

**CITY OF KALAMAZOO
APPLICATION FOR A WATER WITHDRAWAL**

**PERMIT DECISION
And
RESPONSE TO PUBLIC COMMENTS**

August 9, 2016

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EXECUTIVE SUMMARY

CITY OF KALAMAZOO APPLICATION FOR A WATER WITHDRAWAL

On April 11, 2016, the Department of Environmental Quality (DEQ) received from the city of Kalamazoo (Kalamazoo) a water withdrawal permit application submitted under Part 327, Great Lakes Preservation, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended. The permit application was for a proposed large quantity water withdrawal for a new wellfield and pumping station to be added to Kalamazoo's existing public water supply system.

Subsection 32723(4) of Part 327 requires the DEQ provide for a public comment period of not less than 45 days before a permit application is acted upon. The DEQ announced the permit application and invited public comment via public notice and web site posting on May 30, 2016. A copy of the public notice was transmitted to Kalamazoo, to other nearby large quantity water users, and to local units of government for postings accessible to the public. Public comments were accepted until July 14, 2016.

On August 9, 2016, the DEQ rendered a decision in favor of permit issuance. It was concluded that all conditions for approval under Subsection 32723(6) have been met. This document includes the basis of the decision for issuance of a permit to Kalamazoo for a water withdrawal of up to 2.5 million gallons per day (MGD) from groundwater.

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I. BACKGROUND

PROPOSED WITHDRAWAL

The proposed withdrawal is for up to 2.5 MGD from groundwater for a public water supply. Kalamazoo proposes to use the withdrawal to add a new wellfield and pumping station, Station 38, to augment their existing water supply system. The proposed wellfield is located approximately 4.5 miles northwest of the nearest Kalamazoo wellfield pumping station, and at an approximately 110 feet higher elevation, which will allow for more efficient water delivery to portions of the existing service area by reducing the need to boost water from lower elevation pumping stations. The proposed withdrawal will also meet projected future peak demands, and provide water for new customers whose existing private wells are impacted by groundwater contamination from the KL Landfill Superfund site. All water withdrawn, minus the amount of consumptive use, will be discharged back to the Kalamazoo River watershed. The consumptive rate of this public water supply use is estimated to be ten percent. Therefore, the potential water loss from the local hydrologic system and from the Great Lakes Basin is 0.25 MGD. The proposed withdrawal location is in Section 3 of Oshtemo Township, T02S R12W, Kalamazoo County, at approximately 42.3308° latitude and -85.7055° longitude.

II. STATUTORY STANDARD

A person who proposes to develop new or increased capacity of 2 MGD or more to withdrawal from the waters of the state to supply a common distribution system is required to obtain a water withdrawal permit prior to making the withdrawal (MCL 324.32723[1]).

Application Submittal

A person required to apply for a water withdrawal permit shall do so by submitting an application for the withdrawal to the DEQ containing the following information (MCL 324.32723[2]):

- Capacity of equipment used to make the withdrawal.
- Location of the withdrawal.
- Withdrawal source, including depth and geologic stratum if the source is groundwater.
- Amount and rate of withdrawal, and whether the withdrawal will be intermittent.
- Intended maximum monthly and annual volumes and rates, if different from the capacity of equipment used to make the withdrawal.
- Relevant information related to seasonal use.
- Description of how the water will be used and location, amount and rate of return flow.
- Any other information the person would like the DEQ to consider.

The application is required to include an evaluation of existing hydrological and hydrogeological conditions, and a detailed description of any proposed preventative measures where relevant. The applicant must certify they will be in compliance with the environmentally sound and economically feasible water conservation measures (WCM) applicable to the water use sector, or to the specific proposed withdrawal. The application must also include a description of how the withdrawal will be implemented such that all criteria of Section 4.11, Decision-Making Standard of the Great Lakes – St. Lawrence River Basin Water Resources Compact (Compact) will be met. An application fee of \$2000 is required.

Administrative Requirements

MCL 324.32723 requires that a permit application be considered administratively complete 30 days after receipt by the DEQ, unless the applicant is notified of deficiencies in the application requiring additional information. The DEQ is required to provide a public comment period of not less than 45 days prior to acting on an application, and shall render a decision within 120 days of receipt of an administratively complete application.

The DEQ received an administratively complete permit application from Kalamazoo on April 11, 2016. On May 19, 2016, the DEQ sent a letter and public notice document to Kalamazoo, notifying them of the 45-day public comment period and the requirement to post the notice at a nearby locality that is accessible to the public.

The DEQ announced the permit application and invited public comment via notice in the DEQ Environmental Calendars dated May 30, June 13, June 27, and July 11, 2016. Comments were accepted by the DEQ until July 14, 2016.

For a proposed new or increased consumptive use of 5 MGD or greater, the Compact requires prior notice be provided to the other Great Lakes states and provinces and an opportunity for them to comment. The proposed withdrawal does not exceed 5 MGD in consumptive use. Accordingly, management and regulation of the withdrawal is at the discretion of Michigan, and no notification was made to the Great Lakes states and provinces.

Conditions Required for Issuance of a Permit

The DEQ shall issue a permit for a water withdrawal if all of the following conditions are met (MCL 324.32723[6]):

- All water withdrawn, less any consumptive use, is returned to the source watershed.
- The withdrawal is implemented to ensure there is no individual or cumulative adverse resource impact (ARI) based upon an evaluation of available information by the DEQ.
- The withdrawal will be implemented in compliance with all applicable local, state, and federal laws, as well as legally binding regional interstate and international agreements.
- The proposed use is reasonable under common law principles.
- The permit applicant certifies compliance with the environmentally sound and economically feasible WCMs applicable to the water use sector.
- The proposed withdrawal does not violate public or private rights and limitations imposed by Michigan water law or other common law duties.

A permit issued under MCL 324.32723 is considered to satisfy parallel conditions given in Section 4.11, Decision Making Standard, of the Compact. Subsection 4.11(5) of the Compact provides greater specificity on reasonable use conditions including: planned efficient use of the water; avoidance or minimization of waste; efficient use of existing water supplies; the balance between economic and social development and environmental protection as they relate to other existing or planned withdrawals and uses sharing the same water source; the supply potential of the water source; the degree and duration of any expected adverse impacts, and the proposed plans and arrangements for avoidance or mitigation of such impacts; and the restoration of hydrologic conditions and functions, if necessary.

III. DECISION MAKING PROCESS

Returning Water to the Source Watershed

The water source for the proposed withdrawal is groundwater from a glacial drift aquifer within the Kalamazoo River watershed, which drains to Lake Michigan. All water withdrawn, minus the amount lost to consumptive use, will be discharged either directly to the Kalamazoo River through the Kalamazoo Wastewater Treatment Plant, or to groundwater within the Kalamazoo River watershed through private septic systems. Therefore all water withdrawn, minus consumptive use, is returned to the source watershed.

Adverse Resource Impact

Subsection 32721(1) of Part 327 prohibits a person from making a new or increased large quantity withdrawal from the waters of the state that causes an adverse resource impact. Subsection 32701(1)(a) defines an ARI as decreasing the flow of a river or stream by explicit percentages of flow, such that its ability to support characteristic fish populations is functionally impaired, or decreasing the level of a lake or pond through a direct withdrawal that would impair the uses made of the lake or pond, including its ability to support characteristic fish populations. Subsection 4.11(2) of the Compact similarly requires that a proposed withdrawal will be implemented so as to ensure it will result in no significant individual or cumulative adverse impacts to the quantity or quality of the waters and water dependent natural resources of the Great Lakes Basin.

Kalamazoo first contacted the DEQ in 2008 requesting an ARI assessment for Station 38. The DEQ performed the initial assessment via the DEQ Water Withdrawal Assessment Tool (WWAT), which at the time was in its beta testing stage. The WWAT is an online, automated screening system that is the first step in Michigan's assessment process that is required of all new or increased large quantity withdrawals. The WWAT assesses withdrawals relative to the ARI standard for any location, and provides an estimate of potential impact to local stream and river flows as a result of the operation of a proposed withdrawal. The DEQ's initial assessment for one well equipped at a 1.44 MGD pumping rate determined that the withdrawal was not likely to cause an ARI.

In 2009 Kalamazoo retained Fishbeck, Thompson, Carr & Huber (FTC&H) to perform an independent ARI assessment which was provided with the permit application in a report titled *Adverse Resource Impact Evaluation for a Proposed Wellfield in Oshtemo Township, Michigan*. The FTC&H assessment tested various pumping rates up to 3 MGD using an available flow model developed by the United States Geological Survey and documented in the report titled *Simulation of the Ground-Water-Flow System in the Kalamazoo County Area, Michigan, Scientific Investigations Report 2004-5054*. The findings of the FTC&H assessment in 2009 indicated that the withdrawal was not likely to cause an ARI when utilizing the stream index flows estimated by the DEQ. Note that FTC&H independently estimated stream index flows using a different method than the DEQ, and resulted in lower index flows. Lower index flows equate to a lower amount of allowable withdrawals because the ARI threshold is based on a percentage of index flow. The FTC&H report identified two streams of primary interest of potential impact: Sand Creek and Campbell Creek. Campbell Creek is also referred to as the North Branch of the Paw Paw River, and is known locally as Whiskey Run. The Sand Creek index flow was initially model-estimated in the WWAT at 10.7 cubic feet per second (cfs), and was later revised to 8.7 cfs based on DEQ manual index flow calculation methodology. The FTC&H review derived an index flow of 6.23 cfs for Sand Creek. The Campbell Creek index flow was initially model-estimated in the WWAT at 10.24 cubic feet per second, and was later revised to 13.0 cfs based on DEQ manual index flow calculation methodology. The FTC&H

review derived an index flow of 4.28 cfs for Campbell Creek. As a result of using the lower FTC&H estimated index flows, the FTC&H assessment indicated an ARI was likely when pumping continuously at 2.5 MGD or more. However, the DEQ does not concur with the methodology used by FTC&H to estimate index flows for this given situation. Therefore the DEQ stands by the index flows as estimated by the DEQ and the determination that an ARI was not likely to occur at a withdrawal rate of 3 MGD.

In 2014, Kalamazoo requested an ARI assessment by the DEQ for Station 38 at a 4 MGD withdrawal rate as a preliminary assessment for a community water supply under the Safe Drinking Water Act (MCL 325.1004). The DEQ performed a site-specific review assessment of the withdrawal and determined that the withdrawal is not likely to cause an ARI at the higher withdrawal rate of 4 MGD.

Impacts to the quantity and quality of other waters, and water dependent natural resources of the Great Lakes Basin, were also considered. Several wetlands in the vicinity of the proposed withdrawal are the only other water dependent natural resources identified. These wetlands are relatively small and isolated, 5 acres or less in size, and likely perched or otherwise not expected to be impacted by the operation of the proposed withdrawal. This is evidenced by the static water levels for the Kalamazoo test wells which are recorded at 140-150 feet below ground surface, and which are drilled into the deepest of three identified aquifer units that are generally separated from each other by confining units of low permeability materials primarily composed of clay.

The proposed withdrawal will not result in any significant individual or cumulative adverse impacts to the quantity and quality of the waters and water dependent natural resources of the Great Lakes Basin.

Consumptive Use Considerations

The consumptive use calculation for the Kalamazoo proposed withdrawal is based upon a consumptive use coefficient of ten percent. Kalamazoo relied primarily upon the United States Geological Survey publication *Consumptive Water-Use Coefficients for the Great Lakes Basin and Climatically Similar Areas, Scientific Investigation Report 2007-5197*. The published coefficient value for the public water supply sector in Table 3-2, Total water use by category for the Great Lakes Basin, by year, from the Great Lakes Commission annual reports, 1998-2002 ranges from ten to eleven percent. Based upon the ten percent coefficient for consumptive use, the proposed withdrawal is projected to have a consumptive use of up to 0.25 MGD.

Conservation Measures

As a condition of permit approval the applicant must self-certify that he or she is in compliance with the WCM associated with the applicable water use sector, or with measures developed for the specific withdrawal. The WCM for the public water supply sector have been developed by the Michigan Section of the American Water Works Association and have been adopted by the DEQ. Kalamazoo has certified they are in compliance with the public water supply sector WCM and will consider additional WCM to the maximum extent practical and appropriate. The WCM that Kalamazoo currently has in place include metering, meter calibration and replacement, system audits, full cost pricing rates, water use restriction notices, on-line access to account information, public and customer education and outreach through www.protectyourwater.net, and promotion of WCM including water efficient landscaping and irrigation, water reuse and recycling, land use planning, and regional water resource management.

Reasonable Use

As a condition of permit approval a proposed withdrawal must be deemed reasonable under common law principles of Michigan water law, and as required in the Compact. The specific criteria for consideration of reasonable use are outlined and addressed below.

Efficiency of the Proposed Water Use: Meeting this requirement signifies the user's commitment to WCM in the future operation of the proposed withdrawal. Kalamazoo has certified they will be in compliance with the WCM applicable to the public water supply sector, and will consider additional WCM to the maximum extent practical and appropriate. This certification adequately addresses a commitment to avoidance or minimization of the waste of water and is determined to be reasonable.

Efficient Use of Existing Water Supplies: The efficient use of existing water supplies and withdrawal capacity is an essential consideration when an increased withdrawal is proposed. It ensures that water is being used efficiently by a large quantity user before they are granted approval for an increased withdrawal. Kalamazoo's adherence to the applicable WCM, and additional public and customer education and outreach activities in the operation of its current public water supply system demonstrate its commitment to the efficient use of its existing supplies. Kalamazoo seeks the additional capacity of the proposed withdrawal partially to replace the existing supply for portions of the service area that are currently supplied by less efficient delivery of boosted, and double-boosted water from low to high pressure districts, and also to meet projected future demands including adding new customers whose private wells were impacted by groundwater contamination from the KL Avenue Landfill Superfund site. The proposed withdrawal will provide a more energy-efficient means of delivering water to the higher elevation northwestern portion of the current service area and projected future service area. Kalamazoo's efficiency of use of its existing water supplies is determined to be reasonable.

Balance between Economic Development, Social Development and Environmental Protection: An important measure of the reasonableness of a water use relates to the balance between economic development, social development, and environmental protection. The proposed withdrawal will have a low probability of adverse or lasting environmental impacts, and has positive economic and social development factors. The associated positive economic development effects include the construction project itself, and the infrastructure improvements to accommodate future growth. Positive social development effects include advanced planning for potential future growth, providing safe water to residents whose private wells have been impacted by groundwater contamination, and the improved system and more efficient delivery of water service to the Kalamazoo community. The proposed withdrawal is determined to be reasonable in regards to the balance between economic and social development, and environmental protection.

Supply Potential of the Water Source: The impact of the proposed withdrawal on the quantity, quality, reliability, and safe yield of hydrologically interconnected water sources is considered in the review process. The proposed withdrawal does not present any known or anticipated threat to the quantity of hydrologically connected water sources. The DEQ reviewed the report *Test/Production Well 1 Aquifer Performance Test, Safe Yield Analysis & Drawdown Assessment, Kalamazoo, Michigan*, provided by Peerless-Midwest, and determined the Station 38 site and aquifer is capable of sustaining a 3 MGD safe yield. Kalamazoo commissioned a special investigation and report by Fleis & VandenBrink Engineering, Inc. (F&V) titled *An Evaluation of the Potential for Groundwater Contamination Related to the KL Avenue Landfill to Impact the Proposed City of Kalamazoo Oshtemo Well Field Site (WPS 38)* to evaluate the potential for groundwater contamination to impact Station 38, or to change the direction of the plume migration by the proposed withdrawal. The F&V study

suggests that the contamination plume will not migrate toward the proposed withdrawal, nor will the proposed withdrawal significantly alter the existing groundwater flow conditions at the KL Landfill Superfund site. The proposed withdrawal is not anticipated to impact the reliability or the safe yield of the source aquifer and is determined to be reasonable on these grounds.

Degree and Duration of Likely Adverse Impacts: The probable degree of any adverse impacts to the quantity or quality of the waters and water dependent natural resources of the Great Lakes Basin, or to other uses of water expected to be caused by the proposed withdrawal must be considered. The proposed withdrawal will not cause adverse impacts to the waters of the Great Lakes Basin. Streams, rivers, lakes, and wetlands are not anticipated to be adversely impacted by the proposed withdrawal. The proposed withdrawal has the potential to adversely impact other uses of groundwater by reducing the water level in the aquifer, and interfering with the normal operation of other nearby wells. However, investigation of nearby well construction characteristics including well casing depths and screened intervals, static water levels, and submersible pump setting depths relative to the predicted drawdown level and extent indicates that no wells will be adversely impacted by the proposed withdrawal. Nevertheless, Kalamazoo has made contingency plans to either replace or repair any impacted wells to normal operation, or to connect the residence to the public water supply system at no cost to the impacted well owner. As a condition of permit approval and compliance, Kalamazoo is required to take corrective actions to rectify any problems with the normal operation of other wells caused by the proposed withdrawal. The probable degree of any adverse impacts, and the contingency plans to correct any adverse impacts is determined to be reasonable.

Restoration of Hydrologic Conditions and Functions: If a withdrawal proposal includes measures for restoration of hydrologic conditions and functions of the source watershed they may also be considered in the review process. The withdrawal proposal did not warrant measures for restoration of hydrologic conditions and functions of the source watershed.

Applicable Local, State and Federal Laws

A withdrawal must be in compliance with all applicable local, state, and federal laws as well as legally binding interstate and international agreements, including the Boundary Waters Treaty of 1909 to be approved. The Boundary Waters Treaty of 1909 was agreed to by the United States and Canada to provide a mechanism for the resolution of disputes over waters bordering the two countries, and to ensure the waters of the Great Lakes remain navigable. The DEQ has concluded the proposed withdrawal would be in compliance with applicable state and federal laws, and international agreements including the Boundary Waters Treaty of 1909. A condition of the water withdrawal permit will require the permittee to maintain compliance with all applicable local, state, and federal laws including, but not limited to, obtaining permits.

Public or Private Rights, Limitations and Common Law

The issuance of a permit for the proposed withdrawal must not violate public or private rights or the public trust doctrine, or exceed limitations imposed on the use of the resource by Michigan water law or other common law decisions. Specifically, the DEQ must ascertain if the issuance of the permit would interfere with other uses of the water resources, or with the state's ability to maintain the resources for the public's reasonable use. The proposed withdrawal is not anticipated to interfere with other water uses or to violate public or private rights or the public trust doctrine, or to exceed other regulatory limitations. Nevertheless, as a condition of permit approval and compliance Kalamazoo is required to take corrective actions to rectify any problems with the normal operation of other wells caused by the proposed withdrawal should they occur. The issuance of this permit does not in any way authorize any violation of public or private rights, property rights, common law water rights, or other regulatory limitations.

IV. PUBLIC PARTICIPATION PROCESS

The DEQ announced the permit application and invited public comment via notice in the DEQ Environmental Calendars dated May 30, June 13, June 27, and July 11, 2016. The notice included an Internet link to the permit application packet and a draft permit made available on the DEQ web site. The public notice was sent to local government offices, other nearby large quantity water users, and the applicant was also required to post the public notice at a nearby locality that is accessible to the public. The public notice announced the 45-day public comment period beginning on May 30, and concluding July 14, 2016.

The DEQ considers all comments prior to rendering a decision on the basis of applicable rule, policy, and procedure in administration of the permit application and review process under Part 327, Great Lakes Preservation, of NREPA. The following summarizes the comments received regarding the proposed withdrawal and the DEQ response to the comments.

Compliance with local, state and federal laws

Comments were received asserting that Kalamazoo is not in compliance with the Ordinances of the Charter Township of Oshtemo, because neither a franchise agreement, nor a long-term water service agreement currently exists for Kalamazoo to provide water service within the political jurisdiction of the township.

DEQ response: The DEQ reviewed the Ordinances of the Township and finds Kalamazoo not in violation of any provision thereof at the current state of the project. The DEQ finds that in accordance with the Ordinances of the Township, Kalamazoo will be required to submit construction plans and obtain approval and consent by the township board prior to beginning construction of the pumping station and installation of water main within public streets, roads, and right-of-ways. The issuance of the water withdrawal permit to Kalamazoo does not violate this ordinance, nor does it render Kalamazoo noncompliant with local, state, or federal laws.

V. SUMMARY OF DEQ POSITION

The DEQ concludes that with the addition of specified permit conditions, the proposed withdrawal meets all criteria for a water withdrawal permit under Part 327 and that a permit may be issued. The authorized withdrawal capacity is 2.5 MGD from groundwater.