Detailed Water Quality Report 2013

Reporting May 2012 thru April 2013

Central Lake County Join Action Water Agency

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Taking Water To A Higher Standard

The Central Lake County Joint Action Water Agency (CLCJAWA) is required under state and federal law to monitor water quality. While we carefully do so, we go above and beyond by voluntarily monitoring for hundreds more compounds. This is done with automatic instrumentation every 10 seconds, manually by our certified lab analysts and independently by certified testing laboratories.

Because we more frequently test for many more compounds, and because we use more sensitive test methods in many cases, we detect more compounds than others might report. These compounds are expected to be found in most drinking water originating from the Great Lakes. Public water supplies are required to issue a water quality report, termed the Consumer Confidence Report or CCR, each year. The CCR is composed of mandated language and lists only regulated contaminants in contrast with this "Detailed Water Quality Report" that lists both regulated and unregulated compounds that we detect. It should be noted that bottled water companies are not required to issue water quality reports.

The drinking water at CLCJAWA meets all drinking water standards. The compounds detected in our drinking water do not exceed drinking water standards. We have set more stringent goals to assure a consistent water quality that is better than mandated drinking water standards. You may independently verify our performance by visiting the Illinois Environmental Protection Agency (IEPA) "Drinking Water Watch" website at http://www.epa.state.il.us/water/drinking-water-watch/.

NEW TESTING ON THE HORIZON

The Environmental Protection Agency (EPA) is continually researching and studying possible contaminants that may be found in our Nation's water sources and their effects on our health. The Unregulated Contaminant Monitoring Rule (UCMR) program was developed in coordination with the Contaminant Candidate List (CCL). The CCL is a list of contaminants that are not regulated by the National Primary Drinking Water Regulations; are known or anticipated to occur at public water systems; and may warrant regulation under the Safe Drinking Water Act. Data collected through UCMR support analysis and review of contaminant occurrence, guide the CCL selection process, and support the determination of whether to regulate a contaminant in the interest of protecting public health. Thirty possible contaminants are now being tested in water systems throughout the United States but here at CLCJAWA we have been testing for over 20 of these contaminants for the last 10 years prior. We will continue to test rigorously all possible UCMR contaminants to ensure the safest water possible

Compounds Detected At CLCJAWA

All Drinking Water Regulations were Met this Year for Testing Completed from May 2012 thru April 2013

	Compound	Unit of Measure	Date Tested	MCL	Untreated Lake Michigan Water	Treated Drinking Water	Drinking Water In Pipe To Customer
Regulated Compounds Detected	Barium	ug/L	7/5/2012	2000	--	19.7	--
	Bromate	ug/L	quarterly	10	--	2.4 - 3.7	--
	Chlorine, free	mg/L	daily	4	--	0.81	0.78
	Chlorine, total	mg/L	daily	4	--	0.94	--
	Combined Radium 226/228	pCi/L	8/21/2012	5	--	0.88	--
	Fluoride	mg/L	monthly	4	--	0.8 - 1.0	--
	Nitrate as (N03) calculated	mg/L	4/8/2013	10	--	0.43	--
	Sodium (Na)	mg/L	7/5/2012	None	--	8	--
	Sulfate	mg/L	7/5/2012	250	--	25	--
	Total Haloacetic Acids (THAA-5)	ug/L	quarterly	60	--	--	1.8 - 10.4
	Total Trihalomethanes (TTHM-4)	ug/L	quarterly	80	--	--	5.2 - 11.5
Unregulated Compounds Detected	Assimilable Organic Carbon	ug/L	5/7/2012	NR	73	84	--
	Bromodichloromethane	ug/L	quarterly	NR	--	--	1.7 - 6.1
	Bromoform	ug/L	quarterly	NR	--	--	1.2 - 1.3
	Chloroacetic Acid	ug/L	quarterly	NR	--	--	2.2
	Chloroform	ug/L	quarterly	NR	--	--	1.3 - 5.8
	Chromium, Hexavalent	ug/L	quarterly	UCMR	0.20 - 0.29	0.10 - 0.26	--
	Cotinine	ug/L	5/7/2012	NR	0.002	0.001	--
	Dibromoacetic Acid	ug/L	quarterly	NR	--	--	1.4 - 2.4
	Dibromochloromethane	ug/L	quarterly	NR	--	--	2.1 - 5.0
	Dichloroacetic Acid	ug/L	quarterly	NR	--	--	1.8 - 4.0
	Perfluorooctane Sulfonate (PFOS)	ng/L	3/11/2013	UCMR	2.4	2.1	--
	Perfluorooctanoic Acid (PFOA)	ng/L	3/11/2013	UCMR	2.7	2.7	--
	Progesterone	ng/L	5/7/2012	NR	0.1	ND	--
	Sulfamethoxazole	ug/L	5/7/2012	NR	0.001	ND	--
	Total Organic Carbon	mg/L	monthly	NR	1.1 - 2.1	1.1 - 1.5	--
	Trans-Testosterone	ng/L	5/7/2012	UCMR	0.2	ND	--
	Trichloroacetic Acid	ug/L	quarterly	NR	--	--	1.76
Water Chemistry	Alkalinity	mg/L	monthly	NR	105 - 127	91	--
	Conductivity	uS/cm	weekly	NR	299	307	--
	Hardness	mg/L	monthly	NR	126	125	--
	pH	None	daily	6.5-8.5	8.3	7.8	7.8
	Turbidity	NTU	hourly	5	13.2	0.02	0.02

- MCL is the maximum contaminant level allowed by state regulations.
- Units of Measure include mg/l or milligrams per liter, which is the same as parts per million or PPM. Micrograms per liter is noted as ug/l and is equal to part per billion (PPB).
- NR depicts compounds that are not regulated by the Federal or State Government.
- ND depicts compounds that were not detected during the testing process.
- — indicts no reportable data.
- UCMR are compounds that are unregulated at this time but the Federal Government is conducting research to determine if they should be regulated and at what level.

WHAT ARE REGULATORY COMPOUNDS

Regulated compounds have been shown to impact health when they exceed regulations. The maximum level allowed in water is set by the Environmental Protection Agency (EPA). It is set at a level that assures the tap water is safe to consume over a lifetime. Unregulated compounds are those that the EPA does not believe pose a health threat in drinking water or are still being evaluated.

We are regulated by the Illinois Environmental Agency (IEPA) as are all drinking water plants in Illinois. The IEPA lists about 100 compounds that we must test for on an annual basis in our water. These compounds are the regulated compounds. We also voluntarily test our water for more than 350 additional compounds that are unregulated. We do this to better understand our water quality and the performance of our water treatment process.

Page 3 of this report contains information regarding all compounds found in our water. For in depth information about all the compounds in this report please visit the Environmental Protection Agency website at www.epa.gov/drink/contaminants/index.cfm

Regulated Compounds Detected in our Water

What Each Compound is and its Entry into our Water System

NATURALLY OCCURRING COMPOUNDS DETECTED

Barium

Barium is present fairly consistently in Lake Michigan water at concentrations of about 0.02 mg/L or about 100 times less than the maximum allowed level in drinking water. The source is believed to be from erosion of natural deposits though barium is found in air, soil and water throughout the world.[11]

Minerals

Sodium and sulfate are present primarily due to erosion of soils and rock. These minerals are not viewed as a health concern by the USEPA.

Nitrates

Nitrate is present in nearly all lakes and streams including Lake Michigan, whose primary source is from rainfall and the break-down of organic matter. It may also enter through runoff from agricultural sources. [2] We detected 0.43 mg/L of nitrate in our tap water and the maximum level allowed is 10 mg/L.

Radiological Substance

We detected radium 226 & 228. Their source in Lake Michigan is most likely from decay of minerals in the lake and its watershed. Most drinking water sources contain these radioactive compounds at levels which are not considered a public health concern.[6] Everywhere we look in the environment we find naturally occurring "background" radiation.[7] Cement and drywall for example emit a bit more radiation per gram than the background levels found in Lake Michigan water.[8] Although the levels detected present no known health risk, the EPA has established an ideal goal of zero for these substances.

Turbidity

Turbidity is a measure of water clarity; the lower the number, the clearer the water. This measurement is one of the most important measurements in water treatment, so important that we measure it automatically at 20 different locations every 10 seconds. The maximum turbidity allowed in Illinois is 5 nephelometric turbidity units (NTU). Our turbidity is so consistently low that we were the first water treatment plant of our kind in the United States to win the Drinking Water Excellence Award from the Partnership for Safe Water. The Partnership is a voluntary program, co-sponsored by the USEPA, that sets the highest drinking water standards and independent review of treatment performance.

TREATMENT RELATED COMPOUNDS DETECTED

Chlorine

The Illinois EPA requires that public water supplies chlorinate their water. They require a chlorine level between 0.2 and 4.0 mg/L. We strive for a does of 1 mg/L or the equivalent of one pound of chlorine per one million pounds of water. The term free chlorine indicates the chlorine we measured that is not chemically bound to anything. Total chlorine is the sum of free chlorine and bound or combined chlorine. Combined chlorine is the fraction of chlorine that binds with other substances in the water after it is added. Both forms are effective disinfectants.

Fluoride

The Illinois Department of Public Health require that public water supplies add fluoride to their water.[17] Fluoride levels between 0.8 and 1.2 mg/L are optimum for dental health.

Bromate

Bromate is produced in water during ozone disinfection. Ozone is used in drinking and bottled water production to kill germs and eliminate odors in water. During this process, ozone reacts with harmless bromide in the water and forms bromate. High levels of bromate can increase the risk of cancer. The EPA has determined that an annual average level below 10 ug/L in drinking water is protective of public health but encourages water producers to strive for zero. We operate our system to maximize ozone and minimize bromate formation, ranging from 2.4 - 3.7 in the last year. Bromate has been used in bread baking as a dough conditioner for years and is still permitted by the FDA.[11]

Disinfection Byproducts

We detected total haloacectic acids (THAA) and total trihalomethanes (TTHM). These compounds form in water when chlorine reacts with naturally occurring organic compounds in the water. [16] These organic compounds enter the lake water from the plants and animals that live in this habitat, and from watershed runoff into the lake. The levels found in our tap water are well below those allowed by the EPA. They can vary slightly from community to community and as a result are also monitored by each village.

OPEN DOOR PHILOSOPHY AT CLCJAWA

Here at CLCJAWA we take water treatment very seriously and strive to keep the public informed. From providing a detailed water quality report to opening up our doors for public tours, we make our data and our facilities accessible to all. CLCJAWA has been providing tours free of charge to all that enjoy our water.

Tours need to be scheduled in advance and include a brief presentation about our Lake Michigan source water, followed by a tour of the drinking water facilities. Additional activities can be added such as filtration experiments and water quality testing. Typically a tour lasts 1-1.5 hours but additional projects will lengthen the time needed. Schools, Boy/Girl Scouts, Organizations, and inquisitive customers have all experienced our state of the art facility. Interested in seeing for yourself? Just contact Melissa Olenick to set up your visit today.

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Unregulated Contaminants Detected in Our System

Unregulated Organic Carbon

These compounds include assimilable organic carbon and total organic carbon. Both are general measurements of naturally occurring organic carbon found in water. These compounds enter the water from the plants and animals that live in this habitat and from watershed runoff into the lake.

Hexavalent Chromium

Total Chromium refers to chromium in primarily two forms, the micro-nutrient chromium-3 and the pollutant chromium-6 or hexavalent chromium.[12] In distribution systems, chromium -3 in the presence of chlorine, can be converted to chromium-6, which is a more toxic form. Hexavalent chromium was detected at a concentration of 0.0003 mg/L, more than 100 times lower than the level of total chromium considered protective of public health by the USEPA.

Unregulated Water Treatment Compounds

TTHM compounds are regulated as a group as discussed previously, but are not regulated individually. However, the EPA has set non-enforceable ideal goals for these compounds. These individual compounds include bromodichloromethane, bromoform, chloroform, chlorodibromomethane and dibromomchloromethane.

Like TTHM, THAA are regulated collectively and not individually. However, some of the individual compounds do have ideal goals set by the EPA as well.. Detected individual HAA compounds include chloroacetic acid, dibromacetic acid and trichloroacectic acid.

Unregulated Emerging Contaminants

These compounds are present in trace concentrations or the part-per-trillion level. The only emerging contaminants we detected in our drinking water were cotinine, PFOA and PFOS.

Cotinine is produced in the human body after exposure to nicotine. It is most likely present in treated waste water discharged into Lake Michigan.

PFOA, also known as "C8" is produced during production of chemicals that are heat and chemical resistant. For example, PFOA is formed in the manufacture of non-stick surfaces on cook ware.[15]

PFOS is an ingredient in fire fighting foam and was an ingredient in Scotch Guard fabric protector. The source of this compound in Lake Michigan is not well understood. What is understood is that this compound is present in homes, throughout the environment and in nearly every human tested.' The health impact of these pervasive compounds is still being evaluated by many researchers and the US EPA has set a provisional PFOS health advisory of 0.0002 mg/L in drinking water. Water in Lake Michigan currently appears to have levels approximately 80 times lower than these advisories.

Progesterone and **Trans-Testosterone** are the major hormones that are naturally occurring in the human body. Many take prescriptions for hormone treatment and the unmetabolized product may be passed in waste material and eventually out to our water sources. Both hormones are detected in minute quantities in our source water but are removed during the treatment process.

Sulfamethoxazole is a prescription antibiotic most commonly used to treat urinary tract infections, streptococcus, staph infections, E. coli and oral anerobes. It is detected at low levels in Lake Michigan water but is removed during treatment.

LAKE MICHIGAN WATER: What We DON'T Find

Of the hundreds of compounds we test for each year, we **do not and have never detected** weed killers (herbicides) or bug killers (pesticides), solvents, plasticizers (chemicals found in plastic bottles), cleaning compounds, oils, volatile organic chemicals, mercury, lead and PCB (polychlorinated biphenyl) among hundreds of other more obscure compounds. Please feel free to contact us for a detailed list of all the compounds that we test for. If there is a chemical we have not tested for that you are concerned about please call or email us.

Have A Compromised Immune System?

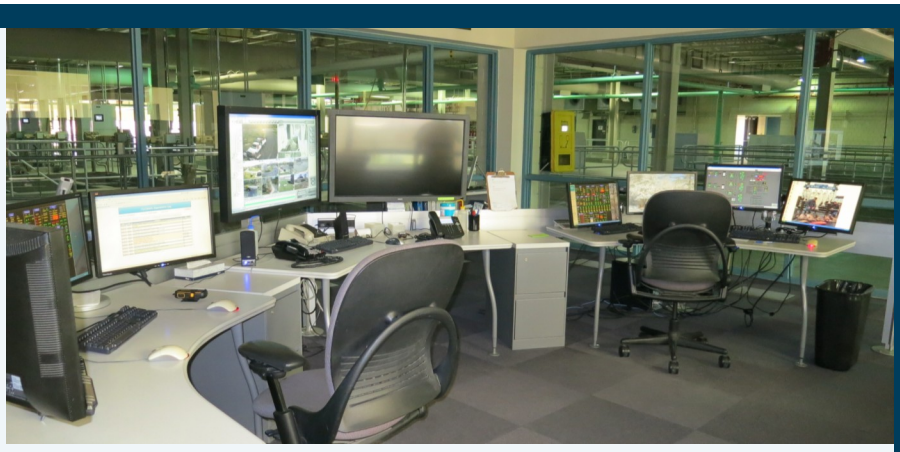
Some people may be more vulnerable to contaminants in tap or bottled water than the general population. People with severely compromised immune systems, such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. The people should seek advice about drinking water from their health care providers. [5]

Where are the Contaminants Coming From?

One potential source is unused or expired pharmaceuticals that are flushed into our sewer system. When flushed down sinks or through sewage systems, medications and personal care products pollute our rivers, lakes and streams which in turn, pollutes our water source and endangers the aquatic life living in them. Additionally, flushed pharmaceuticals can kill beneficial bacteria responsible for breaking down waste which can result in damaged septic systems. The best method of disposal is to take your products to a local household chemical waste collection in your county where they can be processed and disposed of safely. The Solid Waste Agency of Lake County (SWALCO) and Central Lake County Joint Action Water Agency (CLCJAWA) are asking residents to participate in the safe disposal of unwanted or expired medications and personal care products in order to protect our water resources.

SWALCO holds household chemical waste (HCW) collections which accept a variety of waste products including pharmaceuticals and personal care products. The free collections are held for Illinois residents periodically throughout the year at various locations in Lake County. Visit www.swalco.org or call 847-336-9340 for upcoming HCW collections.

OUR COMMITMENT TO QUALITY



- We test for hundreds more compounds than other purveyors of water
- Some of the compounds of public concern are not regulated and there are typically no approved test methods for unregulated compounds. We seek laboratories that have scientifically defensible test methods when no approved test method is available.
- We report EVERY compound we detect in our water, regulated or not.
- We seek testing labs that have low detection limits which means we detect more compounds than those manufacturers who use labs whose testing methods are not as sensitive.
- We test for compounds more often because frequent testing increases the chance that we will detect potential compounds and provides us with a more accurate portrayal of water quality.

References and Resources

1 Visit http://www.epa.state.il.us/water/drinking-water-watch/ Our Water System Number is 0971070.

2 Bullers, AC. "Bottled Water: Better Than Tap?" *FDA Consumer Magazine*, 7/8-2002.

3 USEPA. "Water Health Series: Bottled Water Basics". September 2005. Retrieved 4/27/11.

4 Gleick, P. & Cooley, H. "Energy Implications of Bottled Water". *Environ. Res. Lett.* 4 (2009). Retrieved 4/27/11. http://www.stacks.iop.org/ERL/4/014009

5 USEPA. "Ground and Drinking Water Frequently Asked Questions". Retrieved 2/27/09.

6 USEPA. "Basic Information about Radionuclides in Drinking Water". The Office of Ground Water and Drinking Water. Retrieved 4/27/11.

7 "Open Source Radiation Safety Training. Module 2: Background Radiation and Other Sources of Exposure". Princeton University, Environmental Health & Safety. Retrieved 4/27/11.

8 Fenner, R. "Bulk Survey for Release (BSFR) Program". Tennessee Department of Environment and Conservation. Division of Radiological Health. Presentation to Solid Waste Advisory Committee. July 5, 2007. Retrieved 4/27/11.

9 USEPA. "Arsenic in Drinking Water". Retrieved 4/27/11. http://water.epa.gov/lawsregs/rulesregs/sdwa/arsenic/index.cfm

10 Ngrigu, J.O.& Simmons, M.S. Toxic Contaminants in the Great Lakes. John Wiley & Sons, New York. 1984.

11 "The Food Processing Center – Food From Thought". University of Nebraska-Lincoln. Retrieved 4/27/11.

12 National Academies, Institute of Medicine, Food and Nutrition Board. "Dietary Reference Intakes (DRI's): Recommended Dietary Allowances and Adequate Intakes, Elements." Retrieved 4/27/11.

13 Bowen, H. Environmental Chemistry of the Elements. Academic Press, New York. 1979.

14 Gropper, Sareen et al. Advanced Nutrition and Human Metabolism, Fifth Ed. Wadsworth, Belmont, CA. 2009.

15 Solomons, N. et al. "Bioavailability of Nickel in Man". *Journal of Nutrition*. 1982. 112:39-50.

16 USEPA. "Stage 2 Disinfectants and Disinfection Byproduct Rule (Stage 2 DBP rule). Retrieved 4/27/11.

17 "57 Years Ago in IDPH History". Illinois Department of Public Health. Retrieved 4/27/11.

18 Strynar, M.J. & Lindstrom A.B. "Perfluorinated Compounds in House Dust from Ohio and North Carolina, USA". *Environmental Science and Technology*. 2008 May 15; 42(10):3751-6.

19 Personal Communication with Dr. Lynn Goldman of Johns Hopkins Bloomberg School of Public Health 9/12/08.

20 Becker, A. et al. "Perfluorooctane surfactants in waste waters, the major source of river pollution". *Chemosphere*. 2008 May, 72(1):115 -121.

21 Personal Communication with Dr. Magie Peden-Adams in the Department of Pediatrics, Medical University of South Carolina 9/13/08.

22 USEPA Letter dated 1/8/09. "Provisional Health Advisories for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS).

23 Minnesota Department of Health. "Perfluorochemicals and Health". January 2009. Retrieved 4/27/11. http://www.health.state.mn.us/divs/eh/hazardous/topics/pfcshealth.html

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	Internal Memorandum **January 21, 2013**

To:	Darrell Blenniss - Executive Director
From:	Bill Soucie - Director of Operations
Re:	Lake Michigan Water Levels

Lake Michigan water levels are nearing a record low level. What does this mean for CLCJAWA?

Lake Michigan Water Balance

First, it is important to understand the water balance in Lake Michigan.[1] Water enters the lake primarily through precipitation and runoff (+73%) and from Lake Superior (+27%). Water leaves the lake via Huron on its way to Lake Erie (-68%) and through evaporation (-31%).

Weather Affects Water Levels

It is clear from these factors that weather has a significant impact on lake level and most critical of all is precipitation in the Lake Superior and Lake Michigan watershed. The lake's level cyclically fluctuates during the year with typical high and low levels in July and February respectively. Snowmelt and humid air over cold water contribute to high summertime lake levels. Dry fall and winter air over relatively warm water leads to increased evaporation and low wintertime lake levels. It is estimated that 26,500 million gallons per day (MGD) evaporate from Lake Michigan.[2] At CLCJAWA, we pump approximately 20 MGD or 0.08% of that total.

Last year we experienced a "double-whammy"; record warm lake levels during the winter (increasing evaporation output) and a draught (decreasing precipitation input).

Where Are We Now?

The lake is at record low levels. On January 18, 2013 the Army Corp reported an average 576.0 foot lake level. The long-term average for the month of January is 578.3 feet and the all-time (from 1918 - 2011) low is 576.10 feet, occurring in 1965.[3,4,5] The Army Corp is projecting that the lake will drop an additional 1-inch in the next month and then begin their typical spring rebound.

For some perspective, record high January lake levels last occurred in 1987 at 581.30, a 62-inch difference from the record low level.

Lake Levels Impact CLCJAWA Intake Capacity

CLCJAWA's intake sits about 22 feet below the lake surface. And while there is no concern that the lake will drop this far, the lower the lake's water level, the lower the water pressure and water movement through the intake. Because of this, the intake was designed assuming the historical summertime low lake level of 576.55 feet, resulting in an intake capacity of 40 MGD.[6] In producing water at the water plant we consume approximately 2 MGD. Combined with the intake capacity, this means that our overall plant capacity at low lake level is 38 MGD. At this time, we are approximately one-half foot below this level. The Army Corp is predicting a continued drop of approximately 1 inch and then a slow rise as we move into spring. Should water levels continue to drop, a decreased intake capacity may be realized and will be dependant on the friction losses (the C-Factor) CDM-Smith has assumed for the intake pipe. At this time, we expect to have sufficient intake capacity to meet the demands of our existing member communities.

What if Lake Levels Continue to Fall?

Long term, Lake Michigan levels have fluctuated significantly going back to 1860[8] . It is anticipated that the Lake will rebound to normal levels as it has in the past. However, if we are not able to meet demand due to intake capacity limitations we may chose to open emergency inlets #1 (1000' from shore) and #2 (2000' from shore) in order to increase intake capacity.

We may also choose to schedule construction of the second intake sooner than planned in the CIP. The current schedule calls for engineering and design to begin in FY 2017 with construction slated for 2020. The new intake is planned to go further into the lake and into deeper water.

What if New Member Communities Join CLCJAWA?

New members would move-up the need for construction of the second intake. The intake design would obviously take into consideration any new record low lake levels and future Army Corp projections. Together, the second intake and original intake would provide sufficient capacity for existing and projected new members.

What are the Impacts of Climate Change?

The impact of global warming trends and climate change on the Great Lakes remain uncertain. Climate models predict that Great Lakes water levels will continue to drop, remain the same, or even will rise with increasing precipitation.[9, 10] Whatever the regional climate impacts are, they will affect both groundwater and surface water supplies.

Just How Big is Lake Michigan?

- Lake Michigan is the largest lake in the world to lie completely within one country's borders and is also therefore the largest lake in the United States.
- Lake Michigan contains 1.3 quadrillion gallons of freshwater and is 923 feet deep.
- Lake Michigan is the 6th largest fresh or saltwater lake in the world, by volume.
- Lake Michigan is twice the size of Massachusetts at 307 miles long and 118 miles wide.
- Lake Michigan water is consumed by approximately 8.5 million people in Illinois alone.[11]

1. Impacts on Upper Great Lakes Water Levels: St. Clair River, Summary Report. International Joint Commission, May 2009.

2. Our Waters - Great Lakes Water Balance. University of Wisconson - Milwaukee and Great Lakes Water Institute. Date not specified.

3. Great Lakes Water Levels (Feet). http://www.lre.usace.army.mil/hh/GreatLakesWaterLevels/GLWL-CurrentMonth-Feet.pdf. Retrieved 10/22/2012.

4. Final 2011 and Long-Term (1918-2011) Mean, Max & Min Water Levels. http://www.lre.usace.army.mil/_kd/Items/actions.cfm?action=Show&item_id=6281&destination=ShowItem. USACE. Retrieved 10/22/12

5. Lakes Michigan-Huron Water Levels - October 2012. http://www.lre.usace.army.mil/_kd/Items/actions.cfm?action=Show&item_id=3885&destination=ShowItem. USACE. Retrieved 10/22/12.

6. CDM used NGVD datum and lake levels are reported in IGLD datum. 577.3 feet NGVD 1929 - 0.752' = IGLD 1985. *CLCJAWA Capacity Assessment Report*, 2005.

7. Assumes a C-Factor of 100

8. Lake-Level Variability and Water Availability in the Great Lakes.http://www.ijc.org/loslr/en/library/Environmental/08c%20Lake%20level%20variability%20and%20water%20availability%20in%20the%20Great%20Lakes-3.pdf. International Joint Commission. Retrieved 1/21/2013.

9. Climate Change Models. http://www.seagrant.wisc.edu/Home/Topics/CoastalEngineering/Details.aspx?PostID=632 . University of Wisconsin Sea Grant Institute. Retrieved 1/21/13.

10**.** NOAA study points to less water loss in future Great Lakes levels. http://www.noaanews.noaa.gov/stories2011/20111019_glerlwaterlevels.html. NOAA. Article from 10/19/11. Retrieved 1/21/13.

11. Lake Michigan Monitoring Program. http://www.epa.state.il.us/water/surface-water/lake-michigan-mon.html IEPA. Retrieved 1/21/13.

Central Lake County
Joint Action Water Agency

Chromium Information Sheet

What is chromium?
Chromium is an element found in our environment. It exists in two primary forms called trivalent chromium or chromium-3 and hexavalent chromium or chromium-6.

Where does chromium come from?
Chromium-3 is found worldwide in air (from smelters, dust, seawater & cigarette smoke), water (from electroplating processes, tanneries, textile manufacturing), soil (occurs naturally in rock and as a result of land disposal) and food (especially meats, vegetables and unrefined sugar). It is a micro-nutrient used by the human body. Chromium-6 exists naturally and is also an industrial pollutant. Its source in Lake Michigan is not yet known though metal refineries are suspected by some. Chromium-6 is found in contaminated air, water and though very few studies exist for food, was found in white and whole wheat bread.

Are there regulations for chromium?
Yes. Chromium is regulated by the United States Environmental Protection Agency (USEPA) in drinking water. The Illinois EPA has adopted the USEPA standard. This standard then applies to all public water supplies in Illinois.

The regulation for chromium is 100 micrograms per liter (also known as parts per billion). This regulation is for both chromium-3 and chromium-6 added together. In other words, under current regulations, a water supply is deemed safe as long as the sum of chromium-3 + chromium-6 is less than 100 parts-per-billion.

Does CLCJAWA test for total chromium?
Yes.

Does CLCJAWA test for chromium-6?
Yes. Though it is not required, the US EPA asked all water utilities nationwide to test their water for chromium-6 in January 2011. CLCJAWA responded by initiating quarterly testing that month.

What levels of chromium are being detected?

CLCJAWA Finished Water Chromium Data
Note that all values are micrograms per liter (parts-per-billion).

Date	Total Chromium	Chromium-6
2006	7	Not determined
2007	Not detected	Not determined
2008	Not detected	Not determined
2009	Not detected	Not determined
2010	1	Not determined
1/20/2011	Not determined	0.28
4/19/2011	Not detected	0.23
7/28/2011	Not detected	0.27

Does CLCJAWA water meet all drinking water standards including chromium?
Yes.

Are other Lake Michigan utilities testing for chromium-6?
Yes. Evanston, Chicago and Milwaukee have found levels nearly identical to CLCJAWA.

Have any public water supplies in Lake County tested for chromium-6?
We have been in contact with the Illinois EPA and are not aware of any.

What can Lake Michigan supplies do about chromium-6?
Currently no action is warranted. Because chromium-6 levels relatively low in Lake Michigan water, the most likely treatment option is reverse osmosis. This technology is exceedingly expensive to install and operate. The City of Evanston's water plant, just slightly larger than CLCJAWA, has estimated a cost of 110 million dollars to convert their plant. It is our current belief that the public would be unwilling to fund such improvements unless chromium-6, at the levels detected, posed a public health risk. Currently, the science does not indicate that is the case.

How does CLCJAWA communicate this information with the public?
CLCJAWA has a very aggressive testing program testing for hundreds more compounds, every year, than required by regulation. All of this information is available on our web site. In fact, the above table is on the Agency's web site in addition to special water quality reports that discuss any and all compounds we detect in water, regulated or not. In addition, we have studied the topic and are available to answer public inquiries.

Did CLCJAWA receive public feed-back regarding chromium-6 stories in the press?
Yes, we fielded approximately three calls from residents from the first reports of chromium-6 in December through the Chicago Tribune article on hexavalent chromium in mid August.

Why is chromium in the news?
The State of California adopted a chromium-6 public health goal of 0.02 parts-per-billion on July 27, 2011. This is the equivalent of ⅓ ounce of chromium-6 in one billion pounds of water. The goal is based primarily on oral exposure studies in rats and mice conducted by the National Toxicology Program. Because this goal is very low and because 89% of public water utilities exceeded this goal in one study, some organizations are sounding an alarm.

What is the difference between a public health goal and and a water quality standard?
In sounding the alarm, some organizations have confused the difference between a goal and a standard. The USEPA defines a goal as the level of a contaminant below which there is no known or expected health effect. Goals are established when their attainment is not technically and/or economically feasible. A standard, by contrast, is defined as the highest level of a contaminant that is allowed in drinking water. A standard is something that must be achieved by a water utility and is legally enforceable.

Where can I find more information?
The California Environmental Protection Agency released a document titled "Hexavalent Chromium (Cr VI)" in July 2011. It is found here:

http://oehha.ca.gov/water/phg/pdf/Cr6PHG072911.pdf

Is CLCJAWA's water safe to drink?
Yes.

8/24/2011