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ENVIRONMENTAL HEALTH DIVISION

Groundwater Monitoring Policy and Procedure

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1. Purpose
 - a. The Environmental Health Division (EHD) routinely requires groundwater monitoring information for projects in groundwater concern areas to determine if on-site wastewater and/or subdivision ordinance requirements can be met.
 - b. Unusual situations may require additional groundwater review of a specific site completed by a professional such as a registered engineering hydrologist or geologist.
2. Area Identification

Parcels with suspected seasonal groundwater issues requiring rainy season monitoring include:

 - a. Valleys, Ravines, Swales
 - b. Waterways
 - c. Confined and Unconfined Sand and Gravel Strata
 - d. Shallow Topsoil Areas
 - e. Springs or other indications, such as swampy/marshy appearance or presence of water-loving vegetation such as cattails, willows, perennial grasses
 - f. History of seasonal groundwater in the vicinity of the project
 - g. Visual indication of seasonal groundwater, such as mottling or gleying in soil profiles
3. Application and Coordination
 - a. Groundwater monitoring may be conducted in the following circumstances:
 - (1) As part of a pre-application review for a land use project;
 - (2) As a condition for preliminary map approval for land use applications, where the owner has signed a disclosure document for concurrent review;
 - (3) As a condition for site evaluation approval or as a stand-alone review, where the applicant has agreed to payment of the EHD's hourly rate.
 - b. In all cases, the consultant will discuss the monitoring plan ahead of time with the EHD, and provide the EHD with a map showing the number and location of monitoring wells.

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4. Groundwater Observation Period

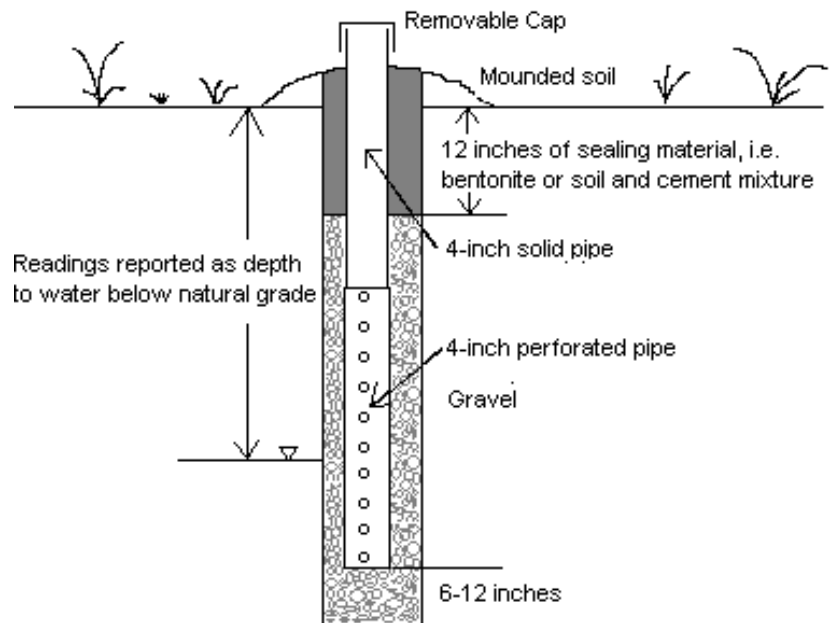
- a. The groundwater observation period is November through April.
- b. The EHD may allow the consultant to install and initiate observation of monitoring wells after November, on a case-by-case basis, provided there is reasonable likelihood that maximum groundwater elevations may still be observed during the remainder of the groundwater observation period.
- c. Snow pack influenced areas may require observation through the entire spring snowmelt.

5. Collection of Rainfall Data

- a. Observation data shall be collected by the consultant at EHDst every two weeks during the monitoring period.
- b. Additional readings shall be taken by the consultant within 2 days following a significant rain, such as when there has been 1 or more inches of rainfall within a 24-hour period.
- c. Daily observations by the consultant may be necessary during elevated groundwater periods to identify maximum groundwater levels.
- d. Confirmatory observations will be made periodically by the EHD.

6. Monitoring Well Design

- a. Monitoring well depth should be determined by the consultant after consultation with the EHD. The usual depth is eight (8) feet, however a shallower depth may be appropriate for sites with a shallow restrictive layer. For larger flow systems, deeper wells may be required to assess ground water mounding.



- b. Monitoring well design should generally be as shown in this diagram. Holes will be constructed using an auger and 4-inch diameter pipe shall be used. However, approval of alternate designs will be considered on a case-by-case basis by EHD staff.
- c. Monitoring wells must be staked and flagged so that they can be readily located by EHD staff.

7. Certification Criteria

a. Rainfall Data Source

Unless the consultant justifies another source of rainfall data acceptable to the EHD, the following site will be used for tracking daily and monthly rainfall and for determining average rainfall:

<http://www.cimis.water.ca.gov/cimis/info.jsp>

Note: The California Irrigation Management Information System (CIMIS) is a program in the Office of Water Use Efficiency (OWUE), California Department of Water Resources (DWR) that manages a network of over 120 automated weather stations in the state of California. CIMIS was developed in 1982 by the California Department of Water Resource and the University of California at Davis to assist California's irrigators manage their water resources efficiently.

b. Minimum Rainfall for Certification

(1) Minimum rainfall shall be 80% of average for the observation months of November through April for sites where, based on geographical location, absence of restrictive layer, and absence of visual evidence of seasonal watertable, there appears to be 36 inches or more of effective soil.

(2) Minimum rainfall shall be 90% of average for the observation months of November through April for sites where, based on geographical location, presence of a restrictive layer, or visual evidence of seasonal watertable, there may be less than 36 inches of effective soil.

(3) Low Rainfall Years

(i) Lower rainfall years will normally not be certified. However, during multiple years of low rainfall, a secondary data source may be considered. After completion of at least one groundwater observation period (normally November through April) that does not reach the average rainfall requirement for certification, an applicant may submit, for consideration by the Regional Board and the EHD, a complete groundwater report prepared by a certified engineering geologist or by a certified hydrogeologist.

(ii) The report should contain supporting data for groundwater elevation conclusions and include an analysis of expected maximum groundwater elevations for the proposed dispersal site. Elements of the report will include:

- Topographical and geographical characteristics of the site, including slope of the land, that could affect surface and subsurface drainage characteristics;
- Soil classification and hydraulic conductivity of the soil;

- Presence of restrictive layers in the soil profile;
- Presence of visual indication of seasonal groundwater (e.g. soil mottling) within the soil profile;
- Historical rainfall patterns and relationship to groundwater monitoring observations; and
- Depth of observed groundwater in relationship to minimum soil depth requirements and proposed depth of trenches.

(iii) The Regional Board, in consultation with the EHD, must approve groundwater reports in order to determine that groundwater monitoring requirements have been met.

8. Determination of Maximum Seasonal Watertable Elevation

- a. Maximum seasonal watertable is the highest level of groundwater determined to be the **characteristic level** for the groundwater monitoring well, based on a series of observations recorded by the consultant and verified by representative quality control observations of the EHD. To assure consistent correlation of EHD and consultant measurements, the consultant will notify the EHD within 24 hours of observing high seasonal watertable in monitoring wells.
- b. Seasonal groundwater levels are known to temporarily spike in some monitoring wells after periods of heavy rainfall. This will be allowed to occur in a limited manner (within tolerance limits) without affecting the groundwater level determined to be **characteristic level** for the monitoring well, provided the following conditions are met:
- (1) The groundwater level spikes must not occur at any time above the depth proposed for the dispersal field (with the exception as noted in the table, below; and
 - (2) The number of days in which the groundwater is above the **characteristic level** must not exceed that which is shown on the following table:

Rainfall as % of Average Annual Rainfall	Tolerance for Groundwater Exceeding Characteristic Level (# days within 30 day period)	
	< 5% Slope	5%+ Slope
80% - 110%	2	2
110% - <130%	7	2
130% - <200%	14	2
200%+	21 ⁽¹⁾	2

⁽¹⁾ Special Exception: Groundwater may rise to a level above the proposed bottom of the dispersal field for up to 2 days.

- c. Groundwater monitoring results will be determined to be unsatisfactory when the **characteristic level** of the seasonal watertable does not meet minimum Butte County soil depth requirements.