

DIVISION OF DRINKING WATER

POLICY/PROCEDURE

Title:	SWTR IMPLEMENTATION POLICY - MINIMUM WATERSHED CONTROL PROGRAM REQUIREMENTS	L-04
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Contact:	Lead Secretary, Division of Drinking Water	
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Approved:		Director, Division of Drinking Water

PURPOSE STATEMENT:

To define the minimum watershed control program requirements a system using an unfiltered surface supply must meet to remain unfiltered.

BACKGROUND

Federal Watershed Control Requirements

The federal Surface Water Treatment Rule (SWTR) was promulgated in June, 1989. The SWTR requires all public water systems using surface water sources to provide disinfection and provide filtration unless source quality and site-specific criteria are met. Maintenance of a watershed control program which minimizes the potential for contamination by Giardia and viruses in the source water is one of the site-specific criteria.

The federal rule specifies minimum elements that must be addressed in the watershed control program. The rule also states that systems must demonstrate through ownership and/or written agreements with landowners in the watershed that it can control all human activities which may have an adverse impact on the microbiological quality of the source water.

Current State Watershed Control Requirements

Current state drinking water regulations, WAC 246-290-250 (5), specify several criteria that existing surface water systems must meet to remain unfiltered. Watershed control is included as one of these criteria. In addition, WAC 246-290-450, mandates that systems using unfiltered surface water document a watershed control program to preclude degradation of the physical, chemical, microbiological, viral, and radiological quality of the source of supply. The regulations identify basic elements to be addressed in a watershed control program report; the report is to be submitted to the department for approval as part of the water system plan.

To date, the Drinking Water Program has not had a written policy which specifically defines minimum watershed control program requirements that must be met by a surface water system as a condition of remaining unfiltered. These decisions have been left to the professional judgement of the regional engineers.

Process for Establishing Minimum State Requirements

A two day meeting was held in February, 1992 to address watershed control. The purpose of the meeting was to: 1) establish minimum watershed control program requirements to remain unfiltered, and 2) judge the adequacy of the watershed control programs/make final filtration decisions for the systems trying to remain unfiltered in Washington.

The meeting was attended by DOH staff from each of the three regional offices (Moseng and James from Seattle, Leichty and Apperson from Olympia, and Riley from Spokane) and headquarters (Hudson, Notestine). In addition, EPA had two representatives attend the meeting - Al Henning from Region 10 and Ed Geldreich from Cincinnati representing EPA headquarters. Decisions were made using a consensus process.

POLICY:

Applicability/Definition

This policy applies to Group A systems using unfiltered surface supplies. This policy will be effective until the SWTR is adopted as part of the drinking water regulations, WAC 246-290. At that time, the policy will be revised into guidance designed to complement the watershed control program requirements identified in regulation as part of the SWTR.

For purposes of determining compliance with this policy, the term "watershed" means the region or area which ultimately drains into a surface water source diverted for drinking water supply and affects the physical, chemical, microbiological and radiological quality of the source.

DOH Watershed Control Program Philosophy

The Department's long-standing philosophy has been for systems to use the best source available and to protect each source to the highest degree possible. The workgroup agreed to the concept that, to remain unfiltered, systems must meet some minimum watershed control criteria, and systems failing to meet the minimum criteria would be required to filter. To judge the adequacy of watershed control programs, the group agreed to use a qualitative (pass/fail) approach, rather than a quantitative approach. As part of establishing the minimum requirements, the group agreed to establish some minimal level of effort associated with each watershed activity that could adversely impact water quality. The group also agreed that systems with minimal control of their watersheds (but "passing") should provide increased monitoring of activities within the watershed.

The workgroup also noted that systems can always improve watershed control, and thus, must demonstrate to the Department a good faith effort to improve their watershed control programs. It was acknowledged that the Department may have difficulty gauging program improvements. Water quality trends could be used to show how improved watershed control has improved water quality. Good faith effort could also be demonstrated through yearly increases in the watershed control budget and associated

activities. It is up to the utility to determine whether the benefits outweigh the costs required to improve watershed control.

It was acknowledged that some systems have watershed control programs that currently exceed the minimum requirements specified in this policy. The workgroup agreed that these systems should not be allowed to let their watershed control programs degrade to the minimum level required to "pass". All unfiltered systems shall be required to improve their watershed control, based on the level of control existing in January, 1992.

MINIMUM WATERSHED CONTROL PROGRAM REQUIREMENTS/ANNUAL REPORT

The Drinking Water Program has accepted the federal watershed control program elements as the minimum elements that must be addressed by an unfiltered system to avoid filtration. At a minimum, the watershed control program must:

1. Characterize the watershed hydrology and land ownership;
2. Identify watershed characteristics and activities which may have an adverse effect on source water quality; and
3. Monitor the occurrence of activities which may have an adverse effect on source water quality.

The water system must also demonstrate through ownership and/or written agreements that it can control all human activities which may have an adverse impact on the microbiological quality of the source. Each of these watershed control program elements is defined in more detail below.

In addition to accepting the minimum program elements, the Drinking Water Program has accepted the federal requirement for a public water system to submit an annual watershed control program report to the Department. The annual report shall summarize the effectiveness of the watershed control program and identify, at a minimum, the following:

1. Activities occurring in the watershed which are adversely affecting or could potentially affect source water quality;
2. Changes (e.g. topographical, climatological/hydrological) in the watershed that have occurred within the previous year which could adversely affect source water quality;
3. Human activities expected to occur in the future and how the activities will be addressed (monitored/controlled);
4. The monitoring program the system used to assess the adequacy of watershed protection including an evaluation of sampling results; and
5. Special concerns about the watershed and how the concerns are being addressed.

In addition to information described in items 1 - 5 directly above, the annual report shall contain other information as specified elsewhere in this policy.

WATERSHED HYDROLOGY AND LAND OWNERSHIP

This portion of the watershed control program report shall describe the watershed including the following:

1. Geography: geographical location/boundaries of watershed, topographic features, and size (area).
2. Hydrology: annual precipitation patterns, stream flow characteristics, sediment loadings as related to rainfall intensity, stream flow, and land use practices.
3. Identification of Critical Areas: DOH defines a "critical area" as any location within the watershed wherein human activity could degrade water quality at the intake and requires additional protection or control to protect water quality.
4. Delineation of Land Ownership: a map, table, and narrative description of entities owning parcels of land within the watershed. Include information on total acreage owned by each entity, a description of primary land use activities and use percentages for each landowner. Land ownership shall be related to "critical areas" as defined in item 3 above. For both utility and non-utility owned land, include information on mineral rights and any other legal encumbrances that affect land use and ultimately water quality.
5. Water System Components: major components of the water system located within the watershed shall be mapped and described, including intake facilities, reservoirs, etc.
6. Identification of Key Access Points: key entry points and areas most subject to trespass shall be mapped, described and related to "critical areas".

Regarding land ownership, at present none of the unfiltered surface supply watersheds in Washington is solely utility owned. The following non-utility watershed landowners have been identified:

Federal: United States Forest Service, National Park Service, and Bonneville Power Administration

State: Department of Natural Resources

Private: Timber companies, radio stations, railroads, private agricultural interests

Utilities are encouraged to increase watershed control through direct purchase of additional parcels from the above entities and/or through transfer of ownership via land exchanges. Direct ownership of critical areas and key access points by the utility is strongly encouraged.

WRITTEN AGREEMENTS

Water systems must demonstrate through ownership and/or written agreements control of all human activities which may have an adverse impact on the microbiological quality of the source. To be considered acceptable to the Department, written agreements with landowners must:

1. Identify the party responsible for monitoring the water quality impacts of activities occurring on non-utility owned land and identify which water quality parameters will be monitored and the frequency of monitoring. The parameters to be monitored shall be based on the potential adverse water quality impact(s) of the activity of concern.

2. Be in place prior to the time any activity which could adversely impact water quality occurs.
3. Include a provision for an annual review by the utility of the activities planned for the coming year by the landowner. The utility must document results of the annual review meetings and include them in the annual watershed control program report.
4. Clarify acceptable/unacceptable practices, specify best management practices (BMP's), identify access controls, etc. Practices must adhere to established federal and state regulations.
5. Give the utility the authority to access property to conduct water quality monitoring and/or check for deficiencies in the conduct of activities (inspections). Agreements must give the utility the authority to correct any deficiencies noted or hire others to correct any deficiencies, if the landowner does not take corrective action in a timely manner (as determined by the utility).

Agreements must be signed by both the landowner and utility. The purveyor shall ensure that copies of the most current written agreements are on file at the Department. Copies of any new or modified agreements shall be provided to the Department as part of the annual watershed control program report. The annual report need not contain copies of agreements already on file with the Department, as long as the agreement on file has not been modified.

IDENTIFICATION OF WATERSHED CHARACTERISTICS AND ACTIVITIES

The watershed control program report shall identify those characteristics within the watershed that have the potential to adversely impact water quality. Naturally-occurring characteristics including precipitation, terrain, soil types and land cover and animal populations should be described. The watershed control program must also identify activities/land uses which may adversely impact source water quality.

Activities known to be occurring on watersheds of unfiltered systems in Washington and having the potential to adversely impact water quality are:

1. Logging
2. Road Building
3. Recreational Activities
 - a. Off-road vehicles (ORV's)
 - b. Camping
 - c. Hiking
 - d. Fishing
 - e. Hunting
 - f. X-Country Skiing
 - g. Wood Cutting
 - h. Snowmobiling
4. Residential Land Uses/On-site Wastewater Treatment Systems
 - a. Temporary (Work camps)
 - b. Permanent (Caretakers Only)

5. Transportation Routes
6. Forest, Power Line Patrols/Maintenance
7. Fisheries and Wildlife Management
8. Fire Fighting
9. Mining
10. Research and Education

The Department encourages utilities to reduce or eliminate, to the extent possible, the above activities in the watershed, especially in critical areas.

MONITORING/CONTROL OF ACTIVITIES WHICH MAY ADVERSELY IMPACT SOURCE QUALITY

Activities that must be monitored/controlled

From the above list of all known activities occurring on unfiltered system watersheds in Washington, the activities of most concern, "highest priority", as related to SWTR (turbidity, microbiological impacts) have been identified by the Department. To be considered adequate, the watershed control program shall, at a minimum, address how the system monitors and controls adverse water quality impacts (respective concerns noted in parentheses) from the following activities/land uses:

1. Logging (turbidity);
2. Road building and maintenance (turbidity);
3. Recreational activities and hunting (turbidity, microbial); and
4. Transportation routes (microbial).

In addition to the parameters of concern as related to the SWTR, the purveyor's watershed control program shall also address the monitoring and control of water quality impacts originating from spills, aerial and land application of chemicals, etc.

Note: residential land uses and associated wastewater treatment discharges (point or non-point) were identified as having a high potential for adversely impacting source quality. No residences shall be allowed in the watershed with the exception of those specified under "Sanitation".

Grazing of domestic animals in the watershed was also identified as having the potential to affect the turbidity and microbiological quality of the source. Grazing of domestic animals shall not be allowed in critical areas of the watershed, and is discouraged anywhere in the watershed.

"Abandoned" or unneeded roads and railroads should be replanted and/or barricaded to be made impassable to vehicles.

Monitoring of Activities/Inspections/Patrols

To be considered adequate, as part of the watershed control program, the utility shall provide individuals dedicated to the duties of inspecting and patrolling the watershed. The number of individuals dedicated to these efforts shall be proportional to the size of the watershed, and take into consideration other factors such as accessibility, geography, and communication systems.

Inspectors shall be responsible for monitoring the impacts of planned activities on the watershed; at a minimum, inspections shall be conducted on a weekly basis. Inspectors shall be knowledgeable about watershed control in general, and more specifically, the potential adverse water quality impacts, best management practices and federal and state laws governing the activities they are monitoring.

Patrols shall be responsible for checking the watershed for unauthorized entry, i.e. trespassers. The minimum effort required for an adequate watershed control program shall be daily patrols of the headworks, reservoirs, and a systematic program acceptable to the department to inspect the remaining areas of the watershed (with an emphasis on critical areas and areas most susceptible to trespass). Besides the headworks and reservoirs, a different portion of the watershed shall be inspected every day, so that all critical/high trespass areas are inspected at a frequency acceptable to the department. The department may reduce the frequency of patrols when warranted due to seasonal variations in activity within the watershed, inaccessibility due to snow, etc.

Utility personnel shall report to the proper authorities unauthorized (as determined by the utility) people in the watershed for trespassing. The authority to write citations and fine individuals is encouraged, but not required.

As part of the watershed surveillance program, the utility shall track the number of people entering the watershed and identify the purpose of their entries into the watershed. The utility shall keep written records of this information for inclusion in the annual watershed control report. Records of people entering critical areas, trends in numbers of people entering and their associated activities, and numbers and locations of unauthorized entry shall be documented. Traffic counters at key access points and user frequency data from the USFS, NPS, etc. may be used to obtain some of this information where applicable.

Activities, such as controlled hunts and educational field trips, shall be conducted under the supervision of utility personnel. Although desirable, utility personnel are not required to accompany non-utility persons entering the watershed as a minimum watershed control program requirement.

Water Quality Monitoring

The watershed control program shall include a plan to conduct water quality monitoring before and after the occurrence of human activities which could adversely impact water quality. For activities on utility owned land, the plan shall identify the nature of the activities, their potential impact on water quality, the water quality parameters to be monitored and frequency of monitoring. For activities to be conducted on non-utility owned land, written agreements with landowners shall identify the party responsible for conducting water quality monitoring and list the parameters to be monitored and frequency of monitoring. The utility shall be responsible for performing water quality monitoring, unless the written agreements specify that another party acceptable to the department will conduct such measurements.

Minimum Acceptable Controls for Priority Activities/Land Uses

The following are considered minimum controls acceptable to the state for the priority activities/land uses noted above:

1. Logging/Road Building and Maintenance

For utility owned lands, the utility shall ensure that logging practices and road building and maintenance activities meet current federal and state logging standards. For non-utility owned lands, the utility shall monitor the conduct of these activities and attempt to resolve in the field problems identified. Utility personnel shall report to the proper authorities violations of the Forest Practices Act. Through notification of the appropriate State and/or Federal authorities, the utility shall ensure that they will have "review rights" for all proposed plans for road building and logging activities within the watershed.

2. Recreational Activities

The watershed control program shall prohibit off-road vehicles in the watershed, unless they are used by the utility to patrol or work in the watershed. In addition, water contact activities such as swimming, boating, and fishing shall not be allowed in critical areas and are highly discouraged anywhere in the watershed. If hunting is allowed in the watershed, hunts must be under the direct control of the utility or under the control of the Department of Game through written agreement. Where hiking is allowed in the watershed, it shall be limited to controlled trails in non-critical areas.

These recreational activities shall be prohibited in watersheds where they do not currently occur (i.e. don't "open up" watershed in the future).

3. Transportation Routes

The watershed control program shall evaluate the potential for source contamination from transportation routes (such as railroads and highways) through and/or adjacent to the watershed. To the extent possible, the utility shall exclude or minimize the transport of hazardous materials through the watershed. The utility shall address the impact and possible control measures of sewage dumped by trains passing through the watershed.

The utility shall demonstrate to the satisfaction of the department the ability to contain spills to protect source quality and provide an alternate source of water or operate off storage during an emergency (48 hour minimum).

Written agreements shall address the transport of hazardous materials through the watershed. Systems with currently inactive transportation routes in their watersheds shall be required to obtain written agreements with the appropriate parties, if at some time in the future the routes are reactivated. Utilities are encouraged to acquire these routes when they become inactivated/available.

ADDITIONAL WATERSHED CONTROL REQUIREMENTS

Sanitation

The utility shall ensure that sanitation facilities are provided and properly maintained (pumped) in the watershed at strategic locations, i.e. where activities that concentrate people (> 2 people), such as logging and hunting, occur. The utility shall ensure that all persons entering the watershed on authorized business are "educated" with regards to sanitation concerns and requirements.

Wastewater discharges and on-site systems shall be prohibited in watersheds, with one possible exception. The Department may allow on-site systems to provide for wastewater treatment at the only residences allowed in the watersheds - the caretaker's homes or utility facilities used as a base of operations for staff working in the watershed. Utilities currently having any other residences in the watershed shall ensure that they are in non-critical areas and provide the department with an acceptable plan and schedule to eliminate them from the watershed.

When allowed, on-site systems shall be located and maintained in a manner acceptable to the Department to preclude degradation of source quality. If it is determined that a septic system in the watershed poses a threat to the quality of the source, alternative locations and/or alternative waste disposal systems shall be evaluated and installed in accordance with a schedule acceptable to the Department.

Access Control

To be considered adequate, the utility's watershed program shall provide control of access to the watershed. The following are considered minimum access control measures:

- * The utility must control key entry points to the watershed including roads, hiking trails and inactive transportation routes such as abandoned logging roads and railroads.
- * The utility shall ensure that all roads providing access to the watershed are equipped with locked gates. In cases where the utility does not own the entire watershed, all roads accessing utility owned land and critical areas shall have locked gates. Where access to non-utility owned land can't be denied, the utility shall make an effort to improve watershed control by obtaining ownership, access rights and/or making arrangements with the owners to provide gate keys for passage through utility owned land. In areas where animals graze on lands adjacent to the watershed, all access roads shall be equipped with cattle guards, and fencing shall be provided appropriate to the conditions.
- * The utility shall post watershed boundary signs at all strategic locations, i.e. watershed access points and shall also post signs at the intake, headworks and reservoirs, if accessible to the public. The watershed shall be posted to prohibit ORV access; also, where hiking trails exist in the watershed adequate controls should be provided, including signs and public information brochures.
- * In combination with gates, posting and patrols, the utility shall provide fencing in areas most susceptible to human trespass(as determined by the utility), including all "critical" areas, such as the source intake and any reservoirs accessible to people other than utility personnel or animals.
- * Written agreements with non-utility watershed landowners must address access control via land and air.

Note: staffed stations ("Checkpoint Charlie") at watershed access points and issuance of watershed entry permits are desirable but not considered minimum requirements, with the following exception. Systems allowing controlled hunts shall ensure that hunters entering and leaving the watershed are required to "check" through a staffed station.

Education

Education of people entering the watershed is a minimum watershed control program requirement. Education brochures shall be provided at key entry points to the watershed (not including active railroad entry points). In addition, where controlled hunts are allowed in the watershed, the utility shall conduct a watershed education class that hunters must complete to participate in the controlled hunt. Education must include information regarding proper sanitation techniques to prevent degradation of source quality. Alternate equivalent education programs may be submitted to the Department for review and acceptance. Education of the general public regarding watershed control is desirable, but not a minimum requirement.

Operations

The watershed control program shall address system operations to ensure that the water delivered to customers always meets the SWTR. Systems that rely on alternate sources for use when the surface source turbidity is high and/or for emergencies shall provide:

- * evidence that they have been issued the water right permit by the Department of Ecology for the alternate source(s); and
- * information to show that the alternate source has the capacity to handle system needs until the primary surface source can be put back on-line.

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