NMED - Drinking Water Bureau

TECHNICAL MANUAL

GWUDI

GUIDANCE MANUAL

Ground Water Under Direct Influence of Surface Water

April 2021

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Drinking Water Bureau
Determining Ground Water Under Direct Influence (GWUDI) of Surface Water

Purpose

The purpose of this guidance is to determine the best methodology to be used by the DWB for identifying GWUDI sources. These are general guidelines and methodologies, as not every methodology may be suitable for every situation. This document is based on GWUDI programs from other states and will be reviewed periodically and updated as is necessary.

Introduction

The National Primary Drinking Water regulations define in § 141.2 GWUDI as "Ground water under the direct influence of surface water (GWUDI) means any water beneath the surface of the ground with significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as Giardia lamblia or Cryptosporidium, or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions."

GWUDI occurs when the groundwater source receives direct surface water recharge. This could lead to contamination of groundwater from surface water pathogens, which are usually not found in true groundwaters.

This protocol is used by the Drinking Water Bureau (DWB) of the New Mexico Environment Department (NMED) to identify sources vulnerable to direct surface water influence. This guidance will apply to sources employing collection devices (spring houses, infiltration galleries, horizontal and shallow vertical wells) or sources (aquifers) that may be at risk of surface water influence.

If a drinking water source is suspected to be under the direct influence of surface water, the DWB may immediately deem that source as a GWUDI in order to ensure the protection of public health. The water system must then meet the requirements of 40 CFR 141.71 (a) and (b) within 18 months of notification unless the water system appeals.

Each source not previously classified as surface water is evaluated in terms of the parameters detailed in this guidance and placed in one of three Categories as listed in Table 1. Classification should take place at the time of the sanitary survey or within 90 days in the case of a newly activated source. In Category 1, DWB staff determines by visual or hydrologic parameters that the source is groundwater under direct influence of surface water (GWUDI) without testing or using the scoring system. For the remaining 2 categories, placement is based on a score that is determined from various criteria described in Table 2. A Category 2 source is determined to be GWUDI after any combination of coliform microbiological sampling, a Water Quality Assessment, a Microscopic Particulate Analysis (MPA) test, and/or a Source Water Assessment; and a Category 3 source is considered to have minimal potential to be GWUDI and may not require further action.

The Hydrogeologic Assessment

The Hydrogeologic assessment and scoring system are based on the type of collection device, static water level, aquifer characteristics, proximity to surface water features, flooding potential, chemical and physical parameters, and historical bacteriological results. Table 1 describes the Score and resulting Category.

Table 1: Category Classification for GWUDI Determinations

Score	Category	
N/A	**1** High Probability	Source is surface water or GWUDI with no additional assessment or test required Hydrogeologic Survey may be performed.
≥ 50	**2** Moderate Probability	Any combination of: Four bacteriological source water samples (total coliform presence/absence test), Water Quality Assessment, MPA, and/or Source Water Assessment
< 50	**3** Low Probability	No sampling required or MPA, however, sampling may be performed at the discretion of DWB.

The score is determined from a Hydrogeologic Assessment summarized in Table 2. Each parameter has conditions within each category. The score is the sum of all applicable conditions for an individual source. It can also apply to several sources that combine into a single flow.

Description of Conditions Within Each Parameter

The condition of the source and collection device are considered in this scoring system. The source and collection device are placed into one of three conditions as follows:

Condition 1: The source and collection device are in good condition. Modification or renovation is not expected to change the results of a test.

Condition 2: The source and collection device need repair or re-design. The results of a test might be dependent on the condition of the source or collection device. Examples include a worn spring box or a well with a questionable casing.

Condition 3: The source or collection device is in poor condition and the results of a test are likely to change if the collection device is improved. Examples include an unsealed spring box or an uncased well.

The score is generally lower for poor collection devices. This will place the source in a higher Category for borderline cases in order to initiate more testing and to allow the water system to improve the collection device as part of the assessment. The lower overall score and higher Category classification

should reveal if the device is the cause of the surface water infiltration as opposed to the source water itself. In these cases, the collection device can possibly be modified to improve the water quality and prevent the need for surface water treatment under 40 CFR 141.71.

Other provisions: DWB may reclassify from Category 1 to Category 2 with sufficient justification, however, immediate continuous disinfection may be required prior to test results if not already in place.

Table 2: Hydrogeologic Scoring System				
Collection Device	**Condition 1**	**Condition 2**	**Condition 3**	**Scoring**
Horizontal wells	50	50	50	
Vertical Well ≤ 100 ft depth **or** screen depth ≤ 100 ft from surface	50	50	40	
Infiltration Gallery	50	50	50	
Vertical Well >100-120 ft depth **or** screen depth >100-120 ft from surface	40	30	20	
Spring in known fractured rock **or** any limestone formation	40	30	20	
Spring in solid rock	30	20	20	
Vertical Well > 120 ft depth in unconfined aquifer and screen depth >120 ft depth	20	10	10	
Static Water Level (wells only)				
≤ 60 ft from surface	20	20	20	
61 to 120 ft from surface	10	10	10	
Proximity to Surface Water Features				
≤ 100 ft from permanent surface water	40	30	30	
>100 to 200 ft from permanent surface water and < 100 ft elevation difference	30	20	20	
< 100 ft from intermittent surface water	30	20	20	
< 100 ft from ephemeral surface water	20	10	10	
Flooding Potential				
Source is prone to runoff	40	30	20	
Chemical, Physical, and Bacteriological Parameters				
Bacteriological contamination following storm event	40	30	30	
Significant increase in chlorine demand following or related to storm event	40	30	30	
Turbidity spike following storm event or turbidity levels typically above acceptable levels of 0.3 NTU.	50	40	30	
Significant history of bacteriological contamination incriminating source	40	30	30	
Significant history of manmade nitrate contamination	40	40	40	
			Total Score	

Condition 1: The source and collection device are in good condition. Modification or renovation is not expected to change the results of a test.
Condition 2: The source and collection device need repair or re-design. The results of a test might be dependent on the condition of the source or collection device.
Condition 3: The source or collection device is in poor condition and the results of a test are likely to change if the collection device is improved.

Procedures for Category Classification and GWUDI Determination

Source information is gathered and reviewed in order to classify the Category. Information such as engineering drawings, as-built drawings, well logs including depth and screen location(s), aquifer information, and chemical and microbiological data are used in the determination. A site visit is required; photographs and field notes are taken. Compliance or Technical Services staff prepare a file for each source and fill out a GWUDI Source Information form, appended. The Category is determined from this data and, for Categories 2 through 3, from the score using Table 2.

Compliance or Technical Services staff make the initial Category recommendation and the Category assignment is accepted upon approval of the Technical Services Manager and the Regional Compliance Supervisor. The procedures below are then followed. The Compliance or Technical Services staff determines the status of the source based on the results of the procedures for the particular Category. The PWSS Manager and Technical Services Manager review the results and approve the determination. If a source is determined to be under the direct influence of surface water, the water system must meet the requirements of 40 CFR 141.71 within 18 months of determination. The source must immediately have continuous disinfection installed with a treatment approved by the department. A letter is sent to the water system identifying the source as surface water and designating the 18-month period. A request is sent to the PWSS Group Manager to mandate disinfection to meet 4-log inactivation of viruses. The mandate, if approved, will be sent by PWSS Group Manager.

Category 1

Category 1 is reserved for sources that are obviously surface water based on state and federal drinking water regulations and based on the professional judgment of DWB staff assigned to the water system These sources include but are not limited to intakes in streams or lakes, pipes or vertical wells with limited and porous overburden, infiltration galleries, and any device used for the collection of surface water.

Category 2

Sources with a score of 50 or more are classified as Category 2. These are sources with a moderate probability of direct influence of surface water. Generally, one microbiological sample is collected as close to the source as possible in 4 consecutive months to determine a further course of action. An MPA sample can be collected in place of the 4 microbiological samples. The Compliance Officer determines a sample schedule, includes it on the GWUDI Source Information form, and informs the sampling staff. A Water Quality Assessment is also performed (see Section 4).

In cases where microbiological samples are collected, if all 4 samples are coliform positive or 1 or more samples are *E. coli* positive, then the source is determined to be under the direct influence of surface water.

If an MPA sample is collected instead of the 4 microbiological samples, the source is determined to be under the direct influence of surface water if the result is Moderate or High.

Category 3

Sources with a score less than 50 are classified as Category 3. These sources are regarded as low probability of direct surface water influence. At the discretion of DWB staff, these sources may be sampled as Category 2 sources.

GWUDI Determination based on Category Classification

Once the Category has been determined, the flow chart on page 14 can be used to classify the source as GWUDI or not GWUDI.

Microbiological Assessment

If a Microscopic Particulate Analysis (MPA) is performed, the sample should be collected during periods when in the professional judgement of DWB the water quality has the greatest probability of surface water impacting the groundwater. This is generally the season of highest precipitation and infiltration.

The EPA has published a detailed technical document on methods for using particulate analysis for establishing direct surface water influence entitled EPA 910/9-92-029: "*Consensus Method for Determining Groundwater Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA)"* and is used as the guideline for collection of MPA samples. This document states that since groundwater under the direct influence of surface water is indicated by the significant occurrence of insects, algae, or other large- diameter pathogens, the MPA cannot be used as a presence or absence criterion. The document arrives at a risk factor based on the number of the various bio-indicators per 100 gallons of water. The indicators are diatoms, rotifers, coccidia, plant debris, insect parts, *Giardia,* and *Cryptosporidium* cysts.

1. Microscopic Particulate Analysis Procedure

- Equipment

Six-foot inlet hose
Filter holder housing containing polypropylene yarn filter
Water meter in gallons (5/8 x ¾)
Limiting flow orifice, 1.0 gallon per minute
Six-foot discharge
Cooler

- Sampling Location

Samples should be sampled as close to the source as possible to avoid any organisms growing in holding tanks, distribution systems, or blended waters. Spring boxes should be cleaned and allowed to completely flush prior to sampling. Sampling should be performed prior to any chemical additions. The main objective in raw water sampling is to collect a true representative sample of water prior to entering the treatment process or distribution system.

- Chlorinated Water Samples

The MPA test should not be conducted on chlorinated water. If there is no choice but to use chlorinated water, add sodium thiosulfate solution to the sample using a dilution factor

of 2 with 0.5 % sodium thiosulfate stock solution to de-chlorinate samples. Note this on sample forms.

- Non-Pressurized Sources

A small 1-3 gallon per minute pump should be used in situations involving insufficient pressure. Samples should be taken at the intake of a spring box or where settled sediment will not be stirred up and enter the filter.

- Cleanliness

A minimum of 50 gallons of sample water is run through the sampling apparatus before installing a new sampling filter. The filter is not touched with bare hands; sanitary gloves are used, or the plastic cover is handled to install the filter.

- Flow Rate & Pressure During Sample Collection

An initial meter reading is recorded after completing the flushing of the testing apparatus. Flow is maintained near 1.0 gallons per minute during sample collection. Although flow may decrease during the sampling process, it should be kept below 1.0 gallon per minute. After removing trapped air from the apparatus, incoming water should be adjusted to create a slight amount of backpressure on the filter to prevent channeling and bubble formation. Pressure should not exceed 20 psi during any time of sample collection to avoid filter breakthrough. Check with the manufacturer or lab for further filter limitations.

- Sample Collection Gallon Amount

It is recommended that between 800 and 1500 gallons of water be sampled. The minimum allowable sample amount is 500 gallons (excluding clogged filters). The Ideal collection amount would be 1440 gallons over a 24-hour period. If a sample filter becomes clogged there is no need for alarm; simply terminate sampling and record the gallons which have been sampled.

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- Water Quality Parameters

Temperature, pH, and turbidity are recorded before and after sample collection. These parameters are measured directly upstream of the filtration apparatus or (preferably) without the apparatus in place. A GPS reading is taken at or near the source, and another reading is recorded at the sampling location if different.

- Sample Completion and Shipping

After sampling the required quantity of water, the finishing time and the final meter reading are recorded. The initial reading is subtracted from the final reading and the gallon amount collected is also recorded. Disconnect the sampling apparatus so that the filter can be removed. Pour residual water from the filter holder into a gallon-size zip-lock bag. Remove sampling cartridge from the plastic apparatus with sanitary gloves and place the sampling cartridge into the zip-lock bag. Place this zip-lock bag inside another zip-lock bag. Using a permanent marker write the sample identification on the outer zip-lock bag. Make sure the bags are sealed to prevent leakage. If necessary, the sample may be

refrigerated for 24 hours prior to shipping. **Do not freeze.** Use two cold packs and place them on the bottom of the cooler, put some insulation between the cold packs and the sample to prevent freezing. Wet ice may also be used to ship samples to ensure that the meltwater cannot leak onto the sample. **Do not use dry ice.** Include a completed analysis request sheet for each sample; then seal your shipping container and address it to the laboratory. **Ship overnight delivery.** Samples should be received no later than Thursday.

2. Disinfection

When determining if a source is GWUDI, the public health of the water users must be protected. If any MPA sample indicates a source as high or moderate risk, if all microbiological samples collected at the source are total coliform positive, or if any samples collected at the source are *E. coli* positive, then the source may be under the direct influence of surface water and harmful pathogens may be present. Under any of these conditions, DWB at its discretion, may require that an approved disinfection system be installed to reduce this risk until a final determination of the source is completed, or until a complete treatment system is installed.

3. Source Construction

A detailed evaluation of well construction (or source development) must be undertaken to determine its effect on the sample results. A poorly constructed source may allow inflow of rainfall or runoff into the aquifer or water supply. Although clearly a water quality problem, this may not mean that the system is in hydraulic connection to surface water.

If, in the professional judgement of DWB staff the source construction is inadequate then the water system can elect to correct the deficiencies. After a system corrects these deficiencies, microbiological samples are collected at the source or an MPA sample is taken and evaluated. If the water system elects not to correct the deficiencies by the timeframe determined by DWB staff then DWB at its discretion may use only the source sampling or the first result in making the GWUDI determination. A second sample may be collected at the discretion of DWB.

4. Source Water Assessment

For sources that are Category 2, but are likely not GWUDI, this option will allow the system to arrive at a determination concerning whether they should be classified as under direct surface water influence in a relatively short period of time. A source water assessment can be reviewed from the system's files or be conducted according to NMED's Source Water Assessment Program.

If the source water assessment indicates in NMED's professional judgement that the aquifer supplying the system's well is not in hydraulic connection with surface water, the system will not be required to perform any further analysis. Otherwise further assessments should be performed. If the system fails to complete a satisfactory assessment, then the source may be sampled a second time.

Water Quality Assessment

a. Background:

The variation in water quality parameters, e.g., temperature, pH, total dissolved solids, etc., in groundwater isolated from the nearby influence of surface water tends to be minimal. The actual variation exhibited decreases with increasing depth of the groundwater. With respect to temperature, for example, groundwater that is at a depth of 25 to 50 feet may show a variation of several degrees centigrade throughout the year. Groundwater at a depth greater than 100 feet may vary on the order of one degree centigrade over the same period. Surface water, on the other hand, typically has considerably greater temperature variation because of the water being in contact with the atmosphere.

In addition, isolated groundwater undergoes only small variations in water quality parameters such as pH, and dissolved constituents, e.g., total dissolved solids, calcium, chloride, sulfate, etc. Surface water, however, because of differing levels of runoff versus inflow from groundwater, or because of differing levels of biologic activity, may undergo significant variations in these parameters.

Groundwater that is in hydraulic connection, i.e., is recharged in part by water from a nearby surface water source, will show greater variations in water quality parameters than isolated groundwater. Further, variations observed in hydraulically connected groundwater will be correlated to variations in the surface water source. Because of chemical reactions in the subsurface, and because of a time lag due to travel from the surface water to the aquifer, the influenced groundwater will not show the identical variations as the surface water, nor will groundwater's variation occur at the same time. For example, if the temperature of the surface water increases, the temperature of influenced groundwater may not reflect that change for several days to several weeks and then the variation may be significantly less than that observed in the surface water.

In order to evaluate whether a particular groundwater source in proximity to a surface water source is hydraulically connected to surface water, periodic monitoring of both the groundwater and surface water must be done. The data is evaluated to see if variations that occur in surface water throughout the year are also seen in the groundwater.

b. Requirement:

At a minimum, the public water system must record temperature, pH, TDS or conductivity, turbidity, and one other parameter of both the groundwater from the well and nearby surface water sources. The optional parameter may be any other water quality parameter approved by DWB, such as alkalinity, dissolved species such as calcium (often expressed as hardness), sodium, chloride (not chlorine), sulfate, etc. Precipitation shall be recorded for the monitoring period. Recordings shall be made at a minimum of weekly frequency, and additional measurements shall be recorded as close to a significant storm event as possible and practical. Several recordings during and after a storm event are

recommended. If a significant storm event is missed, then the assessment duration will extend an additional 2 weeks. If no significant storm events occur during the six-month period, then the assessment will extend to include at least 3 significant storm events.

Measurements must be taken over a period of at least 6 months. A report of the assessment results must be submitted to DWB. A surface water source that is intermittent during the six-month evaluation period shall: record rainfall amount, sample the groundwater, and sample the surface water when it is present. If the surface water source dries up, recording of rainfall and sampling of the groundwater source should continue for at least one additional month.

c. Definition of Surface Water Source:

Surface water is defined as any water that is open to the atmosphere or is subject to surface runoff. This includes perennial streams, rivers, ponds, lakes, and some wetlands, but also intermittent streams and natural or artificial surface impoundments that receive water from runoff.

Intermittent streams may be important sources of recharge to the aquifer when they are flowing. Perennial streams are fed by groundwater (i.e. base flow) throughout the year. The beds of intermittent streams are above the water table throughout a portion of the year, only flowing when either the water table rises to intersect the stream bed or rainfall occurs at a rate that exceeds infiltration and as a consequence runs off, directed to the channels of the intermittent stream. In either case, infiltration to the aquifer can occur through the streambed and banks.

d. Sampling Method:

For the purpose of this assessment, both the water from the well(s) or spring(s) in question and the potential surface water source(s) will be sampled to include the same period of time. In order to adequately assess the potential of hydraulic connection, samples must be carefully and consistently collected. Samples collected from the surface water source must represent the water volume that is in or moving through the source.

It is also understood that a permanent, intermittent, or ephemeral surface feature may not exist near the water source in question. Data from the source itself will be compared over time to detect fluctuation after storm events or other events that can potentially influence the quality of the source water. Data must be collected during and after such events in addition to dry days.

- Sample Site.

A stream bottom is often irregular in form, consisting of deep pools, the active channel, and shallows. A sample taken from the active channel is more likely to reflect the water that is infiltrating because it is more representative of the bulk of the water that is flowing through the stream or river. A sample from the

shallows on the other hand will potentially be quite different from the bulk of the water in the system owing to more stagnant conditions or a higher level of biological activity.

Detailed studies of surface water quality generally involve more rigorous methods of sampling in order to more accurately represent the mass of water moving through the stream, e.g. several depth-integrated samples weighted to reflect the various masses of water each sample represents. For this study, however, DWB is requiring only a single sample site, preferably at the mid-channel.

The mid-channel sample can be collected from a bridge, dock, or boat within one mile upstream and 0.25 miles downstream, if no other tributaries enter within that distance. Because you will be comparing the data from the surface water source with water from your well(s), it is very important that once a sample site is selected, that the same site and procedures are used each time.

- Test Equipment.

Temperature measurements should be accomplished using a digital thermometer and recorded to the nearest tenth of a degree centigrade. A digital conductivity meter, capable of reporting to the nearest microsiemen (or micromho) per centimeter, over the range of 0 to 2000 µS/cm, and preferably temperature compensated, should be used for conductivity measurements. The pH measurement must be collected with equipment that provides a digital readout capable of displaying pH to a minimum of the 0.1 pH unit.

For the dissolved species such as calcium (as hardness), chloride and sulfate, a colorimetric test kit is acceptable. Collection of water quality parameters should be taken by a certified water sampler in accordance with NMAC 20.7.10.4.

To measure rainfall, a simple rain gauge will be sufficient. Precipitation start time and duration shall be recorded. The location of the gauge should be as close to the source as practical, and the location should remain the same for the duration of the study.

- Sample Collection.

For temperature, rainfall, and several other parameters, e.g. conductivity, pH, alkalinity, etc., field measurements must be made. For dissolved constituents, samples that are properly preserved and handled can be analyzed later. Preservation procedures depend on the constituent of interest.

- Surface Water.

Collection of surface water for the purpose of analyzing or measuring the temperature should be done by bailing, using a previously cleaned bucket with a minimum capacity of one gallon. The bucket should be rinsed a minimum of three times in the surface water source and, for the purpose of temperature, be brought

to as near as possible to the temperature of the water. (Filling the bucket with the source water, letting it sit for several minutes and then dumping and refilling will accomplish this.) Sampling or bailing should be done in a manner so as not to stir up bottom sediments.

Each measurement event must continue until three successive bails agree within 0.5 degree C or 1.0 degrees F. Similar procedures should be followed for other parameters, including pH, conductivity, etc. For dissolved constituents, at least two measurements from two separate bails will be made and averaged. Individual analyses and the average should be recorded.

- Groundwater.

Routine weekly measurements of source water should be accomplished under pumping conditions. If the well is off, it will be necessary to allow it to pump until the well bore is filled with water solely from the aquifer, i.e. purging the well. Normally this is accomplished after pumping an equivalent of three well volumes. At least two measurements shall be recorded for each parameter.

Calculation of the well volume is as follows:
Depth of Water in Well (Dw) = Depth of Well – SWL, where SWL = static water level, the level of water in the well measured from the surface when the well is at rest, i.e. the pump has been off for at least 12 hours. All values in feet and measured from ground level.

Well Volume (in gallons) = Dw x π x r^2 x 7.48
where π = 3.14 and r = radius of the well bore in feet.

The time required to pump 3 well volumes is given by:
Time (min) = 3 x Well Volume / pump rate (gpm)

5. Direct Surface Water Influence Determination

To determine if a source is GWUDI requires the evaluation of all data gathered during this process. The attached flow charts are a basic outline of the procedures for determining if a source is GWUDI. Any combination of bacteriological tests (4 sample), MPA, Water Quality Assessment, and/or Source Water Assessment may be used at DWB's discretion.

6. Appeal:

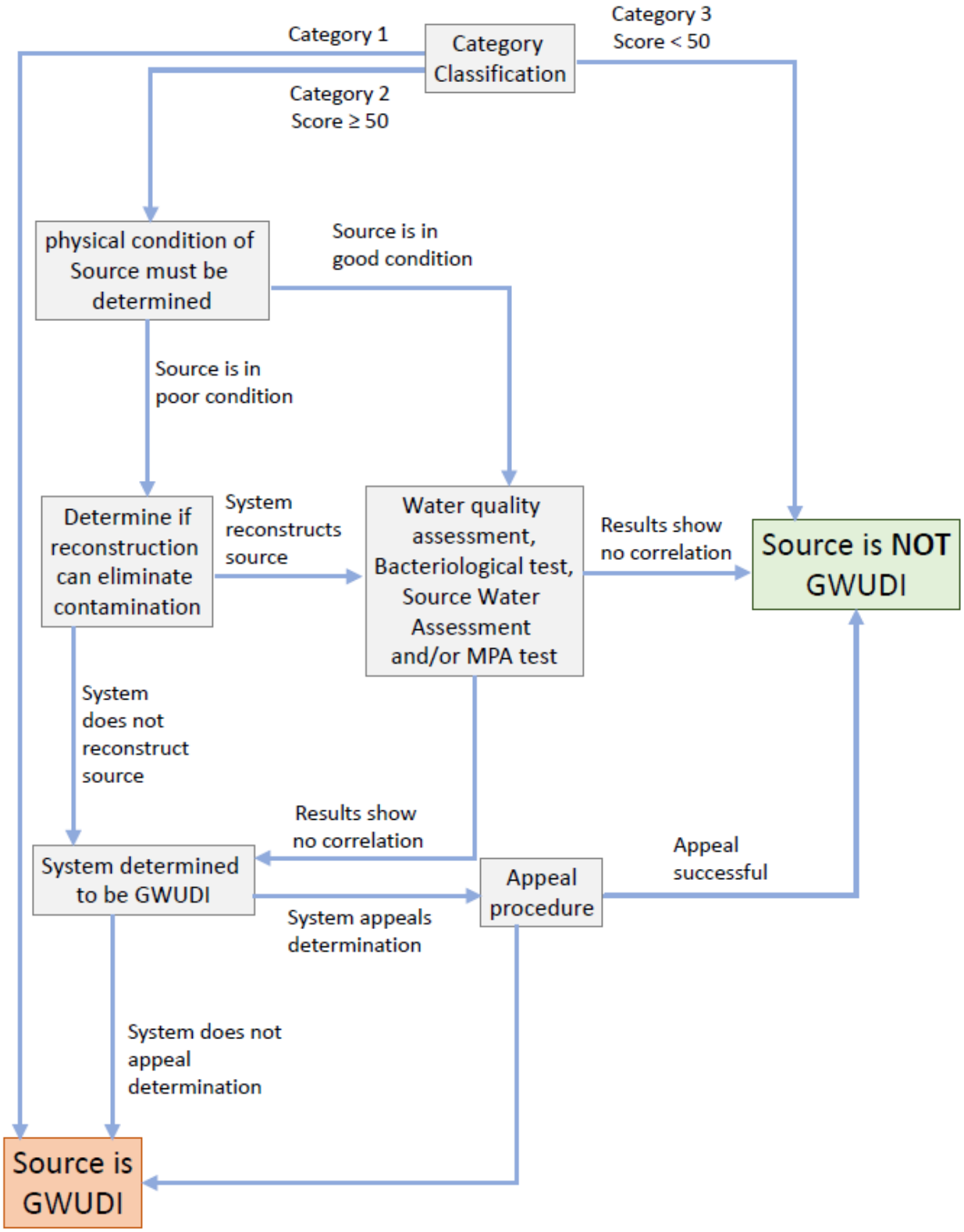
If a public water system disagrees with a GWUDI determination, the system may appeal that determination. The appeal must be provided in writing to NMED and provide clear reasoning for the basis of the appeal. Within the written appeal, the public water system may also provide NMED with additional data that has not previously been considered in the decision or if they challenge data based on scientific principles. The water system has 90 days to appeal from the day of the GWUDI determination. While an appeal is being considered, the drinking water source being appealed will maintain its GWUDI status during the appeal and the timeframe for providing appropriate Subpart H treatment will continue.

Definitions

Bacteriological Contamination	A positive total coliform sample
Chlorine Demand	A decrease in free chlorine residual
Collection Device	Any manmade structure for collection of source water
Ephemeral Surface Water	A surface feature having flowing water only during, and for a short duration after, precipitation events in a typical year*
Horizontal Well	Any collection device consisting of a pipe or casing positioned horizontally with entry of water predominantly through the open end of the pipe
Infiltration Gallery	Any collection device consisting of a pipe or casing positioned horizontally with entry of water through perforations in the pipe
Intermittent Surface Water	A surface feature having flowing water during certain times of the year when groundwater provides water for stream flow*
Nitrate Contamination	A nitrate residual of greater than half of the MCL
Permanent Surface Water	A surface feature containing water for more than 9 months of each year
Runoff	Water accumulation following a storm event or snowmelt
Spring	A source of water which does not require pumping
Static Water Level	The depth of the top of the water table measured from the surface of the ground
Turbidity Spike	An increase in turbidity greater than twice the normal

*33 CFR 330. US Corps of Engineers, Definitions.

Flow Chart for Classification



GWUDI Source Information	
PWSS#	Source ID
Source Name	Source Type (spring, well, etc.)
DWB Staff	
Inspection Date	Recommendation Date
Score (From Table 2)	Category
Source Description	
Description of source including photographs on separate sheets:	
Category Justification	
Justify the Category classification in terms of Hydrogeologic Assessment and Score.	
Category Approval	
PWSS Mgr	Date
Sampling Required	
Sample 1 (microbiological or MPA)	Date and Result
Sample 2	Date and Result
Sample 3	Date and Result
Sample 4	Date and Result
Sample 5	Date and Result
Other Requirements	
Is source improvement recommended?	Date water system notified
Is a Water Quality Assessment required?	Date water system notified

Final Determination / Approval	
This source has been determined to be / not to be GWUDI / surface water.	
Justification:	
Northern/Southern Regional Compliance Manager PWSS Group Manager signature and date Bureau Chief signature and date	
Date letter sent to system	Date requesting disinfection

This form is used for all sources identified as potentially GWUDI.