

TOWN OF SHAPLEIGH

ORDINANCE GOVERNING
THE LARGE-SCALE PUMPING OR EXTRACTION OF
GROUNDWATER, SPRING WATER AND/OR WATER FROM
AQUIFERS WITHIN THE MUNICIPALITY OF
SHAPLEIGH, MAINE

AN ADDITION TO TOWN OF SHAPLEIGH ORDINANCES
SECTION 105-

March 2009

Section 1. TITLE

This Ordinance shall be known and cited as the Large-Scale Groundwater Extraction Ordinance of the Town of Shapleigh, Maine.

Section 2. PURPOSE

The intent and purposes of this Ordinance are as follows:

- To protect the short-term and long-term quality and quantity of groundwater, spring water and freshwater resources within aquifers and the recharge areas for these water bodies and related surface waters, including but not limited to lakes, ponds, wetlands, rivers and streams as may be located wholly or partially within the Town of Shapleigh;
- To ensure that any proposed large-scale water extraction activities are subject to appropriate review and approval by the Town of Shapleigh and the State of Maine;
- To establish a regulatory framework for the oversight and management of groundwater resources and groundwater extraction activities and to develop management practices governing groundwater extraction activities which will ensure the ongoing sustainability and quality and avoid interruption of supply or degradation in the quality of groundwater resources within the Town of Shapleigh;
- To protect the general health, safety and well-being of all persons dependent upon aquifers and groundwater resources located in the Town of Shapleigh;
- To ensure that groundwater extraction activities do not adversely impact or impair plant or wildlife communities or the viability of wetlands, meadow areas or forested areas dependent on groundwater resources;
- To ensure the ongoing stability and to safeguard the environmental health of surface land proximate to and within groundwater extraction areas and to conserve topsoil and to promote conditions safeguarding agricultural and silvicultural activities as may be dependent on water resources;
- To protect private and public property proximate to and within groundwater extraction areas by regulating the structures, facilities, uses and activities associated with groundwater extraction so that there is no undue adverse impact to new and existing roadways due to extraction, processing, loading or transport of water resources;
- To minimize, limit and require mitigation and buffering of noise, vibration, dust, other adverse effects or pollution associated with groundwater extraction activities, including regulation of equipment and vehicles used in groundwater extraction, processing, loading or transport of groundwater resources; and

- To provide policies promoting fair use of and equitable access to groundwater resources and supplies.

Section 3. AUTHORITY

This Ordinance is adopted and enacted pursuant to the following authority:

- Title 38 M.R.S.A, Sections 401 et seq.
- Maine Constitution, article VIII and Title 30-A M.R.S.A, Sections 2101 et seq. (Municipal Home Rule);
- Title 30-A M.R.S.A., Sections 3001-3006 (Ordinance Power);
- Title 30-A M.R.S.A., Section 4311 (Growth Management); and
- Title 22 M.R.S.A., Sections 2611 et seq. (Drinking Water Regulations).

Section 4. DEFINITIONS

In this Ordinance, the words and phrases listed below have the following meanings unless a contrary meaning is required by the context or is specifically prescribed. Terms related to groundwater extraction that are not listed below shall be defined in accordance to the following order: (1) as defined by State of Maine Statutes; (2) in accordance with their generally accepted technical meaning within the applicable scientific disciplines; and (3) their common dictionary definition.

Aquifer: An underground body of water and earth, sand, gravel, or rock that contains sufficient saturated permeable geologic material to hold, conduct and yield significant quantities of groundwater to wells and springs. The term “aquifer” as used in this Ordinance includes all areas specifically mapped or identified on the current maps issued by the Maine Geological Survey as the colored map series identified as Significant Sand and Gravel Aquifer Maps.

Drought: A period of abnormally dry weather that is sufficiently prolonged to cause serious hydrologic imbalance in the affected area. It is possible to index the severity of a drought by an impact grading system. One such system – the Palmer Index - uses a zero for normal conditions, a plus scale of 1 to 4 to measure or index the degrees of wetness of a region, and a minus scale of -1 to -4 to index the degree of dryness of a region. In the fall of 2008, the State of Maine is 14 inches above normal in the year-to-date precipitation. The Palmer Drought Index for Maine in the Fall of 2008 is + 4 (extremely moist).

Extraction Point or Extraction Facility: The physical location where groundwater is extracted from the ground by the use or development of springs, wells, pumps, piping apparatus, catchments, weirs or other extractive devices, methods or technologies.

Groundwater: Underground water resources located at or below the water table and within the pore space of unconsolidated sediments or in fractures in bedrock.

Large-Scale Water Extraction Activities: Extraction of five thousand (5,000) or more gallons of groundwater from a single or multiple Extraction Points located within the Town of Shapleigh within any twenty-four (24) hour period by any individual, business association or entity, consortium or association of related individuals or related business entities.

Water Bodies or Surface Waters. Lakes, ponds, rivers, streams, wetlands, and similar surficial water bodies.

Water Extraction Activities: The withdrawal, removal, diversion, taking or collection of groundwater by any means from aquifers, springs, wells or other groundwater resources through the use of wells, pumps, piping apparatus, catchments, weirs or other extractive devices, methods or technologies.

Watershed or Drainage Basin. The area of land in which all precipitation (rainfall, snow melt, etc.) drains towards a single location or area and water body or water course. Ridges of higher ground generally form the boundaries between watersheds. At the linear boundaries of a drainage basin, precipitation falling on one side flows towards the low point of one drainage basin while precipitation falling on the other side of the boundary flows towards the single location or area and water body or water course of the adjacent drainage basin.

Water Table. The level of the surface of groundwater or the water saturated zone within the underground substrate. The location of a water table is revealed by the level at which water stands in a well open along its length and which penetrates into adjacent groundwater resources.

Zone of Contribution. The area of an aquifer that is capable of contributing groundwater to a well or other Extraction Point under the most severe pumping and limited recharge conditions that can be realistically anticipated, (i.e., 180 days of pumping at the maximum approved yield rate with no recharge of the groundwater resources from precipitation). A Zone of Contribution is bounded by groundwater divides which are evidenced by the pumping of the well and/or by the contact zones of supplying aquifers with adjacent low-permeable geologic materials such as glacial till or bedrock. Depending on local geologic and hydrologic conditions, surface water bodies such as rivers, streams, wetlands, ponds or lakes, may act as recharge boundaries and define a Zone of Contribution. In all cases, a Zone of Contribution will extend upgradient within the related aquifer areas to the point of intersection of the aquifer with prevailing site-specific hydrogeologic boundaries such as (1) a groundwater divide, (2) a contact zone with low-permeable geologic materials such as glacial till or bedrock, or (3) a recharge boundary which may be demarcated by a surface water body.

Zone of Influence. The area surrounding a pumping well within which there are or will be physical changes in the water table due to groundwater relocation, extraction or withdrawal or the interruption of groundwater recharge conditions.

Section 5. APPLICATIONS AND PERMITS

A. General. The following provisions are intended to ensure the ongoing sustainability and quality of water supplies and the avoidance of any interruption or degradation of water quality and quantity in groundwater resources to members of the general public within the Town of Shapleigh, and to protect the health, safety and well-being of all persons dependent upon aquifers and groundwater resources located in the Town of Shapleigh.

B. Permit Required. Any person seeking to develop or engage in Large-Scale Water Extraction Activities must first apply for and obtain a Conditional Use Permit issued by the Planning Board of the Town of Shapleigh.

C. Water Extraction Activities Not Requiring a Permit. The following Water Extraction Activities and uses do not require a Conditional Use Permit:

- (1) Water extraction for use in agricultural activities and used on farmlands, agricultural or on silvicultural lands for such purposes in the immediate vicinity of an Extraction Point developed for such activities and use;
- (2) Water extraction for use as drinking and domestic water by private residences located within the Town of Shapleigh;
- (3) Water extraction for use by public facilities such as schools, wastewater treatment facilities, public water utilities, public athletic fields or similar facilities or uses located within the Town of Shapleigh
- (4) Water extraction used to support public safety or fire suppression; or
- (5) Existing water extraction used to support ongoing residential, commercial and industrial activities within the Town of Shapleigh to the limit of the historic level of water use existing as of the date of the adoption of this Ordinance.

D. Application for Permit. Applications for Conditional Use Permits shall be subject to the provisions set forth in the Town of Shapleigh Zoning Ordinances, Chapter 105 and the following additional application and performance standards. Application forms and instructions for completion of a Conditional Use Permit are available in the Shapleigh Town Office.

- (1) Additional Application and Performance Standards.
 - a. Written Application Required. Applications for a permit from the Planning Board to conduct Large-Scale Groundwater Extraction activities shall be in writing and accompanied by detailed site plans and project descriptions prepared by a qualified and Licensed State of Maine geologist, hydrogeologist or engineer.

- b. Right, Title and Interest. Applicants must submit with an application adequate evidence of the applicant's right, title and interest in and to the property or properties on which any Water Extraction Activity is proposed. Applicants may show sufficient right, title and interest by providing a copy of a deed duly recorded in the York County Registry of Deeds or a copy of the lease, option, contract or other instrument establishing their right, title and interest. In all cases, such instruments must be provided in their entirety and must be submitted with the application. References to purchase price and specific business sensitive financing terms may be redacted from the documentation provided.
- c. Extraction Methods and Quantity. Applications shall include a detailed statement describing the extraction methods proposed and the total maximum quantity of water to be extracted within any twenty-four (24) hour period from the aggregate of all Extraction Points as operated by and proposed to be operated by the same individual/entity, or consortium/association of individuals or entities. The description and submissions shall include a detailed summary and maps describing and showing the locations of all existing and proposed Points of Extraction and the proposed and existing methods of extraction, the depth of the extraction methods and a summary description of the characteristics and type of aquifer resource.
- d. Water Use. Applications shall include detailed description of the proposed uses for which the water is to be extracted, including a description of the facilities for the use, processing, transport, storage, bottling, sales or other similar activities associated with the proposed Water Extraction Activity.
- e. Water Transport. Applications shall include a description detailing the means of transportation, transportation vehicles and the proposed number of daily trips of the water transportation vehicles on specific routes within Shapleigh to and from the Extraction Site and/or water pipeline terminus from which water transport vehicles will be loaded, transferred or discharged. The Planning Board may require a traffic study to be completed by a qualified, registered traffic or transportation engineer, retained by the Town of Shapleigh, and paid for by the applicant.
- f. Related Applications and Documents. Applications shall include copies of all related applications, exhibits and reports for such extraction project filed with any other municipal authority or any agency or department of the State of Maine or United States government, including, but not limited to, as required under 22 M.R.S.A Sections 2660 et seq. (transport of water for commercial purposes) or under applicable Maine Department of Health and Human Services rules and regulations. Related applications and documents filed after the date of the application but before any permit

is issued by the Planning Board shall be submitted to the board within 10 days of filing such related applications and documents.

- g. Hydrogeologic Investigation. Applications shall include a written report addressed to the Shapleigh Planning Board, procured by and paid for by the applicant, of a hydrogeological investigation. The investigation report must be prepared, signed and sealed by a Maine Certified Hydrogeologist, Geologist or Engineer. The report shall be based on a hydrogeological investigation of sufficient detail to provide, but not be limited to, the following information:
- (a) Watershed Map. A topographic map of the proposed entire watershed both upgradient and downgradient of the proposed Water Extraction Point(s). Topographic contours shall be shown on the map at intervals of twenty (20) feet or less.
 - (b) Aquifer Maps. Two maps of the aquifer showing the location of the spring(s), well(s), or excavation(s) from which water is currently extracted and proposed to be extracted and all wetlands and surface water bodies located within two thousand (2,000) feet of the Extraction Point(s). The applicant shall undertake all reasonable measures to obtain data for the aquifer maps from land not owned, leased, or to be leased by the applicant, but the applicant is not required to include such data from land areas whose owners do not allow access. The maps shall be at a scale of one hundred (100) feet or less to an inch and include topographic contours at an interval of twenty (20) feet or less. The two maps shall show the following information respectively:
 - (i) (Map 1) Water table contours and their range under ambient conditions as determined over at least a two (2) year period prior to any water extraction;
 - (ii) (Map 2) Water table contours under actual pumping conditions at completion of a five day constant rate pumping test at a rate at or above that proposed for operation;
 - (iii) The maps shall be based on Water Table elevation measurements from monitoring wells and Surface Water bodies in the vicinity of the extraction site(s), and must include surface water elevations for more distant locations;
 - (iv) Graphs and charts of precipitation and flow of water in related springs, streams, brooks, or rivers and water table elevation over the two-year period prior to any water

extraction shall be provided as well as an explanation of the significance of the data; and

- (v) Graphs and charts of precipitation and flow of water in related springs, streams, brooks, or rivers, and water table elevations shall also be provided for the period of the pumping test and ten days afterward.
- (c) Geologic Cross-Sections. At least two geologic cross-sections showing geologic structure and stratigraphy, groundwater and surface water elevations for two Aquifer Maps required in (b), above. The locations of these cross-sections shall be indicated on the Aquifer Maps.
- (d) Zones of Contribution and Zones of Influence. A map showing and narrative describing the long-term Zone of Contribution and Zone of Influence of each Extraction Point(s) based on maximum proposed extraction rates, and a quantitative water budget analysis that includes analysis of precipitation inputs, evaporation losses, surface water runoff, infiltration rates of precipitation into groundwater, analysis of discharge-recharge relationships between surface water and groundwater and the relationship of such factors to the soil types in the drainage basin. Such maps shall also provide identification of owned and leased land areas and indicate the current owner's or lessee's name.
- (e) Aquifer Characteristics. A narrative explaining the ability and capacity of the aquifer or other groundwater resource to provide the quantity of water desired to be extracted by the applicant based on the geologic conditions and relevant properties of the site and hydrogeologic conditions (e.g. hydraulic conductivity and transmissivity). Such explanation shall address but not be limited to the following issues:
 - (i) rates of groundwater drawdown and recharge;
 - (ii) sustainable groundwater extraction rates;
 - (iii) details regarding the location of aquifer boundaries;
 - (iv) details regarding the location of recharge areas;
 - (v) a review of possible changes in the zone of contribution and zone of influence over time and predicted impacts on the groundwater resources impacted; and

- (vi) prediction of the effects of long-term water extraction on the Water Table and the impacts on any and all nearby water bodies including, but not limited to, springs, lakes, ponds, rivers, streams, wetland areas, Town wells, and private wells or other existing extraction locations within the zone of contribution.
- (f) Chemical/Biological Characteristics. A narrative explaining the chemical and biological characteristics of the aquifer or other groundwater resource and a baseline chemical analysis or fingerprint of the water resource characteristics, studied for one (1) year on a monthly basis.
- (g) Water Quality Issues. A narrative analyzing the possible effects or impacts on the aquifer or other groundwater resources from disturbances of existing Water Extraction Activities causing potential groundwater chemistry or elements and/or minerals such as, but not limited to, iron, manganese, arsenic, or uranium, and reviewing any health hazards or water quality issues raised by such disturbances or other impacts as measured or otherwise ascertained of the specific conductance, turbidity, clarity, odor or taste associated with current groundwater conditions.
- (h) Site Plan. A detailed site plan depicting the following:
 - (i) Site Dimensions. The limits (outside perimeter) of the aquifer or other water source cited in the application, and the bounds of the land of the applicant.
 - (ii) Nearby Water Bodies. The location of all water bodies within 500 feet of the outside perimeter of the aquifer or other water resource.
 - (iii) Existing Road Network. The existing network of public or private roads leading to or by the Extraction Point(s).
 - (iv) Proposed New Roads. Any proposed new roads or driveways to be constructed for access to and egress from the Extraction Point(s), and the point(s) of intersection of such proposed roads or driveways with existing roads.
 - (v) Utility Lines. Any existing or proposed utility lines proposed for use in the Groundwater Extraction Activities.

- (vi) Monitoring and Test Wells. The location and type proposed or required of monitoring and test wells.
- (vii) Extraction Points. The location of all existing and proposed Extraction Point(s) including without limitation all associated existing and proposed well heads, pumping facilities, monitoring or test wells, buildings, and/or sheds, utility lines, fencing, access roads or driveways, with related elevation, and contour line information.
- (viii) Water Pipeline. The location of all existing and proposed pipes, pipelines, aqueducts or similar that are intended to facilitate transport of extracted water from Extraction Point(s) to all intended end users.
- (ix) Other Information Related to the Review of Groundwater Extraction Activities. All other relevant and material information bearing on the proposed Large Scale Water Extraction Activities the omission of which would tend to hinder the ability of the reviewing authority, affected land owners or the public from developing a full understanding of the scope and impact of the proposal, or as may be required by the Planning Board.
- (x) Other Required Information. All other information the Shapleigh Zoning Ordinance requires with a Conditional Use Permit Application.

E. Traffic Impact Analysis (if required by Planning Board). A traffic impact analysis prepared, signed and sealed by a State of Maine Certified Engineer with experience in traffic engineering. The analysis shall include the following:

- (1) Routes to be used,
- (2) Access conditions at site,
- (3) Types and weights of water transport vehicles expected,
- (4) The expected daily water transport vehicle trips,
- (5) Peak-hour volumes,
- (6) Pre- and post-directional distribution of hourly and daily traffic volumes and level of service for the affected roads/streets and intersections,
- (7) Assessment of the load capability and volume capacity of the roads/streets to be

used,

- (8) Effect upon the level of service of the roads/streets giving access to the site and the neighboring streets that may be affected, and
- (9) Recommended improvements to assure an adequate level of service on the affected Streets and mitigate the physical degradation of roads sooner than the anticipated life span.

F. Conditions of Permit. No application for Large Scale Water Extraction Activities shall be issued until and unless the Planning Board affirmatively finds that each of the following performance standards has been or will be met and that all other Shapleigh Zoning Ordinance requirements are met. The burden of proof is solely on the applicant.

- (1) **Technical Expertise and Financial Capability.** The applicant must demonstrate to the reviewing authority that it possesses the technical expertise and financial resources to provide continuing adherence and capacity to meet these performance standards.
- (2) **Sustainability of Aquifer Characteristics.** The quantity of groundwater proposed to be extracted will not cause undue adverse impact to the groundwater flow patterns relating to the aquifer or its recharge areas, related springs or other groundwater resources within the Town of Shapleigh.
- (3) **Sustainability of Aquifer Production.** The quantity of groundwater proposed to be extracted will not adversely affect the long-term sustainability of the aquifer, groundwater resource recharge areas, or other groundwater resources, during periods of drought or due to reasonably anticipated changes in the recharge capacity of the effected groundwater resources.
- (4) **Sustainability of Surface Water Characteristics.** The quantity of groundwater to be extracted will not adversely impact, significantly diminish, or alter the characteristics of any surface waters within the Town of Shapleigh, including during periods of drought.
- (5) **Land Subsidence.** The quantity of water to be extracted will not cause any ground subsidence on the parcel on which groundwater extraction is taking place or in the vicinity of the parcel on which Groundwater Extraction Activities are proposed.
- (6) **Sustainability of Water Quality.** The proposed extraction will not create a health risk or create adverse impacts such as drinking water turbidity, reduced clarity, or new odors within existing groundwater resources from the disturbance

of existing geologic materials within the aquifer, or from any other cause related to the proposed Groundwater Extraction Activity.

- (7) **Monitoring System and Schedule.** Applicant must, in conjunction with the Town, establish an ongoing monitoring system which documents extraction and recharge data and water quality characteristics within the zone of contribution. The data is to be reported in writing to the Shapleigh Board of Selectmen on at least a monthly basis. If an aquifer location allows, at least 25% of monitoring locations shall be at private wells located within the Zone of Contribution, provided the applicant is able to obtain landowner permission for such testing. In the event there are not enough private wells to attain the 25% threshold of wells to be monitored, the Planning Board may request the applicant to provide additional monitoring stations on adjacent public or State lands under which the aquifer or groundwater resource is located. The information to be gathered at each testing/monitoring well on water quality parameters shall include, at minimum, the following data:

- a. Water level;
- b. Turbidity;
- c. Temperature;
- d. pH;
- e. Conductivity;
- f. Alkalinity;
- g. Dissolved oxygen;
- h. Aroma;
- i. Total coliform;
- j. Chlorophyll-a;
- k. Total organic carbon;
- l. Volatile organic compounds (VOCs);
- m. Phosphorus;
- o. Sodium;
- p. Calcium;
- q. Arsenic;
- r. Iron;
- s. Manganese;
- t. Sulfur;
- u. Lead;
- v. Copper; and
- w. Other parameters deemed appropriate by the Planning Board.

- (8) **Sustainability of Preexisting Domestic Use of Groundwater.** The applicant assumes and shall be individually responsible for any and all liability for the loss, interruption, degradation or interference with the preexisting use or beneficial domestic use of groundwater enjoyed by any person caused by applicant's participation in Large Scale Water Extraction Activities.

For the purposes of this section “beneficial domestic use”, “groundwater” and “preexisting use” shall be as defined by 38 M.R.S.A. § 404-1A-C and liability of applicant shall be for compensatory damages in accordance with 38 M.R.S.A. § 404.

- (9) **Surety.** See H(1) below.
- (10) **Road Use Restrictions.** Additional vehicular demand on existing town roads or public easements occasioned by the operation of the extraction facility(ies) will not exceed the capacity of those roads, or cause the premature failure, aging or diminished utility of those roads as determined by the Town Road Commissioner, and/or State of Maine DOT.
- (11) **Pipeline Use.** If extraction facility(ies) will be served by pipes, pipelines, aqueducts or similar devices, such installations will be sited and constructed in a manner which shall not unduly interrupt the public use of any existing roadway, the public’s access to any public facility, great pond, and access to private property; or pose the risk of damage to any property along or through which installation traverses as a result of any failure or malfunction which might cause ponding, erosion, run-off, or similar conditions.
- (12) **Habitat Preservation.** The applicant has complied with the requirements of 38 M.R.S.A. § 480-D-3, harm to habitats and fisheries.

G. Independent Expert Assistance. If the Planning Board reasonably determines it requires independent expert assistance to assist in its review of the application, or in evaluating the substance of the application or in developing appropriate conditions of approval, it may engage the service of a technical expert to assist the Board. The applicant shall pay to the Town, in advance of the scheduling of any public hearing, a sum equal to the estimated cost of the independent expert. The failure to make payment shall excuse the reviewing authority from scheduling any further review of the application by the Planning Board until such payment is made in full.

H. Surety and Terms of Permit.

- (1) **Surety.** No permit shall be issued without a surety bond or an equivalent and appropriate security, including anticipated inflation, as determined by the Planning Board in consultation with the Town Attorney to secure performance of the activities permitted to an applicant seeking to engage in Groundwater Extraction Activities and to ensure compliance with such conditions as the Planning Board may impose in connection with such authority. The bond or surety shall be in an amount recommended by the Board of Selectmen and approved by the Planning Board.

- (2) **Time Limit and Extensions of Permits.** Permits shall be issued for a period not to exceed three years, but may be renewed subject to the same criteria contained herein.

With respect to an application for a permit renewal if, after notice and hearing as referred to in § 105-73.D of the Shapleigh Zoning Ordinance, a renewal permit for another three (3) year period shall be issued provided:

- a) There is no increase in the permit holder's extraction activities in terms of the quantity of water to be extracted; and
- b) There is no change in the location or configuration of the extraction facility; and
- c) There has been no material failure by the permit holder to comply with any conditions of the expiring permit; and
- d) There has been no material failure by the permit holder to meet the performance standards applicable to the expiring permit; and
- e) There is no significant, credible evidence that the permit holder's continuing operations would be unable to meet the performance standards of the ordinance during any renewal period.

Any application for a renewal permit must be filed with the reviewing authority not less than 90 days prior to the expiration of the existing permit.

- (3) **Discontinuance of Permit.** The permit holder is required to inform the Town of Shapleigh if and when Extraction Points are going to be non-functional for extended periods of time. If an existing or permitted Large Scale Water Extraction Activity is discontinued for more than one year, such activity shall require application for a new or amended permit. Existing Water Extraction Activities in operation before the date of this ordinance is adopted may continue such operations for three years from such date. At the expiration of the three year period, any such Water Extraction Activities shall require the water extractor(s) to file for and receive a permit according to the application procedures, terms and performance standards of this ordinance. In addition, after notice and hearing the Conditional Use Permit for Large Scale Water Extraction Activities may be discontinued by the Planning Board in consultation with the Town Attorney during the three-year term of the permit for significant violations and/or variations of the Conditions of Permit described in this document.

- (4) **Independent Monitoring.** Applicant shall pay the Town of Shapleigh for on-going independent monitoring of extraction operations.

I. Effective Date. This ordinance shall become effective immediately upon its adoption and enactment by vote of the legislative body of the Town of Shapleigh at a duly called Town Meeting.