

TABLE B

Groundwater Susceptibility Analysis Work Sheet

1. Source Sensitivity: (check boxes as appropriate)

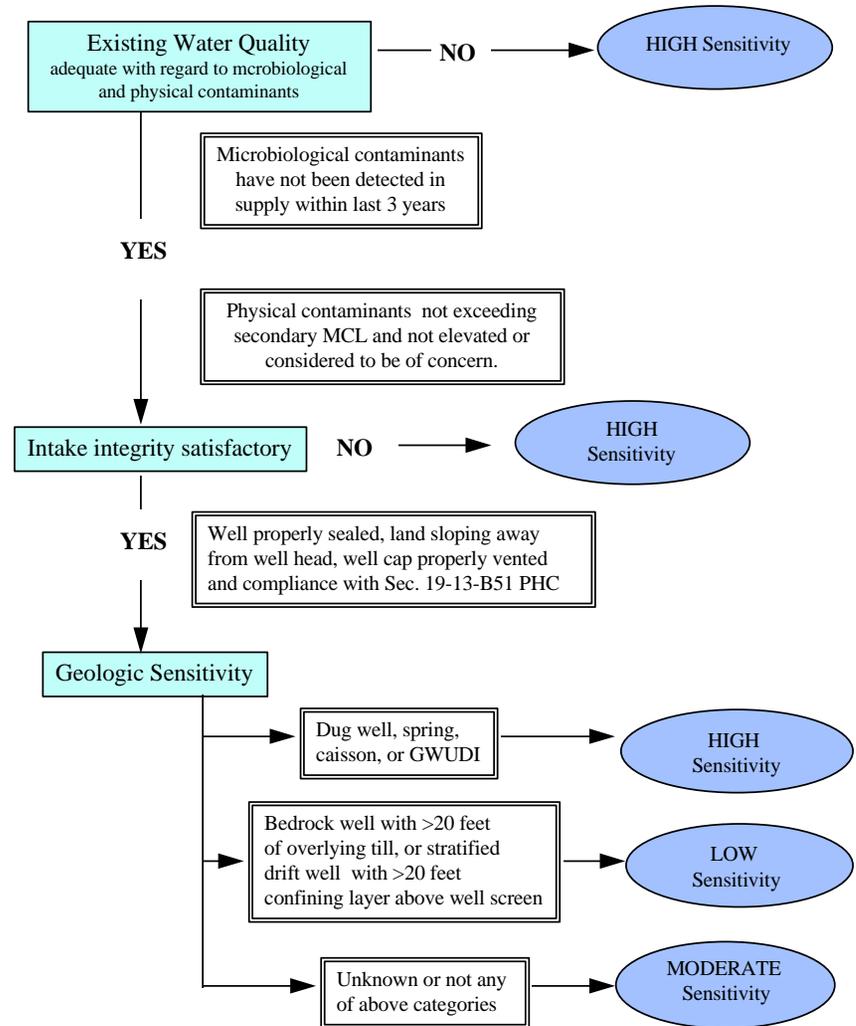
1. WATER QUALITY (microbiologic and physical contaminant categories):
 - Pathogens, microbiologics, viruses, protozoa or bacteria detected in supply within last three years, then rate as HIGH Sensitivity to microbiologics
 - Physical contaminants including particulates, solids, taste, color and odor are exceeding secondary MCL or are elevated and considered to be of concern, then rate as HIGH Sensitivity to physical contaminants.
2. INTAKE INTEGRITY:

Is well properly sealed, land slopes away from wellhead, well cap properly vented, and compliance with Section 19-13-B51 of the PHC? YES/NO

 - If YES, then rate based on geologic sensitivity.
 - If NO, then rate as HIGH Sensitivity.
3. GEOLOGIC SENSITIVITY: (Well Type/Characteristic)
 - A. Dug well, Caisson, Spring, or Ground Water under the Direct Influence of Surface Water, then rate as HIGH Sensitivity.
 - B. Bedrock well with greater than 20 feet of overlying till, or Stratified drift well with greater than 20 foot confining layer above well screen, then rate as LOW Sensitivity.
 - C. *Not any of above two categories(3A or 3B), then rate as MODERATE Sensitivity*

NOTE: UNKNOWN INFORMATION - HIGH* SENSITIVITY

Sensitivity Analysis for Ground Water Supplies



2. Source Vulnerability to Contaminants

1. WATER QUALITY CONDITIONS:

A. **MCL Exceedance** (Primary standards), within last three years to organic or inorganic chemicals

Parameter(s): _____ Single Violation Repeat

Parameter(s): _____ Single Violation Repeat

then rate as HIGH Existing Vulnerability to organic and/or inorganic contaminant categories based upon MCL violations;

or Water Quality Classification of GB requiring treatment prior to drinking.

B. **Elevated Parameters**, No MCL Violation of physical, organic or inorganic chemicals

Parameter(s): _____ Level _____ MCL _____

Parameter(s): _____ Level _____ MCL _____

then consider in conjunction with significant potential sources of contamination (SPCSs) as a Tier 1 factor.

C. if none of above water quality concerns and water quality classification of GAA, then base rating on significant potential sources of contamination indicator.

2. SIGNIFICANT POTENTIAL SOURCES of CONTAMINATION:

Number of SPSC Sites**: NONE FEW MANY

SPSC contaminant category(s): Inorganic or Organic

Assess Supplemental SPSC Factors (subjective):

Tier 1 Close* Large Producer/Storage History of Spills/Problems Elevated Parameters

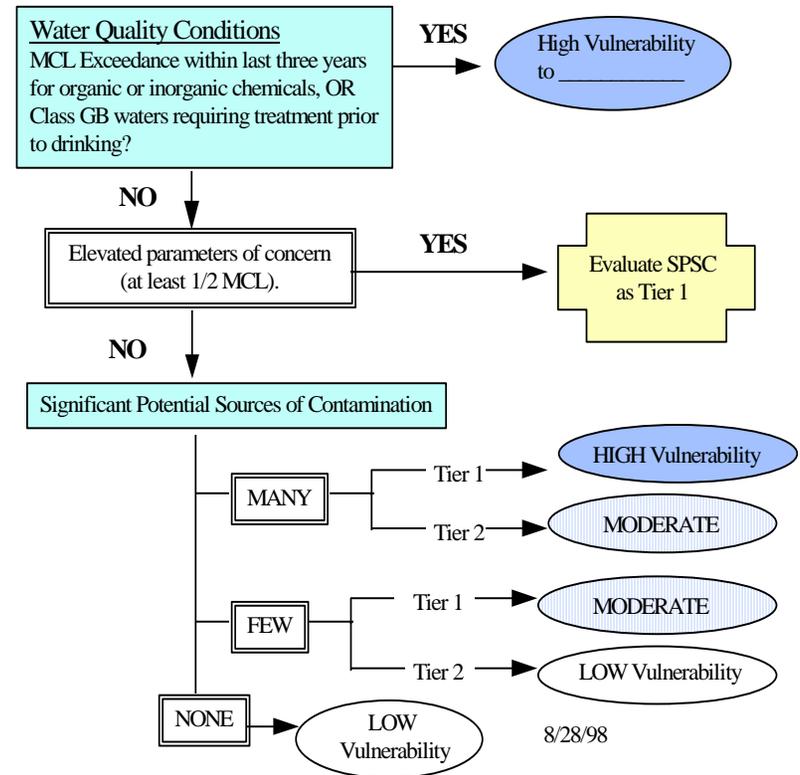
Tier 2 Distant* Small Producer/Storage Good Compliance history & BMP's in place

* Considers fate and transport characteristics of contaminants

If # of **Secondary** **then existing**
SPPC is: **Factors:** **Vulnerability is:**

NONE	NA	LOW
FEW	Tier 2 Factors	LOW
FEW	Tier 1 Factors	MODERATE
MANY	Tier 2 Factors	MODERATE
MANY	Tier 1 Factors	HIGH

Vulnerability to Contaminants



**** MANY means > 3, FEW means = OR < 3**

Source Vulnerability to Contaminants:
continued

3. LAND COVER:

A. “Agricultural land cover category comprises:

- <10% of total source area, then rank as LOW vulnerability to inorganics and pesticides.
- 10 to 30% of total source area, then rank as MODERATE vulnerability to inorganics and pesticides.
- >30% of total source area, then rank as HIGH vulnerability to inorganics and pesticides.

B. “Urban” land cover category comprises:

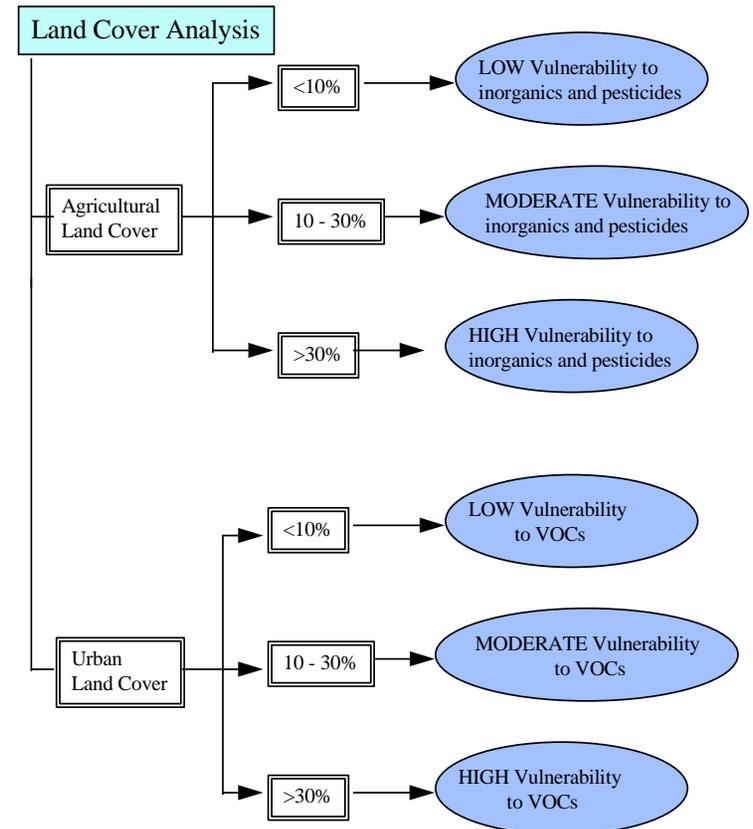
- <10% of total source area, then rank as LOW vulnerability to VOCs.
- 10 to 30% of total source area, then rank as MODERATE vulnerability to VOCs.
- >30% of total source area, then rank as HIGH vulnerability to VOCs.

Rank potential future vulnerability based on flow chart located on the right hand side.

The highest vulnerability indicated for any particular contaminant group is utilized, except where a detailed SPSC inventory is available, it should be given greater consideration than the land cover analysis.

NOTE: UNKNOWN INFORMATION-HIGH*VULNERABILITY

Future Vulnerability to Contaminants
Based on Existing Land Cover



3. Need for Additional Source Protection Measures

Community Wells

1. LAND CONTROL/OWNERSHIP: Base ranking of this indicator on SWAP area map with overlay of public open space, park, forest and water company lands.

Control/ownership of all of sanitary radius and at least 10% of SWAP area, then rate need for further land control/ownership as LOW.

Control/ownership of 100% of sanitary radius, then rate need for further land control/ownership as MODERATE.

Less than 100% control/ ownership of sanitary radius, then rate need for further land control/ownership as HIGH.

2. ADEQUACY OF LOCAL PROTECTION MEASURES

Municipality has a comprehensive protection plan in place.
 Municipality has adopted overlay zones or protective ordinances.

Status of above check-off boxes:

Rate need for local outreach as:

HIGH
 MODERATE
 LOW

3. WATER COMPANY PROTECTION MEASURES

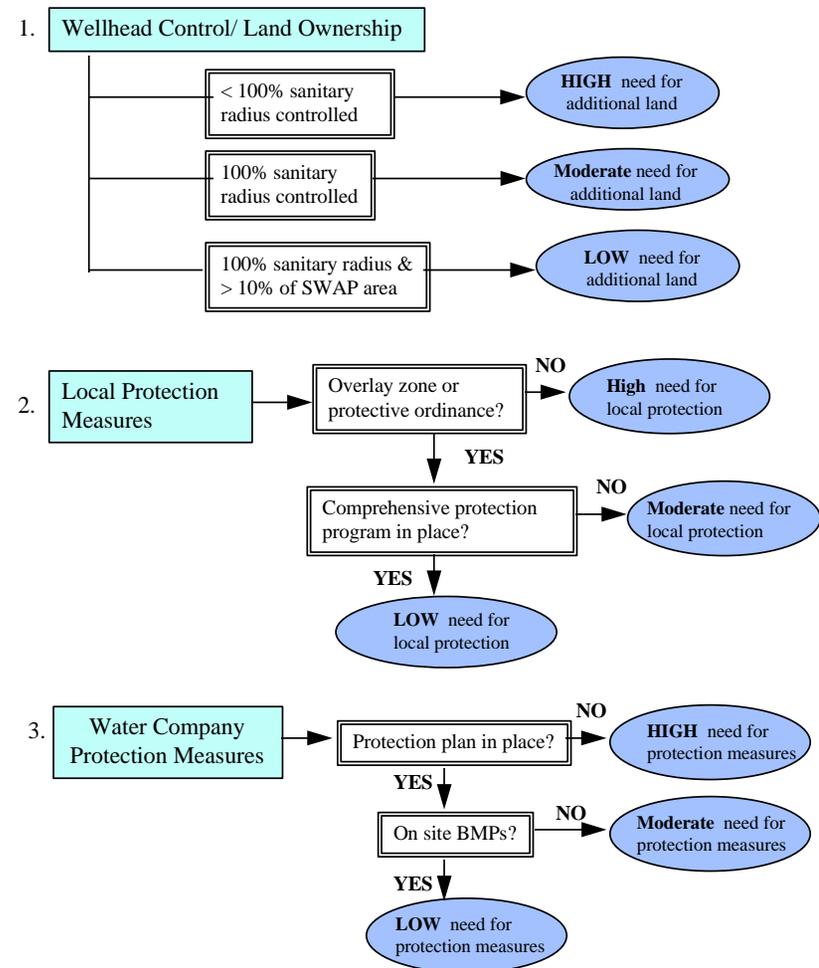
On-Site Water Quality BMPs Protection Plan in Place

Status of above check-off boxes:

Then rate need for further water system measures as:

HIGH
 MODERATE
 LOW

Need for Additional Source Protection Measures



8/31/98

Combine the three indicators into one ranking of the need for Additional Source Protection Measures using the table on the following page.

**NEED FOR ADDITIONAL SOURCE
PROTECTION MEASURES
FOR COMMUNITY WELLS:**

<u>Land control/ ownership need:</u>	<u>Local outreach, education_ need:</u>	<u>Need for further water system measures:</u>	<u>Then susceptibilit risk is:</u>
Low	Low or Mod	Any category	LOW
Low	High	High	HIGH
Low	High	Moderate/Low	MOD
Moderate	Low	Low/Moderate	LOW
Moderate	Low	High	Moderate
Moderate	Moderate	Low/Moderate	Moderate
Moderate	Moderate	High	HIGH
Moderate	High	Moderate/Low	Moderate
Moderate	High	High	HIGH
High	All categories	All categories	HIGH

NOTE: UNKNOWN INFORMATION - HIGH* Source Protection Need

4. Need for Additional Source Protection Measures - Non-Community Wells

1. LAND CONTROL/OWNERSHIP:

Sanitary radius: _____ feet.

Is 100% of sanitary radius contained within property boundary?

If YES, then rate need for further land control as MODERATE.

If No, then rate need for further land control as HIGH.

2. ADEQUACY OF LOCAL PROTECTION MEASURES

Has Municipality adopted overlay zones or protective ordinances addressing non-community water supply wells?

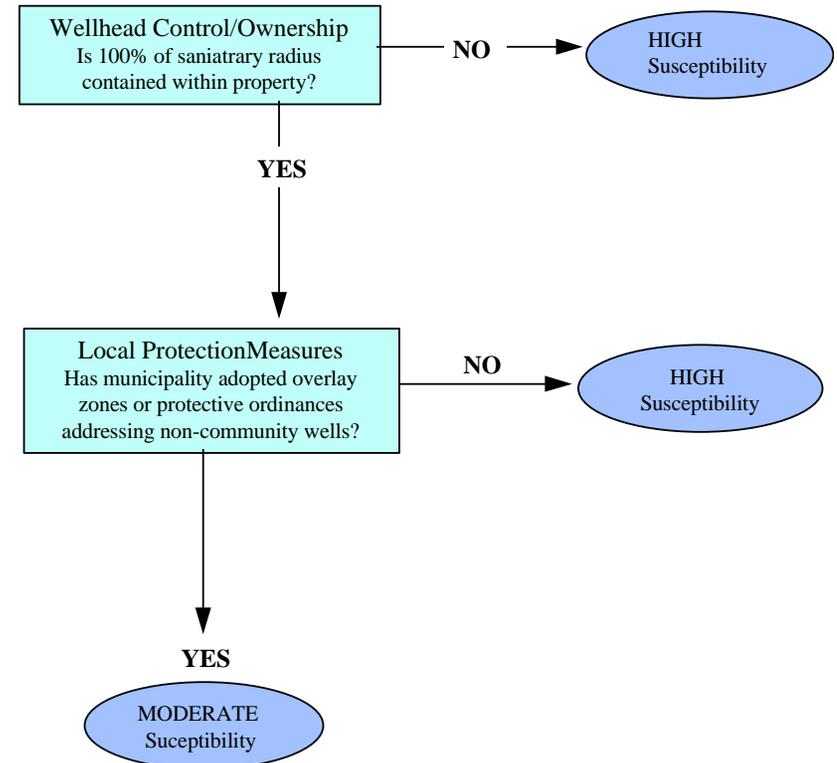
If YES, then rate need for local outreach and source protection education as MODERATE.

If NO, then rate need for local outreach and source protection education as HIGH.

Protection rating of non-community wells:

<u>Need for further Land Control/ Ownership:</u>	<u>Local outreach/ education need:</u>	<u>Then susceptibility risk is:</u>
Moderate	Moderate	Moderate
Moderate	High	High
High	Moderate	High
High	High	High

Source Protection Susceptibility Analysis for Non-Community Wells



5. Susceptibility Determination

Factor:	Susceptibility Ratings	Indicators:
Sensitivity	<input type="checkbox"/> HIGH <input type="checkbox"/> MEDIUM <input type="checkbox"/> LOW	<i>Based on Water Quality (microbiological and physical parameters, Intake Integrity and Geologic Sensitivity</i>
Vulnerability to Contaminants	<input type="checkbox"/> HIGH <input type="checkbox"/> MEDIUM <input type="checkbox"/> LOW to <input type="checkbox"/> Specific parameters <input type="checkbox"/> Microbiologics, <input type="checkbox"/> Physical, <input type="checkbox"/> Inorganics & pesticides, <input type="checkbox"/> Organic (VOCs)	<i>Vulnerability based on Water Quality, SPSC (Significant Potential Sources of Contamination), and Land Cover Analysis (agricultural and urban land cover). The highest vulnerability indicated for any particular contaminant group is utilized, except where a detailed SPSC inventory is available, it should be given greater consideration than the land cover analysis.</i>
Need for Additional Source Protection Measures	<input type="checkbox"/> HIGH <input type="checkbox"/> MODERATE <input type="checkbox"/> LOW	<i>Based on Land Ownership/Control, local protection measures and water company protection practices.</i>

Notes:

1. The SWAP assessment is a general assessment of the sensitivity of the source to contamination, the vulnerability of the source based on the availability of significant sources of potential contamination within the source protection area, and the current protection and mitigation measures which reduce risk and serve to further protect drinking water. It is intended to prioritize sources in need of additional source protection measures.
2. This assessment is not meant to be all encompassing or inclusive, but is intended as a general representation and tool to support public protection efforts. The assessments are based upon the information as available in the SWAP data base at the time
3. The assessment is not a prediction of pollution or eventual outcome.
4. The assessment and inventory is not a substitute for a site specific source investigation in order the determine threats to water which may not be indicated by SWAP.
5. Low susceptibility or low risk should not be confused with no risk. All sources have some degree of risk and even sources in undeveloped areas with no known sources of pollution have been found to be contaminated.
6. High susceptibility or high risk should not be considered a prediction of contamination. With adequate mitigation, best management practices and aggressive source protection programs, the risk can be greatly reduced and avoided.
7. Source assessments' can and should be subject to change as more information becomes available about the threats posed to drinking water sources.
8. *If there is a need for more information for any of the categories within this susceptibility determination, then that source will receive a HIGH* overall rating.*

6. OVERALL SUSCEPTIBILITY RANKING

<u>NAME OF SOURCE</u>	<u>SENSITIVITY</u>	<u>VULNERABILITY</u>	<u>SOURCE PROTECTION NEED</u>	<u>FINAL RANKING</u>
	<p><i>HIGH = H</i> <i>MODERATE = M</i> <i>LOW = L</i></p>	<p><i>HIGH = H</i> <i>MODERATE = M</i> <i>LOW = L</i></p>	<p><i>HIGH = H</i> <i>MODERATE = M</i> <i>LOW = L</i></p>	<p><i>HIGH = >OR=2H</i> <i>MODERATE = >OR=2M, <2H</i> <i>LOW = >OR=2L, <2M</i></p>
1.				
2.				
3.				
4.				

If a source receives a HIGH rating for any of the three main categories within the susceptibility determination, then that source will receive a HIGH* overall rating.*