Source Water Assessment for Mountain View Estates

A Hydrogeologic Susceptibility and Vulnerability Assessment

DRINKING WATER PROTECTION PROGRAM REPORT 412
PWSID 226509.001

March 2002

Source Water Assessment for Mountain View Estates

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.

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION: 2002

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Alaska Department of Environmental Conservation

Drinking Water Protection Program
Alaska Department of Environmental Conservation

EXECUTIVE SUMMARY

The Mountain View Estates is a Class A (community) drinking water source consisting of one well. Identified potential and current sources of contaminants for Mountain View Estates includes residential areas, residential septic systems, sewer lines, large capacity septic systems, residential areas, paved roads, gasoline stations, landfills, airports, gravel quarries, underground fuel tanks and recognized contaminated sites. These existing and potential sources of contamination are considered a source of bacteria and viruses, nitrates and/or nitrites, volatile organic chemicals, heavy metals, synthetic organic chemicals, and other organic chemicals. Overall, Mountain View Estates public water source received vulnerability rating of **High** for bacteria and viruses, nitrates/nitrites, volatile organic chemicals, inorganic chemicals, synthetic organic chemicals and other organic chemicals.

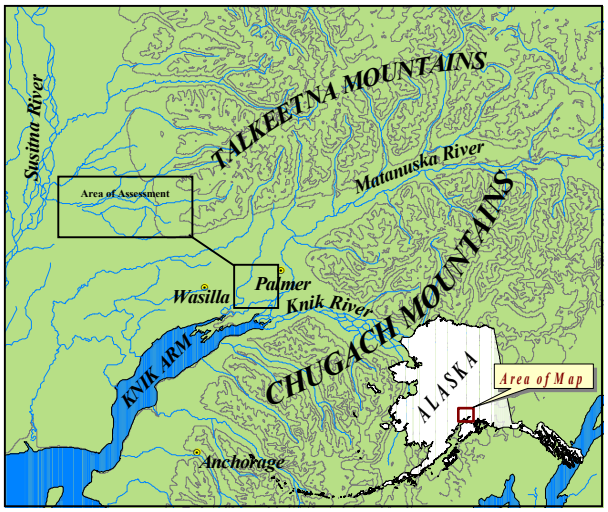

Figure 1. Index Map showing the location of the Matanuska-Susitna Valley and area of assessment.

INTRODUCTION

The purpose of this environmental assessment is to provide public water system owners/operators, communities, and local governments with information they can use to preserve the quality of Alaska's public drinking water supplies. This assessment was completed for the Mountain View Estates source of public drinking water. This source consists of one well in the Palmer area (Figure 1). This assessment, known under the Alaska Drinking Water Protection Program as the Source Water Assessment, has combined a review of the natural hydrogeologic sensitivity with potential and existing contaminant risks to arrive at an overall vulnerability of the drinking water source to contamination. This assessment has been completed as a basis for local voluntary protection efforts and to assist agencies in their efforts to reduce risk to this public drinking water supply.

DESCRIPTION OF THE MATANUSKA-SUSITNA VALLEY-AREA, ALASKA

Location

The Matanuska-Susitna Valley is part of the lowland lying about 50 miles north of Anchorage in south-central Alaska. The well described in this report is part of the Matanuska River Watershed. This study area is roughly bounded on the north by the Talkeetna Mountains; on the west by Wasilla Creek; on the south by the Knik River; and on the east by the Chugach Mountains. The area covers approximately 150 square miles.

Climate

The climate of the Matanuska-Susitna Valley is the result of a combination of marine and continental influences. The 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 is approximately 15 inches per year. On the average, the Valley receives a total snow accumulation of 58 inches per year. Precipitation generally increased inland toward the Talkeetna Mountains where annual precipitation may exceed 60 inches. Mean daily temperature ranges from 67° F during July to 5° F in January [Western Regional Climate Center, 2000].

Physiography and Groundwater Conditions

The Matanuska-Susitna Valley is surrounded by rugged mountains that rise abruptly above the valley floor. The Chugach Mountains at the southern edge of the valley reach altitudes greater than 6300 feet. These mountains are composed primarily of metamorphosed sedimentary marine and volcanic rocks. Along the northern edge of the valley, peaks in the Talkeetna Mountains reach altitudes of 3000 to 5000 feet. The Talkeetna Mountains are composed mainly of igneous rocks, chiefly granite intrusives and subordinate lavas and tuffs; Cretaceous and Tertiary sedimentary rocks form the south flank of the mountains. Although the altitude of the valley floor ranges from sea level at Knik Arm to 1000 feet at the base of Wishbone Hill, the local relief is commonly not more than 100 to 200 feet.

The Matanuska and Knik River's drain the area. These rivers are braided glacial outwash streams having wide floodplains. Drainage is poor in many interstream tracts resulting in large areas of swampy ground with shallow lakes occupying depressions.

The Matanuska-Susitna Valley is floored with unconsolidated deposits, chiefly glacial drift that represents several episodes of glacial advances and retreats. The drift includes till, outwash stream deposits, and estuarine and lake deposits. Physiographic features formed by these deposits in or adjacent to the study area include end moraine, lateral moraines, eskers, crevasse fillings, and other pitted

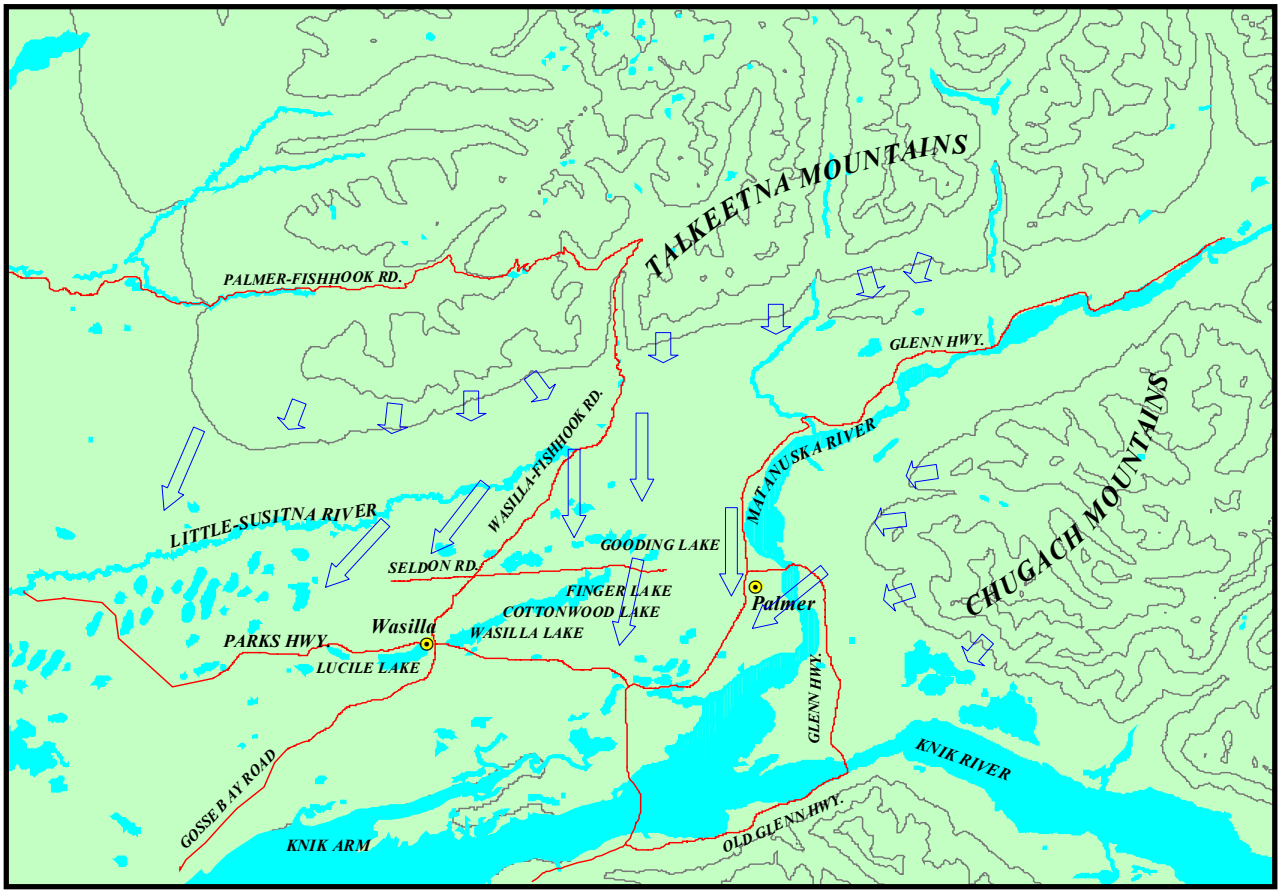

Figure 2. Map showing groundwater flow in the Matanuska-Susitna Valley (Jokela, Munter and Evans, 1991).

features, river terraces, outwash floodplains and an extensive estuarine flat (Trainer, 1960).

The glacial till and bedrock form aquifers of minor importance. The chief hydrologic significance of the till is in confining the artesian aquifer. Generally, the till is poorly permeable, although locally thin layers of sand may yield small quantities of water. Till that is present at or near the land surface in much of the area makes the acquisition of shallow groundwater difficult. The bedrock is poorly permeable. It yields water only from fractures, whose location and frequency cannot be easily predicted.

The chief aquifers are composed of outwash sand and gravel laid down by melt-water streams or in lakes. The outwash deposits are of two chief forms. The first consists of sheet-like deposits that lie just beneath the ground surface. These deposits range in thickness from a few feet to more than 100 feet. They typically rest on till or bedrock. The water in these deposits is unconfined. The other outwash deposits are buried beneath till. They are known to be as much as 50 to 60 feet thick, and probably are considerably thicker in some places. They commonly contain confined, or artesian, groundwater. Well logs and data from pumping tests suggest that outwash sand and gravel form a continuous or nearly continuous sheet in an area of more than 10 square miles north and west of Palmer (Jakola et al, 1991).

In the Mat-Su Valley, groundwater is primarily recharged by snowmelt and precipitation infiltrating both directly and also from the infiltration into the foothill slopes of the Talkeetna and Chugach Mountains. In addition,, aquifers may be recharged by streams where surface water percolates into surrounding permeable sediments (losing reaches of streams). This is the case for the water-table aquifers in the terrace south of Palmer and in the Bodenburg Butte area, which receive underground flow from the Matanuska River. Groundwater flow in the confined aquifers is generally from the north and north-northwest. The direction of groundwater flow in the upper unconfined aquifer is more variable due to the influence from surficial topography as well as its close connection with surface water bodies (Trainer,1960).

MOUNTAIN VIEW ESTATES PUBLIC WATER SOURCE

Mountain View Estates public water source is a Class A (community) water source, which is privately owned and operated. The source consists of one well located approximately 1 mile east of the Glenn Highway and 200 feet north of Robley Street at an approximate elevation of 125 feet above seal level. The depth of well is 82 feet below the surface. The static water level at the time of drilling (7/9/79) was 28.8 feet below the surface. The well is screened from 70 ft to 80 ft. The well casing is not grouted. Grouting is a seal surrounding the well casing. The seal helps protect ground water resource from surface and/or subsurface contamination (NGWA, 2001).

The water system at Mountain View Estates collectively serves approximately 188 residents through 47 service connections and operates 365 days per year.

ASSESSMENT AND PROTECTION AREA FOR MOUNTAIN VIEW ESTATES DRINKING WATER SOURCE

The Drinking Water Protection and Assessment Area that has been established for Mountain View Estates is the area that is most sensitive to contamination. This area has served as a basis for assessing the risk of the drinking water source to contamination. This zone around the drinking water source is the most critical area for the preservation of the quality of the drinking water for this source. For simplicity, this area will be known as your Drinking Water Protection Area and will serve as the area of focus for voluntary protection efforts.

Conceptually, groundwater enters the aquifer systems along the front range of the Talkeetna Mountains and flows toward Cook Inlet. An analytical calculation was used to calculate the size and shape of the area that contributes water to the well. The input parameters describing the attributes of the aquifer in this calculation were adopted from the well log and the recent Sanitary Survey. This analytical calculation was used as a guide in establishing the protection area for Mountain View Estates. Additional methods were further employed to take into account any uncertainties in groundwater flow and aquifer characteristics to arrive at a meaningful and conservative protection area with respect to public health (Please refer to the Guidance Manual for Class A Public Water Systems for additional information).

The Drinking Water Protection Areas established for wells by the Alaska Department of Environmental Conservation (ADEC) are separated into zones. These zones correspond to a time-of-travel. Time-of-travel is the time required for water to move in the saturated zone of the ground from a specific point to the well. The Drinking Water Protection Areas for Mountain View Estates contains four zones, Zone A, Zone B, Zone C and Zone D (Map 1, Appendix A). Zone A corresponds to the area between the well and the

distance equal to ¼ of the distance of the 2-year time-of-travel. Depending on where a contaminant source is located within Zone A, travel time for a contaminant to the well may be on the order of several days to several hours. Zone A also extends down gradient from the well to take into account the area of the aquifer that is influenced by pumping of the well. The Zone B protection area for Mountain View Estates corresponds to a time-of-travel of less than two years and extends toward base of the Talkeetna Mountains. Zone C protection area corresponds to a time-of-travel of greater than 2 years and less than 5 years. Zone D corresponds to a time-of-travel of greater than 5 years and less than 10 years.

INVENTORY OF POTENTIAL AND EXISTING CONTAMINANT SOURCES

The Drinking Water Protection Program has completed an inventory of potential and existing sources of contamination within Mountain View Estates Drinking Water Protection Area. This survey was completed through a search of agency records and other publicly available information.

Potential sources of contamination to drinking water supplies cover 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 this assessment and 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

Table 1 in Appendix C lists the Contaminant Source Inventory for Mountain View Estates. Below is a summary of the categories of the contaminant sources inventoried within the Mountain View Estates protection area Zone A though D:

- Sewer lines
- Paved roads
- Large capacity septic systems (Class V Injection Wells)
- Residential areas
- Gasoline stations
- Landfills
- Airports
- Gravel quarries
- Underground fuel tanks
- Recognized contaminate sites

These potential contaminant sources present risks for all six categories of drinking water contaminants for Mountain View Estates drinking water source. Contaminants located in Zone E, F and G are also included in Table 1of Appendix C. These contaminant sources are provided for informational use and are not used in determining contaminant risk and vulnerability.

RANKING OF CONTAMINANT RISKS

Potential and existing sources of contamination have been identified, sorted, and ranked 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. Contaminant risks are further a function of the number and density of those types of contaminant sources as well as the proximity of those sources to the well (Appendices B & C).

VULNERABILITY OF MOUNTAIN VIEW ESTATES DRINKING WATER SOURCES

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

- Natural susceptibility; and
- Contaminant risks.

Each of the three 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)

The Mountain View Estates well is completed in an unconfined-aquifer setting. The well log indicates that loose sand and gravel exist from near the surface to the bottom of the well. These deposits are coarse and highly transmissive, allowing water to flow rapidly through the aquifer material. The lack of a confining layer and the highly transmissive deposits may allow contaminants to enter the subsurface aquifer uninhibited and travel down gradient.

Combining the susceptibilities of the wellhead and the aquifer to contamination leads to a score (0 – 50 points) and rating of overall Susceptibility (Appendix D). Table 1 shows the overall Susceptibility score and rating for Mountain View Estates.

Table 1. Natural Susceptibility - Susceptibility of the Wellheads and Aquifer to Contamination

	Score	Rating
Susceptibility of the Wellheads	5	Low
Susceptibility of the Aquifer	23	Very High
Natural Susceptibility	28	Medium

Contaminant risks to a drinking water source depend on the type, number or density, and distribution of contaminant sources. A score (0 – 50 points) and rating of Contaminant Risks (See Appendix D) is assigned based on the findings of the Contaminant Source Inventory (See Appendix B - Table 1 – Table 7). This portion of the analysis examines recent existing or historical contamination that has been detected at the drinking water sources through routine sampling. It also reviews contamination that has or may have occurred but has not arrived or been detected at the either well. Table 2 summarizes the Contaminant Risks for each category of drinking water contaminants.
Table 2. Contaminant Risks

Contaminant Risks	Score	Rating
Bacteria and Viruses	40	High
Nitrates and/or Nitrites	43	Very High
Volatile Organic Chemicals	47	Very High
Heavy Metals, Cyanide, And Other Inorganic Chemicals	38	High
Synthetic Organic Chemicals	32	High
Other Organic Chemicals	32	High

Appendix D contains fourteen charts, which together form the 'Vulnerability Analysis' for a Class A public drinking water system. 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 Analysis for nitrates and nitrites, volatile organic chemicals, heavy metals, synthetic organic chemicals, and other organic chemicals, respectively.

Vulnerability of drinking water sources to contamination is the combination of susceptibility of the aquifer and the well with contaminant risks. Table 3 contains the overall vulnerability scores (0 – 100) and ratings for each of the six categories of drinking water contaminants (See Appendix D). Note: scores are rounded off to the nearest five.

Table 3. Overall Vulnerability of Mountain View Estates Public Drinking Water Source to Contamination by Category.

Category	Score	Rating
Bacteria and Viruses	70	High
Nitrates and Nitrites	75	High
Volatile Organic Chemicals	75	High
Heavy Metals, Cyanide, and Other Inorganic Chemicals	65	High
Synthetic Organic Chemicals	60	High
Other Organic Chemicals	60	High

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,

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

The contamination risk for the bacteria/viruses is driven by the potential risk associated with large capacity septic systems and residential septic systems. No detection of bacteria and viruses has occurred in recent sampling history. Combining the contamination risk with the natural susceptibility of the well leads to an overall vulnerability to bacteria and virus contamination of high.

Recent historical sampling indicates no detection of bacteria and viruses. Combining the contaminant risk with the natural susceptibility of the wells leads to an overall vulnerability to bacteria and virus contamination of medium.

The contamination risk for nitrate/nitrites is driven by the potential risk associated with large capacity septic systems, residential septic systems, residential areas, and roads.

Exisitng risk was determined by reviewing recent historical sampling data. The most recent detection indicates that nitrates were detected at 5% of the maximum contaminant level (MCL) of 10 mg/l on 10/11/01. (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 without harmful effects. Combining the contamination risk with the natural susceptibility of the well leads to an overall vulnerability to nitrate/nitrite contamination of very high.

The high risk ranking for bacteria and viruses and nitrates/nitrites is largely attributed to the presence of one large capacity of septic systems (LCSS's) in Zone A. For purposes of this study, LCSS are defined as septic systems serving more then one single family home. The United States Environmental Protection Agency's (USEPA) Underground Injection Control Program (UICP) is responsible for regulating large capacity septic systems (LCSS's) serving 20 or more individuals (USEPA, 1999). It is unknown how many individuals are served by the LCSS's located in Zone A.

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. According to the 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 not being influenced by man made sources. (Wang, Strelakos, Jokela, 2000). The level of nitrate/nitrite detected at Mountain View Estates remains at very safe levels with respect to human health.

The contaminant risks for volatile organic chemicals are driven by the potential risk associated with sewer lines, a large capacity septic system, gasoline stations, landfills, quarries, underground fuel tanks, airports, residential areas, residential septic systems and recognized leaking underground storage tanks (LUST) sites.

Recent historical sampling indicates no detection of volatile organic chemicals. Combining the potential and existing contaminant risk with the natural susceptibility of the wells leads to an overall vulnerability to volatile organic chemical contamination of high.

Public records indicate that a recognized LUST exists at 801 Cope Industrial Way-Facility ID: 1571.On March 10, 1993 (Event ID: 685) 3,000 gallons aviation gas spilled to the ground due to suspected vandalism during the night. A hose was left on the ground and pump left running. The clean up and testing of the soil occurred. The status of the site is closed.

Another event (ID:2313)occurred at the same facility. During the examination of underground fuel tanks, diesel contamination was discovered at 10 and 30 ft below ground surface. The extent of contamination is unknown, further investigation is occurring and monitoring wells will be installed if the contamination is determined to be within 10 feet of the groundwater.

An ADEC recognized contaminated site owned by the Small Business Association, exists at mile 17 of the Glenn Highway. Tetrachloroethylene (PCE) has been detected in surface water and shallow groundwater at

levels detected at 0.030-0.040 mg/l. The site is currently inactive.

The MCL for tetrachloroethylene in public drinking water is 0.005 mg/l. According to the USEPA, tetrachloroethylene is a man made chemical that is used for cleaning and industrial metal cleaning or finishing. Water pollution can occur from tetrachloroethylene leaching from vinyl liners in some types of pipelines used for water distribution, and during chlorination water treatment. (USEPA, 2001).

According to the USEPA, some people who drink water-containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver and may have an increased risk of getting cancer. (USEPA, 2001) The source and extent of tetrachloroethylene at this site is unknown. It should be noted that tetrachloroethylene has only been detected in one shallow monitoring well at this site. No detection has been reported from a drinking water well. Additional monitoring has been recommended by ADEC but it is unknown whether the monitoring is occurring.

The contaminant risks for heavy metals and inorganics are driven by the potential risks associated with roads, residential septic systems, sewer lines, residential areas, large capacity septic systems, gasoline stations, landfills, underground fuel tanks, airports and existing contamination.

Exisitng risk was determined by reviewing recent historical sampling data. The most recent detection indicates that barium was detected at less then 1% of the maximum contaminant level (MCL) of 0.05 mg/l on 4/6/98. (See Chart 9 – Contaminant Risks for Heavy Metals, Cyanide and Other Inorganic Chemicals) in Appendix D). Combining the potential and existing contaminant risk with the natural susceptibility of the wells leads to an overall vulnerability to bacteria and virus contamination of high.

Combining the potential contaminant risk and existing contaminant risk with the natural susceptibility of the well leads to an overall vulnerability to heavy metals and inorganic chemical contamination of high.

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).

Barium has potential to cause gastrointestinal disturbances and muscular weakness when people are exposed to it at levels above the MCL for relatively short periods of time. Lifetime exposure at levels above the MCL may lead to high blood pressure (USEPA, 2001). The levels of barium detected at Mountain View Estates remains at very safe levels with respect to human health.
The contaminant risk for synthetic organic chemicals is driven by the potential risk associated with residential areas, large capacity septic systems and residential septic systems, landfills and airports

Mountain View Estates has a waiver for other organic chemicals. No sampling has recently occurred for this system. Combining the potential and existing contaminant risk with the natural susceptibility of the well leads to an overall vulnerability to synthetic chemical contamination of high.

The contamination risk for other organic chemicals is driven by the potential risk associated with roads, large capacity septic systems, residential areas and residential septic systems, landfills, quarries and airports.

Mountain View Estates has a waiver for other organic chemicals. No sampling has recently occurred for this system. Combining the contaminant risk with the natural susceptibility of the well leads to an overall vulnerability to other organic chemical contamination of high.

SUMMARY

A Source Water Assessment has been completed for the source of public drinking water serving Mountain View Estates. The overall vulnerability of this source to contamination is **High** for bacteria and viruses, nitrates/nitrites, volatile organic chemicals , inorganic chemicals, synthetic organic chemicals and 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 Mountain View Estates 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 Mountain View Estates' public drinking water source.

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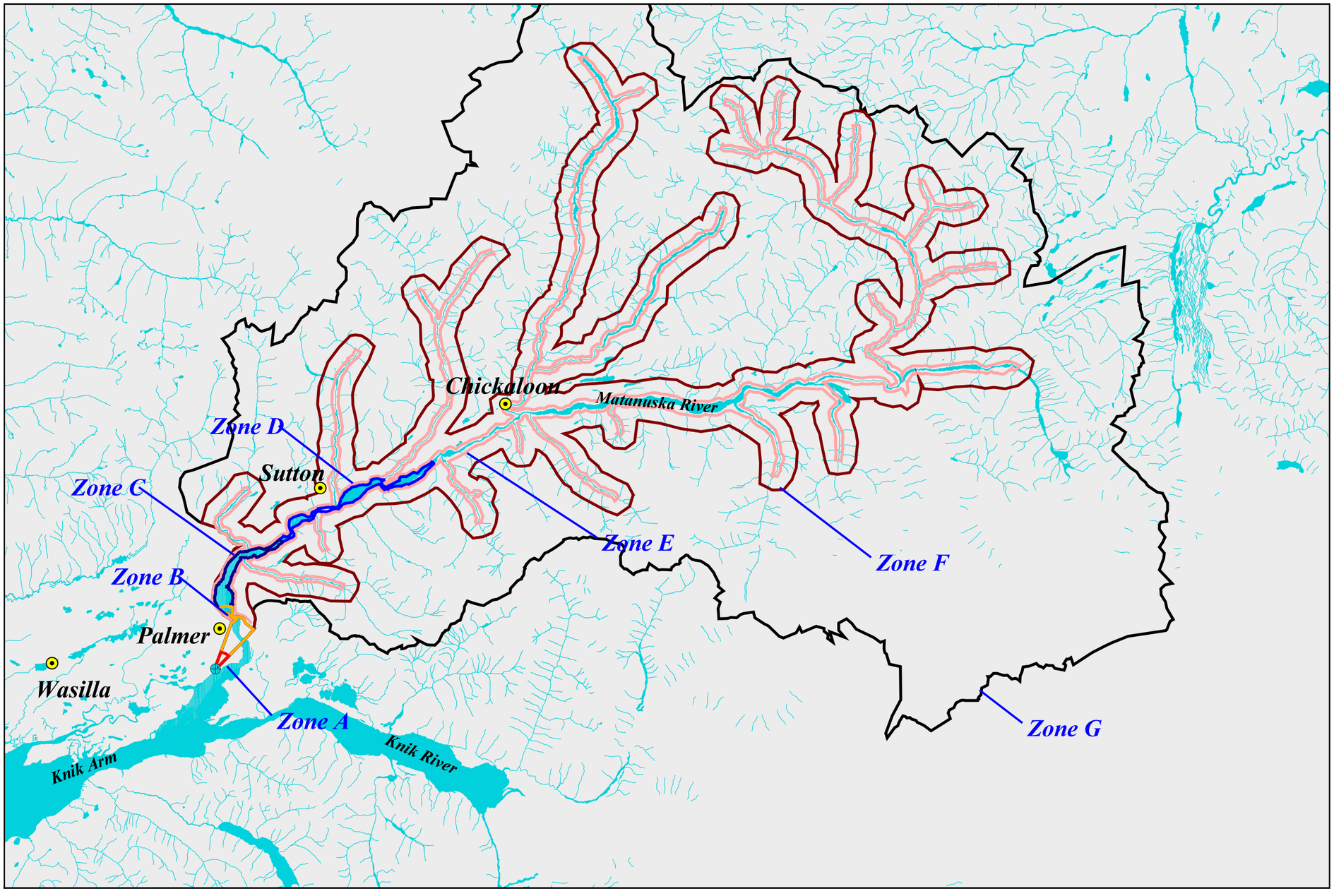
APPENDIX A

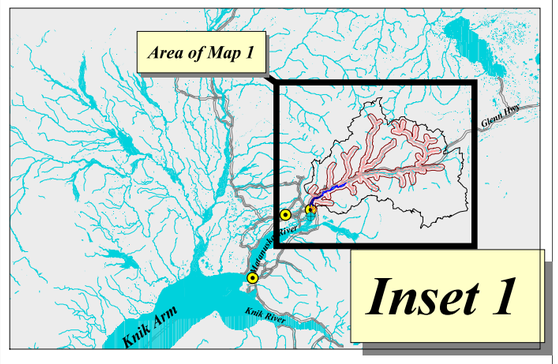
Mountain View Estates
Drinking Water Protection Area

Drinking Water Protection Area for Mountain View Estates



Legend

- Mountain View Estates Public Water Systems
- Zone A Protection Zone
  - Several Months Travel Time
- Zone B Protection Zone
  - 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
  - Zone E Protection Area
- Zone F Protection Area
  - 1 Mile Buffer
- Zone G Protection Area
  - Watershed Boundary
- Cities
- Lakes
- Rivers and Streams
- Roads



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PWSID 226509.001

Map 1

APPENDIX B

Contaminant Source Inventory and Risk Ranking for Mountain View Estates

Table 1 *Contaminant Source Inventory for* ***PWSID 226509.001***

Mountain View Estates

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Location*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-01	A	Near Brooks Road	2	
Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method)	D10	D10-01	A	Near Inner Springer Loop	2	
Residential Areas	R01	R01-01	A	Residential area in Zone A	2	Field verification from road indicates that above ground storage tanks and heavy equipment is stored throughout this residential area.
Septic systems (serves one single-family home)	R02	R02-01	A	Outter Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-02	A	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-03	A	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-04	A	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-05	A	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-01	A	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-02	A	Icy Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-03	A	Wendy Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-04	A	Kalwies Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-05	A	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-06	A	Phyl Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-07	A	Brooks Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-08	A	Badger Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-09	A	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-10	A	Caulkins Street	2	
Gasoline stations (without repair shop)	C15	C15-01	B	Cheveron-Cope Industrial Way	3	
Gasoline stations (without repair shop)	C15	C15-02	B	Cope Industrial Way	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-02	B	Near Crowther Road	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Location*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-03	B	Near Eklutna Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-04	B	Lepak Avenue	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-05	B	Industrial Way	3	
Landfills (municipal; Class III)	D51	D51-01	B	Palmer Airport Landfill	3	Unpermitted landfill. Clean up occurred and solid waste was moved the MSB Central landfill. Site has been inactive for years.
Quarries (gravel)	E10	E10-01	B	Near Evergreen Avenue	3	Non active
Residential Areas	R01	R01-02	B	All Residential Areas in Zone B	1	
Septic systems (serves one single-family home)	R02	R02-06-16	B	All Residential Septics in Zone B	3	
Tanks, diesel (underground)	T08	T08-02	B	Cope Industrial Way	3	15000 gallon diesel. Permanently out of use.
Tanks, diesel (underground)	T08	T08-03	B	Cope Industrial Way	3	10000 gallon diesel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-01	B	Cheveron- Cope Industrial Way	3	Tank No. 2: 12000 gallon underground gasoline tank. 11 years old double walled with tank detection. Next inspection due 10/31/03.
Tanks, gasoline (underground)	T12	T12-02	B	Cheveron-Cope Industrial Way	3	Tank No. 3: 12000 gallon underground gasoline tank. 11 years old double walled with tank detection. Next inspection due 10/31/03.
Tanks, gasoline (underground)	T12	T12-04	B	Cope Industrial Way	3	10000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-05	B	Cope Industrial Way	3	10000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-06	B	Cope Industrial Way	3	10000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-07	B	Cope Industrial Way	3	5000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-08	B	Cope Industrial Way	3	5000 gallon aviation fuel. Permanently out of use.
Tanks, heating oil, nonresidential (underground)	T16	T16-01	B	Cheveron-Cope Industrial Way	3	Tank No. 1: 12000 gallon underground kerosene tank.11 years old double walled with tank detection. Next inspection due 10/31/03.

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Location*	*Map Number*	*Comments*
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-03	B	Mile 17 Old Glenn Highway	3	Inactive: chlorinated hydrocarbon tetrachloroethane (PCE) have been detected at 0.030-0.040 mg/l in shallow groundwater and surface water at this site. The extent of PCE and source of contamination is not known.
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U07-01	B	Cope Industrial Way	3	Facility ID: 1571, Event ID: 685, Status: Closed. 3,000 gallons aviation gas spilled to ground surface on March 10, 1993. Suspected vandalizm during the night, hose left on the ground and pump left running.
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U07-02	B	Cope Industrial Way	3	Facility ID: 1571, Event ID: 2313, Status: Open. Diesel contamination found at 10 and 30 ft below ground surface.
Open dumps	U09	U09-01	B	Near bluff on Matanuska River	4	Unpermitted landfill. Appears that people have been dumping vehicles,scrap metal, batteries and appliances.
Airports	X14	X14-01	B	Palmer Runway	3	
Airports	X14	X14-02	B	Palmer Runway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Outter Springer Loop	3	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Lawalter Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Twigs Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Ticks Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-15	B	Deland Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-16	B	Lepak Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-17	B	Popes Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-18	B	Eklutna Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-19	B	Thuma Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-20	B	Cope Industiral Way	3	
Highways and roads, paved (cement or asphalt)	X20	X20-21	B	Evergreen Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-22	B	Old Glenn Highway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-23	B	Arctic Street	3	
Residential Areas	R01	R01-03	C	Residential Area in Zone C	4	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Location*	*Map Number*	*Comments*
Septic systems (serves one single-family home)	R02	R02-17	C		4	
Construction trade areas and materials	C09	C09-01	E	East Virginia Ave off the Old Glenn Highway	3	
Metals mining, open pit- Inactive	E03	E03-06	E	Jack	5	
Metals mining, placer- Inactive	E04	E04-03	E	Boulder Creek	5	
Metals mining, placer- Active	E04	E04-04	E	LynDee 1-3	5	
Metals mining, placer- Inactive	E04	E04-05	E	Caribou Creek	5	
Metals mining, placer-Inactive	E04	E04-06	E	Mazuma Creek	5	
Metals mining, placer -Inactive	E04	E04-07	E	Alfred Creek	5	
Metals mining, placer- Active	E04	E04-08	E	Caribour Creek	5	
Metals mining, placer-Active	E04	E04-09	E	Matanuska River	5	
Metals mining, placer -Active	E04	E04-10	E	Agnes No. 1	5	
Metals mining, placer - Active	E04	E04-11	E	Glacier Creek	5	
Quarries (gravel)	E10	E10-02	E	Near Old Glenn Highway	3	Non active
Orchards or nurseries	A10	A10-01	F	Clark Wolverine Road	4	
Gasoline stations (with repair shop)	C16	C16-01	F	Mile 59.5 Glenn Hwy	4	
Landfills (municipal; Class III)	D51	D51-02	F	Chickaloon	4	Chickaloon Landfill
Metals mining, open pit-Active	E03	E03-03	F	Wishbone Hill	4	
Tanks, diesel (underground)	T08	T08-04	F	Palmer Correctional Center	5	
Tanks, diesel (underground)	T08	T08-05	F	Palmer Correctional Center	5	
Tanks, gasoline (underground)	T12	T12-09	F	Palmer Correctional Center	5	
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-04	F	Palmer Correctional Center	5	Release of <480 gallons #1 diesel from a 500 gallon above ground storage tank connection in 12/93.
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-05	F	Palmer Correctional Center	5	20,000 gallon heating oil spill in 1989.
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-06	F	Palmer Correctional Center	5	During the removal of one 500 gal. diesel UST and one 1500 gal. buried heating oil tank, petroleum contamination was encountered at both excavations. Gilfilian Engineering recommends a clean closure for the site

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Location*	*Map Number*	*Comments*
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-07	F	Palmer Correctional Center	4	10, 0000 gallon diesel No.1 spilled at Butler Building
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-08	F	Palmer Correctional Center	4	168 gallons diesel No.1 spilled in 1995
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-09	F	Palmer Correctional Center	4	Heating oil spill
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-10	F	Palmer Correctional Center	4	Tank #4, 300 gallon diesel tank was pulled. Subsequent soil contaminated.
Mineral extraction wells- Active	W05	W05-01	F	Drill Lake	5	
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-11	F/G	Palmer Correctional Center	4	48 gallons of diesel No. 1
Solid Waste Transfer Facility	D61	D61-01	G	Sutton	4	Sutton Transfer Facility
Metals mining, open pit Inactive	E03	E03-04	G	Howard-Jessen	4	
Metals mining, open pit- Inactive	E03	E03-05	G	Coal Creek	5	
Metals mining, open pit (active or inactive?)	E03	E03-07	G	Gypsum Creek	5	
Metals mining, placer - Active	E04	E04-01	G	Moose Creek	4	
Metals mining, placer- Active	E04	E04-02	G	Mag 1-2	4	
Metals mining, Inactive	E05	E05-01	G	Premier Mine near Moose Creek	4	
Metals mining, underground-Inactive	E05	E05-02	G	Baxter Mine	4	
Metals mining, underground Inactive	E05	E05-03	G	Buffalo Mine	4	
Metals mining, underground- Inactive	E05	E05-04	G	Rawson Mine	4	
Abandoned mine spoils or mine tailings piles/ ponds	U01	U01-01	G	Knob Creek - Division of Mining, Site #1	4	

Table 2

Contaminant Source Inventory and Risk Ranking for Mountain View Estates Sources of Bacteria and Viruses

PWSID 226509.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method)	D10	D10-01	A	High	Near Inner Springer Loop	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-01	A	Medium	Near Brooks Road	2	
Septic systems (serves one single-family home)	R02	R02-01	A	Low	Outter Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-02	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-03	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-04	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-05	A	Low	Inner Springer Loop	2	
Residential Areas	R01	R01-01	A	Low	Residential area in Zone A	2	Field verification from road indicates that above ground storage tanks and heavy equipment is stored throughout this residential area.
Highways and roads, paved (cement or asphalt)	X20	X20-01	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-02	A	Low	Icy Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-03	A	Low	Wendy Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-04	A	Low	Kalwies Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-05	A	Low	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-06	A	Low	Phyl Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-07	A	Low	Brooks Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-08	A	Low	Badger Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-09	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-10	A	Low	Caulkins Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-02	B	Medium	Near Crowther Road	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-03	B	Medium	Near Eklutna Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-04	B	Medium	Lepak Avenue	3	

Table 2 (continued)

Contaminant Source Inventory and Risk Ranking for Mountain View Estates Sources of Bacteria and Viruses

PWSID 226509.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-05	B	Medium	Industrial Way	3	
Residential Areas	R01	R01-02	B	Low	All Residential Areas in Zone B	1	
Septic systems (serves one single-family home)	R02	R02-06-16	B	Low	All Residential Septics in Zone B	3	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low	Outter Springer Loop	3	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low	Lawalter Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low	Twigs Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Low	Ticks Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-15	B	Low	Deland Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-16	B	Low	Lepak Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-17	B	Low	Popes Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-18	B	Low	Eklutna Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-19	B	Low	Thuma Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-20	B	Low	Cope Industiral Way	3	
Highways and roads, paved (cement or asphalt)	X20	X20-21	B	Low	Evergreen Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-22	B	Low	Old Glenn Highway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-23	B	Low	Arctic Street	3	
Residential Areas	R01	R01-03	C	Low	Residential Area in Zone C	4	
Septic systems (serves one single-family home)	R02	R02-17	C	Low		4	
Solid Waste Transfer Facility	D61	D61-01	G	Low	Sutton	4	Sutton Transfer Facility

Table 3

Contaminant Source Inventory and Risk Ranking for Mountain View Estates Sources of Nitrates/Nitrites

PWSID 226509.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method)	D10	D10-01	A	High	Near Inner Springer Loop	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-01	A	Medium	Near Brooks Road	2	
Septic systems (serves one single-family home)	R02	R02-01	A	Low	Outter Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-02	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-03	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-04	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-05	A	Low	Inner Springer Loop	2	
Residential Areas	R01	R01-01	A	Low	Residential area in Zone A	2	Field verification from road indicates that above ground storage tanks and heavy equipment is stored throughout this residential area.
Highways and roads, paved (cement or asphalt)	X20	X20-01	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-02	A	Low	Icy Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-03	A	Low	Wendy Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-04	A	Low	Kalwies Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-05	A	Low	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-06	A	Low	Phyl Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-07	A	Low	Brooks Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-08	A	Low	Badger Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-09	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-10	A	Low	Caulkins Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-02	B	Medium	Near Crowther Road	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-03	B	Medium	Near Eklutna Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-04	B	Medium	Lepak Avenue	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-05	B	Medium	Industrial Way	3	
Quarries (gravel)	E10	E10-01	B	Low	Near Evergreen Avenue	3	Non active
Residential Areas	R01	R01-02	B	Low	All Residential Areas in Zone B	1	
Septic systems (serves one single-family home)	R02	R02-06-16	B	Low	All Residential Septics in Zone B	3	
Airports	X14	X14-01	B	Low	Palmer Runway	3	
Airports	X14	X14-02	B	Low	Palmer Runway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low	Outter Springer Loop	3	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low	Lawalter Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low	Twigs Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Low	Ticks Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-15	B	Low	Deland Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-16	B	Low	Lepak Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-17	B	Low	Popes Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-18	B	Low	Eklutna Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-19	B	Low	Thuma Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-20	B	Low	Cope Industiral Way	3	
Highways and roads, paved (cement or asphalt)	X20	X20-21	B	Low	Evergreen Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-22	B	Low	Old Glenn Highway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-23	B	Low	Arctic Street	3	
Residential Areas	R01	R01-03	C	Low	Residential Area in Zone C	4	
Septic systems (serves one single-family home)	R02	R02-17	C	Low		4	
Quarries (gravel)	E10	E10-02	E	Low	Near Old Glenn Highway	3	Non active
Solid Waste Transfer Facility	D61	D61-01	G	Low	Sutton	4	Sutton Transfer Facility

Contaminant Source Inventory and Risk Ranking for Mountain View Estates

Sources of Nitrates/Nitrites

Contaminant Source Type	***Contaminant Source ID***	***CS ID tag***	***Zone***	***Risk Ranking for Analysis***	***Location***	***Map Number***	***Comments***
Metals mining, open pit (active or inactive?)	E03	E03-07	G	Low	Gypsum Creek	5	

Table 4

Contaminant Source Inventory and Risk Ranking for Mountain View Estates
Sources of Volatile Organic Chemicals

PWSID 226509.001

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Location	Map Number	Comments
Residential Areas	R01	R01-01	A	Low	Residential area in Zone A	2	Field verification from road indicates that above ground storage tanks and heavy equipment is stored throughout this residential area.
Airports	X14	X14-01	B	High	Palmer Runway	3	
Airports	X14	X14-02	B	High	Palmer Runway	3	
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-03	B	High	Mile 17 Old Glenn Highway	3	Inactive: chlorinated hydrocarbon tetrachloroethane (PCE) have been detected at 0.030-0.040 mg/l in shallow groundwater and surface water at this site. The extent of PCE and source of contamination is not known.
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U07-02	B	Medium	Cope Industrial Way	3	Facility ID: 1571, Event ID: 2313, Status: Open. Diesel contamination found at 10 and 30 ft below ground surface.
Tanks, gasoline (underground)	T12	T12-01	B	High	Cheveron- Cope Industrial Way	3	Tank No. 2: 12000 gallon underground gasoline tank. 11 years old double walled with tank detection. Next inspection due 10/31/03.
Tanks, gasoline (underground)	T12	T12-02	B	High	Cheveron-Cope Industrial Way	3	Tank No. 3: 12000 gallon underground gasoline tank. 11 years old double walled with tank detection. Next inspection due 10/31/03.
Highways and roads, paved (cement or asphalt)	X20	X20-01	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-02	A	Low	Icy Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-03	A	Low	Wendy Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-04	A	Low	Kalwies Lane	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-01	A	Low	Near Brooks Road	2	
Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method)	D10	D10-01	A	Low	Near Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-01	A	Low	Outter Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-02	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-03	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-04	A	Low	Inner Springer Loop	2	

Table 4 (continued)

Contaminant Source Inventory and Risk Ranking for Mountain View Estates
Sources of Volatile Organic Chemicals

PWSID 226509.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Septic systems (serves one single-family home)	R02	R02-05	A	Low	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-05	A	Low	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-06	A	Low	Phyl Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-07	A	Low	Brooks Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-08	A	Low	Badger Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-09	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-10	A	Low	Caulkins Street	2	
Gasoline stations (without repair shop)	C15	C15-01	B	High	Cheveron-Cope Industrial Way	3	
Gasoline stations (without repair shop)	C15	C15-02	B	High	Cope Industrial Way	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-02	B	Low	Near Crowther Road	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-03	B	Low	Near Eklutna Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-04	B	Low	Lepak Avenue	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-05	B	Low	Industrial Way	3	
Landfills (municipal; Class III)	D51	D51-01	B	High	Palmer Airport Landfill	3	Unpermitted landfill. Clean up occurred and solid waste was moved the MSB Central landfill. Site has been inactive for years.
Quarries (gravel)	E10	E10-01	B	Low	Near Evergreen Avenue	3	Non active
Residential Areas	R01	R01-02	B	Low	All Residential Areas in Zone B	1	
Septic systems (serves one single-family home)	R02	R02-06-16	B	Low	All Residential Septics in Zone B	3	
Tanks, diesel (underground)	T08	T08-02	B	High	Cope Industrial Way	3	15000 gallon diesel. Permanently out of use.
Tanks, diesel (underground)	T08	T08-03	B	High	Cope Industrial Way	3	10000 gallon diesel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-04	B	High	Cope Industrial Way	3	10000 gallon aviation fuel. Permanently out of use.

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Tanks, gasoline (underground)	T12	T12-05	B	High	Cope Industrial Way	3	10000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-06	B	High	Cope Industrial Way	3	10000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-07	B	High	Cope Industrial Way	3	5000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-08	B	High	Cope Industrial Way	3	5000 gallon aviation fuel. Permanently out of use.
Tanks, heating oil, nonresidential (underground)	T16	T16-01	B	Low	Cheveron-Cope Industrial Way	3	Tank No. 1: 12000 gallon underground kerosene tank.11 years old double walled with tank detection. Next inspection due 10/31/03.
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U07-01	B	Low	Cope Industrial Way	3	Facility ID: 1571, Event ID: 685, Status: Closed. 3,000 gallons aviation gas spilled to ground surface on March 10, 1993. Suspected vandalizm during the night, hose left on the ground and pump left running.
Open dumps	U09	U09-01	B	Medium	Near bluff on Matanuska River	4	Unpermitted landfill. Appears that people have been dumping vehicles,scrap metal, batteries and appliances.
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low	Outter Springer Loop	3	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low	Lawalter Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low	Twigs Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Low	Ticks Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-15	B	Low	Deland Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-16	B	Low	Lepak Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-17	B	Low	Popes Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-18	B	Low	Eklutna Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-19	B	Low	Thuma Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-20	B	Low	Cope Industiral Way	3	
Highways and roads, paved (cement or asphalt)	X20	X20-21	B	Low	Evergreen Avenue	3	

Table 4 (continued)

Contaminant Source Inventory and Risk Ranking for Mountain View Estates
Sources of Volatile Organic Chemicals

PWSID 226509.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Highways and roads, paved (cement or asphalt)	X20	X20-22	B	Low	Old Glenn Highway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-23	B	Low	Arctic Street	3	
Residential Areas	R01	R01-03	C	Low	Residential Area in Zone C	4	
Septic systems (serves one single-family home)	R02	R02-17	C	Low		4	
Construction trade areas and materials	C09	C09-01	E	Low	East Virginia Ave off the Old Glenn Highway	3	
Metals mining, open pit- Inactive	E03	E03-06	E	Medium	Jack	5	
Quarries (gravel)	E10	E10-02	E	Low	Near Old Glenn Highway	3	Non active
Gasoline stations (with repair shop)	C16	C16-01	F	High	Mile 59.5 Glenn Hwy	4	
Landfills (municipal; Class III)	D51	D51-02	F	High	Chickaloon	4	Chickaloon Landfill
Metals mining, open pit-Active	E03	E03-03	F	Medium	Wishbone Hill	4	
Tanks, diesel (underground)	T08	T08-04	F	High	Palmer Correctional Center	5	
Tanks, diesel (underground)	T08	T08-05	F	High	Palmer Correctional Center	5	
Tanks, gasoline (underground)	T12	T12-09	F	High	Palmer Correctional Center	5	
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-04	F	High	Palmer Correctional Center	5	Release of <480 gallons #1 diesel from a 500 gallon above ground storage tank connection in 12/93.
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-05	F	High	Palmer Correctional Center	5	20,000 gallon heating oil spill in 1989.
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-06	F	Low	Palmer Correctional Center	5	During the removal of one 500 gal. diesel UST and one 1500 gal. buried heating oil tank, petroleum contamination was encountered at both excavations. Gilfilian Engineering recommends a clean closure for the site
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-07	F	High	Palmer Correctional Center	4	10, 0000 gallon diesel No.1 spilled at Butler Building
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-08	F	Medium	Palmer Correctional Center	4	168 gallons diesel No.1 spilled in 1995

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-09	F	Medium	Palmer Correctional Center	4	Heating oil spill
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-10	F	High	Palmer Correctional Center	4	Tank #4, 300 gallon diesel tank was pulled. Subsequent soil contaminated.
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-11	F/G	Medium	Palmer Correctional Center	4	48 gallons of diesel No. 1
Solid Waste Transfer Facility	D61	D61-01	G	Low	Sutton	4	Sutton Transfer Facility
Metals mining, open pit Inactive	E03	E03-04	G	Medium	Howard-Jessen	4	
Metals mining, open pit- Inactive	E03	E03-05	G	Medium	Coal Creek	5	
Metals mining, open pit (active or inactive?)	E03	E03-07	G	Medium	Gypsum Creek	5	
Metals mining, Inactive	E05	E05-01	G	Medium	Premier Mine near Moose Creek	4	
Metals mining, underground-Inactive	E05	E05-02	G	Medium	Baxter Mine	4	
Metals mining, underground Inactive	E05	E05-03	G	Medium	Buffalo Mine	4	
Metals mining, underground- Inactive	E05	E05-04	G	Medium	Rawson Mine	4	

Table 5

Contaminant Source Inventory and Risk Ranking for Mountain View Estates

Sources of Heavy Metals, Cyanide and Other Inorganic Chemicals

PWSID 226509.001

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Location	Map Number	Comments
Residential Areas	R01	R01-01	A	Low	Residential area in Zone A	2	Field verification from road indicates that above ground storage tanks and heavy equipment is stored throughout this residential area.
Airports	X14	X14-01	B	Low	Palmer Runway	3	
Airports	X14	X14-02	B	Low	Palmer Runway	3	
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U07-02	B	Medium	Cope Industrial Way	3	Facility ID: 1571, Event ID: 2313, Status: Open. Diesel contamination found at 10 and 30 ft below ground surface.
Tanks, gasoline (underground)	T12	T12-01	B	Medium	Cheveron- Cope Industrial Way	3	Tank No. 2: 12000 gallon underground gasoline tank. 11 years old double walled with tank detection. Next inspection due 10/31/03.
Tanks, gasoline (underground)	T12	T12-02	B	Medium	Cheveron-Cope Industrial Way	3	Tank No. 3: 12000 gallon underground gasoline tank. 11 years old double walled with tank detection. Next inspection due 10/31/03.
Highways and roads, paved (cement or asphalt)	X20	X20-01	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-02	A	Low	Icy Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-03	A	Low	Wendy Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-04	A	Low	Kalwies Lane	2	
Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method)	D10	D10-01	A	Low	Near Inner Springer Loop	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-01	A	Low	Near Brooks Road	2	
Septic systems (serves one single-family home)	R02	R02-01	A	Low	Outter Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-02	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-03	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-04	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-05	A	Low	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-05	A	Low	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-06	A	Low	Phyl Court	2	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Highways and roads, paved (cement or asphalt)	X20	X20-07	A	Low	Brooks Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-08	A	Low	Badger Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-09	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-10	A	Low	Caulkins Street	2	
Gasoline stations (without repair shop)	C15	C15-01	B	Low	Cheveron-Cope Industrial Way	3	
Gasoline stations (without repair shop)	C15	C15-02	B	Low	Cope Industrial Way	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-02	B	Low	Near Crowther Road	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-03	B	Low	Near Eklutna Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-04	B	Low	Lepak Avenue	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-05	B	Low	Industrial Way	3	
Landfills (municipal; Class III)	D51	D51-01	B	High	Palmer Airport Landfill	3	Unpermitted landfill. Clean up occurred and solid waste was moved the MSB Central landfill. Site has been inactive for years.
Residential Areas	R01	R01-02	B	Low	All Residential Areas in Zone B	1	
Septic systems (serves one single-family home)	R02	R02-06-16	B	Low	All Residential Septics in Zone B	3	
Tanks, gasoline (underground)	T12	T12-04	B	Medium	Cope Industrial Way	3	10000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-05	B	Medium	Cope Industrial Way	3	10000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-06	B	Medium	Cope Industrial Way	3	10000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-07	B	Medium	Cope Industrial Way	3	5000 gallon aviation fuel. Permanently out of use.
Tanks, gasoline (underground)	T12	T12-08	B	Medium	Cope Industrial Way	3	5000 gallon aviation fuel. Permanently out of use.

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Tanks, heating oil, nonresidential (underground)	T16	T16-01	B	Low	Cheveron-Cope Industrial Way	3	Tank No. 1: 12000 gallon underground kerosene tank.11 years old double walled with tank detection. Next inspection due 10/31/03.
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07	U07-01	B	Low	Cope Industrial Way	3	Facility ID: 1571, Event ID: 685, Status: Closed. 3,000 gallons aviation gas spilled to ground surface on March 10, 1993. Suspected vandalizm during the night, hose left on the ground and pump left running.
Open dumps	U09	U09-01	B	Medium	Near bluff on Matanuska River	4	Unpermitted landfill. Appears that people have been dumping vehicles,scrap metal, batteries and appliances.
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low	Outter Springer Loop	3	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low	Lawalter Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low	Twigs Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Low	Ticks Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-15	B	Low	Deland Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-16	B	Low	Lepak Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-17	B	Low	Popes Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-18	B	Low	Eklutna Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-19	B	Low	Thuma Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-20	B	Low	Cope Industiral Way	3	
Highways and roads, paved (cement or asphalt)	X20	X20-21	B	Low	Evergreen Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-22	B	Low	Old Glenn Highway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-23	B	Low	Arctic Street	3	
Residential Areas	R01	R01-03	C	Low	Residential Area in Zone C	4	
Septic systems (serves one single-family home)	R02	R02-17	C	Low		4	
Construction trade areas and materials	C09	C09-01	E	Low	East Virginia Ave off the Old Glenn Highway	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Metals mining, open pit- Inactive	E03	E03-06	E	Very High	Jack	5	
Metals mining, placer- Inactive	E04	E04-03	E	Low	Boulder Creek	5	
Metals mining, placer- Active	E04	E04-04	E	Low	LynDee 1-3	5	
Metals mining, placer- Inactive	E04	E04-05	E	Low	Caribou Creek	5	
Metals mining, placer-Inactive	E04	E04-06	E	Low	Mazuma Creek	5	
Metals mining, placer -Inactive	E04	E04-07	E	Low	Alfred Creek	5	
Metals mining, placer- Active	E04	E04-08	E	Low	Caribour Creek	5	
Metals mining, placer-Active	E04	E04-09	E	Low	Matanuska River	5	
Metals mining, placer -Active	E04	E04-10	E	Low	Agnes No. 1	5	
Metals mining, placer - Active	E04	E04-11	E	Low	Glacier Creek	5	
Landfills (municipal; Class III)	D51	D51-02	F	High	Chickaloon	4	Chickaloon Landfill
Metals mining, open pit-Active	E03	E03-03	F	Very High	Wishbone Hill	4	
Tanks, gasoline (underground)	T12	T12-09	F	Medium	Palmer Correctional Center	5	
Mineral extraction wells- Active	W05	W05-01	F	High	Drill Lake	5	
Solid Waste Transfer Facility	D61	D61-01	G	Low	Sutton	4	Sutton Transfer Facility
Metals mining, open pit Inactive	E03	E03-04	G	Very High	Howard-Jessen	4	
Metals mining, open pit- Inactive	E03	E03-05	G	Very High	Coal Creek	5	
Metals mining, open pit (active or inactive?)	E03	E03-07	G	Very High	Gypsum Creek	5	
Metals mining, placer - Active	E04	E04-01	G	Low	Moose Creek	4	
Metals mining, placer- Active	E04	E04-02	G	Low	Mag 1-2	4	
Metals mining, Inactive	E05	E05-01	G	Very High	Premier Mine near Moose Creek	4	
Metals mining, underground-Inactive	E05	E05-02	G	Very High	Baxter Mine	4	
Metals mining, underground Inactive	E05	E05-03	G	Very High	Buffalo Mine	4	
Metals mining, underground- Inactive	E05	E05-04	G	Very High	Rawson Mine	4	

Contaminant Source Inventory and Risk Ranking for Mountain View Estates

Sources of Heavy Metals, Cyanide and Other Inorganic Chemicals

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Abandoned mine spoils or mine tailings piles/ ponds	U01	U01-01	G	Very High	Knob Creek - Division of Mining, Site #1	4	

Table 6

Contaminant Source Inventory and Risk Ranking for Mountain View Estates
Sources of Synthetic Organic Chemicals

PWSID 226509.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Residential Areas	R01	R01-01	A	Low	Residential area in Zone A	2	Field verification from road indicates that above ground storage tanks and heavy equipment is stored throughout this residential area.
Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method)	D10	D10-01	A	Low	Near Inner Springer Loop	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-01	A	Low	Near Brooks Road	2	
Septic systems (serves one single-family home)	R02	R02-01	A	Low	Outter Springer Loop	2	
Airports	X14	X14-01	B	Medium	Palmer Runway	3	
Airports	X14	X14-02	B	Medium	Palmer Runway	3	
Septic systems (serves one single-family home)	R02	R02-02	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-03	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-04	A	Low	Inner Springer Loop	2	
Open dumps	U09	U09-01	B	Medium	Near bluff on Matanuska River	4	Unpermitted landfill. Appears that people have been dumping vehicles,scrap metal, batteries and appliances.
Septic systems (serves one single-family home)	R02	R02-05	A	Low	Inner Springer Loop	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-02	B	Low	Near Crowther Road	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-03	B	Low	Near Eklutna Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-04	B	Low	Lepak Avenue	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-05	B	Low	Industrial Way	3	
Landfills (municipal; Class III)	D51	D51-01	B	High	Palmer Airport Landfill	3	Unpermitted landfill. Clean up occurred and solid waste was moved the MSB Central landfill. Site has been inactive for years.
Residential Areas	R01	R01-02	B	Low	All Residential Areas in Zone B	1	
Septic systems (serves one single-family home)	R02	R02-06-16	B	Low	All Residential Septics in Zone B	3	

Contaminant Source Inventory and Risk Ranking for Mountain View Estates

Sources of Synthetic Organic Chemicals

Contaminant Source Type	***Contaminant Source ID***	***CS ID tag***	***Zone***	***Risk Ranking for Analysis***	***Location***	***Map Number***	***Comments***
Residential Areas	R01	R01-03	C	Low	Residential Area in Zone C	4	
Septic systems (serves one single-family home)	R02	R02-17	C	Low		4	
Orchards or nurseries	A10	A10-01	F	High	Clark Wolverine Road	4	
Landfills (municipal; Class III)	D51	D51-02	F	High	Chickaloon	4	Chickaloon Landfill
Solid Waste Transfer Facility	D61	D61-01	G	Low	Sutton	4	Sutton Transfer Facility

Table 7

Contaminant Source Inventory and Risk Ranking for Mountain View Estates
Sources of Other Organic Chemicals

PWSID 226509.001

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Location	Map Number	Comments
Residential Areas	R01	R01-01	A	Low	Residential area in Zone A	2	Field verification from road indicates that above ground storage tanks and heavy equipment is stored throughout this residential area.
Airports	X14	X14-01	B	Medium	Palmer Runway	3	
Airports	X14	X14-02	B	Medium	Palmer Runway	3	
Injection wells (Class V) Large-Capacity Septic System (Drainfield Disposal Method)	D10	D10-01	A	Low	Near Inner Springer Loop	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-01	A	Low	Near Brooks Road	2	
Septic systems (serves one single-family home)	R02	R02-01	A	Low	Outter Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-02	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-03	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-04	A	Low	Inner Springer Loop	2	
Septic systems (serves one single-family home)	R02	R02-05	A	Low	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-01	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-02	A	Low	Icy Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-03	A	Low	Wendy Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-04	A	Low	Kalwies Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-05	A	Low	Inner Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-06	A	Low	Phyl Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-07	A	Low	Brooks Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-08	A	Low	Badger Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-09	A	Low	Outter Springer Loop	2	
Highways and roads, paved (cement or asphalt)	X20	X20-10	A	Low	Caulkins Street	2	
Gasoline stations (without repair shop)	C15	C15-01	B	Low	Cheveron-Cope Industrial Way	3	
Gasoline stations (without repair shop)	C15	C15-02	B	Low	Cope Industrial Way	3	

Contaminant Source Inventory and Risk Ranking for Mountain View Estates

Sources of Other Organic Chemicals

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-02	B	Low	Near Crowther Road	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-03	B	Low	Near Eklutna Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-04	B	Low	Lepak Avenue	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D01-05	B	Low	Industrial Way	3	
Landfills (municipal; Class III)	D51	D51-01	B	High	Palmer Airport Landfill	3	Unpermitted landfill. Clean up occurred and solid waste was moved the MSB Central landfill. Site has been inactive for years.
Quarries (gravel)	E10	E10-01	B	Low	Near Evergreen Avenue	3	Non active
Residential Areas	R01	R01-02	B	Low	All Residential Areas in Zone B	1	
Septic systems (serves one single-family home)	R02	R02-06-16	B	Low	All Residential Septics in Zone B	3	
Open dumps	U09	U09-01	B	Medium	Near bluff on Matanuska River	4	Unpermitted landfill. Appears that people have been dumping vehicles,scrap metal, batteries and appliances.
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low	Outter Springer Loop	3	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low	Lawalter Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low	Twigs Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Low	Ticks Circle	3	
Highways and roads, paved (cement or asphalt)	X20	X20-15	B	Low	Deland Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-16	B	Low	Lepak Avenue	3	
Highways and roads, paved (cement or asphalt)	X20	X20-17	B	Low	Popes Road	3	
Highways and roads, paved (cement or asphalt)	X20	X20-18	B	Low	Eklutna Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-19	B	Low	Thuma Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-20	B	Low	Cope Industiral Way	3	
Highways and roads, paved (cement or asphalt)	X20	X20-21	B	Low	Evergreen Avenue	3	

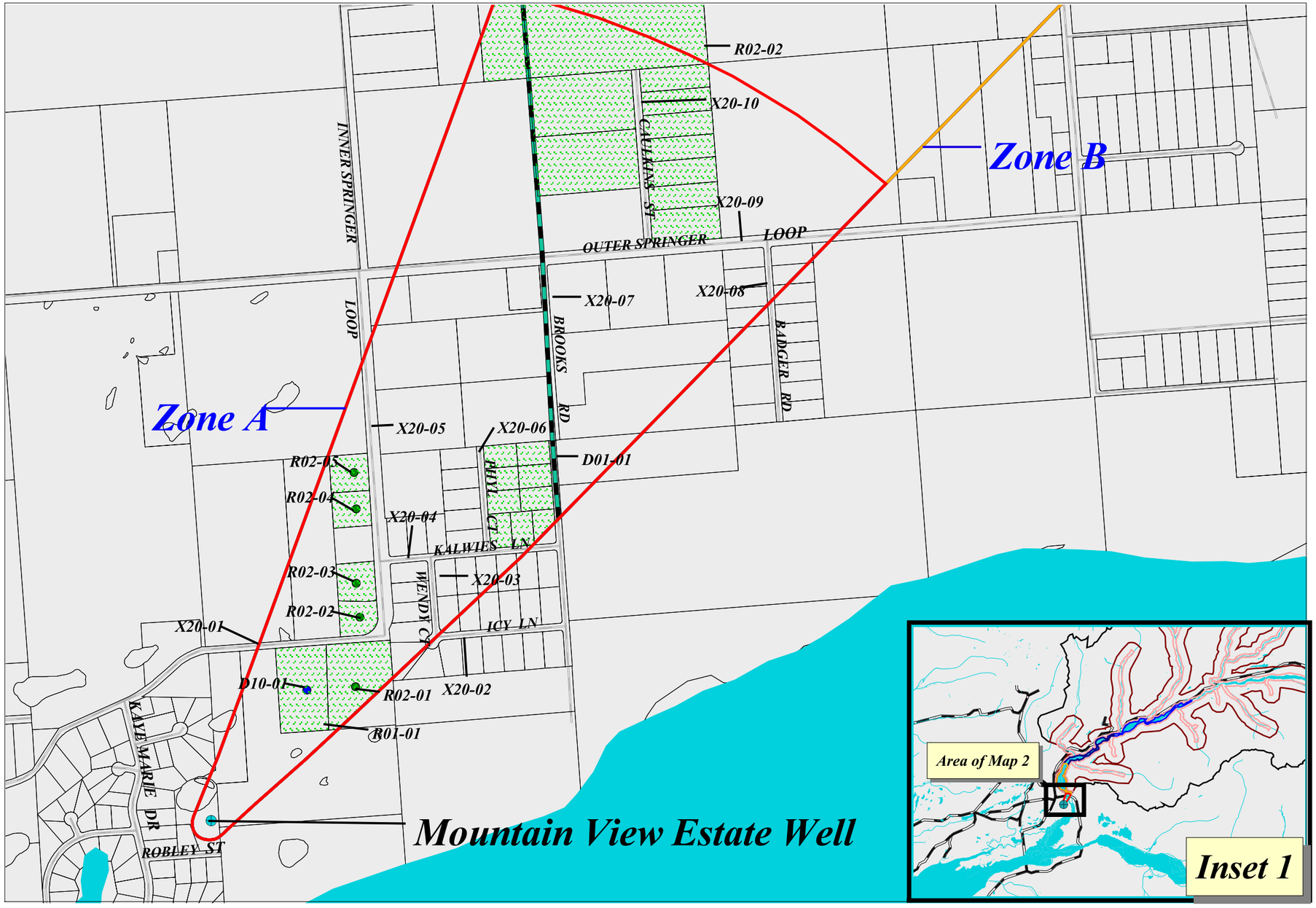
Sources of Other Organic Chemicals

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Location*	*Map Number*	*Comments*
Highways and roads, paved (cement or asphalt)	X20	X20-22	B	Low	Old Glenn Highway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-23	B	Low	Arctic Street	3	
Residential Areas	R01	R01-03	C	Low	Residential Area in Zone C	4	
Septic systems (serves one single-family home)	R02	R02-17	C	Low		4	
Construction trade areas and materials	C09	C09-01	E	Low	East Virginia Ave off the Old Glenn Highway	3	
Quarries (gravel)	E10	E10-02	E	Low	Near Old Glenn Highway	3	Non active
Landfills (municipal; Class III)	D51	D51-02	F	High	Chickaloon	4	Chickaloon Landfill
Solid Waste Transfer Facility	D61	D61-01	G	Low	Sutton	4	Sutton Transfer Facility

APPENDIX C

Mountain View Estates
Drinking Water Protection Area
And Potential & Existing Contaminant Sources

Drinking Water Protection Area and Potential and Existing Sources of Contamination for Mountain View Estates



Legend

- Mountain View Estates Public Water Systems

Zone A Protection Zone
- Several Months Travel Time

Zone B Protection Zone
- 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
- Zone E Protection Area

Zone F Protection Area
- 1 Mile Buffer

Zone G Protection Area
- Watershed Boundary
- Residential (R01)

Septics
- Injection Wells - Class V (D10)
- Septic Systems -Residential (R02)
- Sewer lines (D01)
- Lakes
- Matanuska Susitna Borough Parcels
- Roads
- Rivers and Streams
- Elevation Contours
- Cities

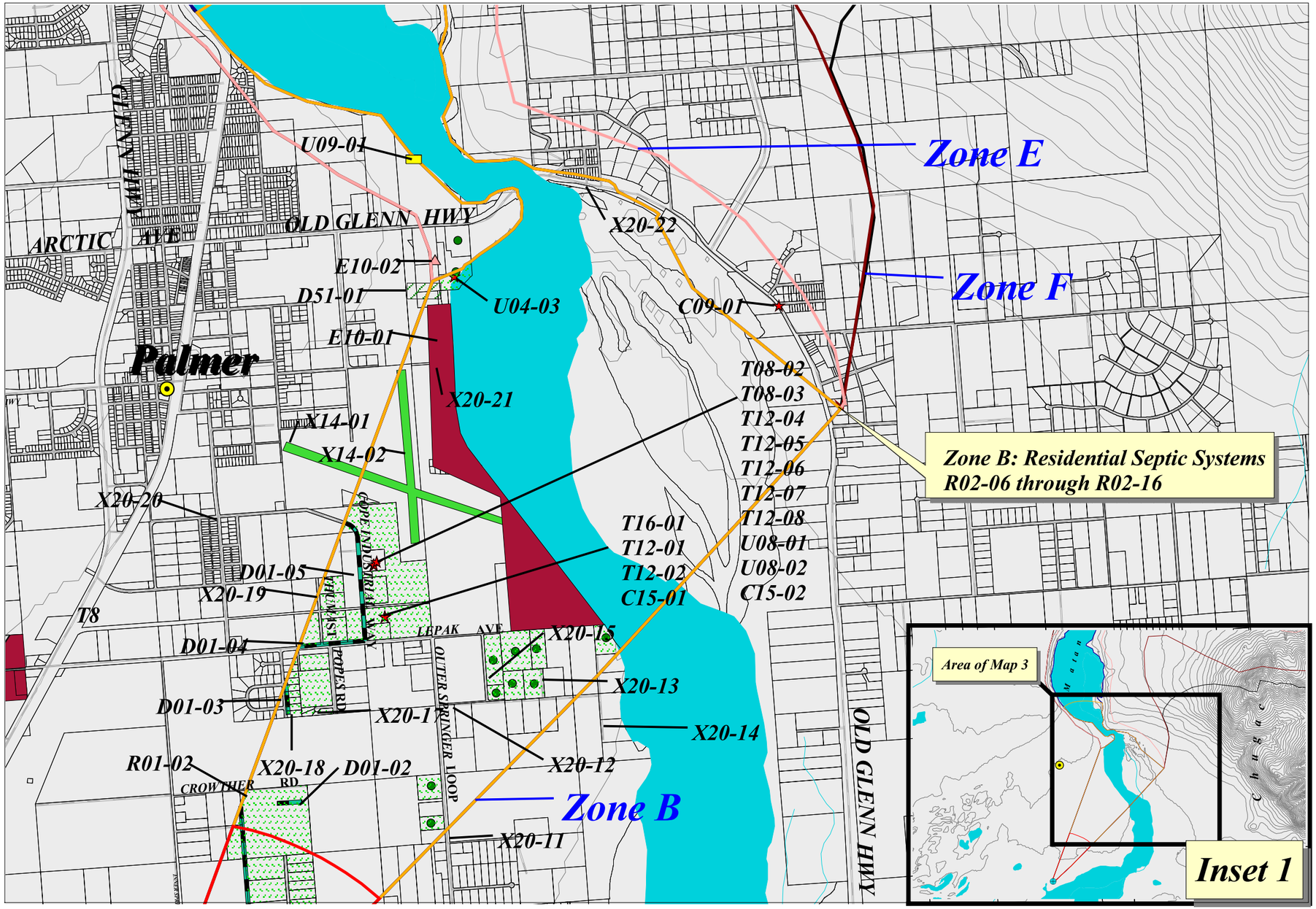
2000 0 2000 4000 Feet

N W E S

PWSID 226509.001

Map 2

Drinking Water Protection Area and Potential and Existing Sources of Contamination of Mountain View Estates



4000 0 4000 8000 Feet

PWSID 226509.001

Legend

- Cities
- Mountain View Estates Public Water Systems

Zone A Protection Zone
- Several Months Travel Time

Zone B Protection Zone
- 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
- Zone E Protection Area

Zone F Protection Area
- 1 Mile Buffer

Zone G Protection Area
- Watershed Boundary
- Residential (R01)

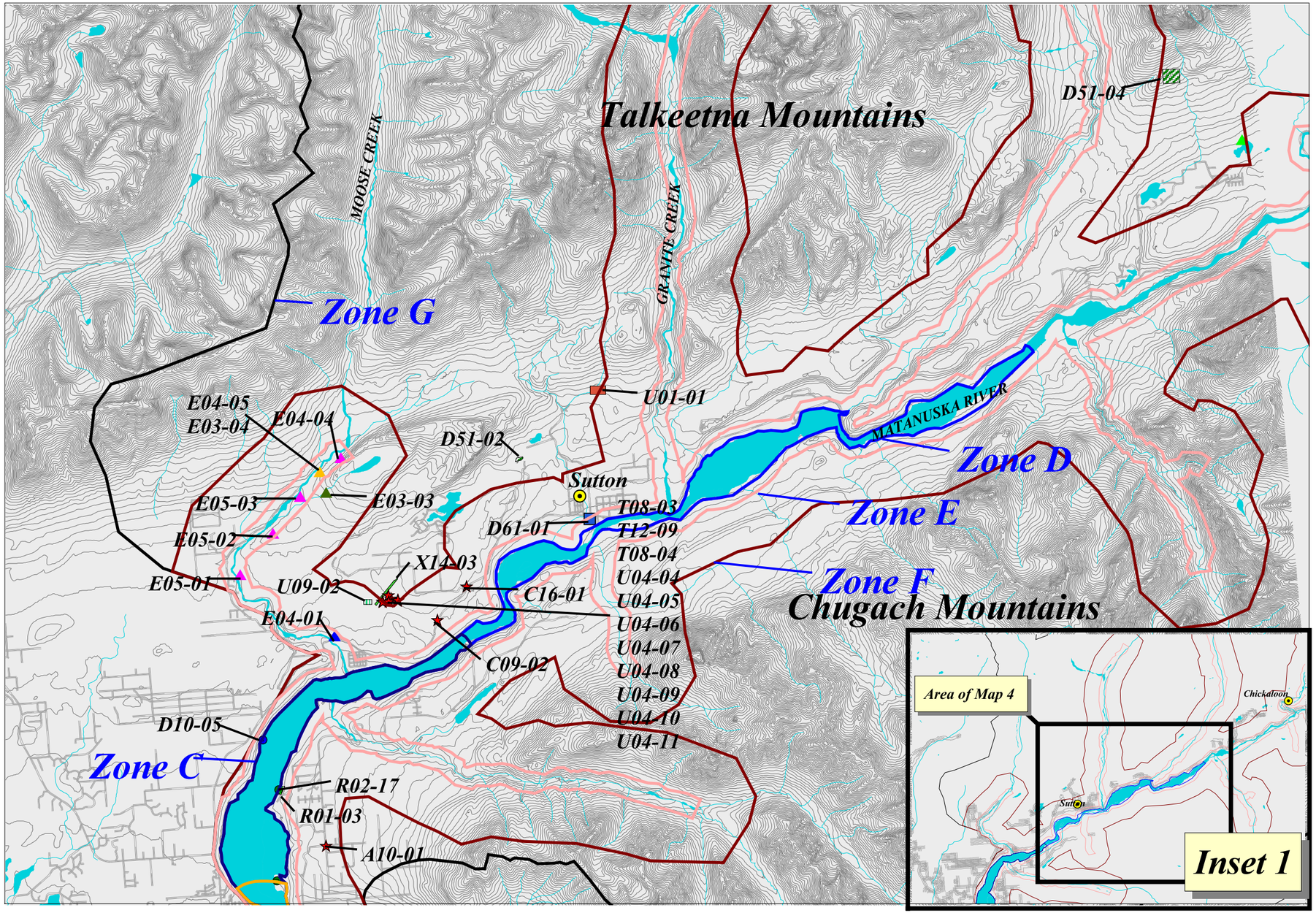
Septics
- Injection Wells - Class V (D10)
- Septic Systems -Residential (R02)
- Solid Waste Facility (D51)
- Potential Contaminant Sources
- Open Dump (U09)
- Airports (X14)
- Gravel Pit (E10)

Mines
- Metals mining, Placer (E04)
- Metals mining, surface and underground (E03 and E05)
- Metals mining, Open pit (E03)
- Metals mining, underground (E05)
- Mines
- Sewer lines (D01)
- Lakes
- Rivers and Streams
- Matanuska Susitna Borough Parcels
- Roads
- Elevation Contours

N W E S

Map 3

Drinking Water Protection Area and Potential and Existing Sources of Contamination for Mountain View Estates



20 0 20 40 Miles

PWSID 226509.001

Legend

- Cities
- Mountain View Estates Public Water Systems

Zone A Protection Zone
- Several Months Travel Time

Zone B Protection Zone
- 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
- Zone E Protection Area

Zone F Protection Area
- 1 Mile Buffer

Zone G Protection Area
- Watershed Boundary
- Residential (R01)

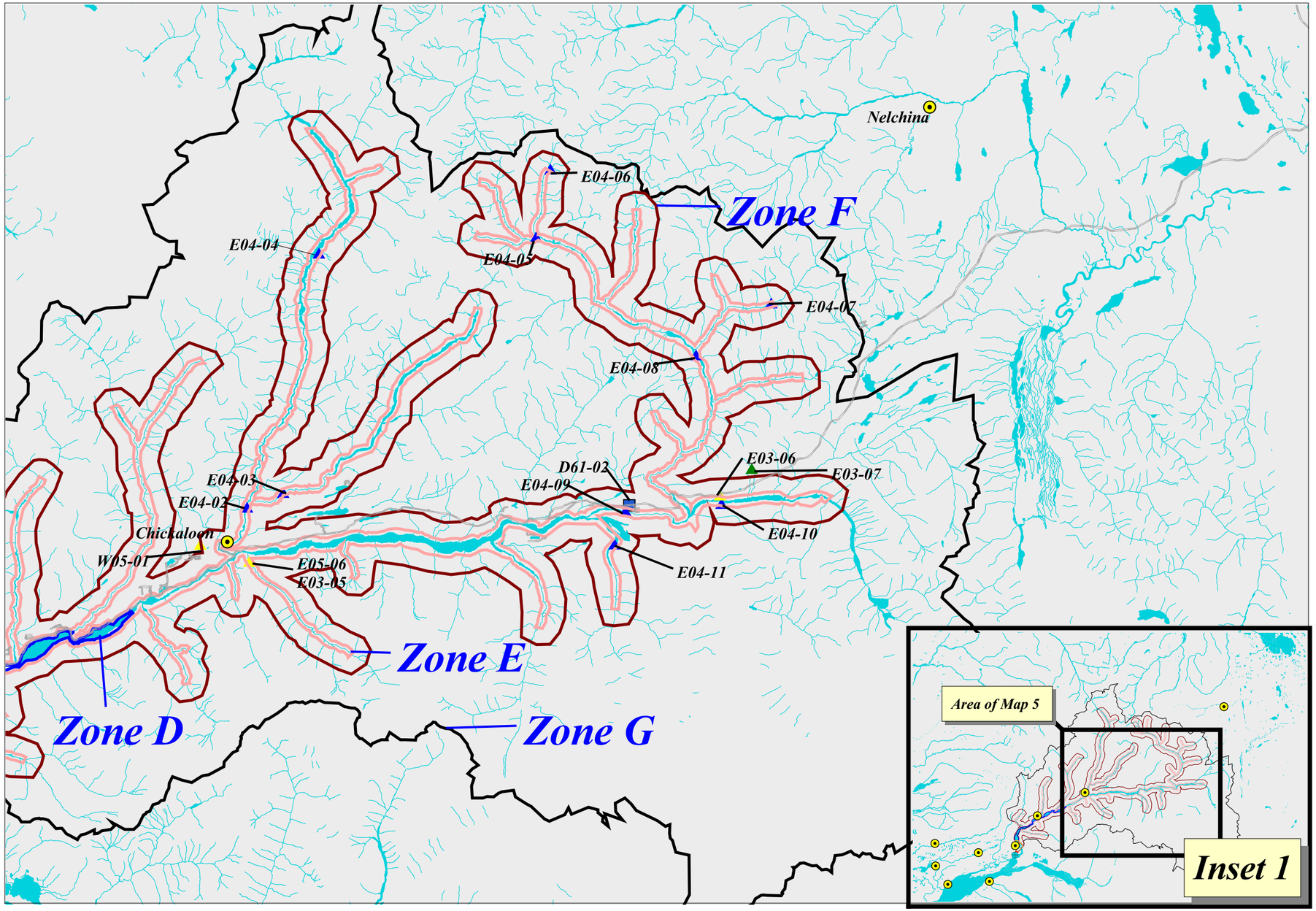
Septics
- Injection Wells - Class V (D10)
- Septic Systems -Residential (R02)
- Potential and Existing Sources of Contamination
- Transfer Stations (D61)
- Solid Waste Facility (D51)
- Open Dump (U09)
- Mine Tailings (U01)

Mines
- Metals mining, Placer (E04)
- Metals Mining, surface and underground (E03 and E05)
- Metals mining, Open pit (E03)
- Metals mining, underground (E05)
- Mineral Extraction Well (W05)
- Lakes
- Rivers and Streams
- Roads
- Elevation Contours

N W E S

Map 4

Drinking Water Protection Area and Potential and Existing Sources of Contamination for Mountain View Estates



9 0 9 18 Miles

PWSID 226509.001

Legend

- Cities
- Roads
- Mountain View Estates Public Water Systems

Zone A Protection Zone
- Several Months Travel Time

Zone B Protection Zone
- 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
- Zone E Protection Area

Zone F Protection Area
- 1 Mile Buffer

Zone G Protection Area
- Watershed Boundary
- Potential and Existing Sources of Contamination

Mines
- Metals mining, Placer (E04)
- Metals Mining, surface and underground (E03,E05)
- Metals Mining, Open Pit
- Metals Mining, underground (E05)
- Mineral Extraction Wells (W05)
- Transfer Stations (D61)
- Solid Waste Facilities (D51)
- Open Dump (U17)
- Mine Tailings (U01)
- Lakes
- Rivers and Streams
- Matanuska Susitna Borough Parcels

N W E S

Map 5

APPENDIX D

Vulnerability Analysis for Mountain View Estates Public Drinking Water Source

Chart 1. Susceptibility of the wellhead - Mountain View Estates

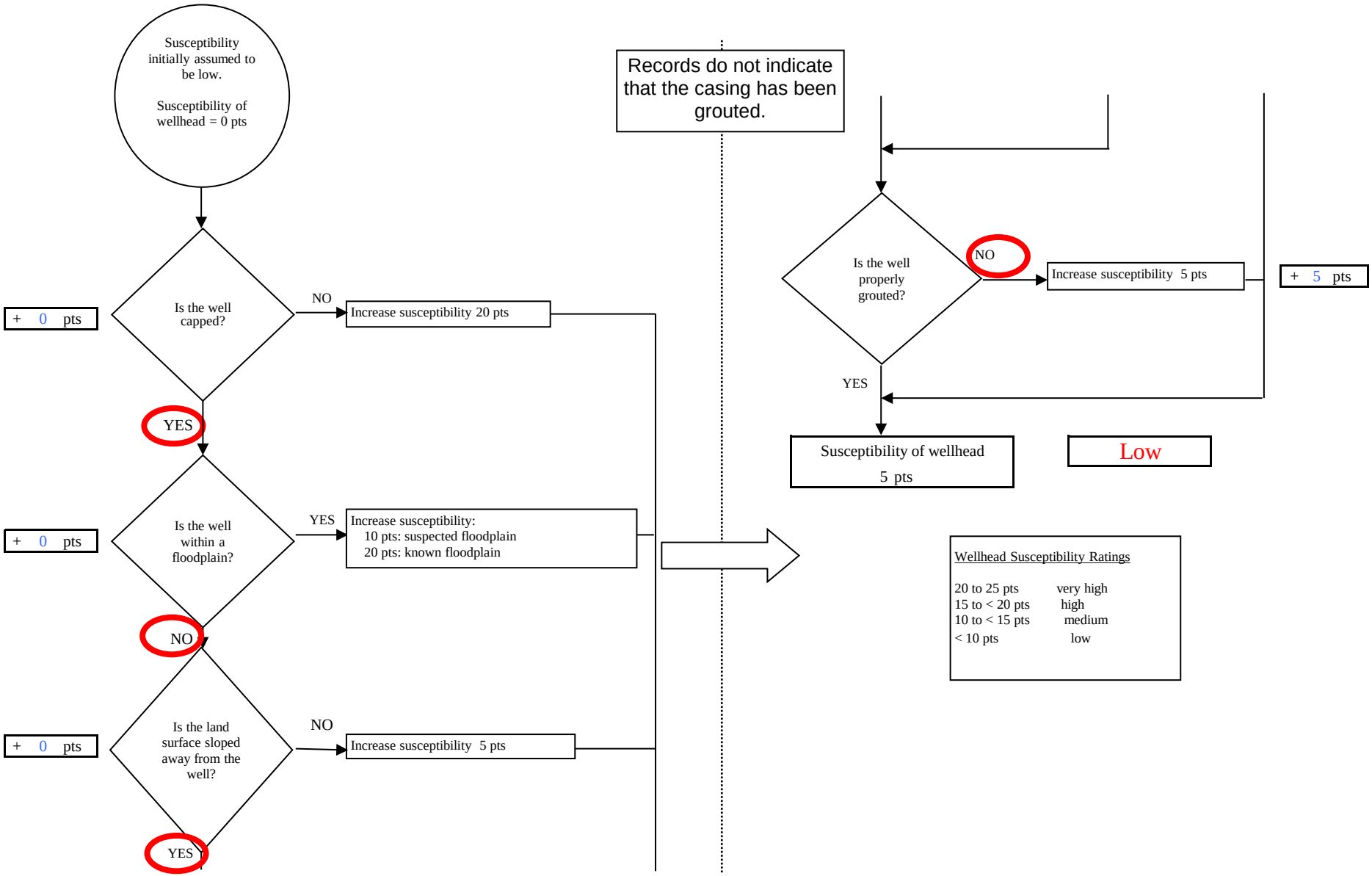


Chart 2. Susceptibility of the aquifer - Mountain View Estates

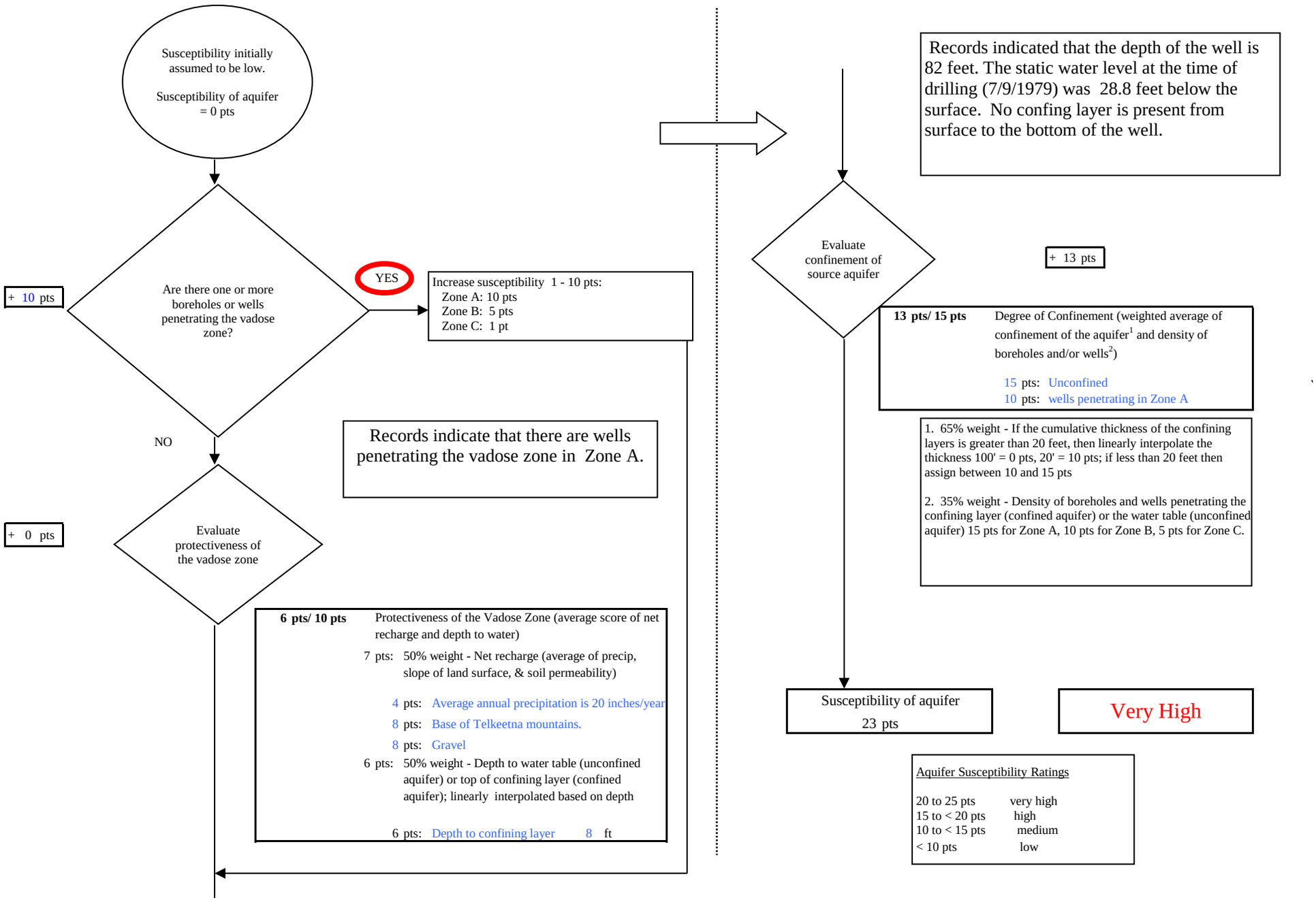
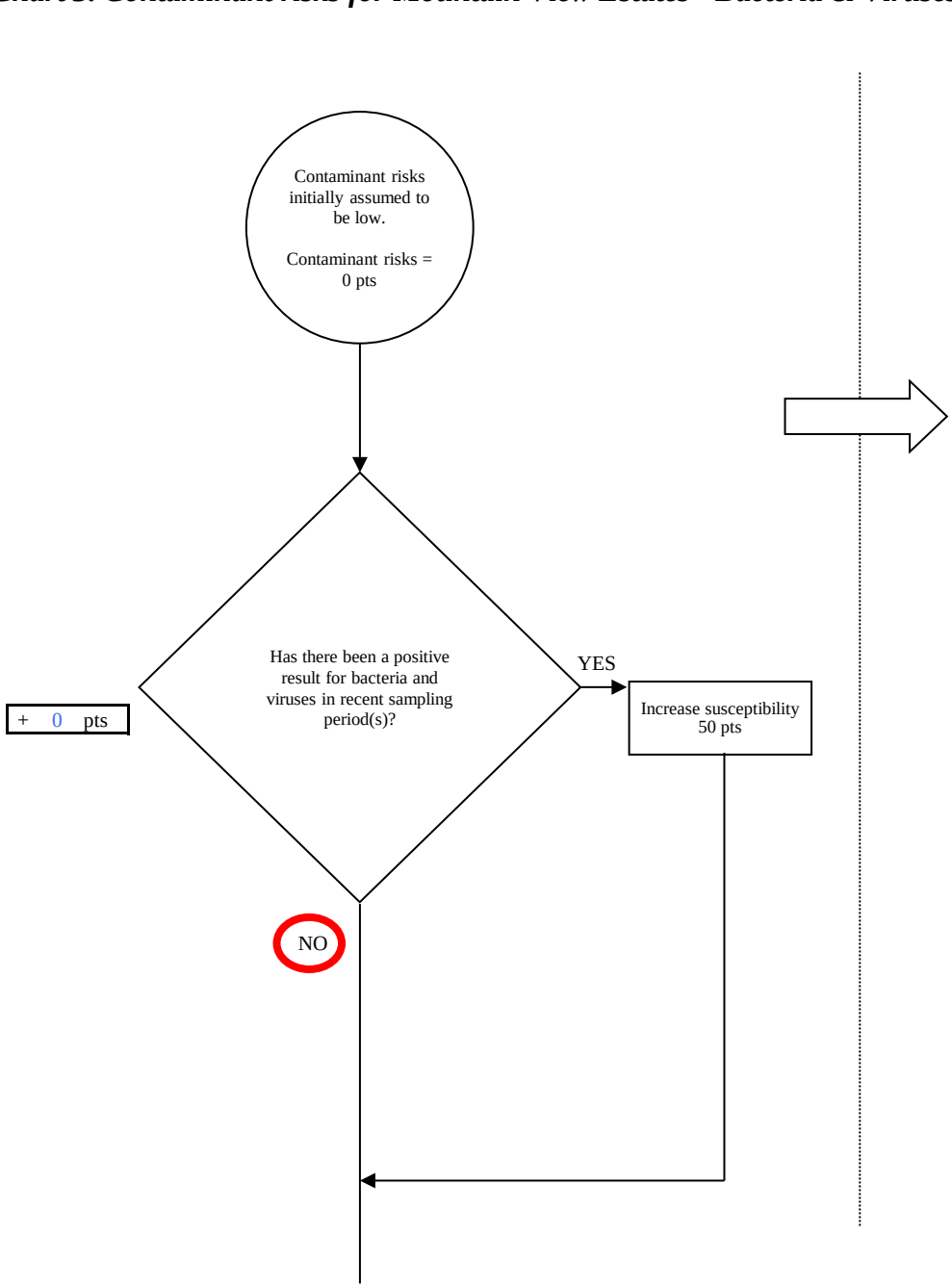
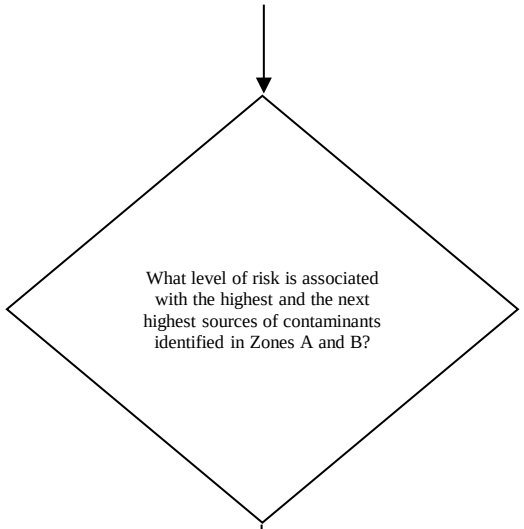


Chart 3. Contaminant risks for Mountain View Estates - Bacteria & Viruses





+ 30 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)	1	0	1
Medium(s)	1	0	1
Low(s)	7	4	11

	LOW	MEDIUM	HIGH	VERY HIGH
LOW	≥ 10 sources	≥ 10 sources	≥ 20 sources	----
MEDIUM	----	≥ 2 sources	≥ 5 sources	≥ 10 sources
HIGH	----	----	≥ 1 source	≥ 2 sources
VERY HIGH	----	----	----	≥ 1 source

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 3. Contaminant risks for Mountain View Estates - Bacteria & Viruses

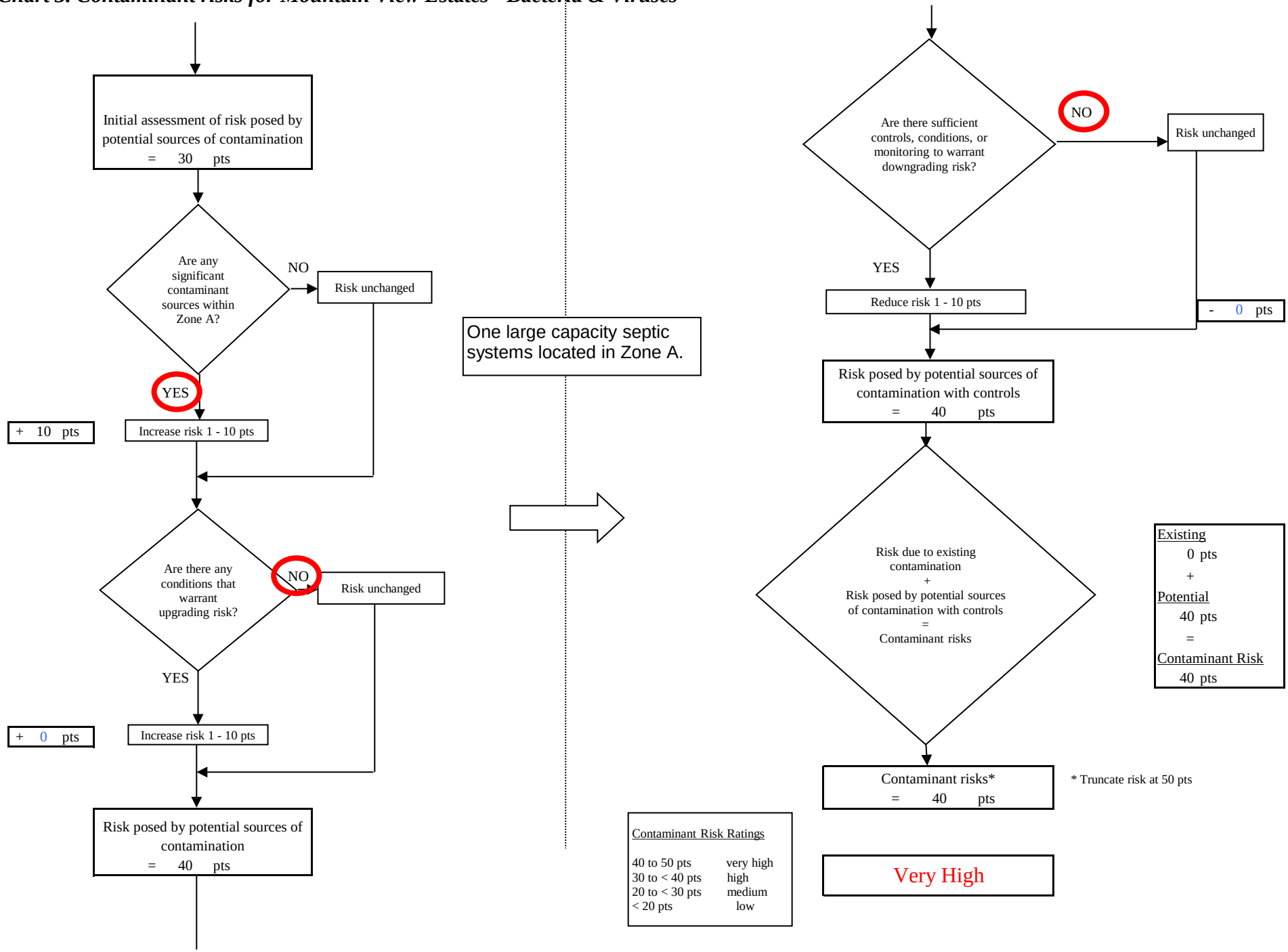


Chart 4. Vulnerability analysis for Mountain View Estates - Bacteria & Viruses

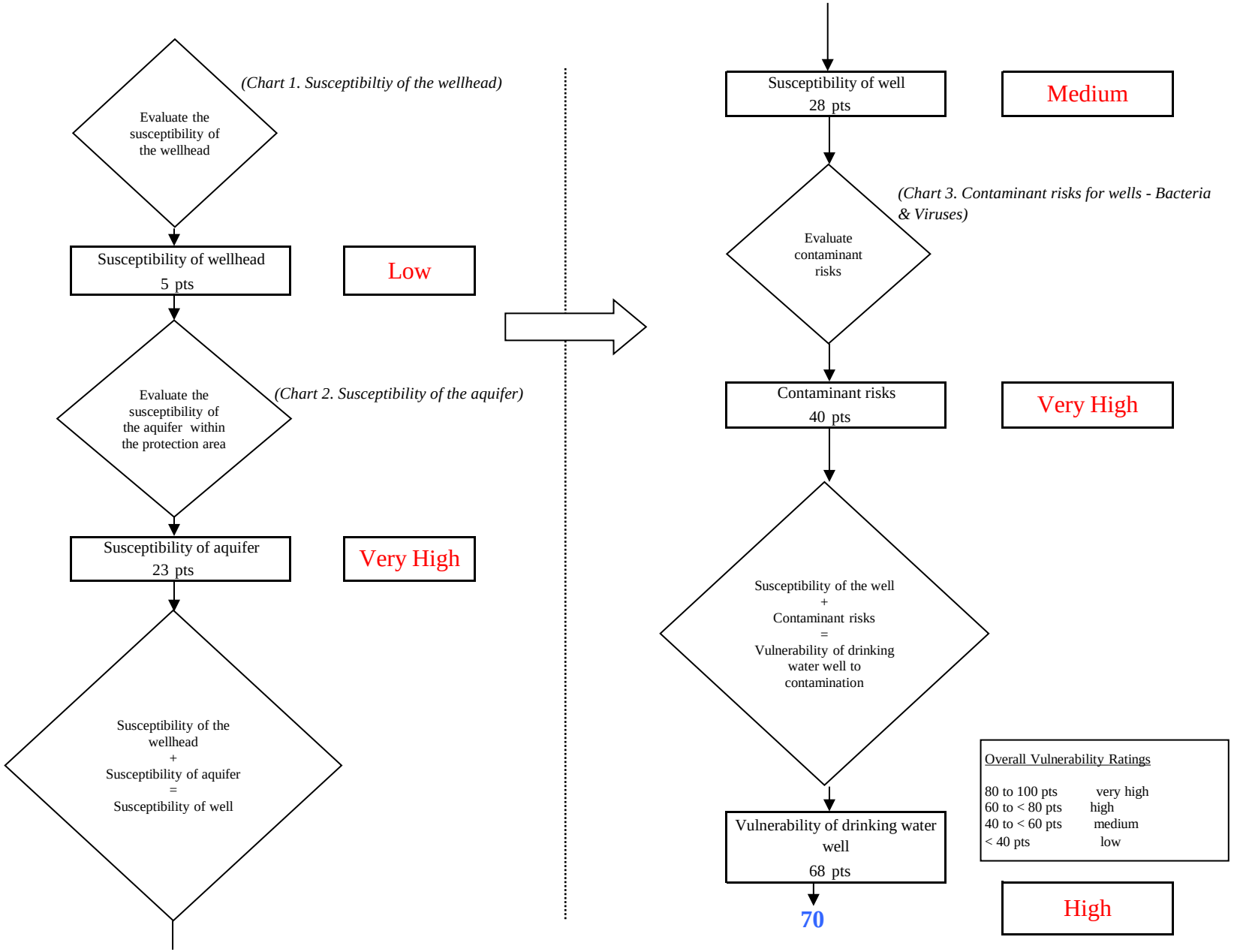


Chart 5. Contaminant risks for Mountain View Estates - Nitrates and Nitrites

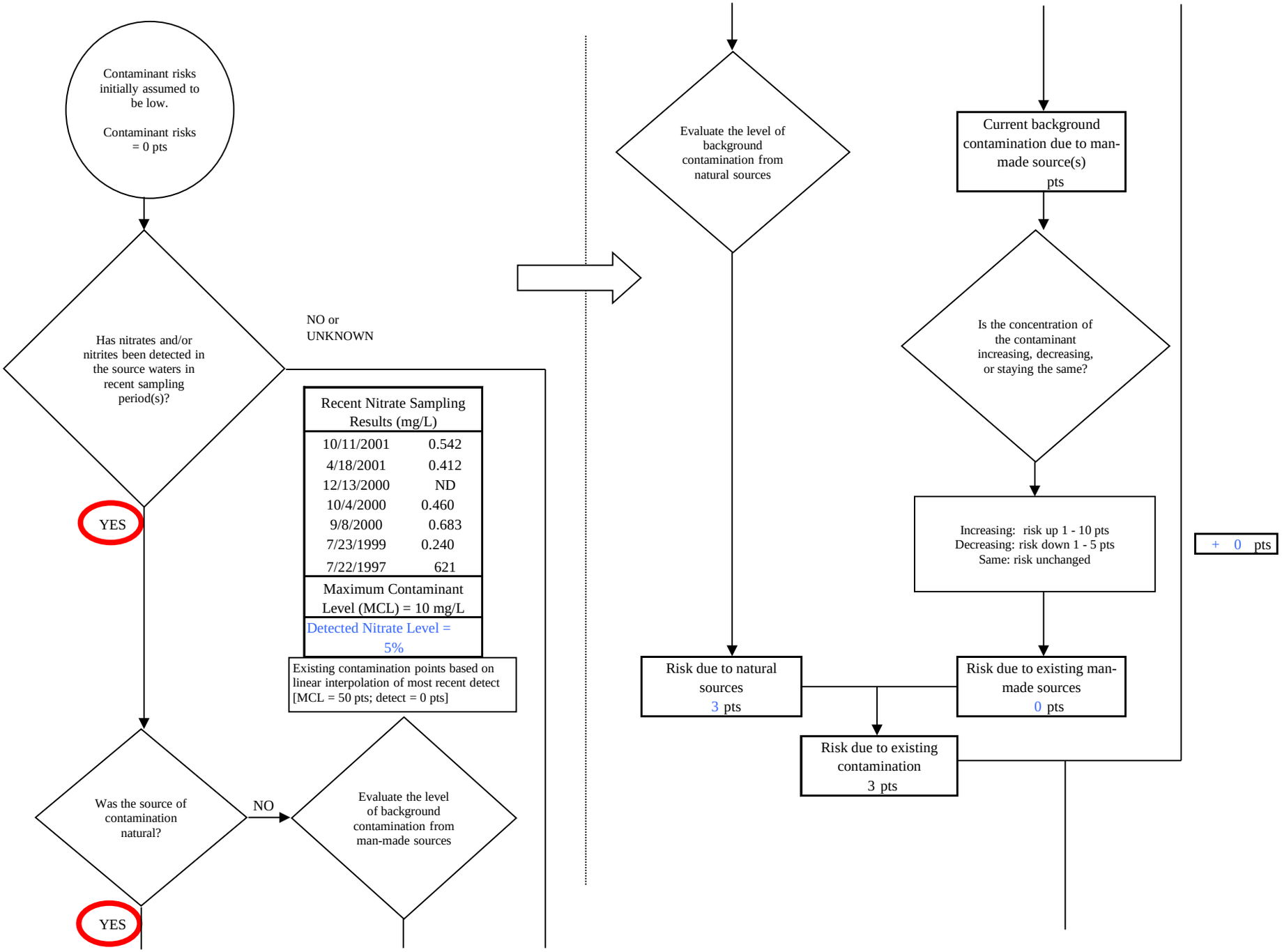
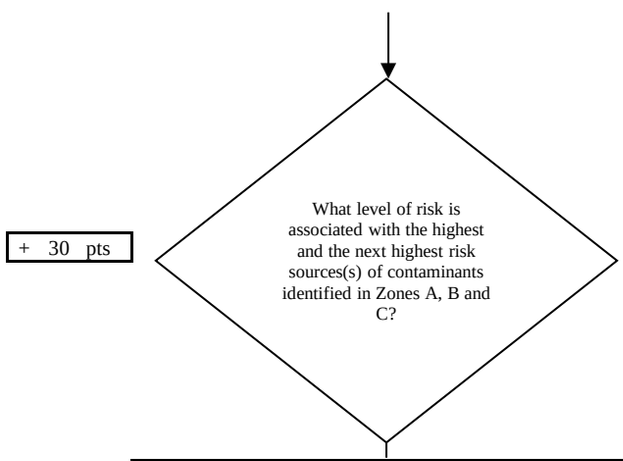


Chart 5. Contaminant risks for Mountain View Estates - Nitrates and Nitrites



+ 30 pts

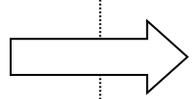
Risk Levels for Contaminant Sources identified in Zones A, B and C

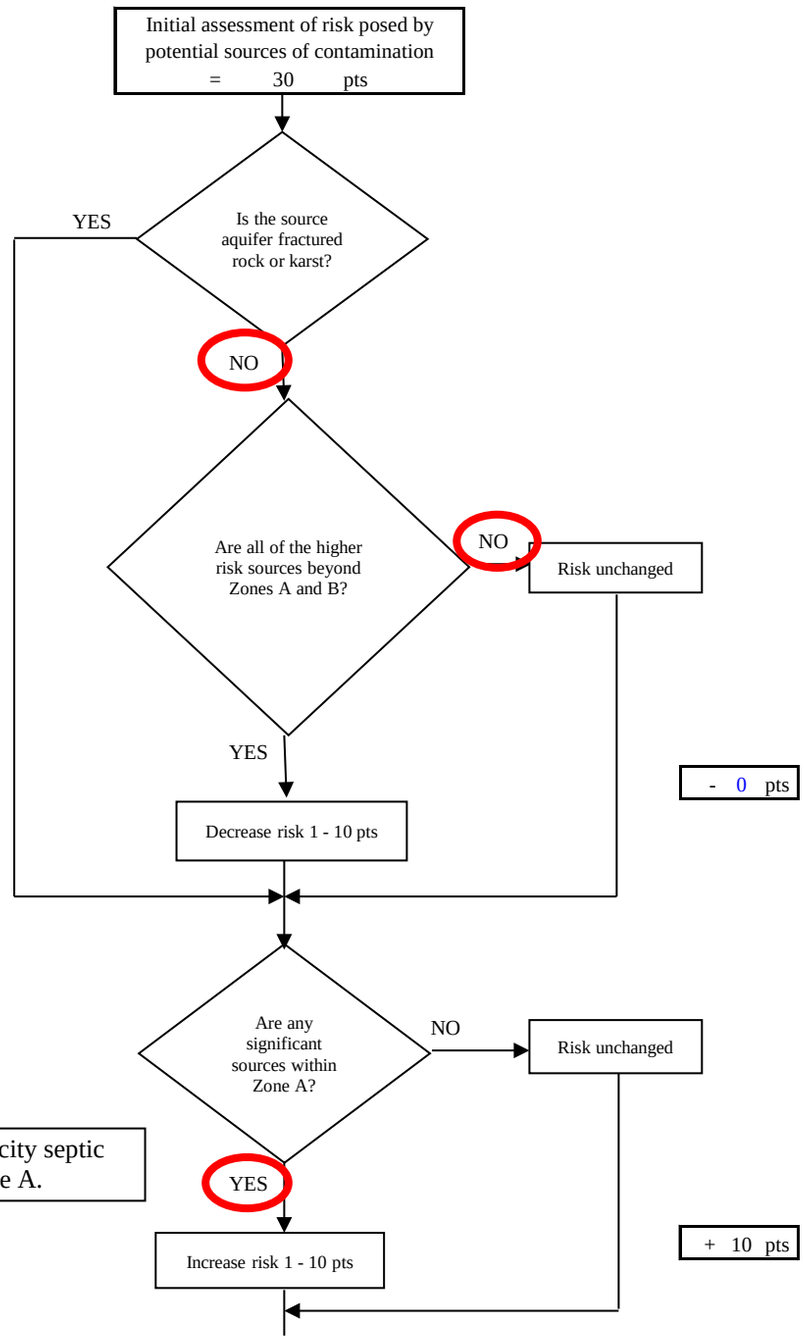
	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	1	0	1
Medium(s)	1	0	1
Low(s)	7	9	16

	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

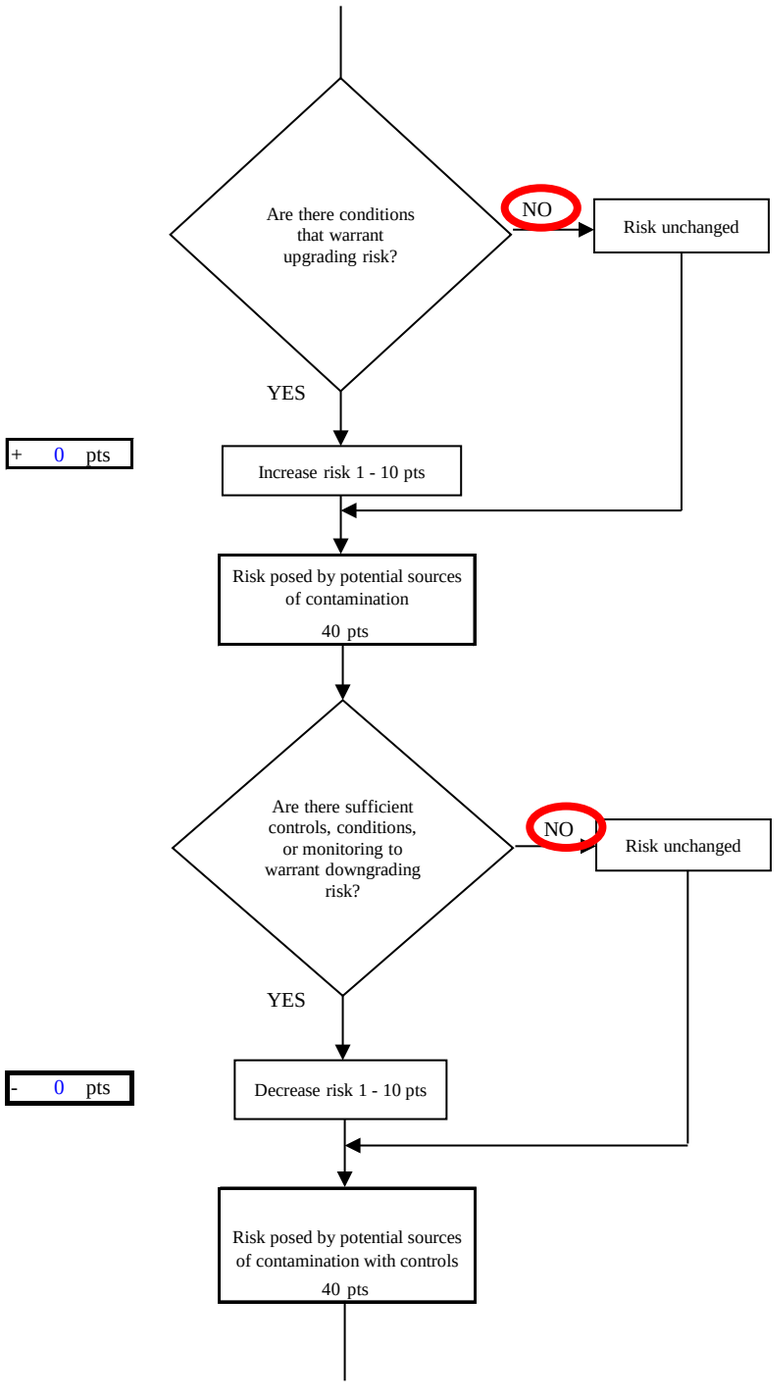
Note: Septic systems, sewerlines, and roads are each assigned a risk ranking for each individual contaminant source in the CSI. The VA, however, counts these contaminant sources as a group and assigns a calculated number of either "lows" or "mediums" based on the density.





One large capacity septic systems in Zone A.

Chart 5. Contaminant risks for Mountain View Estates - Nitrates and Nitrites



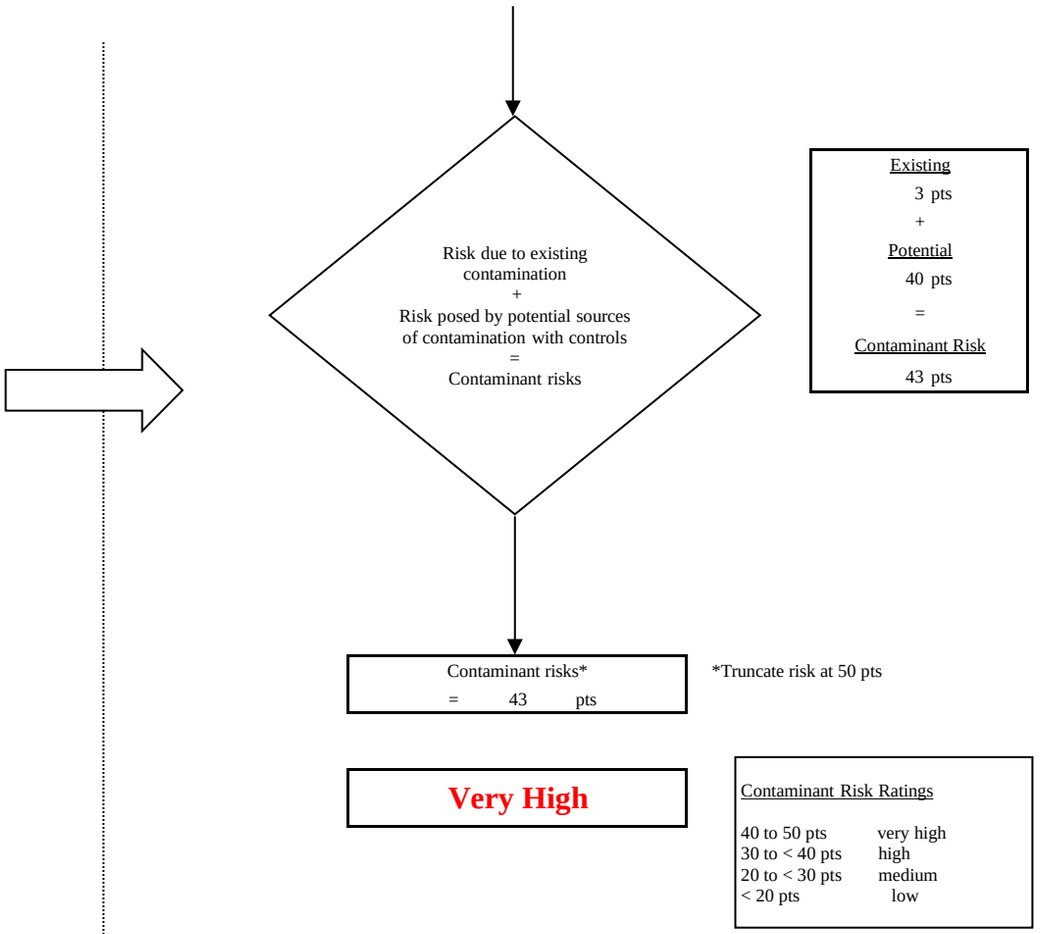


Chart 6. Vulnerability analysis for Mountain View Estates - Nitrates and Nitrites

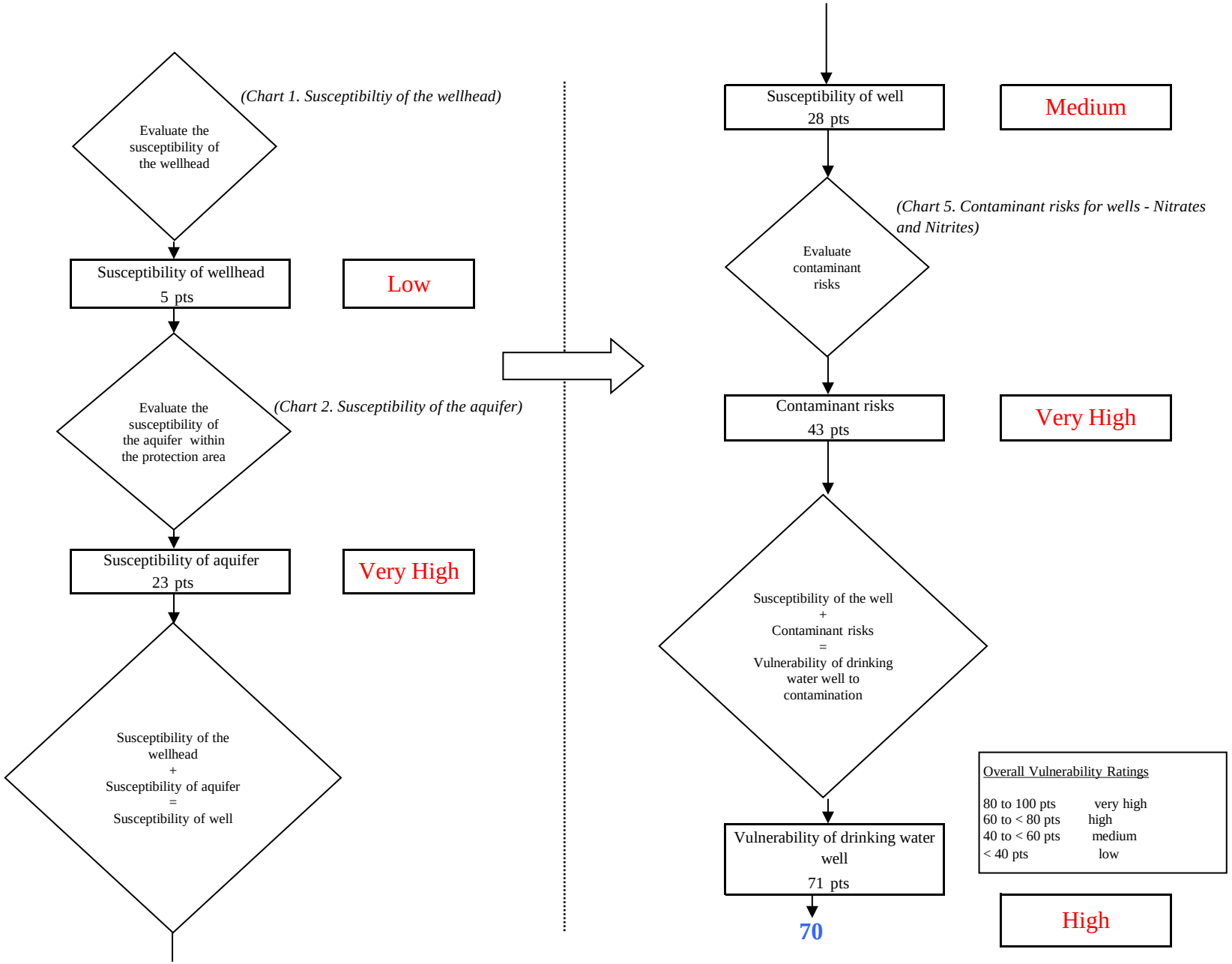


Chart 7. Contaminant risks for Mountain View Estates - Volatile Organic Chemicals

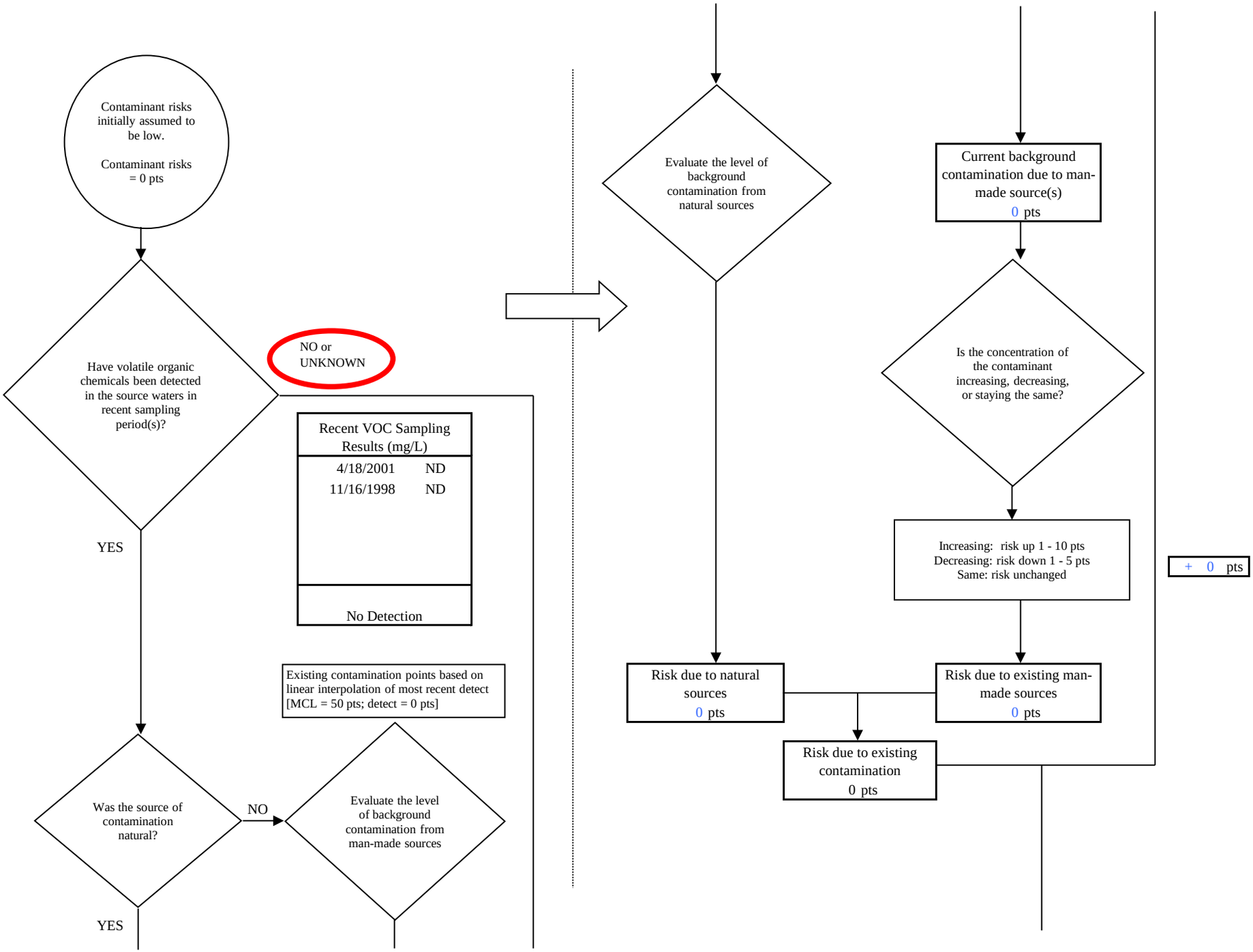


Chart 7. Contaminant risks for Mountain View Estates - Volatile Organic Chemicals

+ 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	15	15
Medium(s)	0	2	2
Low(s)	5	7	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 40

Note: Septic systems, sewer lines, 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

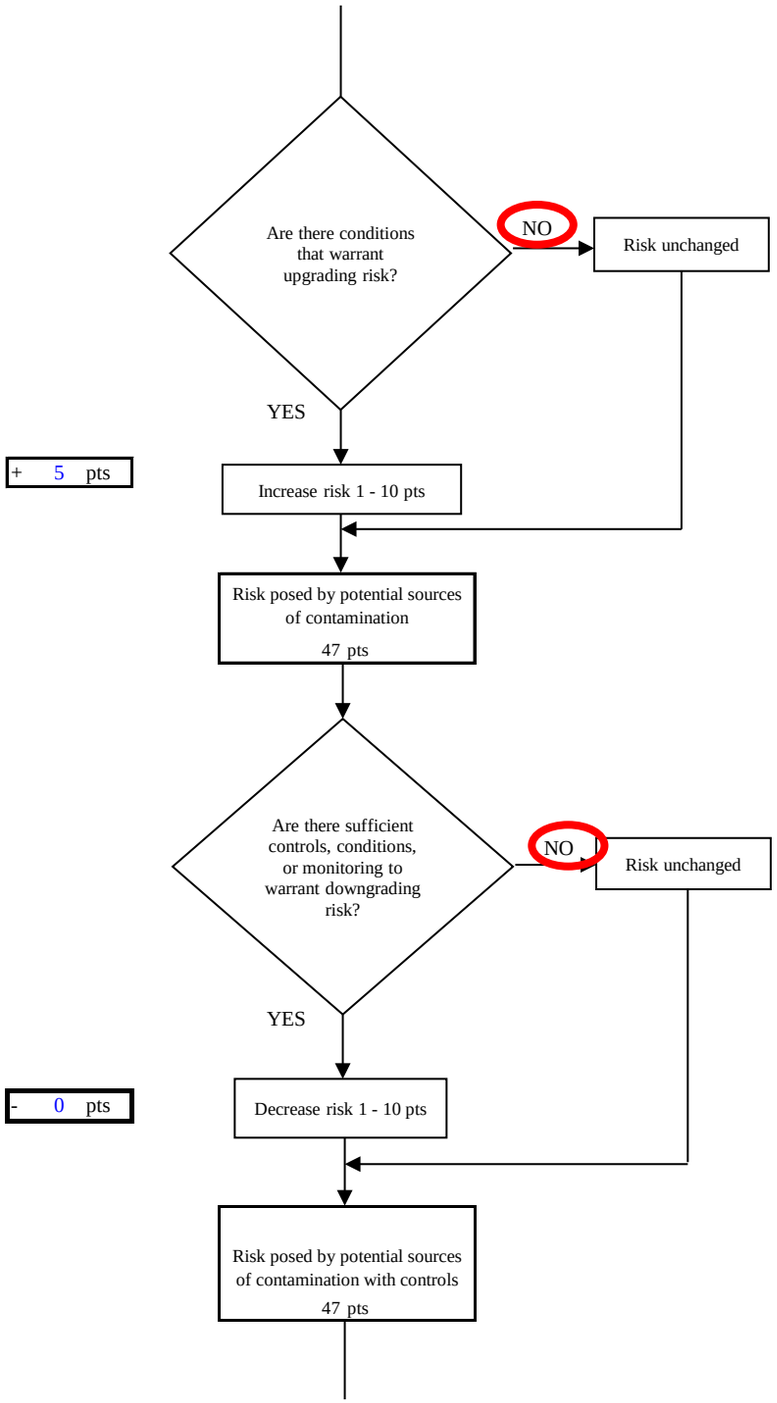
Risk unchanged

YES

Increase risk 1 - 10 pts

+ 2 pts

Chart 7. Contaminant risks for Mountain View Estates - Volatile Organic Chemicals



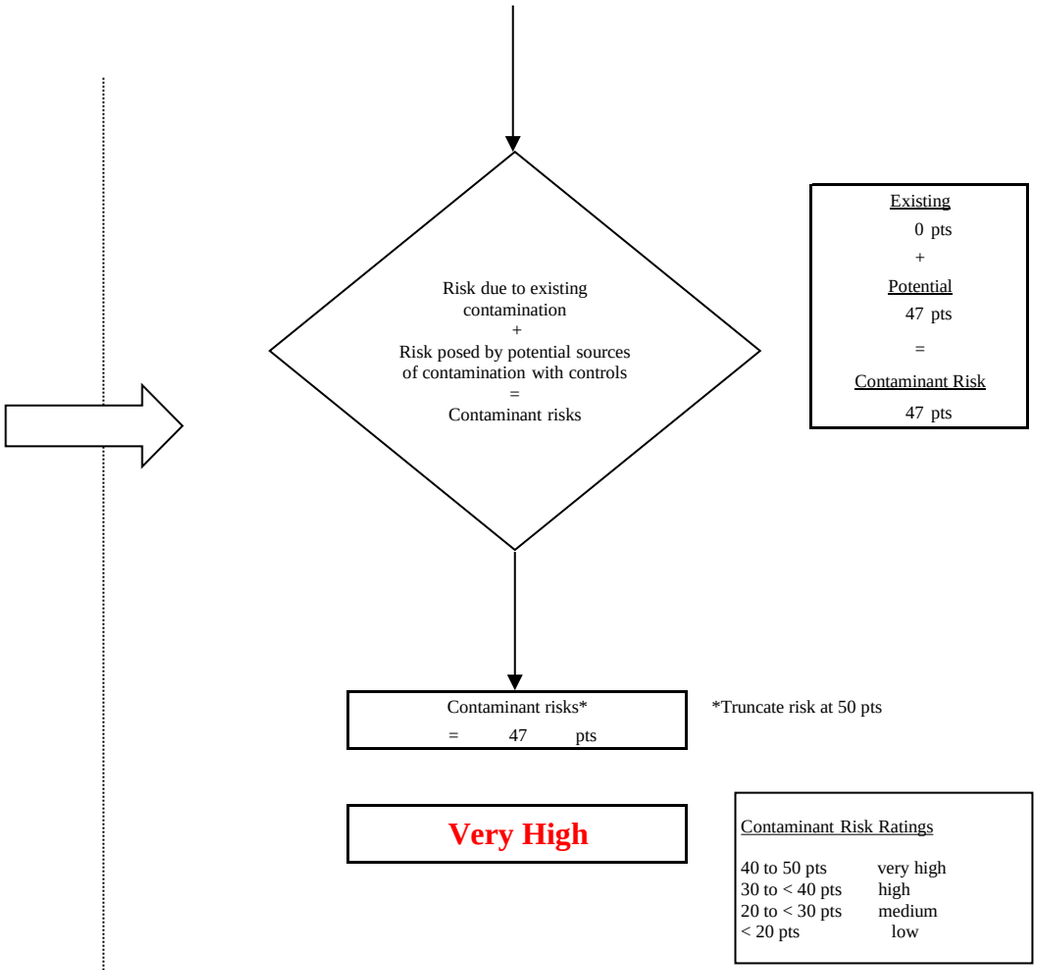


Chart 8. Vulnerability analysis for Mountain View Estates - Volatile Organic Chemicals

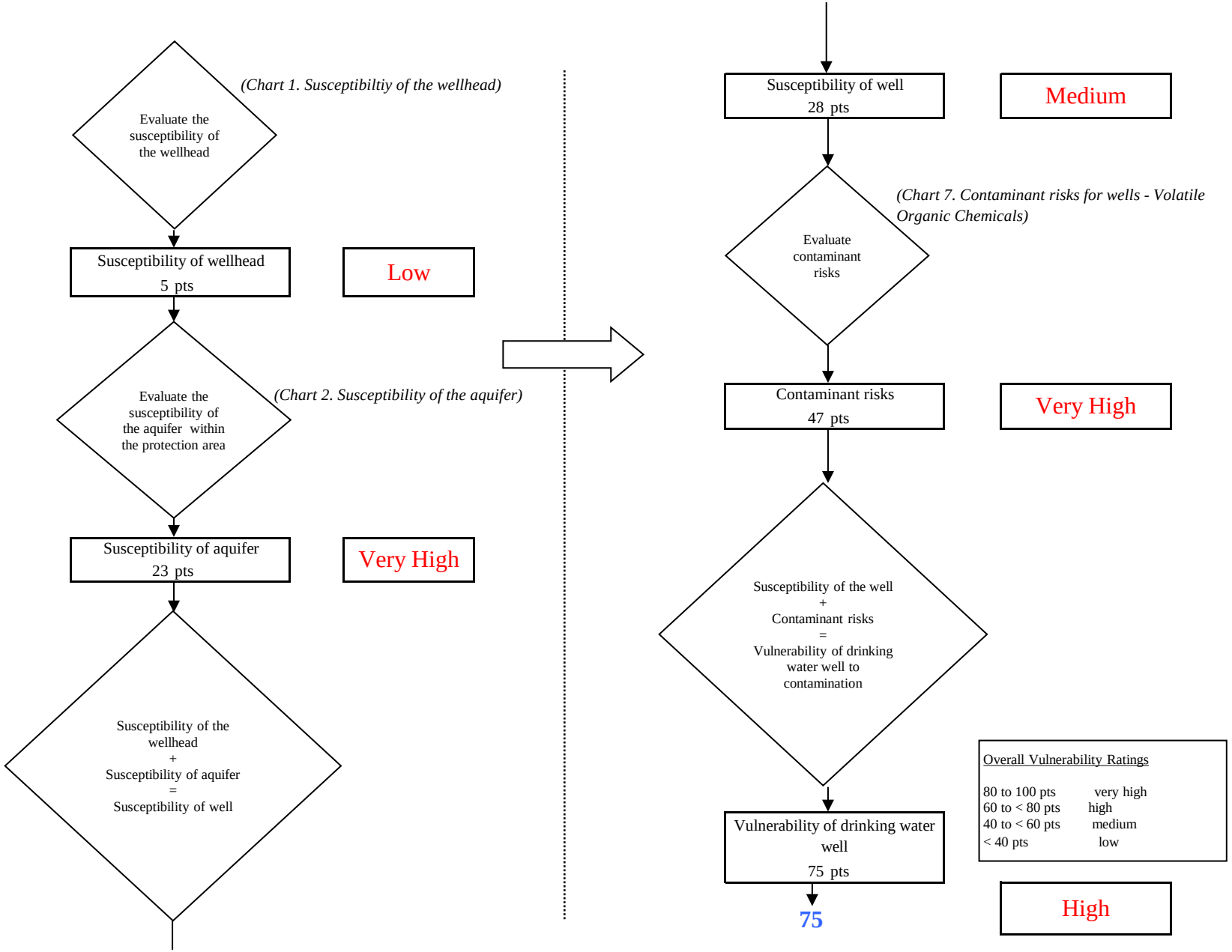


Chart 9. Contaminant risks for Mountain View Estates - Heavy Metals, Cyanide and Other Inorganic Chemicals

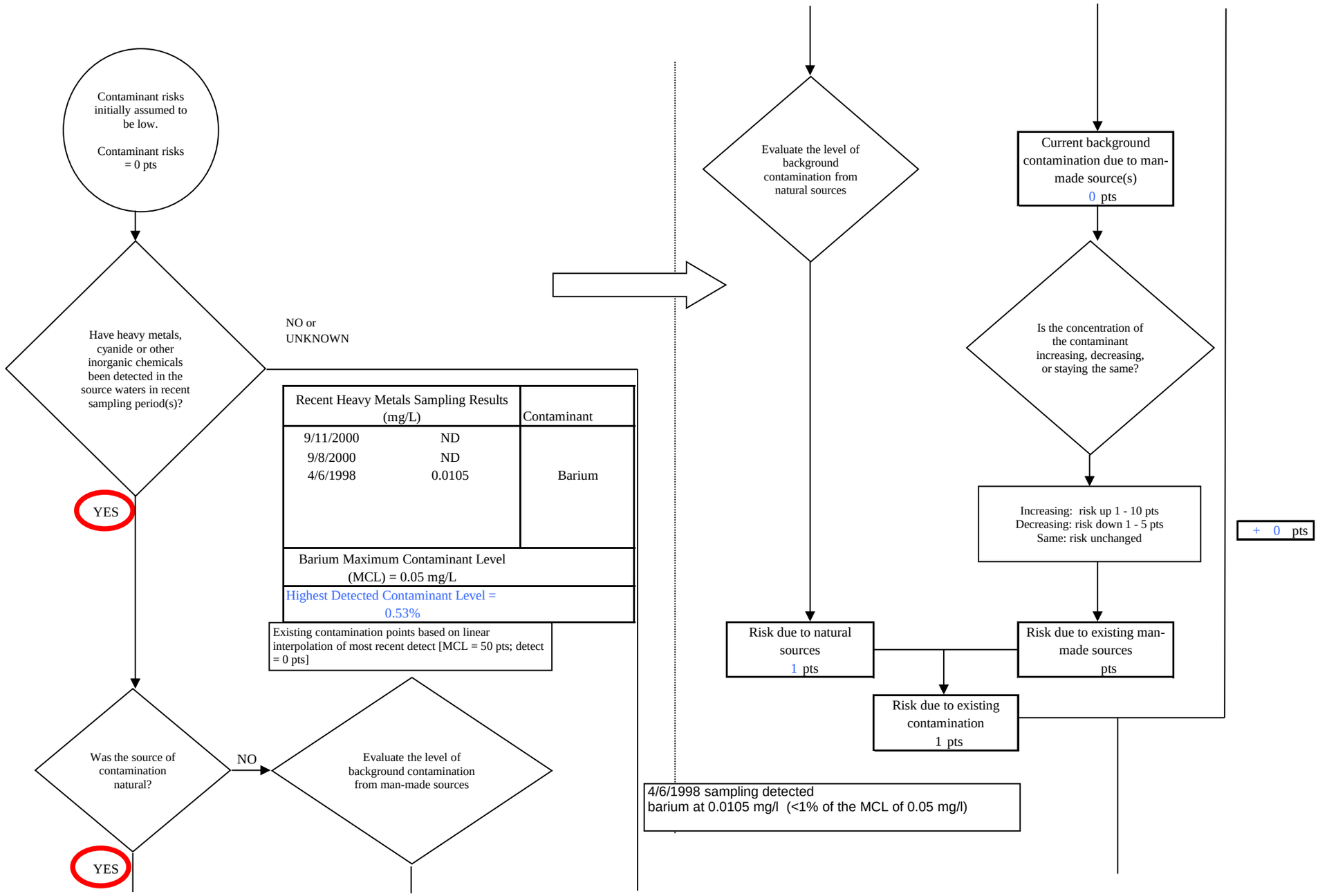
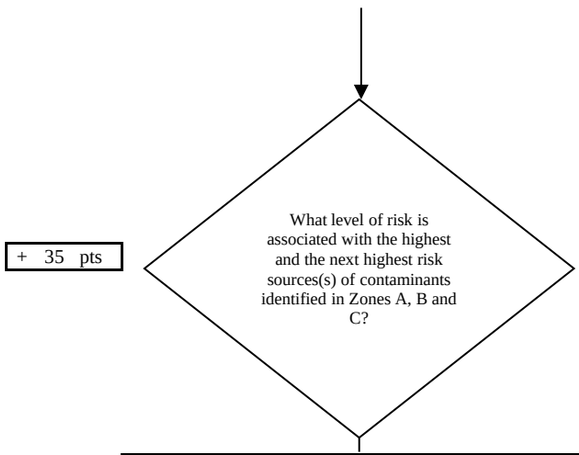


Chart 9. Contaminant risks for Mountain View Estates - Heavy Metals, Cyanide and Other Inorganic Chemicals



+ 35 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	1	1
Medium(s)	0	9	9
Low(s)	5	10	15

	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, sewer lines, 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.

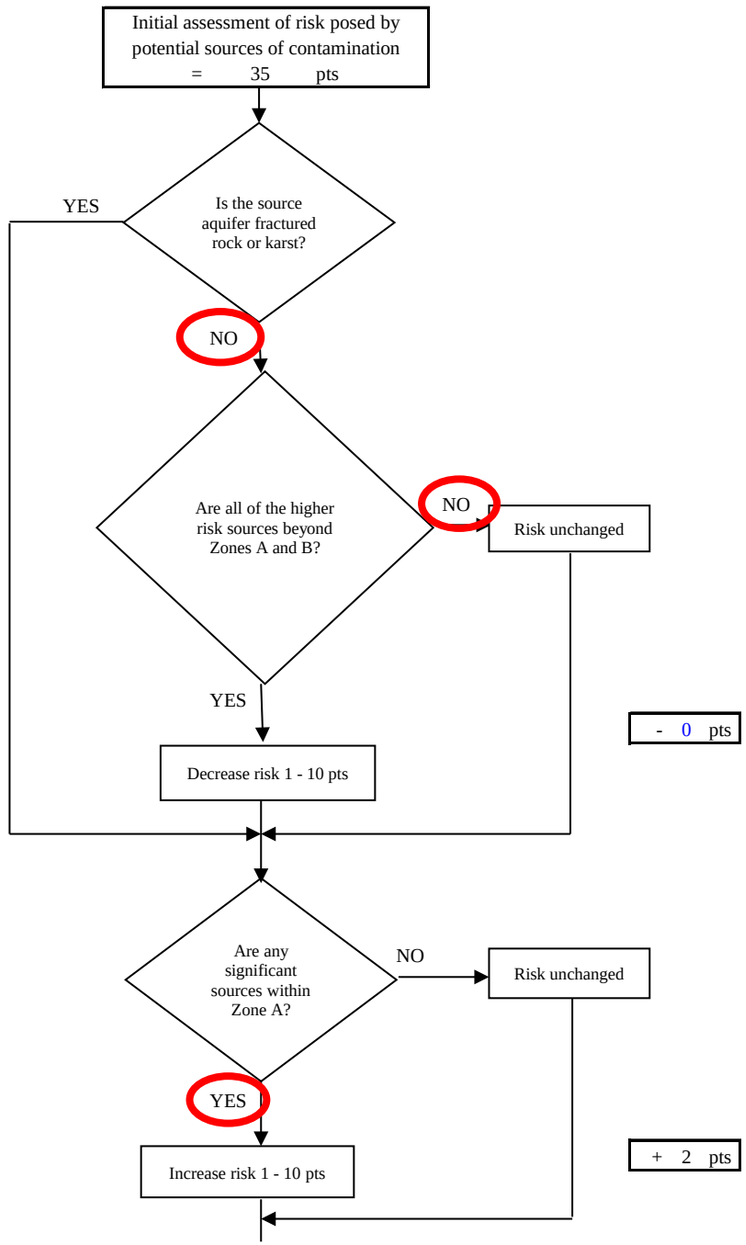


Chart 9. Contaminant risks for Mountain View Estates - Heavy Metals, Cyanide and Other Inorganic Chemicals

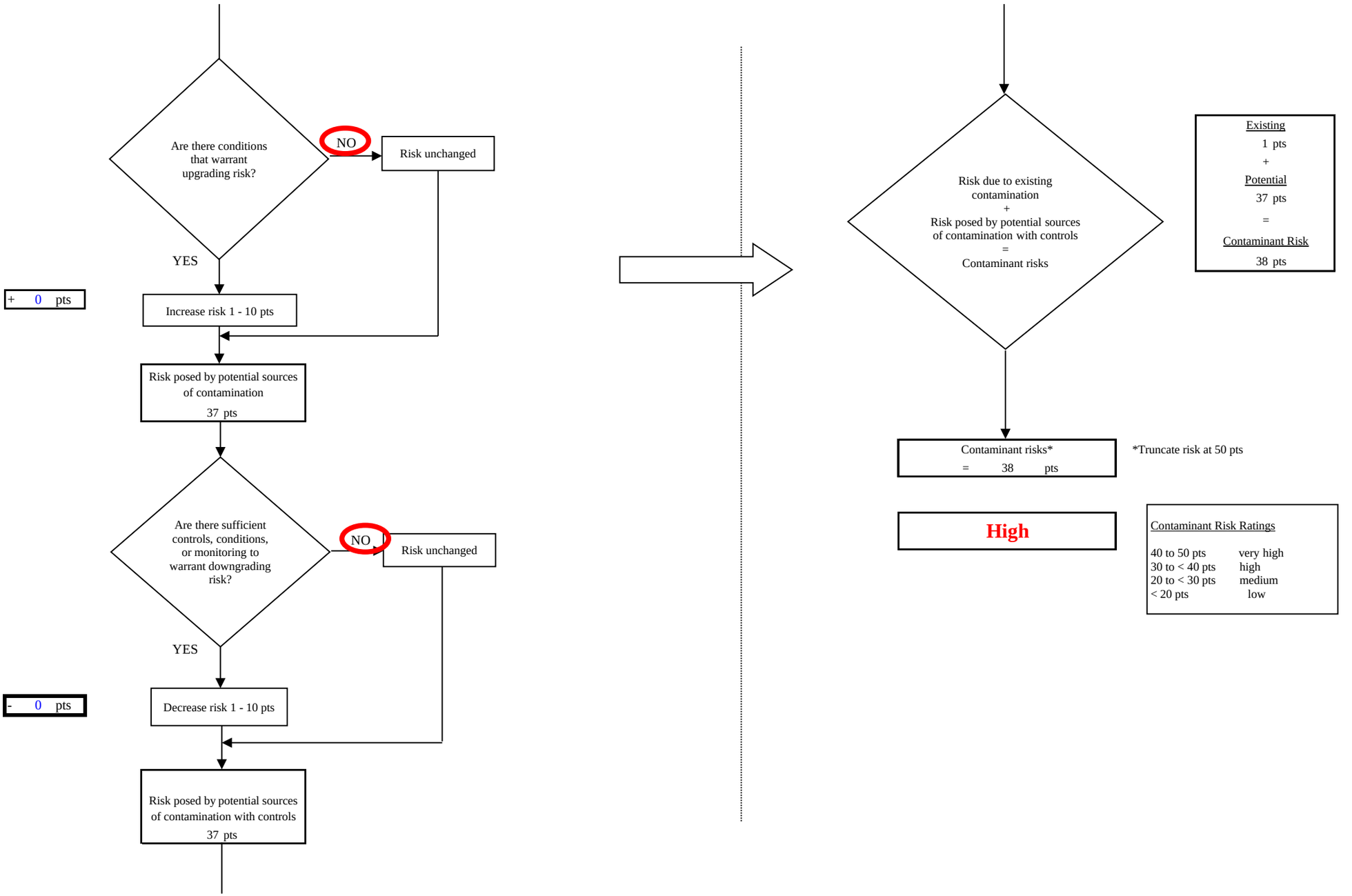


Chart 10. Vulnerability analysis for Mountain View Estates - Heavy Metals, Cyanide and Other Inorganic Chemicals

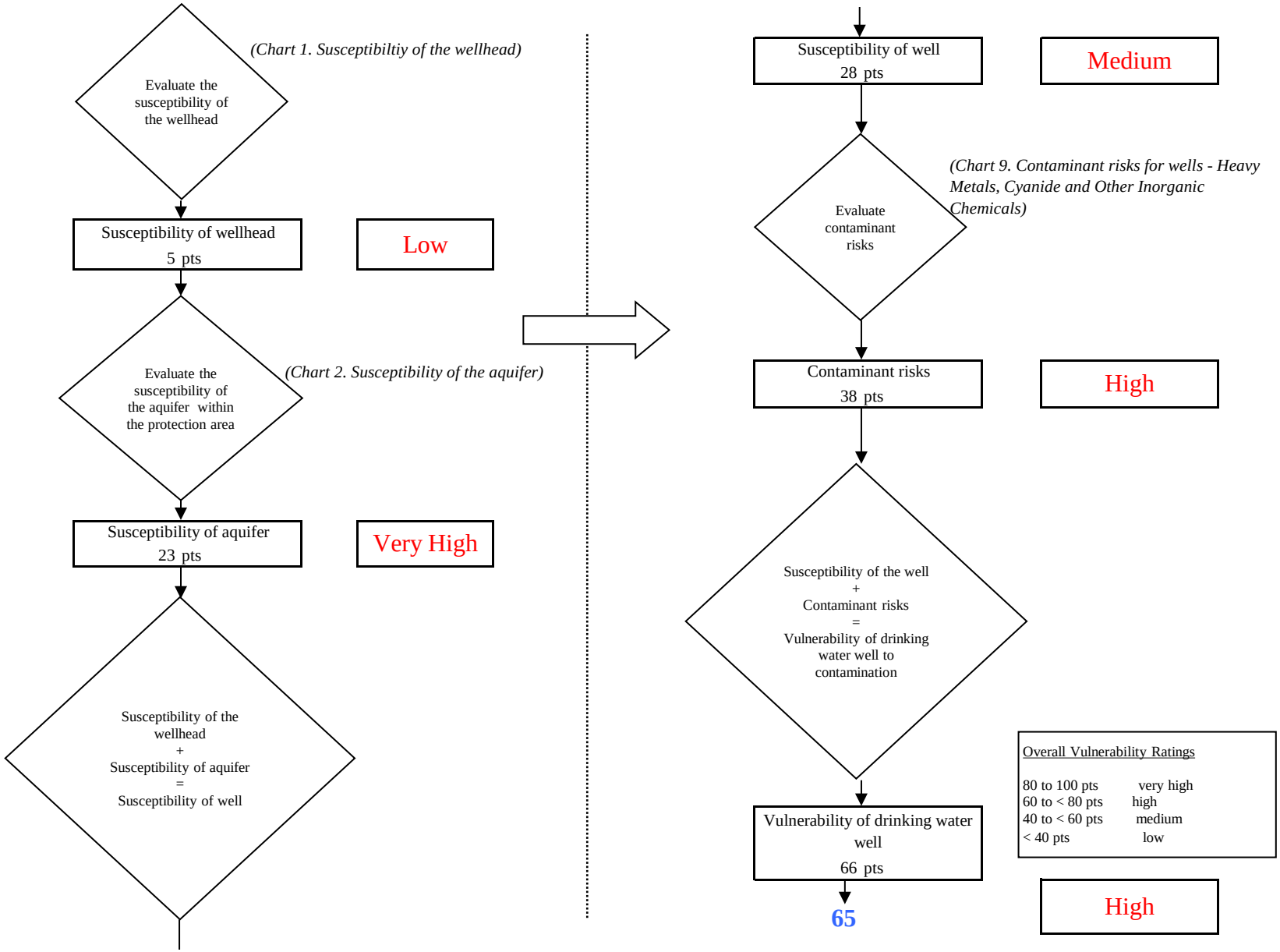


Chart 11. Contaminant risks for Mountain View Estates - Synthetic Organic Chemicals

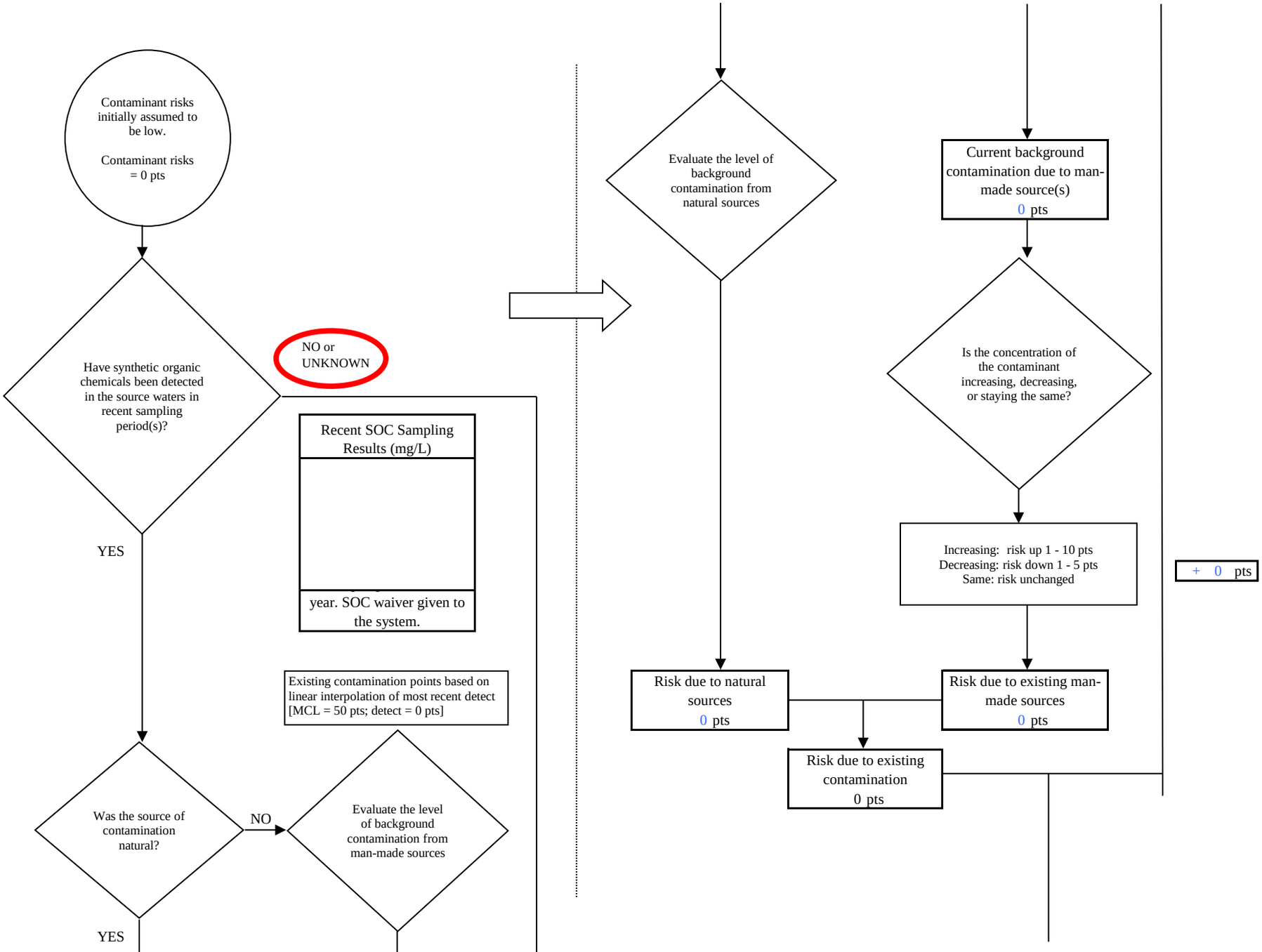
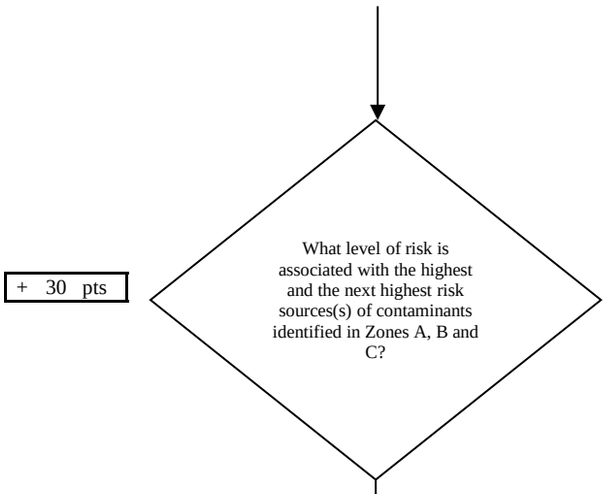


Chart 11. Contaminant risks for Mountain View Estates - Synthetic Organic Chemicals



+ 30 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	1	1
Medium(s)	0	3	3
Low(s)	4	3	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 30

Note: Septic systems, sewer lines, 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.

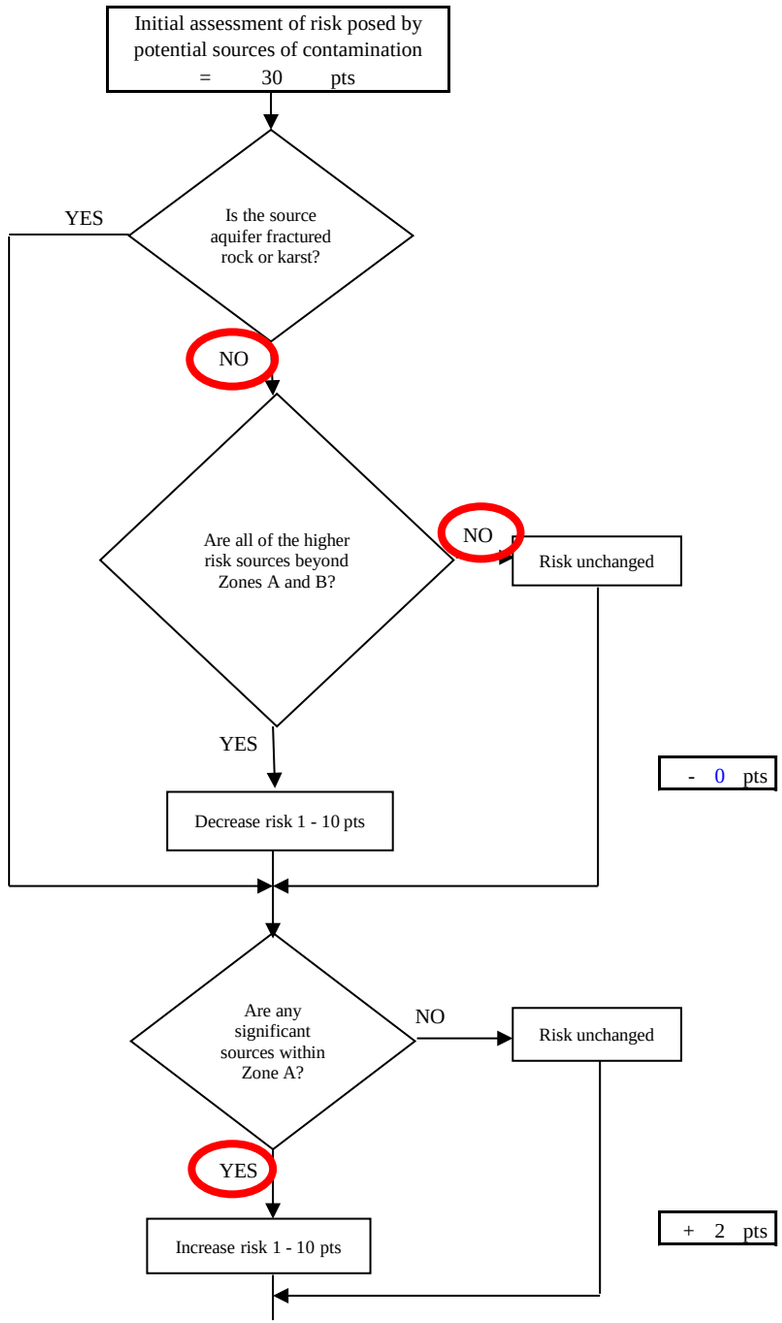
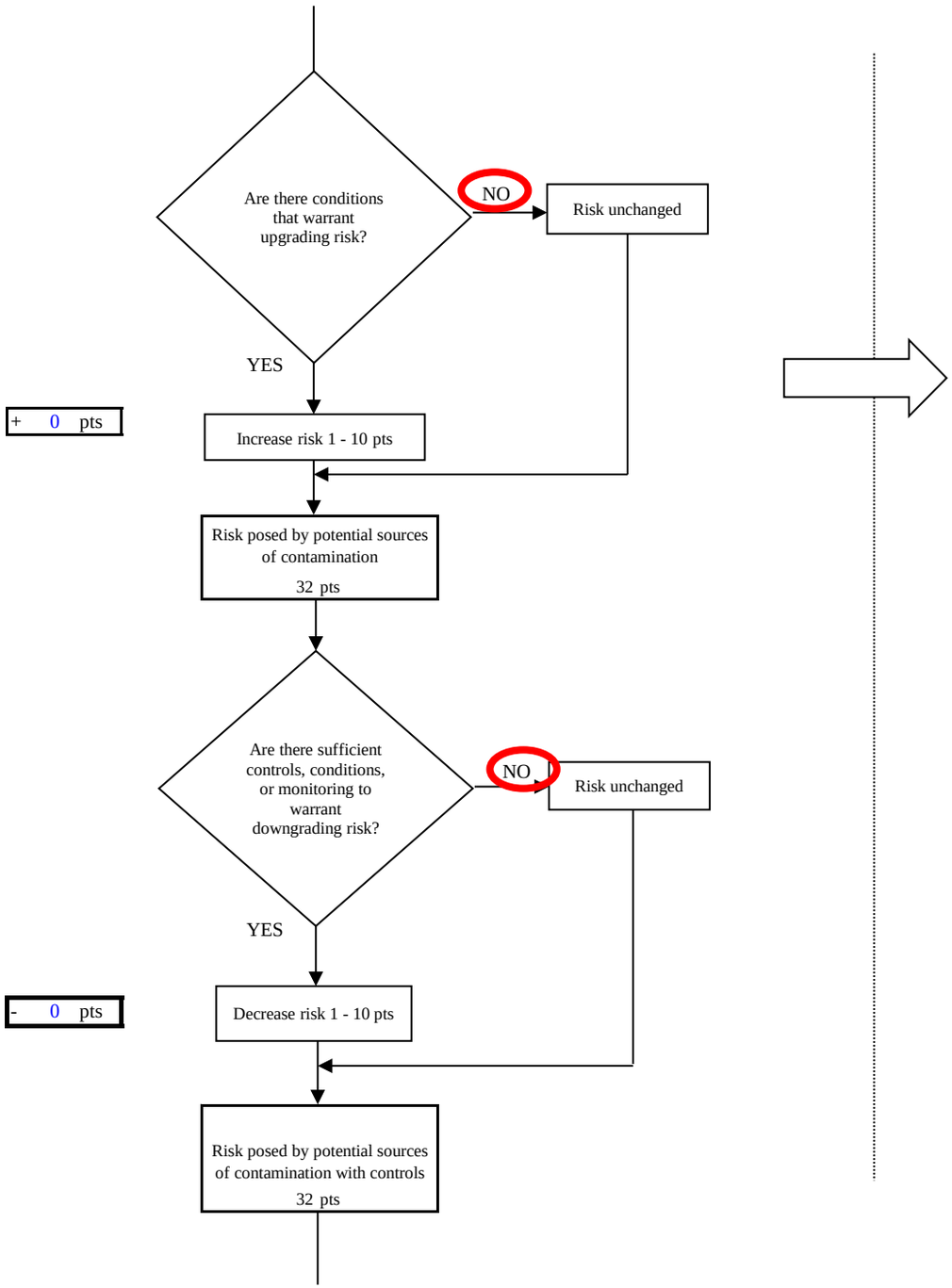


Chart 11. Contaminant risks for Mountain View Estates - Synthetic Organic Chemicals



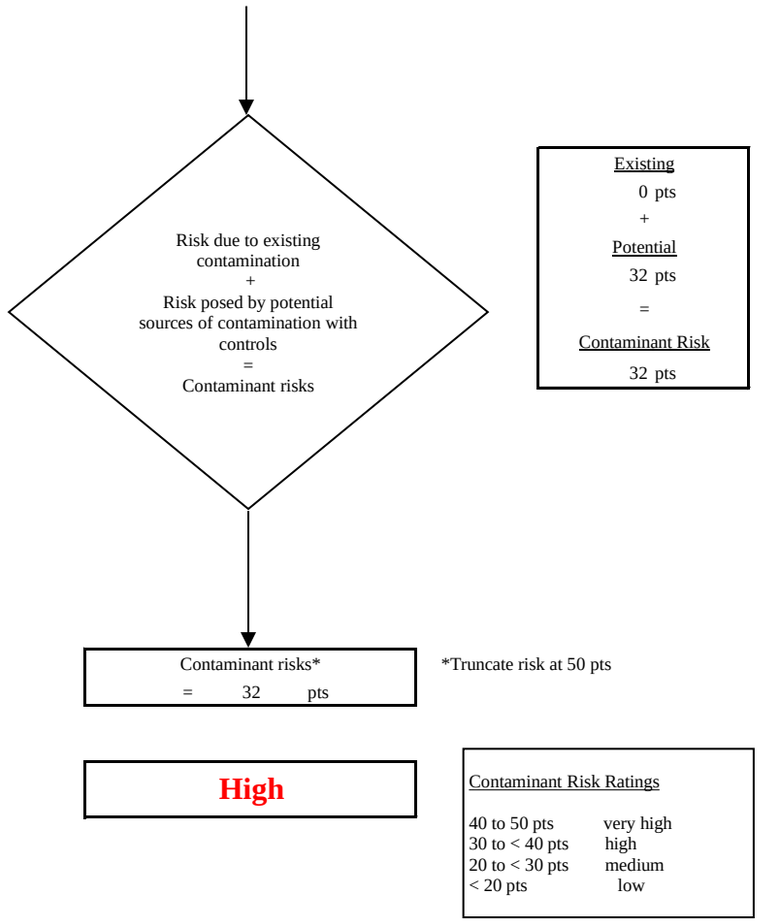


Chart 12. Vulnerability analysis for Mountain View Estates - Synthetic Organic Chemicals

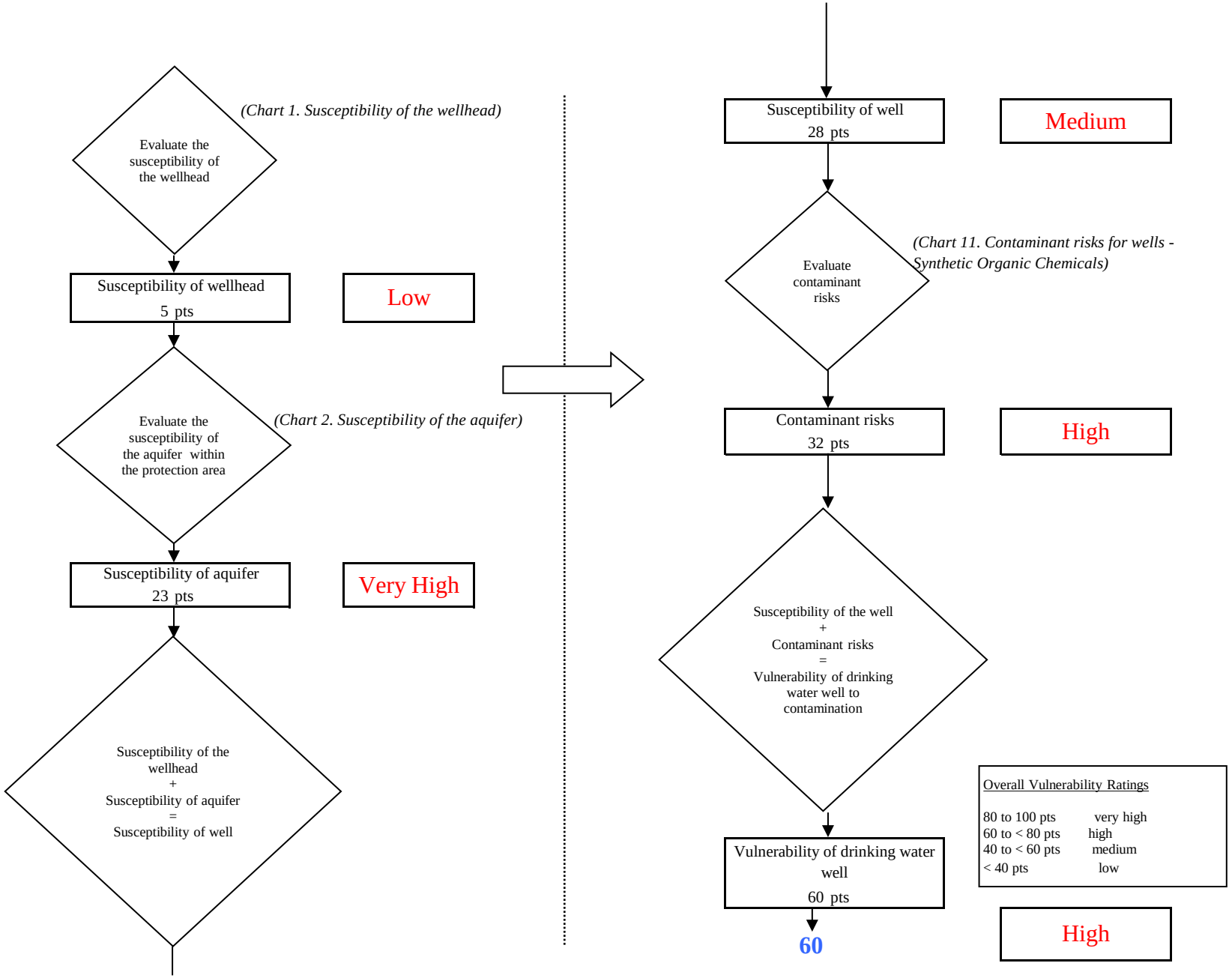


Chart 13. Contaminant risks for Mountain View Estates - Other Organic Chemicals

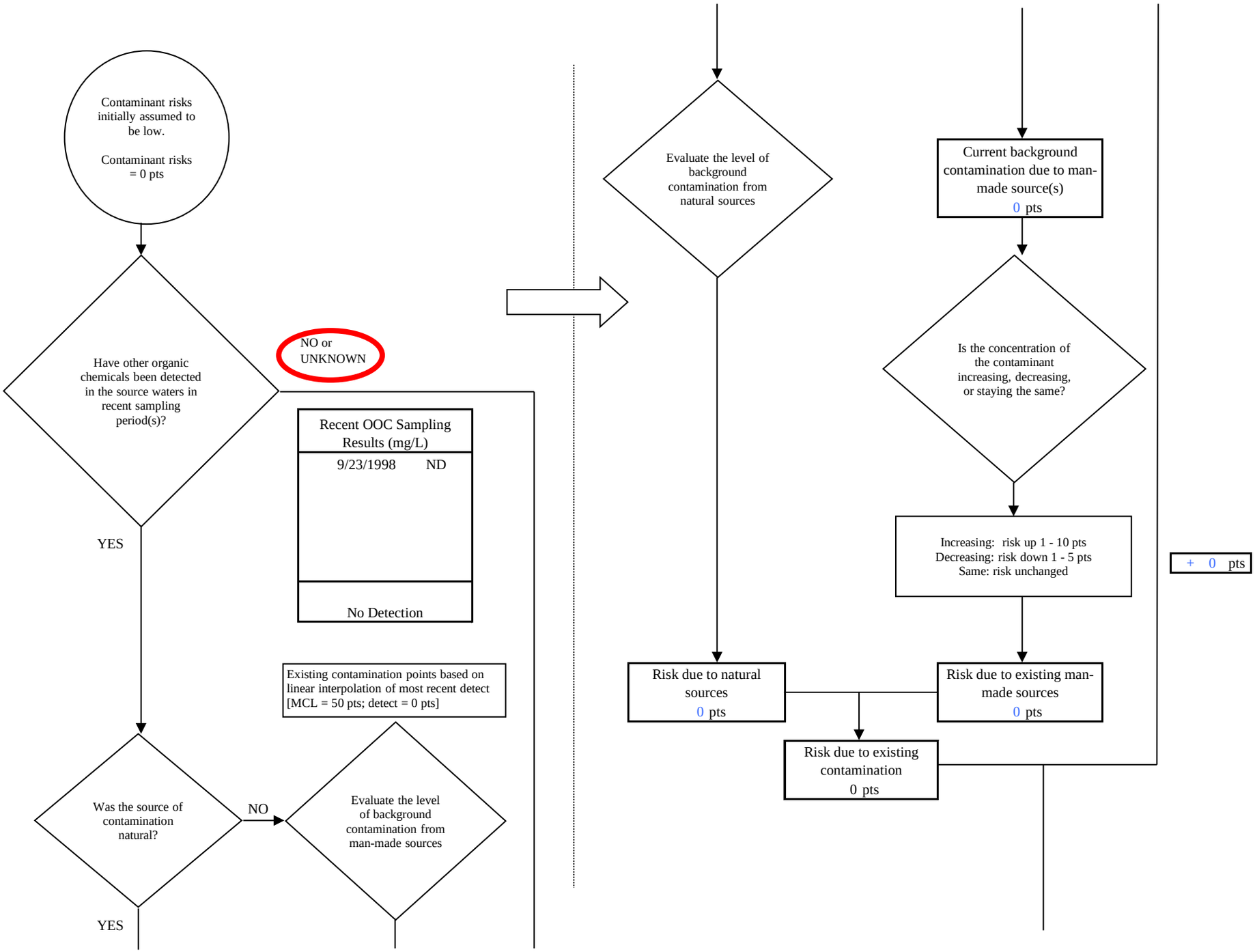


Chart 13. Contaminant risks for Mountain View Estates - Other Organic Chemicals

+ 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)	0	1	1
Medium(s)	0	3	3
Low(s)	5	6	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 30

Note: Septic systems, sewer lines, 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 = 30 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

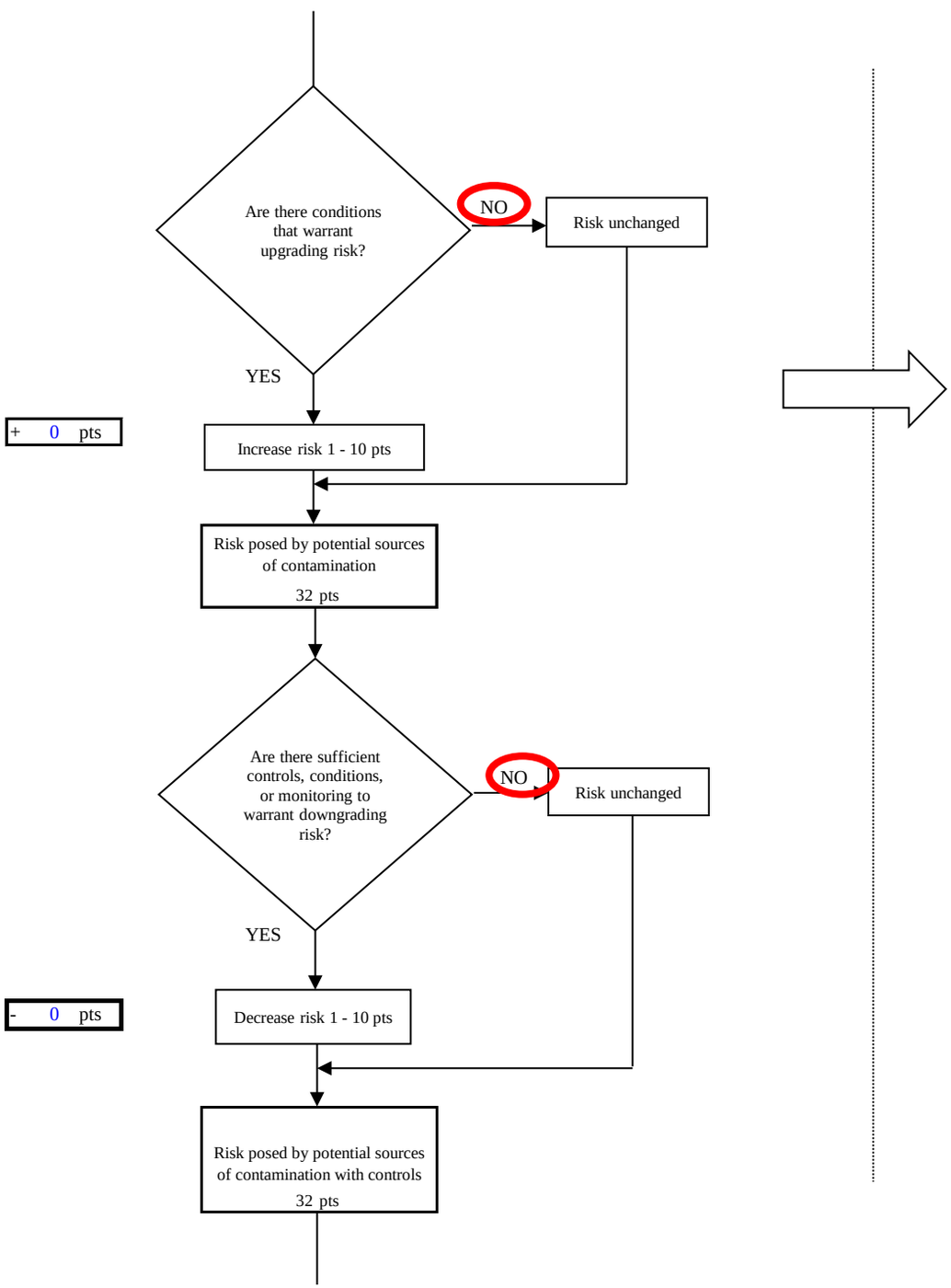
Risk unchanged

YES

Increase risk 1 - 10 pts

+ 2 pts

Chart 13. Contaminant risks for Mountain View Estates - Other Organic Chemicals



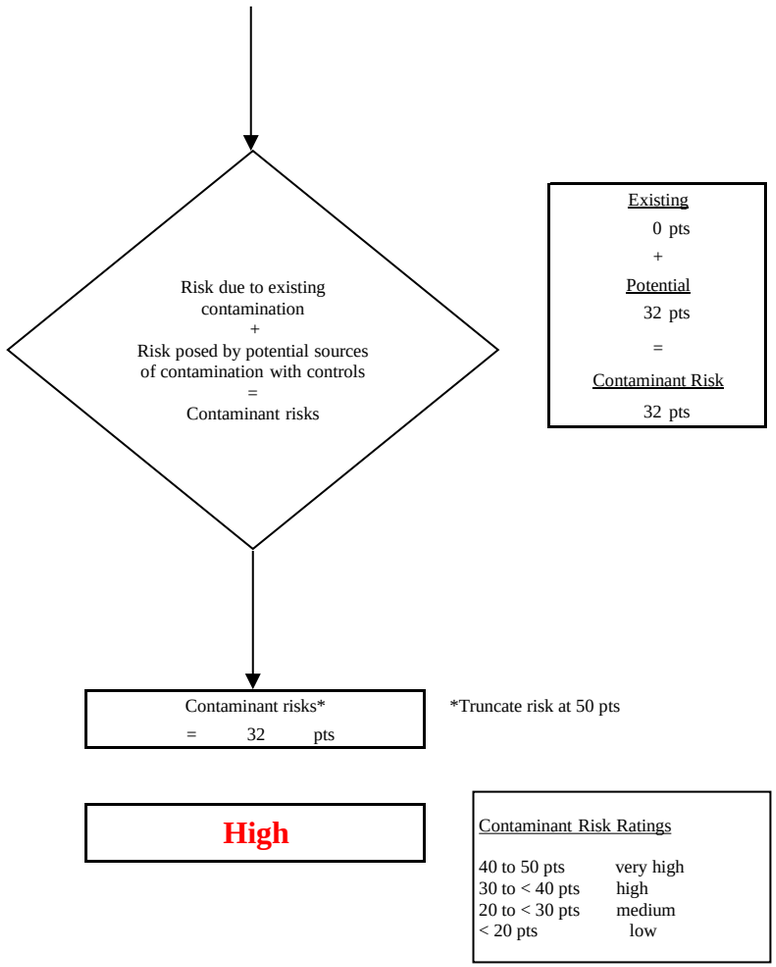


Chart 14. Vulnerability analysis for Mountain View Estates - Other Organic Chemicals