Source Water Assessment

A Hydrogeologic Susceptibility and Vulnerability Assessment for Country Lane Apartment, Anchorage, Alaska PWSID # 211164.001

DRINKING WATER PROTECTION PROGRAM REPORT 692

Alaska Department of Environmental Conservation

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The Drinking Water Protection Program 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. 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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Drinking Water Protection Program
Alaska Department of Environmental Conservation

EXECUTIVE SUMMARY

The public water system for Country Lane Apartments is a Class A (community) water system consisting of one well in the Anchorage area. Identified potential and current sources of contaminants for Country Lane Apartments include: sewer lines, residential areas, roads, recreation areas, florist, heavy equipment storage, motor vehicle rental facilities, a gasoline station, lumber processing, and various commercial activities. These identified potential and existing sources of contamination are considered sources of bacteria and viruses, nitrates and/or nitrites, volatile organic chemicals, heavy metals, synthetic organic chemicals and other organic chemicals. Overall, Country Lane Apartments received a vulnerability rating of **Low** for bacteria and viruses, nitrates and/or nitrites, **Medium** for volatile organic chemicals, heavy metals and synthetic organic chemicals, **High** for other organic chemicals.

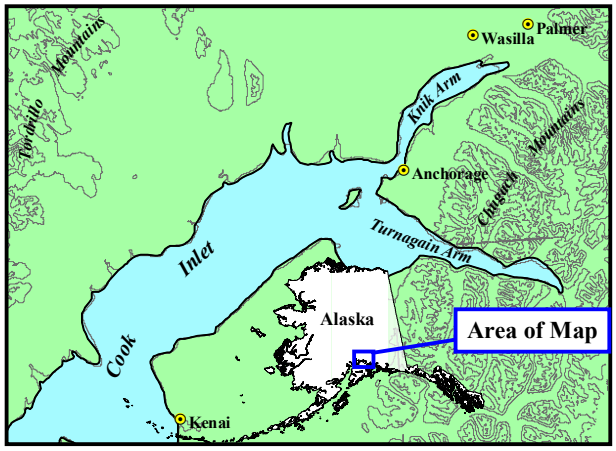

Figure 1. Index map showing the location of Anchorage, Alaska

INTRODUCTION

The Alaska Department of Environmental Conservation (ADEC) is completing source water assessments for all public drinking water sources in the State of Alaska. The purpose of this assessment is to provide public water system owners and/or operators, communities, and local governments with information they can use to preserve the quality of Alaska's public drinking water supplies. The results of this source water assessment can be used to decide where voluntary protection efforts are needed and feasible, and what efforts will be most effective in reducing contaminant risks to your water system.

This source water assessment combines a review of the natural conditions at the site and the potential and existing contaminant risks. These are combined to determine the overall vulnerability of the drinking water source to contamination.

DESCRIPTION OF THE ANCHORAGE AREA, ALASKA

Location

Anchorage, located in south-central Alaska, encompasses 1,698 square miles of land and 264 square miles of water. The area containing a majority of the urban development, commonly referred to as the Anchorage Bowl, encompasses approximately 180 square miles [*Partick, Brabets, and Glass, 1989*] and envelopes the low lands of the area. This area is bounded on the east by the Chugach Mountains and the north, west, and south by the Knik and Turnagain Arm of Cook Inlet (Figure 1). In recent times, urban development has extended eastward along the flanks of the Chugach Mountains. This area, known locally as the Anchorage Hillside, contains development at elevations exceeding 3,700 feet in elevation above sea level.

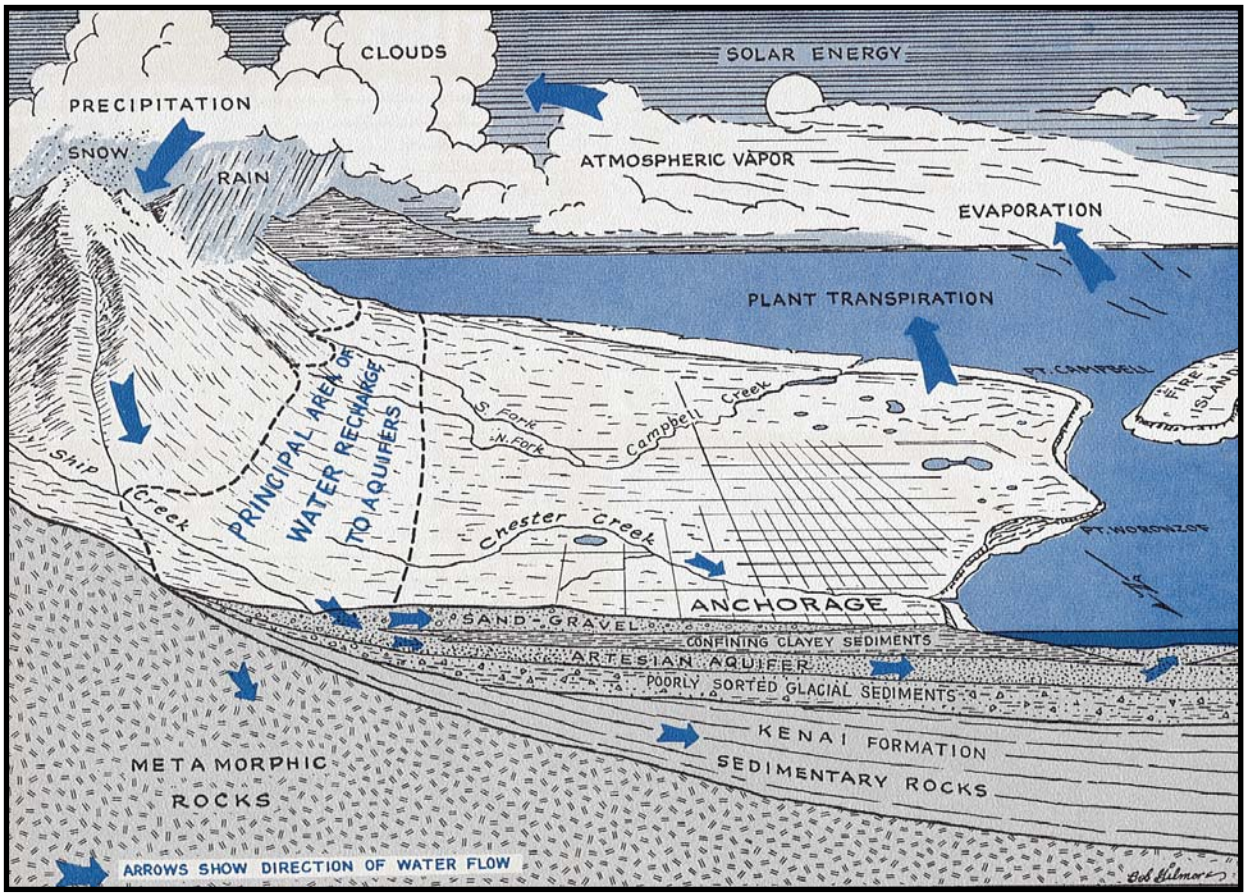

Figure 2. Generalized hydrologic cycle in the Anchorage area [*Barnwell, George, Dearborn,Weeks, and Zenone*, 1972].

Climate

The Anchorage area climate is somewhat transitional in that it does not experience large daily and annual temperature fluctuations like those experienced in the interior of Alaska nor does it experience high amounts of precipitation typified by gulf coast regions. Mean annual precipitation at the Anchorage International Airport is approximately 16 inches per year. On average, Anchorage receives a total snow accumulation of 69 inches per year. Precipitation generally increases inland toward the Chugach Mountains where annual precipitation may exceed 160 inches per year [*Barnwell, George, Dearborn, Weeks, and Zenone*, 1972]. Mean daily temperature ranges from 65^{o} F during July to 8^{o} F in January [*Western Regional Climate Center*, 2000].

Physiography and Groundwater Conditions

Surface elevations in the Anchorage area range from sea level at Knik and Turnagain Arms to well over 5,000 feet in the peaks that bound the area. Glacial moraine and outwash deposits primarily mantle the surface of the Anchorage Bowl.

The backbone of the Chugach Mountains is composed primarily of metamorphic marine and volcanic rocks (bedrock). These high peaks that bound Anchorage's east side are flanked with colluvium or slope deposits. These slope deposits eventually grade into the glacial and stream deposits at lower elevations in the Anchorage Bowl.

In the Anchorage area, two principal groundwater flow systems or aquifers exist (see Figure 2). The upper unconfined aquifer or water-table aquifer is separated from a lower confined aquifer system by layers of silty, clayey glacially derived sediments (confining layer) [*Ulery and Updike*, 1983]. The lower confined aquifer system consists of a series of hydrologically interconnected layers and lenses of gravel, sand and silt that, collectively, form the confined aquifer. The confining layer ranges from 0 to 270 feet thick throughout the Anchorage area and generally thins with increasing distance from Cook Inlet, thus pinching out at the mountain front [*Patrick, Brabets, and Glass*, 1989].

Water enters or recharges these two aquifer systems in several different ways. Along the front of the Chugach Mountains, groundwater seeps from fractures in

bedrock into the sediments. At these higher elevations, rain and snowmelt also enters the sediments. This area along the mountain front is considered the principal recharge area for wells in the Anchorage area. Precipitation in the low lands may also percolate directly into the ground. Lastly, aquifers may also be recharged by streams where surface water percolates into surrounding permeable sediments (losing reaches of streams). Groundwater flow in the confined aquifer is generally east to west from the mountain front toward Cook Inlet and Turnagain Arm, except in areas where the direction of flow is influenced by large municipal or industrial production wells. The direction of groundwater flow in the upper unconfined aquifer is more variable due to the influence from surfacial topography as well as its close connection with surface water bodies.

COUNTRY LANE APARTMENTSPUBLIC DRINKING WATER SYSTEM

Country Lane Apartments is a Class A (community) water system. The system one well in the Anchorage area. (See Map 1 of Appendix A). This area is at an elevation of approximately 150 feet above sea level.

The 1993 Sanitary Survey indicates that the wells are installed with caps providing a sanitary seal. A properly installed sanitary seal may provide protection against contaminants from entering the source waters at the well casing. Due to the date that the well was installed it is suspected that the well was not grouted according to ADEC regulations. Proper grouting provides added protection against contaminants traveling along the well casing and into source waters.

The well log indicates that the depth of the well is 217 feet below the surface and the static water level at the time of drilling (1964) was 11 feet below the surface. The log indicates that the well and passes through a clay and glacial-till layer from 39-84 feet below the surface. This confining layer may provide protection from contaminates entering the aquifer. However, the clay layers tend to thin our towards the mountains allowing contaminants that enter the subsurface near the base of the mountains to enter the confined aquifer uninhibited by the absence of any protective layer.

This system operates 365 days per year and serves 35 residents through 11 service connections.

TUDOR MOBILE COURT'S PROTECTION AREA

In order to evaluate whether a drinking water source is at risk, we must first evaluate what are the most likely pathways for surface contamination to reach the groundwater. Some areas are more likely to allow contamination to reach the well than others. 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 (DWPA). Because releases of contaminants within the DWPA 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 DWPA for Country Lane Apartment. Available geology was also considered to take into account any uncertainties in groundwater flow and aquifer characteristics to arrive at a meaningful DWPA (Please refer to the Guidance Manual for Class A Public Water Systems for additional information).

The DWPAs 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. An analytical calculation was used to determine the size and shape of the DWPA. 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 time of travel for contaminants within the water varies and is dependent on the physical and chemical characteristics of each contaminant. The following is a summary of the four DWPA zones and the calculated time-of-travel for each:

Table 1. Definition of Zones

Zone	Definition
A	¼ the distance for the 2-yr. TOT
B	Less than the 2 year TOT
C	Less Than the 5 year TOT
D	Less than the 10 year TOT

INVENTORY OF POTENTIAL AND EXISTING CONTAMINANT SOURCES

The Drinking Water Protection Program has completed an inventory of potential and existing sources of contamination within Country Lane Apartments DWPA. 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, and
- Other organic chemicals.

The sources are displayed on Maps 2 -6 in 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.

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, volatile organic chemicals, heavy metals, synthetic organic chemicals, and other organic chemicals.

VULNERABILITY OF COUNTRY LANE APARTMENTSDRINKING WATER SOURCE

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

- Natural susceptibility; and
- Contaminant risks.

Each of the six categories of drinking water contaminants has been analyzed and an overall vulnerability score of 0 to 100 is ultimately assigned:

Natural Susceptibility (0 – 50 points)

+

Contaminant Risks (0 – 50 points)

=

Vulnerability of the

Drinking Water Source to Contamination (0 – 100).

A score for the Natural Susceptibility is achieved by analyzing the properties of the well and the aquifer.

Susceptibility of the Wellhead (0 – 25 Points)

+

Susceptibility of the Aquifer (0 – 25 Points)

=

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

Table 2 shows the Susceptibility scores and ratings for the wells serving Country Lane Apartment.

Table 2. Susceptibility of the well

	Score	Rating
Susceptibility of the Wellhead	5	Low
Susceptibility of the Aquifer	7	Low
Natural Susceptibility	12	Low

Contaminant risks to a drinking water source depend on the type, number or density, and distribution of contaminant sources. This data 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. Table 3 summarizes the Contaminant Risks for each category of drinking water contaminants.

Table 3. Contaminant Risks

Category	Score	Rating
Bacteria and Viruses	25	Medium
Nitrates and/or Nitrites	32	High
Volatile Organic Chemicals	45	Very High
Heavy Metals, Cyanide, and Other Inorganic Chemicals	40	Very High
Synthetic Organic Chemicals	32	High
Other Organic Chemicals	50	Very High

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

Table 4. Overall Vulnerability

Category	Score	Rating
Bacteria and Viruses	35	Low
Nitrates and Nitrites	35	Low
Volatile Organic Chemicals	55	Medium
Heavy Metals, Cyanide and Other Inorganic Chemicals	50	Medium
Synthetic Organic Chemicals	45	Medium
Other Organic Chemicals	60	High

Bacteria and Viruses
The contaminant risk for bacteria and viruses is medium with sewer lines presenting the most significant risk to the drinking water well (See Chart 3 – Contaminant Risks for Bacteria and Viruses in Appendix D).

Sampling of the well indicates that no bacteria and viruses have been detected. .

After combining the contaminant risk for bacteria and viruses with the natural susceptibility of the well, the overall vulnerability is low.

Nitrates and Nitrites
The contaminant risk for nitrates and nitrites is high with sewer lines presenting the most significant risk to the drinking water well.

Recent historical sampling data indicates that Nitrates were detected at 4% the maximum contaminant level (MCL) of 10 mg/l during the most recent sampling event (11/30/01). (See Chart 5 – Contaminant Risks for Nitrates and/or Nitrites in Appendix D.) The MCL is the maximum level of contaminant that is allowed to exist in drinking water and still be consumed by humans.

Nitrates and/or nitrites are found in natural background concentration at this site, as elsewhere in Alaska. Other sources of nitrate and/or nitrites are human sewage, livestock manure, especially from feedlots and fertilizers. Due to high solubility and weak retention by soil, nitrates are very mobile often moving at approximately the same rate as water. It is unknown whether the existing contamination is naturally occurring or human influenced. According to the Environmental Protection Agency (USEPA), short-term exposure to levels excessively above the MCL has caused serious illness and sometimes death. Serious illness in infants can occur due to the conversion of nitrate to nitrite by the body, which can interfere with the oxygen-carrying capacity of the childs blood. This can be an acute condition in which health deteriorates rapidly over a period of days. Symptoms include shortness of breath and blueness of the skin. Long term exposure to nitrates and nitrites at levels above the MCL can lead to diuresis, increased starchy deposits and hemorrhaging of the spleen (USEPA, 2001).

Because naturally occurring nitrate levels are typically less than 2 mg/l (or 20% the MCL), it is suspected that the nitrate levels detected are naturally occurring. (Wang, Strelakos, Jokela, 2000).

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

Volatile Organic Chemicals
The contaminant risk for volatile organic chemicals is very high with heavy equipment storage, motor vehicle rental facilities, jewelry manufacturing and lumber processing, and bulk petroleum storage presenting the most significant risk for volatile organic chemicals (See Chart 7 – Contaminant Risks for Volatile Organic Chemicals in Appendix D).

Recent sampling indicates that no volatile organic chemicals have been detected in the source waters.

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, cyanide and other inorganic chemicals is very high with jewelry manufacturing and lumber processing presenting the most significant risk to the drinking water source (See Chart 9 – Contaminant Risks for Heavy Metals, Cyanide, and Other Inorganic Chemicals in Appendix D).
Sampling on 10/16/98 indicates that very low levels of barium have been detected in source waters 0.0052 mg/l (less then 1% of the 2000 mg/l MCL) have been detected in the source waters.

Barium is a lustrous, machinable metal, which exists in nature in ores containing mixtures of elements. It is used in making a wide variety of electronic components, in metal alloys, bleaches, dyes, fireworks, ceramics and glass. In particular, it is used in well drilling operations where it is directly released into the ground (USEPA, 2002). It is suspected the barium detected is from natural sources.

Combining the contaminant risk with the natural susceptibility of the wells leads to an overall vulnerability to heavy metals and other inorganic chemical contamination of medium.

Synthetic Organic Chemicals
The contaminant risk for synthetic organic chemicals is high with lumber processing presenting the most significant risk. (See Chart 11 – Contaminant Risks for Synthetic Organic Chemicals in Appendix D, respectively).

Sampling of synthetic organic chemicals has not occurred.

Combining the contaminant risk with the natural susceptibility of the wells, the overall vulnerability to synthetic organic chemicals is medium.

Other Organic Chemicals
The contaminant risk for other organic chemicals is medium with heavy equipment storage and a bulk petroleum station presenting the most significant risk.

Sampling of other organic chemicals has not occurred. After combining the contaminant risk with the natural susceptibility of the wells, the overall vulnerability to other organic chemicals is high. (See Chart 13 – Contaminant Risks for Other Organic Chemicals in Appendix D, respectively).

SUMMARY

A *Source Water Assessment* has been completed for the source of public drinking water serving Country Lane Apartments. The overall vulnerability of this source to contamination is **Low** for bacteria/viruses, nitrates and nitrites, **Medium** for volatile organic chemicals, inorganic chemicals and synthetic chemicals and **High** for other organic chemicals. This assessment of contaminant risks can be used as a foundation for local voluntary protection efforts as well as a basis for the continuous efforts on the part of Country Lane Apartments to protect public health. It is anticipated that *Source Water Assessments* will be updated every five years to reflect any changes in the vulnerability and/or susceptibility of Country Lane Apartmentspublic drinking water source.

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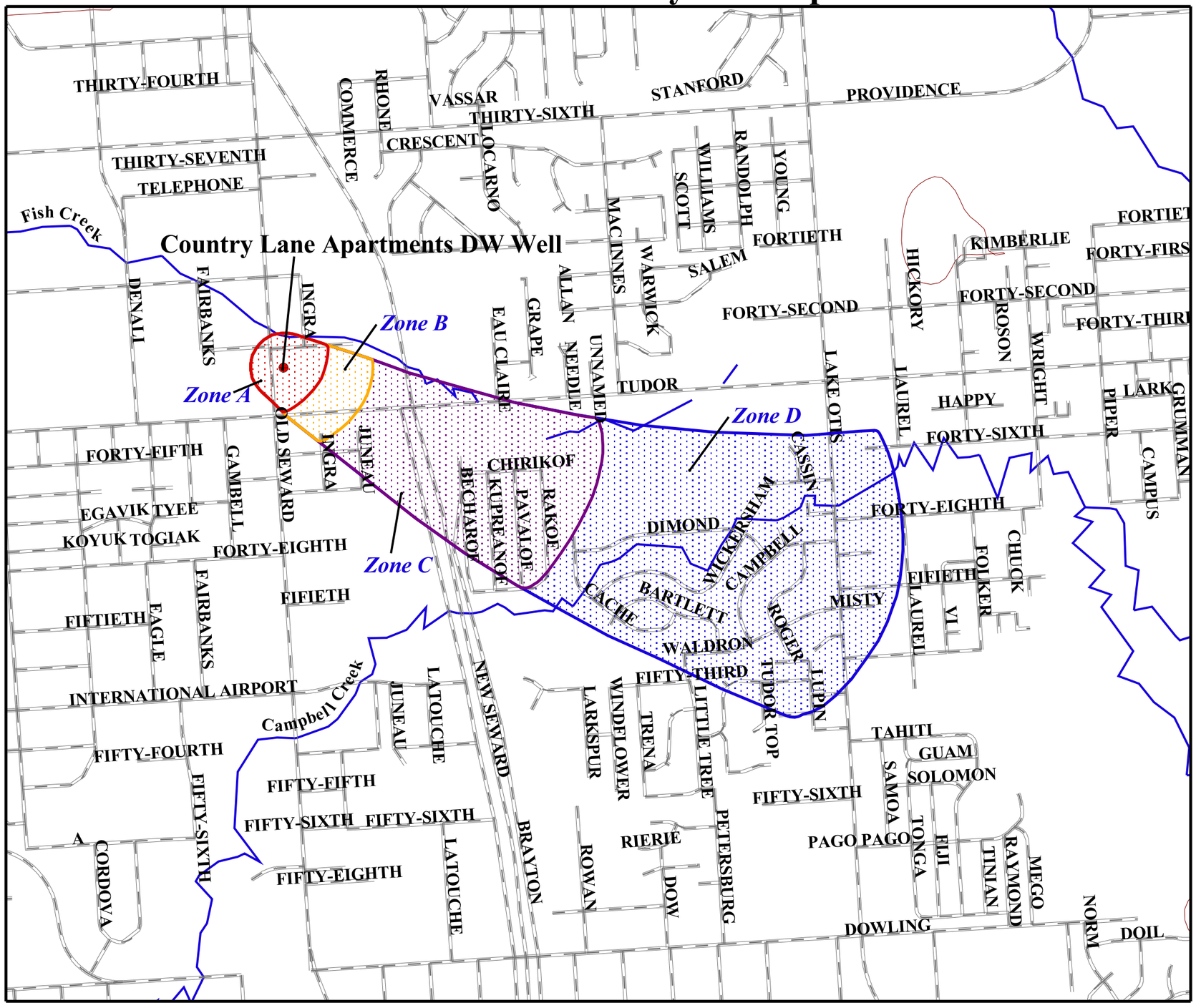
APPENDIX A

Country Lane Apartments
Drinking Water Protection Area Location Map
(Map 1)

Drinking Water Protection Area for Country Lane Apartments



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Legend

- Country Lane Apartments Well

Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less Than 2 Years Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time
- Anchorage Roads
- Anchorage Streams
- Elevation Contours

N
W E
S

Map 1

APPENDIX B

Contaminant Source Inventory and Risk Ranking for Country Lane Apartment (Tables 1-7)

Table 1

Contaminant Source Inventory for ***Country Lane Apartments***

PWSID 211164.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Map Number*	*Comments*
Florists	C12	C12-1	A	2	
Gasoline stations (without repair shop)	C15	C15-1	A	2	
Heavy equipment rental/storage	C18	C18-1	A	2	
Motor vehicle rental facilities - cars, trucks, ATV's, snow machines (with service department)	C30	C30-1	A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	3	
Jewelry manufacturing	I22	I22-1	A	2	
Lawns and gardens	R01	R1-1	A	3	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	2	
Motor vehicle/general storage yards/facilities	X27	X27-1	A	2	
Dog walking areas/foot trails	X46	X46-1	A	3	
Dog walking areas/foot trails	X46	X46-2	A	3	
Construction trade areas and materials	C09	C9-1	B	2	
Hardware stores	C17	C17-1	B	2	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	B	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	B	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	3	
Lumber processing and preservation	N04	N4-1	B	2	
Lawns and gardens	R01	R1-2	B	3	
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	2	
Dog walking areas/foot trails	X46	X46-3	B	3	
Dog walking areas/foot trails	X46	X46-4	B	3	
Construction trade areas and materials	C09	C9-2	C	4	
Heavy equipment rental/storage	C18	C18-2	C	4	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7-20	C	5	
Lawns and gardens	R01	R1-3	C	5	
Municipal or city parks (with green areas)	X04	X4-1	C	4	
Highways and roads, paved (cement or asphalt)	X20	X20-6-13	C	4	
Motor vehicle/general storage yards/facilities	X27	X27-1	C	4	
Electric substation	X37	X37-1	C	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	C	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	C	4	
Dog walking areas/foot trails	X46	X46-5-8	C	5	
Solid Waste Transfer Facility	D61	D61-1	D	6	
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-1	D	6	
Petroleum product bulk station/terminals	X11	X11-1	D	6	
Petroleum product bulk station/terminals	X11	X11-2	D	6	

Table 2

Contaminant Source Inventory and Risk Ranking for Country Lane Apartments Sources of Bacteria and Viruses

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Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Medium	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Medium	3	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low	2	
Dog walking areas/foot trails	X46	X46-1	A	Low	3	
Dog walking areas/foot trails	X46	X46-2	A	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	B	Medium	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Medium	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Medium	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Medium	3	
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	Low	2	
Dog walking areas/foot trails	X46	X46-3	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7-20	C	Medium	5	
Solid Waste Transfer Facility	D61	D61-1	D	Low	6	

Table 3

Contaminant Source Inventory and Risk Ranking for Country Lane Apartments Sources of Nitrates/Nitrites

PWSID 211164.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Florists	C12	C12-1	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Medium	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Medium	3	
Lawns and gardens	R01	R1-1	A	Low	3	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low	2	
Dog walking areas/foot trails	X46	X46-1	A	Low	3	
Dog walking areas/foot trails	X46	X46-2	A	Low	3	
Hardware stores	C17	C17-1	B	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	B	Medium	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Medium	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Medium	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Medium	3	
Lawns and gardens	R01	R1-2	B	Low	3	
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	Low	2	
Dog walking areas/foot trails	X46	X46-3	B	Low	3	
Dog walking areas/foot trails	X46	X46-4	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7-20	C	Medium	5	

Table 3 (continued)

Contaminant Source Inventory and Risk Ranking for Country Lane Apartments Sources of Nitrates/Nitrites

PWSID 211164.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Lawns and gardens	R01	R1-3	C	Low	5	
Highways and roads, paved (cement or asphalt)	X20	X20-6-13	C	Low	4	
Municipal or city parks (with green areas)	X04	X4-1	C	Medium	4	
Dog walking areas/foot trails	X46	X46-5-8	C	Low	5	
Solid Waste Transfer Facility	D61	D61-1	D	Low	6	

Table 4

Contaminant Source Inventory and Risk Ranking for Country Lane Apartments Sources of Volatile Organic Chemicals

PWSID 211164.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Gasoline stations (without repair shop)	C15	C15-1	A	High	2	
Heavy equipment rental/storage	C18	C18-1	A	Medium	2	
Motor vehicle rental facilities - cars, trucks, ATV's, snow machines (with service department)	C30	C30-1	A	Medium	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low	3	
Jewelry manufacturing	I22	I22-1	A	Medium	2	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low	2	
Motor vehicle/general storage yards/facilities	X27	X27-1	A	Low	2	
Hardware stores	C17	C17-1	B	Low	2	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	B	Medium	2	
Construction trade areas and materials	C09	C9-1	B	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Low	3	
Lumber processing and preservation	N04	N4-1	B	Medium	2	

Table 4 (continued)

Contaminant Source Inventory and Risk Ranking for Country Lane Apartments
Sources of Volatile Organic Chemicals

PWSID 211164.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	Low	2	
Heavy equipment rental/storage	C18	C18-2	C	Medium	4	
Construction trade areas and materials	C09	C9-2	C	Low	4	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7-20	C	Low	5	
Highways and roads, paved (cement or asphalt)	X20	X20-6-13	C	Low	4	
Motor vehicle/general storage yards/facilities	X27	X27-1	C	Low	4	
Electric substation	X37	X37-1	C	Low	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	C	Low	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	C	Low	4	
Solid Waste Transfer Facility	D61	D61-1	D	Low	6	
Petroleum product bulk station/terminals	X11	X11-1	D	Very High	6	
Petroleum product bulk station/terminals	X11	X11-2	D	Very High	6	

Table 5

Contaminant Source Inventory and Risk Ranking for Country Lane Apartments

Sources of Heavy Metals, Cyanide and Other Inorganic Chemicals

PWSID 211164.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Heavy equipment rental/storage	C18	C18-1	A	Low	2	
Motor vehicle rental facilities - cars, trucks, ATV's, snow machines (with service department)	C30	C30-1	A	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low	3	
Jewelry manufacturing	I22	I22-1	A	High	2	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low	2	
Hardware stores	C17	C17-1	B	Low	2	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	B	Low	2	
Construction trade areas and materials	C09	C9-1	B	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Low	3	
Lumber processing and preservation	N04	N4-1	B	Medium	2	
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	Low	2	
Heavy equipment rental/storage	C18	C18-2	C	Low	4	

Contaminant Source Inventory and Risk Ranking for Country Lane Apartments

Sources of Heavy Metals, Cyanide and Other Inorganic Chemicals

Contaminant Source Type	***Contaminant Source ID***	***CS ID tag***	***Zone***	***Risk Ranking for Analysis***	***Map Number***	***Comments***
Construction trade areas and materials	C09	C9-2	C	Low	4	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7-20	C	Low	5	
Highways and roads, paved (cement or asphalt)	X20	X20-6-13	C	Low	4	
Electric substation	X37	X37-1	C	Low	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	C	Low	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	C	Low	4	
Solid Waste Transfer Facility	D61	D61-1	D	Low	6	
Petroleum product bulk station/terminals	X11	X11-1	D	Low	6	
Petroleum product bulk station/terminals	X11	X11-2	D	Low	6	

Table 6

Contaminant Source Inventory and Risk Ranking for Country Lane Apartments Sources of Synthetic Organic Chemicals

PWSID 211164.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low	3	
Lawns and gardens	R01	R1-1	A	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Low	3	
Lumber processing and preservation	N04	N4-1	B	High	2	
Lawns and gardens	R01	R1-2	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7-20	C	Low	5	
Lawns and gardens	R01	R1-3	C	Low	5	
Municipal or city parks (with green areas)	X04	X4-1	C	Low	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	C	Low	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	C	Low	4	
Solid Waste Transfer Facility	D61	D61-1	D	Low	6	
Petroleum product bulk station/terminals	X11	X11-1	D	Low	6	
Petroleum product bulk station/terminals	X11	X11-2	D	Low	6	

Table 7

Contaminant Source Inventory and Risk Ranking for Country Lane Apartments Sources of Other Organic Chemicals

PWSID 211164.001

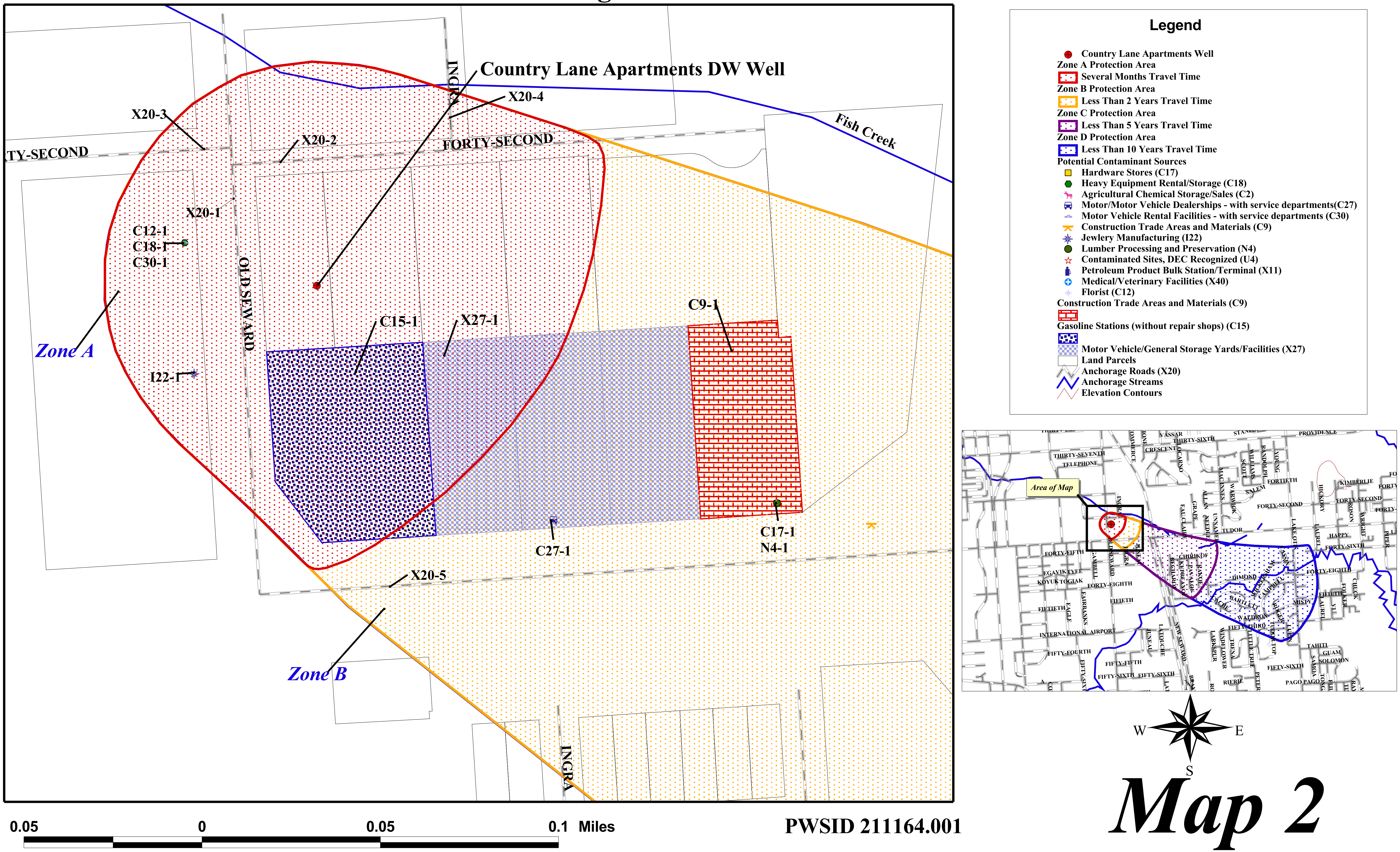
Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Gasoline stations (without repair shop)	C15	C15-1	A	Low	2	
Heavy equipment rental/storage	C18	C18-1	A	Medium	2	
Motor vehicle rental facilities - cars, trucks, ATV's, snow machines (with service department)	C30	C30-1	A	Medium	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low	3	
Jewelry manufacturing	I22	I22-1	A	Medium	2	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low	2	
Motor vehicle/general storage yards/facilities	X27	X27-1	A	Low	2	
Hardware stores	C17	C17-1	B	Low	2	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	B	Medium	2	
Construction trade areas and materials	C09	C9-1	B	Low	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Low	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Low	3	
Lumber processing and preservation	N04	N4-1	B	High	2	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Map Number*	*Comments*
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	Low	2	
Heavy equipment rental/storage	C18	C18-2	C	Medium	4	
Construction trade areas and materials	C09	C9-2	C	Low	4	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7-20	C	Low	5	
Highways and roads, paved (cement or asphalt)	X20	X20-6-13	C	Low	4	
Motor vehicle/general storage yards/facilities	X27	X27-1	C	Low	4	
Electric substation	X37	X37-1	C	High	4	
Solid Waste Transfer Facility	D61	D61-1	D	Low	6	
Petroleum product bulk station/terminals	X11	X11-1	D	High	6	
Petroleum product bulk station/terminals	X11	X11-2	D	High	6	

APPENDIX C

Country Lane Apartments
Drinking Water Protection Area
and Potential and Existing Contaminant Sources
(Maps 2 - 6)

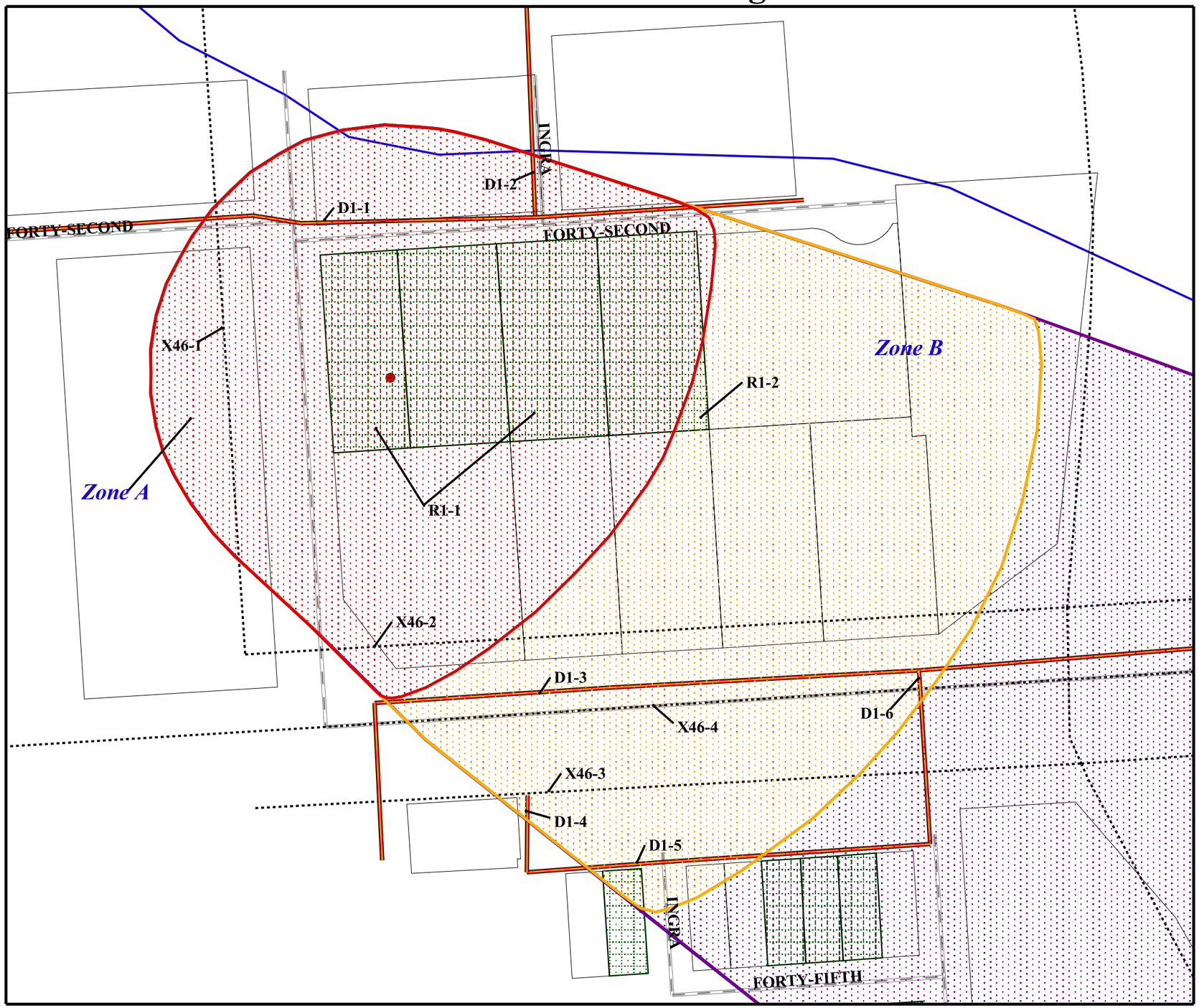
Country Lane Apartments Drinking Water Protection Area and Potential & Existing Contaminant Sources



Map 2

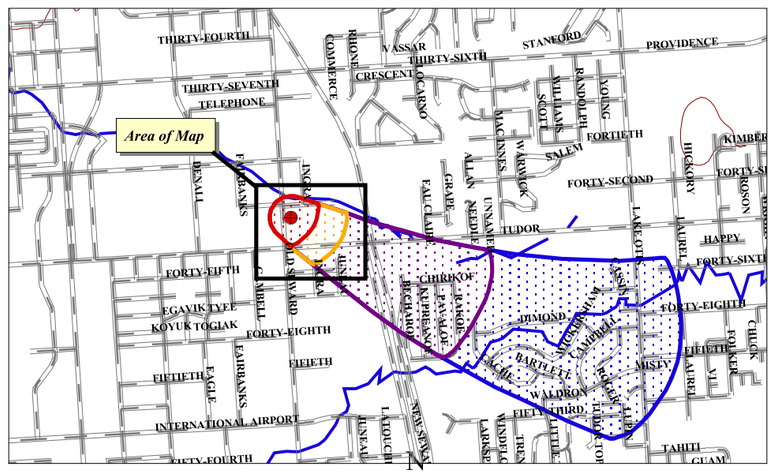
PWSID 211164.001

Country Lane Apartments Drinking Water Protection Area and Potential & Existing Contaminant Sources



Legend

- Country Lane Apartments Well
- Zone A Protection Area
- Several Months Travel Time
- Zone B Protection Area
- Less Than 2 Years Travel Time
- Zone C Protection Area
- Less Than 5 Years Travel Time
- Zone D Protection Area
- Less Than 10 Years Travel Time
- Land Parcels
- Lawns and Gardens (R1)
- Sewer Lines (D1)
- Trails (X46)
- Anchorage Roads (X20)
- Anchorage Streams
- Elevation Contours



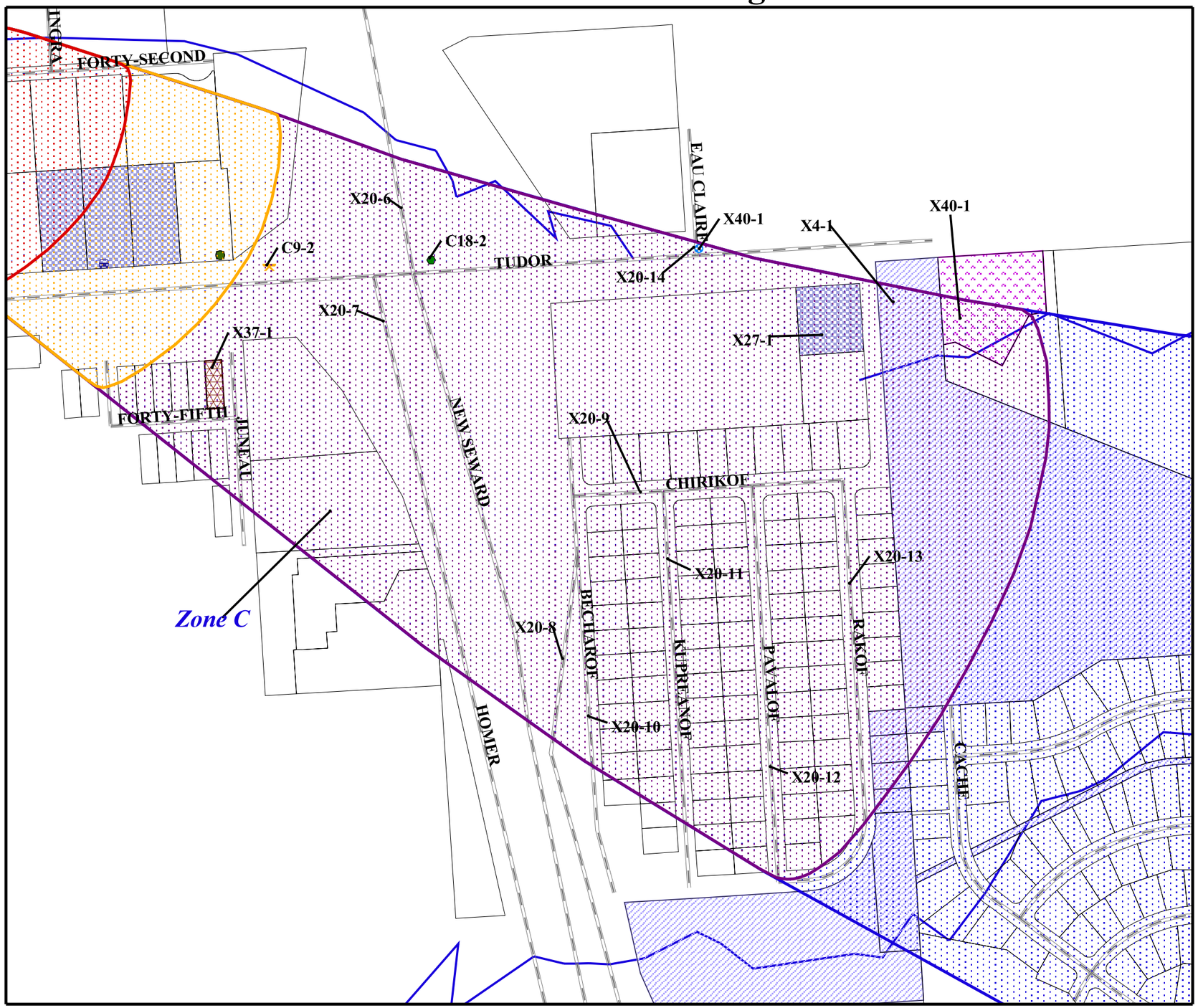
W E S

0.05 0 0.05 0.1 Miles

PWSID 211164

Map 3

Country Lane Apartments Drinking Water Protection Area and Potential & Existing Contaminant Sources



0.1 0 0.1 0.2 Miles

PWSID 211164

Legend

- Country Lane Apartments Well

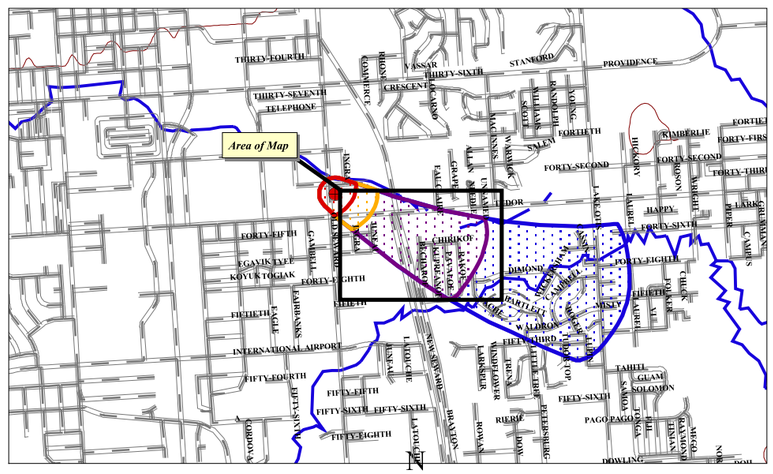
Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less Than 2 Years Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time

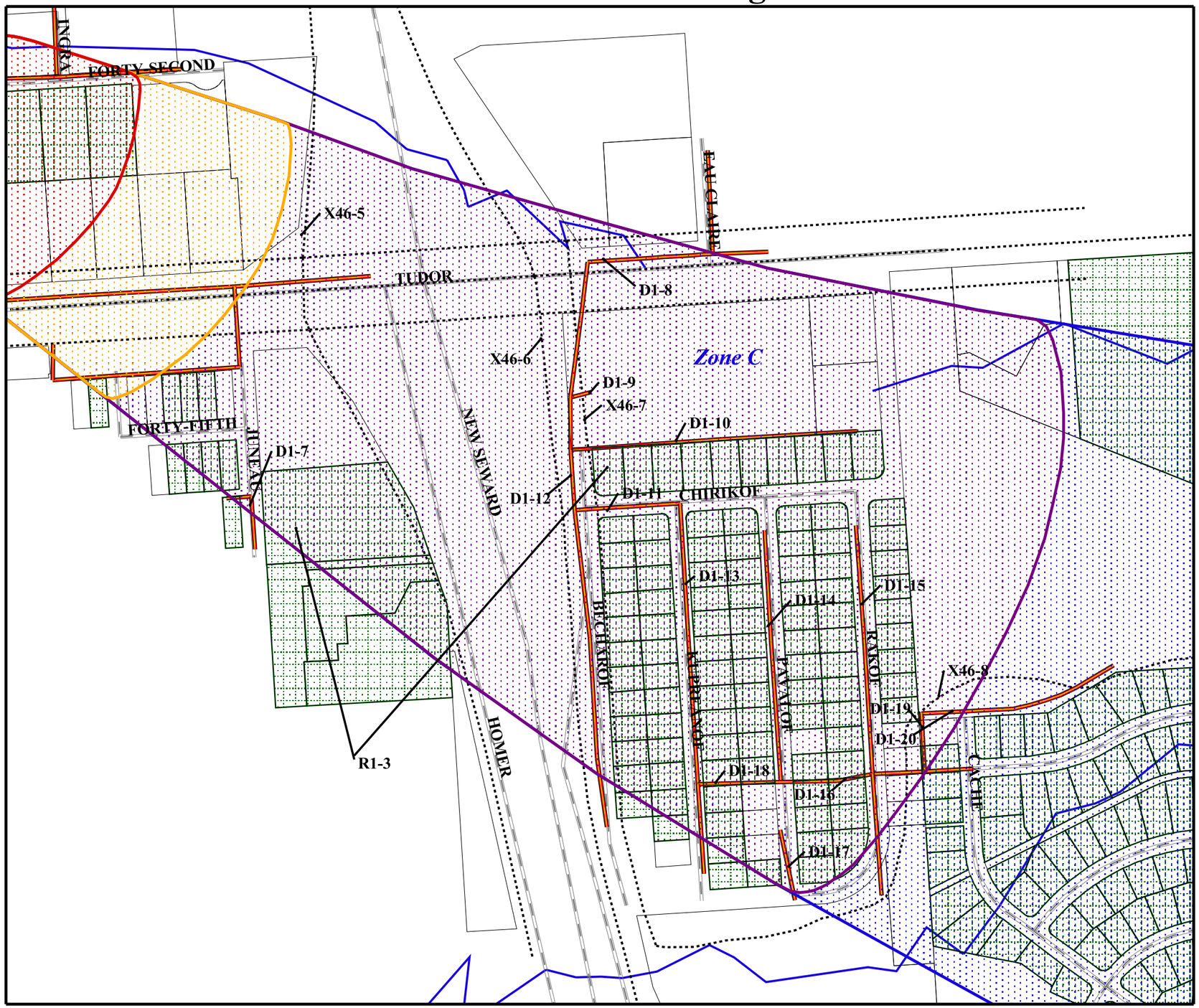
Potential Contaminant Sources
- Hardware Stores (C17)
- Heavy Equipment Rental/Storage (C18)
- Agricultural Chemical Storage/Sales (C2)
- Motor/Motor Vehicle Dealerships - with service departments(C27)
- Motor Vehicle Rental Facilities - with service departments (C30)
- Construction Trade Areas and Materials (C9)
- Jewlery Manufacturing (I22)
- Lumber Processing and Preservation (N4)
- Contaminated Sites, DEC Recognized (U4)
- Petroleum Product Bulk Station/Terminal (X11)
- Medical/Veterinary Facilities (X40)
- Florist (C12)
- Land Parcels
- Anchorage Parks (X4)
- Electric Substations (X37)
- Medical/Vetrinary Facilities (X40)
- Motor Vehicle/General Storage Yards/Facilities (X27)
- Anchorage Roads (X20)
- Anchorage Streams
- Elevation Contours



N
W E
S

Map 4

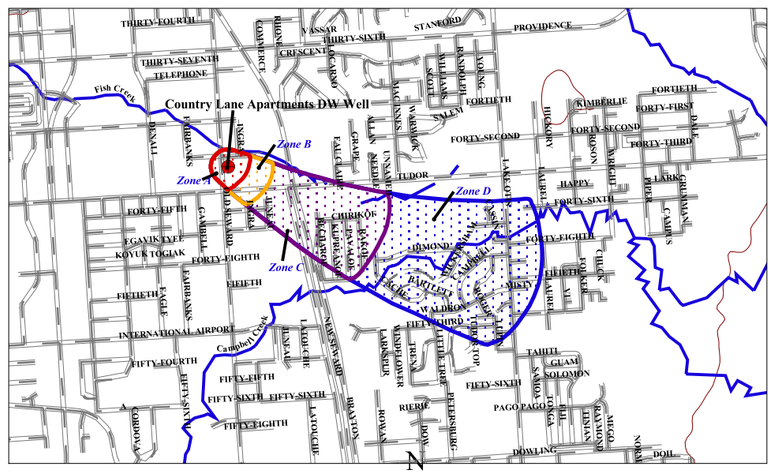
Country Lane Apartments Drinking Water Protection Area and Potential & Existing Contaminant Sources



PWSID 211164

Legend

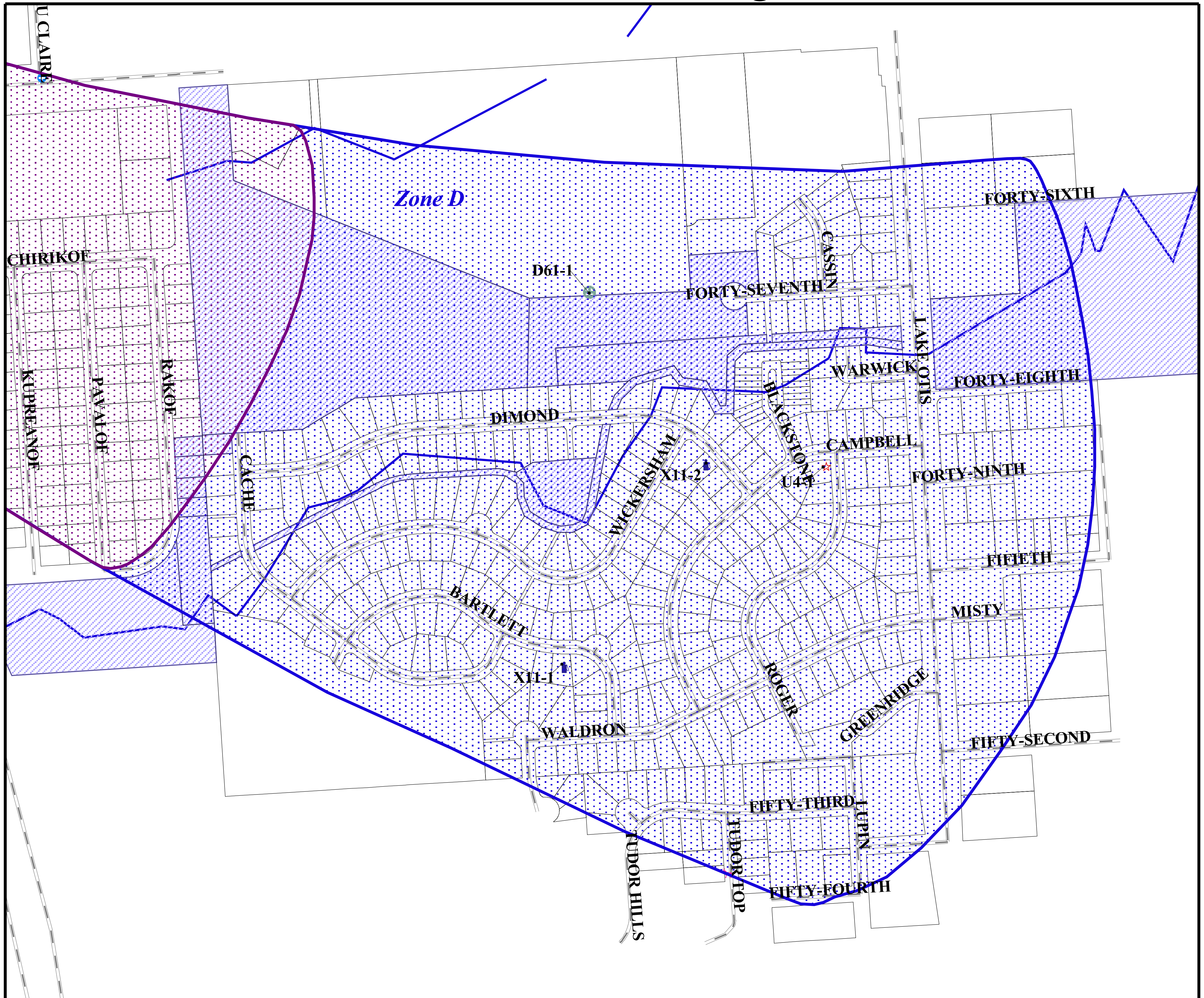
- Country Lane Apartments Well
- Zone A Protection Area
  - Several Months Travel Time
- Zone B Protection Area
  - Less Than 2 Years Travel Time
- Zone C Protection Area
  - Less Than 5 Years Travel Time
- Zone D Protection Area
  - Less Than 10 Years Travel Time
- Land Parcels
- Lawns and Gardens (R1)
- Sewer Lines (D1)
- Trails (X46)
- Anchorage Roads (X20)
- Anchorage Streams
- Elevation Contours



N
W E
S

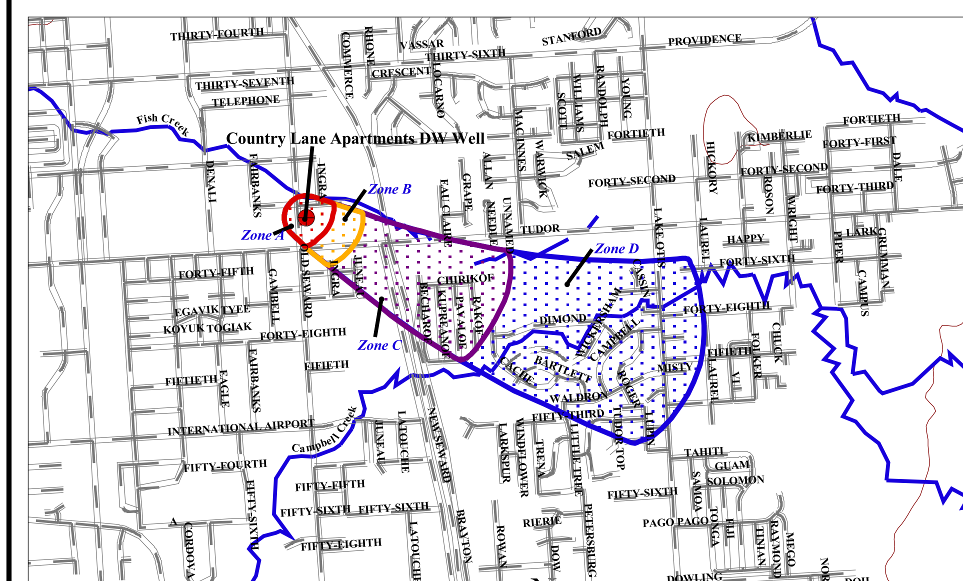
Map 5

Country Lane Apartments Drinking Water Protection Area and Potential & Existing Contaminant Sources



Legend

- Country Lane Apartments Well
- Zone A Protection Area
  - Several Months Travel Time
- Zone B Protection Area
  - Less Than 2 Years Travel Time
- Zone C Protection Area
  - Less Than 5 Years Travel Time
- Zone D Protection Area
  - Less Than 10 Years Travel Time
- Potential Contaminant Sources
  - Hardware Stores (C17)
  - Heavy Equipment Rental/Storage (C18)
  - Agricultural Chemical Storage/Sales (C2)
  - Motor/Motor Vehicle Dealerships - with service departments(C27)
  - Motor Vehicle Rental Facilities - with service departments (C30)
  - Construction Trade Areas and Materials (C9)
  - Jewlery Manufacturing (I22)
  - Lumber Processing and Preservation (N4)
  - Contaminated Sites, DEC Recognized (U4)
  - Petroleum Product Bulk Station/Terminal (X11)
  - Medical/Veterinary Facilities (X40)
  - Florist (C12)
  - Solid Waste Transfer Facility (D61)
- Land Parcels
- Anchorage Parks (X4)
- Anchorage Roads (X20)
- Anchorage Streams
- Elevation Contours



N
W E
S

0.1 0 0.1 0.2 Miles

PWSID 211164

Map 6

APPENDIX D

Vulnerability Analysis for Country Lane Apartments

(Charts 1-14)

Chart 1. Susceptibility of the wellhead - Country Lane Apartments

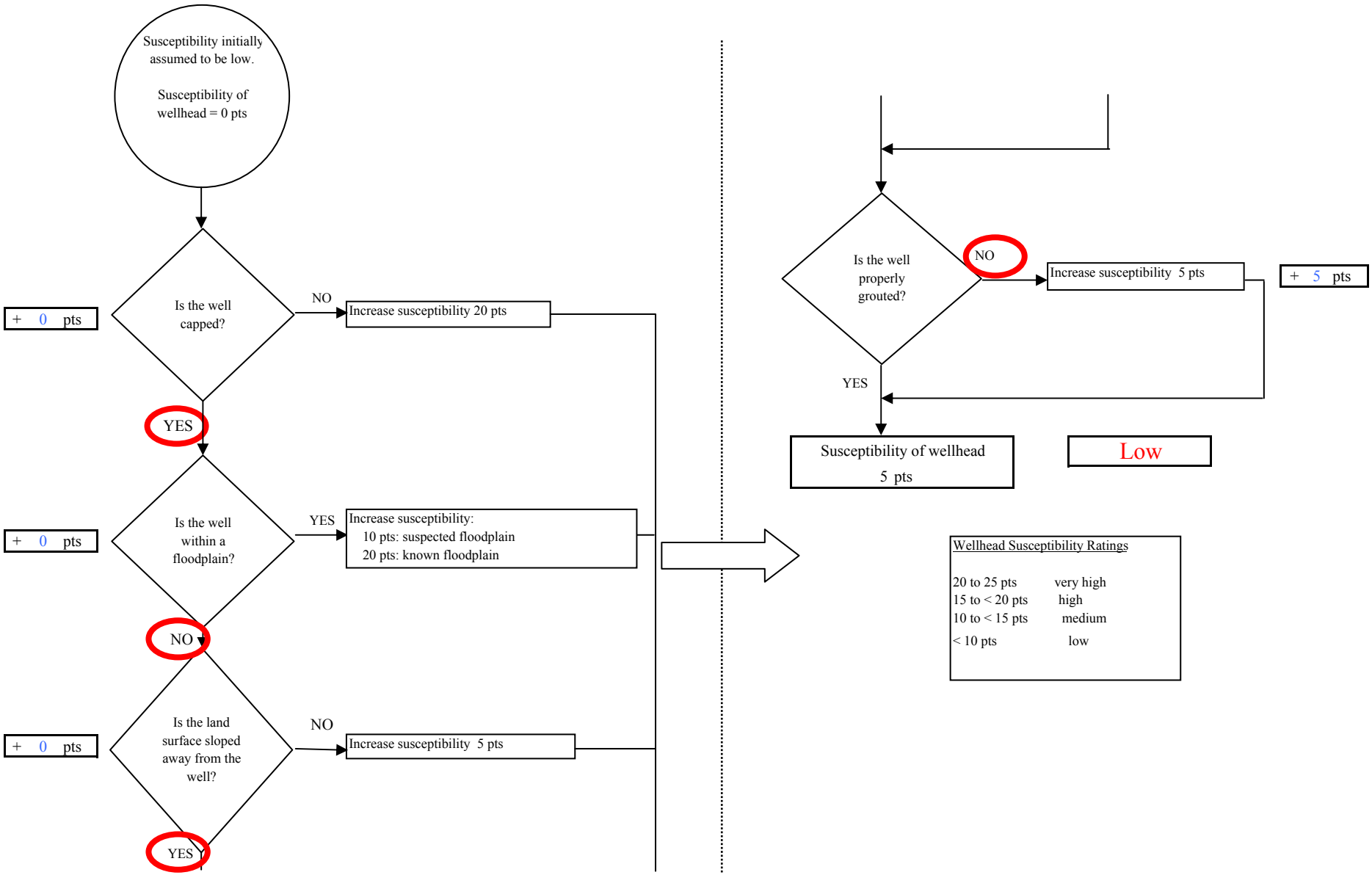


Chart 2. Susceptibility of the aquifer - Country Lane Apartments

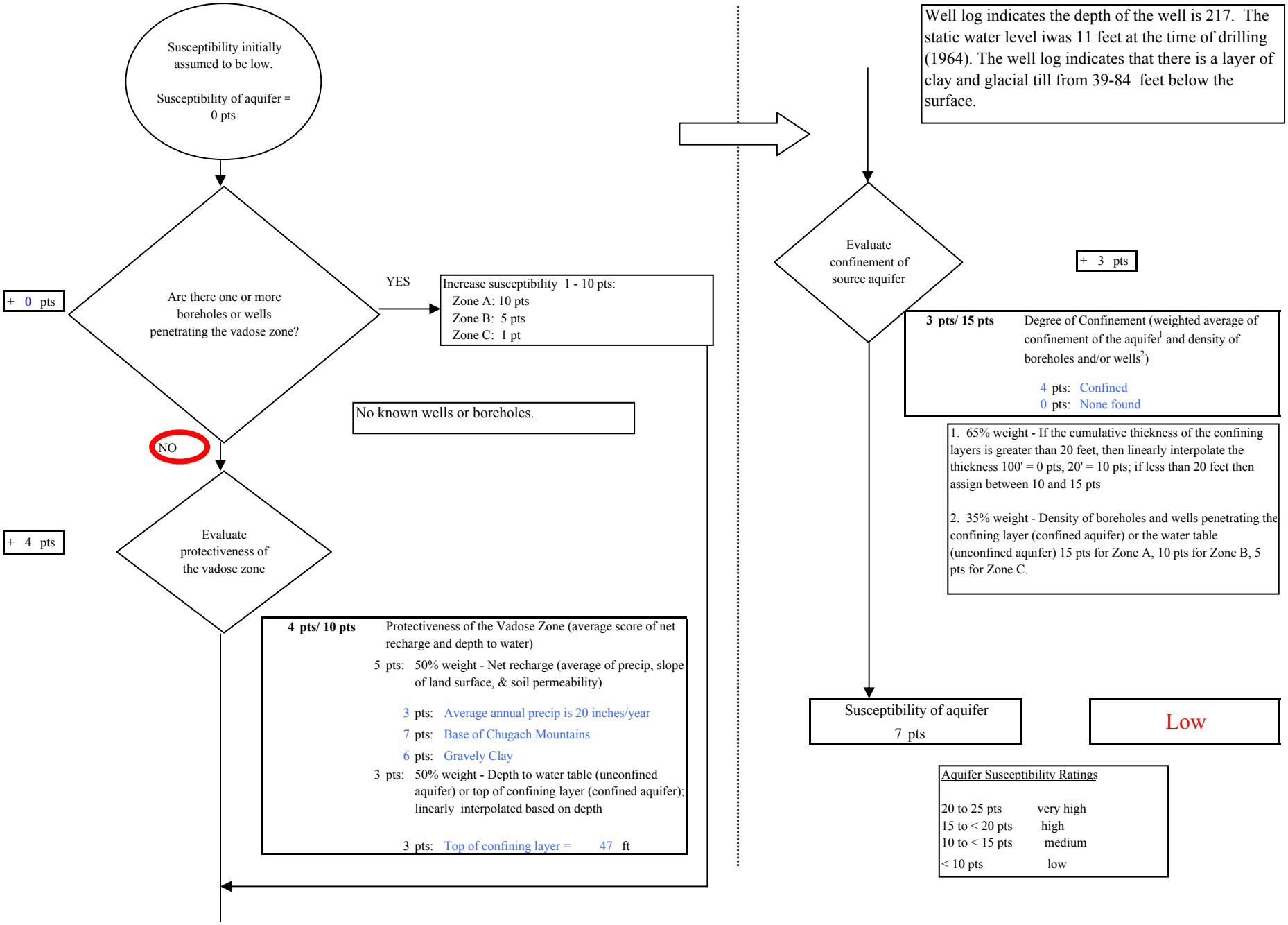
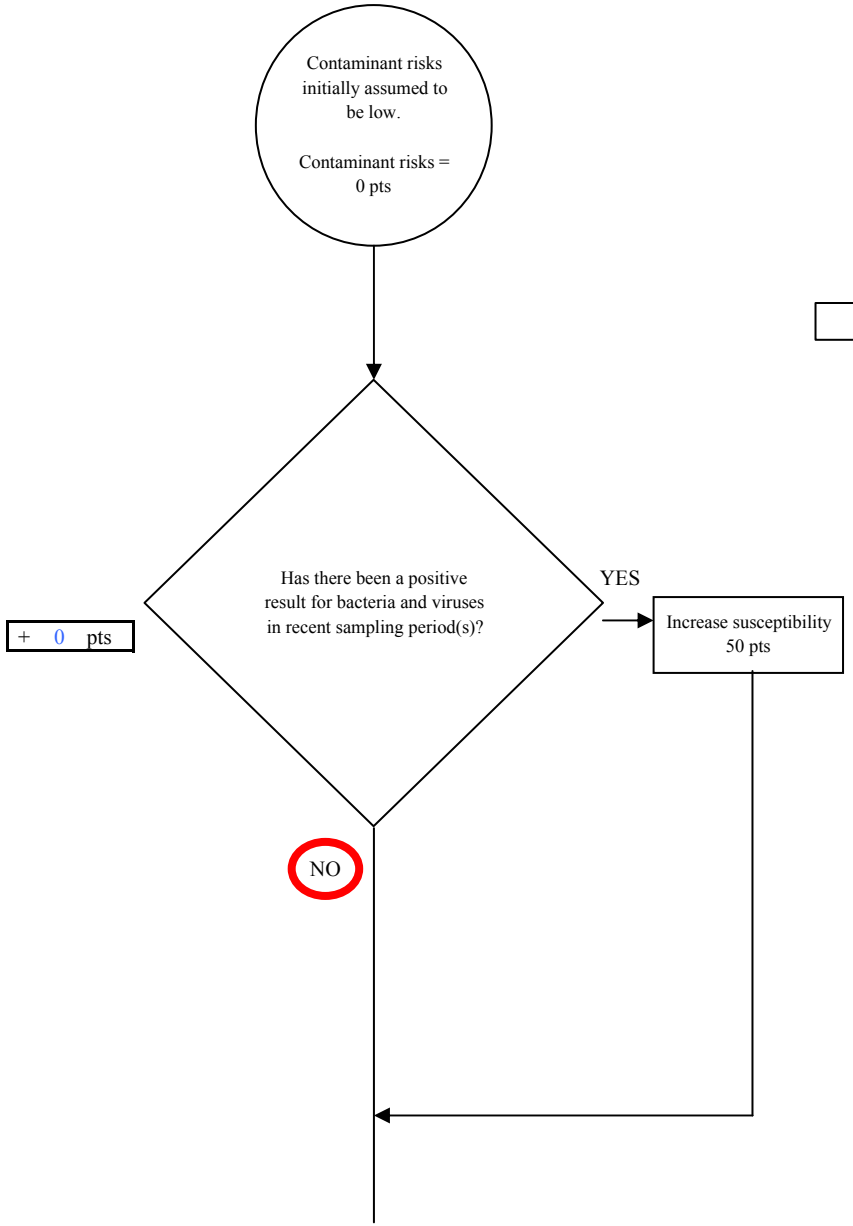
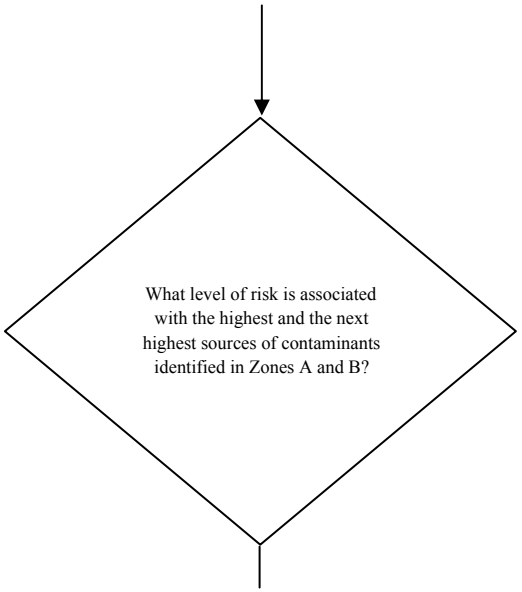


Chart 3. Contaminant risks for Country Lane Apartments - Bacteria & Viruses





+ 20 pts

Risk Rankings for Contaminant Sources Identified in Zones A and B

	Zone A	Zone B	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	1	0	1
Low(s)	3	4	7

	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.

Chart 3. Contaminant risks for Country Lane Apartments - Bacteria & Viruses

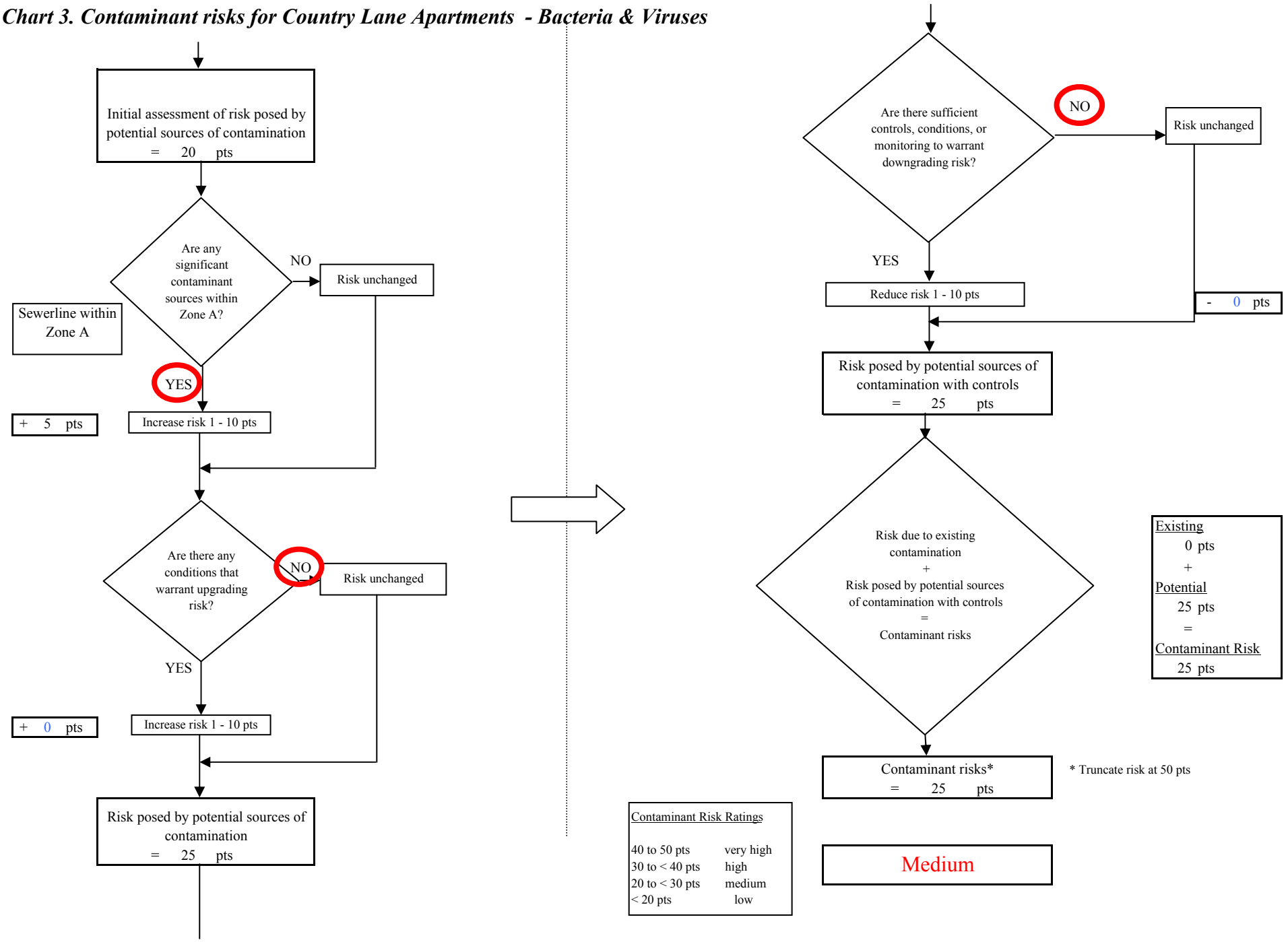


Chart 4. Vulnerability analysis for Country Lane Apartments - Bacteria & Viruses

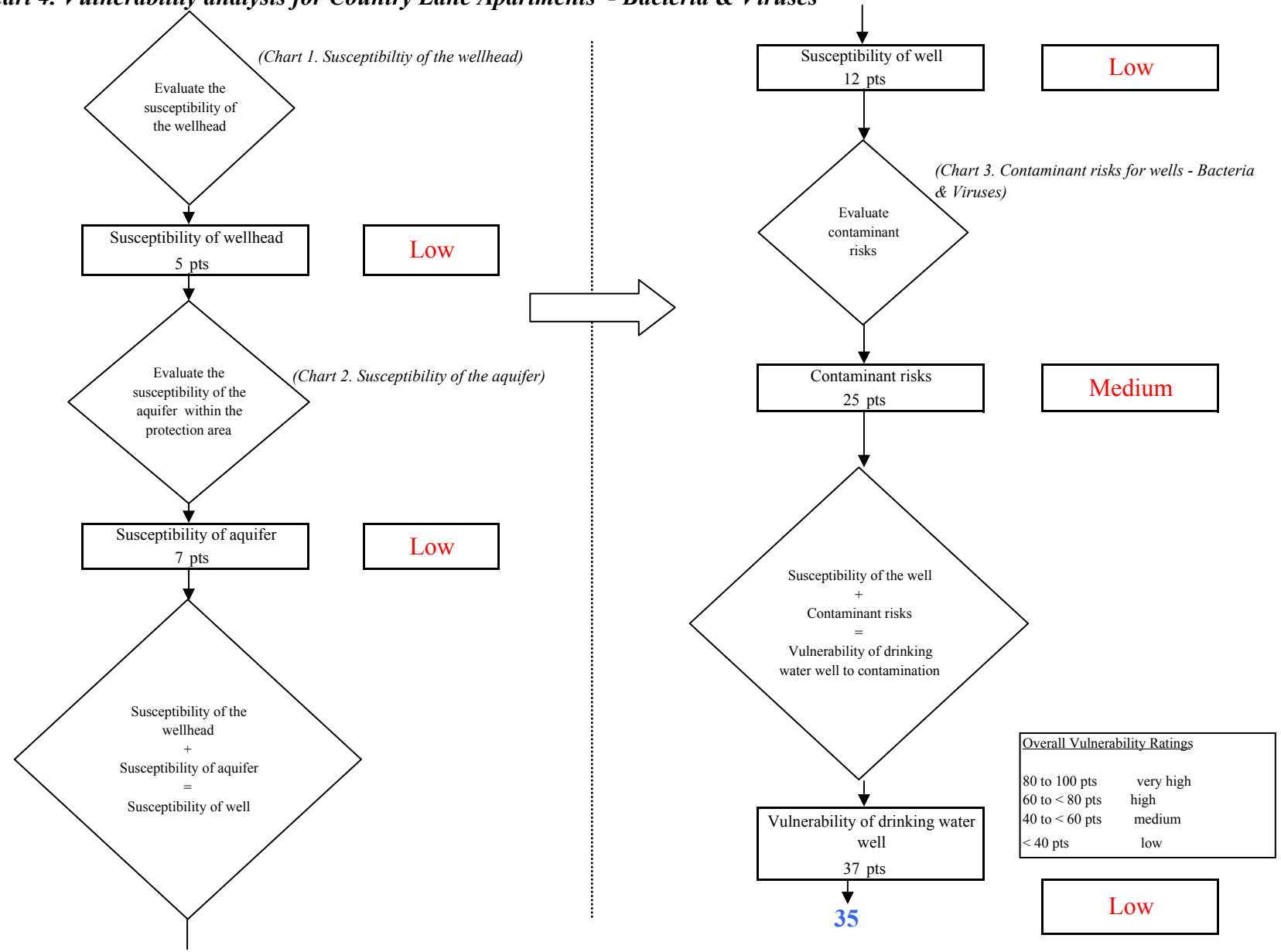


Chart 5. Contaminant risks for Country Lane Apartments - Nitrates and Nitrites

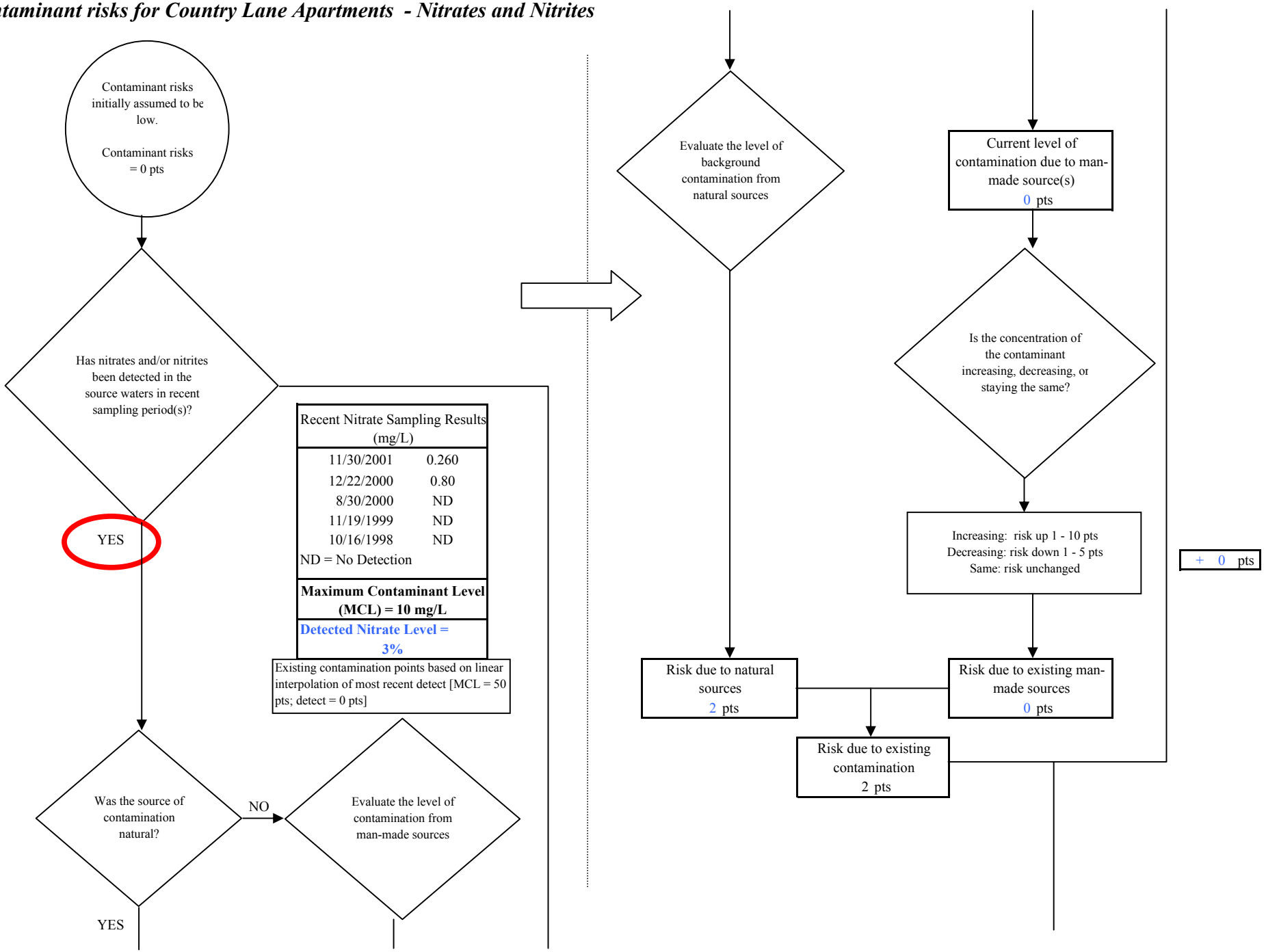


Chart 5. Contaminant risks for Country Lane Apartments - Nitrates and Nitrites

+ 20 pts

What level of risk is associated with the highest and the next highest risk sources(s) of contaminants identified in Zones A, B and C?

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)	1	1	2
Low(s)	5	8	13

	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

Is the source aquifer fractured rock or karst?

YES

NO

Are all of the higher risk sources beyond Zones A and B?

NO

Risk unchanged

YES

Decrease risk 1 - 10 pts

- 0 pts

Are any significant sources within Zone A?

NO

Risk unchanged

YES

Increase risk 1 - 10 pts

+ 5 pts

Chart 5. Contaminant risks for Country Lane Apartments - Nitrates and Nitrites

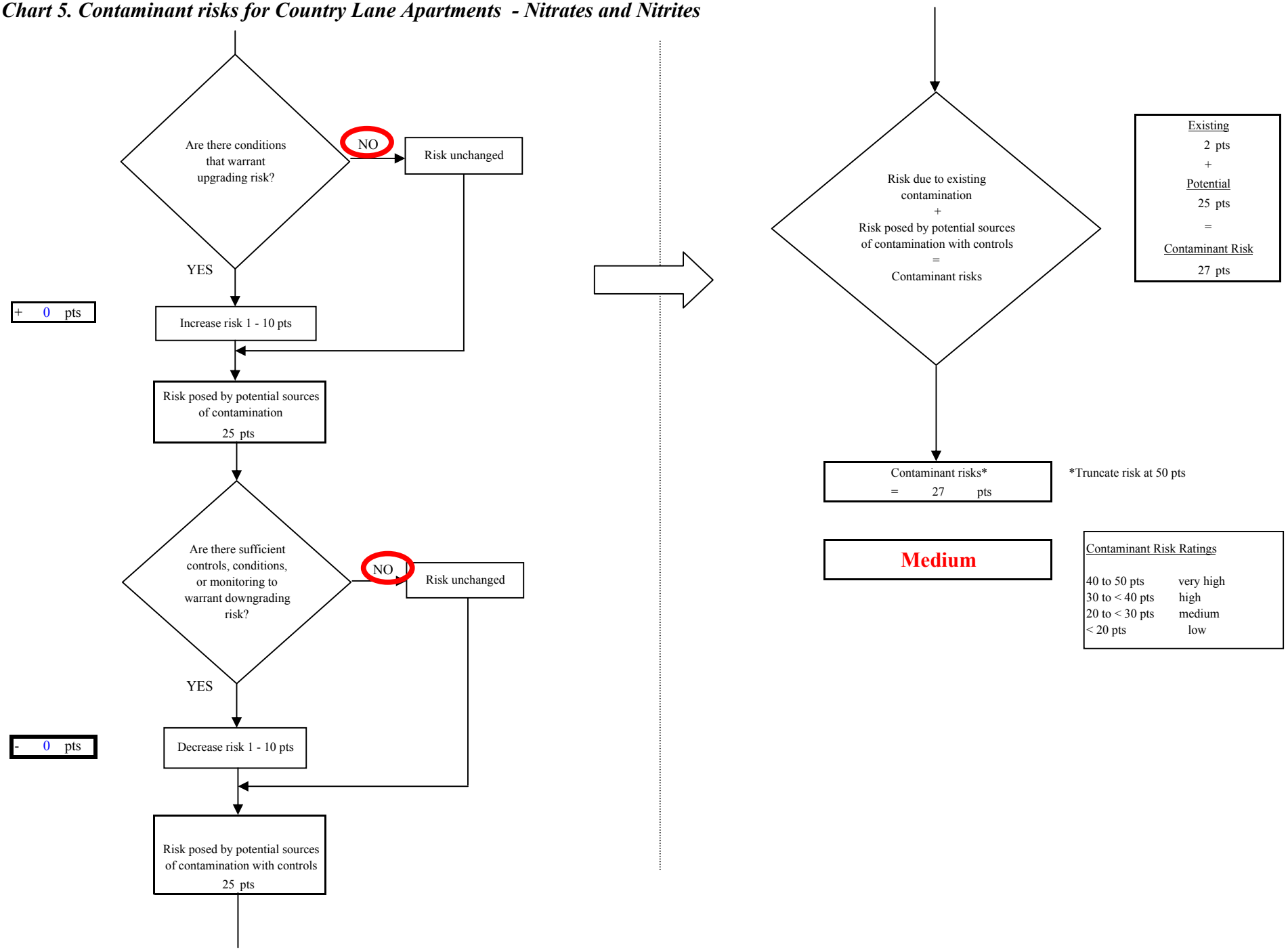


Chart 6. Vulnerability analysis for Country Lane Apartments - Nitrates and Nitrites

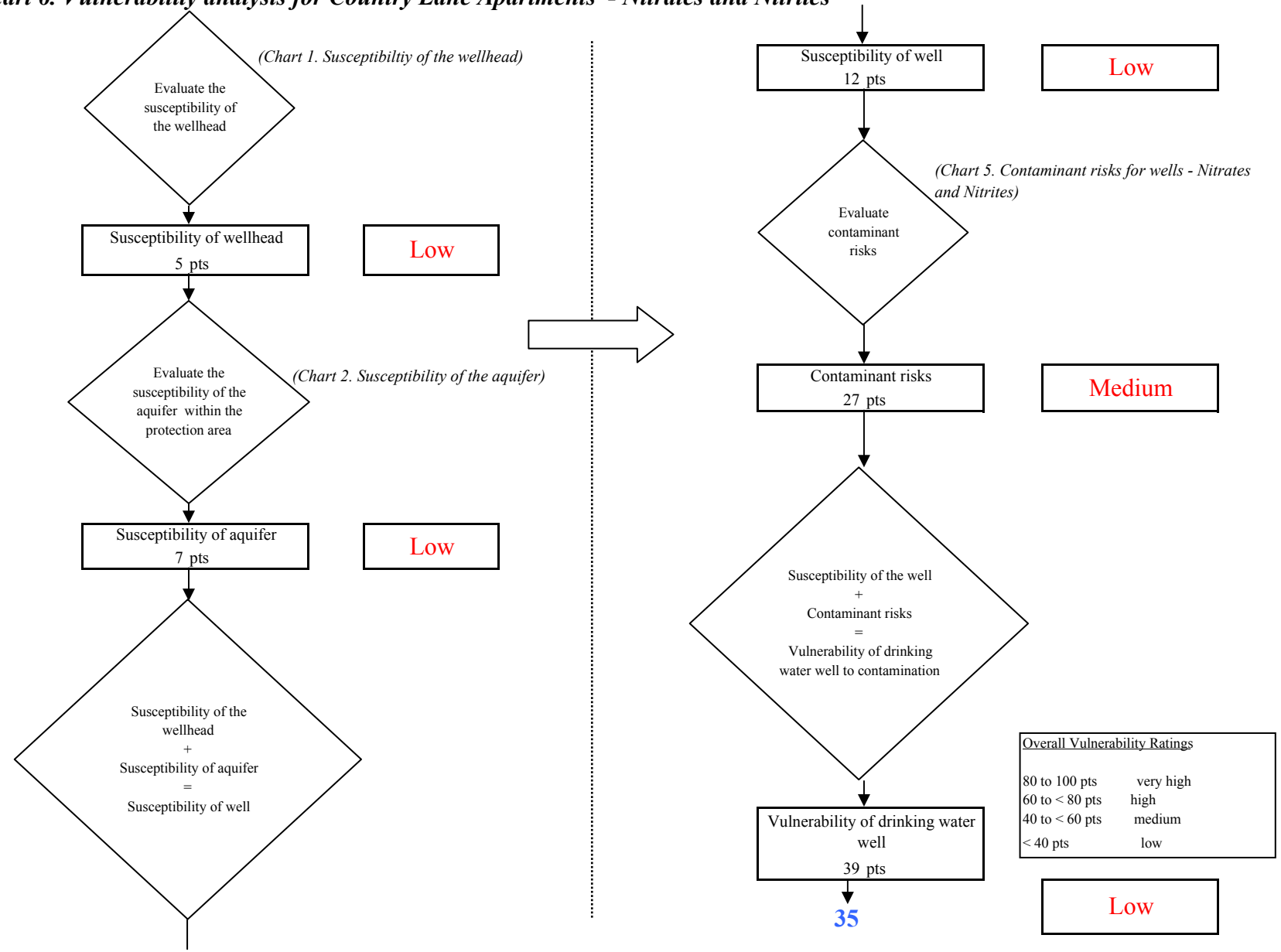


Chart 7. Contaminant risks for Country Lane Apartments - Volatile Organic Chemicals

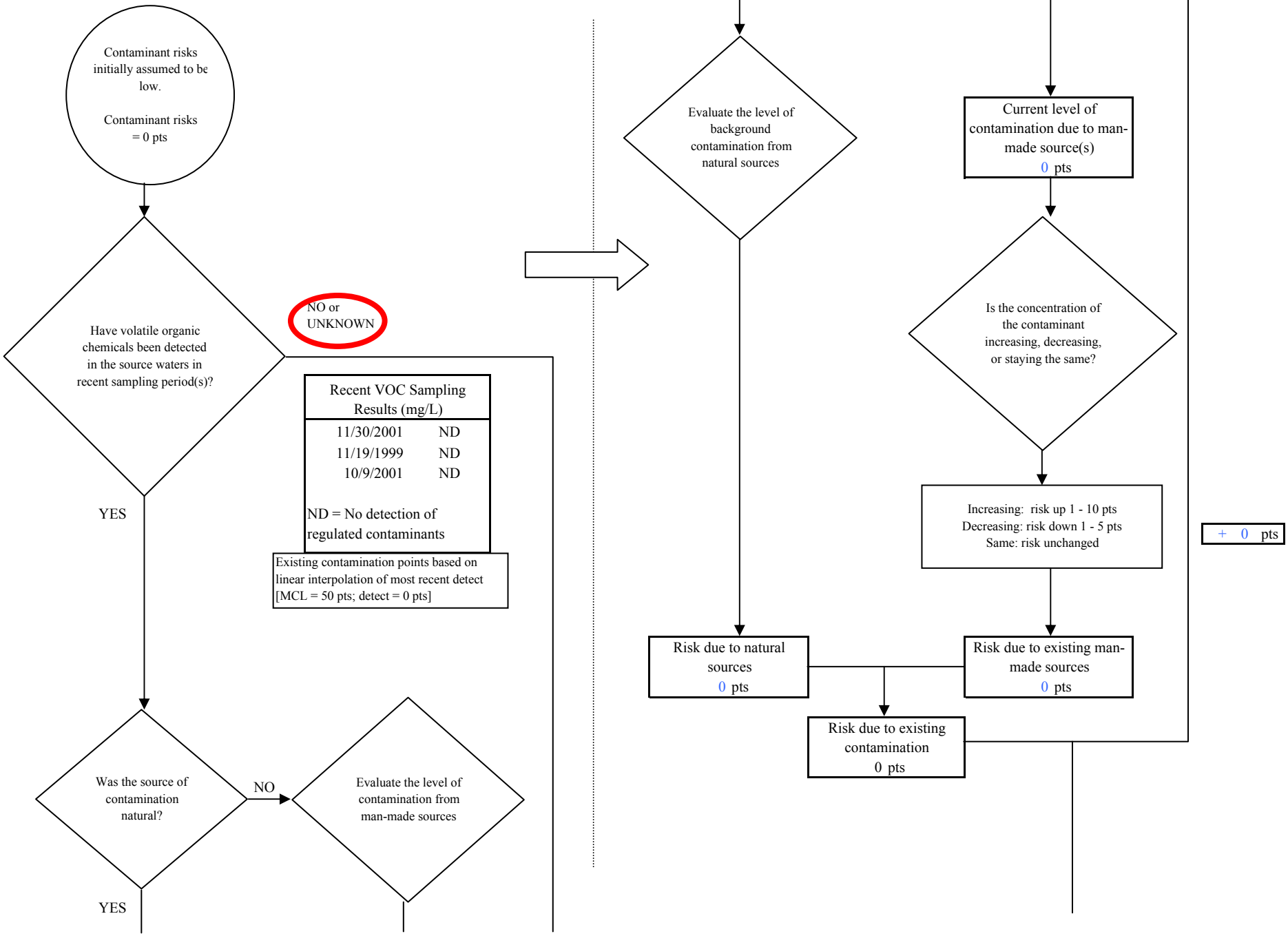


Chart 7. Contaminant risks for Country Lane Apartments - Volatile Organic Chemicals

+ 35 pts

What level of risk is associated with the highest and the next highest risk sources(s) of contaminants identified in Zones A, B and C?

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)	3	3	6
Low(s)	3	9	12

	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.

Initial assessment of risk posed by potential sources of contamination = 35 pts

Is the source aquifer fractured rock or karst?

YES

NO

Are all of the higher risk sources beyond Zones A and B?

NO

Risk unchanged

YES

Decrease risk 1 - 10 pts

- 0 pts

Are any significant sources within Zone A?

NO

Risk unchanged

YES

Increase risk 1 - 10 pts

+ 10 pts

Chart 7. Contaminant risks for Country Lane Apartments - Volatile Organic Chemicals

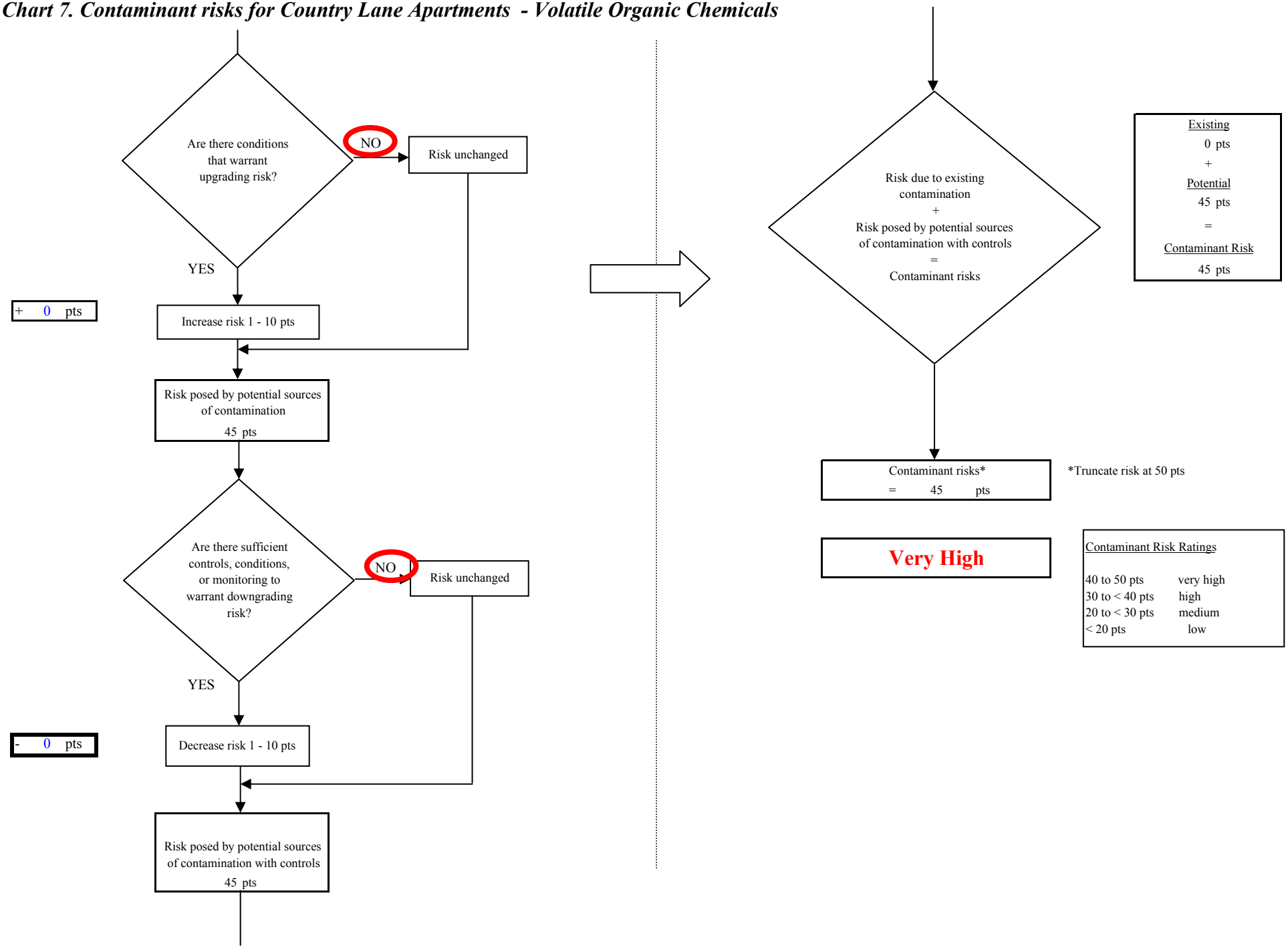


Chart 8. Vulnerability analysis for Country Lane Apartments - Volatile Organic Chemicals

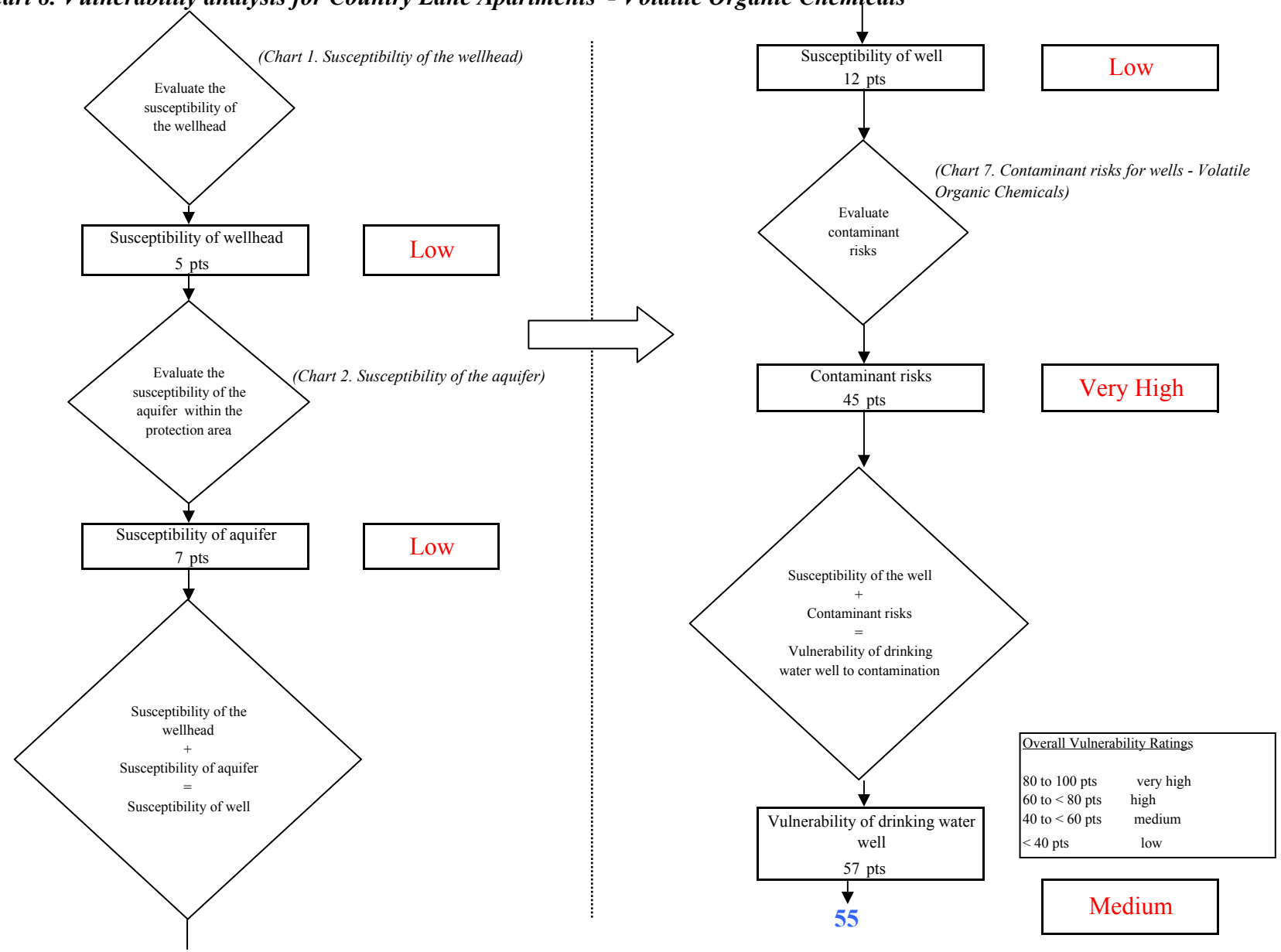


Chart 9. Contaminant risks for Country Lane Apartments - Heavy Metals, Cyanide and Other Inorganic Chemicals

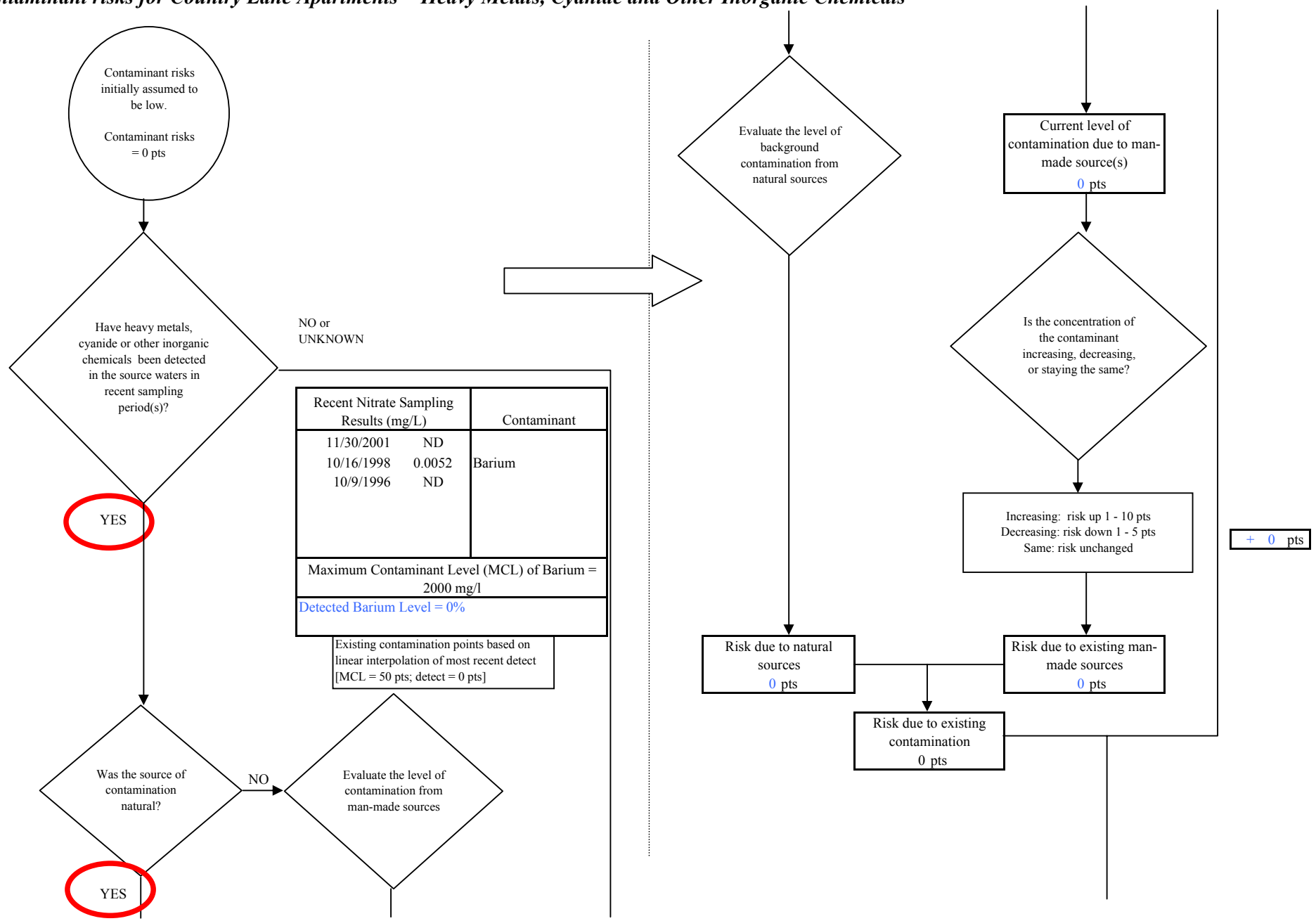


Chart 9. Contaminant risks for Country Lane Apartments - Heavy Metals, Cyanide and Other Inorganic Chemicals

+ 30 pts

What level of risk is associated with the highest and the next highest risk sources(s) of contaminants identified in Zones A, B and C?

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	1	1
Low(s)	4	10	14

	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 30

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.

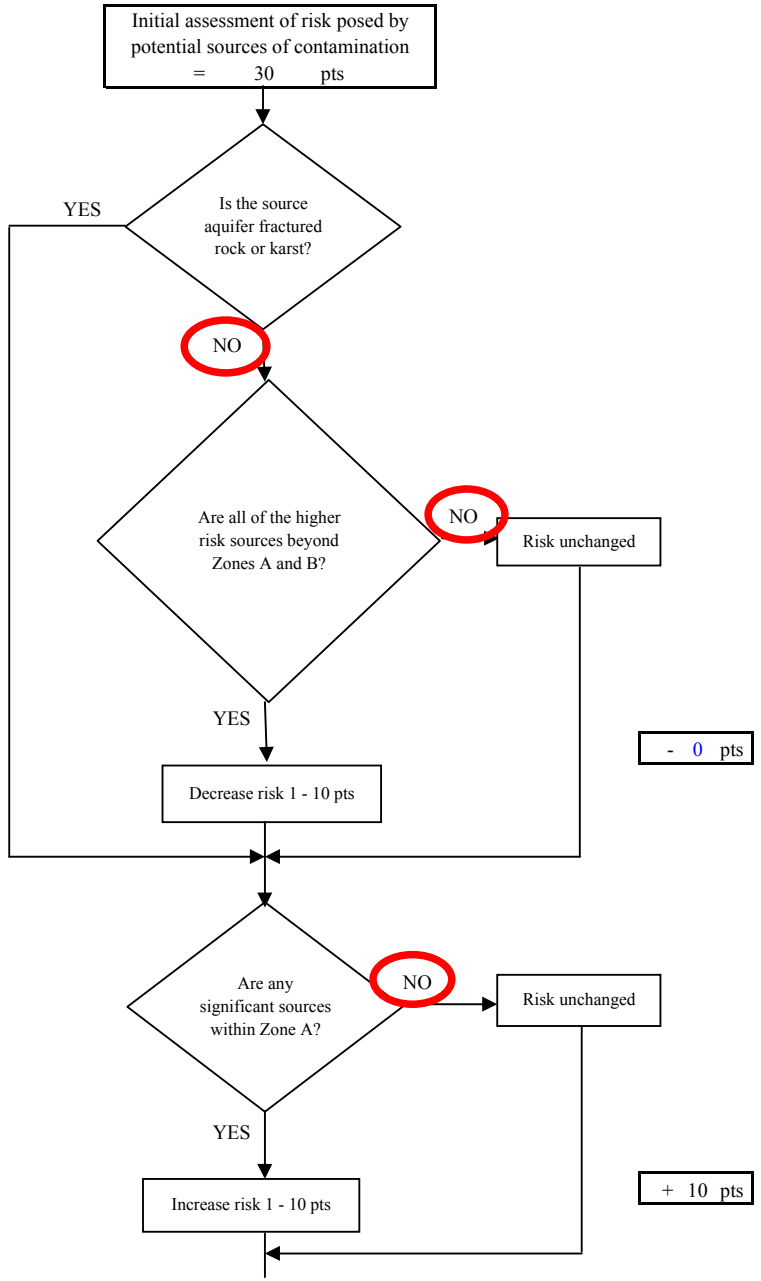


Chart 9. Contaminant risks for Country Lane Apartments - Heavy Metals, Cyanide and Other Inorganic Chemicals

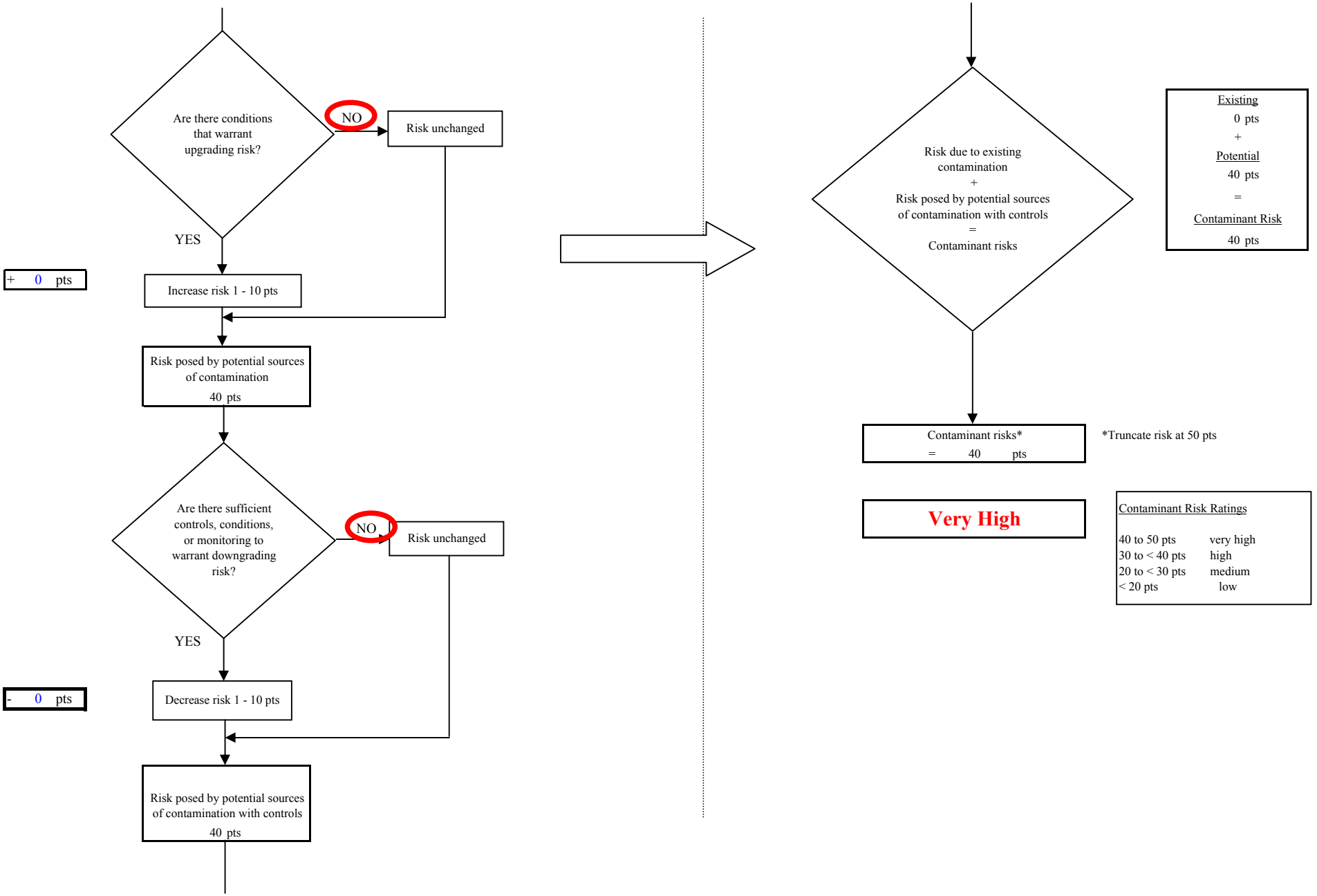


Chart 10. Vulnerability analysis for Country Lane Apartments - Heavy Metals, Cyanide and Other Inorganic Chemicals

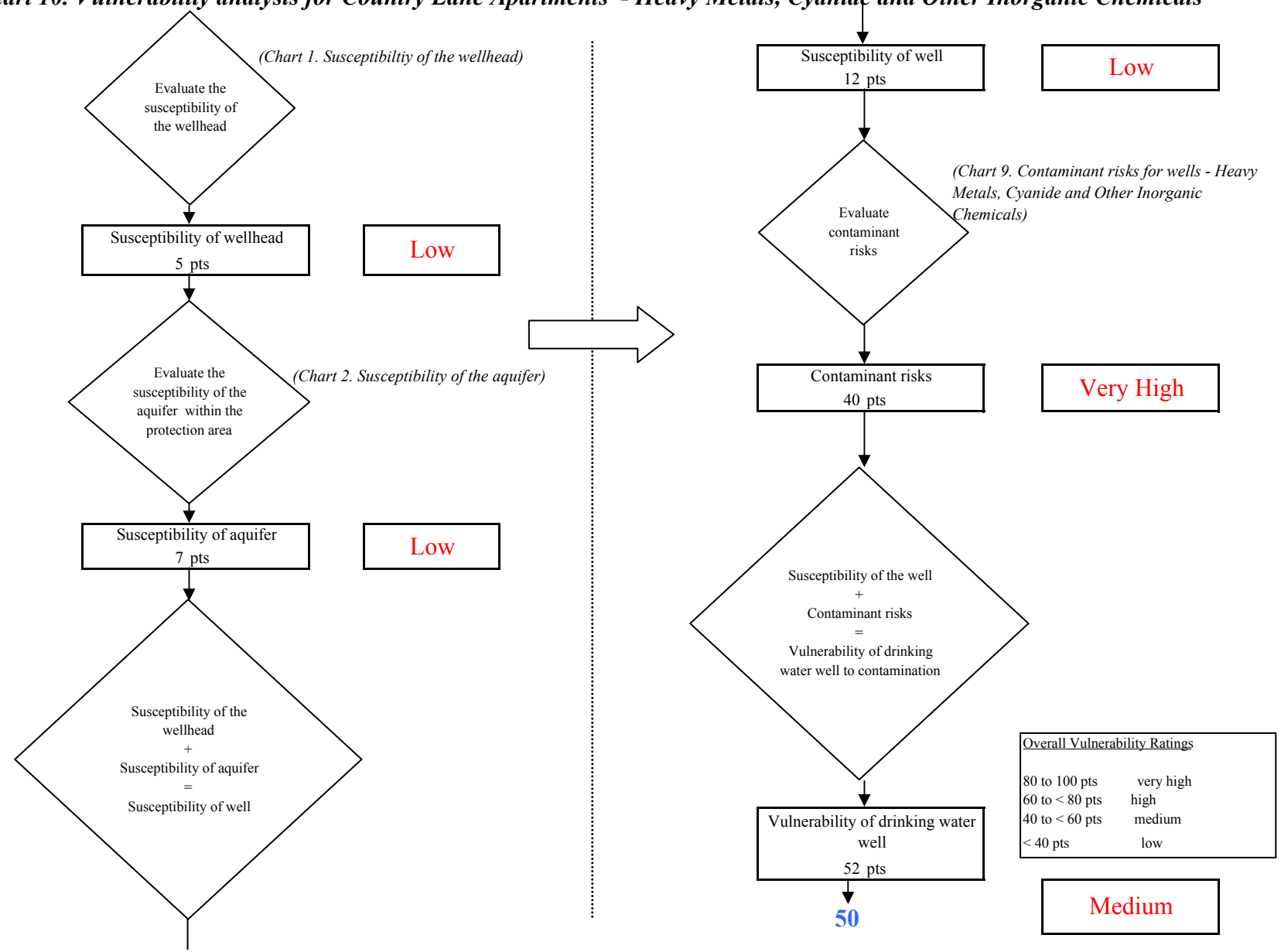


Chart 11. Contaminant risks for Country Lane Apartments - Synthetic Organic Chemicals

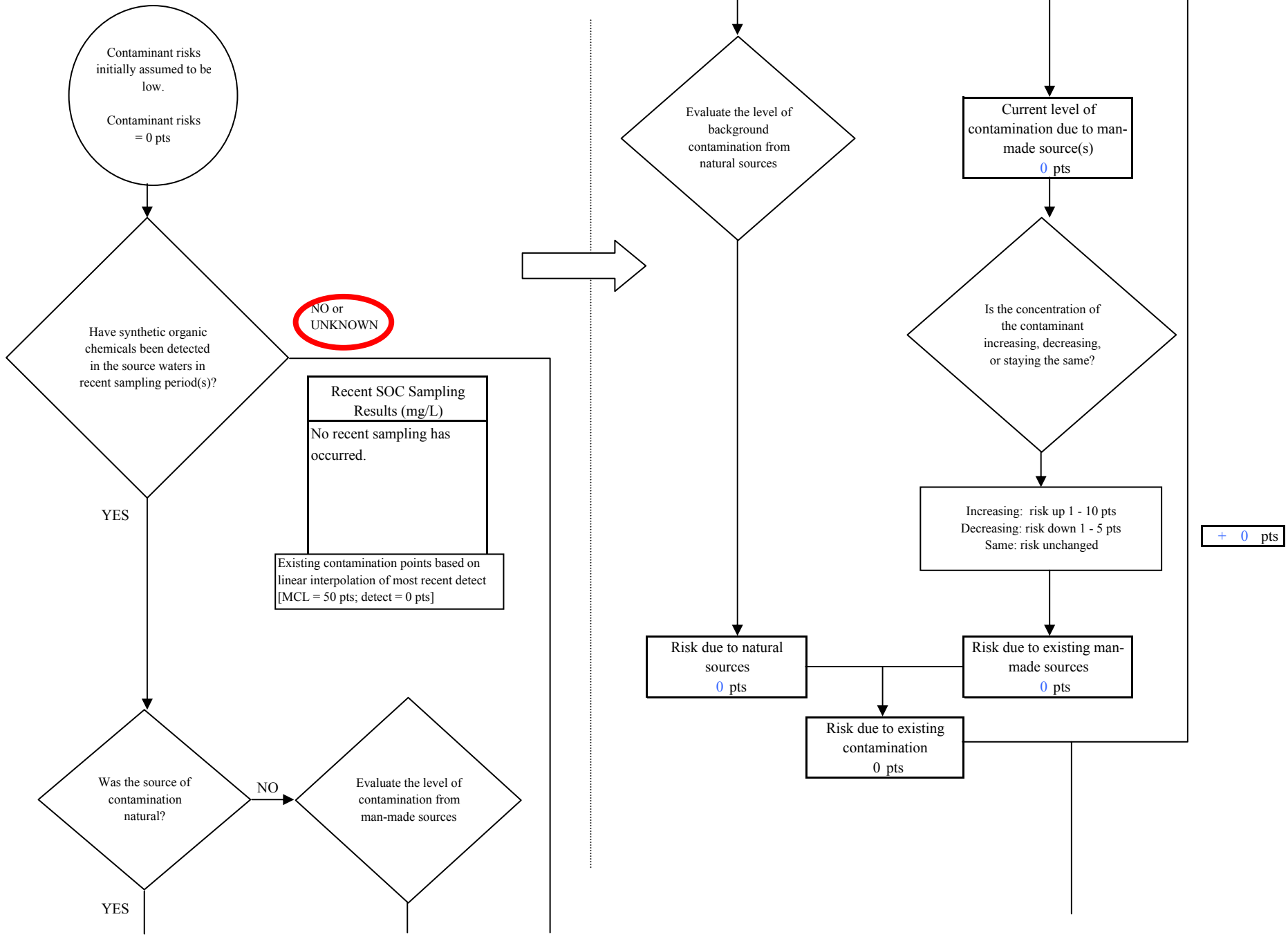
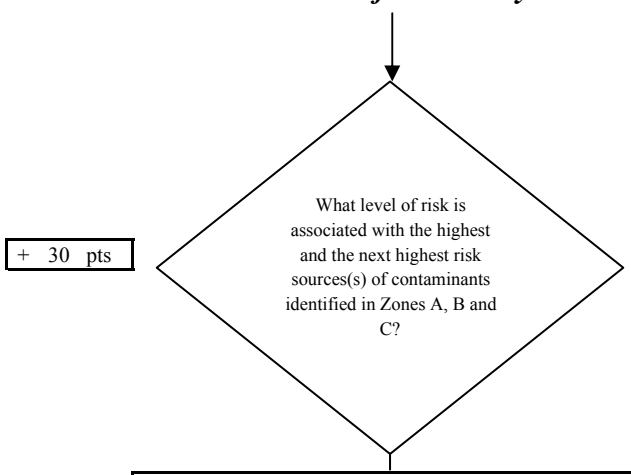


Chart 11. Contaminant risks for Country Lane Apartments - Synthetic Organic Chemicals



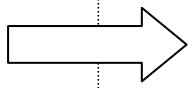
Risk Levels for Contaminant Sources identified in Zones A, B and C

	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	1	1
Medium(s)	0	0	0
Low(s)	2	6	8

	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 30

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.



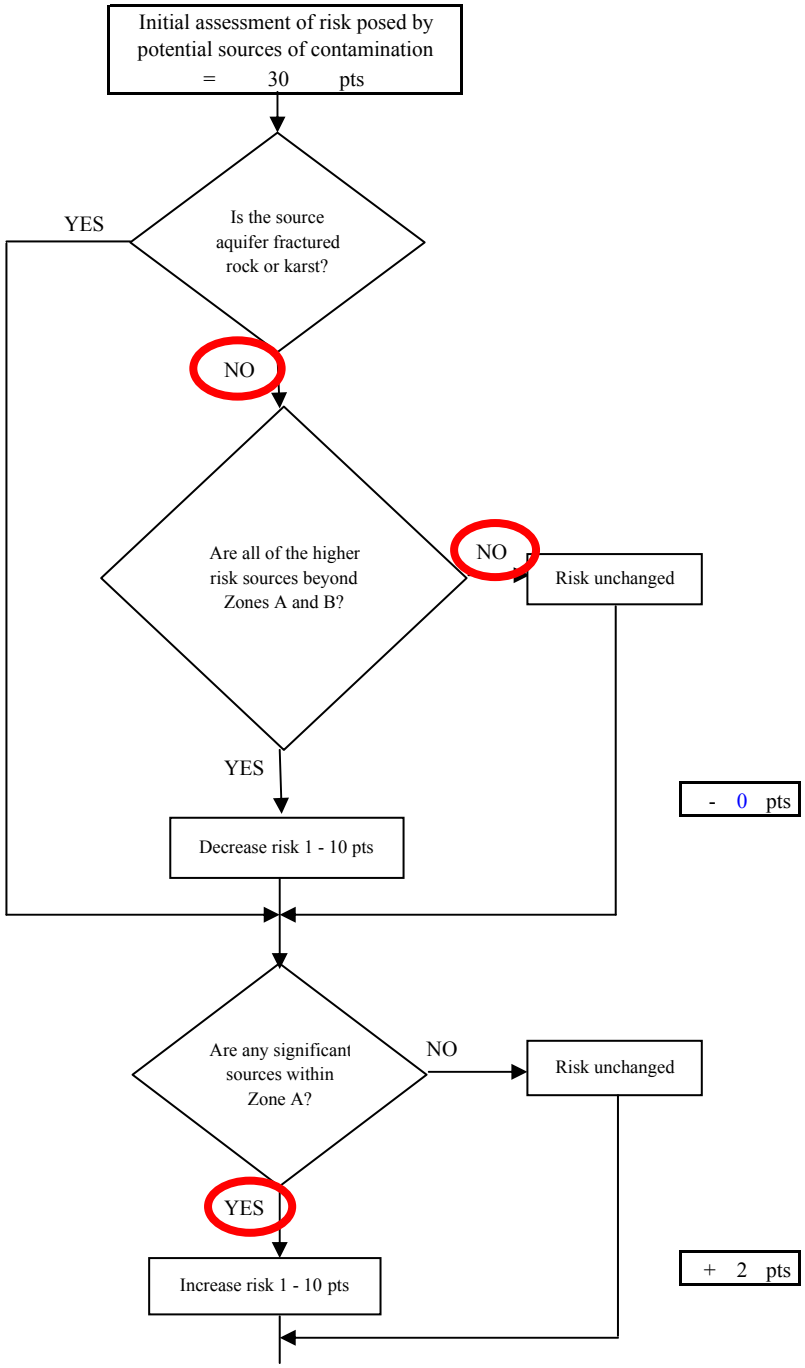
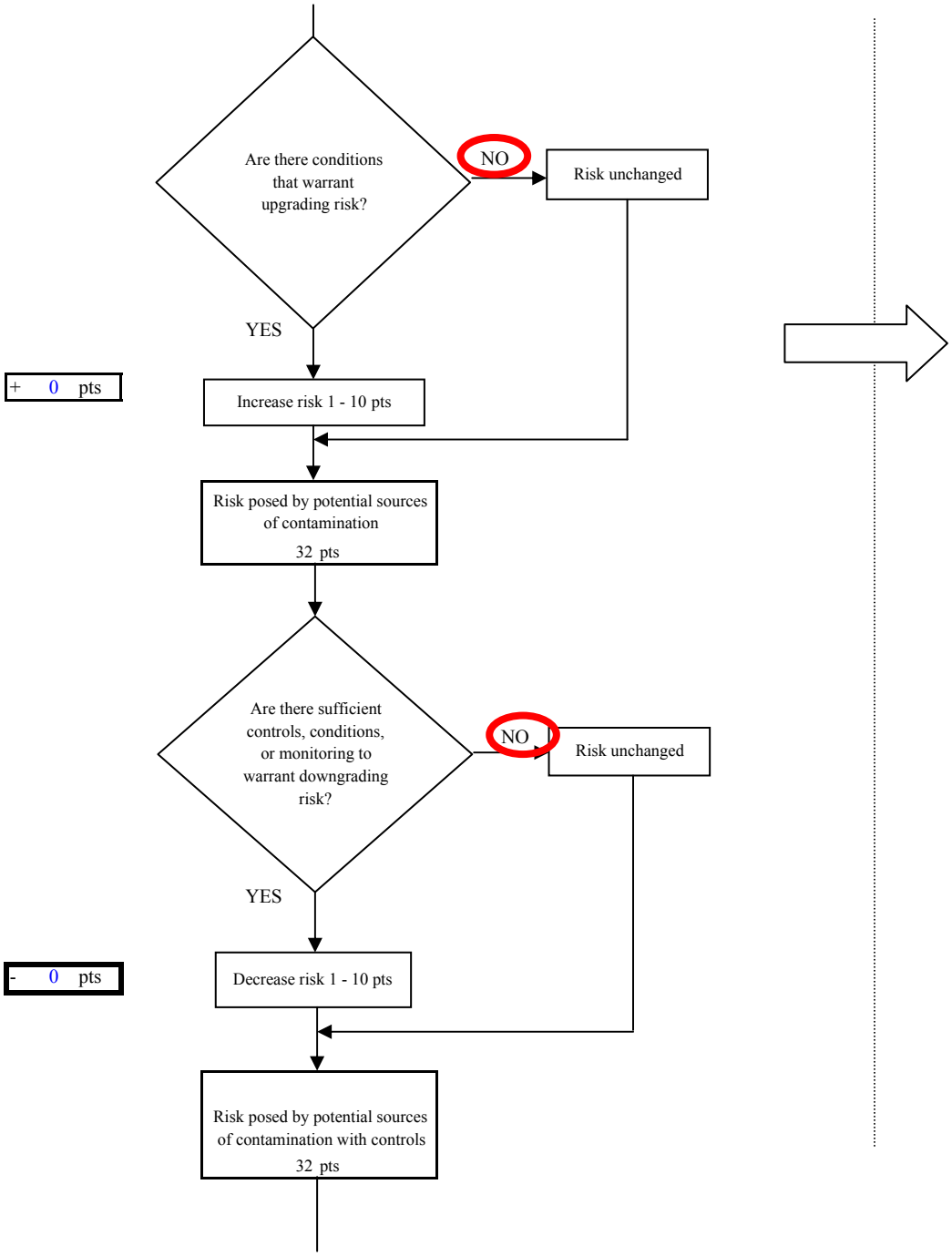


Chart 11. Contaminant risks for Country Lane Apartments - Synthetic Organic Chemicals



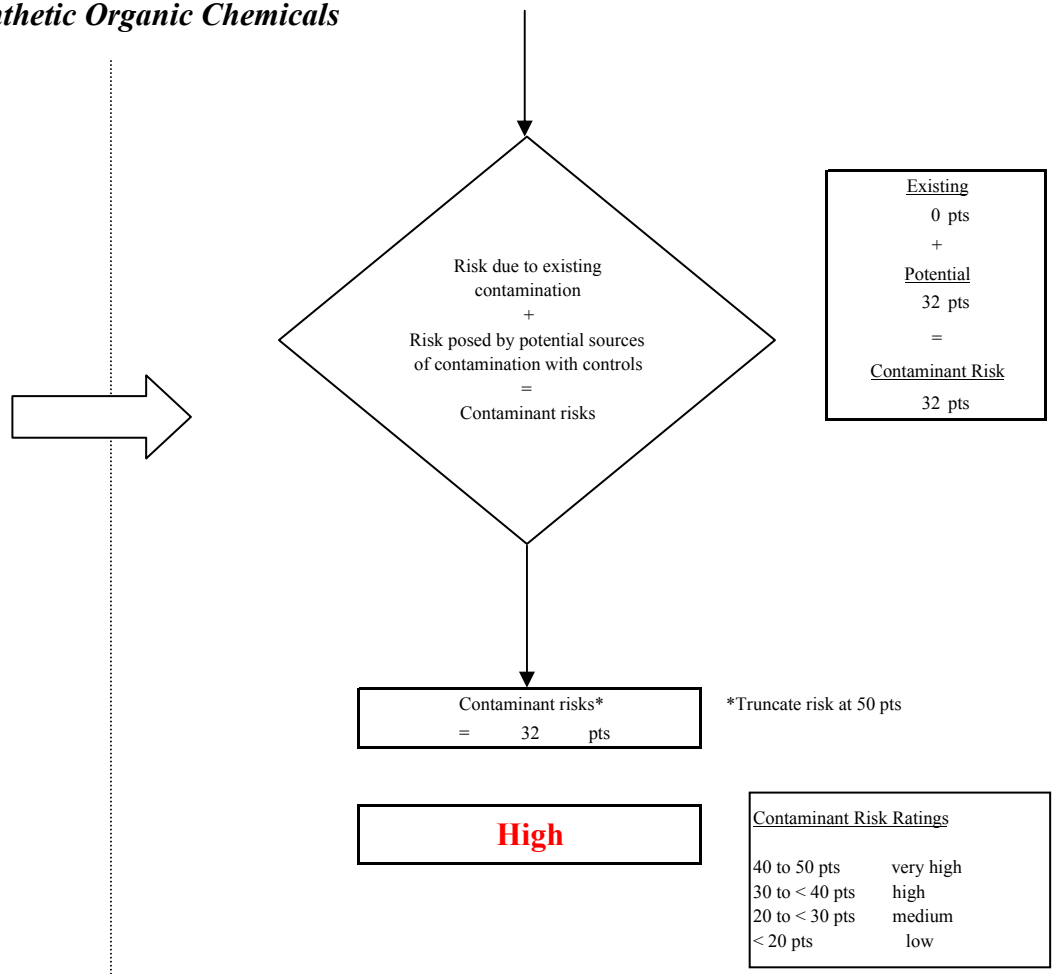


Chart 12. Vulnerability analysis for Country Lane Apartments - Synthetic Organic Chemicals

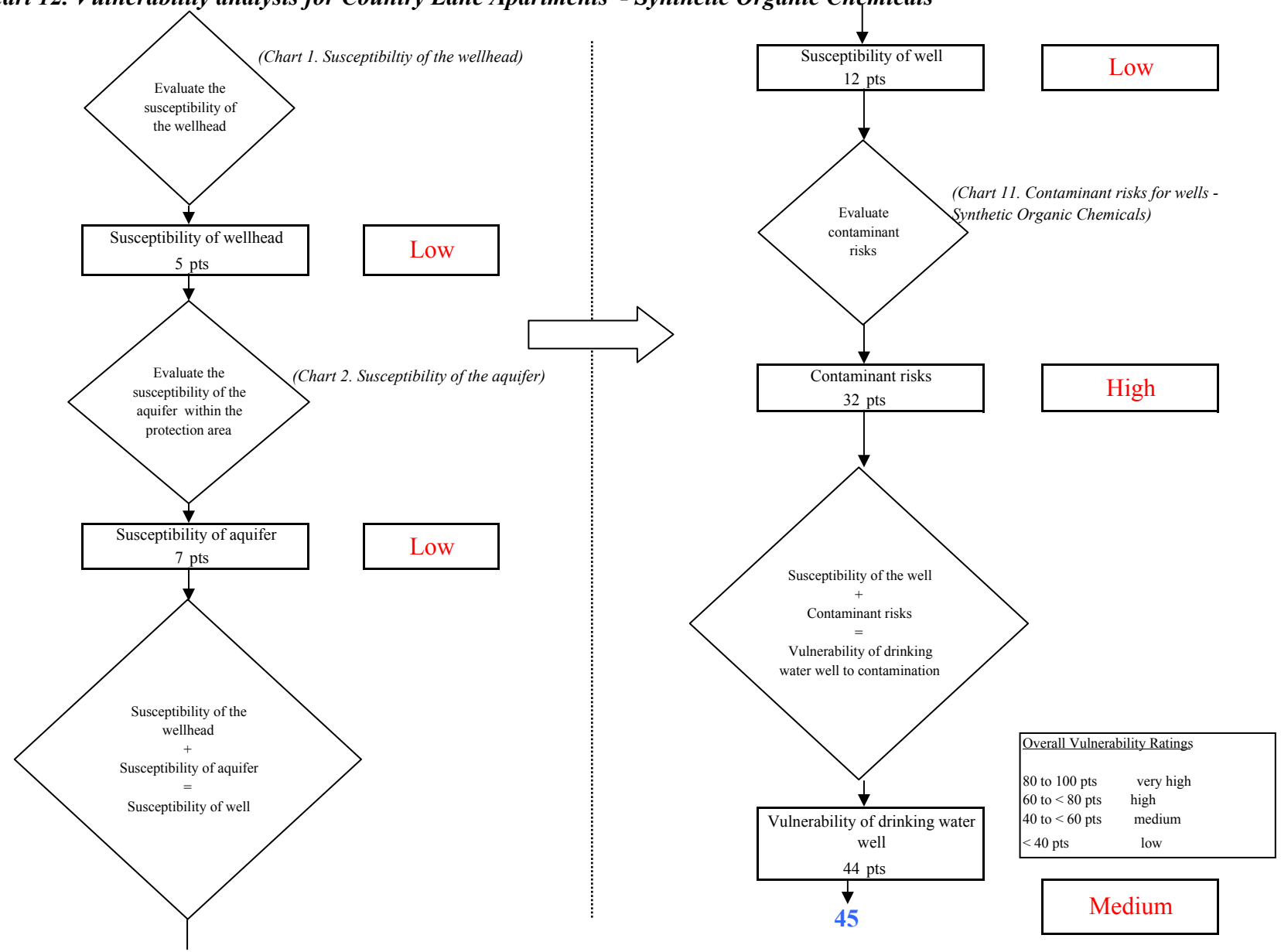


Chart 13. Contaminant risks for Country Lane Apartments - Other Organic Chemicals

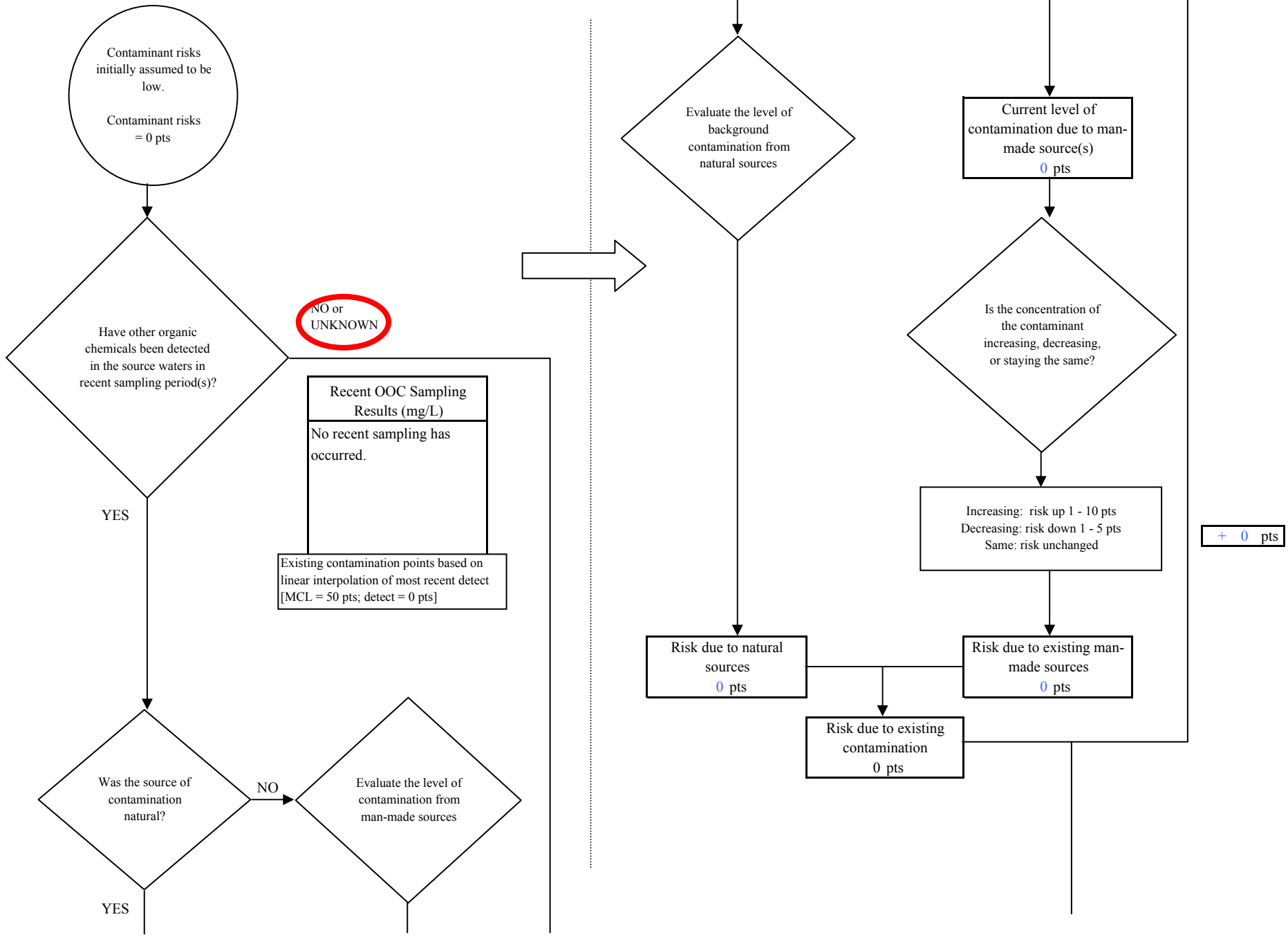


Chart 13. Contaminant risks for Country Lane Apartments - Other Organic Chemicals

+ 40 pts

What level of risk is associated with the highest and the next highest risk sources(s) of contaminants identified in Zones A, B and C?

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	2	2
Medium(s)	3	2	5
Low(s)	4	5	9

	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 40

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 = 40 pts

Is the source aquifer fractured rock or karst?

YES

NO

Are all of the higher risk sources beyond Zones A and B?

NO → Risk unchanged

YES → Decrease risk 1 - 10 pts

- 0 pts

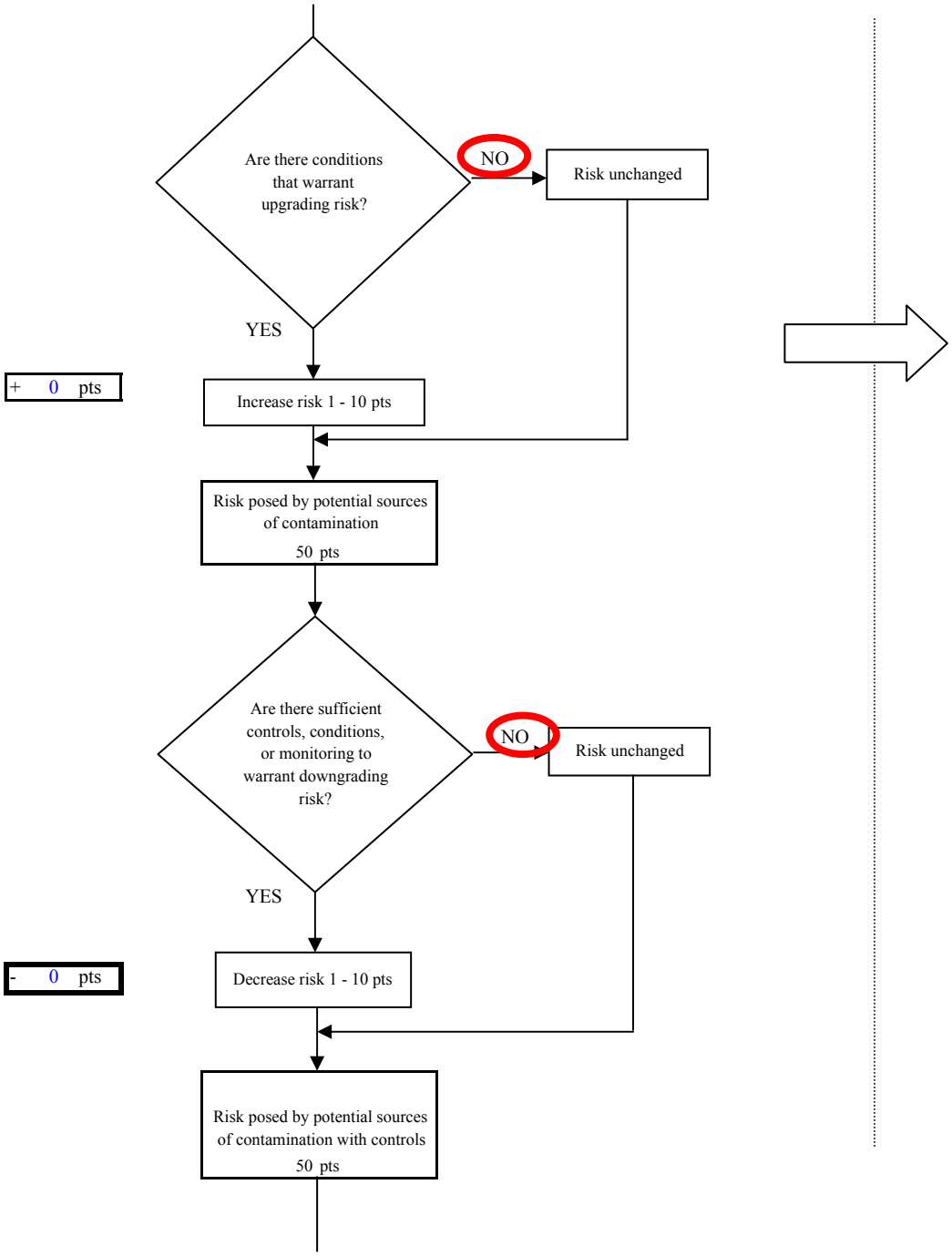
Are any significant sources within Zone A?

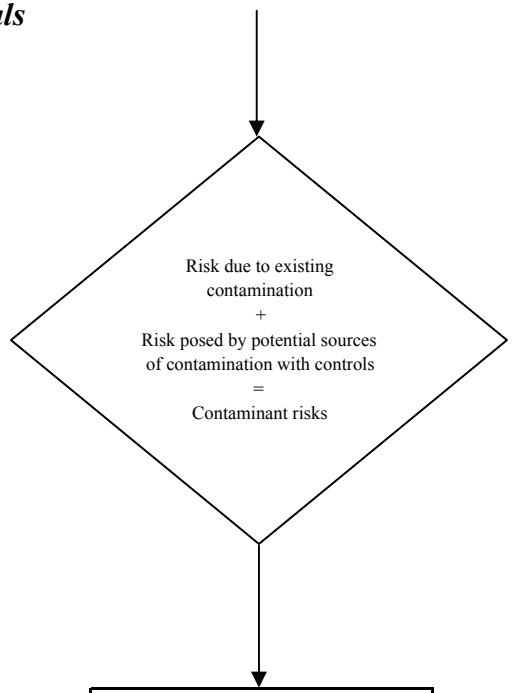
NO → Risk unchanged

YES → Increase risk 1 - 10 pts

+ 10 pts

Chart 13. Contaminant risks for Country Lane Apartments - Other Organic Chemicals





Existing
0 pts
+
Potential
50 pts
=
Contaminant Risk
50 pts

Contaminant risks*
= 50 pts

*Truncate risk at 50 pts

Very High

Contaminant Risk Ratings

40 to 50 pts	very high
30 to < 40 pts	high
20 to < 30 pts	medium
< 20 pts	low

Chart 14. Vulnerability analysis for Country Lane Apartments - Other Organic Chemicals