MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

April 2, 2018

PERMIT 1701

ISSUED TO
Nestlé Waters North America, Inc.

LOCATED AT
19275 8 Mile Road
Stanwood, MI 49346

IN THE COUNTY OF
Osceola

WATER SUPPLY SERIAL NUMBER
2016667, Production Well PW-101

This permit is hereby issued in accordance with Section 17 of the Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399). The Department of Environmental Quality has issued this permit to increase the withdrawal of water at well PW-101, White Pine Springs Site, Latitude 43.939622, Longitude -85.291933 from 250 gallons per minute (gpm) to 400 gpm. This approval is granted in reliance on the information supplied in the corresponding application, other information supplied in connection with the application, and the hydrogeologic conditions at the time of application.

DATE OF RECEIPT OF PERMIT APPLICATION: **July 19, 2016**	
DATE PERMIT NOT APPROVED:	SIGNATURE:
DATE PERMIT APPROVED: **April 2, 2018**	SIGNATURE:

325.1017 Bottled drinking water.

1. Sec. 17.

(1) A person engaged in producing bottled drinking water shall utilize a water source meeting the requirements of this section and the requirements otherwise provided in this act. Bottling or packaging facilities and their operation shall remain under the supervision of the department of agriculture as provided for in the food law of 2000, 2000 PA 92, MCL 289.1101 to 289.8111.

(2) A person producing bottled drinking water from an out-of-state source shall submit proof to the director that the source and bottling facilities were approved by the agency having jurisdiction. The director may withhold approval of the bottled water if the other agency's inspection, surveillance, and approval procedures and techniques are determined to be inadequate.

(3) A person who proposes to engage in producing bottled drinking water from a new or increased large quantity withdrawal of more than 200,000 gallons of water per day from the waters of the state or that will result in an intrabasin transfer of more than 100,000 gallons per day average over any 90-day period shall submit an application to the department in a form required by the department containing an evaluation of environmental, hydrological, and hydrogeological conditions that exist and the predicted effects of the intended withdrawal that provides a reasonable basis for the determination under this section to be made.

(4) The department shall only approve an application under subsection (3) if the department determines both of the following:

(a) The proposed use will meet the applicable standard provided in section 32723 of the natural resources and environmental protection act, 1994 PA 451, MCL 324.32723.

(b) The person will undertake activities, if needed, to address hydrologic impacts commensurate with the nature and extent of the withdrawal. These activities may include those related to the stream flow regime, water quality, and aquifer protection.

(5) Before proposing activities under subsection (4)(b), the person proposing to engage in producing bottled drinking water shall consult with local government officials and interested community members.

(6) Before making the determination under subsection (4), the department shall provide public notice and an opportunity for public comment of not less than 45 days.

(7) If the person proposing to engage in producing bottled drinking water under subsection (3) does not have a permit under section 4, the person shall request a determination under subsection (4) when that person applies for a permit under section 4. If the person proposing to engage in producing bottled drinking water has previously received a permit under section 4, the person shall obtain approval under subsection (4) prior to beginning the operations. A proposed use for which the department makes a determination that the conditions of subsection (4) will be met shall be considered to satisfy the requirements of section 4.11 of the compact.

(8) A person seeking a departmental determination under subsection (4) shall submit an application fee of $5,000.00 to the department. The department shall transmit application fees received under this section to the state treasurer to be credited to the water use protection fund created in section 32714.

(9) This section shall not be construed as affecting, intending to affect, or in any way altering or interfering with common law water rights or the applicability of other laws providing for the protection of natural resources or the environment.

(10) A person who proposes to engage in producing bottled drinking water and who submitted an application for a permit under section 4 prior to the effective date of the amendatory act that added this subsection is subject to the provisions of this section that existed on February 28, 2006.

(11) As used in this section, "compact", "intrabasin transfer", "new or increased large quantity withdrawal", and "waters of the state" mean those terms as they are defined in section 32701 of the natural resources and environmental protection act, 1994 PA 451, MCL 324.32701.

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GENERAL CONDITIONS

1. Nestlé Waters North America, Inc. (permittee) or the designated authorized agent shall notify the Michigan Department of Environmental Quality (Department) via the Noncommunity Water Suppy Unit, Environmental Health Section, Drinking Water and Municipal Assistance Division, Michigan Department of Environmental Quality, P.O. Box 30817, Lansing, Michigan 48909-8311, if it is decided to not utilize the capacity authorized by this Permit.

2. The Department may, after notice and opportunity for a hearing, revoke or modify this permit if at any time the Department determines that the applicable standard in section 32723 of the Natural Resources and Environmental Protection Act, 1994 PA 451, MCL 324.32723, is not being or may not be met.

3. The terms and conditions of this permit shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit. In the event of a change in ownership, the new owner or operator shall submit a written request to the Department for an amendment of the permit. Upon Department approval this permit will be amended to reflect the change of ownership or operational control. The request shall be sent to the Section Manager, Environmental Health Section, Drinking Water and Municipal Assistance Division, Michigan Department of Environmental Quality, P.O. Box 30817, Lansing, Michigan 48909-8311.

4. If, pursuant to this permit, or at the direction of the Department, or on its own initiative, the permit holder proposes to pursue activities under subsection (4)(b) of section 17 (activities to address hydrologic impacts), the permit holder or their representative shall submit a plan to the Department for consideration and approval. The plan must include sufficient supporting information such that the Department can reasonably determine that the proposed activities are warranted and are likely to be effective. The plan must include provisions for consulting with the community. Approval from the Department is required prior to implementing activities.

5. Before withdrawing water above the previously approved 250 gpm, the permittee must submit monitoring plans and Quality Assurance Project Plans (QAPP) to the Department for consideration and approval and required by the special conditions section of this permit. Withdrawal in excess of 250 gpm cannot proceed until the monitoring plans and QAPPs are approved by the Department and required baseline monitoring is completed, including reporting. The monitoring plans must include the required elements detailed in the special conditions section of this permit. The permit holder may propose equivalent monitoring in place of the special conditions for Department consideration and approval. The monitoring plans must detail sample and measurement locations, sampling methods, measurement techniques, sampling and measurement standard operating procedures, equipment calibration and maintenance schedules, quality assurance and quality control measures, laboratory techniques, data analysis techniques, reporting schedule, and reporting format that will be used throughout the life of the permit. Any proposed changes to the monitoring plan must be approved by the Department in writing prior to implementation. The Department may, at any point, require modification of the monitoring plan if it determines based on the data provided or its own research that the monitoring plan is not sufficient to effectively monitor the site. Submit the plans to the Noncommunity Water Suppy Unit, Environmental Health Section, Drinking Water and Municipal Assistance Division, Michigan Department of Environmental Quality, P.O. Box 30817, Lansing, Michigan 48909-8311.

6. Issuance of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under 1976 PA 399, as amended or 1994 PA 451, as amended, or other applicable law.

7. This permit does not remove the necessity of obtaining other federal, state, or local permits and authorizations as required by law, including as may be necessary to implement the conditions of this permit

8. This permit shall not be construed as affecting, intending to affect, or in any way altering or interfering with common law water rights or the applicability of other laws providing for the protection of natural resources or the environment.

9. If at any time the Department determines that monitoring is not performed in compliance with the approved plans, and upon written notification from the Department, the additional capacity authorized by this permit (250 gpm) is suspended until the Department reinstates it.

10. If at any time monitoring parameters described in the following narrative and on the attached table are crossed, the permittee shall immediately reduce pumping to previously approved capacity of 250 gpm, notify the Department's Noncommunity Water Supply Unit, prepare an action plan for submittal to the Department detailing actions to be taken, and maintain pumping at baseline until written approval to resume permitted capacity is received from the Department.

Permit Conditions - Streamflow

1. Continuous streamflow monitoring at SF-8 during the summer and fall months (June to October) to verify the modeled flow reductions, better define stream flow at this location, and assess if an adverse resource impact occurs as a result of the permitted increase to 400 gpm. Monitoring shall be conducted using a pre-fabricated flume rated for the flow range at SF-8 and equipped with a pressure transducer set to record stream stage in at least one-hour intervals. Flume construction and streamflow measurement using a flume shall be done in accordance with USGS standards (Turnipseed and Saur, 2010; Rantz et al, 1982; and Use of Flumes in Measuring Discharge at Gaging Stations, United States Department of the Interior Geological Survey, 1965). Monthly inspection must be conducted to ensure the flume is operating properly. If flows fall below 72 gpm for a period of 14 days, then pumping levels shall be reduced to 250 gpm. Permitted pumping levels may resume, if all other permit conditions are met, once sustained streamflow of 72 gpm or more is measured for an equivalent 14-day period.

2. Continuous streamflow monitoring at SF-1 during the summer and fall months (June to October) to verify the modeled flow reductions and better define stream flow at this location. Stage measurements shall be collected using a pressure transducer housed in a stilling well-constructed in accordance with USGS standards for stream gaging and set to record stream stage in at least one-hour intervals. Routine discharge measurements with an Acoustic Doppler Velocimeter (ADV) will be required to establish a stage-discharge relationship. If flows fall below 431 gpm for a period of 14 days, then pumping levels shall be reduced to 250 gpm. Permitted pumping levels may resume, if all other permit conditions are met, once sustained streamflow of 431 gpm or more is measured for an equivalent 14-day period.

3. The permittee shall continue its monthly streamflow monitoring program consistent with USGS standards for collecting discharge measurements (Turnipseed and Sauer, 2010; Rantz et al. 1982). These monitoring locations include: SF-2, SF-9, SF-10, SF-11, SF-13, SF-16, SF-17, SF-18, SF-19 and Weirs 1 through 10. Monthly discrete discharge measurements shall also be collected at SF-1 and SF-8 when continuous monitoring is suspended during the winter and spring months (November to May). Monthly discharge measurements should be collected at least 72 hours after a rainfall event.

4. The streamflow monitoring results shall be submitted to the Department in electronic format on an annual basis by December 31 of each year. Streamflow data shall be accompanied by documentation of daily average pumping rates for the periods of continuous flow monitoring (June through October). Annual streamflow reporting shall include stage and discharge data in table format and files downloaded directly from monitoring devices and data loggers, inspection reports, field sheets, and a description of activities, data trends, action level exceedances, problems or equipment failures encountered, and response actions.

5. If no flow is observed at the headwater monitoring locations SF-8 and SF-1 at any point in time, pumping should immediately be reduced to 250 gpm until flow conditions stabilize and return to 75 gpm and 431 gpm, respectively.

6. The permittee shall collect a complete round of streamflow measurements in all existing monitoring locations, as identified below, prior to implementing the permitted increased withdrawal. These data shall be collected in the same sampling event as additional stream

stage and groundwater level measurements to assemble a complete hydrological baseline condition prior to the increase in pumping.

SF-1, SF-2, SF-8, SF-9, SF-10, SF-11, SF-13, SF-16, SF-17, SF-18, SF-19 and Weirs 1 through 10

7. The permittee shall submit for Department approval a Monitoring Plan and Quality Assurance Project Plan (QAPP). The monitoring plan and QAPP must be approved by the Department prior to conducting the baseline monitoring and implementing the increased withdrawal. The Monitoring Plan shall provide details on specific monitoring locations, methods, maintenance and inspection schedules, reporting schedule, and reporting format. The QAPP shall include all quality assurance and quality control measures quality assurance and quality control measures methods used, equipment used, monitoring frequency, equipment calibration, staff qualifications, data and document reporting, and method references.

Permit Conditions - Aquatic Life and Aquatic Habitat

1. The permittee will develop a work plan and an associated Quality Assurance Project Plan for the monitoring activities identified in the following paragraphs 2-5 that describe the sampling and analytical methods; data analysis; data management; and reporting requirements. The plan shall be implemented following the Department's approval of the monitoring plan and QAPP.

2. Continuous temperature measurements shall be made on an hourly basis from June through September at four locations (SF1, SF9, SF8, and SF16) using an instream temperature logger. Logger data shall be compiled once every two (2) weeks at a minimum.

3. A two-week continuous dissolved oxygen (DO) study shall be conducted each year at four locations (SF1, SF9, SF8, and SF16) during hot, low-flow conditions which typically occur in August. Sampling shall be conducted using an installed DO meter, with readings recorded hourly. Baseline DO sampling shall be conducted at these locations after approval of the monitoring plan and QAPP and prior to implementing the permitted increased pumping.

4. Macroinvertebrate sampling shall be conducted in July each year at four (4) locations (SF1, SF9, SF8, and SF16). Samples should not be collected soon after a heavy rain event when stream flows are elevated. Sample collection and analysis will be conducted according to the Department's Water Resources Division (WRD) Policy WRD-SWAS-051, Qualitative Biological and Habitat Survey Protocols for Wadeable Streams and Rivers, which uses a multi-metric index to score sites on a scale of -9 to +9. A baseline assessment will be conducted after approval of the monitoring plan and QAPP and prior to implementing the permitted increased pumping. The threshold for action will be a decline of three (3) metric points from the baseline score in any one year or over multiple years.

   Water depth and stream width will be measured at four locations (SF1, SF9, SF8, and SF16) once each year during low-flow conditions (typically July or August). Results will be compared with previous measurements. In addition, water depth and stream width will be measured upstream and downstream of existing culverts at six road/stream crossings (T2, T3, T8, T18, C2, and C3) once each year during low-flow conditions (typically July or August).

5. The fish community will be monitored in July of each year at four locations (SF1, SF9, SF8, and SF16).

6. The permittee shall notify the Department within 24 hours of compiling the temperature logger data if, at any time during the two-week period, the temperature rises above 68 degrees Fahrenheit in June, July or August, or rises above 63 degrees Fahrenheit in September. The notification shall include all the data from the two-week period, and the permittee shall provide a report to the Department including an assessment of the cause of the elevated temperature and any proposed corrective actions.

7. The permittee shall notify the Department within 24 hours of compiling the dissolved oxygen data if, at any time during the study period, the dissolved oxygen is below seven (7) milligrams per liter. The notification shall include all the dissolved oxygen data, and the permittee shall provide a report to the Department, including an assessment of the cause of the low dissolved oxygen; and any proposed corrective actions.

Permit Conditions – Hydrological Baseline and Groundwater

The permittee shall collect a complete round of groundwater level measurements in all existing and any newly required wells (i.e., monitor wells, piezometers, drive point wells) as identified below prior to implementing the permitted increased withdrawal. These data shall be collected in the same sampling event as additional stream stage and flow measurements to assemble a complete hydrological baseline condition prior to the increase in pumping.

1. Specifically, the following groundwater level and vertical gradient baseline assessment information shall be collected from all existing locations by the permittee before increasing pumping rates. The baseline water level or flow measurements are to include monitoring wells, vents, seeps, drive points, staff gages, and other existing shallow water level monitoring points. The permittee shall exercise the appropriate precautions in the construction of the deep wells to prevent leakage through any confining units separating shallow and deeper aquifers. Based on Nestlé's current sampling locations, this will include at a minimum:

    - MW-115, MW-112, MW-1d, MW-1i, MW-1u, MW-2i, MW-3i, MW-4i, MW-4u, MW-5d, MW-5i, MW-6i, MW-7i, MW-8i, MW-9i, MW-10i, MW-11s, MW-12i, MW-12s, MW-13i, MW-101s, MW-101d, MW-101L, MW-102i, MW-102d, MW-103i, MW-103d, MW-104i, MW-104d, MW-105s, MW-105d, MW-105L, MW-106d, MW-107i, MW-107d, MW-108i, MW-110d, MW-111d, MW-113d, MW-114i

    - Vent-1r, Vent-2, Seep-1, Seep-1r, Seep-2, Seep-3, Seep-4, Seep-5, Seep-6

    - DP-1, DP-2, DP-3, DP-4, DP-5, DP-6, DP-7, DP-8, SW-1, SW-1-DP, SW-2, SW-2-DP, SW-3, SW-3-DP, SW-4, SW-4-DP, SW-5, SW-5-DP, SW-6, SW-6-DP, SW-7, SW-7-DP, SW-8, SW-8-DP, SW-9, SW-10, SW-10R, SW-10-DP, SW-11-DP, SW-12, SW-12-DP, SW-13, SW-13r, SW-14, SW-14-DP, SW-15, SW-15-DP

    - SG-2, SG-3, SG-5, SG-7, SG-8, SG-9, SG-10, SG-16, SG-17, SG-18, SG-19, SG-20, SG-200, SG-201, SG-202, SG-203, SG-204

    - SW-3 WCO, SW-4-WCO, SW-5-WCO

- SF-1, SF-2, the stilling well with transducer and calibrated flume that will replace SF-8, SF-9, SF-10, SF-11, SF-13, SF-16, SF-17, SF-18, and SF-19.

- Weir 1, Weir 2, Weir 3, Weir 4, Weir 5, Weir 6, Weir 7, Weir 8, Weir 9, Weir 10

- Vertically nested well pairs to measure water level and vertical gradients. To the degree possible, these vertically nested wells can utilize the hydrology monitor wells required in the wetlands conditions to reduce duplication of effort. At a minimum, these groundwater monitoring vertically nested well pairs shall be located at:
    - The south-southeast side of Northern Ridge Springs between the springs and the PW-101 well
    - The northeast side of Northern Boomerang Springs to monitor water levels and vertical gradients near the spring and in wetland R
    - White Pine Springs north of location SF-6 and south of wetland G
    - The northeast side of Southern Boomerang Springs. If deeper test wells still exist in this area they may be used as part of the vertically nested wells at this location.
    - The northwest side of wetland CC and southwest of Weir 9 near Decker Springs to measure water levels and vertical gradients in wetland CC and north of Decker Pond

2. Following the baseline data collection, the permittee shall monitor the water levels at each groundwater monitoring location (MW, DP, Vent, Seep) identified in the section above on a monthly basis. The monitoring results are to be submitted in print and electronic format on an annual basis by October 1. At the end of each year period, the permittee will provide an analysis of water level trends observed and identify any areas where additional monitoring points are needed or locations that could be revised.

3. The groundwater level data collected for the baseline, as well as the monthly water level monitoring, should be provided to the Department in print and in an electronic Excel data table format. These tables should include the location name, latitude and longitude in decimal degrees, screen length, top of screen, bottom of screen, date collected, water level elevation above mean sea level (MSL), water level depth below ground level, and any other comments relevant to the data quality or monitoring events. The permittee shall document the baseline sampling results in a report noting any climate or physical conditions that may affect the sampling and provide this documentation to the Department within four (4) weeks of the completion of data collection and prior to any pumping increase above 250 gpm. The water level and vertical gradient monitoring shall be collected on a monthly basis with a report documenting the data, any water level or vertical trends observed, and print and electronic data table presenting site measurements. This report shall be submitted on an annual basis by October 1 each year.

4. The newly collected groundwater level and flow data measurements shall be used to validate the existing modified MODFLOW groundwater model and provide a report that details the findings including any need to revise the existing model based on the new data. The effectiveness of the groundwater model shall be reviewed on an annual basis. This review will also include assessment of the continued validity of the recharge assumptions along with supporting data. Should the drawdown or water level declines observed in the monitoring data exceed what is predicted based on the groundwater model, pumping levels will be reduced to 250 gpm and drawdown and water levels shall be monitored on a monthly basis until water levels recover.

5. Should the data not support the existing groundwater model, the conceptual model shall be reviewed and recommended changes along with a schedule for completion shall be submitted in writing to the Department for approval.

6. The permittee shall submit a Quality Assurance Project Plan (QAPP) and monitoring Work Plan to the Department for approval prior to implementing any monitoring. The Work Plan for installation of the vertical nested wells shall provide details on specific location, screen lengths, screen elevations, screened interval, and construction details for the nested well pairs. The QAPP shall include all methods used, equipment used, monitoring frequency, equipment calibration, staff qualifications, data and document reporting, and method references.

Permit Conditions - Wetlands

1. The following wetland baseline assessment information shall be collected by the permittee according to the approved monitoring plan before increasing pumping rates:

   a. The permittee shall conduct a Level 3 Wetland Identification Program (WIP) assessment of all wetlands located south of Nine Mile, west of 95th Avenue, north of Eight Mile and east of 110th. All wetland boundaries shall be flagged in the field and surveyed using a submeter accuracy GPS. Wetland boundaries shall be verified in the field every two years to detect potential changes to wetland boundaries. Any reduction in wetland area over 0.01 acre per wetland shall be noted and reported to the Department. The boundaries of wetlands A, B, C, CC, D, E, F, G, H, LL, Q, and the east side of R shall be permanently staked in the field (after confirmation by Department staff) to allow for quick visual assessment of changes to wetland boundaries.

   b. The permittee shall conduct a detailed comprehensive floristic quality assessment (using FQI and mean C) in the following wetlands: A, B, C, CC, D, E, F, G, H, LL, Q, and R. The initial baseline survey shall be completed three (3) times (early June, mid July, and late August) throughout the growing season prior to increasing pumping rates to document floristic quality of the wetlands and document any threatened, endangered or special concern species, as well as plants that have a high C value. A qualified botanist shall conduct the survey.

   c. The permittee shall develop a hydrology monitoring plan for Department approval and install monitoring wells located along vegetation transects in the following wetlands: A, B, C, CC, D, E, F, G, H, LL, Q, and the east side of R. A minimum of one growing season hydrology data shall be collected prior to increasing pumping rates.

   d. The permittee shall develop a water chemistry sampling plan for Department approval in wetlands A, B, C, CC, D, E, F, G, H, LL, Q, and the east side of R that includes dissolved oxygen, pH and conductance.

   The permittee shall develop and implement a detailed vegetation and hydrology monitoring plan that covers the duration of this permit. The plan must be approved by the Department prior to implementing the monitoring. The plan shall include the baseline monitoring requirements and the following minimum monitoring components:

      a. The permittee shall survey the boundaries of all wetlands located south of Nine Mile, west of 95th Avenue, north of Eight Mile and east of 110th every two years using a submeter accuracy GPS.

b. The permittee shall conduct a floristic quality assessment every year in wetlands A, B, C, CC, D, E, F, G, H, LL, Q, and R between July 15 and August 31 (see Figure 2).

c. The permittee shall develop a detailed vegetation sampling plan to detect potential changes to wetland hydrology and plant communities. The sampling plan shall include transects in wetlands A, B, C, CC, D, E, F, G, H, LL, Q, and the east side of R which shall be oriented perpendicular to groundwater contours. A qualified individual able to identify plants to genus and species must conduct the wetland vegetation monitoring. The Department reserves the right to reject reports with substandard monitoring data. The following procedure must be used when sampling transects:

   Sample vegetation in plots located along transects once between July 15 and August 31. The number of sample plots necessary within each wetland type shall be determined by use of a species-area curve or other approach approved by the Department. The minimum number of sample plots for each wetland transect shall be no fewer than five (5). Sample plots shall be located on the sample transect at evenly spaced intervals or by another approach acceptable to the Department. If additional or alternative sample transects are needed to sufficiently evaluate each wetland type, they must be approved in advance in writing by the Department.

   The herbaceous layer (all non-woody plants and woody plants less than 3.2 feet in height) shall be sampled using a 3.28 foot by 3.28 foot (one square meter) sample plot. The data recorded for each herbaceous layer sample plot shall include a list of all living plant species, and an estimate of percent cover in one (1) percent intervals for each species, bare soil areas, and open water areas relative to the total area of the plot.

   Provide plot data and a list of all the plant species identified in the plots and otherwise observed during monitoring. Data for each plant species must include: common name, scientific name, wetland indicator category from the U.S. Army Corps of Engineers 2012 National Wetland Plant List for Michigan (Lichvar, R.W. 2012), physiognomic classification, coefficient of conservatism, and whether the species is considered native according to the Michigan Floristic Quality Assessment (Michigan Department of Natural Resources, 2001). Nomenclature shall follow in the *Flora of North America*, which can be found at www.fna.org.

   The locations of sample transects and plots shall be identified in the monitoring report on a plan view showing the location of wetland types. Each transect and sample plot shall be permanently and visibly staked at a frequency sufficient to locate the transect and sample plots in the field.

d. The permittee shall conduct a meander each year in wetlands A, B, C, CC, D, E, F, G, H, LL, Q, and R once between July 15 and August 31 to search for visible signs of vegetation stress including stress to trees and shrubs (e.g. wilting, discolored leaves, mortality, etc.).

e. The permittee shall develop a detailed hydrology monitoring plan in wetlands A, B, C, CC, D, E, F, G, H, LL, Q, and R for Department approval to assess potential changes to wetland hydrology that may result in changes to wetland vegetation. The plan shall include electronic monitoring wells placed along transects perpendicular to the water table. The permittee shall measure water levels at all monitoring wells shown in the monitoring plan daily.

f. The permittee shall conduct water chemistry sampling in wetlands A, B, C, CC, D, E, F, G, H, LL, Q, and the east side of R in accordance with the approved plan.

g. The permittee shall provide photographic documentation of all vegetation sampling transects during each monitoring year. At a minimum, photos shall be located at both ends of each transect and at each quadrat location when viewed from above. Photos must be labeled with the location, date photographed, and direction.

h. The permittee shall provide a written summary of data from previous monitoring periods and a discussion of changes or trends based on all monitoring results. This summary shall include a calculation of the acres of each wetland, a plan view drawing depicting each ecological type, and identification of all performance standards and whether each standard has been met.

i. The permittee shall provide a written summary of all the problem areas that have been identified and potential corrective measures to address them including any potential corrective actions based on results of the monitoring.

A monitoring report, which compiles and summarizes all data collected during monitoring, shall be submitted annually by the permittee. Monitoring reports shall cover the period of January 1 through December 31 and be submitted to the Department prior to January 31 of the following year.

2. The following performance standards will be used to evaluate the assessed wetlands:

a. The surveyed boundary of each wetland shall not decrease by more than 0.01 acre at any time. A submeter accuracy GPS shall be used to survey the wetland boundary.

b. The average conservatism score (average C) for native wetland plants shall be greater than or equal to the baseline score at the end of the monitoring period. The Floristic Quality Index (FQI) shall be greater than or equal to the baseline at the end of the monitoring period.

c. The percent cover of invasive species (based on transects and plot data) shall not increase within wetlands A, B, C, CC, D, E, F, G, H, LL, Q, or the east side of R.

d. Wetland indicator status of all species per transect shall remain stable (e.g., no increase in drier rated species) and wetland type shall not change.

e. The wetland shall not show visible signs of vegetation stress including trees and shrubs.

f. Hydrology shall not show a decrease due to pumping based on data previously provided by the permittee and the baseline hydrology assessment.

g. Water levels shall be within 12 inches of the soil surface for 30 consecutive days starting at the beginning of the growing season.

If the performance standards listed above are not met, the permittee shall reduce pumping to 250 gpm and notify the Department via the Noncommunity Water Suppy Unit, Environmental Health Section, Drinking Water and Municipal Assistance Division, Michigan Department of Environmental Quality, P.O. Box 30817, Lansing, Michigan 48909-8311. The permittee shall provide a written summary to the Department of all the problem areas that have been identified and potential corrective measures to address them, including any potential corrective actions based on results of the monitoring data and site observations.

FIGURES

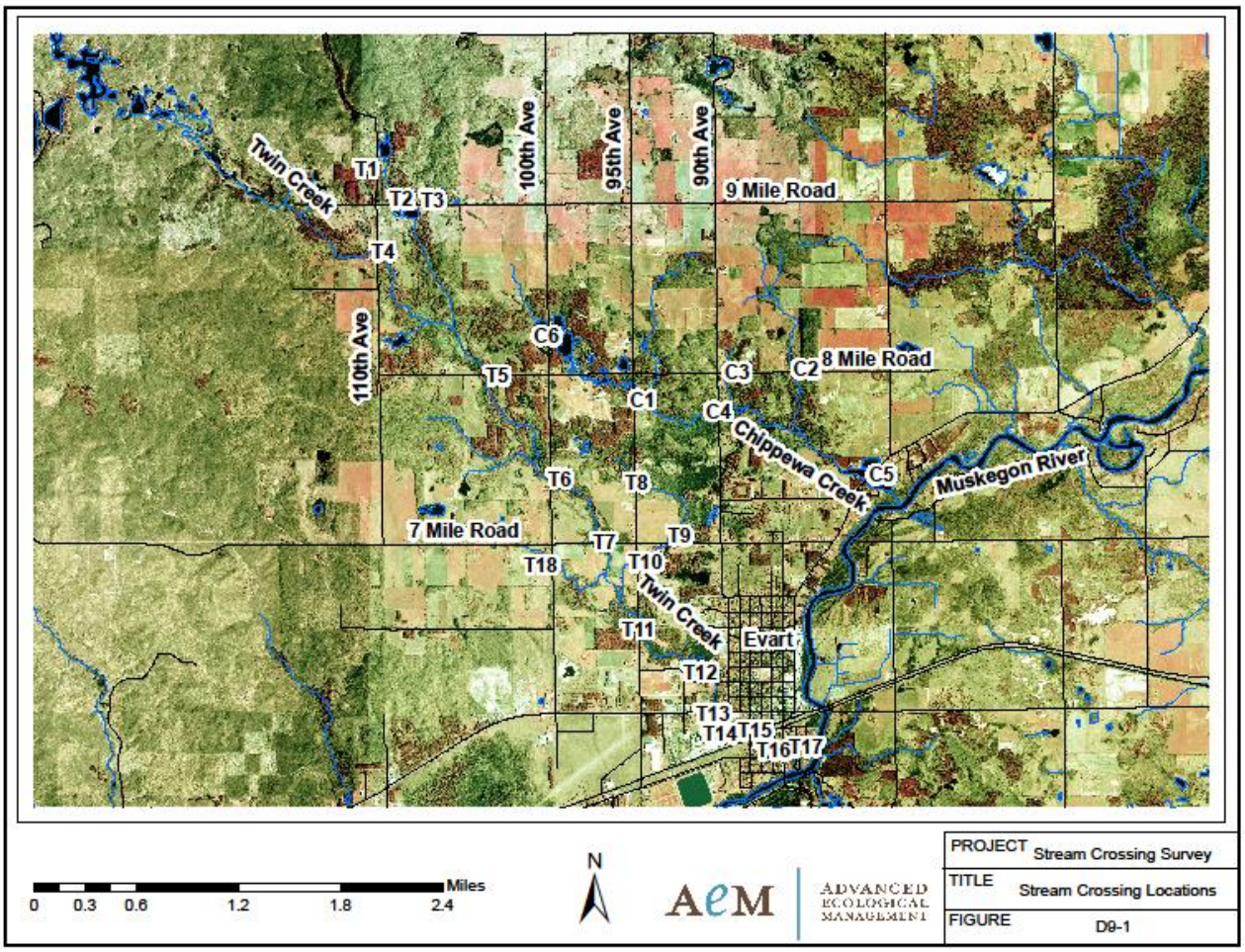

Figure 1. Stream Crossing Survey

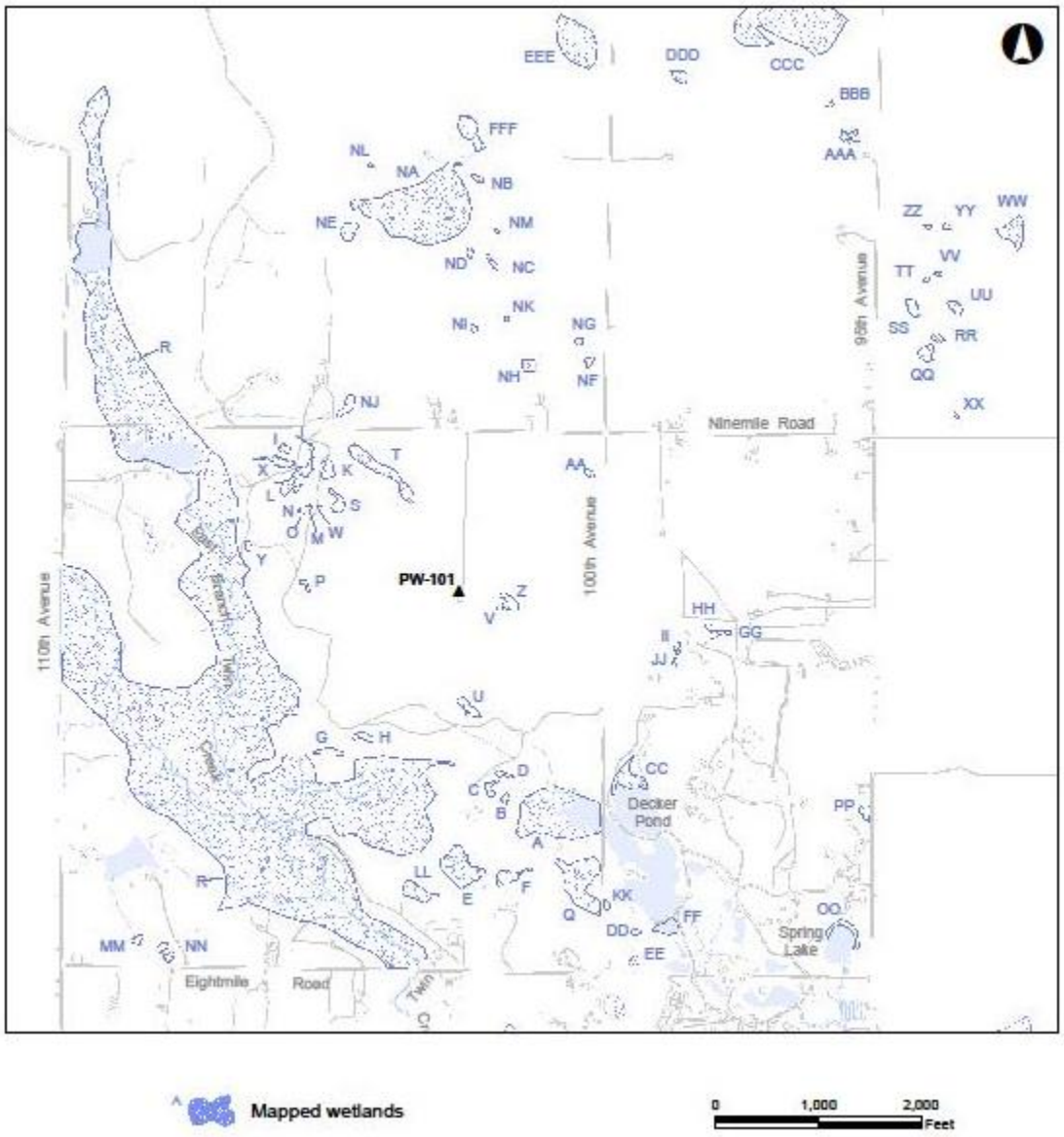

Figure 2. Location Map of Wetlands

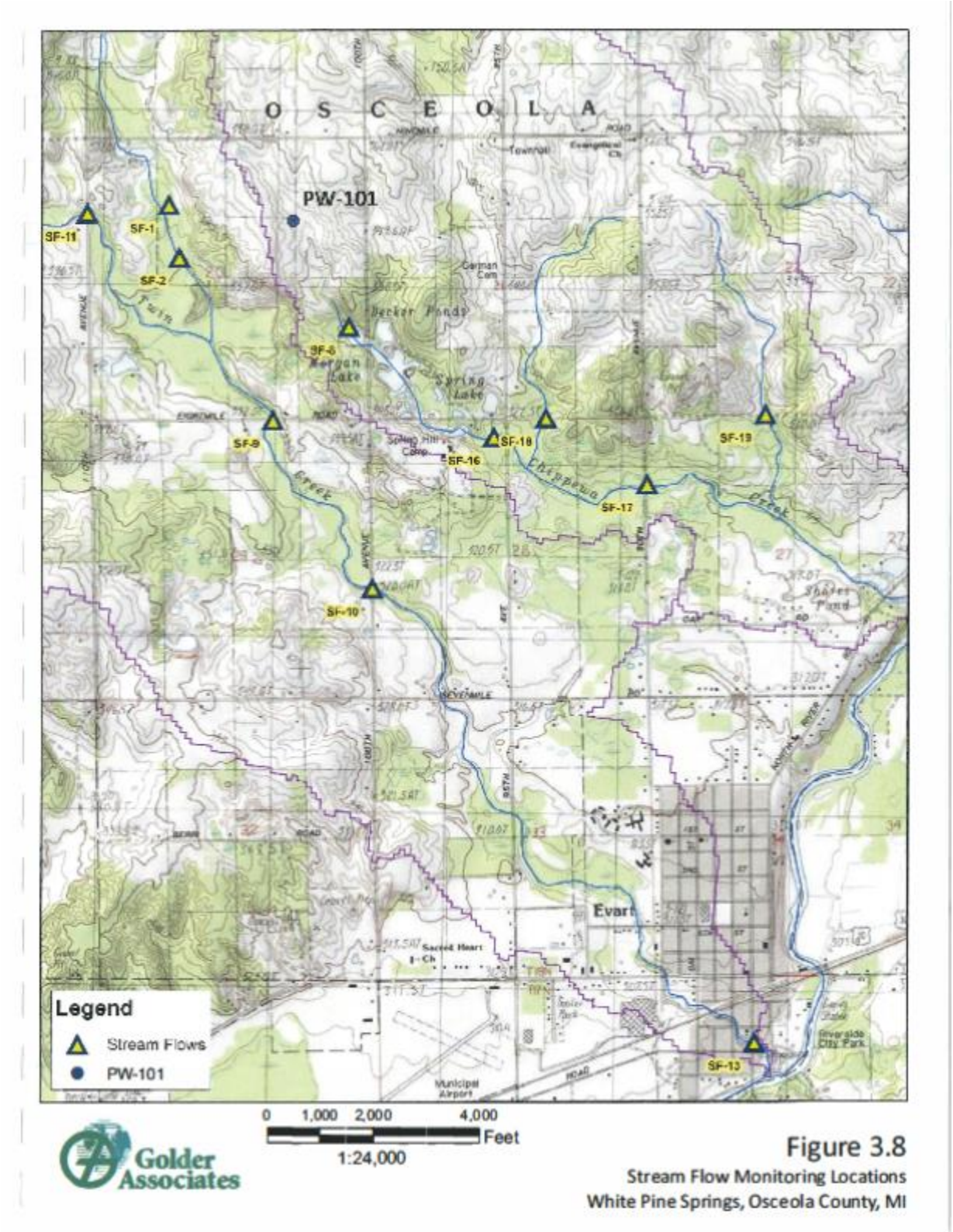

Figure 3. Stream Flow Monitoring Locations

TABLES

SUMMARY OF SPECIAL CONDITIONS

This summary is provided for convenience to the reader, but the interpretation should be considered incomplete without reviewing all the Permit Conditions described in this document.

Media	Location	Measure	Frequency	Reporting	Purpose	Threshold for Action	Additional Comments
Surface Water	All existing SF locations (SF-1,SF-2, SF-8,SF-9, SF-10, SF-11, SF-13, SF-16, SF-17, SF-18, SF-19 and Weirs 1 to 10)	The permittee shall collect a complete round of streamflow measurements in all existing monitoring locations prior to increase in pumping.		The permittee shall submit for Department approval a Monitoring Plan and Quality Assurance Project Plan (QAPP) prior to conducting the baseline monitoring and implementing the increased withdrawal. For details refer to Permit Conditions-Streamflow.	To assemble a complete hydrological baseline condition		These data shall be collected in the same sampling event as additional stream stage and flow measurements to assemble a complete hydrological baseline condition prior to the increase in pumping.
Surface Water	SF-8 - Chippewa Creek	Stage and discharge	Continuous. Readings shall be recorded hourly from June to October.	Annually by December 31 of each year. For details refer to Permit Conditions-Streamflow.	Model validation and monitoring of sensitive headwaters area where predicted flow reductions are highest	Flow falls below 72 gpm for a period of 14 days	Monitoring shall be conducted using a pre-fabricated flume rated for the flow range at SF-8 and equipped with a pressure transducer to continuously measure stream stage. Flume construction and streamflow measurement using a flume shall be done in accordance with USGS standards (refer to Permit Conditions-Streamflow for details). Stage measurements shall be collected using a pressure transducer housed in a stilling well, constructed in accordance with USGS standards for stream gaging.
Surface Water	SF-1	Stage and discharge	Continuous. Readings shall be recorded hourly from June to October.	Annually by December 31 of each year. For details refer to Permit Conditions-Streamflow.	Model validation and monitoring of sensitive headwaters area where predicted flow reductions are highest	Flow falls below 431 gpm for a period of 14 days	Stage measurements shall be collected using a pressure transducer housed in a stilling well, constructed in accordance with USGS standards for stream gaging.
Surface Water	All existing SF locations (SF-2, SF-9, SF-10, SF-11, SF-13, SF-16, SF-17, SF-18, SF-19 and Weirs 1 to 10)	Continue collecting monthly discharge measurements at existing surface water monitoring locations	Monthly measurements of streamflow	Annually by December 31 of each year. For details refer to Permit Conditions-Streamflow.	Model validation	No flow is observed at the headwater monitoring locations SF-8 and SF-1	Monthly discrete discharge measurements shall also be collected at SF-1 and SF-8 when continuous monitoring is suspended during the winter and spring months (November to May). Monthly discharge measurements should be collected at least 72 hours after a rainfall event.
Surface Water	SF1, SF9, SF8, SF16	Temperature , Dissolved Oxygen, and Macroinvertebrate Community		The permittee will develop a work plan and an associated Quality Assurance Project (QAPP) Plan for the monitoring of activities and submit to the Department for approval			For details about the QAPP refer to Permit Conditions-Aquatic Life and and Aquatic Habitat.

Media	Location	Measure	Frequency	Reporting	Purpose	Threshold for Action	Additional Comments
Surface Water	SF1, SF9, SF8, SF16	Temperature	Continuous. Readings shall be recorded hourly from June to October.	Data shall be compiled every two weeks at a minimum. The permittee shall notify the Department within 24 hours of compiling the temperature logger data if, at any time during the two (2)-week period, the temperature rises above 68 degrees Fahrenheit in June, July or August, or rises above 63 degrees Fahrenheit in September.	To ensure that the creeks are meeting the temperature standard for cold water streams		Temperature measurements should be made using an instream temperature logger. The permittee shall notify the Department within 24 hours of compiling the temperature logger data if, at any time during the two (2)-week period, the temperature rises above 68 degrees Fahrenheit in June, July or August, or rises above 63 degrees Fahrenheit in September.
Surface Water	SF1, SF9, SF8, SF16	Dissolved Oxygen (DO).		The baseline shall be conducted after approval of the monitoring plan and QAPP by the Department and prior to implementing the permitted increased pumping.	Baseline for DO		
Surface Water	SF1, SF9, SF8, SF16	Dissolved Oxygen (DO)	Yearly – A continuous two (2)-weeks sample shall be conducted in August. Readings shall be recorded hourly.	The permittee shall notify the Department within 24 hours of compiling the dissolved oxygen data if, at any time during the study period, the dissolved oxygen is below seven (7) milligrams per liter.	To ensure that the creeks are meeting the dissolved oxygen standard for cold water streams		Sampling shall be conducted using an installed dissolved oxygen meter.
Macroinvertebrates	SF1, SF9, SF8, SF16	Macroinvertebrate Community		The baseline shall be conducted after approval of the monitoring plan and QAPP by the Department and prior to implementing the permitted increased pumping.	To conduct a baseline assessment		
Macroinvertebrates	SF1, SF9, SF8, SF16	Macroinvertebrate Community	Yearly in July	Annually - September	To ensure biodiversity and sensitive taxa presence	Due to natural variability in metric score from year to year, the threshold will be a decline of three (3) metric points from the baseline score in any one year or over multiple years.	Sampling shall be conducted according to the Department's WRD's Policy WRD-SWAS-051 Qualitative Biological and Habitat Survey Protocols for Wadeable Streams and Rivers (refer to Permit Conditions- Aquatic Life and Aquatic Habitat for details).
Surface Water	SF1, SF9, SF8, SF16	Depth/Width Stream Measurement	Yearly during low-flow conditions (late July or August)	Annually - September	To ensure creek depth is supportive of aquatic life		Measurements will be also taken upstream and downstream of existing culverts at six road/stream crossing locations: T2, T3, T8, T18, C2, and C3 (Figure 1).

Media	Location	Measure	Frequency	Reporting	Purpose	Threshold for Action	Additional Comments
Fish	SF1, SF9, SF8, SF16	Fish Community	Yearly in July	Annually - September	To ensure cold water fish species presence and a diverse fish community		
Groundwater				The permittee shall submit a Quality Assurance Project Plan (QAPP) and monitoring Work Plan to the Department to ensure proper monitoring.			For details of the QAPP and monitoring Work Plan refer to Permit Conditions- Hydrological Baseline and Groundwater
Groundwater	All permittee's current sampling locations and the set of five (5) newly required nested wells, weirs, flumes, or stream stages (refer to Nestlé Permit Conditions – Hydrological Baseline and Groundwater for details)	Collection of groundwater level and vertical gradient baseline assessment information.	One time minimum	Document the findings of the baseline sampling noting any climate or physical conditions that may affect the sampling and provide this documentation to the Department within four (4) weeks of data collection	To assemble a complete hydrological baseline condition. The baseline water level or flow measurements shall include monitoring wells, vents, seeps, drive points staff gages, existing shallow water level monitoring points, and weirs.		These data shall be collected in the same sampling event as additional stream stage and flow measurements to assemble a complete hydrological baseline condition prior to the increase in pumping. Any newly installed nested wells, weirs, flumes, or staff gages shall also be included in the baseline.
Groundwater	MW, DP, Vent, Seep	Monitoring of the water levels at each groundwater monitoring location. This includes the requested nested pair of wells as identified in the Permit Conditions.	Monthly basis	Provide the data in a single print and electronic Excel Table including all the information listed in Nestlé Permit Conditions – Hydrological Baseline and Groundwater annually by October 1.	The data shall be used to validate the existing modified MODFLOW groundwater model on a yearly basis Furthermore, the model should be revised and re-calibrated on a yearly basis	Drawdown or water level declines observed in the monitoring data exceed what is predicted based on the groundwater model and the threshold limits set in the wetland permit conditions for any wetland or residential well supply negatively impacted based on supply or quality.	
Groundwater	Nested wells at Northern Ridge Springs	Water level and vertical gradients	Baseline and monthly	Data tables submitted monthly with result summary report sent annually	Groundwater model suggests a high percentage of flow reduction at this location but there is insufficient monitoring data from weir 6 to verify	Drawdown or water level declines are greater than expected based on groundwater model predictions and the threshold limits set in the wetland permit conditions for any associated wetland or residential well supply negatively impacted based on supply or quality	The limited data provided produces a potentially large flow reduction in these springs. It is located to the north-northwest of PW-101 near wetland R and SF-1 locations. Groundwater model residuals are high in this area between the springs and the pumping well. The vertical gradients tend to fluctuate based on the information we have. The trend of the gradients should be monitored if a reduction is detected.
Groundwater	Nested wells at the northeast side of Southern Boomerang Springs and also at Northern Boomerang Springs	Water level and vertical gradients	Baseline and monthly	Data tables submitted monthly with result summary report sent annually	Model validation and provide information on changes in these springs that do not have any monitoring information.	Drawdown or water level declines are greater than expected based on groundwater model predictions and the threshold limits set in the wetland permit conditions for any associated wetland or residential well supply negatively impacted based on supply or quality	There is not data on these two springs. There should be locations in one or both springs or nearby. The vertical gradients tend to fluctuate based on the information we have. The trend of the gradients should be monitored if a reduction is detected.

Media	Location	Measure	Frequency	Reporting	Purpose	Threshold for Action	Additional Comments
Groundwater	White Pine Springs north of location SF-6 and south of wetland G	Water level and vertical gradients	Baseline and monthly	Data tables submitted monthly with result summary report sent annually	Model validation and provide information on changes in this spring do to the limited monitoring in 2000-2003 at SF-6 because of site conditions.	Drawdown or water level declines are greater than expected based on groundwater model predictions and the threshold limits set in the wetland permit conditions for any associated wetland or residential well supply negatively impacted based on supply or quality	Flow measurements from or nearby SF-6 would be preferred since there is limited data (2003). The location however is difficult because of frequent changes in conditions. If a viable location cannot be found near SF-6 then a nested well pair to monitor water levels and gradients should be considered.
Groundwater	The northwest side of wetland CC and southwest of Weir 9 near Decker Springs	Water level and vertical gradients	Baseline and monthly	Data tables submitted monthly with result summary report sent annually	Model validation and provide information on changes in these springs and wetland CC that do not have any water level monitoring data or locations currently. This is an area of higher groundwater model residuals.	Drawdown or water level declines are greater than expected based on groundwater model predictions and the threshold limits set in the wetland permit conditions for wetland CC or any residential well supply negatively impacted based on supply or quality	
Groundwater	Local Site Model	All hydrological and recharge data	Annually	Validate the existing groundwater model based on the baseline and all newly collected hydrological data collected. The report should include an assessment on how well the new data matches model predication along with supporting documentation. Identify any problematic areas with proposed resolution as warranted			
Wetlands				The permittee shall develop and implement a detailed vegetation and hydrology monitoring plan to the Department for approval			
Wetlands	All wetlands located South of Ninemile, West of 95th Ave, North of Eight mile and East of 110th.	The permittee shall conduct a Level 3 Wetland Identification Program (WIP) assessment.	One time		Wetland baseline assessment The information shall be collected by the permittee before increasing pumping rates.		All wetland boundaries shall be flagged in the field and surveyed in using a submeter accuracy GPS.

Media	Location	Measure	Frequency	Reporting	Purpose	Threshold for Action	Additional Comments
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R.	The permittee shall conduct a detailed comprehensive Floristic Quality Assessment (using FQI and mean C).	The initial baseline survey shall be completed three (3) times (early June, mid- July and late August) prior to increasing pumping rates.		The purpose of the survey is to document floristic quality of the wetlands and document any Threatened, Endangered or Special Concern Species, as well as plants that have a high C value. The information shall be collected by the permittee before increasing pumping rates.		A qualified botanist shall conduct the survey.
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R.	The permittee shall develop a hydrology monitoring plan for Department approval and install monitoring wells located along vegetation transects	A minimum of one growing season		Wetland baseline assessment The information shall be collected by the permittee before increasing pumping rates.		Hydrology data shall be collected prior to increasing pumping rates.
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R.	The permittee shall develop a detailed vegetation sampling plan for Department approval	The initial baseline survey shall be completed three (3) times (early June, mid- July and late August) prior to increasing pumping rates		Wetland baseline assessment The information shall be collected by the permittee before increasing pumping rates.		The initial vegetation assessment shall be conducted prior to increasing pumping to obtain a baseline. Refer to Permit Conditions-Wetland for the minimum components that a monitoring plan shall include.
Wetlands	All wetlands located South of Ninemile, West of 95th Ave, North of Eight mile and East of 110th.	Wetland boundaries shall be verified in the field every two (2) years to detect potential changes to wetland boundaries. The boundaries of wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R (east side only) shall be permanently staked in the field to allow for quick visual assessment of changes to wetland boundaries.	Every two (2) years.	Any reduction in wetland area over 0.01 acre per wetland shall be noted and reported to the Department.	To ensure wetlands protection	The surveyed boundary of each wetland shall not decrease by more than 0.01 acre at any time.	A submeter accuracy GPS shall be used to survey in the wetland boundary. The permittee shall provide a written summary of all the problem areas that have been identified and potential corrective measures to address them, including any potential corrective actions based on results of the monitoring data and site observations.
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R.	Dissolved oxygen (DO), pH, and conductance.	One time				The permittee shall develop a water chemistry sampling plan for Department approval measuring DO, pH, and conductance.
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R.	Estimation of the average conservatism score (average C)	Once a year	Annually prior to January 31 of the following year	To ensure wetlands protection	The average conservatism score (average C) for native wetland plants shall be greater than or equal to the baseline score at the end of the monitoring period.	Refer to Permit Conditions-Wetland for the minimum components that a monitoring plan shall include.

Media	Location	Measure	Frequency	Reporting	Purpose	Threshold for Action	Additional Comments
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R.	Estimation of the Floristic Quality Index (FQI)	Once a year	Annually prior to January 31 of the following year	To ensure wetlands protection	FQI shall be greater than or equal to the baseline at the end of the monitoring period.	Refer to Permit Conditions-Wetland for the minimum components that a monitoring plan shall include.
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R.	Estimation of percent cover of invasive species	Once a year	Annually prior to January 31 of the following year	To ensure wetlands protection	The percent cover of invasive species shall not increase within wetlands A, B, C, CC, D, E, F, G, H, LL, Q, or the east side of R.	
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R.	Wetland Performance Standard	Once a year	Annually prior to January 31 of the following year	To ensure wetlands protection	Wetland indicator status of all species per transect shall remain stable and wetland type shall not change.	Refer to Permit Conditions-Wetland for the minimum components that a monitoring plan shall include.
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R	Vegetation Health	Once a year	Annually prior to January 31 of the following year	To ensure wetlands protection	The wetland shall not show visible signs of vegetation stress including trees and shrubs.	Refer to Permit Conditions-Wetland for the minimum components that a monitoring plan shall include.
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R	Wetlands Performance	Once a year	Annually prior to January 31 of the following year	To ensure wetlands protection	Hydrology shall not show a decrease due to pumping based on data previously provided by Nestle and/or the baseline hydrology assessment.	Refer to Permit Conditions-Wetland for the minimum components that a monitoring plan shall include.
Wetlands	Wetlands A, B, C, CC, D, E, F, G, H, LL, Q, R	Wetland water levels			To ensure wetlands protection	Water levels shall be within 12 inches of the soil surface for 30 consecutive days starting at the beginning of the growing season.	Refer to Permit Conditions-Wetland for the minimum components that a monitoring plan shall include.