| Colorado Water Quality Control Division<br><br>**WATER QUALITY SITE APPLICATION POLICY** | Policy No: WQSA-6<br>Initiated By: Engineering Section<br>Approved By: Steve H. Gunderson<br>Effective Date: January 29 2007 |
|---|---|

POLICY NUMBER 6: MULTIPLE INDIVIDUAL SEWAGE DISPOSAL SYSTEMS

Purpose: To clarify the applicability of Regulation No. 22 to multiple Individual Sewage Disposal Systems (ISDS) with a total design capacity of 2,000 gallons per day (gpd) or more serving as a community system or serving a single property or wastewater generator.

Background: In the past, the lack of guidance with regard to such circumstances led to inconsistent interpretation as to whether a site application approval and a discharge permit are required for these systems. Instances have also arisen in which entities have been advised that the Division's processes could be circumvented through the use of multiple systems, no one of which has a capacity of 2,000 gpd. If multiple septic systems under common ownership do not receive proper operation and maintenance, they could potentially have an adverse affect on ground water quality. In at least one instance, a community water supply well was impacted by an array of septic tank/leachfield systems surrounding it. Recognizing that poorly maintained and functioning septic systems can occur throughout Colorado regardless of ownership, the Division has developed this policy to address multiple septic systems and intends to address single septic systems at a later date when the Guidelines on Individual Sewage Disposal Systems are revised.

Class V injection wells: In Colorado, EPA regulates certain septic systems under the Underground Injection Control (UIC) Program (40 CFR Part 144). A septic system is required to meet UIC Program requirements and is considered a Class V injection well if either one of the following conditions is met:

The septic system, regardless of size, receives any amount of industrial or commercial wastewater (also known as industrial waste disposal wells or motor vehicle waste disposal wells); or the septic system receives solely sanitary waste from multiple family residences or a non-residential establishment and has the capacity to serve 20 or more persons per day (also known as large-capacity septic systems).

Additional information on the Class V injection well program is available on EPA's website at http://www.epa.gov/safewater/uic/classv.html.

Policy: Multiple ISDS shall be treated as a single domestic wastewater treatment works subject to the site location and design approval requirements in Regulation No. 22 if the combined design capacity of the systems is 2,000 gpd or more, irrespective of whether the systems were constructed at the same time or at different times, and where one or more of the following conditions is met:

1. the septic systems serve a single occupied structure (i.e., school, church, apartment building);

2. the septic systems serve more than one habitable structure on a single property (a property owned by one person or company) (e.g., mobile home park, lodge or resort, shopping center) **and** the horizontal influence area to be maintained from one system's soil treatment system overlaps the minimum horizontal separations of another facility's soil treatment system, or any wells, streams, lakes, water course, or potable water lines, as calculated using the method described in note 1 below or as determined in Table II in the "Guidelines in Individual Sewage Disposal Systems;"

3. the septic systems are commonly owned and serve more than one habitable structure on separate properties (e.g., condominiums, townhouses, single family houses, etc.) **and** the horizontal influence area to be maintained from one system's soil treatment system overlaps the minimum horizontal separations of another facility's soil treatment system, or any wells, streams, lakes, water course, or potable water lines, as calculated using the method described in note 1 below or as determined in Table II in the "Guidelines in Individual Sewage Disposal Systems;" unless the properties are divided by legal property lines approved by the local land use planning authority, are identified on a final plat or deed, and a site-specific analysis (see note 2 below) shows that the properties can support the multiple ISDS without negatively impacting public health or water quality;

4. the systems are interconnected such that wastewater may flow from one system to another;

5. the septic tank and/or absorption field is within the 100-year flood plain or within 500 feet, if the 100-year floodplain has not been mapped, of a stream or river that is listed on the 303 (d) list of impaired water bodies for a contaminant (e.g. BOD, ammonia, phosphorus, solids, or e-coli) likely present in significant concentrations in sewage; or,

6. after consultation between the Local Health Department and the Division it is determined that site location and plans and specifications reviews are warranted due to public concerns, public health, and/or environmental risk.

Additionally, should the combined design capacity of all systems under consideration be greater than 6,000 gpd, the Division will determine, based on information similar to the site-specific analysis described in note 2 below,

whether a site location application and plans and specifications must be submitted for review.

This policy does not apply to subdivisions where a developer or builder may construct the ISDS and the properties are sold to individuals and the individuals are then responsible to meet the requirements contained in the ISDS permit issued by the Local Health Department.

According to Regulation No. 22, Design Capacity for ISDS is the average daily flow at full occupancy, prior to the application of the 150 percent design flow factor.

Example calculations for determining minimum horizontal influence area distance are attached. Also attached is a flow chart for determining when a site location application may be required.

References: Guidelines on Individual Sewage Disposal Systems, Revised 2000
Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works, Regulation No. 22 (5 CCR 1002-22)
40 CFR Part 144 – Underground Injection Control Program

Note 1- Method to Determine the Horizontal Influence Area

The minimum distance between any of the septic system components including the absorption fields is calculated using the following formula:

$100 + [(DF - 1000) / 100] \times 8$ = Horizontal influence area required

Where: DF = Design Flow = 1.5 X DC
DC = Design Capacity = Average Daily Flow at maximum occupancy

To determine whether the systems overlap, the distance in feet is obtained from the formula above, and a line is drawn around the outside edge of each absorption field generating the horizontal influence area for that component. If the horizontal influence areas of two or more septic systems overlap, the systems are added together to determine the total design capacity (see examples on pages 7 & 8).

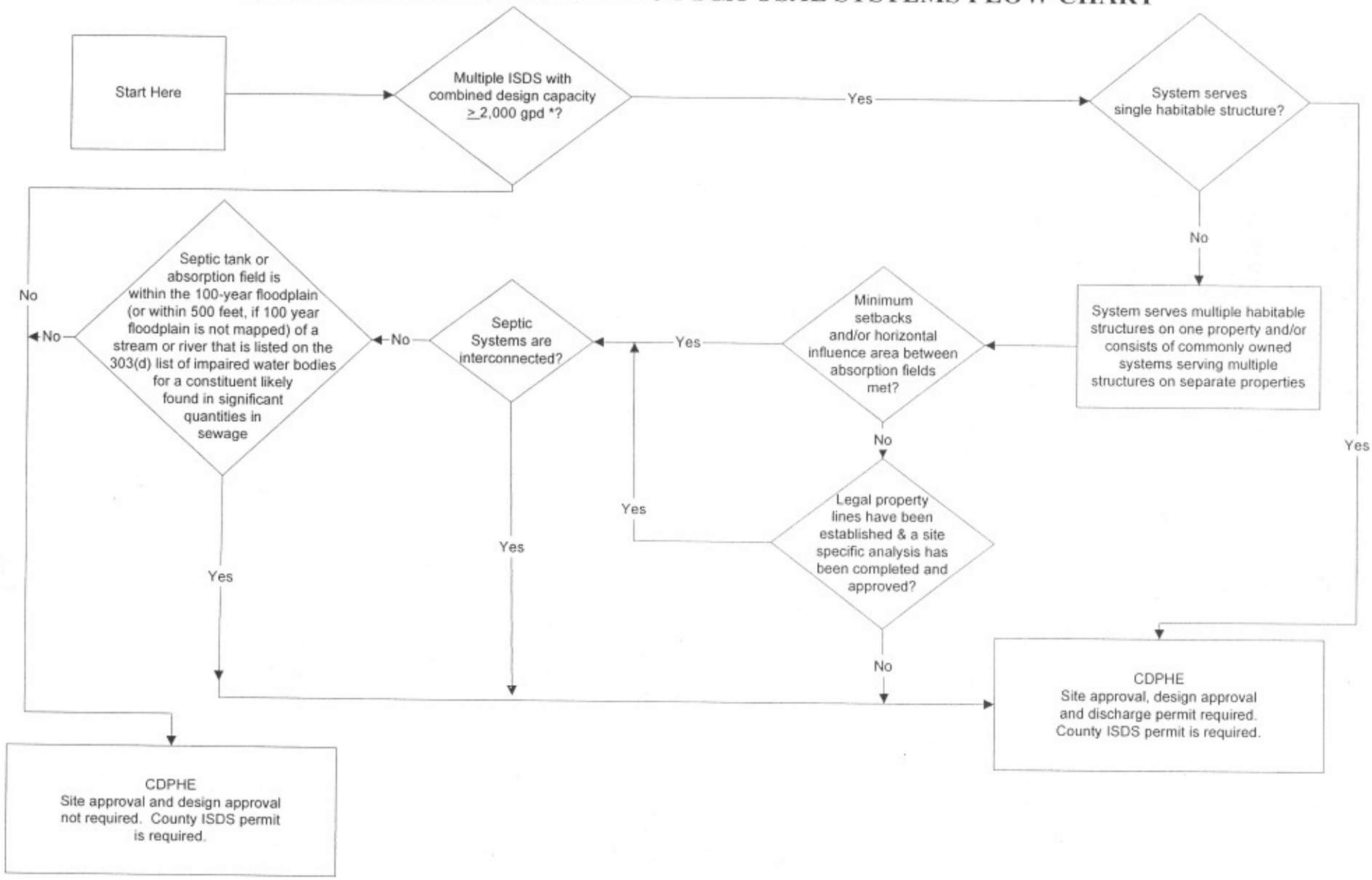
Note 2 – Description of Site Specific Analysis

The site-specific analysis shall be conducted by a qualified person, e.g. Professional Geologist, geotechnical engineer or other similarly qualified professional hired or employed by the permit applicant. The results of the site-specific analysis shall be submitted to the local health department and the Division. The Division and local health department will review the submittal for completeness and technical adequacy. The Division, in consultation with the local health department, will then determine if site approval, design approval, and a state-issued discharge permit are required. Construction at the site cannot commence until this decision is reached. The site-specific analysis shall include:

1. Detailed site plan showing proposed structures and proposed setback distances from features as defined in the ISDS Guidelines.
2. Population to be served by the septic system and calculation of sewage flows using the Table 1 in the "Guidelines on Individual Sewage Disposal Systems" or actual water usage records.
3. Discussion of known future developments in the area
4. Discussion of the area's population density, location and density of other septic systems, topography, geology, and hydrology, ground cover.

5. Distance to nearest central wastewater treatment facility.
6. Location and depth of existing wells within one mile of the property and any proposed wells associated with the subject development.
7. Groundwater level, including any seasonal variations.
8. Soil type, profile hole, and percolation test results.
9. Any available groundwater quality sampling results, particularly for nitrates.
10. ISDS pollutant modeling to assess whether the proposed ISDS have the potential to cause impacts to the groundwater, particularly for nitrates.
11. Cost to install proposed septic systems.
12. Operation and maintenance plan including costs.

# MULTIPLE INDIVIDUAL SEWAGE DISPOSAL SYSTEMS FLOW CHART



# Example ISDS Calculations

Formula used: 100 + [(DF – 1000) / 100] X 8 = Horizontal influence area (from Table II – Guidelines on ISDS)

Where: DF = Design Flow = 1.5 X DC
DC = Design Capacity = Average Daily Flow at maximum occupancy

Calculation:

Assumptions: DC System 1 = 1500 gpd, DF System 1 = 2250 gpd
DC System 2 = 1000 gpd, DF System 2 = 1500 gpd

## Case I (see below for diagram)

Horizontal influence area for System 1= 100 + [(2250 – 1000) / 100] X 8 = 200 feet

Requirement for horizontal influence area from absorption fields, springs or wells are met. Site location and design approval not required; it remains under Local Health Department jurisdiction.

## Case II (see below for diagram)

Horizontal influence area for System 1= 100 + [(2250 – 1000) / 100] X 8 = 200 feet
Horizontal influence area for System 2= 100 + [(1500 – 1000) / 100] X 8 = 140 feet

Systems 1 and 2 do **not** overlap.
Requirement for horizontal influence area from absorption fields, springs or wells are met. Site location and design approval not required; it remains under Local Health Department jurisdiction.

## Case III A (see below for diagram)

Horizontal influence area for System 1= 100 + [(2250 – 1000) / 100] X 8 = 200 feet
Horizontal influence area for System 2= 100 + [(1500 – 1000) / 100] X 8 = 140 feet

Systems 1 and 2 **do** overlap. Add design flows (2250+1500=3750) and recalculate required horizontal influence area as in Case III B. Site location and design approval required, unless system components are relocated.

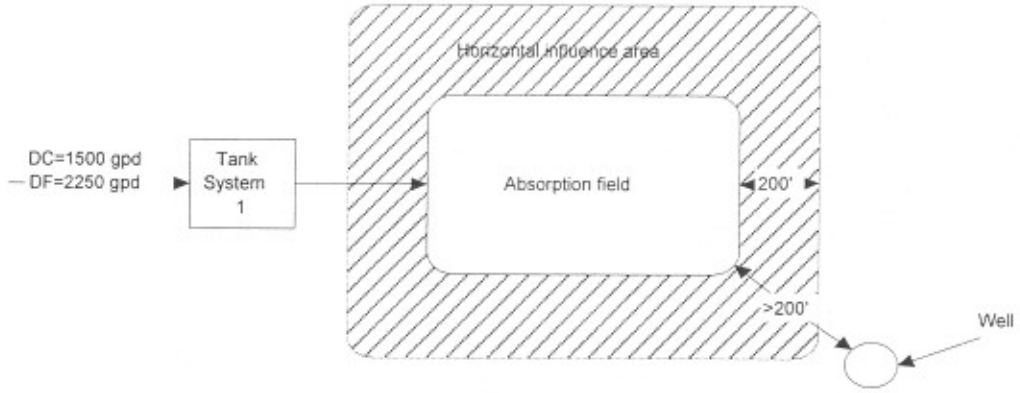
## Case III B (see below for diagram)

Horizontal influence area for combined System 1 and 2
= 100 + [(3750 – 1000) / 100] X 8 = 320 feet

Systems 1 and 2 **do** overlap. Site location and design approval required, unless system components are relocated.

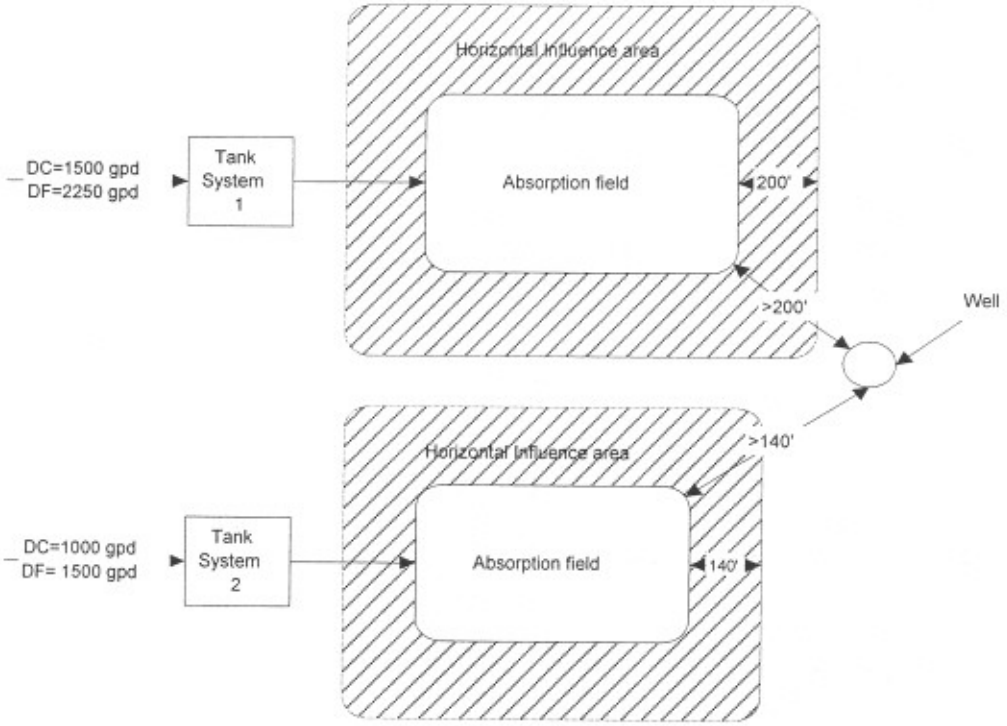
Case I

Single system - All horizontal influence area distance requirements met. Remains under Local Health Department Control
(If DC ≥ 2000 gpd then Site Application required and horizontal influence area to well would increase)



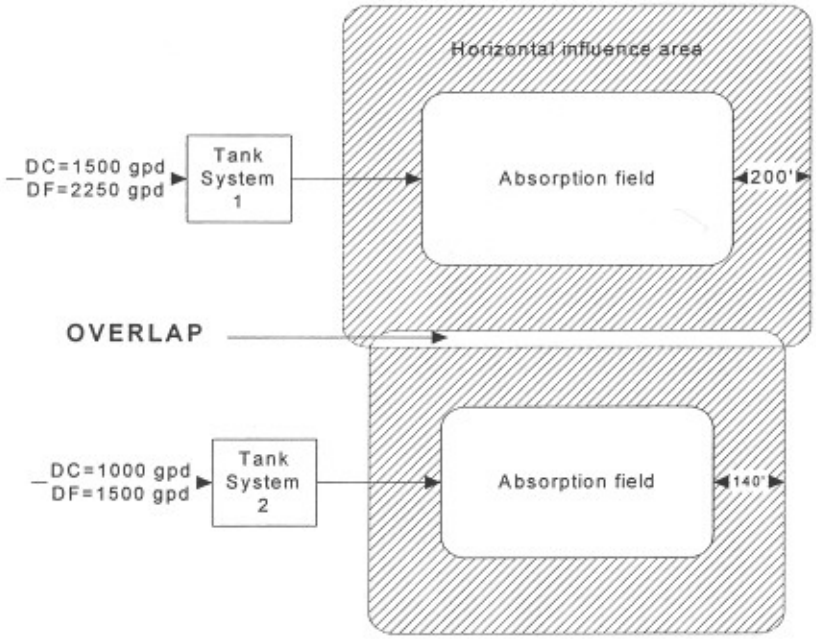

Case II

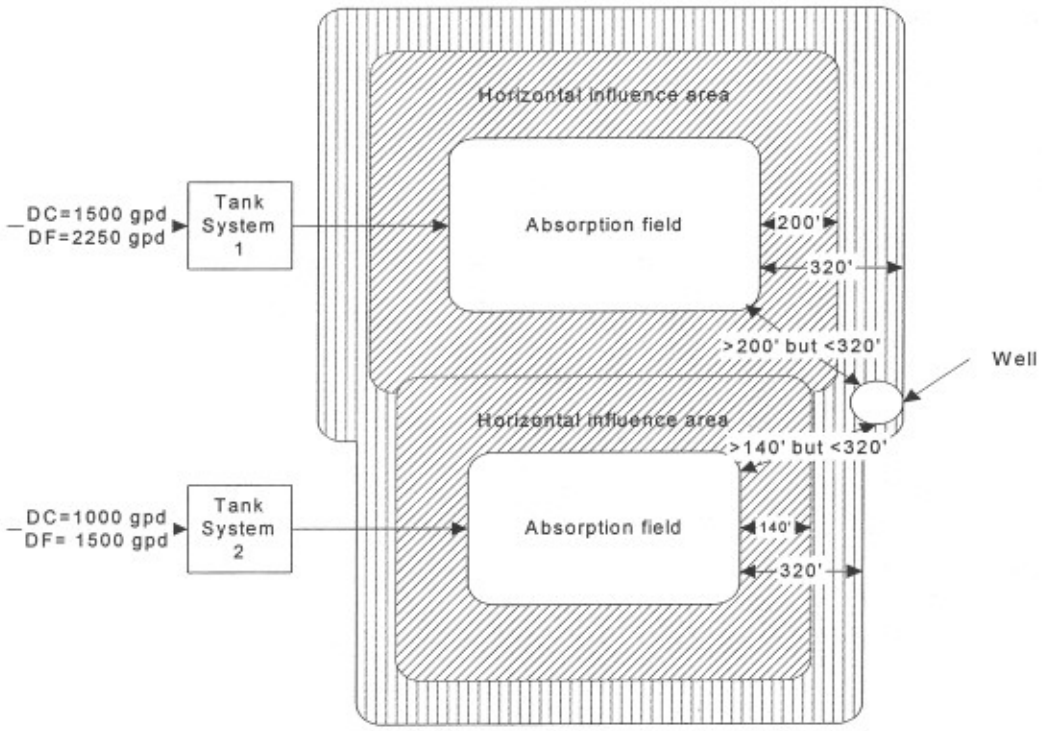
Two systems - All horizontal influence area distance requirements met. Remains under Local Health Department Control
(Each DC <2000 gpd, and horizontal influence areas do not overlap)



Case III A

Two systems - Absorption field horizontal influence areas overlap. Two systems are added together and DC is ≥ 2,000 gpd. System is required to obtain site location and design approval. (Must recalculate combined horizontal influence area distance for any well or stream etc. as in Case III B).




Case III B

Two systems - Absorption field horizontal influence areas overlap. Recalculate horizontal influence area distance. Well is now in zone of influence. Cannot meet horizontal influence area requirements. Possible solution is to move System 1 or 2 such that Case II applies.