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# Source Water Assessment

A Hydrogeologic Susceptibility and  
Vulnerability Assessment for  
Town & Country Trailer Court Drinking  
Water System,  
Fairbanks area, Alaska  
PWSID # 310895

DECEMBER 2002

DRINKING WATER PROTECTION PROGRAM REPORT Report 799  
Alaska Department of Environmental Conservation

Source Water Assessment for Town &  
Country Trailer Court Drinking Water  
System  
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DRINKING WATER PROTECTION PROGRAM REPORT Report 799

The Drinking Water Protection Program (DWPP) is producing Source Water Assessments in compliance with the Safe Drinking Water Act Amendments of 1996. Each assessment includes a delineation of the source water area, an inventory of potential and existing contaminant sources that may impact the water, a risk ranking for each of these contaminants, and an evaluation of the potential vulnerability of these drinking water sources.

These assessments are intended to provide public water systems owners/operators, communities, and local governments with the best available information that may be used to protect the quality of their drinking water. The assessments combine information obtained from various sources, including the U.S. Environmental Protection Agency, Alaska Department of Environmental Conservation (ADEC), public water system owners/operators, and other public information sources. The results of this assessment are subject to change if additional data becomes available. It is anticipated this assessment will be updated every five years to reflect any changes in the vulnerability and/or susceptibility of public drinking water source. If you have any additional information that may affect the results of this assessment, please contact the Program Coordinator of DWPP, (907) 269-7521.

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# Source Water Assessment for Town & Country Trailer Court Source of Public Drinking Water, Fairbanks Area, Alaska

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## Drinking Water Protection Program Alaska Department of Environmental Conservation

### EXECUTIVE SUMMARY

The public water system for Town & Country Trailer Court is a Class A (community) water system consisting of two wells along Howland Road approximately 3 miles north of Fairbanks, Alaska. The wellhead received a susceptibility rating of **Low** and the aquifer received a susceptibility rating of **High**.

Combining these two ratings produces a **Medium** rating for the natural susceptibility of the water system. Identified potential and current sources of contaminants for Town & Country Trailer Court public drinking water source include: residential septic systems, a large capacity septic system, fuel storage tanks, roads, and residential area. These identified potential and existing sources of contamination are considered as sources of bacteria and viruses, nitrates and/or nitrites, volatile organic chemicals, heavy metals, cyanide, and other inorganic chemicals, synthetic organic chemicals, and other organic chemicals. Combining the natural susceptibility of the water system with the contaminant risk, the public water source for Town & Country Trailer Court received a vulnerability rating of **High** for bacteria and viruses, and nitrates and/or nitrites, a **Medium** for volatile organic chemicals, and heavy metals, and a **Low** for synthetic organic chemicals and other organic chemicals.

### TOWN & COUNTRY TRAILER COURT PUBLIC DRINKING WATER SYSTEM

Town & Country Trailer Court public water system is a Class A (community) water system. The system consists of two wells along Howland Road between McGrath and Lowell Roads approximately 3 miles north of Fairbanks, Alaska (T1N, R1W, Section 24) (See Map 1 of Appendix A). Fairbanks and its surrounding communities are located in the Fairbanks North Star Borough which is near the center of Alaska (Please see the inset of Map 1 in Appendix A for location). The Borough's current population is 82,840 making it the second-largest population center in the state (ADCED, 2002). Communities located within the Borough include : College, Eielson Air Force Base, Ester, Fairbanks, Fox, Harding Lake, Moose Creek, North Pole, Pleasant Valley, Salcha, and Two Rivers.

The majority of residents in the Fairbanks area use individual wells or hauled water, and septic systems (ADCED, 2002). Heating oil (commonly stored in both above and below ground 275 to 500-gallon tanks) is most commonly used for heating homes and buildings (ADCED, 2002). Refuse is transported to the Fairbanks North Star Borough landfill.

The Fairbanks area includes two distinct topographic areas: the floodplain of the Tanana River and the Chena River, and the uplands north of this floodplain. The wells for Town & Country Trailer Court are located in the uplands at an elevation of approximately 725 feet above sea level.

According to the most recent Sanitary Survey (9/12/01), the depth of both wells is 180 feet. The well log in the file indicates the well is screened in bedrock, it is assumed that both wells are screened in bedrock. Bedrock in this area is predominantly a metamorphosed marine mud deposit, called a pelitic schist. The schist is locally intruded by granitic rocks – granite and quartz diorite. Groundwater in the bedrock is principally contained in fractures. The water wells in this area with the greatest well recharge appear to be in quartz veins, quartzite, and siliceous schist (Nelson, 1978).

Groundwater in the uplands is recharged by local precipitation. Outflow of ground water in the uplands primarily occurs two ways. In areas under artesian pressure (pressure caused by overlying permafrost), water can flow to the surface through thawed conduits within the permafrost. Otherwise groundwater will flow under the permafrost (if present) and out to the groundwater beneath the adjacent flood plain or creek valley (Nelson, 1978).

The most recent Sanitary Survey (9/12/01) indicates both wells are installed with a cap providing a sanitary seal. A properly installed sanitary seal may provide protection against contaminants from entering the source waters at the well casing. The land surface is also appropriately sloped away from each well providing adequate surface water drainage. The inside well (source 001) is grouted according to ADEC regulations, the outside well (source 002) is not. Proper grouting provides added protection against contaminants travelling along the well casing and into source waters. Neither well is located in a known floodplain.

This system operates year-round and serves approximately 200 residents through 63 service connections.

### DRINKING WATER PROTECTION AREA

The pathways most likely for surface contamination to reach the groundwater are identified as the first step in determining a drinking water system's risk. These areas are determined by looking at the characteristics of the soil, groundwater, aquifer, and well.

The most probable area for contamination to reach the drinking water well is the area that contributes water to the well, the groundwater recharge area. This area is designated as the drinking water protection area. Because releases of contaminants within the protection area are most likely to impact the drinking water well, this area will serve as the focus for voluntary protection efforts.

An outline of the immediate watershed was used to determine the size and shape of the protection area for Town & Country Trailer Court. Available geology was also considered to take into account any uncertainties in groundwater flow and aquifer characteristics to arrive at a meaningful protection area (Please refer to the Guidance Manual for Class A Public Water Systems for additional information).

The protection areas established for wells by the ADEC are usually separated into four zones, limited by the watershed. These zones correspond to differences in the time-of-travel (TOT) of the water moving through the aquifer to the well. The protection area for Town & Country Trailer Court is limited by its immediate watershed and includes only Zone A (See Map 1 of Appendix A). The input parameters describing the attributes of the aquifer in this calculation were adopted from the U.S. Geological Survey (*Patrick, Brabets, and Glass, 1989*), and State of Alaska Department of Water Resources (*Jokela et. al., 1991*).

The following is a summary of the four protection area zones for wells and the calculated time-of-travel for each:

**Table 1. Definition of Zones**

Zone	Definition
A	¼ the distance for the 2-yr. time-of-travel
B	Less than the 2 year time-of-travel
C	Less than the 5 year time-of-travel
D	Less than the 10 year time-of-travel

The time of travel for contaminants within the water varies and is dependent on the physical and chemical characteristics of each contaminant.

### INVENTORY OF POTENTIAL AND EXISTING CONTAMINANT SOURCES

The Drinking Water Protection Program has completed an inventory of potential and existing sources of contamination within the Town & Country Trailer Court protection area. This inventory was completed through a search of agency records and other publicly available information. Potential sources of contamination to the drinking water aquifer include a wide range of categories and types. Potential drinking water contaminants are found within agricultural, residential, commercial, and industrial areas, but can also occur within areas that have little or no development.

For the basis of all Class A public water system assessments, six categories of drinking water contaminants were inventoried. They include:

- Bacteria and viruses;
- Nitrates and/or nitrites;
- Volatile organic chemicals;
- Heavy metals, cyanide, and other inorganic chemicals;
- Synthetic organic chemicals
- Other organic chemicals.

The sources are displayed on Map 2 of Appendix C and summarized in Table 1 of Appendix B.

### RANKING OF CONTAMINANT RISKS

Once the potential and existing sources of contamination have been identified, they are assigned a ranking according to what type and level of risk they represent. Ranking of contaminant risks for a "potential" or "existing" source of contamination is a function of toxicity and volumes of specific contaminants associated with that source. Rankings include:

- Low;
- Medium;
- High; and
- Very High.

The time-of-travel for contaminants within the water varies and is dependent on the physical and chemical characteristics of each contaminant. Bacteria and Viruses are only inventoried in Zones A and B because of their short life span. Only “Very High” and “High” rankings are inventoried within the outer Zone D due to the probability of contaminant dilution by the time the contaminants get to the well.

Tables 2 through 7 in Appendix B contain the ranking of potential and existing sources of contamination with respect to bacteria and viruses, nitrates and/or nitrites, and volatile organic chemicals.

**VULNERABILITY OF TOWN & COUNTRY TRAILER COURT DRINKING WATER SYSTEM**

Vulnerability of a drinking water source to contamination is a combination of two factors:

- Natural susceptibility; and
- Contaminant risks.

Appendix D contains fourteen charts, which together form the ‘Vulnerability Analysis’ for a source water assessment for a public drinking water source. Chart 1 analyzes the ‘Susceptibility of the Wellhead’ to contamination by looking at the construction of the well and its surrounding area. Chart 2 analyzes the ‘Susceptibility of the Aquifer’ to contamination by looking at the naturally occurring attributes of the water source and influences on the groundwater system that might lead to contamination. Chart 3 analyzes ‘Contaminant Risks’ for the drinking water source with respect to bacteria and viruses. The ‘Contaminant Risks’ portion of the analysis considers potential sources of contaminants as well as a review of contamination that has or may have occurred, but has not arrived or been detected at the well. Lastly, Chart 4 contains the ‘Vulnerability Analysis for Bacteria and Viruses’. Charts 5 through 14 contain the Contaminant Risks and Vulnerability Analyses for nitrates and nitrites, volatile organic chemicals, heavy metals, synthetic organic chemicals, and other organic chemicals, respectively.

A score for the Natural Susceptibility is reached by considering the properties of the well and the aquifer.

Susceptibility of the Wellhead (0 – 25 Points)  
(Chart 1 of Appendix D)

+

Susceptibility of the Aquifer (0 – 25 Points)  
(Chart 2 of Appendix D)

=

Natural Susceptibility (Susceptibility of the Well)  
(0 – 50 Points)

A ranking is assigned for the Natural Susceptibility according to the point score:

Natural Susceptibility Ratings	
40 to 50 pts	Very High
30 to < 40 pts	High
20 to < 30 pts	Medium
< 20 pts	Low

The wells for the Town & Country Trailer Court are completed in a confined fractured bedrock aquifer. The nearly impermeable confining layers above the aquifer create a barrier to contaminants traveling downward from the surface with the precipitation and surface water runoff. Although the aquifer is relatively protected in the area of the wells, the water supply wells upgradient of the wells offer an easy pathway for contaminants to travel down into the confined aquifer and towards the wells. Table 2 shows the Susceptibility scores and ratings for Town & Country Trailer Court.

**Table 2. Susceptibility**

	Score	Rating
Susceptibility of the Wellhead	5	Low
Susceptibility of the Aquifer	19	High
Natural Susceptibility	24	Medium

Contaminant risks to a drinking water source depend on the type, number or density, and distribution of contaminant sources. This score has been derived from an examination of existing and historical contamination that has been detected at the drinking water source through routine sampling. It also evaluates potential sources of contamination. Flow charts are used to assign a point score, and ratings are assigned in the same way as for the natural susceptibility:

Contaminant Risk Ratings	
40 to 50 pts	Very High
30 to < 40 pts	High
20 to < 30 pts	Medium
< 20 pts	Low

Table 3 summarizes the Contaminant Risks for each category of drinking water contaminants.

**Table 3. Contaminant Risks**

Category	Score	Rating
Bacteria and Viruses	50	Very High
Nitrates and/or Nitrites	50	Very High
Volatile Organic Chemicals	35	High
Heavy Metals, Cyanide and Other Inorganic Chemicals	25	Medium
Synthetic Organic Chemicals	10	Low
Other Organic Chemicals	10	Low

Finally, an overall vulnerability score is assigned for each water system by combining each of the contaminant risk scores with the natural susceptibility score:

$$\begin{array}{r}
 \text{Natural Susceptibility (0 – 50 points)} \\
 + \\
 \text{Contaminant Risks (0 – 50 points)} \\
 = \\
 \text{Vulnerability of the} \\
 \text{Drinking Water Source to Contamination (0 – 100).}
 \end{array}$$

Again, rankings are assigned according to a point score:

Overall Vulnerability Ratings	
80 to 100 pts	Very High
60 to < 80 pts	High
40 to < 60 pts	Medium
< 40 pts	Low

Table 4 contains the overall vulnerability scores (0 – 100) and ratings for each of the three categories of drinking water contaminants. Note: scores are rounded off to the nearest five.

**Table 4. Overall Vulnerability**

Category	Score	Rating
Bacteria and Viruses	75	High
Nitrates and Nitrites	75	High
Volatile Organic Chemicals	55	Medium
Heavy Metals, Cyanide, and Other Inorganic Chemicals	55	Medium
Synthetic Organic Chemicals	35	Low

**Bacteria and Viruses**

The contaminant risk for bacteria and viruses is very high with the large capacity septic system and the density of residential septic systems nearest to the wells representing the greatest risk to the drinking water wells (See Chart 3 – Contaminant Risks for Bacteria and Viruses in Appendix D).

Only a small amount of bacteria and viruses are required to endanger public health. Monitoring samples collected on 2/14/01 were positive for total coliform (an additional sample collected on 2/16/01 confirmed the positive result). The positive samples increase the overall vulnerability of the drinking water source, indicating that the source is susceptible to bacteria and viruses contamination. The source of the bacteria and viruses is unknown. More recent samples taken in 2001 and 2002 all had negative results for bacteria and viruses. After combining the contaminant risk with the natural susceptibility of the wells, the overall vulnerability of the wellsto contamination is high.

**Nitrates and Nitrites**

The contaminant risk for nitrates and nitrites is very high with the septic system nearest the wells representing the greatest risk to this source of public drinking water (See Chart 5 - Contaminant Risks for Nitrates and/or Nitrites in Appendix D).

Nitrates are very mobile, moving at approximately the same rate as water. Sampling history for the Town & Country Trailer Court wells indicates that concentrations of nitrate have been detected in the drinking water. Existing nitrate concentration is approximately 4.96 mg/L or about 50% of the Maximum Contaminant Level (MCL) of 10 mg/L. The MCL is the maximum level of contaminant that is allowed to exist in drinking water by the Environmental Protection Agency (EPA). Nitrate concentrations have remained consistent with concentrations varying from 4.38 to 5.50 mg/L within the past 5 years.

After combining the contaminant risk for nitrates and nitrites with the natural susceptibility of the wells, the overall vulnerability of the wells to contamination is high.

**Volatile Organic Chemicals**

The contaminant risk for volatile organic chemicals is high with the two above ground gasoline tanks and the density of heating oil storage tanks creating the greatest risk for volatile organic chemicals (See Chart 7 – Contaminant Risks for Volatile Organic Chemicals in Appendix D).

Both underground and above ground heating oil storage tanks are the standard way of heating homes and businesses in the area surrounding Fairbanks. The most common causes of fuel leaks of these heating oil systems are overfilling the tank, ruptured fuel lines, leaking storage tanks, damaged or faulty valves and vandalism. Regular system maintenance can help prevent many of these harmful fuel leaks.

Volatile Organic Chemicals have been detected in extremely low concentrations during recent sampling. Toluene was most recently detected on 3/15/99 at a concentration of 0.00047 mg/L, well below its MCL of 1 mg/L. Xylene was detected at 0.0002 mg/L, also well below its MCL of 10 mg/L. Benzene was detected on a sample collected on 5/18/92 at a concentration of 0.0002 mg/L. Benzene has a MCL of 0.005 mg/L. All three of these chemicals commonly come from gasoline. After combining the contaminant risk for volatile organic chemicals with the natural susceptibility of the wells, the overall vulnerability of the wells to contamination is medium.

#### **Heavy Metals, Cyanide, and Other Inorganic Chemicals**

The contaminant risk for heavy metals is medium with the gasoline storage tanks in the protection area creating risk (See Chart 9 – Contaminant Risks for Heavy Metals, Cyanide, and Other Inorganic Chemicals in Appendix D).

A small number of metals were detected in this water systems but at very low concentrations. Barium, fluoride, selenium, lead, and copper have all been detected in recent sampling history, although not consistently. After combining the contaminant risk for heavy metals with the natural susceptibility of the wells, the overall vulnerability of the wells to contamination is high.

#### **Synthetic Organic Chemicals**

The contaminant risk for synthetic organic chemicals is low with the residential activities creating risk. Synthetic Organic Chemicals have not been sampled for in this water system. After combining the contaminant risk with the natural susceptibility of the wells, the overall vulnerability to synthetic organic chemicals of the wells is low (See Chart 11 – Contaminant Risks for Synthetic Organic Chemicals in Appendix D).

#### **Other Organic Chemicals**

The contaminant risk for other organic chemicals is low with the residential activities within the protection area creating the risk. Other Organic Chemicals have not been sampled for. After combining the contaminant risk with the natural susceptibility of the wells, the overall vulnerability to other organic chemicals of the wells is low (See Chart 13 – Contaminant Risks for Other Organic Chemicals in Appendix D).



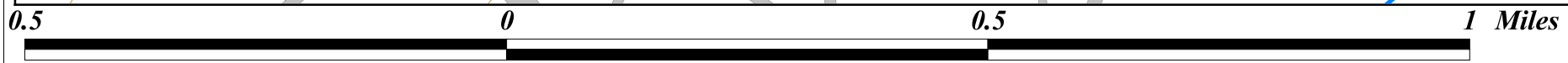
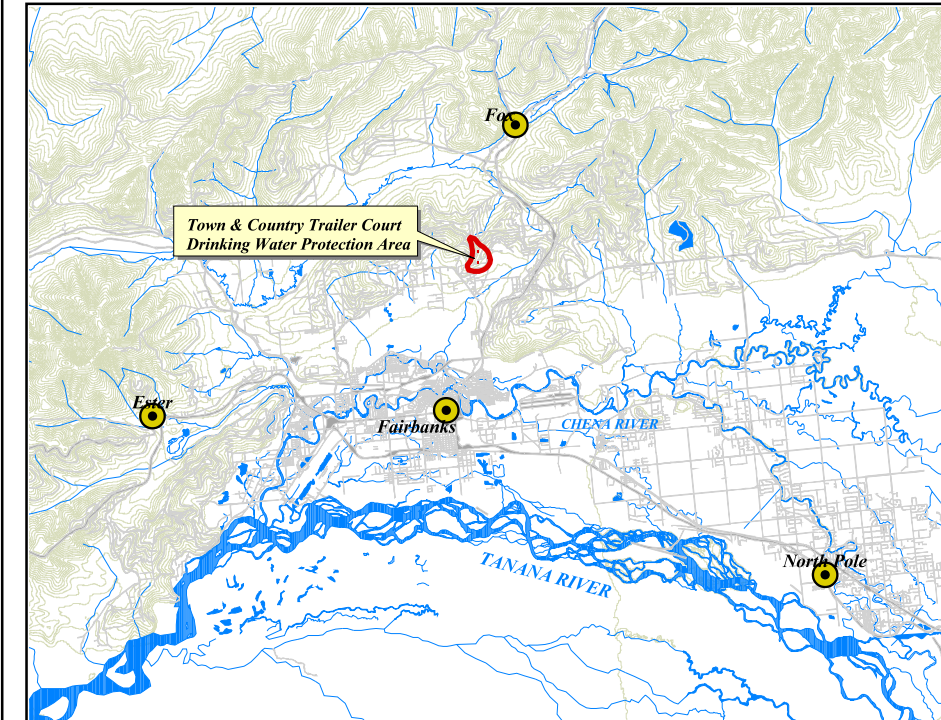
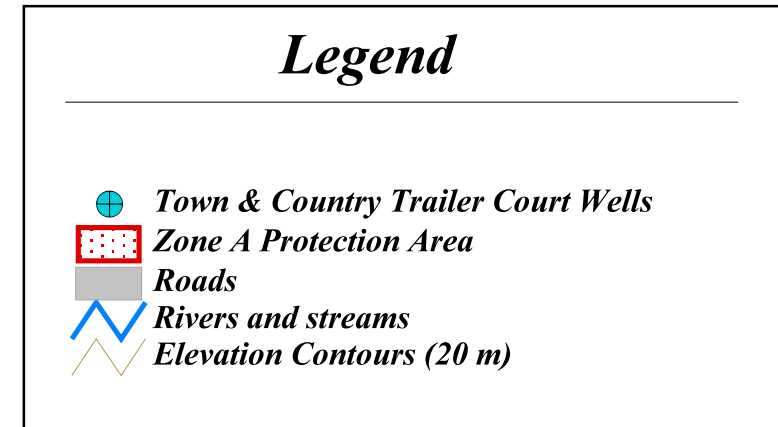
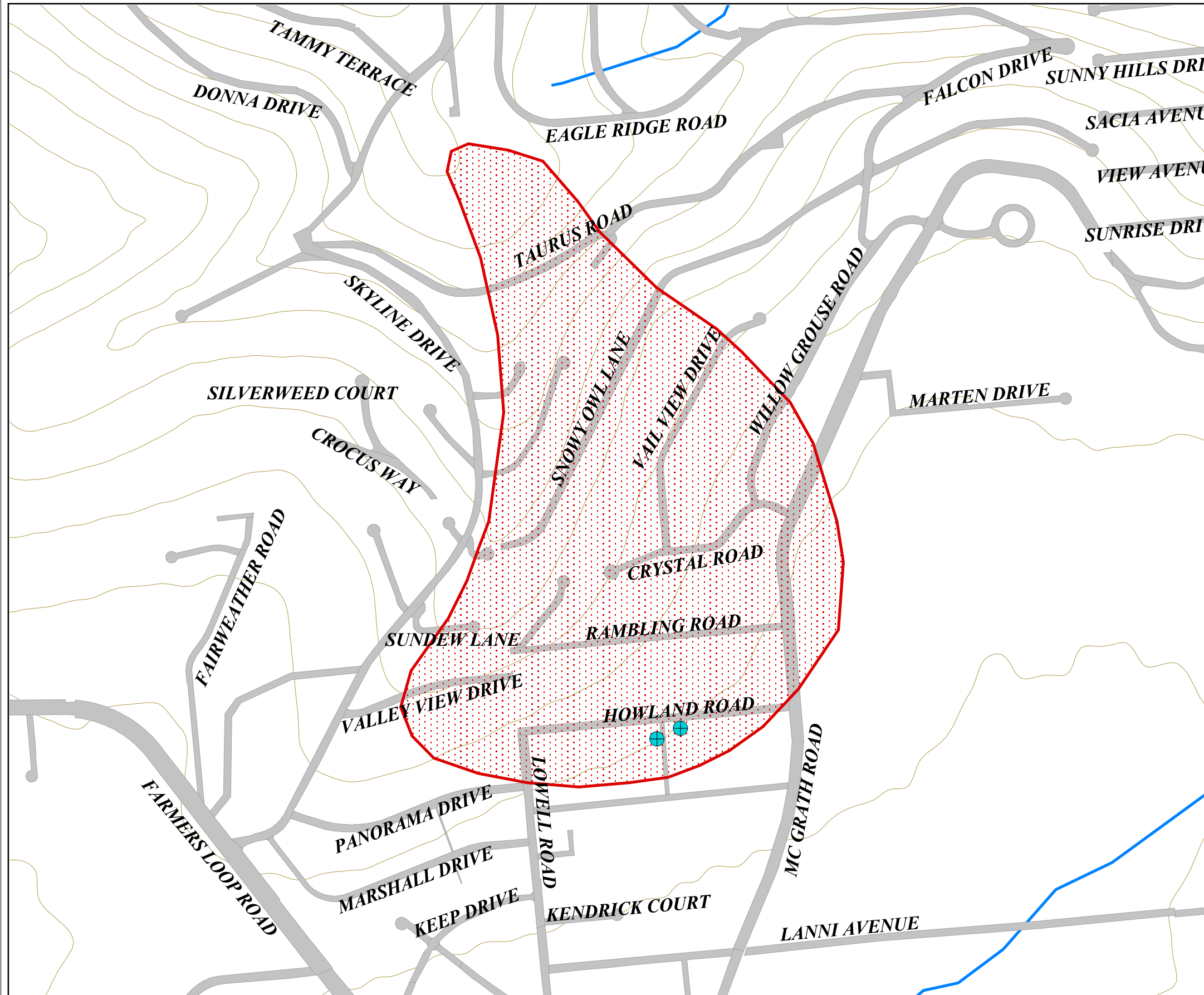
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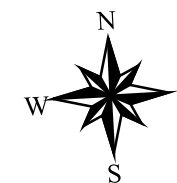
## **APPENDIX A**

### **Town & Country Trailer Court Drinking Water Protection Area Location Map (Map 1)**

# Town & Country Trailer Park Drinking Water Protection Area



PWSID 310895



## Map 1

## **APPENDIX B**

### **Contaminant Source Inventory and Risk Ranking for Town & Country Trailer Court (Tables 1-7)**

**Table 1**

**Contaminant Source Inventory for  
FNSB - Weller Elementary**

**PWSID 310251.001**

<b>Contaminant Source Type</b>	<b>Contaminant Source ID</b>	<b>CS ID tag</b>	<b>Zone</b>	<b>Map Number</b>	<b>Comments</b>
Construction trade areas and materials	C09	C09-1	A	2	935 Highland Street
Residential Areas	R01		A	2	Approximately 400 acres of residential area
Septic systems (serves one single-family home)	R02		A	2	Approximately 137 septic systems (approximated by number of parcels designated as residential)
Tanks, heating oil, residential (above ground)	R08		A	2	Approximately 137 heating oil tanks (approximated by number of parcels designated as residential)
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U07-1	A	2	Waste oil tank at the Firehouse
Highways and roads, dirt/gravel	X24		A	2	Approximately 11 roads located within the protection area
Firehouses	X38	X38-1	A	2	585 Steele Creek Road

**Table 2**

*Contaminant Source Inventory and Risk Ranking for  
FNSB - Weller Elementary  
Sources of Bacteria and Viruses*

**PWSID 310251.001**

<i>Contaminant Source Type</i>	<i>Contaminant Source ID</i>	<i>CS ID tag</i>	<i>Zone</i>	<i>Risk Ranking for Analysis</i>	<i>Map Number</i>	<i>Comments</i>
Septic systems (serves one single-family home)	R02		A	Low	2	Approximately 137 septic systems (approximated by number of parcels designated as residential)
Highways and roads, dirt/gravel	X24		A	Low	2	Approximately 11 roads located within the protection area
Residential Areas	R01		A	Low	2	Approximately 400 acres of residential area

**Table 3**

*Contaminant Source Inventory and Risk Ranking for  
FNSB - Weller Elementary  
Sources of Nitrates/Nitrites*

**PWSID 310251.001**

<i>Contaminant Source Type</i>	<i>Contaminant Source ID</i>	<i>CS ID tag</i>	<i>Zone</i>	<i>Risk Ranking for Analysis</i>	<i>Map Number</i>	<i>Comments</i>
Septic systems (serves one single-family home)	R02		A	Low	2	Approximately 137 septic systems (approximated by number of parcels designated as residential)
Highways and roads, dirt/gravel	X24		A	Low	2	Approximately 11 roads located within the protection area
Residential Areas	R01		A	Low	2	Approximately 400 acres of residential area

Table 4

*Contaminant Source Inventory and Risk Ranking for  
FNSB - Weller Elementary  
Sources of Volatile Organic Chemicals*

*PWSID 310251.001*

<i>Contaminant Source Type</i>	<i>Contaminant Source ID</i>	<i>CS ID tag</i>	<i>Zone</i>	<i>Risk Ranking for Analysis</i>	<i>Map Number</i>	<i>Comments</i>
Highways and roads, dirt/gravel	X24		A	Low	2	Approximately 11 roads located within the protection area
Septic systems (serves one single-family home)	R02		A	Low	2	Approximately 137 septic systems (approximated by number of parcels designated as residential)
Residential Areas	R01		A	Low	2	Approximately 400 acres of residential area
Tanks, heating oil, residential (above ground)	R08		A	Medium	2	Approximately 137 heating oil tanks (approximated by number of parcels designated as residential)
Construction trade areas and materials	C09	C09-1	A	Low	2	935 Highland Street
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U07-1	A	Low	2	Waste oil tank at the Firehouse
Firehouses	X38	X38-1	A	Low	2	585 Steele Creek Road



**Table 5**

*Contaminant Source Inventory and Risk Ranking for  
FNSB - Weller Elementary  
Sources of Heavy Metals, Cyanide and Other Inorganic Chemicals*

**PWSID 310251.001**

<i>Contaminant Source Type</i>	<i>Contaminant Source ID</i>	<i>CS ID tag</i>	<i>Zone</i>	<i>Risk Ranking for Analysis</i>	<i>Map Number</i>	<i>Comments</i>
Septic systems (serves one single-family home)	R02		A	Low	2	Approximately 137 septic systems (approximated by number of parcels designated as residential)
Highways and roads, dirt/gravel	X24		A	Low	2	Approximately 11 roads located within the protection area
Residential Areas	R01		A	Low	2	Approximately 400 acres of residential area
Construction trade areas and materials	C09	C09-1	A	Low	2	935 Highland Street
Firehouses	X38	X38-1	A	Low	2	585 Steele Creek Road

**Table 6**

*Contaminant Source Inventory and Risk Ranking for  
FNSB - Weller Elementary  
Sources of Synthetic Organic Chemicals*

**PWSID 310251.001**

<i>Contaminant Source Type</i>	<i>Contaminant Source ID</i>	<i>CS ID tag</i>	<i>Zone</i>	<i>Risk Ranking for Analysis</i>	<i>Map Number</i>	<i>Comments</i>
Residential Areas	R01		A	Low	2	Approximately 400 acres of residential area
Septic systems (serves one single-family home)	R02		A	Low	2	Approximately 137 septic systems (approximated by number of parcels designated as residential)

**Table 7**

*Contaminant Source Inventory and Risk Ranking for  
FNSB - Weller Elementary  
Sources of Other Organic Chemicals*

**PWSID 310251.001**

<b>Contaminant Source Type</b>	<b>Contaminant Source ID</b>	<b>CS ID tag</b>	<b>Zone</b>	<b>Risk Ranking for Analysis</b>	<b>Map Number</b>	<b>Comments</b>
Highways and roads, dirt/gravel	X24		A	Low	2	Approximately 11 roads located within the protection area
Septic systems (serves one single-family home)	R02		A	Low	2	Approximately 137 septic systems (approximated by number of parcels designated as residential)
Residential Areas	R01		A	Low	2	Approximately 400 acres of residential area
Construction trade areas and materials	C09	C09-1	A	Low	2	935 Highland Street

## **APPENDIX C**

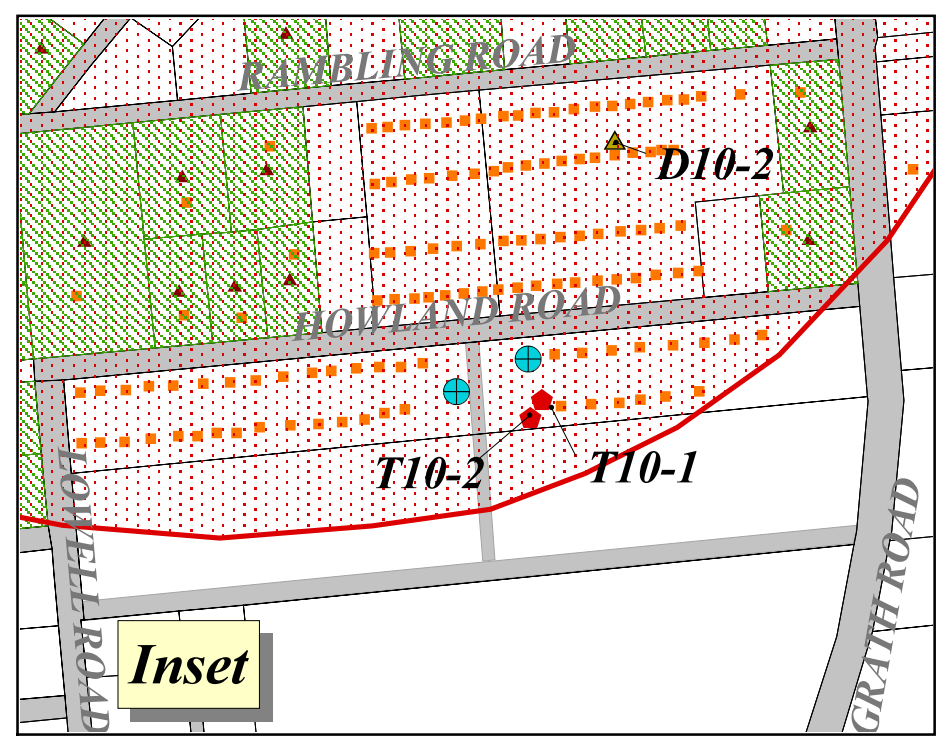
### **Town & Country Trailer Court Drinking Water Protection Area and Potential and Existing Contaminant Sources (Map 2)**

# Town & Country Trailer Court Drinking Water Protection Area with Potential and Existing Contaminant Sources



### Legend

- Town & Country Trailer Court Wells
- Zone A Protection Area
- Contaminant Sources**
- Large Capacity Septic System (D10)
- Above Ground Gasoline Tank (T10)
- Residential Area (R01)
- Residential above ground heating oil tanks (R08)
- Residential septic systems (R02)
- Parcels
- Roads



0.5 0 0.5 Miles

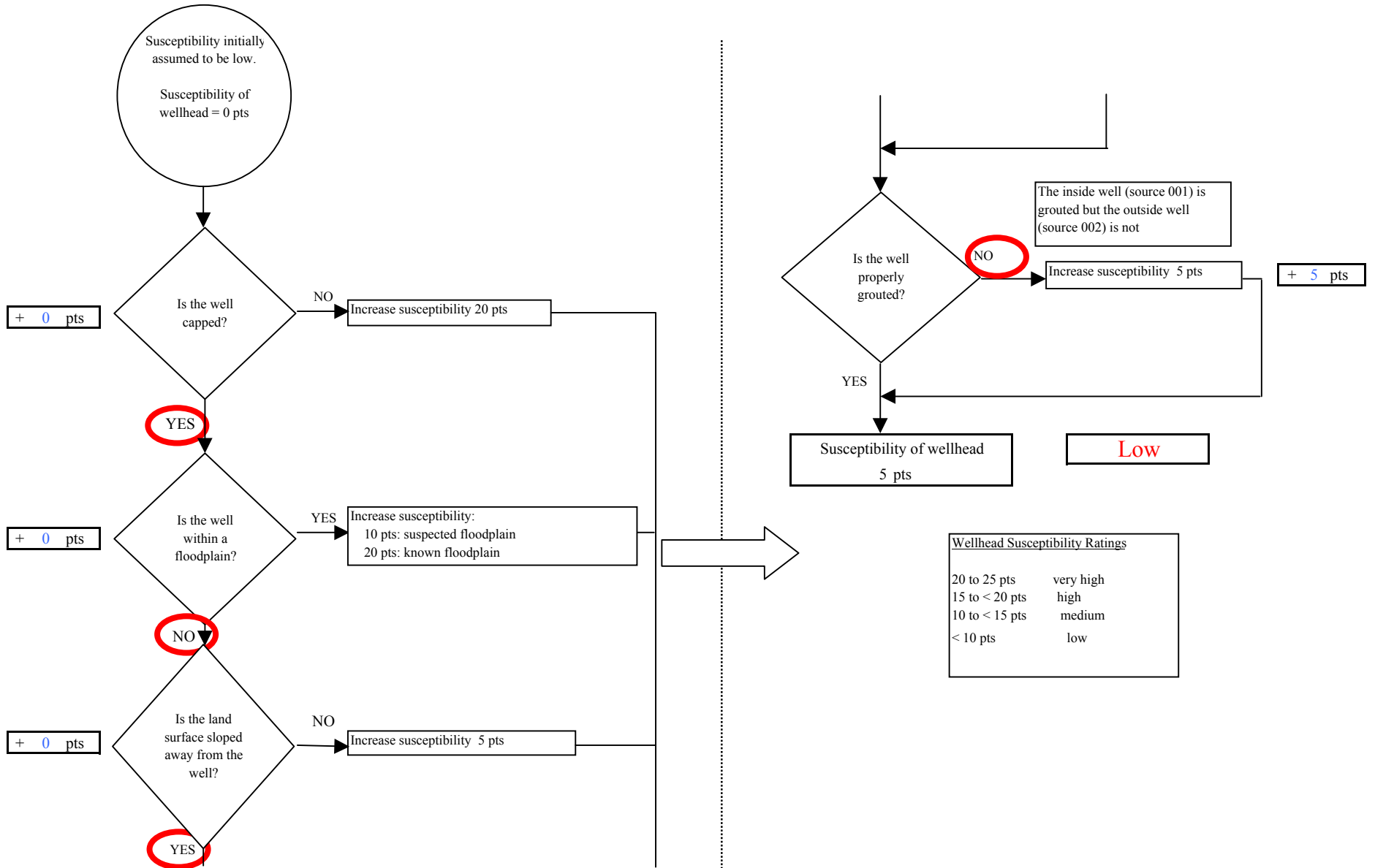
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# Map 2

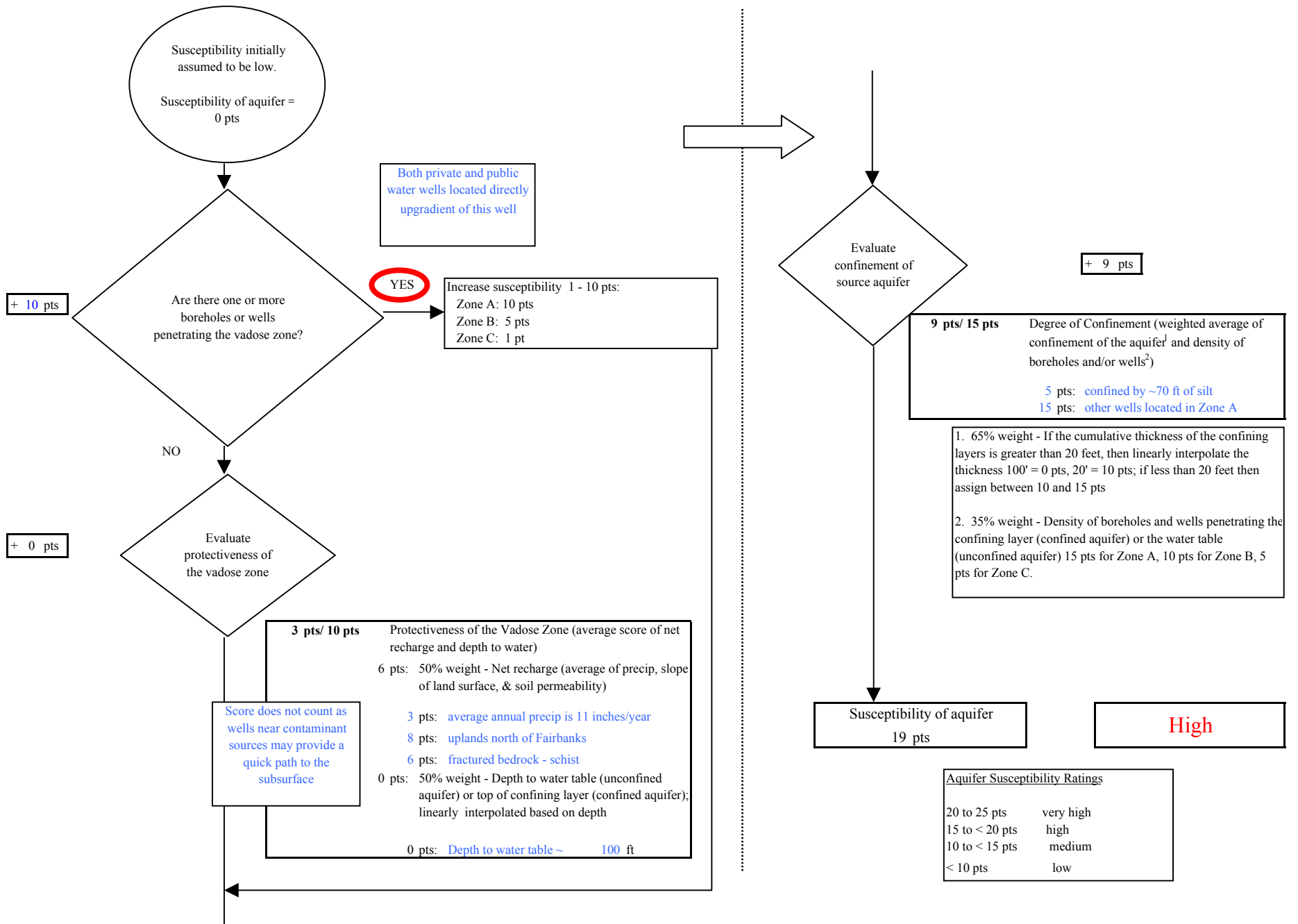
## **APPENDIX D**

### **Vulnerability Analysis for Town & Country Trailer Court Public Drinking Water Source (Charts 1-14)**

**Chart 1. Susceptibility of the wellhead - Town & Country Mobile Home Park**

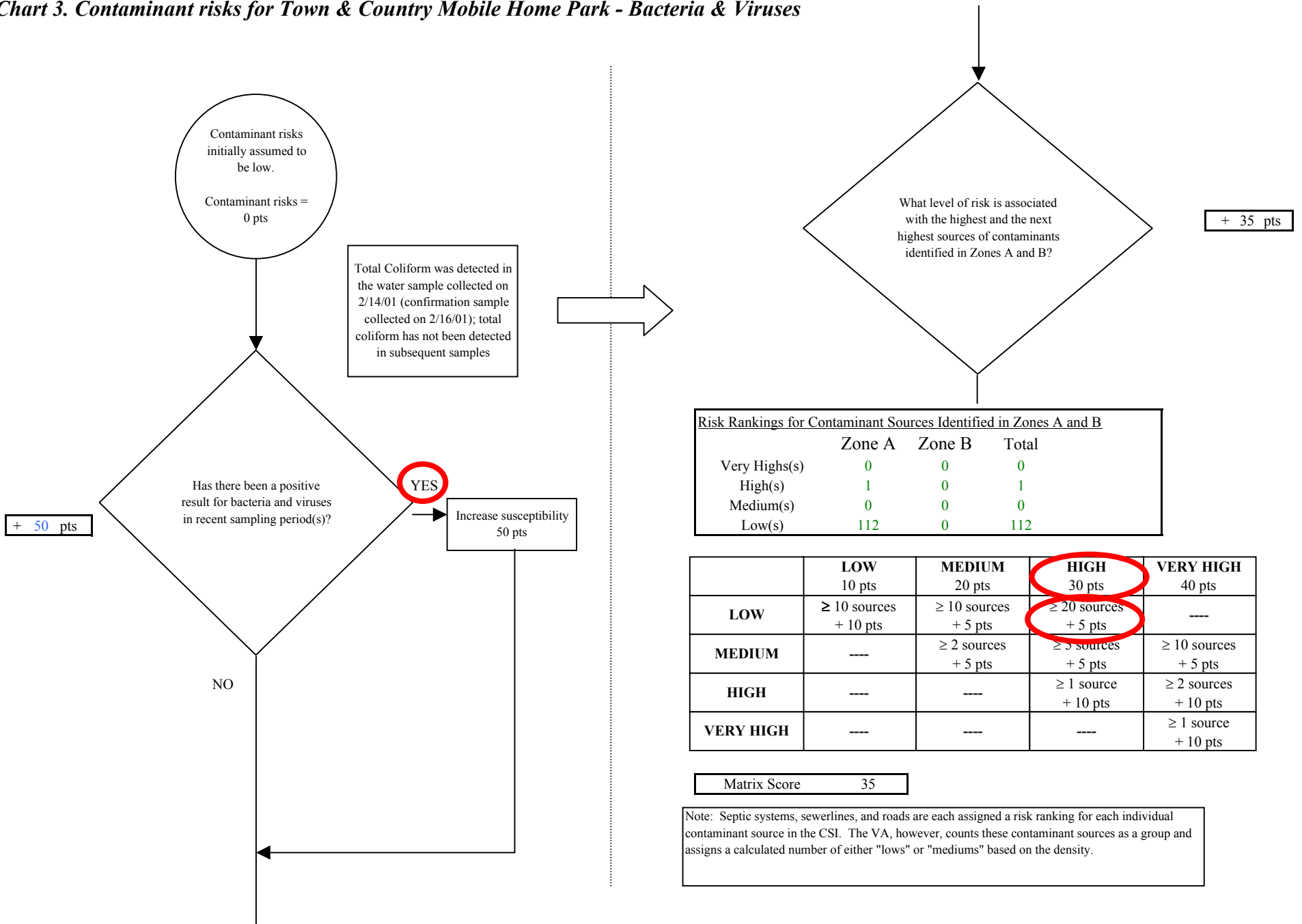


**Chart 2. Susceptibility of the aquifer - Town & Country Mobile Home Park**

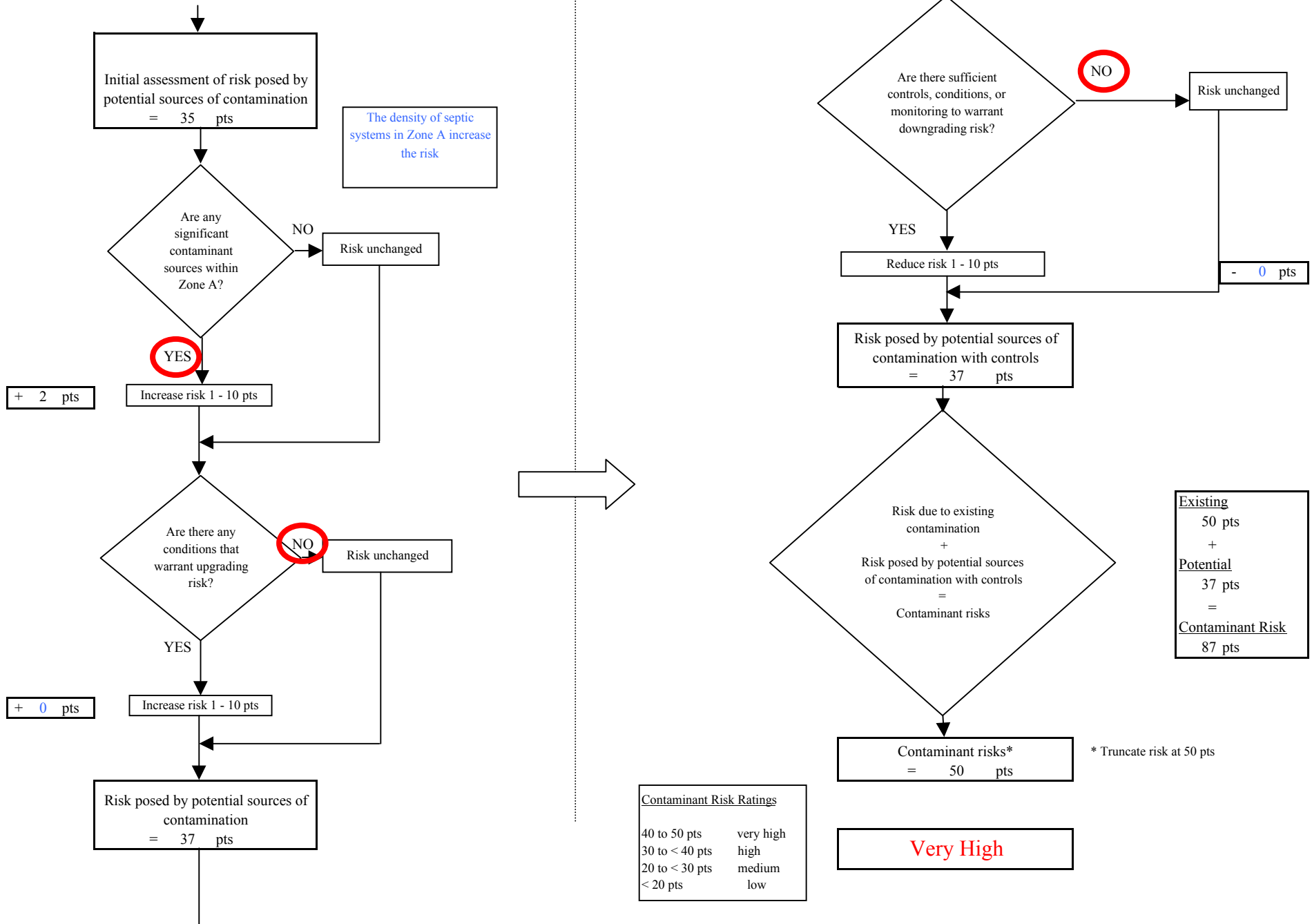




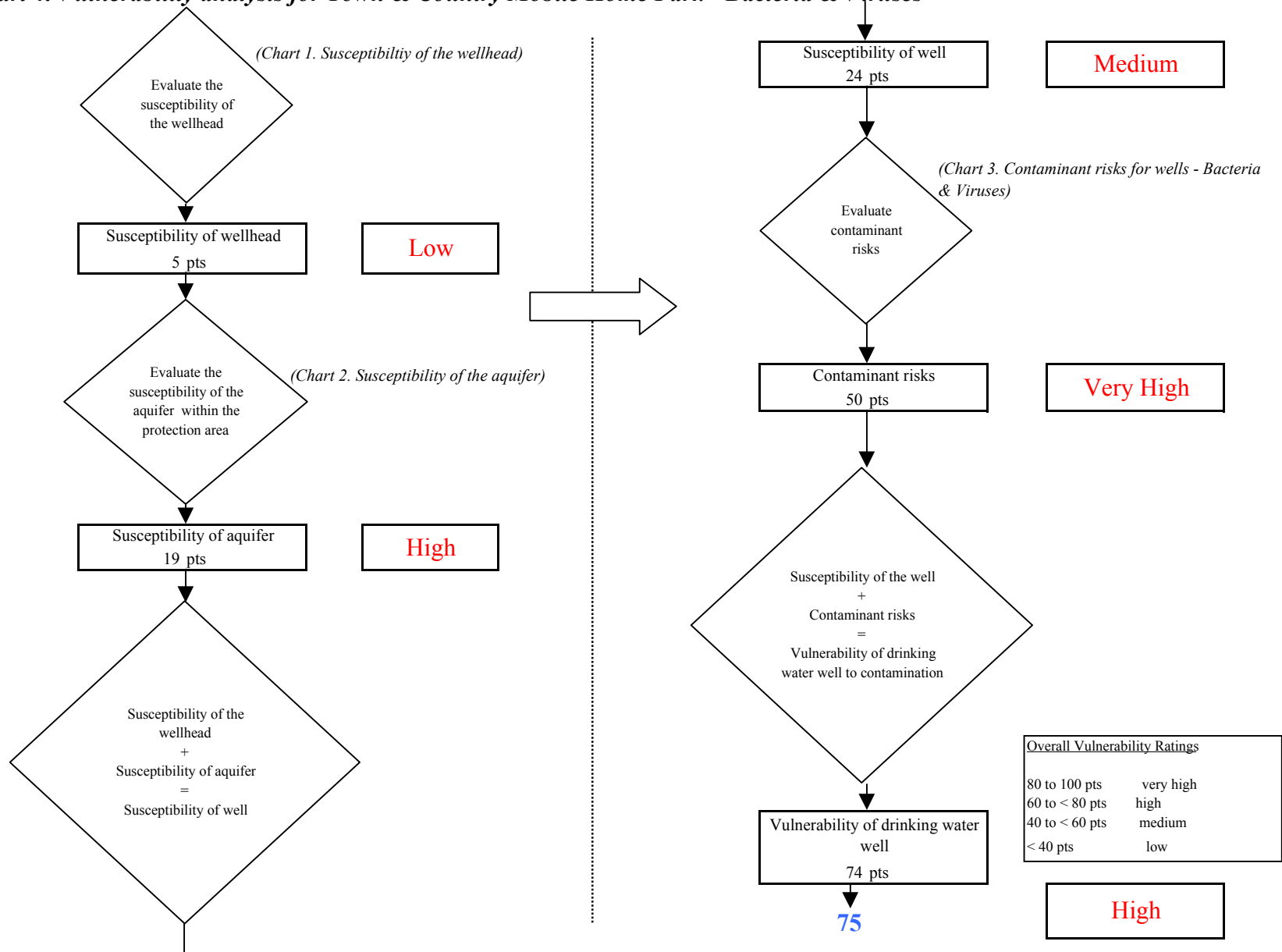
**Chart 3. Contaminant risks for Town & Country Mobile Home Park - Bacteria & Viruses**



**Chart 3. Contaminant risks for Town & Country Mobile Home Park - Bacteria & Viruses**



**Chart 4. Vulnerability analysis for Town & Country Mobile Home Park - Bacteria & Viruses**



**Chart 5. Contaminant risks for Town & Country Mobile Home Park - Nitrates and Nitrites**

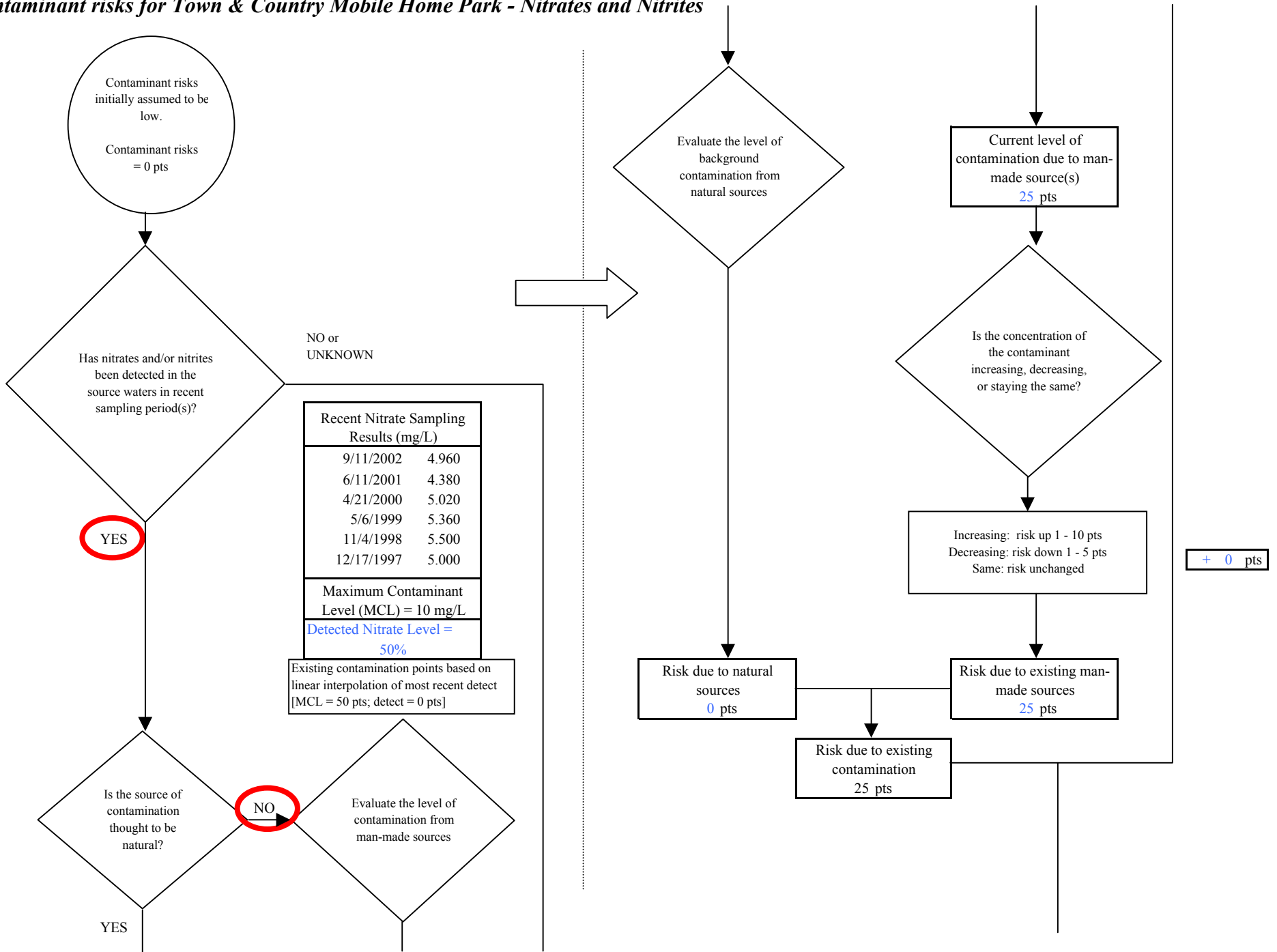
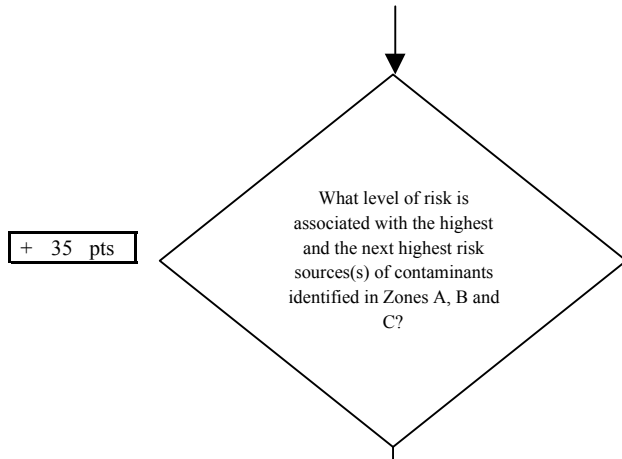


Chart 5. Contaminant risks for Town & Country Mobile Home Park - Nitrates and Nitrites

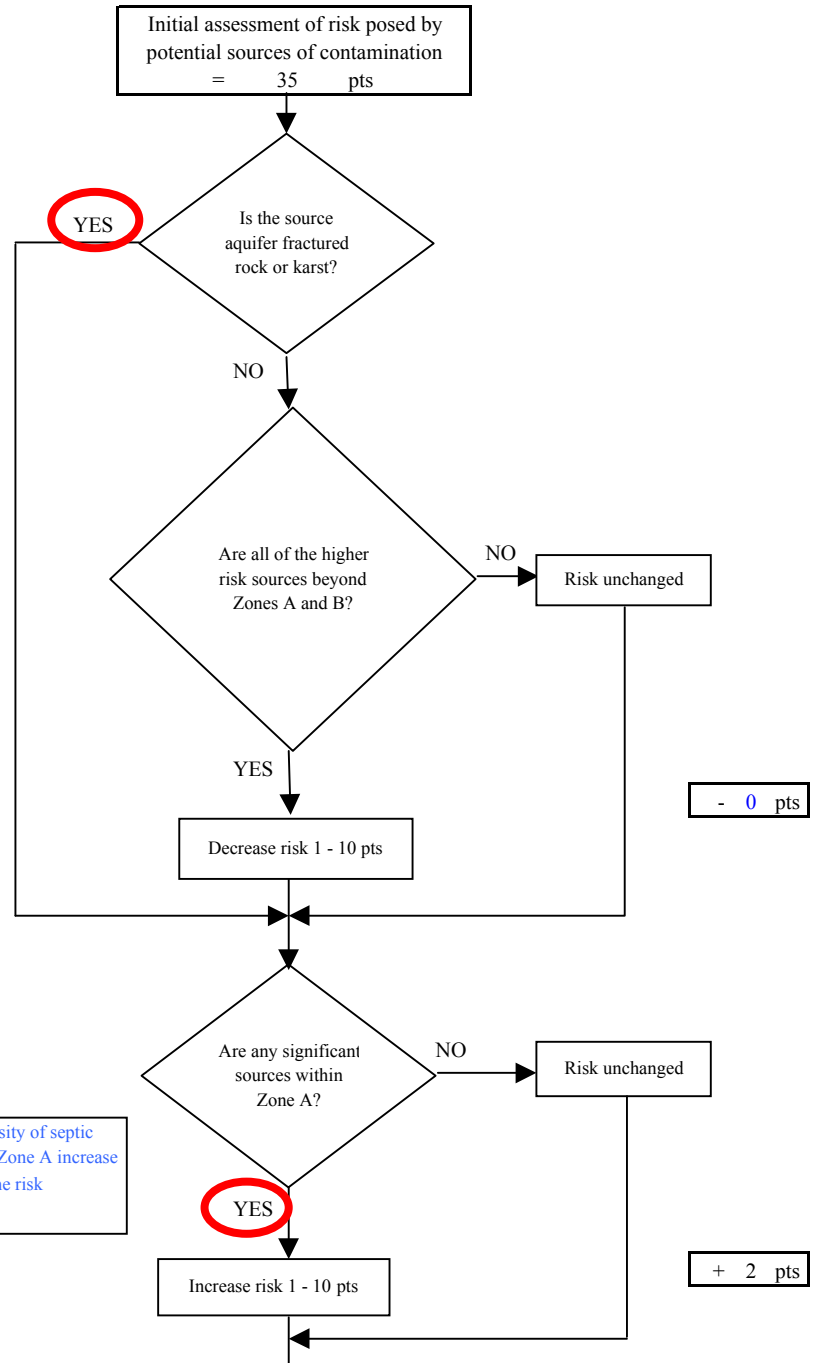


Risk Levels for Contaminant Sources identified in Zones A, B and C			
	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	1	0	1
Medium(s)	0	0	0
Low(s)	112	0	112

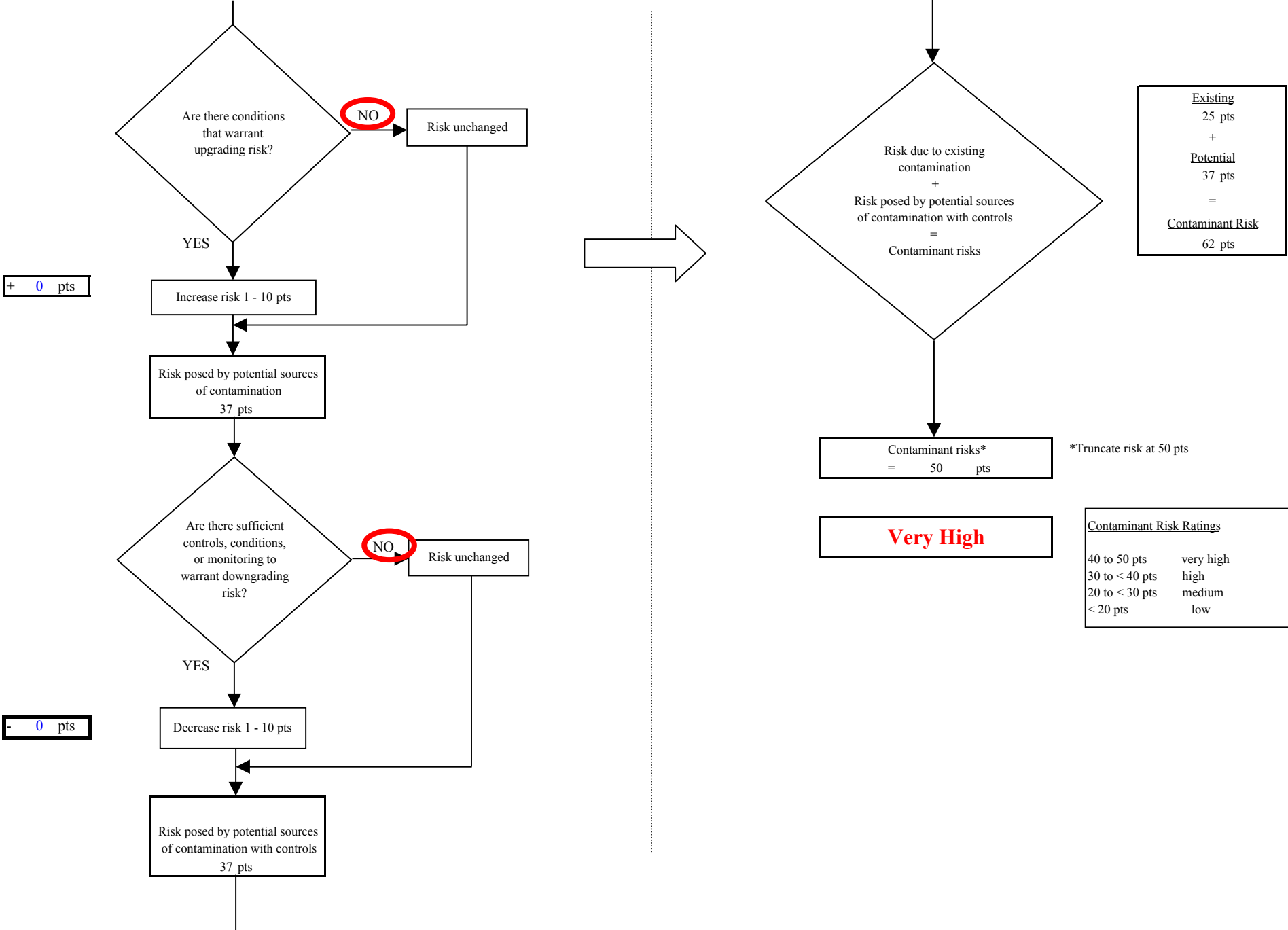
	LOW 10 pts	MEDIUM 20 pts	HIGH 30 pts	VERY HIGH 40 pts
LOW	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	---
MEDIUM	---	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
HIGH	---	---	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
VERY HIGH	---	---	---	≥ 1 source + 10 pts

Matrix Score 35

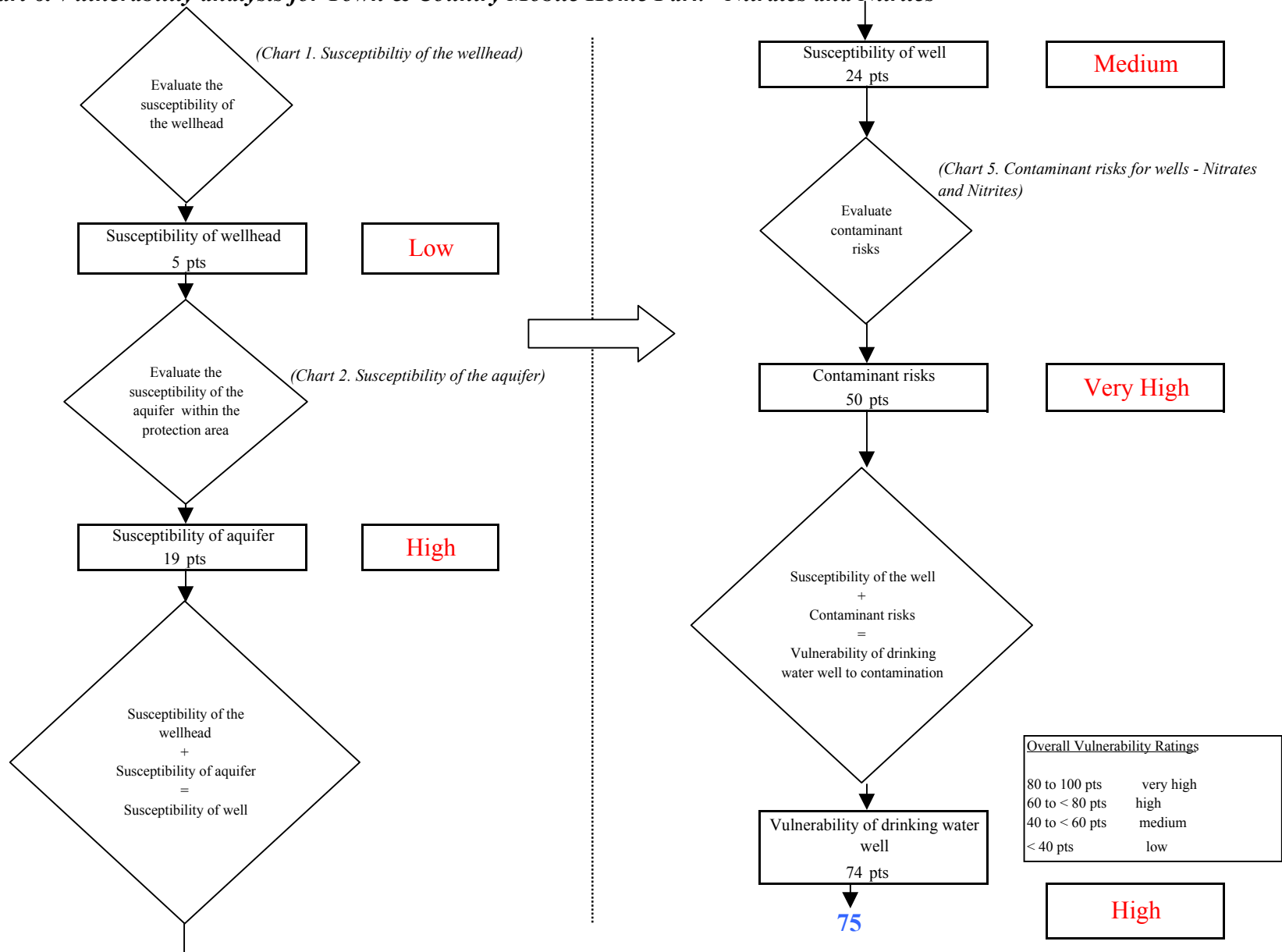
Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.



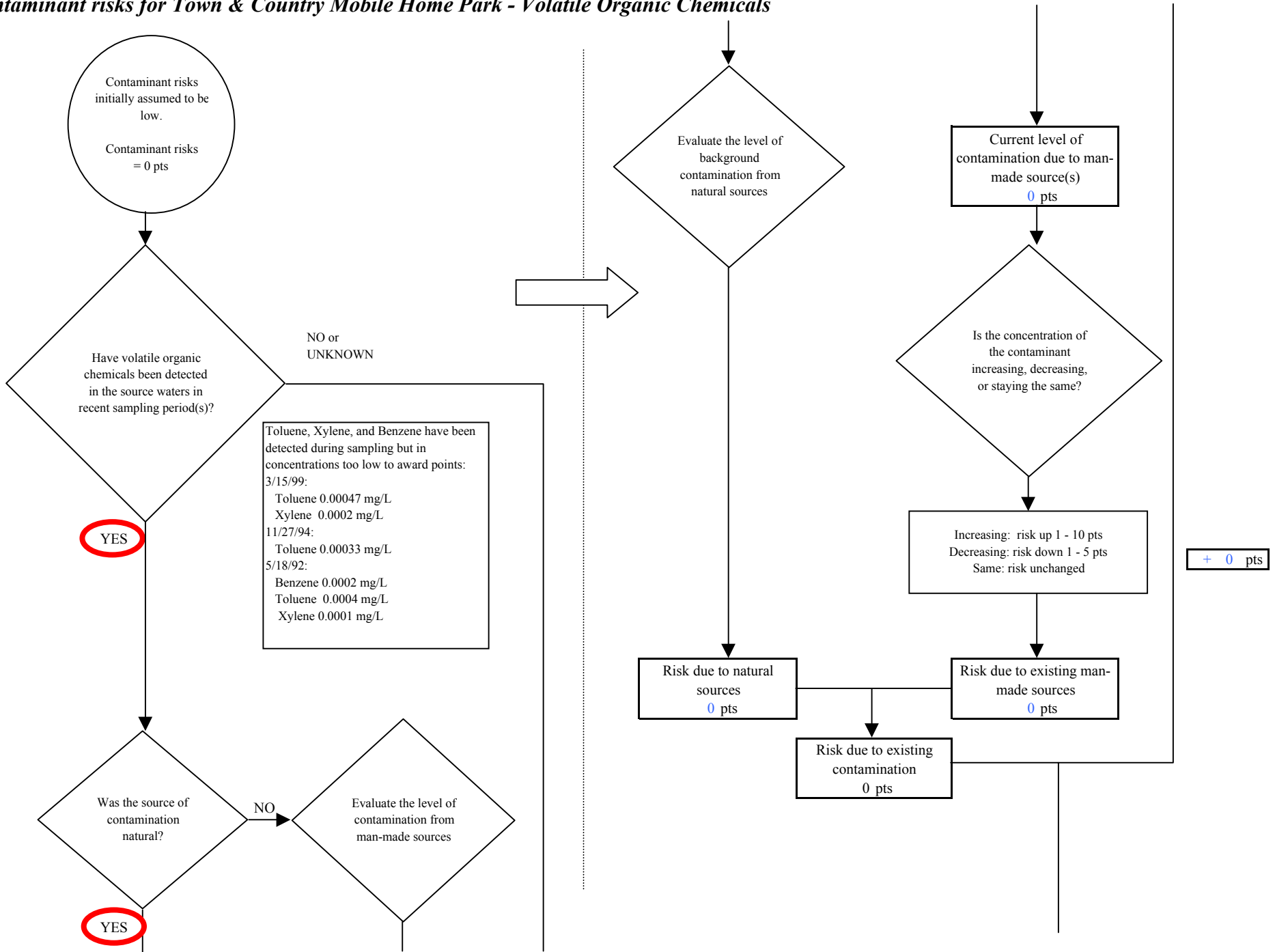
**Chart 5. Contaminant risks for Town & Country Mobile Home Park - Nitrates and Nitrites**



**Chart 6. Vulnerability analysis for Town & Country Mobile Home Park - Nitrates and Nitrites**

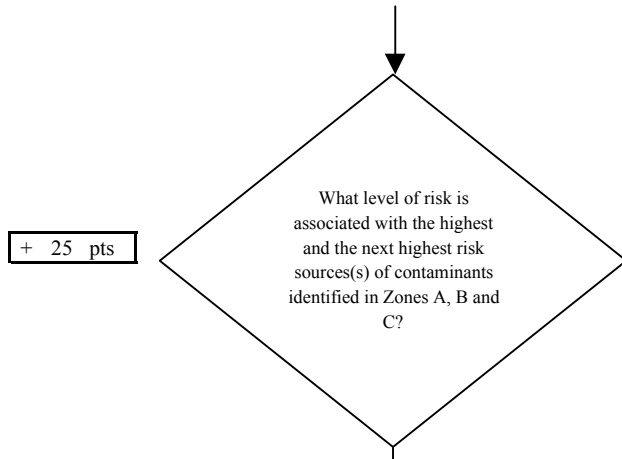


**Chart 7. Contaminant risks for Town & Country Mobile Home Park - Volatile Organic Chemicals**





**Chart 7. Contaminant risks for Town & Country Mobile Home Park - Volatile Organic Chemicals**



+ 25 pts

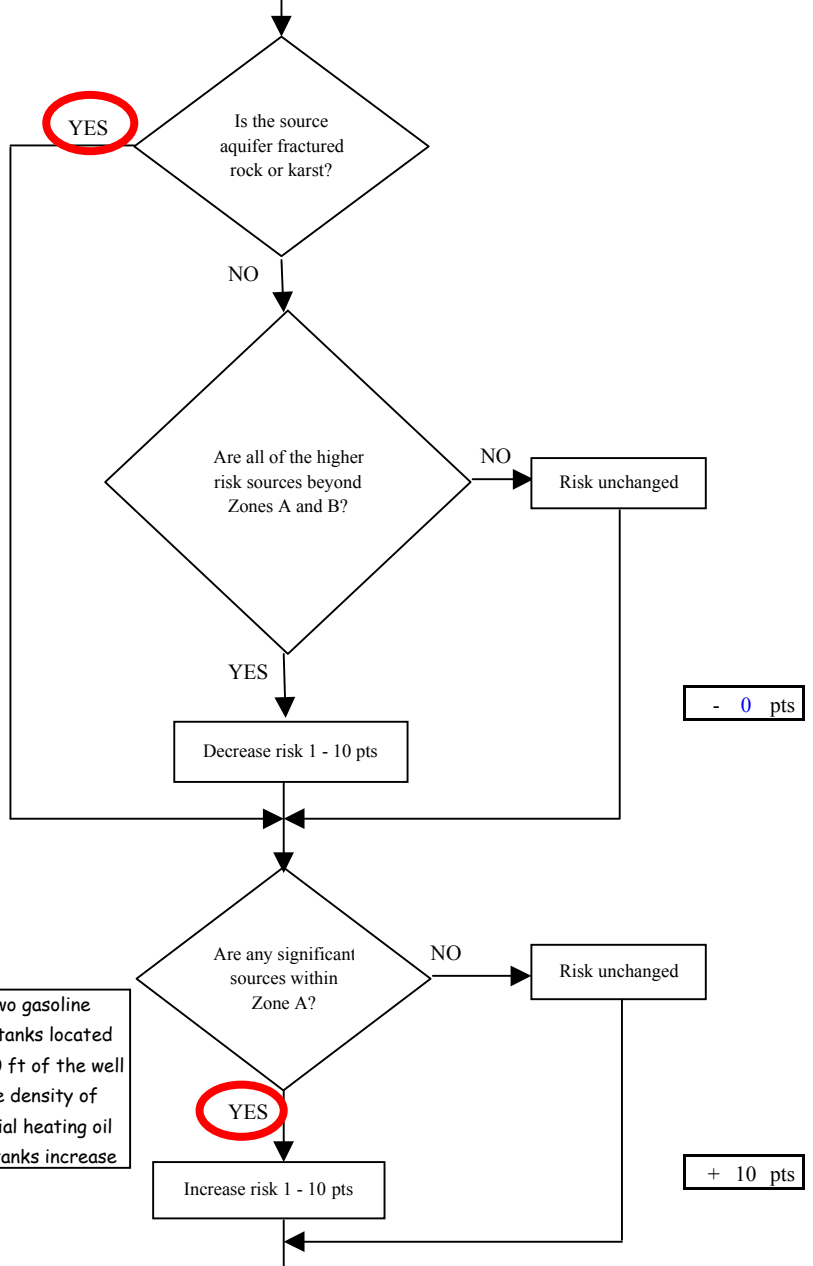
Risk Levels for Contaminant Sources identified in Zones A, B and C			
	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	225	0	225
Low(s)	11	0	11

	LOW 10 pts	MEDIUM 20 pts	HIGH 30 pts	VERY HIGH 40 pts
LOW	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
MEDIUM	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
HIGH	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
VERY HIGH	----	----	----	≥ 1 source + 10 pts

Matrix Score 25

Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.

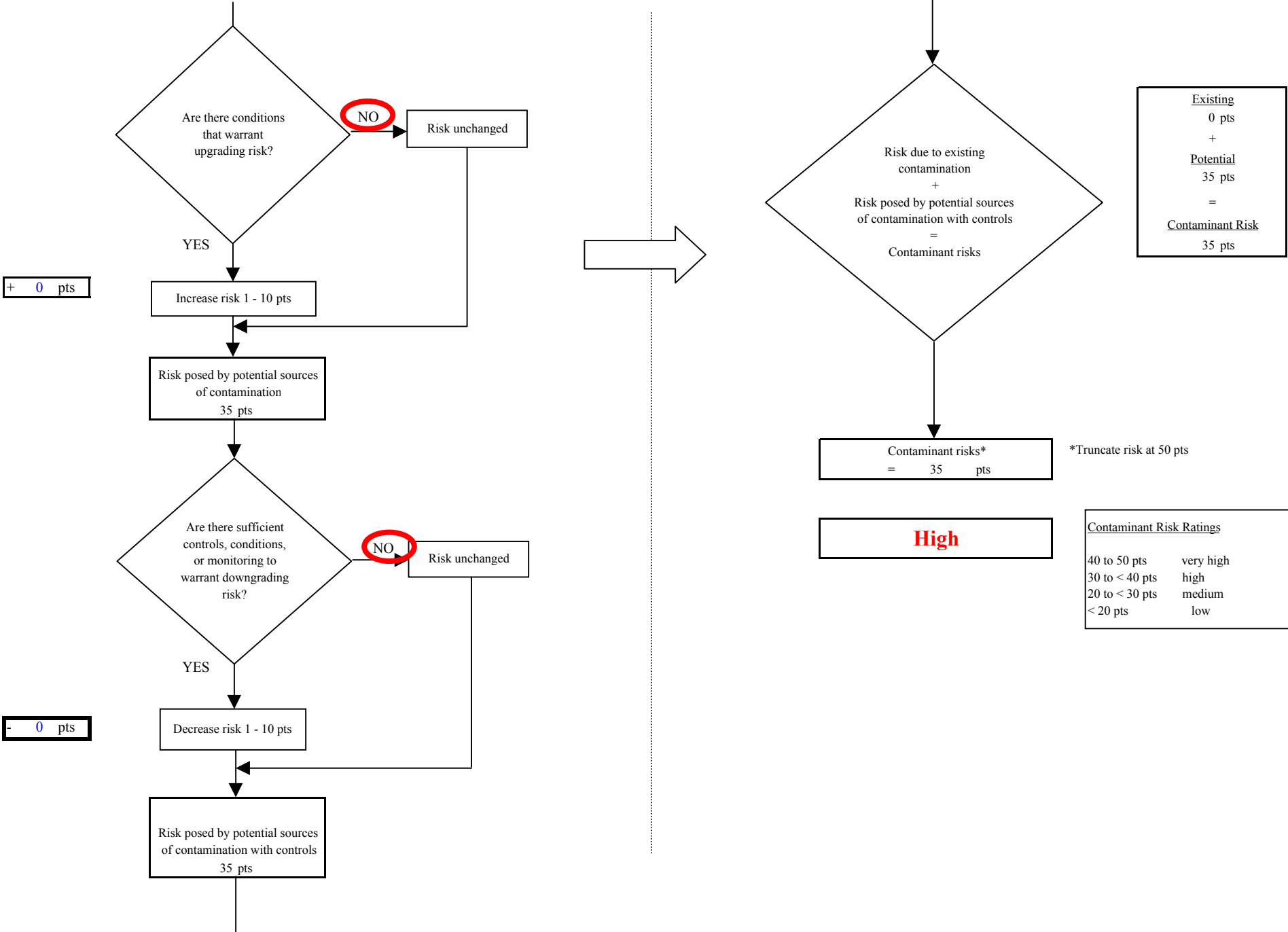
Initial assessment of risk posed by potential sources of contamination = 25 pts



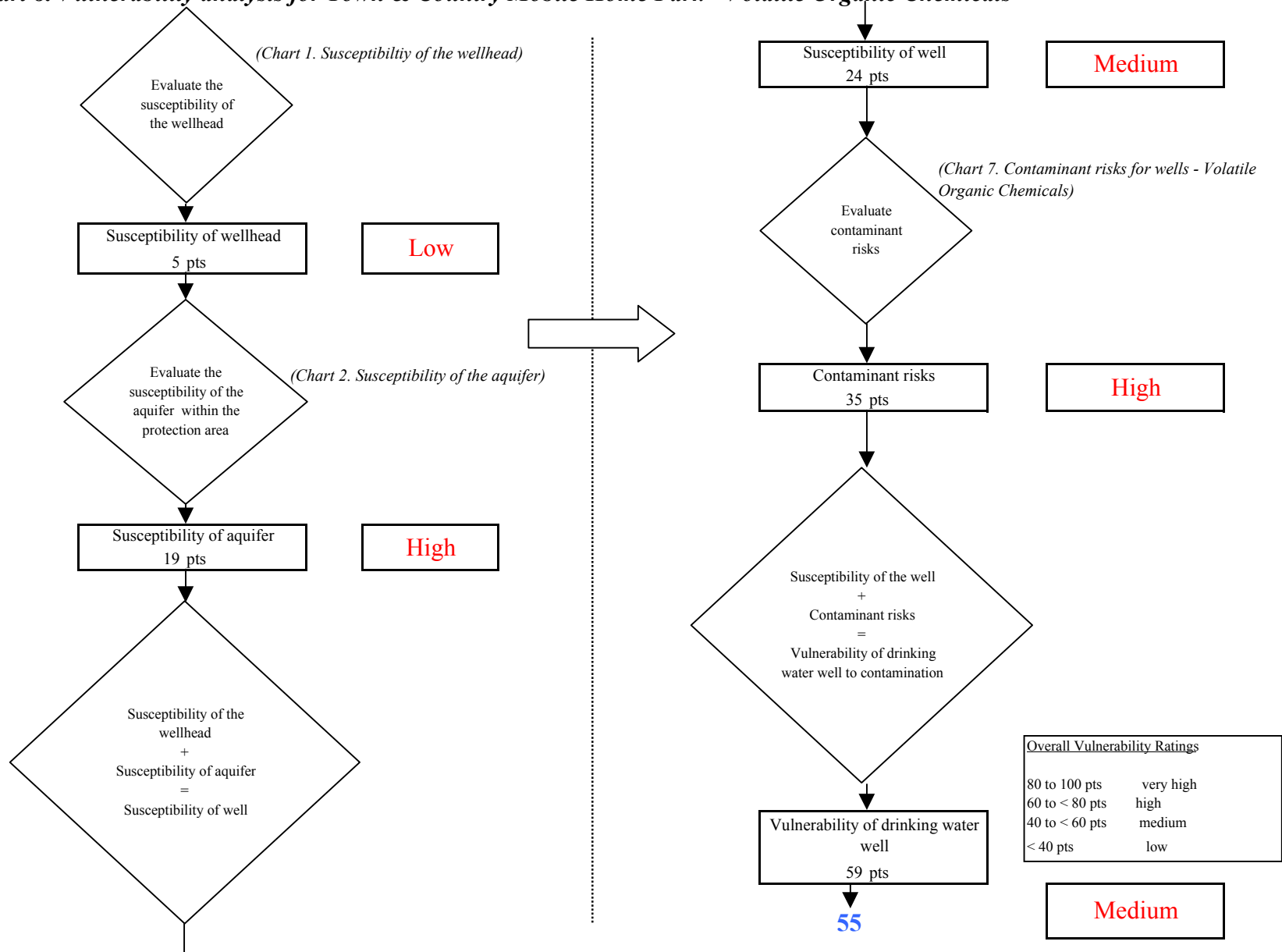
- 0 pts

+ 10 pts

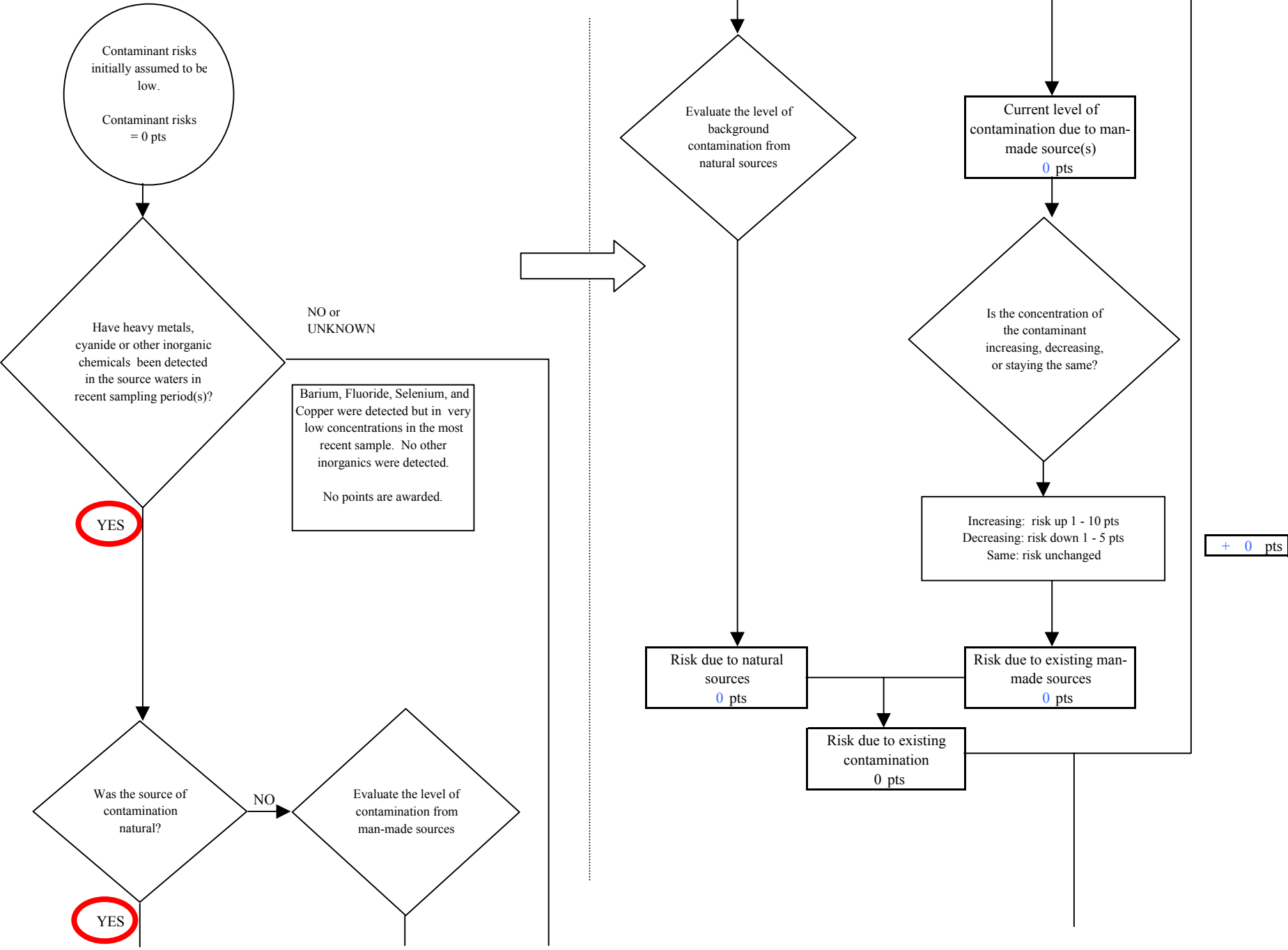
**Chart 7. Contaminant risks for Town & Country Mobile Home Park - Volatile Organic Chemicals**



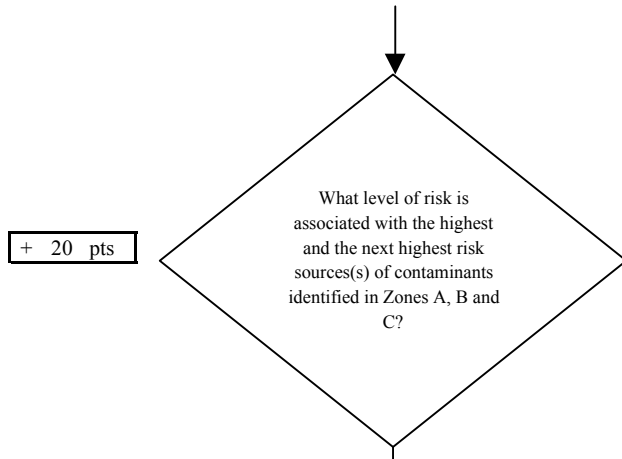
**Chart 8. Vulnerability analysis for Town & Country Mobile Home Park - Volatile Organic Chemicals**



**Chart 9. Contaminant risks for Town & Country Mobile Home Park - Heavy Metals, Cyanide and Other Inorganic Chemicals**



**Chart 9. Contaminant risks for Town & Country Mobile Home Park - Heavy Metals, Cyanide and Other Inorganic Chemicals**



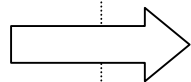
+ 20 pts

Risk Levels for Contaminant Sources identified in Zones A, B and C			
	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	2	0	2
Low(s)	6	0	6

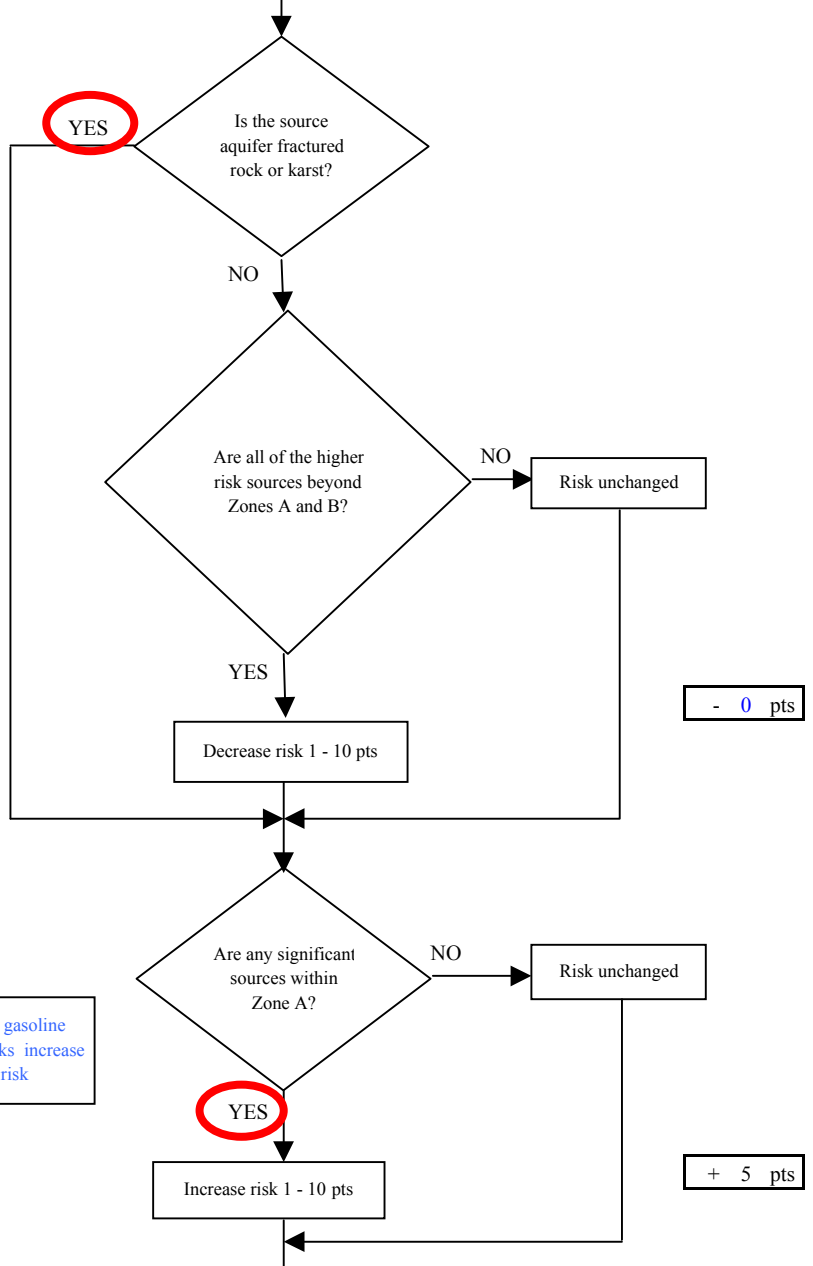
	LOW 10 pts	MEDIUM 20 pts	HIGH 30 pts	VERY HIGH 40 pts
LOW	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
MEDIUM	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
HIGH	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
VERY HIGH	----	----	----	≥ 1 source + 10 pts

Matrix Score 20

Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.

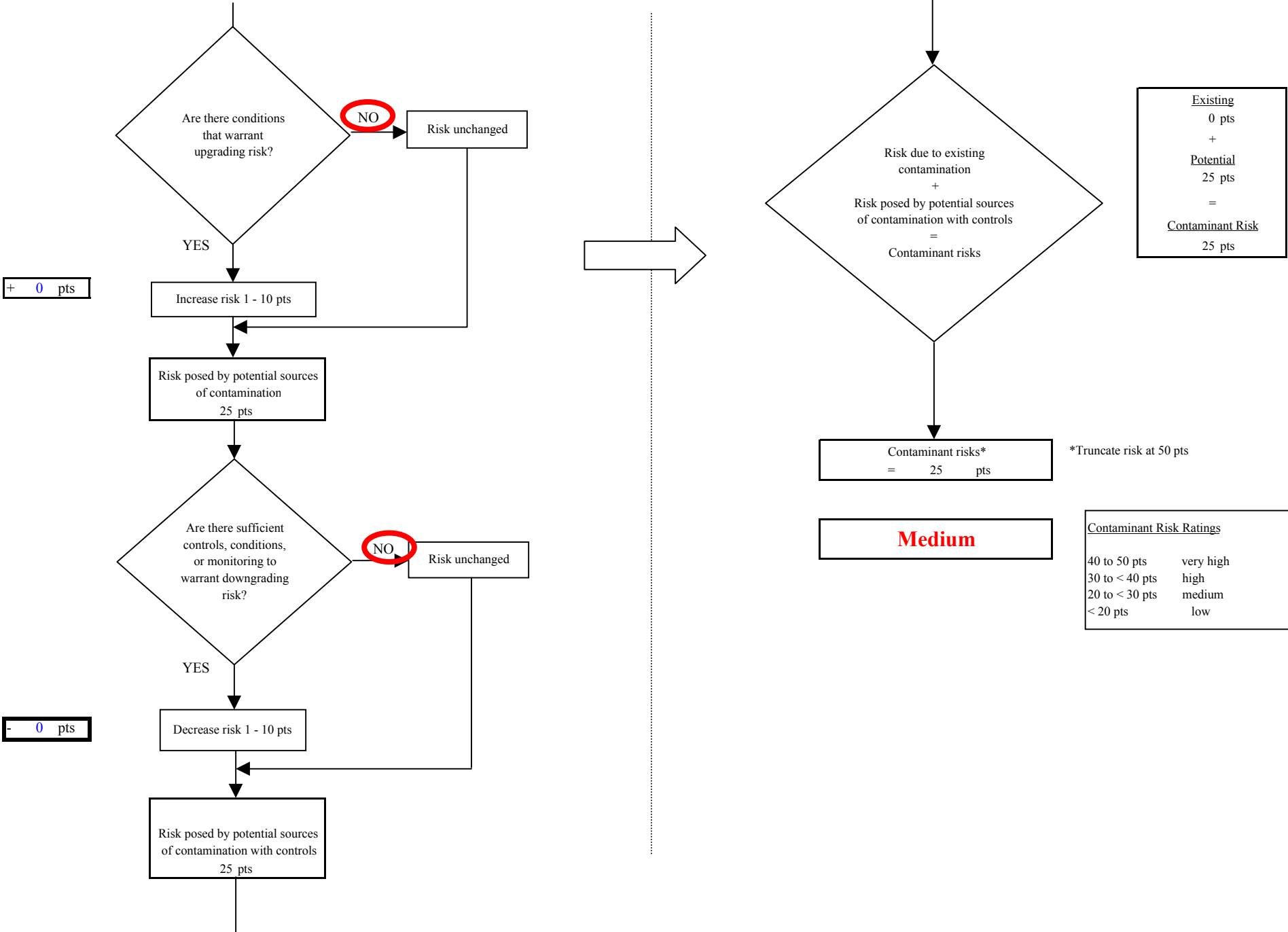


Initial assessment of risk posed by potential sources of contamination = 20 pts

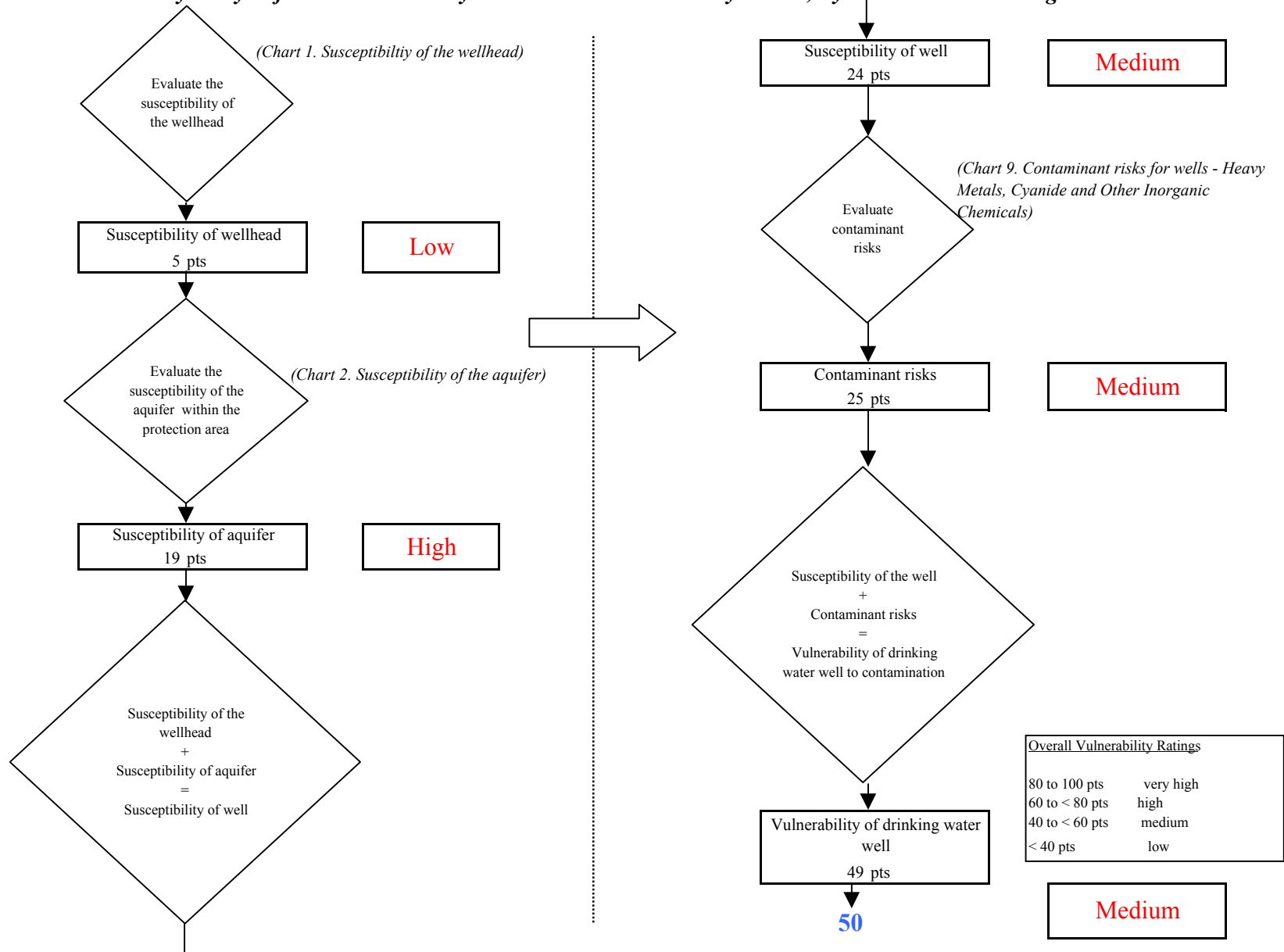


The two gasoline storage tanks increase the risk

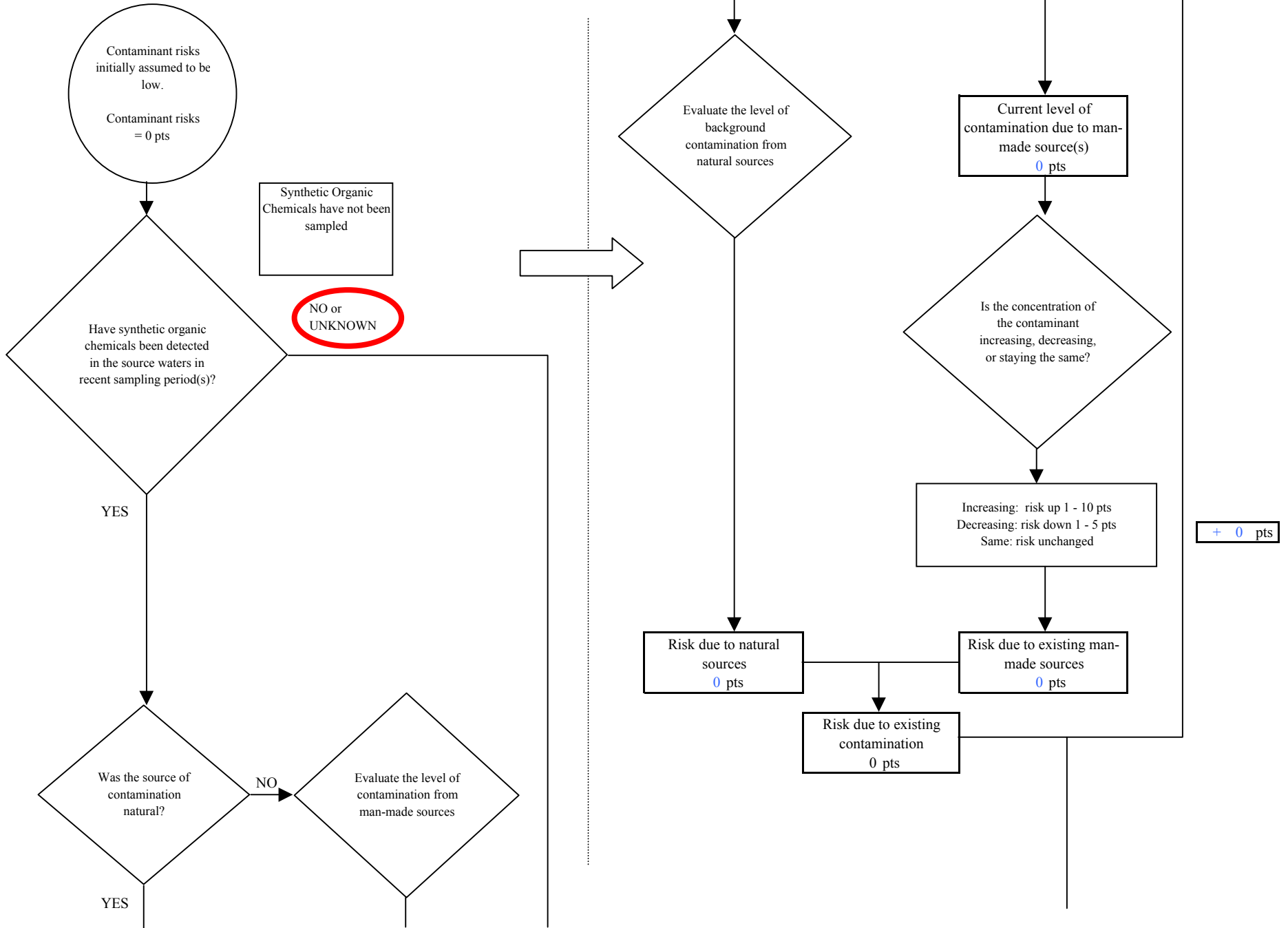
**Chart 9. Contaminant risks for Town & Country Mobile Home Park - Heavy Metals, Cyanide and Other Inorganic Chemicals**



**Chart 10. Vulnerability analysis for Town & Country Mobile Home Park - Heavy Metals, Cyanide and Other Inorganic Chemicals**

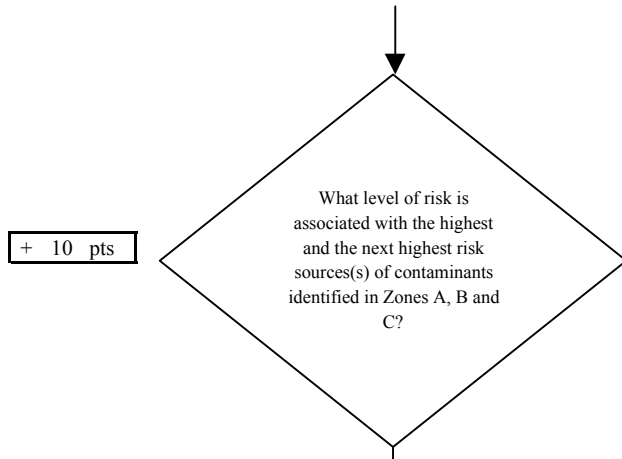


**Chart 11. Contaminant risks for Town & Country Mobile Home Park - Synthetic Organic Chemicals**





**Chart 11. Contaminant risks for Town & Country Mobile Home Park - Synthetic Organic Chemicals**



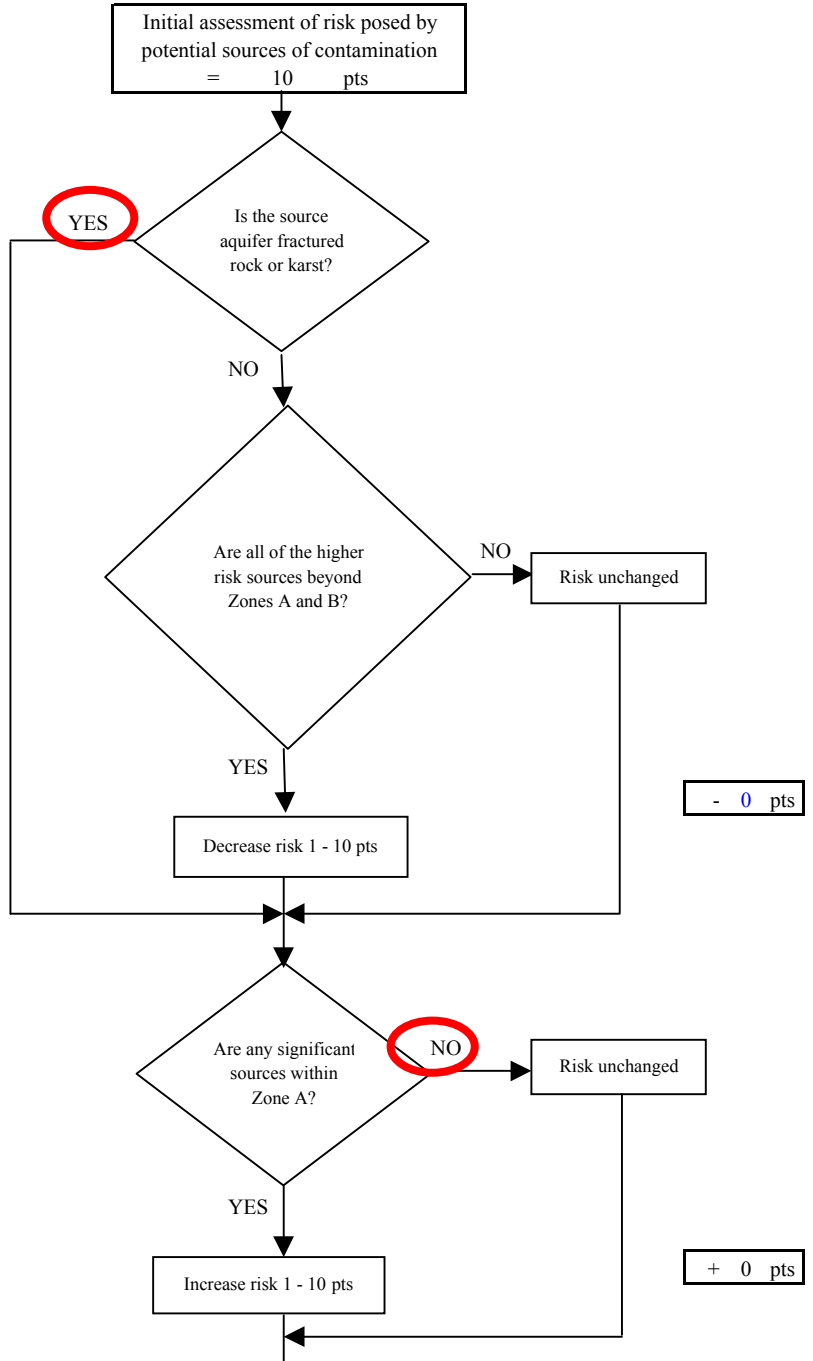
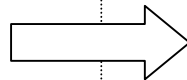
+ 10 pts

Risk Levels for Contaminant Sources identified in Zones A, B and C			
	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	0	0	0
Low(s)	4	0	4

	<b>LOW</b> 10 pts	<b>MEDIUM</b> 20 pts	<b>HIGH</b> 30 pts	<b>VERY HIGH</b> 40 pts
<b>LOW</b>	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
<b>MEDIUM</b>	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
<b>HIGH</b>	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
<b>VERY HIGH</b>	----	----	----	≥ 1 source + 10 pts

Matrix Score 10

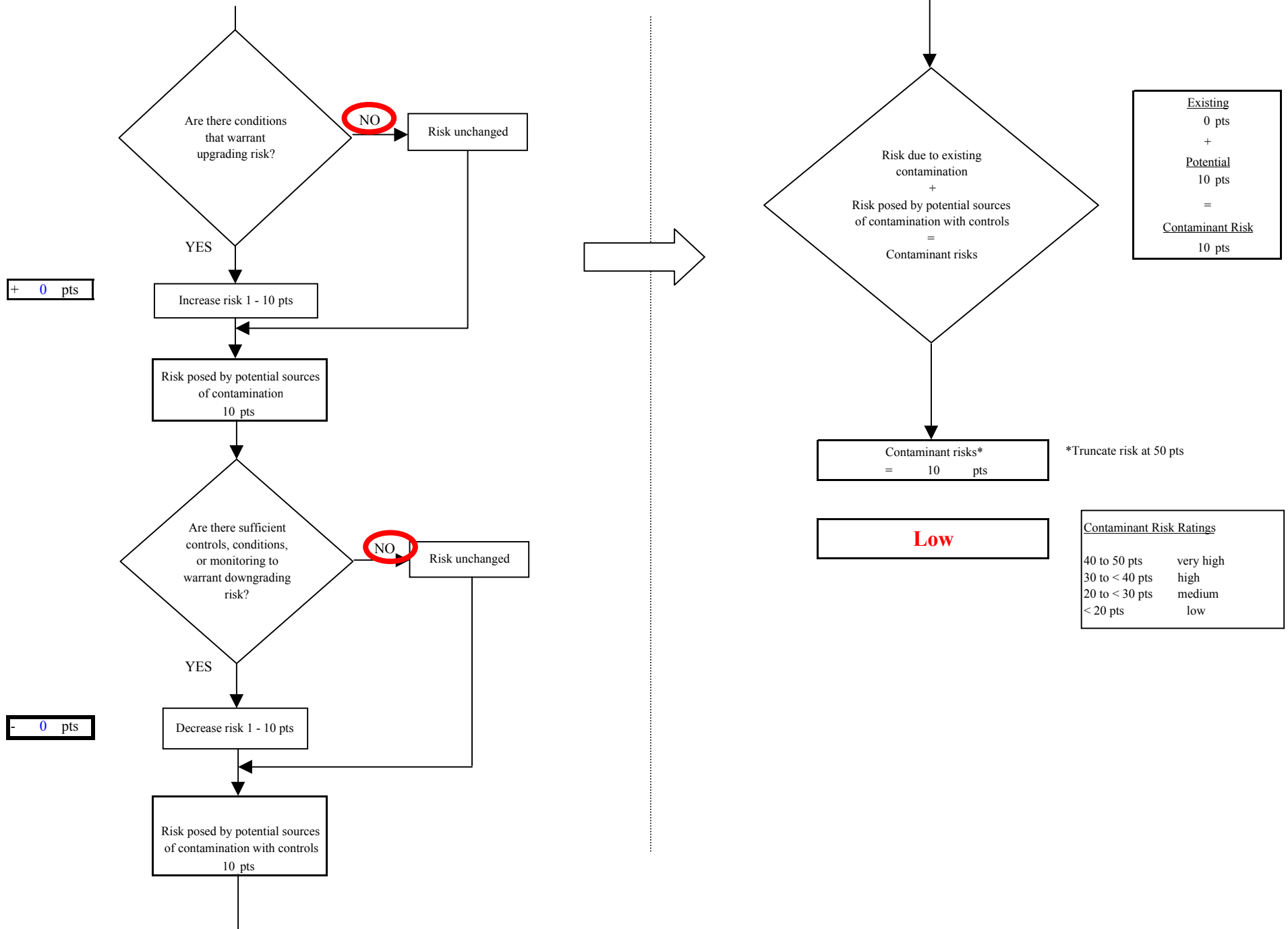
Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.



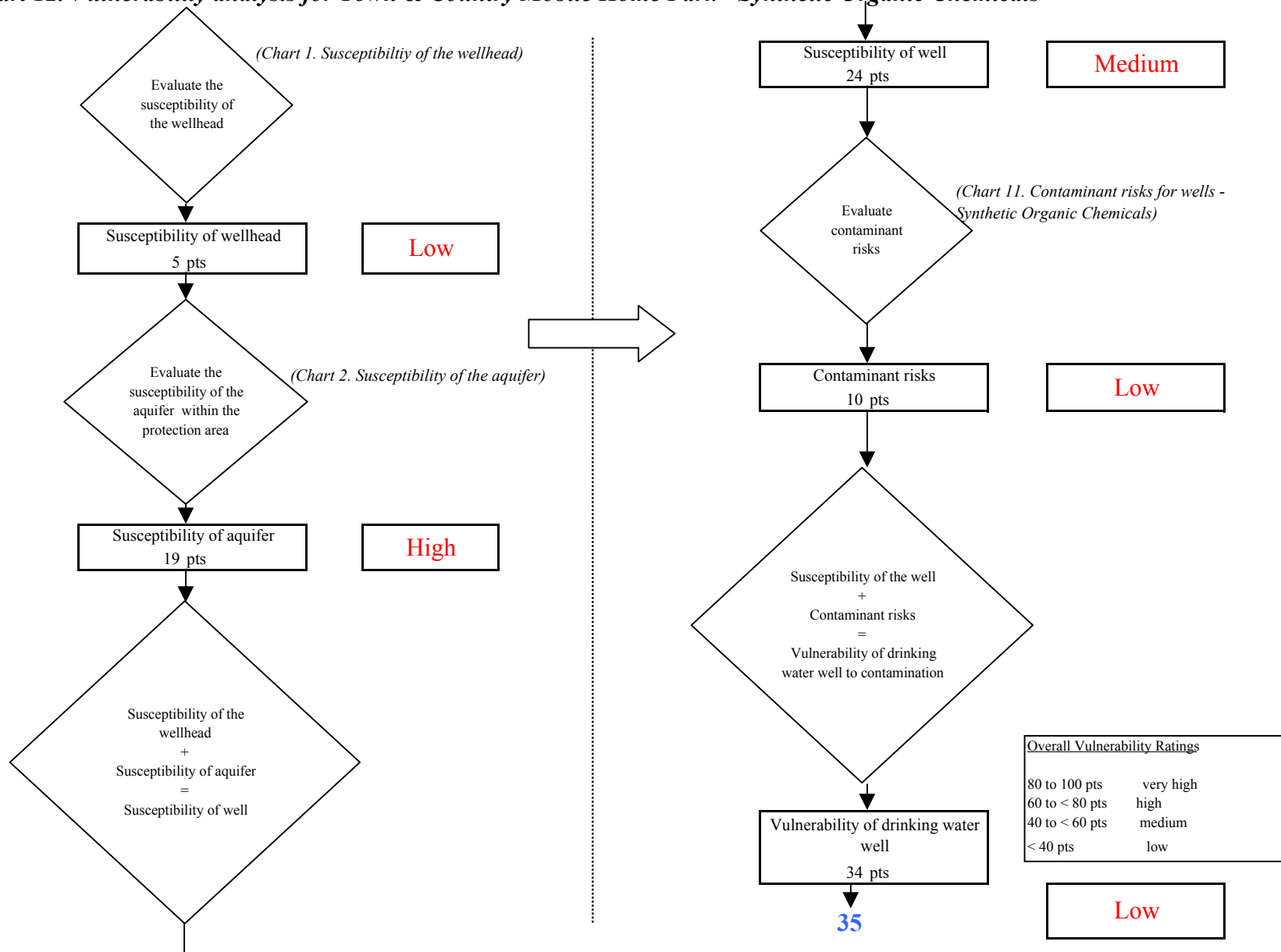
- 0 pts

+ 0 pts

**Chart 11. Contaminant risks for Town & Country Mobile Home Park - Synthetic Organic Chemicals**



**Chart 12. Vulnerability analysis for Town & Country Mobile Home Park - Synthetic Organic Chemicals**



**Chart 13. Contaminant risks for Town & Country Mobile Home Park - Other Organic Chemicals**

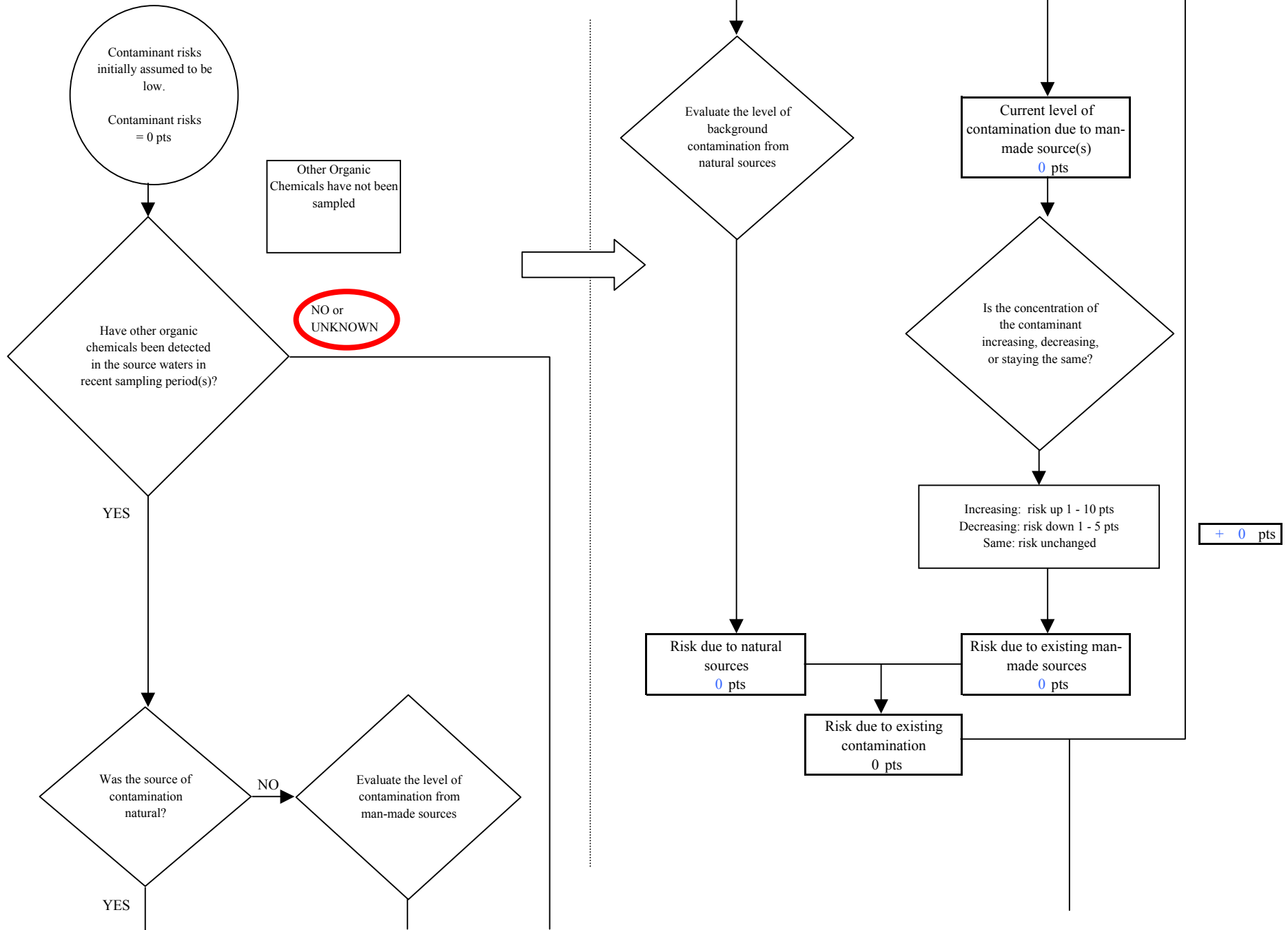
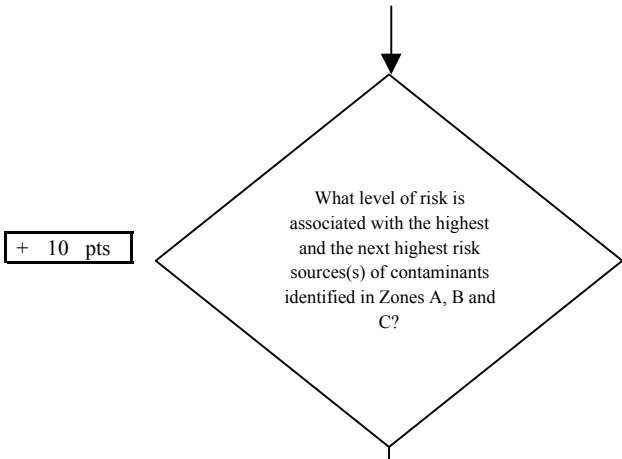


Chart 13. Contaminant risks for Town & Country Mobile Home Park - Other Organic Chemicals



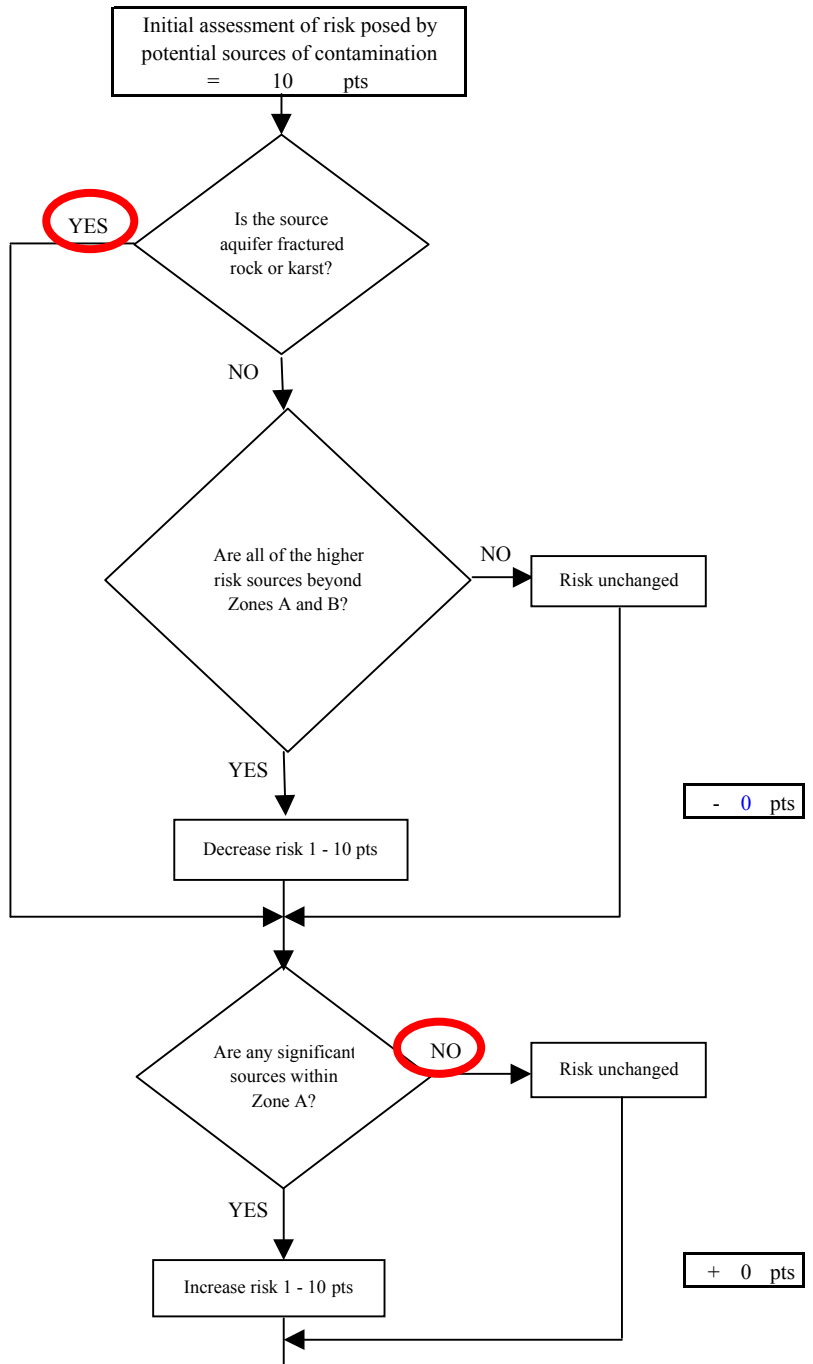
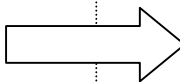
+ 10 pts

Risk Levels for Contaminant Sources identified in Zones A, B and C			
	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	0	0	0
Low(s)	4	0	4

	<b>LOW</b> 10 pts	<b>MEDIUM</b> 20 pts	<b>HIGH</b> 30 pts	<b>VERY HIGH</b> 40 pts
<b>LOW</b>	≥ 10 sources + 10 pts	≥ 10 sources + 5 pts	≥ 20 sources + 5 pts	----
<b>MEDIUM</b>	----	≥ 2 sources + 5 pts	≥ 5 sources + 5 pts	≥ 10 sources + 5 pts
<b>HIGH</b>	----	----	≥ 1 source + 10 pts	≥ 2 sources + 10 pts
<b>VERY HIGH</b>	----	----	----	≥ 1 source + 10 pts

Matrix Score 10

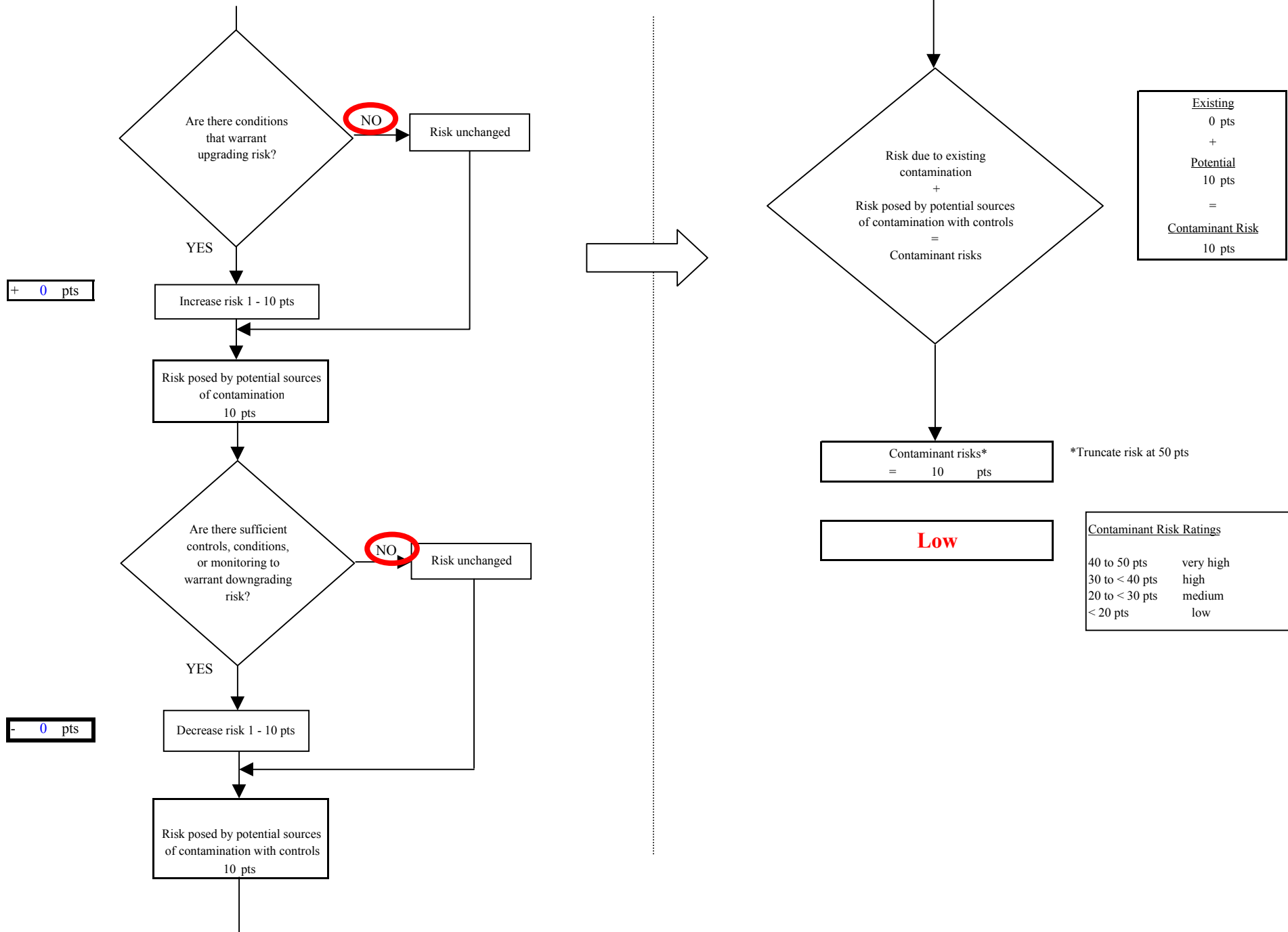
Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.



- 0 pts

+ 0 pts

**Chart 13. Contaminant risks for Town & Country Mobile Home Park - Other Organic Chemicals**



**Chart 14. Vulnerability analysis for Town & Country Mobile Home Park - Other Organic Chemicals**

