

**MODEL ORDINANCES
TO PROTECT LOCAL
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GROUND WATER PROTECTION OVERLAY DISTRICT EXAMPLE ORDINANCE

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1. PURPOSE AND INTENT

The jurisdiction of _____ recognizes that many residents rely on groundwater for their safe drinking water supply, and that certain land uses can contaminate groundwater particularly in shallow/surficial aquifers. To ensure the protection of these drinking water supplies, this ordinance establishes a zoning overlay district to be known as the Groundwater Protection Overlay District.

The purpose of the Groundwater Protection Overlay District is to protect public health and safety by minimizing contamination of shallow/surficial aquifers and preserving and protecting existing and potential sources of drinking water supplies. It is the intent to accomplish this through both public education and public cooperation, as well as by creating appropriate land use regulations that may be imposed in addition to those currently imposed by existing zoning districts or other county regulations.

The Groundwater Protection Overlay District is superimposed on current zoning districts and shall apply to all new construction, reconstruction, or expansion of existing buildings and new or expanded uses. Applicable activities/ uses allowed in a portion of one of the underlying zoning districts which fall within

the Groundwater Protection Overlay District must additionally comply with the requirements of this district. Uses prohibited in the underlying zoning districts shall not be permitted in the Groundwater Protection Overlay District.

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2. DEFINITIONS

For the purposes of this section, the following terms are defined below:

1. **AQUIFER.** A geological formation, group of formations or part of a formation composed of rock, sand or gravel capable of storing and yielding groundwater to wells and springs.
2. **CONTAMINATION.** An impairment of water quality by chemicals, radionuclides, biologic organisms, or other extraneous matter whether or not it affects the potential or intended beneficial use of water.
3. **DEVELOPMENT.** The carrying out of any construction, reconstruction, alteration of surface or structure or change of land use or intensity of use.
4. **FACILITY.** Something that is built, installed, or established for a particular purpose.
5. **GREY WATER.** All domestic wastewater except toilet discharge water.
6. **GROUNDWATER PROTECTION OVERLAY DISTRICT:** The zoning district defined to overlay other zoning districts in the (jurisdiction) of _____. This district may include specifically designated recharge areas that collect precipitation or surface water and carry it to aquifers.
7. **HAZARDOUS MATERIAL.** A material which is defined in one or more of the following categories:

Ignitable: A gas, liquid or solid which may cause fires through friction, absorption of moisture, or which has low flash points. Examples: white phosphorous and gasoline. *Carcinogenic:* A gas, liquid, or solid which is normally considered to be cancer causing or mutagenic. Examples: PCB's in some waste oils.

Explosive: A reactive gas, liquid or solid which will vigorously and energetically react uncontrollably if exposed to heat, shock, pressure or combinations thereof. Examples: dynamite, organic peroxides and ammonium nitrate.

Highly Toxic: A gas, liquid, or solid so dangerous to man as to afford an unusual hazard to life. Example: chlorine gas. *Moderately Toxic:* A gas, liquid or solid which through repeated exposure or in a single large dose can be hazardous to man. *Corrosive:* Any material, whether acid or alkaline, which will cause severe damage to human tissue, or in case of

- leakage might damage or destroy other containers of hazardous materials and cause the release of their contents. Examples: battery acid and phosphoric acid.
8. PRIMARY CONTAINMENT FACILITY. A tank, pit, container, pipe or vessel of first containment of a liquid or chemical.
 9. RELEASE. Any unplanned or improper discharge, leak, or spill of a potential contaminant including a hazardous material.
 10. SECONDARY CONTAINMENT FACILITY. A second tank, catchment pit, pipe, or vessel that limits and contains liquid or chemical leaking or leaching from a primary containment area; monitoring and recovery are required,
 11. SHALLOW/SURFICIAL AQUIFER. An aquifer in which the permeable medial (sand and gravel) starts at the land surface or immediately below the soil profile.
 12. SPILL RESPONSE PLANS. Detailed plans for control, recontainment, recovery, and clean up of hazardous material releases, such as during fires or equipment failures.
 13. STORMWATER TREATMENT PRACTICES (STPs). Measures, either structural or nonstructural, that are determined to be the most effective, practical means of preventing or reducing point source or nonpoint source pollution inputs to stormwater runoff and water bodies.
 14. TIME-OF-TRAVEL DISTANCE. The distance that groundwater will travel in a specified time. This distance is generally a function of the permeability and slope of the aquifer.

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3. ZONES WITHIN THE GROUNDWATER PROTECTION OVERLAY DISTRICT

3.1 ZONE 1 - DRINKING WATER CRITICAL IMPACT ZONE.

Zone 1 is defined as the area within the 6-month time-of-travel distance mapped around all the public water supply well(s). (NOTE: This zone typically constitutes the area within about 1000 feet of a public water supply well.)

a. Encouraged Uses. The following uses are encouraged within Zone 1 provided they meet the appropriate performance standards outlined in 3.1.c below and are designed so as to prevent any groundwater contamination.

Parks, greenways, or publicly-owned recreational areas such as foot, bicycle and/or horse paths, and bridges.

Necessary public utilities/facilities including the construction, maintenance, repair, and enlargement of drinking water supply related facilities such as, but not limited to, wells, pipelines, aqueducts, and tunnels..

Conservation efforts for soil, water, plants, and wildlife;

b. Special Exceptions. The following uses are permitted only under the terms of a special exception and must conform to provisions of the underlying zoning district and meet the performance standards outlined in 3.2.(c) below.

Expansion of existing nonconforming uses to the extent allowed by the underlying district. The applicant should consult the local zoning plan to confirm nonconforming uses. The (zoning authority) reserves the right to review all applications and shall not grant approval unless it finds such expansion does not pose greater potential contamination of groundwater than the existing use.

c. Prohibited Uses. The following uses, unless granted a special exception, are prohibited within Zone 1, the 6- month time-of-travel zone. (NOTE: this is typically within about 1000 feet of the public water supply well.)

Automobile body/repair shop;
Gas station;
Fleet/trucking/bus terminal;
Dry cleaner;
Electrical/electronic manufacturing facility;
Machine shop;
Metal plating/finishing/fabricating facility;
Chemical processing/storage facility;
Wood preserving/treating facility;
Junk/scrap/salvage yard;
Mines/gravel pit
Irrigated nursery/greenhouse stock
Confined animal feeding operations
Land divisions resulting in high density (>1 unit/acre) septic systems;
Equipment maintenance/fueling areas;
Injection wells/dry wells/sumps, except for single-family residences directing gutter downspouts to a drywell;
Underground storage tanks, (except those with spill, overflow, and corrosion protection requirements in place);
All other facilities involving the collection, handling, manufacture, use, storage, transfer or disposal of any solid or liquid material or waste having potentially harmful impact on groundwater quality;

All uses not permitted in the underlying zone district

3.2 ZONE 2 - DRINKING WATER POTENTIAL IMPACT ZONE.

Zone 2 is established as the remainder of the Groundwater Protection Overlay District not included in Zone 1, but deemed necessary to ensure adequate protection of public drinking water supplies.

a. Permitted Uses: All uses permitted in the underlying zoning districts provided that they can meet the Performance Standards as outlined for the Groundwater Protection Overlay District.

b. Special Exceptions: All special exceptions allowed in underlying districts may be approved by the _____ (zoning authority) provided they can meet performance standards outlined for the Groundwater Protection Overlay District.

c. Performance Standards: The following standards shall apply to uses in Zones 1 and 2 of the Groundwater Protection Overlay District:

Any facility involving the collection, handling, manufacture, use, storage, transfer or disposal of any solid or liquid material or wastes, unless granted a special exception either through permit or another ordinance, must have a secondary containment system which is easily inspected and whose purpose is to intercept any leak or release from the primary containment vessel or structure. Underground tanks or buried pipes carrying such materials must have double walls and inspectable sumps.

Open liquid waste ponds containing materials referred to in item (1) above will not be permitted without a secondary containment system.

Storage of petroleum products in quantities exceeding () gallons at one locality in one tank or series of tanks must be in elevated tanks; such tanks must have a secondary containment system noted in item (1) above where it is deemed necessary by _____.

All permitted facilities must adhere to appropriate federal and state standards for storage, handling and disposal of any hazardous waste materials.

An acceptable contingency plan for all permitted facilities must be prepared for preventing hazardous materials from contaminating the shallow/surficial aquifer should floods, fire, or other natural catastrophes, equipment failure, or releases occur:

(a) For flood control, all underground facilities shall include but not be limited to a monitoring system and secondary standpipe above the 100 year flood control level, for monitoring and recovery. For above ground facilities, an impervious dike, above the 100 year flood level and capable

of containing 100 percent of the largest volume of storage, will be provided with an overflow recovery catchment area (sump).

(b) For fire control, plans shall include but not be limited to a safe fire fighting procedure, a fire retarding system, effective containment of any liquid runoff, and provide for dealing safely with any other health and technical hazards that may be encountered by disaster control personnel in combating fire. Hazards to be considered are pipes, liquids, chemicals, or open flames in the immediate vicinity.

(c) For equipment failures, plans shall include but not be limited to:

Below ground level, removal and replacement of leaking parts, a leak detection system with monitoring, and an overfill protection system. Above ground level, liquid and leaching monitoring of primary containment systems, the replacement or repair and cleanup and/or repair of the impervious surface.

(d) For any other release occurring, the owner and/or operator shall report all incidents involving liquid or chemical material to the groundwater protection coordinator designated by the (local government authority).

Since it is known that improperly abandoned wells can become a direct conduit for contamination of groundwater by surface water, all abandoned wells should be properly plugged according to local and state regulations.

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4. LIABILITY

Nothing in this ordinance shall be construed to imply that the (local government authority) _____ has accepted any of an owner/developer's liability if a permitted facility or use contaminates groundwater in any aquifer.

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5. DISTRICT BOUNDARY DISPUTES

If the location of the Groundwater Protection Overlay District boundary in relation to a particular parcel is in doubt, resolution of boundary disputes shall be through a Special Permit application. The burden of proof shall be upon the owner(s) of the land to demonstrate where the boundaries of the district with respect to their individual parcel(s) of land show should be located. If the owner(s) request that the local government

agency determine more accurately the boundaries of the district with respect to individual parcels of land, the agency may engage a professional engineer, hydrologist, geologist, or soil scientist and charge the owner(s) for the cost of the investigation.

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6. ENFORCEMENT

6.1. CIVIL ENFORCEMENT:

- a. Any person may submit a verbal or written complaint alleging a violation of this ordinance.
- b. Upon receipt of a complaint, the jurisdiction shall conduct a brief investigation of the substances of the complaint, including a meeting with the landowner involved.
- c. Based upon the determination that there is a violation of this ordinance, the jurisdiction shall conduct an informal reconciliation with the violator. As part of such informal reconciliation, the jurisdiction shall:
 - (1) Notify the violator by mail of the violation of this ordinance and a desire of the jurisdiction to correct the violation through informal reconciliation. The statement shall also indicate that should the violator refuse to allow the recommended corrective actions within the time set forth by the jurisdiction, action may be taken to correct the violation and the violator will be billed for the cost of taking the corrective action.
 - (2) Make a good faith effort to meet the violator and resolve/correct the violation.
- d. If after taking the steps above and after a period of () days following the mailing of the notice of the violation, the jurisdiction in good faith determines that the violator is unwilling to participate in informal reconciliation and take the corrective actions prescribed, the jurisdiction shall notify the violator by mail of the termination of the informal reconciliation.
- e. The jurisdiction may take corrective actions deemed necessary following () days after notifying violator by mail of the notice of termination of the informal reconciliation, and bill the violator for the reasonable cost of such action.

6.2. CRIMINAL ENFORCEMENT:

In lieu of civil enforcement proceeding, a person who is alleged to have violated this ordinance may be prosecuted for the commission of a crime. Violation of this ordinance is a misdemeanor and may be punished by imprisonment of not more than () days or imposition of a fine of not more than \$ or both.

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7. SAVING CLAUSE

Should any section or provision of this ordinance be declared invalid, such decision shall not affect the validity of the ordinance as a whole or any other part thereof. A determination that any portion or provision of this overlay protection district is invalid shall not invalidate any special permit previously issued thereunder.

Approved by: _____

Date: _____

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MODEL SURFACE WATER ORDINANCE

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A. <i>Statement of Intent</i>	E. <i>Review Requirements for Development in the Reservoir Protection Overlay Zone</i>
B. <i>Applicability</i>	F. <i>Impact Study</i>
C. <i>Definitions</i>	G. <i>Buffer Requirements</i>
D. <i>Use Regulations</i>	

(A). Statement of intent.


The Reservoir Protection Overlay Zone (RPOZ) regulations are intended to ensure the adequate protection of current or potential public water supply reservoirs. The establishment of these regulations is intended to protect public health, insure the availability of safe drinking water, and prevent the degradation of the water supply in the reservoir through the regulation of land uses and development within the reservoir drainage area.

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(B). Applicability.

The special provisions established in this section shall apply to proposed projects identified as possible contaminating activities within areas designated as Reservoir Protection Overlay Zones. These areas may be identified through drainage, groundwater and soils analyses and are considered to be essential to protection of existing or potential reservoirs from the effects of point and non-point source pollution or sedimentation.

The boundaries of the Reservoir Protection Overlay Zone shall be delineated using the most current and best available location data and must be shown on all master zoning map(s) kept on file. The boundaries should be of sufficient size to guarantee the appropriate level of treatment for stormwater runoff from new and existing projects that can contribute to the contamination of public water supplies. These zones may be modified as necessary by the (local governmental authority) as new assessment data becomes available.

 *The boundaries of the Reservoir Protection Overlay Zone should be adequate to ensure that pollutants of concern are removed from runoff before entering the reservoir. Local officials may consider using a watershed approach to delineating the boundaries to ensure that all surface water/groundwater/recharge areas for the water supply are protected. A tiered zone approach to the overlay size, much like that done with wellhead protection zones to protect public well recharge areas has been used in some parts of the country. Please see the Greensboro, NC water supply watershed district is an example of this approach.*

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(C). Definitions.

For the purposes of this section, the following terms shall have the following meanings:

Development. Any construction, external repair, land disturbing activity, grading, road building, pipe laying, or other activity resulting in a change in the physical character of any parcel or land.

Potential Contaminating Activity. Activities identified as having the potential to discharge contaminants to surface or groundwaters.

Reservoir. Any impoundment of surface waters designed to provide drinking water to the public.

Tributary stream. Any perennial or intermittent stream, including any lake, pond or other body of water formed therefrom, flowing either

directly or indirectly into any reservoir.

Watershed. Any area lying within the drainage basin of any reservoir.

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(D). Use regulations.

Within the Reservoir Protection Overlay Zone, the permitted uses, special permit uses, accessory uses, dimensional standards and special requirements established by the underlying zoning district shall apply, unless specifically modified by the requirements of this ordinance.

The following uses shall be specifically prohibited within the RPOZ areas:

(1) Storage or production of hazardous materials as defined in either or both of the following:

- a. Superfund Amendment and Reauthorization Act of 1986; and
- b. Identification and Listing of Hazardous Wastes, 40 C.F.R. §261 (1987).

(2) Disposal of hazardous materials or solid wastes

(3) Treatment of hazardous material, except rehabilitation programs authorized by a government agency to treat hazardous material present at a site prior to the adoption of this ordinance.

(4) Dry-cleaning, dyeing, printing, photo processing and any other business that stores, uses, or disposes of hazardous material, unless all facilities and equipment are designed and operated to prevent the release or discharge of hazardous materials and have undergone an inspection to certify they are in compliance within hazardous material regulations.

(5) Disposal of septage or septic sludge

(6) Automobile service stations

(7) Junkyards

(8) Other uses as specified by the (local government authority) as potential contaminating activities

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(E). Review requirements for Development in the Reservoir Protection Overlay Zone

- (1) A copy of any new application for a building permit, zoning permit, area variance, use variance, zoning amendment, or other land development proposal, including the subdivision of land, occurring wholly or partly in a Reservoir Protection Overlay Zone area shall be submitted to the (local governmental authority) and shall be accompanied by an impact study prepared in accordance with the requirements set forth in subsection (f) below.
- (2) Applications for development within the Reservoir Protection Overlay Zone will be evaluated by the (local governmental authority) to ensure that:
 - (a). Non-point source pollution is prevented to the maximum extent possible, by taking into account site conditions such as slope, soil type and erosivity, and vegetative cover.
 - (b). Management practices are in place sufficient to remove or neutralize those pollutants that present a potential impact to the reservoir
 - (c). Grading and removal of vegetation at a development site is minimized and erosion and sediment control measures are in place and properly installed.
 - (d). All sewage disposal systems will be monitored, inspected and maintained on a regular basis to ensure proper functioning. If two or more dwelling units share a common sewage treatment system, a perpetual maintenance agreement shall be required by the (local governmental authority)
 - (e). Businesses involved in potential contaminating activities within the Reservoir Protection Overlay Zone but which have received a special use permit must submit a spill control plan for approval. This plan shall include the following elements:
 - (1). Disclosure statements describing the types, quantities, and storage locations of all contaminants that will be part of the proposed project.
 - (2). Contaminant handling and spill prevention techniques
 - (3). Spill reporting procedures, including a list of affected agencies to be contacted in the event of a spill
 - (4). Spill recovery plans, including a list of available equipment
 - (5). Spill clean-up and disposal plans
- (3). Existing land uses located within the Reservoir Protection Overlay Zone and identified as potential contaminating activities by the (local governmental authority) shall comply with the requirements of Section E, Subsection (2 (e)) listed above

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(F). Impact study.

(1) An impact study shall be performed or reviewed by a registered professional engineer and shall include, at a minimum, the following information:

- a. Description of the proposed project including location and extent of impervious surfaces; on-site processes or storage of materials; the anticipated use of the land and buildings; description of the site including topographic, hydrologic, and vegetative features.
- b. Characteristics of natural runoff on the site and projected runoff with the proposed project, including its rate and chemical characteristics deemed necessary to make an adequate assessment of water quality.
- c. Measures proposed to be employed to reduce the rate of runoff and pollutant loading of runoff from the project area, both during construction and after.
- d. Proposed runoff control and reservoir protection measures for the site. These measures shall be designed with the goal of ensuring that the rate of surface water runoff from the site does not exceed pre-development conditions and that the quality of such runoff will not be less than pre-development conditions. Special emphasis shall be placed on the impacts of proposed encroachments into the required buffer.
- e. Where the developer of property subject to the terms of this overlay district seeks to utilize existing or planned off-site stormwater quality management facilities, the developer shall provide a written certification that the owner of the off-site facilities will accept the runoff and be responsible for its adequate treatment to a level acceptable to the (local governmental authority).

(2) Such study shall be submitted to the (local governmental authority) for review and approval concurrent with the submission of applications for review and approval of site or subdivision plans or applications for land disturbing or erosion and sediment control permits. A copy of the impact study shall also be forwarded to those agencies identified as interested parties which are responsible for managing the reservoir watershed for review and comments.

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(G). Buffer Requirements

Stream and shore buffer widths vary from twenty feet to up to 200 feet in ordinances throughout the United States. Since this ordinance is for reservoirs that supply public drinking water, the larger buffer width of 200 feet would be more appropriate. There is a much more detailed stream buffer ordinance located at this website. Local communities may wish to consult this ordinance to establish an individual stream buffer ordinance

A foot (') wide buffer strip shall be maintained along the edge of all public water supply reservoirs and any tributary stream discharging into these reservoirs. The required setback distance shall be measured from the centerline of such tributary stream and from the mean high water level of such reservoir. The buffer strip shall be maintained in its natural state to the maximum extent possible, and shall be planted with an erosion resistant vegetative cover in those areas that have been disturbed. In the case of tributary streams located upstream from a stormwater management facility designed to provide water quality protection, no buffer shall be required if such facility has been designed to accommodate and manage the quality of runoff from the subject site.

A reduction in the required buffer width down to an absolute minimum of seventy-five feet (75') may be granted by the (local governmental authority) upon presentation of an impact study that provides sufficient documentation and justification that even with the reduction, the same or a greater degree of water quality protection would be afforded as would be with the full-width buffer. In granting such a reduction, the (local governmental authority) may require additional erosion control or runoff control measures as deemed necessary to protect reservoir water quality.

All development shall be located outside of the required buffer strip, except for the following:

- a. The buffer strip requirement shall not apply to development which is appurtenant to the production, supply, distribution or storage of water by a public water supplier.
- b. Encroachment into or through the required buffer by roads, main-line utilities, or stormwater management structures may be permitted provided the following performance standards are met:
 1. Road and main-line utility crossings will be limited to the shortest path possible and that which causes the least amount of land disturbance and alteration to the hydrology of the watershed.
 2. Any stormwater management facilities located within the buffer should be sited within the context of a larger watershed stormwater management program.
 3. No more land shall be disturbed than is necessary.
 4. Indigenous vegetation shall be preserved to the maximum extent possible.
 5. Wherever possible, disturbed areas shall be planted with trees and

shrubs.

c. When the property where an encroachment is proposed is owned by the entity owning and operating the water supply reservoir being protected, and such entity specifically and in writing authorizes and approves the encroachment, it shall be allowed.

(3) The following uses shall not be permitted within the buffer strip or within feet () of the required buffer strip:


- a. septic tanks and drainfields;
- b. feed lots or other livestock impoundments;
- c. trash containers and dumpsters which are not under roof or which are located so that leachate from the receptacle could escape unfiltered and untreated;
- d. fuel storage in excess of fifty (50) gallons [200L];
- e. sanitary landfills;
- f. activities involving the manufacture, bulk storage or any type of distribution of petroleum, chemical or asphalt products or any materials hazardous to a water supply (as defined in the Hazardous Materials Spills Emergency Handbook, American Waterworks Association, 1975, as revised) including specifically the following general classes of materials:

1. oil and oil products;
2. radioactive materials;
3. any material transported in large commercial quantities that is a very soluble acid or base, highly biodegradable, or can create a severe oxygen demand;
4. biologically accumulative poisons;
5. the active ingredients of poisons that are or were ever registered in accordance with the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (7 USC 135 et seq.);
or
6. substances highly lethal to mammalian or aquatic life.

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