

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-1
Approved By: *[Signature]*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 1 of 2

**POLICY NUMBER 1: DOMESTIC WASTEWATER UTILITY PLANNING AND FACILITY
SITING**

Purpose: To ensure that the Division is properly applying the planning language of both the State law and site location and design approval regulations for domestic wastewater treatment works on a consistent basis.

Procedure: Site location approvals in designated 208 planning areas should be consistent with the most recent applicable and approved water quality management plans (208 plans) and must be consistent with any aspect of a 208 plan that has been adopted as a control regulation by the Water Quality Control Commission. The Division requests that the 208 planning agency comment on the consistency of site applications with approved 208 plans and any proposed amendments thereto.

Site location approvals should be consistent with the relevant water quality elements of a local long-range comprehensive plan. Municipalities and counties are requested to comment on all site application proposals as they relate to water quality aspects of their long-range comprehensive plans. If any of the applicable review and commenting agencies does not comment and the Division believes that water quality related planning questions remain to be resolved, the site application may be returned to the applicant for lack of adequate information upon which to base a decision. The site application may be returned when situations such as, but not limited to, the following occur:

- Application package lacks an engineering report, required signatures, or is otherwise wholly inadequate.
- Issues remaining unresolved for an extended time period.

In implementing this policy, the Division requests, at a minimum, that the site application address consistency with the 208 plan and with the local long-range comprehensive plan in the following areas:

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-1
Approved By: *mf*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 2 of 2

**POLICY NUMBER 1: DOMESTIC WASTEWATER UTILITY PLANNING AND FACILITY
SITING**

1. planning area boundaries,
2. population projections for planning area,
3. facility service areas,
4. facility location, sizing, and timing,
5. appropriate effluent limitations or wasteload allocations,
6. agreements among entities to implement the plan, and
7. other water quality related issues.

In order to ensure that water quality management and wastewater utility planning meets Division requirements, it is suggested that the entities involved meet with the Division to discuss planning requirements early in the planning process.

Background:

The Colorado Water Quality Control Act [C.R.S. 25-8-702 (2)] states, "In evaluating the suitability of a proposed site location for a domestic wastewater treatment works, the Division shall:

- (a) Consider the local long-range comprehensive plan for the area as it affects water quality and any approved regional wastewater management plan for the area;"

Reference:

Colorado Water Quality Control Act C.R.S. 25-8-702, "Approval for commencement of construction."
Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works, Regulation No. 22 (5 CCR 1002-22)

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-2
Approved By: _____
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 1 of 2

POLICY NUMBER 2: SITE LOCATION APPROVAL, PLANS AND SPECIFICATIONS,
AND DISCHARGE PERMIT CAPACITY AGREEMENT

Purpose: To assure that a uniform facility capacity rating is used throughout the site location approval, design approval and permitting processes for each facility in the State.

Procedure: Generally, the capacity established in the site location approval process will be the capacity used:

- To review the facility design;
- To develop the final effluent limitations; and,
- As the facility capacity and flow in the discharge permit.

In certain cases the ability of the proposed facility to remove a specific pollutant may limit the overall hydraulic or organic capacity of the treatment works. In these instances, the site approval letter may specify the hydraulic and organic design capacities based on the design of the treatment works for conventional treatment parameters, e.g. flow and biochemical oxygen demand, and based on the treatment limitations with respect to the specific pollutant. The site approval letter may include appropriate conditions to facilitate water quality trading or offsets in accordance with Colorado's Pollutant Trading Policy. The discharge permit may also consider such factors in setting the hydraulic and organic capacity (including the effluent flow limitation). The permit may also include appropriate conditions regarding implementing the water quality trades or offsets. The goal will be to allow water quality trades and offsets in accordance with the Pollutant Trading Policy without creating an undue administrative burden on the applicant or the Division, i.e. processing site approval or permit amendments only when necessary while still complying with all applicable regulatory requirements and ensuring adequate public health and environmental protection.

This capacity will be the maximum monthly average of daily flow rates unless an alternative is specifically authorized by the Division. Where a facility has been approved for a phased construction or expansion, the discharge permit should reflect the hydraulic and organic capacities of that phase of the facility constructed and in

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-2
Approved By: *MM*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 2 of 2

POLICY NUMBER 2: SITE LOCATION APPROVAL, PLANS AND SPECIFICATIONS,
AND DISCHARGE PERMIT CAPACITY AGREEMENT

use at that point in time. Similarly, the effluent limits should be consistent with the design capacity of that phase.

In those instances where the calculated actual facility capacity is greater than the approved site location capacity, the discharge permit capacity will reflect the capacity approved in the site location process until such time as the site location approval has been amended or a facility expansion has been approved via the site approval process.

An amendment to the site location approval will be executed for those facilities where design plans and specifications demonstrate a capacity less than that contained in the site location approval. The amendment will reduce the approved capacity to that reflected by plans and specifications and the applicant's intent to construct. Where phased construction is approved, this element will apply only when design or construction is inconsistent with an approved phase. The discharge permit will also reflect such reduced capacity.

Any proposal to expand beyond the existing capacity is required to be done in compliance with Regulation No. 22.

Background: Occasionally, the Division receives a site application, a set of plans and specifications, or an application for a discharge permit that contains information regarding capacity that is not consistent with information provided in other review or application documents. This situation can cause confusion among both Division personnel and the regulated community.

Reference: Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works, Regulation No. 22 (5 CCR 1002-22)
Regulations for the State Discharge Permit System, Regulation No. 61 (5 CCR 1002-61)
Colorado Pollutant Trading Policy

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-3
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Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 1 of 3

POLICY NUMBER 3: LOCATION OF WASTEWATER TREATMENT PLANT
DISCHARGES UPSTREAM OF DRINKING WATER PLANT INTAKES

Purpose: To protect the quality of Colorado's drinking water sources for their intended use and to aid in the provision of safe potable water to the public.

Procedure: The following policy is offered as guidance whenever proposed **new** domestic wastewater treatment facilities would discharge upstream (within the same stream segment or within 3 miles if the stream segment ends within three miles of the proposed discharge) of an existing surface water (or infiltration gallery) diversion for a public water system supply. If there is more than one public water system diversion within that distance, generally the approach taken with the first downstream diversion should apply to latter diversions.

The Preliminary Effluent Limitations for the wastewater treatment facility will be developed to protect the water quality stream standards adopted by the WQCC. The engineering report submitted with the site application package will specify the treatment processes that will be utilized to meet the preliminary effluent limitations.

The position of the Division is to encourage wastewater treatment plant discharge locations that minimize potential impacts to public drinking water sources, be they surface or groundwater under the influence. Where the volume of effluent to be discharged during low-flow conditions in the stream would make-up a significant portion of the flow in the stream and the proposed wastewater treatment plant discharge is near the water supply diversion, proposals for new domestic wastewater treatment works must include, as part of the alternatives analysis, consideration of:

1. Discharging the wastewater via land application, to an alternate drainage basin, or to a point downstream from the water supply intake;
2. Collection and transmission of wastewater to an existing treatment plant, or alternate plant site, downstream from the water supply intake;

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-3
Approved By: *MP*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 2 of 3

POLICY NUMBER 3: LOCATION OF WASTEWATER TREATMENT PLANT
DISCHARGES UPSTREAM OF DRINKING WATER PLANT INTAKES

3. The potential for an alternate drinking water source (e.g. groundwater or connection to another existing water system) for the water supply agency; and,
4. Relocation of the water supply intake to a point upstream from the wastewater treatment plant discharge.

It is recognized that water rights issues may limit the feasibility of implementing such alternatives.

If no reasonable alternative to the discharge of wastewater treatment plant effluent upstream and proximate to drinking water sources can be found, then care should be taken in the design and management of the wastewater treatment plant to minimize public health risks.

The Division will review such instances on a case-by-case basis. The Division suggests that entities involved with such potential circumstances contact the Division early in the planning process to arrange a meeting to set forth a detailed approach to facility siting and design. Where appropriate, the Division will participate in meetings between the entities involved.

Additionally, special design and operational issues may need to be considered. These may include (but are not limited to):

1. Providing adequate storage to allow for upset conditions at a wastewater treatment plant such as:
 - a. Flow equalization at the wastewater treatment plant
 - b. Extra detention time at the wastewater treatment plant before discharge
 - c. Ability to temporarily divert the discharge during periods of wastewater treatment plant upset
 - d. Raw water storage at the water treatment plant
 - e. Finished water storage at water treatment plant
2. Providing alarm systems to alert operators at both facilities of upset conditions or equipment failure at the wastewater treatment plant (e.g. chlorine residual, turbidity changes, etc.).

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-3
Approved By: *DR*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 3 of 3

**POLICY NUMBER 3: LOCATION OF WASTEWATER TREATMENT PLANT
DISCHARGES UPSTREAM OF DRINKING WATER PLANT INTAKES**

Adequate wastewater treatment plant staffing to assure prompt reaction to upsets or changes in water quality.

Background:

Continued growth in Colorado has placed increasing pressure on available water resources. As a result, there are a number of potable water treatment plants that rely upon raw water diversions which are downstream from wastewater treatment plant discharges. The Water Quality Control Commission's (WQCC) system of setting water quality standards includes a water supply classification to address this issue. The in-stream water quality standards based on the water supply classification are used in setting discharge permit limits. This should reduce the potential for problems in drinking water treatment processes. However, there are factors, such as wastewater treatment plant upsets, which should be considered in siting new wastewater treatment plants. The Division is required to consider water supply protection in accordance with sections 22.2(c) and 22.9(1)(c) in Regulation No. 22.

Reference:

Regulations for the State Discharge Permit System, Regulation No. 61 (5 CCR 1002-61).
Colorado Primary Drinking Water Regulations (5 CCR 1003-1).

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-4
Approved By: *[Signature]*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 1 of 1

**POLICY NUMBER 4: PHYSICAL TREATMENT PROCESS CHANGES AND SITE
APPLICATION AMENDMENT CONSIDERATIONS**

- Purpose:** Section 22.8(2)(b) in Regulation No. 22 provides a listing of types of process changes that require an application to amend an approved site location approval. That section also requires that if a change is similar to but not precisely covered by this list, then the entity must submit a description of the proposed change. The Division, in consultation with the entity, will determine if an application for amendment must be submitted.
- Procedure:** A record of all decisions by the Division regarding process changes that either require or do not require amending an existing site location approval will be kept on the Technical Services Unit web page. This list will be updated on at least a quarterly basis.
- Background:** Revisions to the amendment process have resulted in a need for the Division to keep a record of the decisions made regarding the type of physical treatment process changes that either require or do not require amending an existing site location approval. This policy has been developed to provide a method to track this information.
- Reference:** Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works, Regulation No. 22 (5 CCR 1002-22).

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

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Revision No.: _____
Revision Date: _____
Page 1 of 3

POLICY NUMBER 5: CONSOLIDATION OF DOMESTIC WASTEWATER TREATMENT
WORKS

Purpose: To ensure that the Division is consistently applying the requirements of both the Water Quality Control Act and site location and design approval regulations for domestic wastewater treatment works.

Procedure: The following factors will be used to evaluate the feasibility of consolidation.

SERVICE AREA - If the site or wastewater treatment service area of a proposed facility is within the wastewater treatment service area (as defined in an adopted local comprehensive plan, or approved 208 water quality management plan) of a district or municipality providing wastewater treatment service, the applicant should be that district or municipality and the application should provide for consolidation of either treatment facilities or management and operation of the separate facilities. An exception may be granted if the proponent is an existing district or municipality also identified in the respective plan(s).

DISTANCE - If the distance to the closest existing/proposed wastewater treatment works, or from a sewer line capable of carrying the proposed flows to an existing treatment works, is less than five miles, an analysis of the cost effectiveness of consolidation with that treatment works is to be prepared. If the distance is in excess of five miles, no further analysis of consolidation is required.

WATER QUALITY IMPACTS – Subject to the above factors, where consolidation can improve the level of wastewater treatment and thereby result in improvements to surface and/or groundwater quality, further analysis of consolidation should be explored.

STREAM FLOW - If the consolidation of treatment works would alter flows in a stream or stream segment or transfer a sufficient amount of water to another stream or stream segment so as to

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-5
Approved By: *[Signature]*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 2 of 3

POLICY NUMBER 5: CONSOLIDATION OF DOMESTIC WASTEWATER TREATMENT
WORKS

result in (i) overwhelming adverse environmental effects on either stream, or (ii) the lowering of the effluent limits of other treatment works so as to cause the need to install additional advanced secondary or tertiary treatment processes, no further analysis of consolidation is required.

THREATENED or ENDANGERED SPECIES - If threatened or endangered species inhabit or utilize the only site which could serve a consolidated treatment works or a site through which interceptor lines would have to pass to reach a consolidated treatment works site, such evidence shall be presented and no further analysis of consolidation is required.

WATER RIGHTS - If the consolidation of treatment works would alter the discharge of effluent in a manner which would impair the water rights of one of the parties to the consolidation, evidence of the same shall be presented and no further analysis of consolidation with those parties is required.

LOCAL PLANS - If consolidation is in direct conflict with a specific recommendation of the county's or city's Comprehensive Plan or an approved 208 Water Quality Management Plan, and the entity responsible for the development of the respective plan recommends against consolidation, no further analysis of consolidation is required.

ECONOMIC ANALYSIS - Unless another factor contained in these criteria results in a determination that consolidation is not feasible, an analysis comparing the cost of consolidating the treatment works versus the cost of constructing separate facilities shall be prepared. The analysis shall include the following costs: land acquisition, capital construction (including such unique construction expenses as flood-proofing, water rights compliance, and wetland mitigation), interceptors and lift stations, treatment plant expansion and/or upgrade, debt retirement expenses, and operation and maintenance costs for a minimum period of 20 years for each alternative. Other unique costs specific to one or more of the

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-5
Approved By: *[Signature]*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 3 of 3

POLICY NUMBER 5: CONSOLIDATION OF DOMESTIC WASTEWATER TREATMENT
WORKS

alternatives under consideration may also be appropriate for consideration, i.e. value of water for reuse either by the applicant or through sales to another party. Cost comparisons shall be made on the basis of cost per 1,000 gallons treated as well as net present worth. If the cost of consolidation exceeds the cost of separate plant construction by more than 30%, no further analysis of consolidation is required.

Background: The Colorado Water Quality Control Act [C.R.S. 25-8-702 (2)] states, "In evaluating the suitability of a proposed site location for a domestic wastewater treatment works, the Division shall:

- (c) Encourage the consolidation of wastewater treatment facilities whenever feasible."

Reference: "Colorado Water Quality Control Act" 25-8-702, "Approval for commencement of construction". Regulation No. 22 "Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works," Colorado Water Quality Control Act, 5 CCR 1002-22, 25-8-702 C.R.S.

**WATER QUALITY
SITE APPLICATION POLICY**

Policy No: WQSA-6
Initiated By: Engineering Section
Approved By: *Steve B. Hunt*
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:

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

Where: DF = Design Flow = $1.5 \times DC$

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

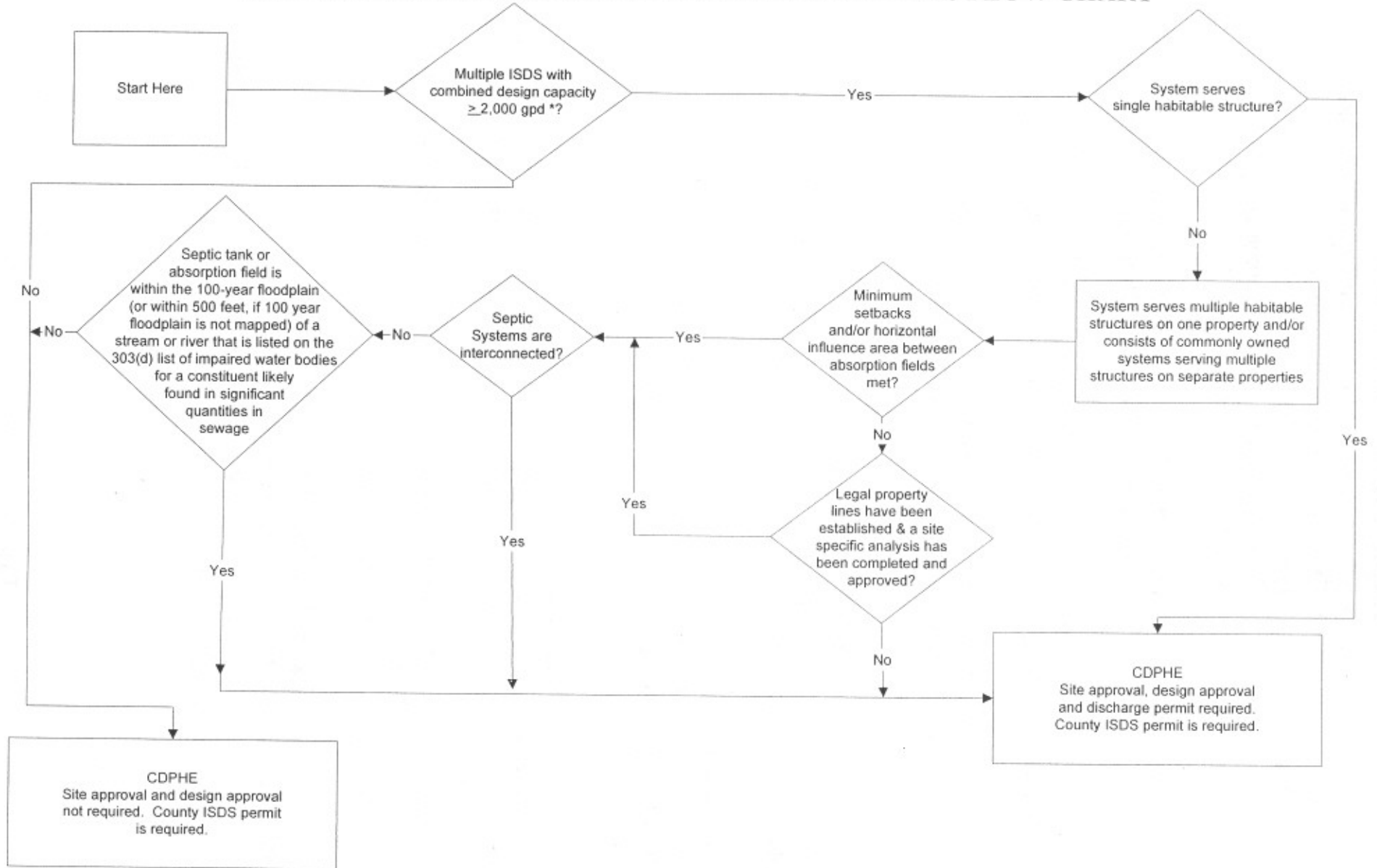
The site-specific analysis shall be conducted by a qualified person, e.g. Professional Geologist, geotechnical engineer or other similarly qualified professional hired or employed by the permit applicant. The results of the site-specific analysis shall be submitted to the local health department and 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: $100 + [(DF - 1000) / 100] \times 8 =$ Horizontal influence area
(from Table II – Guidelines on ISDS)

Where: DF = Design Flow = $1.5 \times DC$
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 = $100 + [(2250 - 1000) / 100] \times 8 = 200$ 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 = $100 + [(2250 - 1000) / 100] \times 8 = 200$ feet

Horizontal influence area for System 2 = $100 + [(1500 - 1000) / 100] \times 8 = 140$ 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 = $100 + [(2250 - 1000) / 100] \times 8 = 200$ feet

Horizontal influence area for System 2 = $100 + [(1500 - 1000) / 100] \times 8 = 140$ 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)

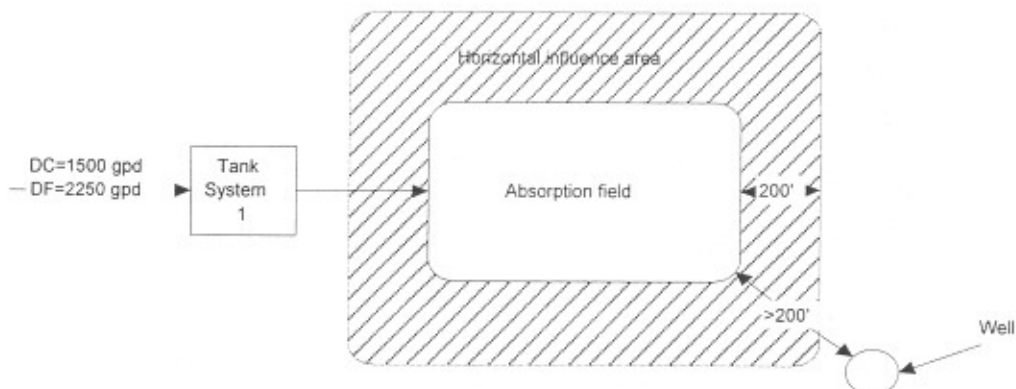
Horizontal influence area for combined System 1 and 2

$$= 100 + [(3750 - 1000) / 100] \times 8 = 320 \text{ feet}$$

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

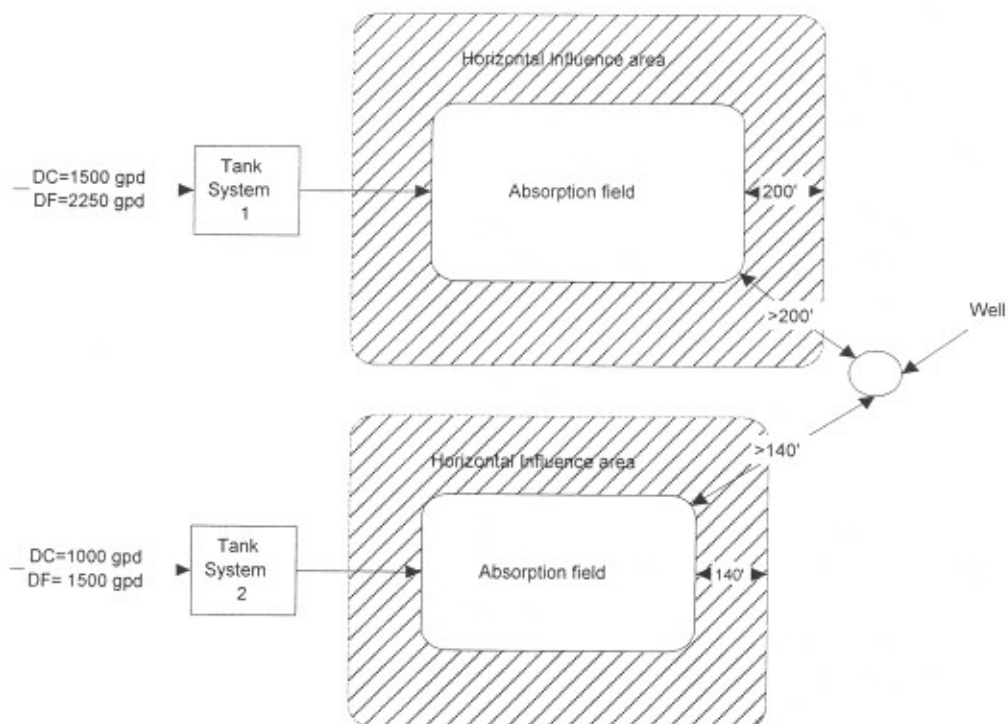
Case I

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



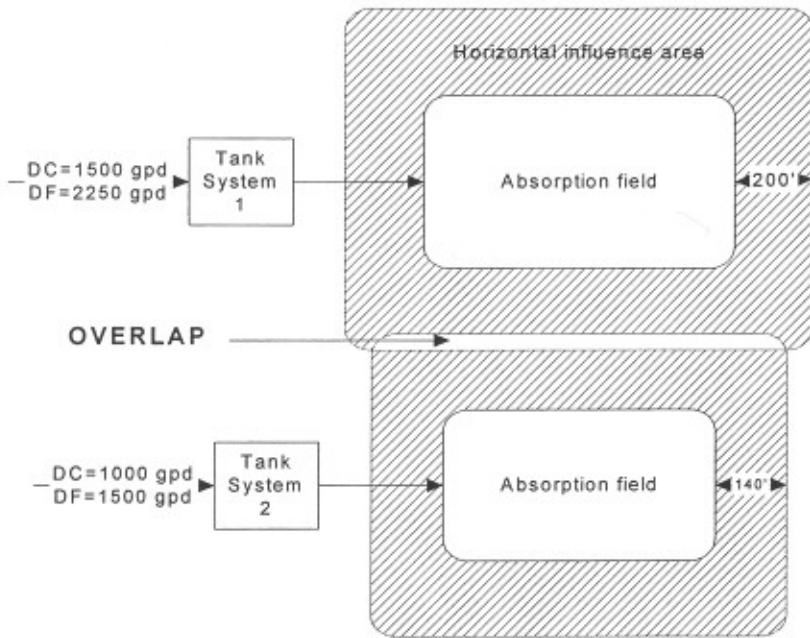
Case II

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)



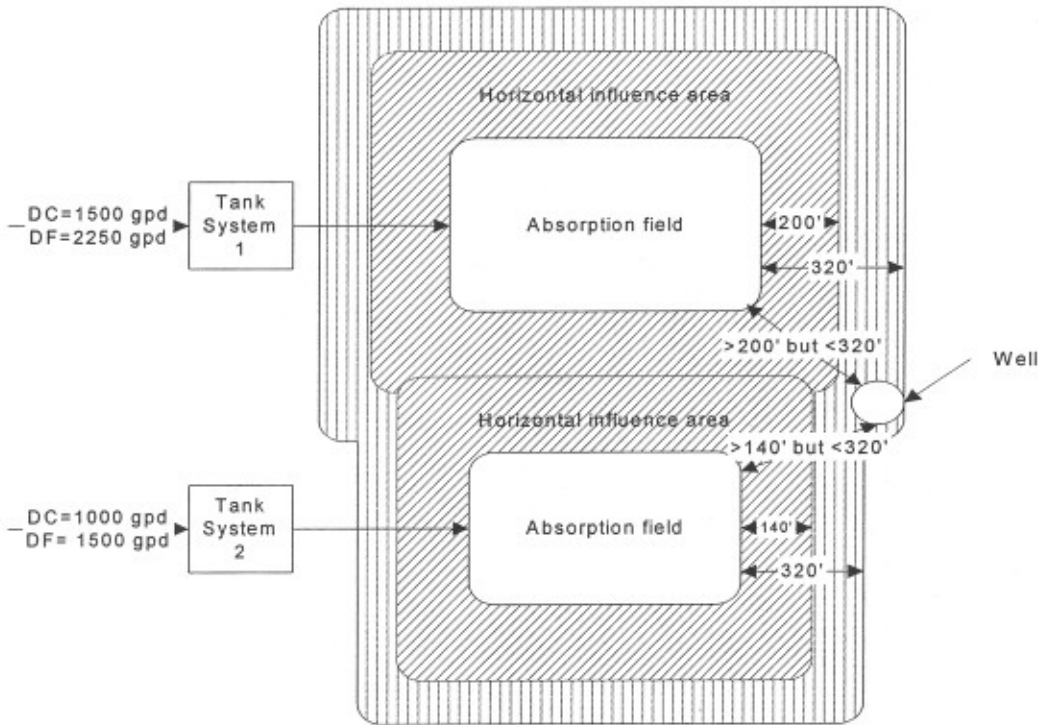
Case III A

Two systems - Absorption field horizontal influence areas overlap. Two systems are added together and DC is $\geq 2,000$ 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.



**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-7
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Revision No.: _____
Revision Date: _____
Page 1 of 5

**POLICY NUMBER 7: ODOR, NOISE AND AEROSOL MITIGATION FROM
WASTEWATER TREATMENT WORKS**

Purpose:

Regulation No. 22 sections 22.3(2)(e) and 22.9(1)(e) requires that the Division review site applications to ensure that the proposed treatment works can be operated and managed at the proposed site location to minimize foreseeable potential adverse impacts on the public health, welfare, and safety as related to wastewater treatment and/or water quality. This policy provides guidance for reviewing those factors and to specifically:

1. Address potential concerns of neighboring property owners to proposed domestic wastewater treatment facility construction;
2. Reduce the likelihood of public nuisance complaints stemming from the operation and maintenance of domestic wastewater treatment facilities (including odors, noise and aerosols);
3. Minimize the potential for the airborne transmission of pathogens from wastewater treatment facilities to the occupants of nearby habitable structures; and,
4. Provide guidance if setback requirements cannot be met and mitigating factors must be incorporated into the design to address potential concerns from odor, noise, and aerosols.

Procedure:

In considering the approval of new and expanded wastewater treatment facilities, the Division shall consider distances to habitable structures and may deny approval of a site location or, in its approval of a site location, may impose reasonable conditions on the design of a facility to minimize potential problems associated with odors and aerosols. Habitable structures include residences, schools, and commercial structures.

General Approach: Incorporating certain design elements can prevent most potential odor, noise, or aerosol problems at a treatment facility. Any mitigation techniques incorporated as a condition of a site application approval must be included in the design for that facility in order to obtain design approval. The applicant is then required to operate and maintain those mitigation

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-7
Approved By: *[Signature]*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 2 of 5

POLICY NUMBER 7: ODOR, NOISE AND AEROSOL MITIGATION FROM
WASTEWATER TREATMENT WORKS

elements or other comparable equipment or mitigation method. Applicants should consider potential odor, noise, and aerosol issues and the potential costs associated with mitigation elements in their site selection process. Should the responsible party for an existing plant allow mitigation elements required in a previous site approval to be operated incorrectly or deteriorate in their effectiveness, the Division may withhold approval of any request for plant expansion until the problems are resolved.

Odors - Wastewater treatment works have the potential for odor generation simply based on the characteristics of wastewater and the processes used to treat wastewater. It has been demonstrated that odors generated in a wastewater treatment works can be contained and minimized by proper design and by active odor control technologies. Therefore, it is the applicant's responsibility to consider odor generation in choosing the location of the facility and selecting the processes to treat the wastewater and mitigate odors.

Odor emissions are addressed by Air Quality Regulation Number 2. Projected odor levels exceeding Air Quality Regulation Number 2 will not be approved.

It is difficult to predict where or under what conditions odors may travel; however, consideration of prevailing winds, localized inversion conditions and other physical characteristics of the proposed site and the treatment processes should be assessed by the applicant.

New Plants

Unless site specific factors exist which would tend to amplify odors, the Division will assume that the following setback distances from the treatment process location to habitable structures are adequate and that consideration of specific odor control requirements in the design is not necessary.

1. Non-aerated lagoons: ¼ mile
2. Aerated lagoons less than 2 total surface acres (all basins combined) with no surface aeration : 250 feet

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-7
Approved By: *MS*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 3 of 5

POLICY NUMBER 7: ODOR, NOISE AND AEROSOL MITIGATION FROM
WASTEWATER TREATMENT WORKS

3. Aerated lagoons greater than 2 total surface acres (all basins combined) with no surface aeration: 500 feet
4. Aerated lagoons less than or equal to 2 total surface acres (all basins combined) with surface aeration: 500 feet
5. Aerated lagoons greater than or equal to 2 total surface acres (all basins combined) with surface aeration: 1,000 feet
6. Mechanical plants 2,000 gpd capacity to less than 50,000 gpd capacity: 250 feet
7. Mechanical plants 50,000 gpd capacity to less than 100,000 gpd capacity: 500 feet
8. Mechanical plants 100,000 gpd or greater: 1,000 feet
9. All enclosed mechanical plants and lift stations: 100 feet

For determining the appropriate setback distance above, surface aeration means aeration accomplished with equipment that generates splashing, i.e. throws the water into the air, not diffused aeration.

Absent site specific factors, if the proposed treatment works are far enough from habitable structures (as defined by the setback distances given above) then odor mitigating design features would not be required. However, if at the time of site application action by the Division, habitable structures do exist within the setback distances listed above for a new domestic wastewater treatment works, the applicant must commit to incorporating reasonable appropriate odor mitigation elements into the plant design.

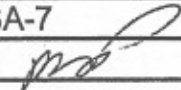
Incorporation of the odor control processes into the design shall be a condition of the approval letter. Failure to construct the odor control processes would invalidate the site location approval, resulting in a violation to the Water Quality Control Act, 25-8-702 C.R.S.

Mitigating elements can include system features designed to prevent odor problems from occurring such as, but not limited to:

1. Aeration system failure alarms with 24-hour autodialing to an appropriate response party;

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-7
Approved By: 
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 4 of 5

POLICY NUMBER 7: ODOR, NOISE AND AEROSOL MITIGATION FROM
WASTEWATER TREATMENT WORKS

2. Covering certain portions of the plant; and,
3. Enclosure and appropriate air handling treatment system (e.g. air filters) for certain processes that generate odors such as headworks and solids handling facilities.

The specific mitigating elements for a particular situation should be developed based on an analysis of the sequence of events that could lead to odor problems. Design features should then be developed to interrupt or control the generation of odors which would negatively affect nearby habitable structures.

Expansion of Existing Plants

Where the distances to habitable structures cited above in the New Plant section are not met for facilities being expanded or modified, the applicant also has the obligation to consider odors. In the site application, the applicant shall address the need for mitigation design elements to reduce the potential for odor from processes being added or modified. Reasonable odor mitigation facilities or strategies shall be proposed by the applicant to reduce the odor potential. Where a new habitable structure(s) has been built near the treatment plant boundary after the construction of the original plant, the Division and the applicant should consider whether the new facilities will increase the already existing odor levels at those new habitable structures.

Noise - Noise is generated by large, powered equipment at treatment plants including engine generators, blowers, fans, and mechanical aerators. The variation, pulse, and tone of the noise can affect the listener as much as or more than the decibel energy of the sound wave. Mitigation strategies must be employed consistent with State and Local Ordinances and should focus on equipment selection, acoustical architectural techniques, and the use of barriers or other sound-wave attenuation measures within buildings, surrounding structures, and plant grounds.

Aerosols - A plant site shall be of sufficient size that, under normally expected operating and climate conditions for the proposed

**WATER QUALITY
SITE APPLICATIONS**

Policies & Procedures

Policy No.: WQSA-7
Approved By: *mb*
Effective Date: November 8, 2004
Revision No.: _____
Revision Date: _____
Page 5 of 5

**POLICY NUMBER 7: ODOR, NOISE AND AEROSOL MITIGATION FROM
WASTEWATER TREATMENT WORKS**

processes, aerosols would not be expected to cross the property line of the plant. Aerosols shall be considered water droplets generated by active treatment processes in the plant. Aerosols do not include fog caused by temperature differences or odors carried through the movement of air across the property. Where aerosol drift may be reasonably expected to go off the plant site, the Division may deny site location approval or may impose appropriate design requirements as a condition of approval. Where the treatment processes are more than 250 feet away from the habitable structures, the Division will assume that aerosol drift is not an issue unless the treatment process proposed would create significant aerosols or the aerosols may create public health concerns.

Background: Opposition by neighboring residents to the construction of domestic wastewater treatment facilities has occurred in some cases and it is necessary for the Division to implement a consistent approach to addressing those concerns while protecting public health and the environment.

Reference: Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works, Regulation No. 22 (5 CCR 1002-22)
Regulation No. 2 Odor Emission, Air Quality Control Commission