GVWD picks up these samples the same day for testing at their laboratory. The test results are sent back to the City for review weekly. A full chemical analysis of the water in our system is done once a year.



The City has 56 samples tested every month, almost twice as many samples as is required under the Canadian Guidelines for Drinking Water Quality. Five testing stations are at low flow mains, one at the reservoir (because there is the only “source”), four at medium flow locations and one at a high flow location.

The testing of metals and disinfection byproducts at three testing sites are also being done by the GVWD – these results are attached to this report.

Testing indicates that water quality issues such as higher summer temperatures, low disinfection residual and fluctuating/high Heterotrophic plate counts (HPC) occur in areas with minimal water looping. These areas have been identified for future capital upgrades and are included on a hydrant flushing program, particularly in the summer months.

In 2012 the City purchased an auto-flusher for sample station COL-450 and has seen an improvement in the water quality results at this station since it has been in operation.

Water Consumption

The total water consumption for 2012 in the City was 3,906,130 cubic meters, down from 3,999,351 cubic meters in 2011.

New Connections

In 2012, the City issued permits for 63 multifamily units and 2 single family units. A new 12 lot single family residential subdivision was approved and construction is in progress to service the lots.

Utility Management

The City responds quickly to problems involving turbidity issues, leaking services or mains, and loss of water pressure. A standby person is on call at night and on weekends; and during normal working hours we have a maintenance crew that will respond immediately to any water complaints. We received 11 low water pressure calls in 2012 and seven calls relating to dirty water.

Turbidity events from source-water quality are dealt with in conjunction with Metro Vancouver and Fraser Health, ensuring that the public is notified if conditions exist that may be a risk to health. Similar notification plans are in place if an area of the City’s system was experiencing high turbidity due to construction or a watermain break.

Problems/complaints from the public regarding issues such as chlorine levels, blue-green staining, ozone & secondary disinfection, or source turbidity, are asked to phone the Metro Vancouver Water Quality department for further information.

Planned Works for 2013

The City has budgeted for the following water capital projects in 2013.

- 48 Avenue 20400 block to 208 Street – abandon 636m of existing 150mm AC watermain
- 56 Avenue – 196 Street to Production Way – abandon 230m of existing 150mm AC pipe



- 60 Avenue and 196 Street– replace 150m of existing 150mm AC watermain with 200mm PVC.
- Watermain looping from 48 Avenue to 48A Avenue, 48B Avenue and 49 Avenue dead-end watermains.
- Reservoir cleaning and inspection.

Emergency Response Plan

The City has an emergency response plan in case our water supply is interrupted for any reason. There are procedures that our Public Works crews follow whether it is a major or

minor problem. Our Emergency Plan involves activating four distinct stages:

1. ALERT situation.
2. EMERGENCY RESPONSE to save as much water as possible & regulate water supply.
3. RECOVERY/RESTORATION to reinstate our water supply.
4. DEBRIEFING would take place when recovery operations are underway.

Conclusion

This 2012 City of Langley Water System Report is presented to the public, by way of posting on the City of Langley website, as required by the British Columbia Drinking Water Protection Act and Regulations, as well as to meet the terms and conditions of the City’s Water System Operating Permit issued by the Fraser Health Drinking Water Officer.

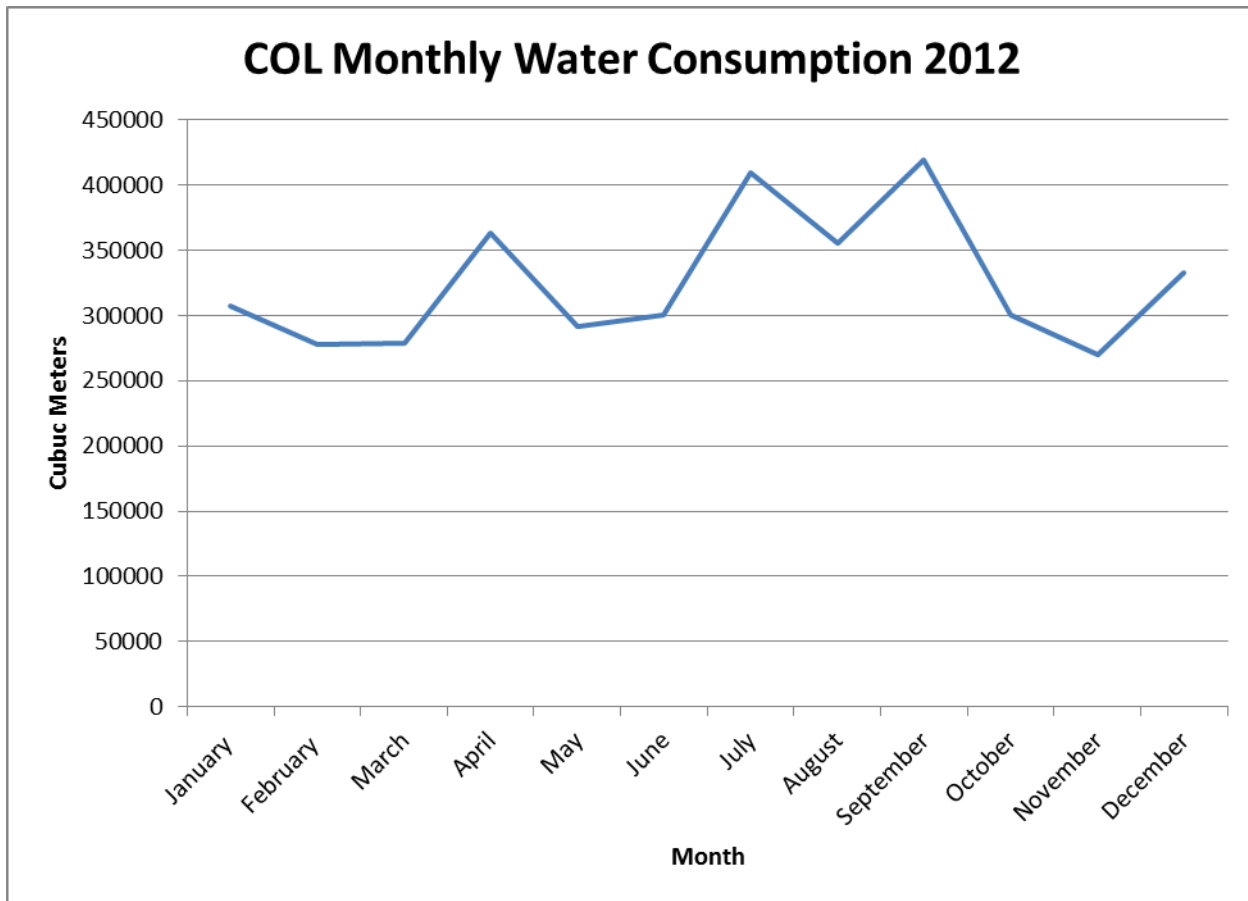
Attachments:

1. City of Langley, Water Distribution System and Water Sample Test Stations
2. COL Monthly Water Consumption 2012
3. COL Water Consumption – 10 Year Comparison
4. Disinfection Byproduct Results –2011 – 2012 – Metro Vancouver
5. 2012 Annual Water Quality Reports for test stations in the City of Langley. *Note regarding graphs: Temperature and HPC are on a logarithmic scale. HPC values shown as “1” are where the reading was given as “<2”*
6. Metals in Drinking Water – “Flush” Message in Annual Reports – Flush Letter from Fraser Health
7. Water Chemistry Analysis at Sample Station 450 –2012



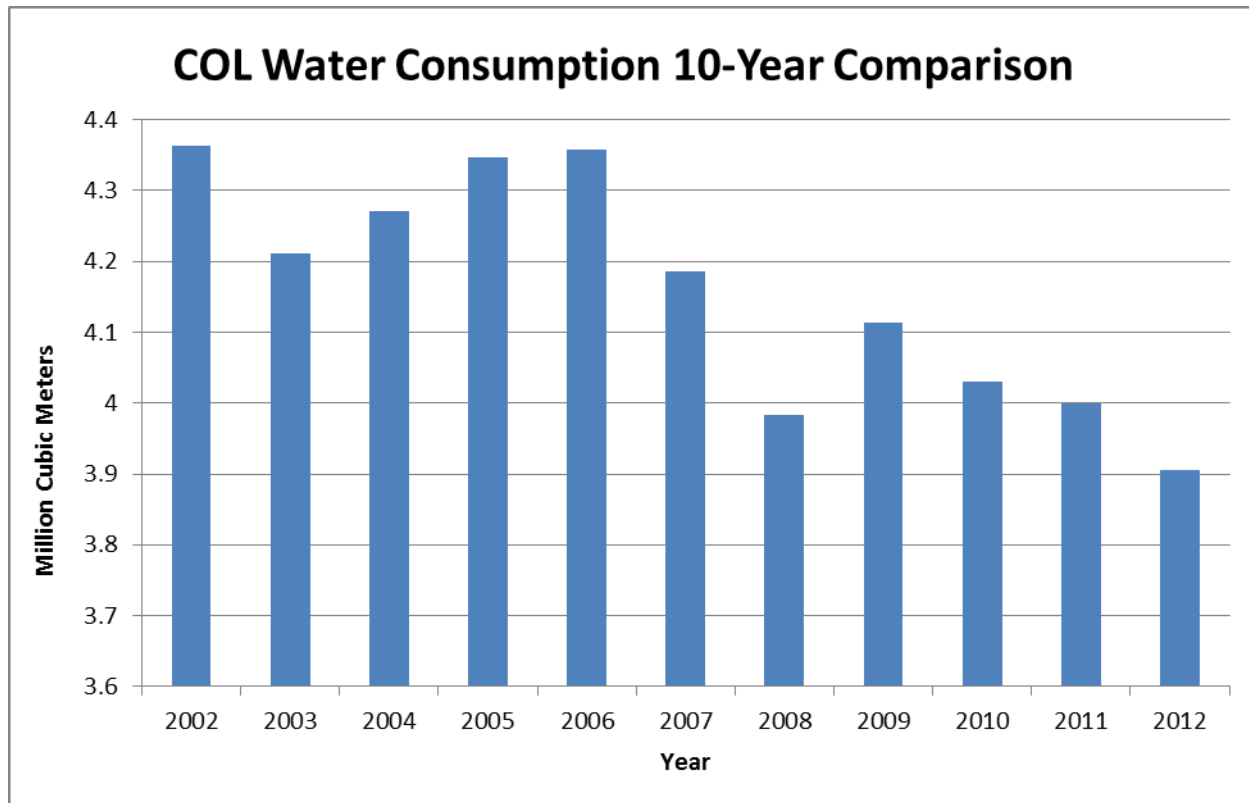
Kara Jefford, P. Eng.





Total 3.906 Million Cubic Meters



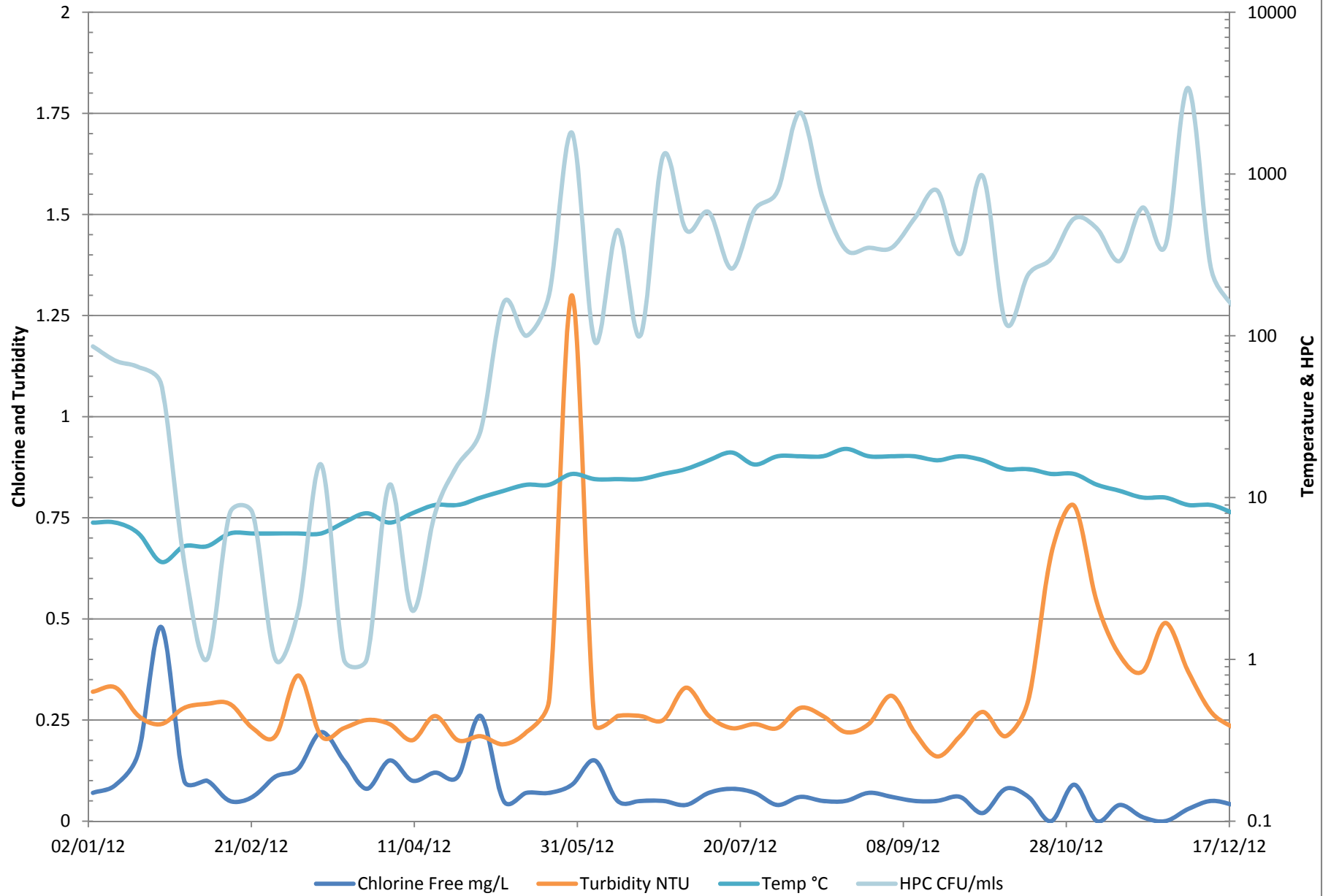


Disinfection Byproduct Results –2011 – 2012

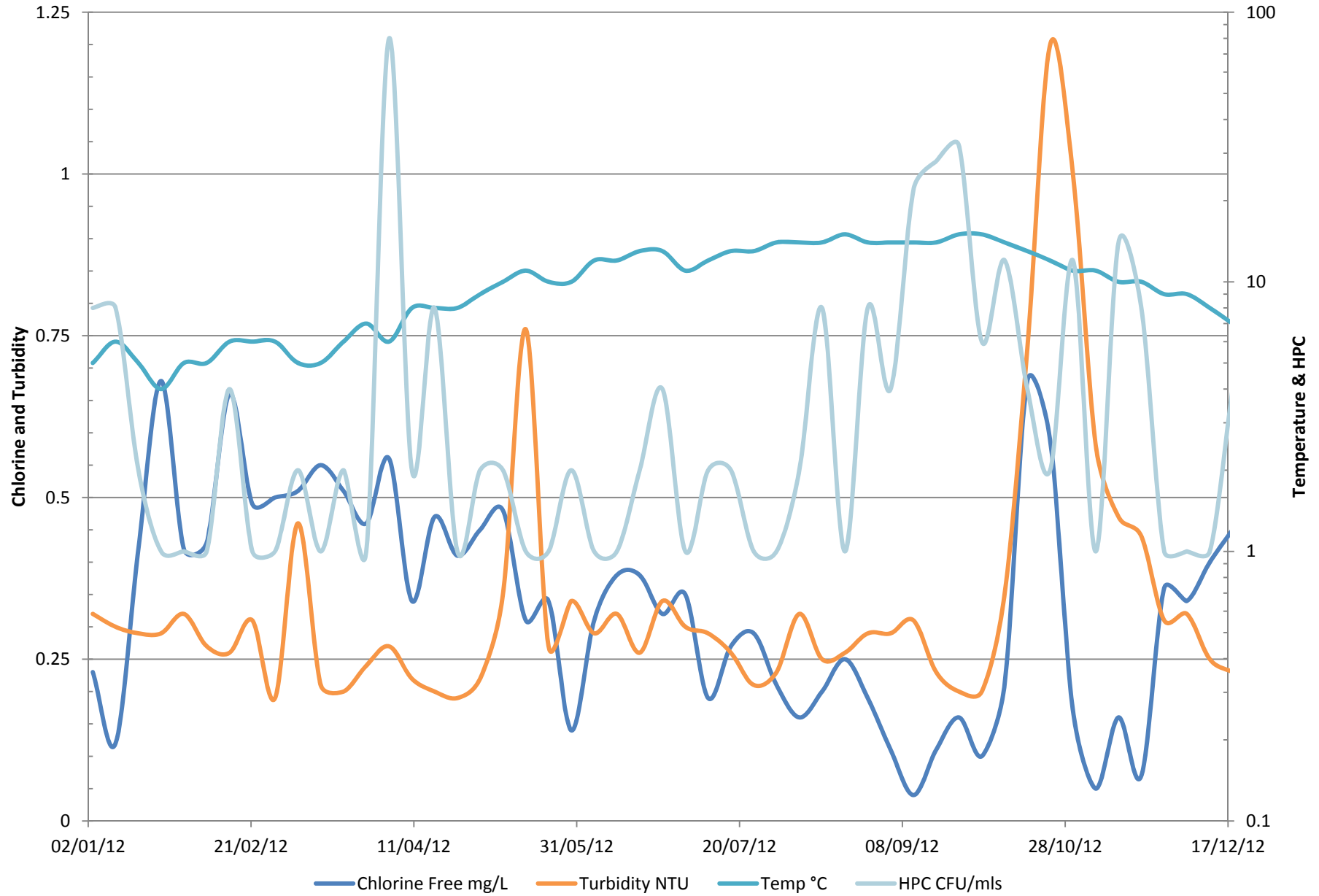
Sample	Date Sampled	THM (ppb)					Total THM Quarterly Average	HAA (ppb)						Total HAA Quarterly Average
		Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroform	Total Trihalomethanes		Dibromoacetic Acid	Dichloroacetic Acid	Monobromoacetic Acid	Monochloroacetic Acid	Trichloroacetic Acid	Total Haloacetic Acid	
COL-451	13/09/2011	<1	<1	<1	35	35		<0.5	13	<1	13	38	64	
COL-451	16/11/2011	<1	<1	<1	39	39		<0.5	18	<1	8	30	57	
COL-451	28/02/2012	<1	<1	<1	20	21		<0.5	13	<1	7	26	45	
COL-451	08/05/2012	<1	<1	<1	30	30	31	<0.5	12	<1	6	22	40	52
COL-451	28/08/2012	<1	<1	<1	32	32	30	<0.5	10	<1	<2	28	38	45
COL-451	27/11/2012	<1	<1	<1	34	34	29	<0.5	9	<1	2	25	36	40
COL-451	19/02/2013	<1	<1	<1	31	32		<0.5	12	<1	2	24	40	
COL-457	13/09/2011	<1	<1	<1	23	23		<0.5	20	<1	51	24	95	
COL-457	16/11/2011	<1	<1	<1	43	43		<0.5	26	<1	28	33	87	
COL-457	28/02/2012	<1	<1	<1	24	24		<0.5	42	<1	12	29	83	
COL-457	08/05/2012	<1	<1	<1	30	30	30	<0.5	18	<1	18	28	64	82
COL-457	28/08/2012	<1	<1	<1	23	23	30	<0.5	12	<1	7	10	29	66
COL-457	27/11/2012	<1	<1	<1	34	34	28	<0.5	15	<1	3	21	40	54
COL-457	19/02/2013	<1	<1	<1	30	30		<0.5	17	<1	4	23	44	
COL-480	13/09/2011	<1	<1	<1	34	34		<0.5	5	<1	7	22	35	
COL-480	16/11/2011	1	<1	<1	50	52		<0.5	10	<1	<2	27	37	
COL-480	28/02/2012	<1	<1	<1	30	30		<0.5	16	<1	3	50	69	
COL-480	08/05/2012	<1	<1	<1	36	36	38	<0.5	13	<1	5	35	53	49
COL-480	28/08/2012	1	<1	<1	37	38	39	<0.5	6	<1	<2	27	33	48
COL-480	28/11/2012	<1	<1	<1	48	48	38	<0.5	7	<1	<2	41	48	51
COL-480	19/02/2013	<1	<1	<1	36	37		<0.5	11	<1	3	30	44	



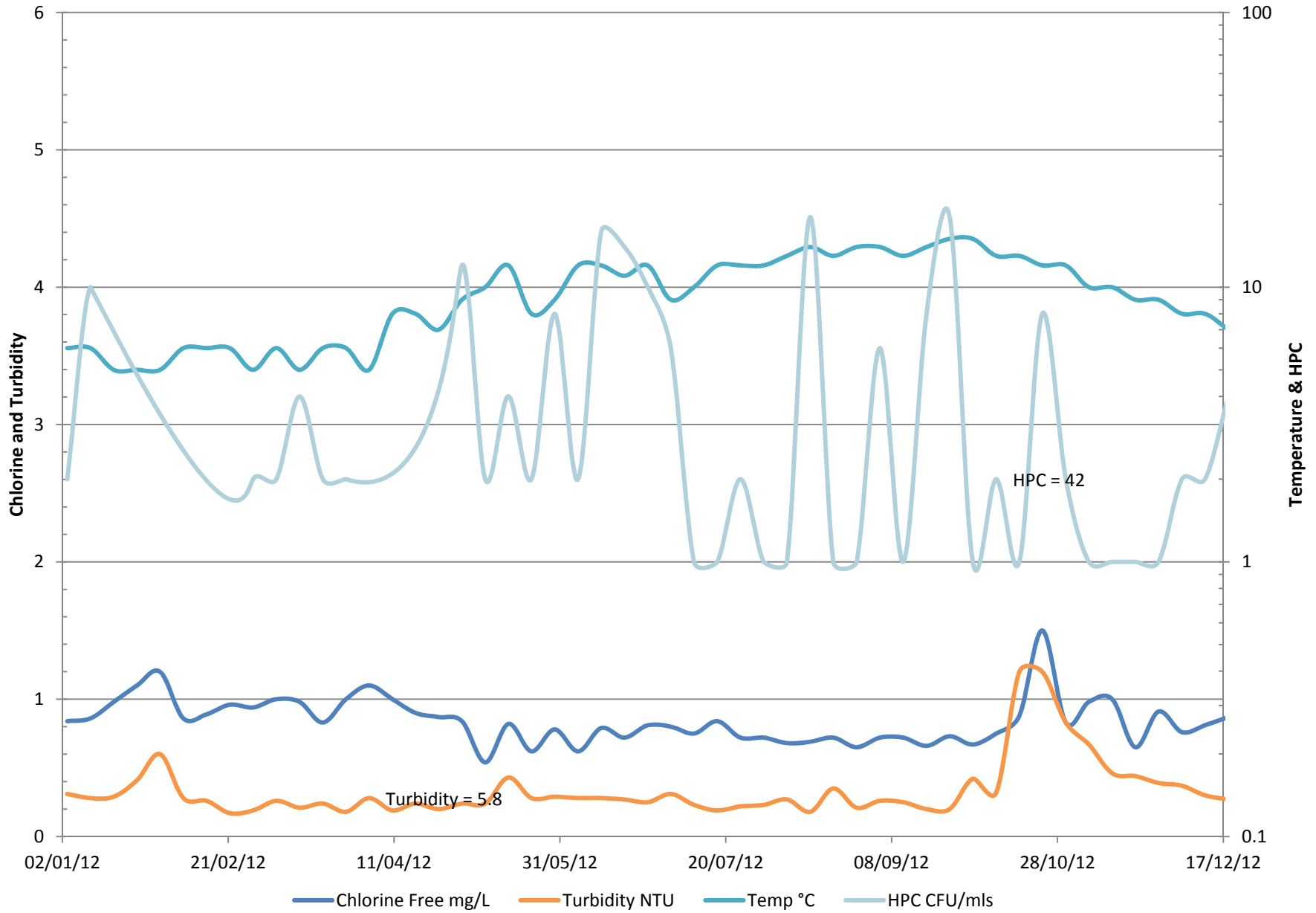
COL-450



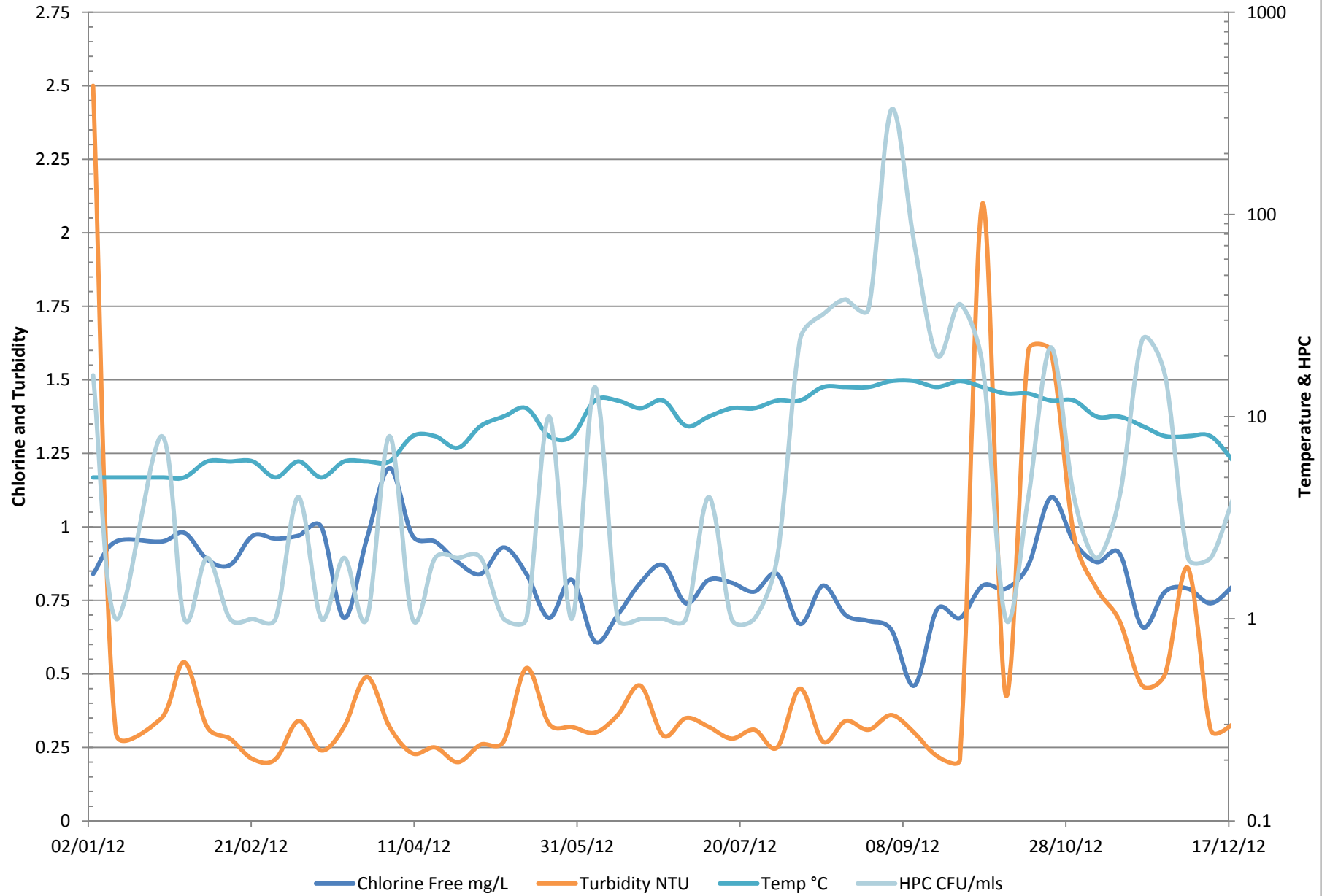
COL-451



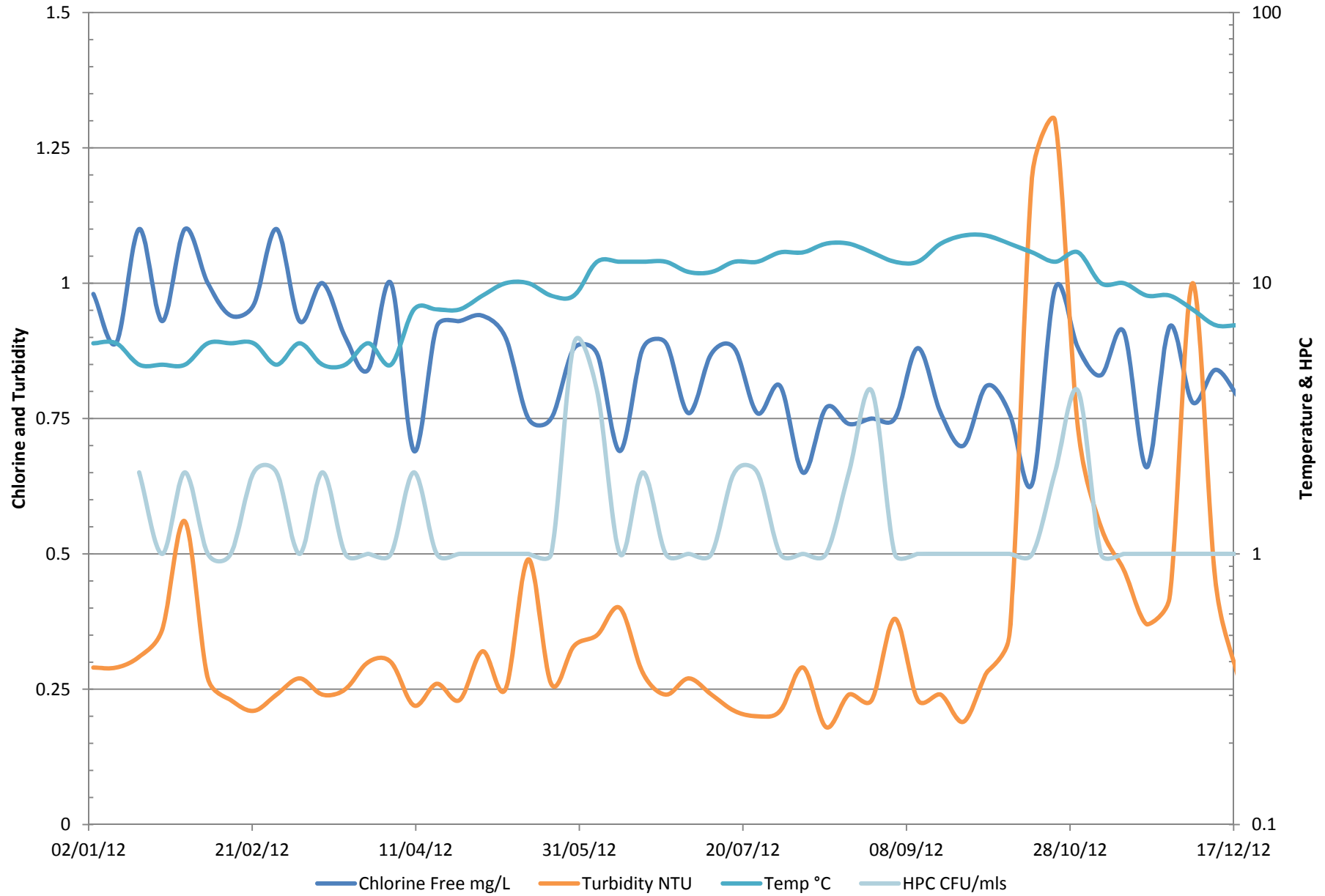
COL-452



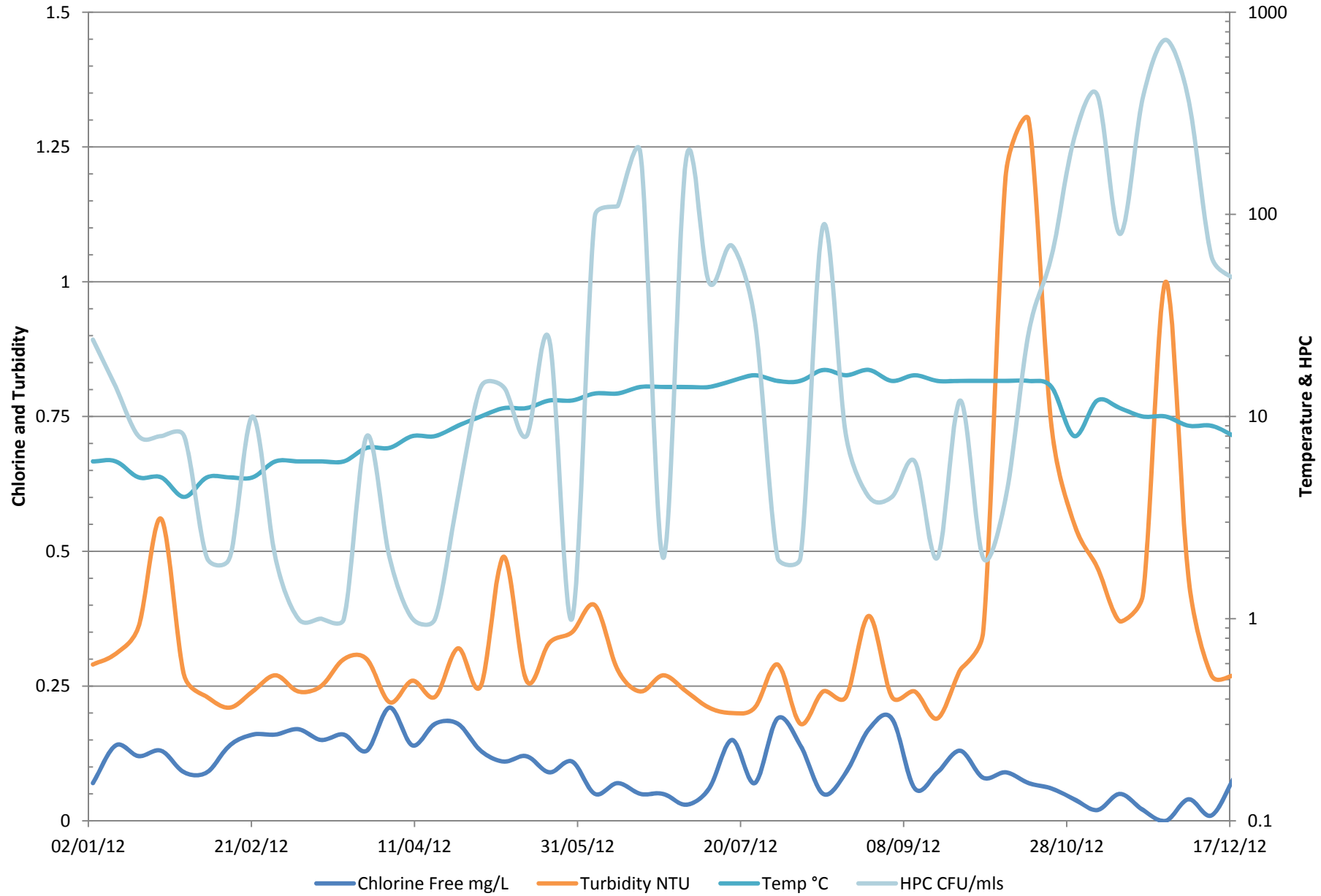
COL-453



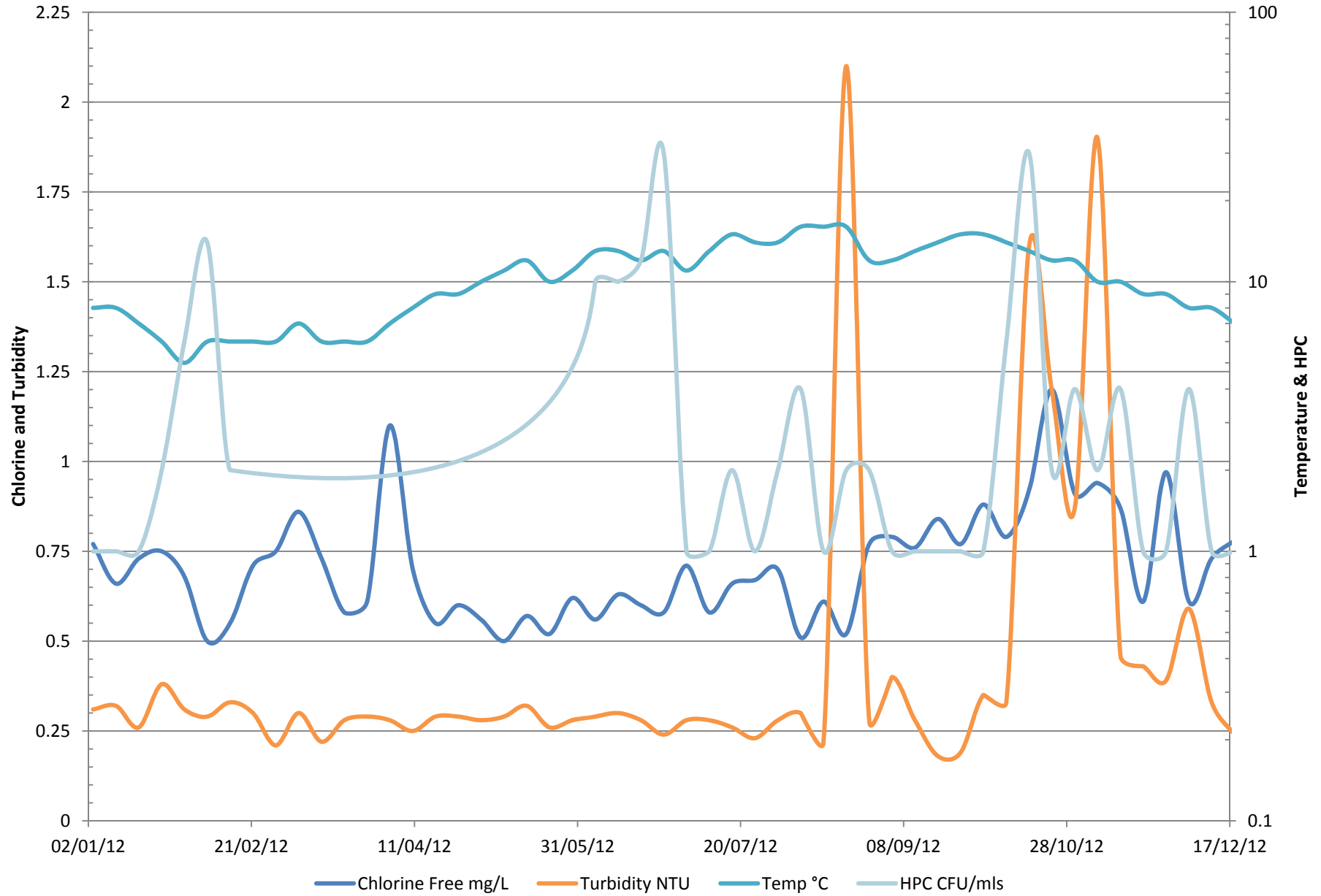
COL-455



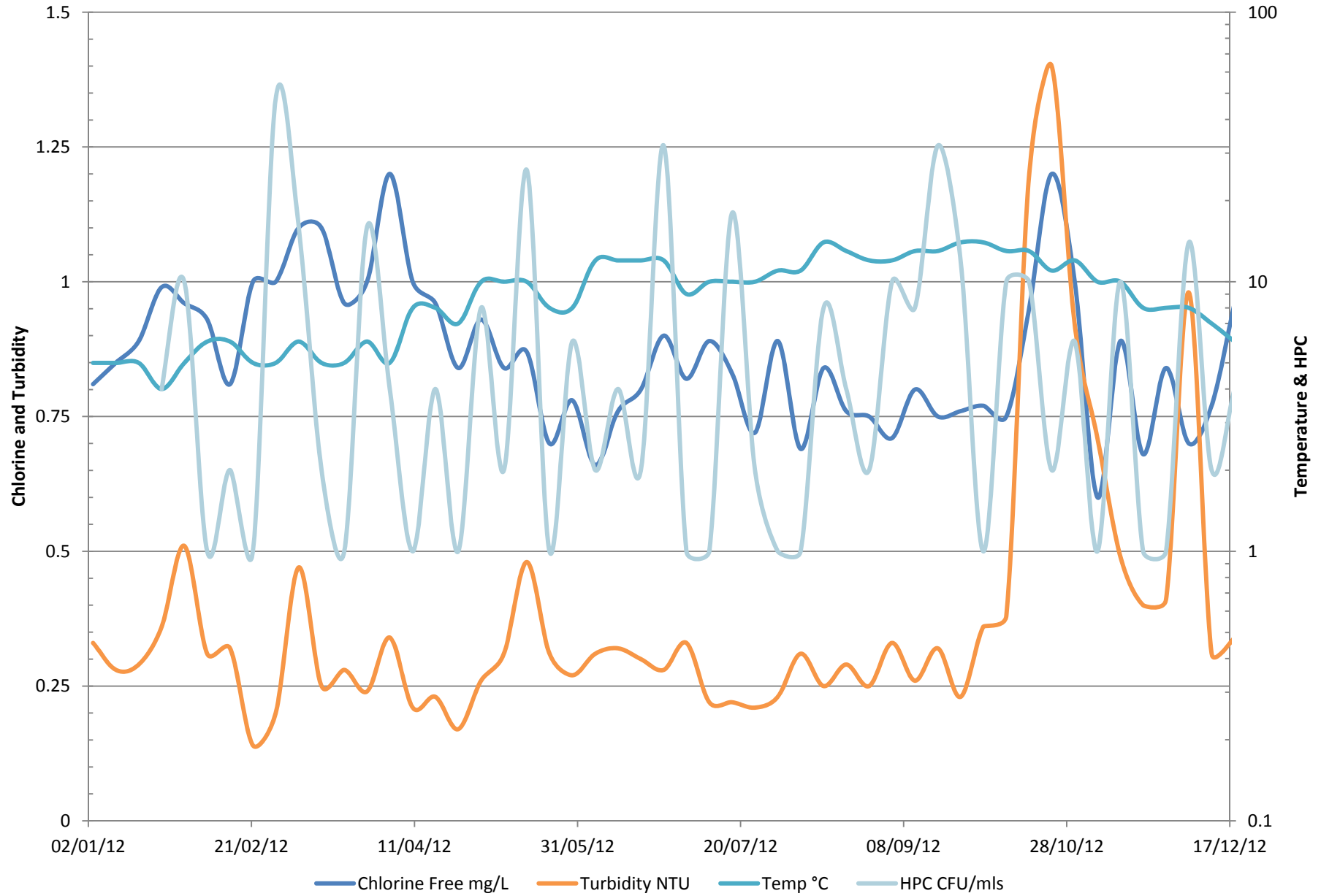
COL-456



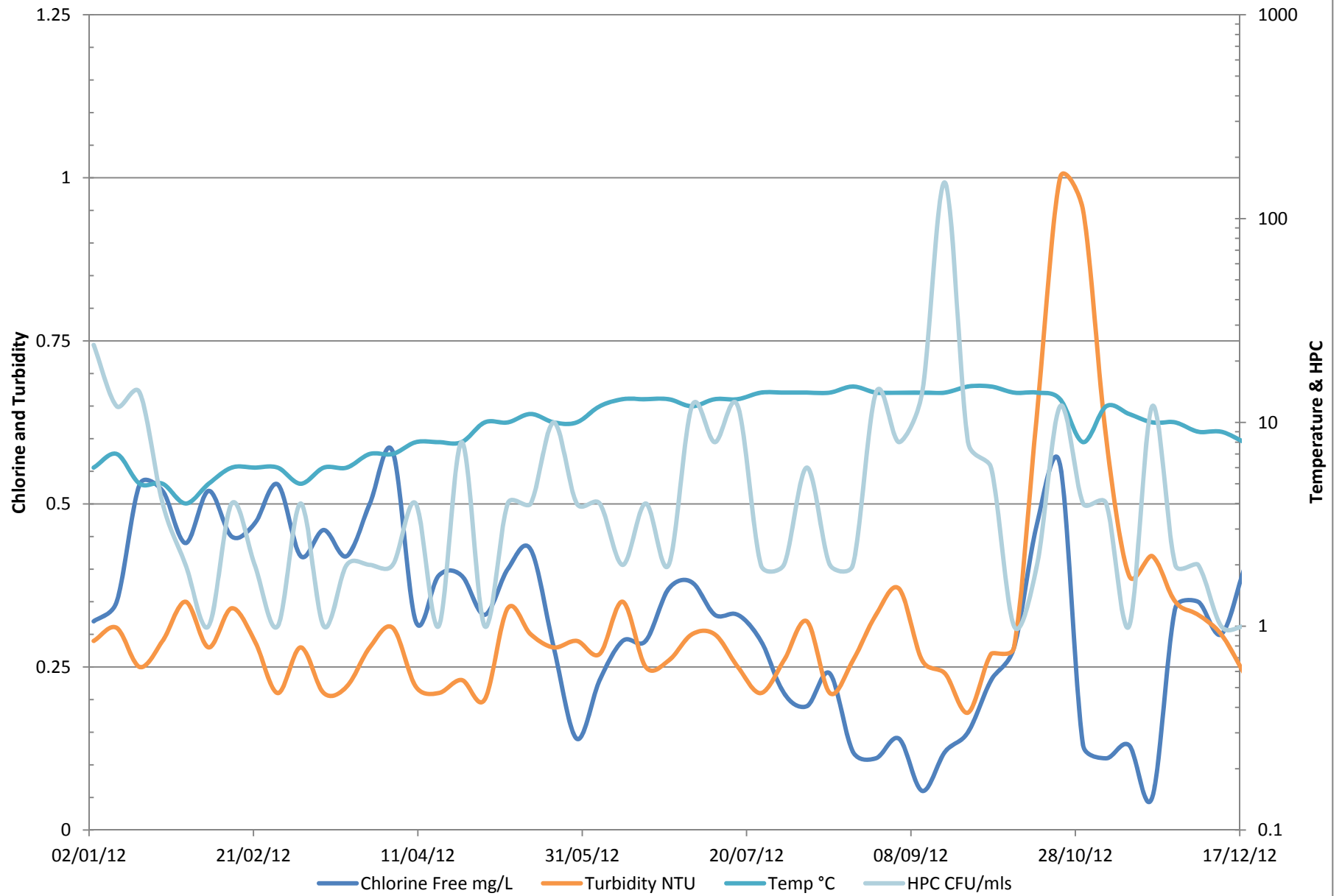
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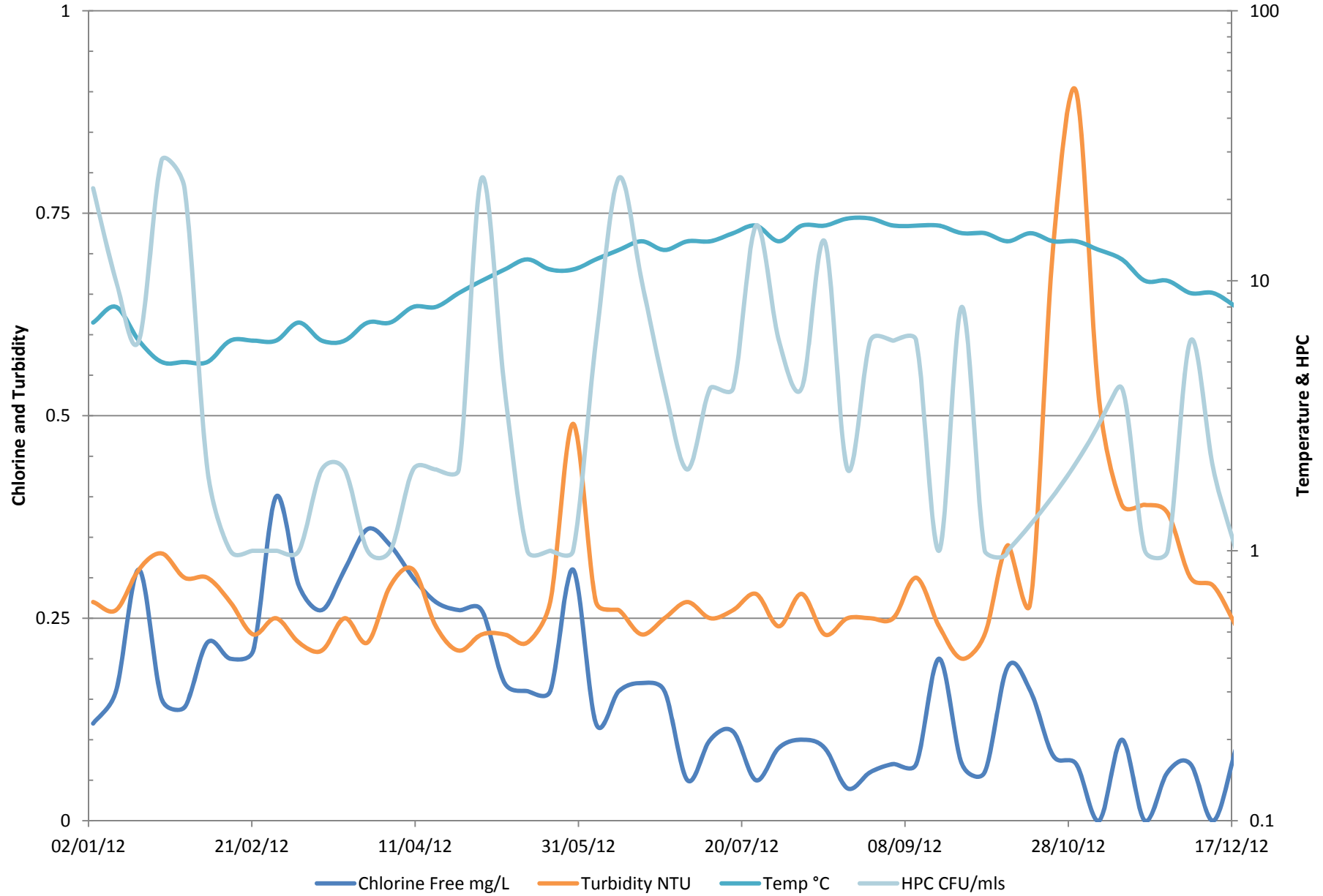
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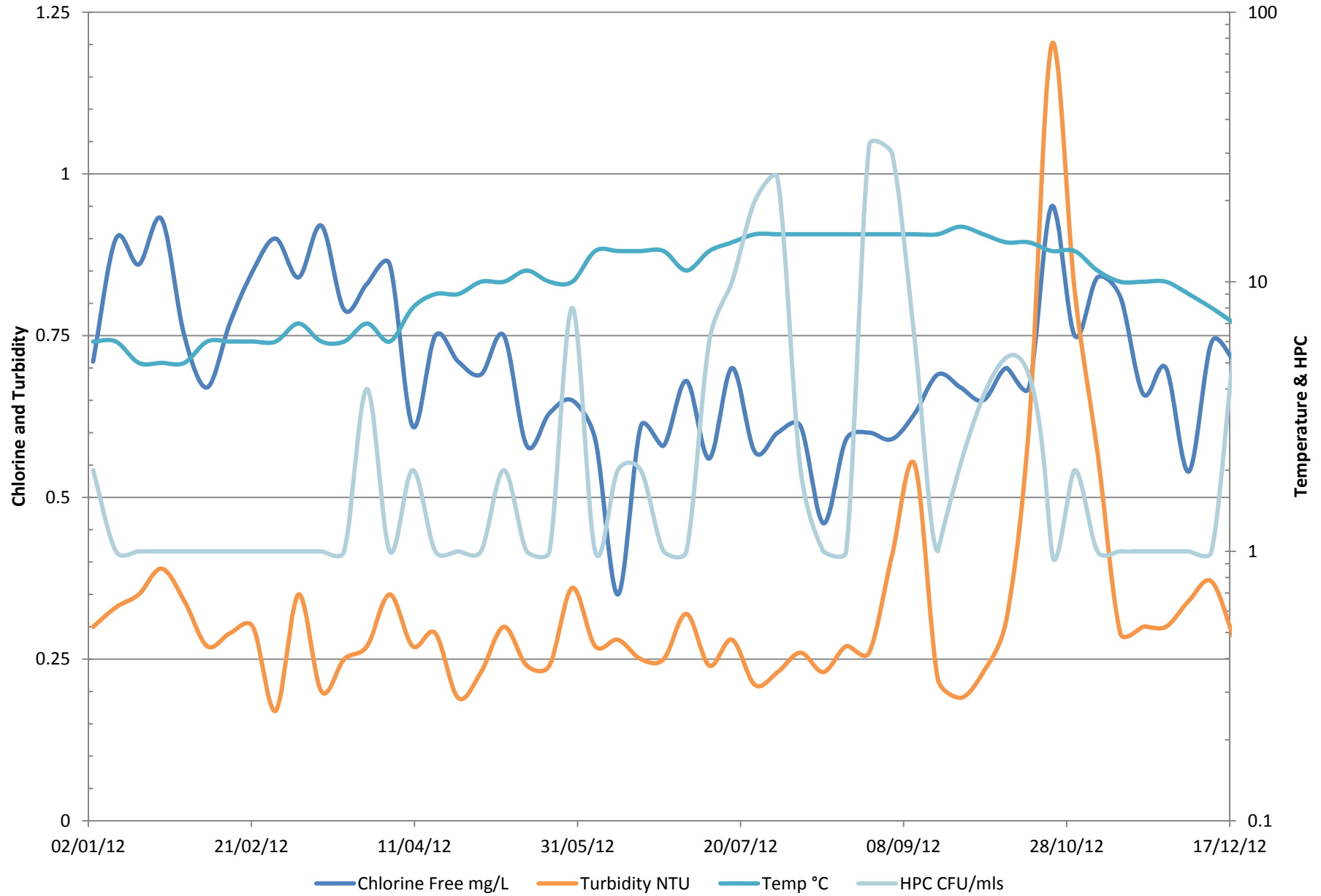
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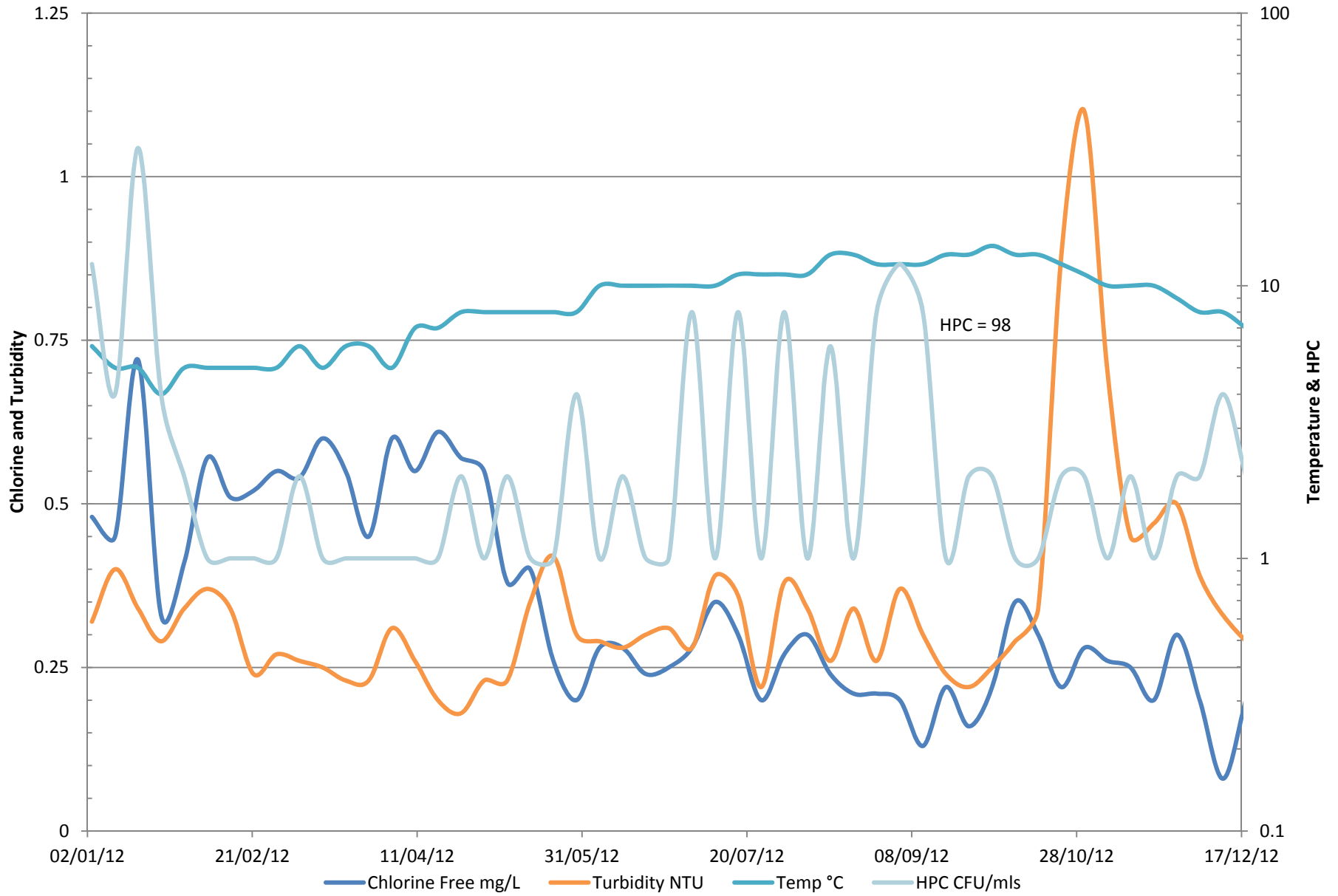
COL-480



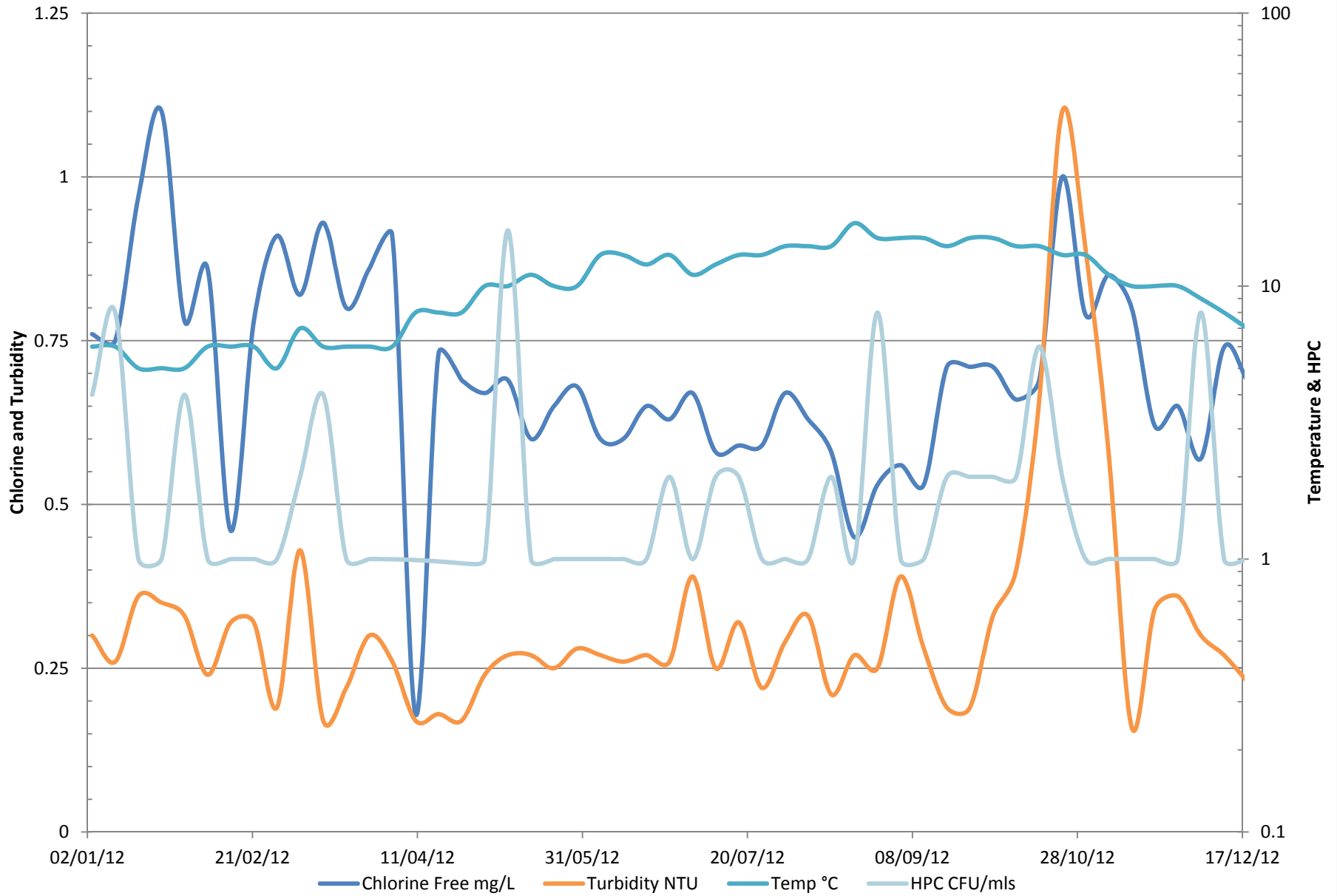
COL-481



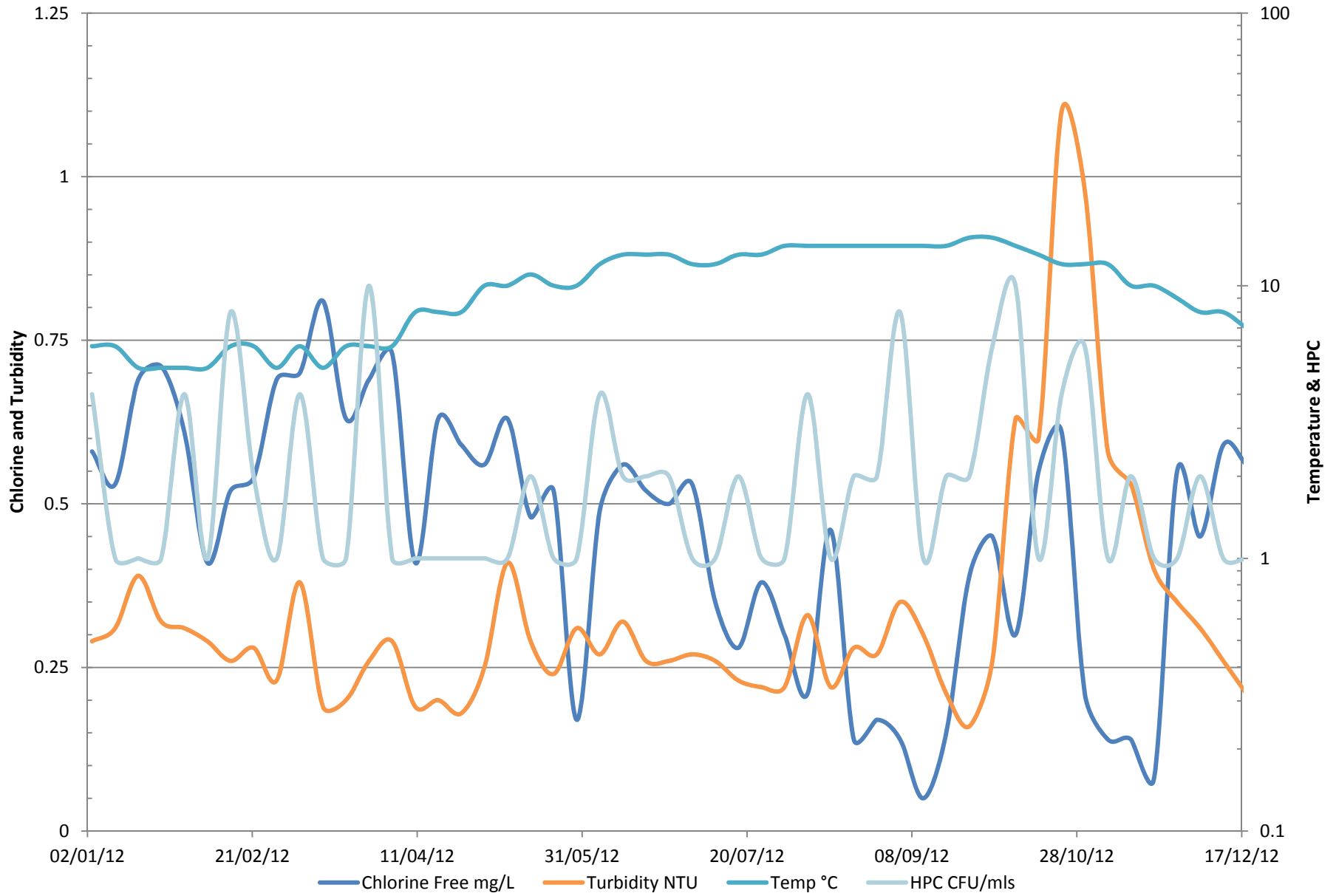
COL-482



COL-483



COL-483





June, 2012

Water System Operators

Re: Metals in Drinking Water – “Flush” Message in Annual Reports

Fraser Health has recently revised its metals at the tap “Flush” message and we are asking all water systems to please include the following health message with your next annual reports to your users.

Anytime the water in a particular faucet has not been used for six hours or longer, "flush" your cold-water pipes by running the water until you notice a change in temperature. (This could take as little as five to thirty seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer.) The more time water has been sitting in your home's pipes, the more lead it may contain.

Use only water from the cold-tap for drinking, cooking, and especially making baby formula. Hot water is likely to contain higher levels of lead.

The two actions recommended above are very important to the health of your family. They will probably be effective in reducing lead levels because most of the lead in household water usually comes from the plumbing in your house, not from the local water supply.

Conserving water is still important. Rather than just running the water down the drain you could use the water for things such as watering your plants.

If you have any questions, please contact our Drinking Water Program at 604-870-7900 or 1-866-749-7900.

Sincerely,

Marc Zubeł
Manager, Drinking Water Program
Health Protection

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Report Transmission Cover Page

Bill To: City of Langley	Project:	Lot ID: 879426
Report To: City of Langley	ID:	Control Number:
5713 - 198 Street	Name:	Date Received: Jul 4, 2012
Langley, BC, Canada	Location:	Date Reported: Jul 6, 2012
V3A 1G5	LSD:	Report Number: 1748589
Attn: Pat Balducci	P.O.:	
Sampled By:	Acct code:	
Company:		

Contact & Affiliation	Address	Delivery Commitments
Accounts Payable City of Langley	20399 Douglas Crescent Langley, British Columbia V3A 4B3 Phone: (604) 514-2800 Fax: (604) 530-4371 Email: n/a	On [Lot Approval and Final Test Report Approval] send (Invoice) by Post M
Pat Balducci City of Langley	5713 - 198 Street Langley, British Columbia V3A 1G5 Phone: (604) 514-2800 Fax: (604) 530-1276 Email: pbalducci@langleycity.ca	On [Lot Verification] send (COA) by Automated Fax On [Report Approval] send (COC, Test Report) by Automated Fax On [Lot Approval and Final Test Report Approval] send (COC, Test Report) by Post M On [Lot Creation] send (COR) by Automated Fax

Notes To Clients:

- Temperature of sample 879426-1 on arrival was 16.0 °C.
- The analysis of water sample 879426-1 is below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the Aug. 5th, 2008 Guidelines for Canadian Drinking Water Quality for the parameters tested.
- Sample 879426-1 was received within one hour of collection. Received temperature is not expected to adversely affect the microbiology results.

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Analytical Report

Bill To: City of Langley	Project:	Lot ID: 879426
Report To: City of Langley	ID:	Control Number:
5713 - 198 Street	Name:	Date Received: Jul 4, 2012
Langley, BC, Canada	Location:	Date Reported: Jul 6, 2012
V3A 1G5	LSD:	Report Number: 1748589
Attn: Pat Balducci	P.O.:	
Sampled By:	Acct code:	
Company:		

Reference Number 879426-1
Sample Date July 04, 2012
Sample Time 08:30
Sample Location
Sample Description Water Sample
Sample Matrix Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments	
Metals Extractable						
Aluminum	Extractable mg/L	0.088	0.005	0.1	Below OG	
Antimony	Extractable mg/L	<0.0002	0.0002	0.006	Below MAC	
Arsenic	Extractable mg/L	<0.0002	0.0002	0.010	Below MAC	
Barium	Extractable mg/L	0.002	0.001	1	Below MAC	
Boron	Extractable mg/L	<0.005	0.005	5	Below MAC	
Cadmium	Extractable mg/L	<0.00007	0.00007	0.005	Below MAC	
Chromium	Extractable mg/L	<0.0005	0.0005	0.05	Below MAC	
Copper	Extractable mg/L	0.002	0.001	1.0	Below AO	
Lead	Extractable mg/L	0.0004	0.0001	0.01	Below MAC	
Selenium	Extractable mg/L	<0.0006	0.0006	0.01	Below MAC	
Uranium	Extractable mg/L	<0.0005	0.0005	0.02	Below MAC	
Vanadium	Extractable mg/L	0.0002	0.0001			
Zinc	Extractable mg/L	0.002	0.001	5.0	Below AO	
Microbiological Analysis						
Total Coliforms	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Escherichia coli	Enzyme Substrate Test	MPN/100 mL	<1.0	1.0	0 per 100 mL	Below MAC
Heterotrophic Count - Aerobic	SimPlate	MPN/mL	<2	2		
Physical and Aggregate Properties						
Turbidity		NTU	0.3	0.1		
Colour	Apparent	Colour units	32	5		
Routine Water						
pH	at 25 °C		7.13		6.5-8.5	Within AO
Electrical Conductivity		µS/cm at 25 C	35	1		
Calcium	Extractable	mg/L	1.8	0.1		
Iron	Extractable	mg/L	0.034	0.005	0.3	Below AO
Magnesium	Extractable	mg/L	<0.1	0.1		
Manganese	Extractable	mg/L	<0.001	0.001	0.05	Below AO
Potassium	Extractable	mg/L	<0.1	0.1		
Silicon	Extractable	mg/L	1.12	0.05		
Sodium	Extractable	mg/L	4.8	0.1	200	Below AO
T-Alkalinity	as CaCO3	mg/L	12	5		
Chloride	Dissolved	mg/L	2.54	0.05	250	Below AO
Fluoride	Dissolved	mg/L	0.03	0.01	1.5	Below MAC
Nitrate - N	Dissolved	mg/L	0.10	0.01	10	Below MAC




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Analytical Report

Bill To: City of Langley	Project:	Lot ID: 879426
Report To: City of Langley	ID:	Control Number:
5713 - 198 Street	Name:	Date Received: Jul 4, 2012
Langley, BC, Canada	Location:	Date Reported: Jul 6, 2012
V3A 1G5	LSD:	Report Number: 1748589
Attn: Pat Balducci	P.O.:	
Sampled By:	Acct code:	
Company:		

Reference Number 879426-1
 Sample Date July 04, 2012
 Sample Time 08:30
 Sample Location
 Sample Description Water Sample
 Sample Matrix Drinking Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Routine Water - Continued					
Nitrite - N	Dissolved mg/L	0.02	0.01	1	Below MAC
Sulfate (SO4)	Dissolved mg/L	0.6	0.5	500	Below AO
Hardness	as CaCO3 mg/L	4	1		
Total Dissolved Solids	Extractable mg/L	21	1		

Approved by: 
 Carol Nam, Dipl. T.
 Quality Officer

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Methodology and Notes

Bill To: City of Langley	Project:	Lot ID: 879426
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5713 - 198 Street	Name:	Date Received: Jul 4, 2012
Langley, BC, Canada	Location:	Date Reported: Jul 6, 2012
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Attn: Pat Balducci	P.O.:	
Sampled By:	Acct code:	
Company:		

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water	APHA	* Alkalinity - Titration Method, 2320 B	04-Jul-12	Exova Surrey
Alk, pH, EC, Turb in water	APHA	* Conductivity, 2510 B	04-Jul-12	Exova Surrey
Alk, pH, EC, Turb in water	APHA	* pH - Electrometric Method, 4500-H+ B	04-Jul-12	Exova Surrey
Alk, pH, EC, Turb in water	APHA	* Turbidity - Nephelometric Method, 2130 B	04-Jul-12	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	04-Jul-12	Exova Surrey
Apparent Color	APHA	* Spectrophotometric - Single Wavelength Method, 2120 C	06-Jul-12	Exova Surrey
Heterotrophic (Standard) Plate Count (Aerobic SP) - Surrey	US EPA	* Approval of Analytical Methods for Chemical and Microbiological Contaminants, CFR40 Part 141	04-Jul-12	Exova Surrey
Metals SemiTrace (Extractable) in water	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	04-Jul-12	Exova Surrey
Total and E-Coli - Colilert - DW	APHA	Enzyme Substrate Test, APHA 9223 B	04-Jul-12	Exova Surrey
Trace Metals (extractable) in Water	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	04-Jul-12	Exova Surrey

* Reference Method Modified

References

APHA Standard Methods for the Examination of Water and Wastewater
 US EPA US Environmental Protection Agency Test Methods

Guidelines

Guideline Description Health Canada GCDWQ
 Guideline Source Guidelines for Canadian Drinking Water Quality, Health Canada, May 2008
 Guideline Comments MAC = Maximum Acceptable Concentration
 AO = Aesthetic Objective
 OG = Operational Guideline for Water Treatment Plants
 Refer to Health Canada GCDWQ for complete guidelines and additional drinking water information at www.hc-sc.gc.ca

Comments:

- Temperature of sample 879426-1 on arrival was 16.0 °C.
- The analysis of water sample 879426-1 is below Maximum Acceptable Concentrations for the chemical and bacteriological health related guidelines specified by the Aug. 5th, 2008 Guidelines for Canadian Drinking Water Quality for the parameters tested.
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Methodology and Notes

Bill To:	City of Langley	Project:	Lot ID:	879426
Report To:	City of Langley	ID:	Control Number:	
	5713 - 198 Street	Name:	Date Received:	Jul 4, 2012
	Langley, BC, Canada	Location:	Date Reported:	Jul 6, 2012
	V3A 1G5	LSD:	Report Number:	1748589
Attn:	Pat Balducci	P.O.:		
Sampled By:		Acct code:		
Company:				

The comparison of test results to guideline limits is provided for information purposes only. This is not to be taken as a statement of conformance / nonconformance to any guideline, regulation or limit. The data user is responsible for all conclusions drawn with respect to the data and is advised to consult official regulatory references when evaluating compliance.

Please direct any inquiries regarding this report to our Client Services group.
Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.