

Source Water Assessment -
Hilltop Ski Area
Anchorage, Alaska

Hydrogeologic Susceptibility and Vulnerability Analysis

DRINKING WATER PROTECTION PROGRAM REPORT 23

September 2001

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Hilltop Ski Area
Anchorage, Alaska

By HEATHER A. HAMMOND

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Source Water Assessment for Hilltop Ski Area’s Sources of Public Drinking Water, Anchorage, Alaska

Hydrogeologic Susceptibility and Vulnerability Analysis

By Heather A. Hammond

Drinking Water Protection Program Alaska Department of Environmental Conservation

EXECUTIVE SUMMARY

Hilltop Ski Area’s Public Water System is a Class B (transient/non-community) drinking water system consisting of three wells. Identified potential and current sources of contaminants for Hilltop Ski Area include: activities along highways and roads, activities along recreation trails, residential areas, septic systems, construction trade areas, and city parks. These identified potential and existing sources of contamination are considered sources of bacteria and viruses, nitrates and/or nitrites, and volatile organic chemicals. Overall, Hilltop Ski Area’s public water sources received a vulnerability rating of **Low** for bacteria and viruses in wells #1 and #3, and well #2 received a vulnerability rating of **Medium** for bacteria and viruses; wells #1 and #3 received a vulnerability rating of **Medium** for nitrates and/or nitrites, and well #3 received a vulnerability rating of **High** for nitrates and/or nitrites; wells #1, #2, and #3 received a vulnerability rating of **Low** for volatile organic chemicals.

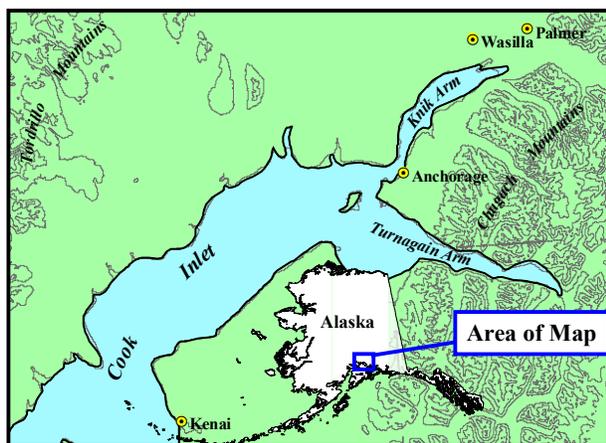


Figure 1. Index map showing the location of Anchorage, Alaska

INTRODUCTION

The purpose of this environmental assessment is to provide public water system owners and/or operators, communities, and local governments with information they can use to preserve the quality of Alaska’s public drinking water supplies. This assessment was completed for Hilltop Ski Area’s sources of public drinking water. This source consists of three wells in the Anchorage area (see 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 sources 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 ANCHORAGE AREA, ALASKA

Location

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

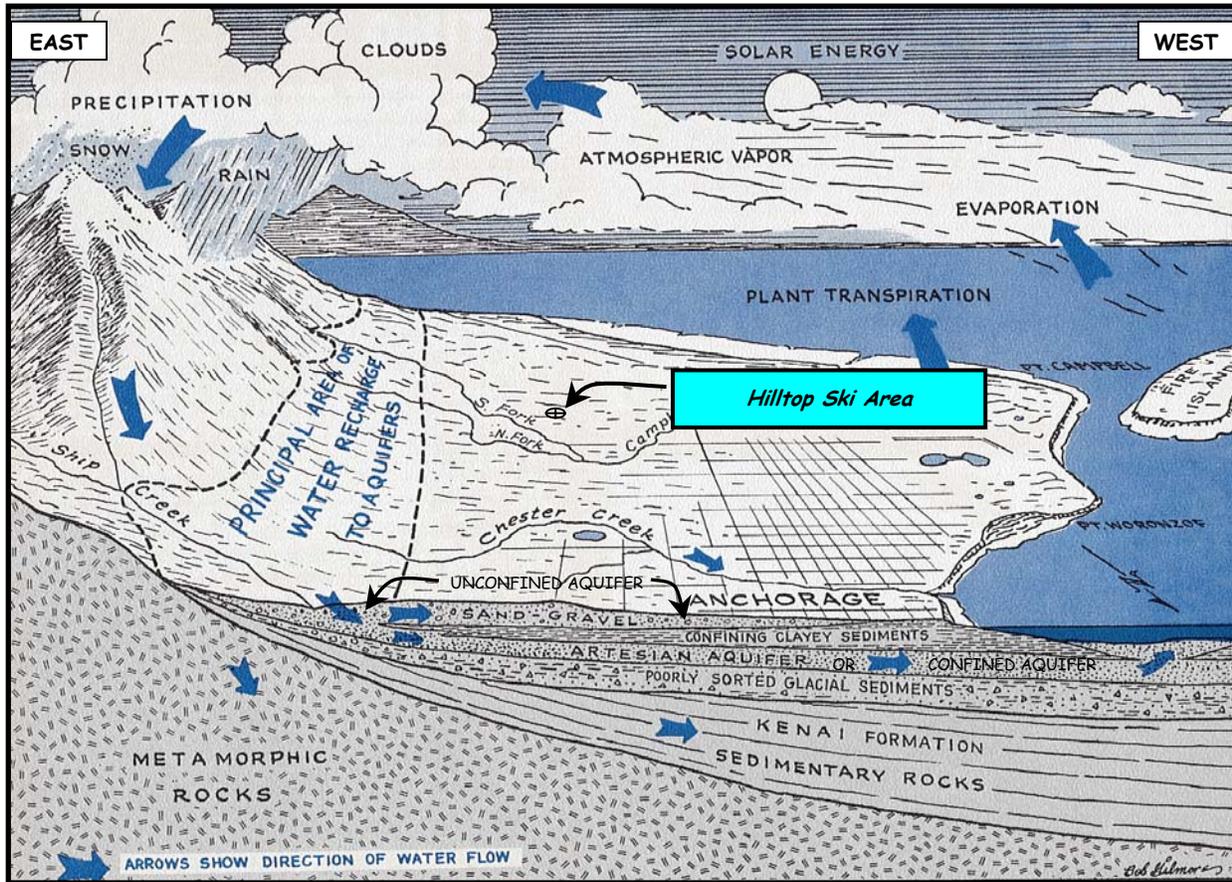


Figure 2. Generalized hydrologic cycle in the Anchorage area [Barnwell, George, Dearborn, Weeks, and Zenone, 1972].

Climate

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

Physiography and Groundwater Conditions

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

Anchorage Bowl.

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

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

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

HILLTOP SKI AREA'S PUBLIC DRINKING WATER SOURCES

Hilltop Ski Area's public water system is a Class B (transient/non-community) water system, which is owned and operated by Hilltop Youth, Inc. The system consists of three wells near the base of the Chugach Mountains

and are at an elevation of approximately 500 feet above sea level. Well #1 is located approximately 1,200 feet north of Lodge Pole Road, well #2 is located approximately 130 feet north of Lodge Pole Road, and well #3 is located approximately 1,300 feet northeast of Lodge Pole Road (see Figure 3). According to the well logs, well #1 lacks proper grouting while well #2 and well #3 appear to be properly grouted. Well #1 penetrates discontinuous layers of hardpan and silt mixed with gravel for a total of 36 feet. The completed well has a total depth of 81 feet below land surface. The well has a six inch casing and is not screened. Static water level was recorded at 50 feet below land surface at the time of drilling (November 1983). Well #2, situated approximately 1,070 feet southeast of well #1, penetrates gravel, silty sand, sandy silt and bedrock to a depth of 254 feet below land surface. The completed well has a total depth of 306 feet below land surface, has a six inch casing and has an open end in bed rock at 254 feet below land surface. Static water level was recorded at 212 feet below land surface at the time of drilling (November 1998). Well #2 appears to have been grouted at the time of drilling from the land surface to 20 feet below the land surface. Well #3, situated approximately 2,275 feet southeast of well #1, penetrates silty gravel with

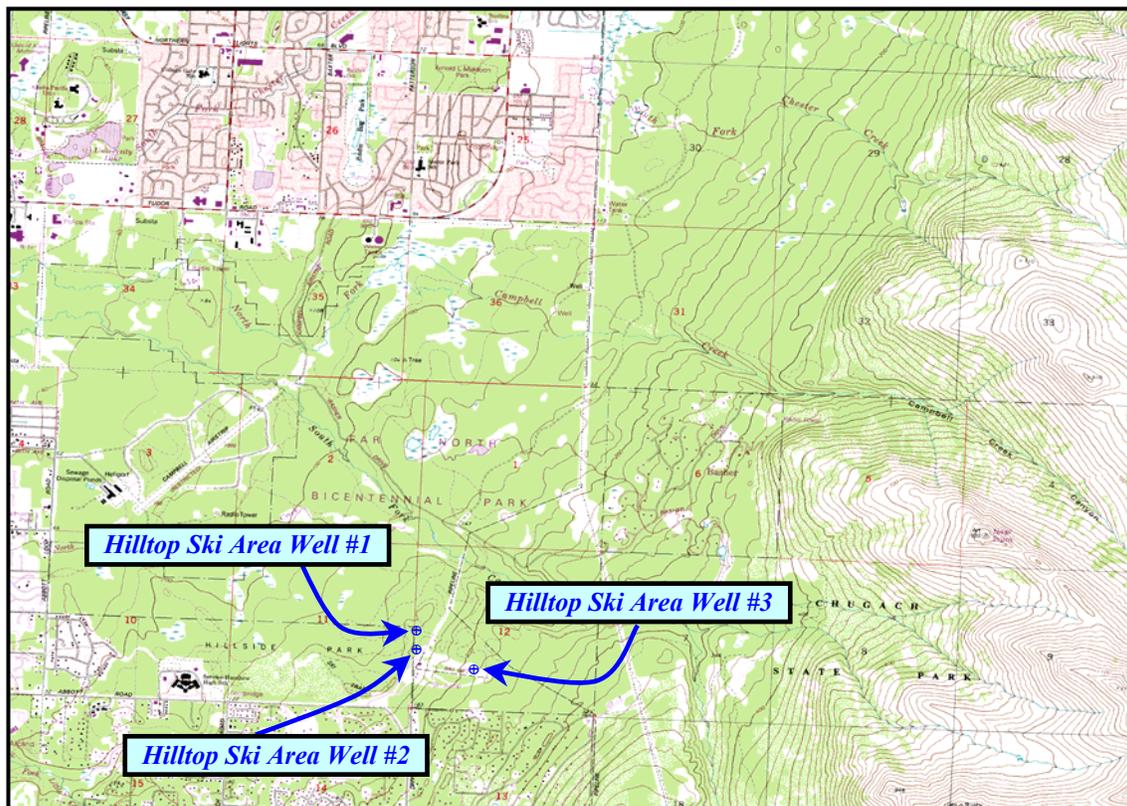


Figure 3. Map showing the location of the drinking water sources for Hilltop Ski Area [Base: USGS Anchorage A8 NE].

discontinuous layers of hardpan. The completed well has a total depth of 64 feet below land surface, has a 6 inch casing, and is screened in gravelly silt from 60 to 64 feet below land surface. Static water level was recorded at 38 feet below land surface at the time of drilling (October 2000). Well #3 appears to have been grouted at the time of drilling. However, the vertical location of grout along the well casing is not indicated on the well log.

Hilltop Ski Area's water system operates year round and serves approximately 200 non-residents through three service connections.

ASSESSMENT AND PROTECTION AREA FOR HILLTOP SKI AREA'S DRINKING WATER SOURCES

The Drinking Water Protection and Assessment Areas that have been established for Hilltop Ski Area are the areas most sensitive to contamination. These areas have served as a basis for assessing the risk of the drinking water sources to contamination. The zones around the drinking water sources are the most critical areas for the preservation of the quality of the drinking water for this system. For simplicity, these areas will be known as your Drinking Water Protection Areas and will serve as the areas of focus for voluntary protection efforts.

Conceptually, groundwater enters the aquifer systems along the front range of the Chugach Mountains (Figure 2) and flows toward Cook Inlet. An analytical calculation was used to calculate the size and shape of the areas that contribute water to the wells. The input parameters describing the attributes of the aquifer in this calculation were adopted from the U.S. Geological Survey (*Patrick, Brabets, and Glass, 1989*). This analytical calculation was used as a guide as the first step in establishing the protection areas for Hilltop Ski Area's drinking water system. Additional methods were further employed to take into account any uncertainties in groundwater flow and aquifer characteristics to arrive at meaningful and conservative protection areas with respect to public health (Please refer to the Guidance Manual for Class B Public Water Systems for additional information).

The Drinking Water Protection Areas established for wells by the Alaska Department of Environmental Conservation 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 Hilltop Ski Area contain three zones, Zone A through Zone C (See Map 1 in Appendix A). Zone A corresponds to the area between the well

and the distance equal to $\frac{1}{4}$ 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 downgradient from the well to take into account the area of the aquifer that is influenced by pumping of the well.

Zones B and C correspond to those areas between 2 years and 5 years time-of-travel, respectively.

INVENTORY OF POTENTIAL AND EXISTING CONTAMINANT SOURCES

The Drinking Water Protection Program has completed an inventory of potential and existing sources of contamination within Hilltop Ski Area's Drinking Water Protection Areas. 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 B public water system assessments, three categories of drinking water contaminants were inventoried. They include:

- Bacteria and viruses;
- Nitrates and/or nitrites; and
- Volatile organic chemicals.

Maps 2 through 6 in Appendix E depict the Contaminant Source Inventory for Hilltop Ski Area. Inventoried potential sources of contamination within Zones A through C were activities associated with highways and roads, activities associated with recreation trails, residential areas, septic systems, construction trade areas, and city parks (see Table 1 in Appendix B for well #1, Appendix C for well #2 and Appendix D for well #3). Below is a summary of the contaminant sources inventoried within Hilltop Ski Area's drinking water protection areas:

- Highways and roads;
- Recreation trails;
- Residential areas;
- Septic systems;
- Construction trade areas; and
- City parks.

These potential contaminant sources present risk for all

three categories of drinking water contaminants for Hilltop Ski Area’s drinking water sources.

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.

VULNERABILITY OF HILLTOP SKI AREA’S 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 have been analyzed and an overall vulnerability score of 0 to 100 ultimately assigned:

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

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

$$\begin{array}{r} \text{Susceptibility of the Wellhead (0 – 25 Points)} \\ + \\ \text{Susceptibility of the Aquifer (0 – 25 Points)} \\ = \text{Natural Susceptibility (Susceptibility of the Well)} \\ \text{(0 – 50 Points)} \end{array}$$

The wells for Hilltop Ski Area are completed in a transition zone between unconfined and confined aquifer conditions. This semi-confined aquifer condition results from the discontinuous and thinning nature of silt and clay layers near the base of the Chugach Mountains that form confining layers lower in the Anchorage Bowl. Therefore, contaminants that enter the subsurface near the base of the mountains may enter the semi-confined aquifer uninhibited by the absence of any protective layer. Private drinking water wells occur within the protection areas for all three of Hilltop Ski Area’s wells. If not properly constructed, the private wells can provide a quick path for contaminants to the subsurface. Therefore the presence of the private wells increase the likelihood of contaminants reaching the source aquifer.

Hilltop Ski Area’s well #1 penetrates layers of hardpan and silt mixed with gravel (semi-confining unit), which may provide a protective barrier against the movement of contaminants in the subsurface. According to the well log static water level was 50 feet below land surface and does not appear to have been properly grouted at the time of drilling (November 1983). In the absence of grouting, the well is not sufficiently protected against contaminants entering the water source along the well casing.

Well #2 penetrates 21 feet of sandy silt (semi-confining unit) which may provide somewhat of a protective barrier. The well log indicates that the well is grouted from the land surface to 20 feet below the land surface. Static water level was recorded at 212 feet below land surface at the time of drilling (October 1998).

Well #3 penetrates silty gravel with 43 feet of discontinuous hardpan silt (confining unit). The well appears to have been grouted. However, the vertical extent of grouting along the well casing is not indicated on the well log. Static water level was recorded at 38 feet below land surface at the time of drilling (October 2000).

Combining the susceptibility of the wellhead and the aquifer to contamination leads to a score (0 – 50 points) and rating of overall Susceptibility of the wells to contamination (See Appendix F for well #1, Appendix G for well #2 and Appendix H for well #3). Table 1 through Table 3 shows the overall Susceptibility score and rating for Hilltop Ski Area’s drinking water sources, respectively.

Table 1. Natural Susceptibility - Susceptibility of the Wellhead and Aquifer to Contamination – Well #1

	Score	Rating
Susceptibility of the Wellhead	5	Low
Susceptibility of the Aquifer	16	High
Natural Susceptibility	21	Medium

Table 2. Natural Susceptibility - Susceptibility of the Wellhead and Aquifer to Contamination – Well #2

	Score	Rating
Susceptibility of the Wellhead	0	Low
Susceptibility of the Aquifer	13	Medium
Natural Susceptibility	13	Low

Table 3. Natural Susceptibility - Susceptibility of the Wellhead and Aquifer to Contamination – Well #3

	Score	Rating
Susceptibility of the Wellhead	0	Low
Susceptibility of the Aquifer	16	High
Natural Susceptibility	16	Low

Contaminant risks to a drinking water source depend on the type, number or density, and distribution of contaminant sources. Highways and roads, septic systems, recreation trails and residential areas contribute the highest risk for potential contamination to Hilltop Ski Area’s sources of public drinking water.

A score (0 – 50 points) and rating of Contaminant Risks (See Appendix F for well #1, Appendix G for Well #2, Appendix H for Well #3) is assigned based on the findings of the Contaminant Source Inventory (Appendix B for well #1, Appendix C for well #2, Appendix D for well #3). This portion of the analysis examines any existing or historical contamination that has been detected at the drinking water source through routine sampling. It also reviews contamination that has or may have occurred but has not arrived or been detected at the well. Tables 4 through 6 summarize the Contaminant Risks for each category of drinking water contaminants.

Table 4. Contaminant Risks – Well #1

Contaminant Risks	Score	Rating
Bacteria and Viruses	11	Low
Nitrates and/or Nitrites	31	High
Volatile Organic Chemicals	11	Low

Table 5. Contaminant Risks – Well #2

Contaminant Risks	Score	Rating
Bacteria and Viruses	22	Medium
Nitrates and/or Nitrites	32	High
Volatile Organic Chemicals	11	Low

Table 6. Contaminant Risks – Well #3

Contaminant Risks	Score	Rating
Bacteria and Viruses	11	Low
Nitrates and/or Nitrites	21	Medium
Volatile Organic Chemicals	10	Low

Appendix F through Appendix H contain eight charts, which together form the ‘Vulnerability Analysis’ for each source contributing water to Hilltop Ski Area’s Class B 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 8 contain the Contaminant Risks and Vulnerability Analysis for nitrates and nitrites, and volatile organic chemicals, respectively.

Vulnerability of the drinking water source to contamination is the combination of susceptibility of the aquifer and the well with respect to contaminant risks. Tables 7 through 9 contain the overall vulnerability scores (0 – 100) and ratings for each of the three categories of drinking water contaminants (See Appendix F for well #1, Appendix G for well #2, Appendix H for well #3). Note: scores are rounded off to the nearest five.

Table 7. Overall Vulnerability of Hilltop Ski Area’s Public Drinking Water Source to Contamination by Category – Well #1

Category	Score	Rating
Bacteria and Viruses	30	Low
Nitrates and Nitrites	50	Medium
Volatile Organic Chemicals	30	Low

Table 8. Overall Vulnerability of Hilltop Ski Area’s Public Drinking Water Source to Contamination by Category – Well #2

Category	Score	Rating
Bacteria and Viruses	35	Low
Nitrates and Nitrites	45	Medium
Volatile Organic Chemicals	25	Low

Table 9. Overall Vulnerability of Hilltop Ski Area’s Public Drinking Water Source to Contamination by Category – Well #3

Category	Score	Rating
Bacteria and Viruses	30	Low
Nitrates and Nitrites	35	Low
Volatile Organic Chemicals	25	Low

Tables 2 through 4 in Appendix B, C and D, respectively, contain the ranking of potential and existing sources of contamination with respect to bacteria and viruses, nitrates and/or nitrites, and volatile organic chemicals.

Nitrates and/or nitrites are found in natural background concentration at this site, as elsewhere in the Alaska. Nitrate concentrations in uncontaminated groundwater are typically less than 2 milligrams per liter (mg/L) and are derived primarily from the decomposition of soil organic matter [Wang, Strelakos, Jokela, 2000].

Sampling history for well #1 indicates low concentrations of nitrate (See Chart 5 – Contaminant Risks for Nitrates and/or Nitrites in Appendix F, G and H, respectively). Existing nitrate contamination is approximately 4.4 mg/L or 44% of the allowable limit (MCL) for this contaminant. The Maximum Contaminant Level or MCL is the maximum level of contaminant that is allowed to exist in drinking water and still be consumed by humans without harmful health effects. Due to the high solubility and weak retention by soil, nitrates are very mobile in

soil, moving at approximately the same rate as water. It is unknown how much of the existing nitrate contamination can be attributed to natural or human-made sources. Though existing nitrate contamination was detected at the site, the amount detected remains at very safe levels with respect to human health.

The overall vulnerability score for nitrates and/or nitrites for Hilltop Ski Area’s drinking water source is medium for well #1 and well #2 and low for well #3. The density of septic systems within the protection areas drive the score for nitrates and/or nitrites.

Other low potential and existing sources of nitrates and/or nitrites for Hilltop Ski Area’s source waters include activities associated with recreation trails, residential areas, Far North Bicentennial Park, and activities associated with highways and roads.

The overall score for bacteria and viruses and volatile organic chemicals for all three of Hilltop Ski Area’s drinking water sources is low. Activities associated with recreation trails intersecting the protection areas drive the score for bacteria and viruses.

Other low potential and existing sources of bacteria and viruses and volatile organic chemicals for Hilltop Ski Area’s source waters include activities associated with Far North Bicentennial Park, residential areas, activities associated with highways and roads, a public utility easement/corridor and a construction trade area. Because roads do pose potential for fuel spills to occur, highways and roads are ranked as a very low potential sources of volatile organic chemicals along with bacteria and viruses and nitrates and/or nitrites.

SUMMARY

A *Source Water Assessment* has been completed for Hilltop Ski Area’s sources of public drinking water. The overall vulnerability of wells #1 and #2 to contamination is **Low** for bacteria and viruses and volatile organic chemicals, and **Medium** for nitrates and/or nitrites. The overall vulnerability of well #3 to contamination is **Low** for bacteria and viruses, nitrates and/or nitrites and volatile 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 Hilltop Ski Area 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 the public drinking water source.

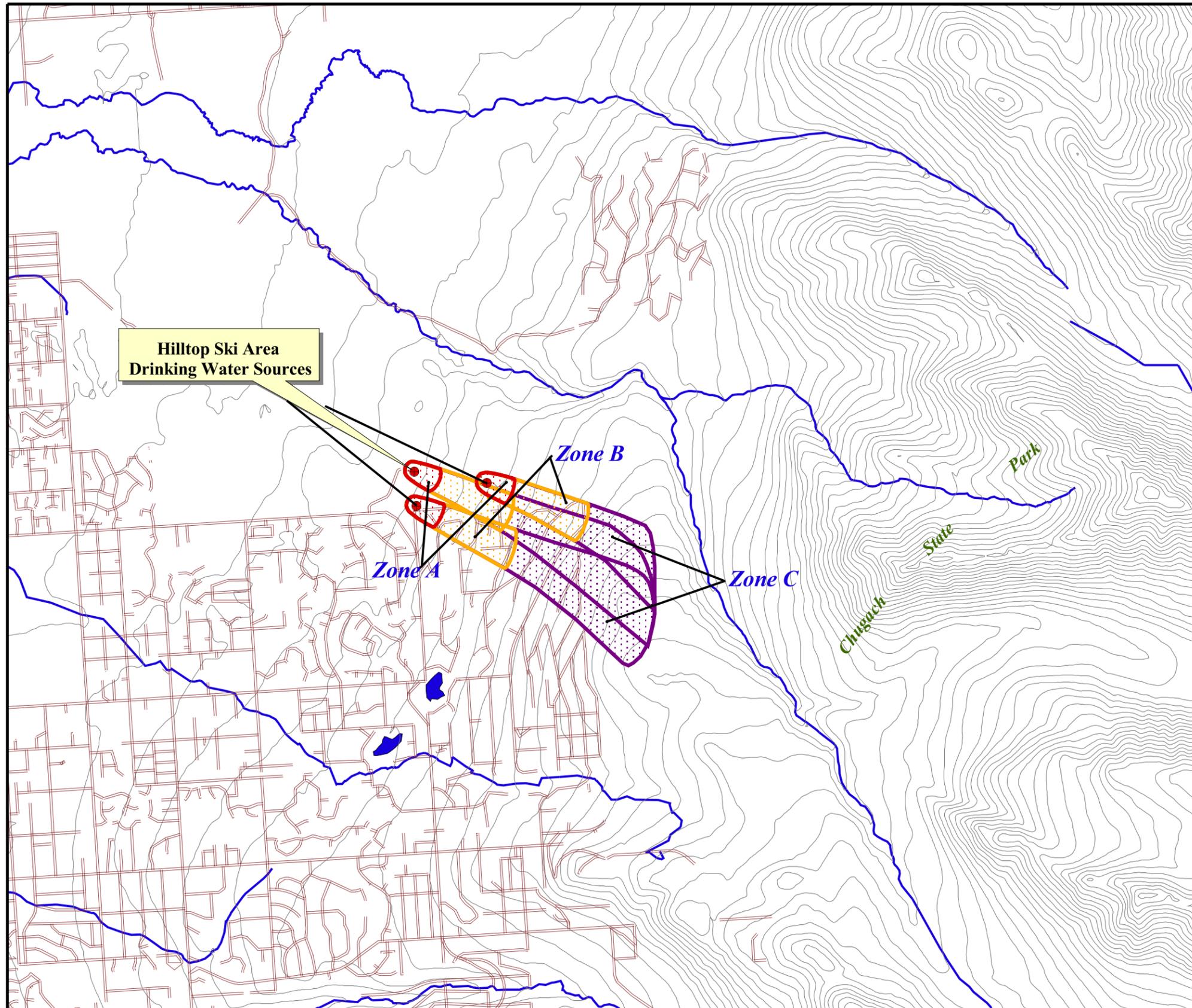
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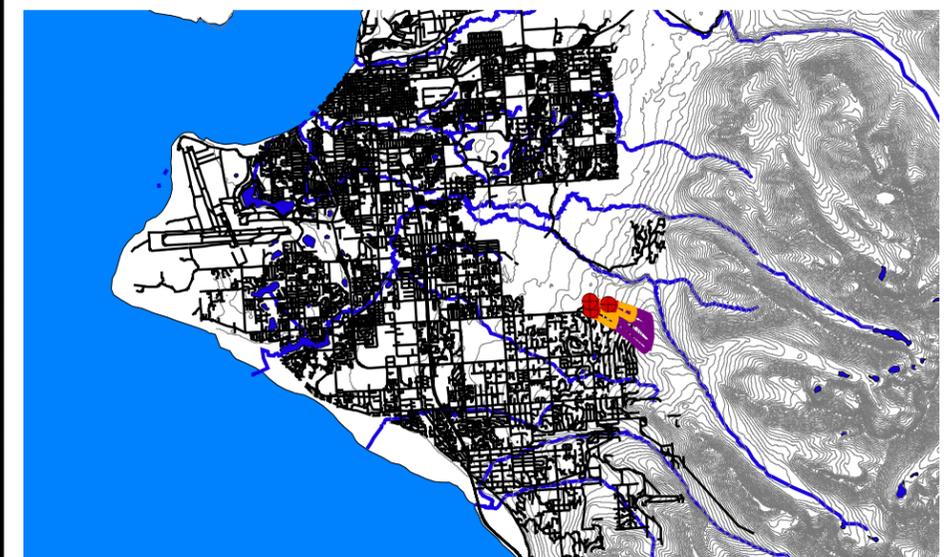
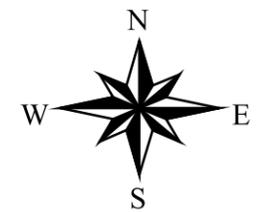
APPENDIX A

Hilltop Ski Area's Drinking Water Protection Area

Drinking Water Protection Area for Hilltop Ski Area



- Drinking Water Wells
- Zone A Protection Area
 - Several Months Travel Time
- Zone B Protection Area
 - Less Than 2 Years Travel Time
- Zone C Protection Area
 - Less Than 5 Years Travel Time
- Anchorage Roads
- Elevation Contours
- Anchorage Streams
- Anchorage Lakes



1 0 1 2 Miles

PWSID 213548

Map 1

APPENDIX B

Contaminant Source Inventory and Risk Ranking for Hilltop Ski Area – Well #1

Table 1

**Contaminant Source Inventory for
Hilltop Ski Area Well #1**

PWSID 213548.001

Contaminant Source Category	Contaminant Source ID	CS ID Tag	Zone	Location	Map	Comments
Dog walking areas/foot trails	X46	X46-1	A	Trail intersecting Zone A	2	
Municipal or city parks (with green areas)	X4	X4-1	A,B,C	Anchorage municipal and city Parks within Zone A, B, C	2	
Construction trade areas and materials	C9	C9-1	B	Off of Port Orford Drive	2	
Residential Areas	R1	R1-1	B	All residential areas located within Zone B	3	
Septic systems (serves one single-family home)	R2	R2-1	B	Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-10	B	Off of Nordic Street	3	
Septic systems (serves one single-family home)	R2	R2-11	B	Off of White Drive	3	
Septic systems (serves one single-family home)	R2	R2-12	B	Off of White Drive	3	
Septic systems (serves one single-family home)	R2	R2-13	B	Off of White Drive	3	
Septic systems (serves one single-family home)	R2	R2-2	B	Off of Nordic Street	3	
Septic systems (serves one single-family home)	R2	R2-3	B	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-4	B	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-5	B	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-6	B	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-7	B	Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-8	B	Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-9	B	Off of Nordic Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-1	B	Red Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	B	Port Orford Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	B	White Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Nordic Street	2	

Table 1**Contaminant Source Inventory for
Hilltop Ski Area Well #1****PWSID 213548.001**

Dog walking areas/foot trails	X46	X46-2	B, C	Trail intersecting Zones B and C	2	
Residential Areas	R1	R1-2	C	All residential areas located within Zone C	3	
Septic systems (serves one single-family home)	R2	R2-14-46	C	All septic systems located within Zone C	3	
Highways and roads, paved (cement or asphalt)	X20	X20-5-9	C	All roads located within Zone C	2	
Public utility easements/corridors	X42	X42-1	C	Easement/corridor running along Pipeline.	3	Pipeline serves dual purpose. Currently transporting natural gas but has been used to transport oil in the past.
Dog walking areas/foot trails	X46	X46-3	C	Trail along the west side of Prospect Heights	2	

Table 2

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #1
Sources of Bacteria and Viruses**

PWSID 213548.001

Contaminant Source Type	Contaminant Source ID	CS ID Tag	Zone	Risk Ranking for Analysis	Overall Rank After Analysis	Location	Map Number	Comments
Municipal or city parks (with green areas)	X4	X4-1	A,B,C	Very Low	1	and city Parks within Zone A, B, C	2	
Dog walking areas/foot trails	X46	X46-1	A	Low	2	Trail intersecting Zone A	2	
Dog walking areas/foot trails	X46	X46-2	B, C	Low	3	Trail intersecting Zones B and C	2	
Septic systems (serves one single-family home)	R2	R2-1	B	Very Low	4	Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-5	B	Very Low	5	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-4	B	Very Low	6	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-3	B	Very Low	7	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-2	B	Very Low	8	Off of Nordic Street	3	
Septic systems (serves one single-family home)	R2	R2-8	B	Very Low	9	Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-7	B	Very Low	10	Off of Red Court	3	
Residential Areas	R1	R1-1	B	Low		All residential areas located within Zone B	3	
Septic systems (serves one single-family home)	R2	R2-9	B	Very Low		Off of Nordic Street	3	
Septic systems (serves one single-family home)	R2	R2-10	B	Very Low		Off of Nordic Street	3	
Septic systems (serves one single-family home)	R2	R2-11	B	Very Low		Off of White Drive	3	
Septic systems (serves one single-family home)	R2	R2-12	B	Very Low		Off of White Drive	3	
Septic systems (serves one single-family home)	R2	R2-13	B	Very Low		Off of White Drive	3	
Residential Areas	R1	R1-2	C	Low		All residential areas located within Zone C	3	
Septic systems (serves one single-family home)	R2	R2-14-46	C	Very Low		All septic systems located within Zone C	3	
Septic systems (serves one single-family home)	R2	R2-6	B	Very Low		Off of Port Orford Drive	3	
Highways and roads, paved (cement or asphalt)	X20	X20-5	C	Very Low		Buddy Werner Drive	2	

Table 2**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #1
Sources of Bacteria and Viruses****PWSID 213548.001**

Dog walking areas/foot trails	X46	X46-3	C	Low		side of Prospect Hieghts	2	
Highways and roads, paved (cement or asphalt)	X20	X20-9	C	Very Low		Hillhaven Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-6	C	Very Low		Slolom Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-1	B	Very Low		Red Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	B	Very Low		White Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	C	Very Low		Prospect Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	B	Very Low		Port Orford Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Very Low		Nordic Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-8	C	Very Low		Sidorof Lane	2	

Table 3

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #1
Sources of Nitrates/Nitrites**

PWSID 213548.001

Contaminant Source Type	Contaminant Source ID	CS ID Tag	Zone	Risk Ranking for Analysis	Overall Rank After Analysis	Location	Map Number	Comments
Municipal or city parks (with green areas)	X4	X4-1	A,B,C	Very Low	1	and city Parks within Zone A, B, C	2	
Dog walking areas/foot trails	X46	X46-1	A	Low	2	Trail intersecting Zone A	2	
Dog walking areas/foot trails	X46	X46-2	B, C	Low	3	Trail intersecting Zones B and C	2	
Septic systems (serves one single-family home)	R2	R2-1	B	Very Low	4	Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-5	B	Very Low	5	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-4	B	Very Low	6	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-3	B	Very Low	7	Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-2	B	Very Low	8	Off of Nordic Street	3	
Septic systems (serves one single-family home)	R2	R2-8	B	Very Low	9	Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-7	B	Very Low	10	Off of Red Court	3	
Residential Areas	R1	R1-1	B	Low		All residential areas located within Zone B	3	
Highways and roads, paved (cement or asphalt)	X20	X20-1	B	Very Low		Red Court	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	B	Very Low		Port Orford Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-5	C	Very Low		Buddy Werner Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	B	Very Low		White Drive	2	
Septic systems (serves one single-family home)	R2	R2-6	B	Very Low		Off of Port Orford Drive	3	
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Very Low		Nordic Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-9	C	Very Low		Hillhaven Circle	2	
Residential Areas	R1	R1-2	C	Low		All residential areas located within Zone C	3	
Highways and roads, paved (cement or asphalt)	X20	X20-6	C	Very Low		Slolom Drive	2	

Table 3

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #1
Sources of Nitrates/Nitrites**

PWSID 213548.001

Septic systems (serves one single-family home)	R2	R2-14-46	C	Very Low		All septic located within Zone C	3	
Septic systems (serves one single-family home)	R2	R2-12	B	Very Low		Off of White Drive	3	
Septic systems (serves one single-family home)	R2	R2-11	B	Very Low		Off of White Drive	3	
Dog walking areas/foot trails	X46	X46-3	C	Low		side of Prospect Hieghts	2	
Septic systems (serves one single-family home)	R2	R2-13	B	Very Low		Off of White Drive	3	
Highways and roads, paved (cement or asphalt)	X20	X20-7	C	Very Low		Prospect Drive	2	
Septic systems (serves one single-family home)	R2	R2-10	B	Very Low		Off of Nordic Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-8	C	Very Low		Sidorof Lane	2	
Septic systems (serves one single-family home)	R2	R2-9	B	Very Low		Off of Nordic Street	3	

Table 4

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #1
Sources of Volatile Organic Chemicals**

PWSID 213548.001

Contaminant Source Type	Contaminant Source ID	CS ID Tag	Zone	Risk Ranking for Analysis	Overall Rank After Analysis	Location	Map Number	Comments
Highways and roads, paved (cement or asphalt)	X20	X20-1	B	Very Low	1	Red Court	2	
Construction trade areas and materials	C9	C9-1	B	Low	2	Off of Port Orford Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	B	Very Low	3	White Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	B	Very Low	4	Port Orford Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Very Low	5	Nordic Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-5	C	Very Low	6	Buddy Werner Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-6	C	Very Low	7	Slolom Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	C	Very Low	8	Prospect Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-8	C	Very Low	9	Sidorof Lane	2	
Highways and roads, paved (cement or asphalt)	X20	X20-9	C	Very Low	10	Hillhaven Circle	2	
Residential Areas	R1	R1-1	B	Low		All residential areas located within Zone B	3	
Septic systems (serves one single-family home)	R2	R2-1	B	Very Low		Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-10	B	Very Low		Off of Nordic Street	3	
Septic systems (serves one single-family home)	R2	R2-11	B	Very Low		Off of White Drive	3	
Septic systems (serves one single-family home)	R2	R2-12	B	Very Low		Off of White Drive	3	
Septic systems (serves one single-family home)	R2	R2-13	B	Very Low		Off of White Drive	3	
Septic systems (serves one single-family home)	R2	R2-2	B	Very Low		Off of Nordic Street	3	
Septic systems (serves one single-family home)	R2	R2-3	B	Very Low		Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-4	B	Very Low		Off of Port Ordford Drive	3	
Septic systems (serves one single-family home)	R2	R2-5	B	Very Low		Off of Port Orford Drive	3	

Table 4

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #1
Sources of Volatile Organic Chemicals**

PWSID 213548.001

Septic systems (serves one single-family home)	R2	R2-6	B	Very Low		Off of Port Orford Drive	3	
Septic systems (serves one single-family home)	R2	R2-7	B	Very Low		Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-8	B	Very Low		Off of Red Court	3	
Septic systems (serves one single-family home)	R2	R2-9	B	Very Low		Off of Nordic Street	3	
Residential Areas	R1	R1-2	C	Low		All residential areas located within Zone C	3	
Septic systems (serves one single-family home)	R2	R2-14-46	C	Very Low		All septic systems located within Zone C	3	
Public utility easements/corridors	X42	X42-1	C	Low		Easement/corridor running along Pipeline.	3	Currently transporting natural gas but has been used to

APPENDIX C

Contaminant Source Inventory and Risk Ranking for Hilltop Ski Area – Well #2

Table 1

**Contaminant Source Inventory for
Hilltop Ski Area Well #2**

PWSID 213548.002

Contaminant Source Category	Contaminant Source ID	CS ID Tag	Zone	Location	Map	Comments
Residential Areas	R1	R1-1	A	All residential areas located within Zone A	5	
Septic systems (serves one single-family home)	R2	R2-1	A	Off of Nettleton Drive	5	
Septic systems (serves one single-family home)	R2	R2-2	A	Off of Panorama Drive	5	
Septic systems (serves one single-family home)	R2	R2-3	A	Off of Panorama Drive	5	
Septic systems (serves one single-family home)	R2	R2-4	A	Off of Panorama Drive	5	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Lodge Pole Court	4	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Nettleton Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Panorama Drive	4	
Municipal or city parks (with green areas)	X4	X4-1	A	Far North Bicentennial Park	5	
Dog walking areas/foot trails	X46	X46-1	A	Trail along Lodge Pole Court	4	
Residential Areas	R1	R1-2	B	All residential areas located within Zone B	5	
Septic systems (serves one single-family home)	R2	R2-10	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-11	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-12	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-13	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-14	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-15	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-16	B	Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-17	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-18	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-19	B	Off of Ponderosa Drive	5	

Table 1

**Contaminant Source Inventory for
Hilltop Ski Area Well #2**

PWSID 213548.002

Septic systems (serves one single-family home)	R2	R2-20	B	Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-21	B	Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-22	B	Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-23	B	Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-24	B	Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-25	B	Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-26	B	Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-27	B	Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-28	B	Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-29	B	Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-30	B	Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-31	B	Off of White Drive	5	
Septic systems (serves one single-family home)	R2	R2-32	B	Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-33	B	Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-34	B	Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-35	B	Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-36	B	Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-37	B	Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-38	B	Off of White Drive	5	
Septic systems (serves one single-family home)	R2	R2-39	B	Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-40	B	Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-41	B	Off of Downhill Circle	5	

Table 1

**Contaminant Source Inventory for
Hilltop Ski Area Well #2**

PWSID 213548.002

Septic systems (serves one single-family home)	R2	R2-42	B	Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-43	B	Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-44	B	Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-45	B	Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-46	B	Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-47	B	Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-48	B	Off of Buddy Werner Drive	5	
Septic systems (serves one single-family home)	R2	R2-49	B	Off of Buddy Werner Drive	5	
Septic systems (serves one single-family home)	R2	R2-5	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-6	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-7	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-8	B	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-9	B	Off of Griffith Street	5	
Highways and roads, paved (cement or asphalt)	X20	X20-10	B	Downhill Circle	4	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Nordic Street	4	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Buddy Werner Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Griffith Street	4	
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	Port Orford Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-6	B	Ponderosa Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-7	B	Port Orford Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-8	B	White Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-9	B	Sugar Circle	4	

Table 1**Contaminant Source Inventory for
Hilltop Ski Area Well #2****PWSID 213548.002**

Residential Areas	R1	R1-3	C	All residential areas located within Zone C	5	
Septic systems (serves one single-family home)	R2	R2-50-85	C	All septic systems located within Zone C	5	
Highways and roads, paved (cement or asphalt)	X20	X20-13-16	C	All roads located within Zone C	4	
Public utility easements/corridors	X42	X42-1	C	Dual purpose pipeline currently transporting natural gas but has transported fuel/oil in the past.	5	

Table 2

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Bacteria and Viruses**

PWSID 213548.002

Contaminant Source Type	Contaminant Source ID	CS ID Tag	Zone	Risk Ranking for Analysis	Overall Rank After Analysis	Location	Map Number	Comments
Septic systems (serves one single-family home)	R2	R2-1	A	Very Low	1	Off of Nettleton Drive	5	
Septic systems (serves one single-family home)	R2	R2-2	A	Low	2	Off of Panorama Drive	5	
Septic systems (serves one single-family home)	R2	R2-3	A	Very Low	3	Off of Panorama Drive	5	
Septic systems (serves one single-family home)	R2	R2-4	A	Very Low	4	Off of Panorama Drive	5	
Municipal or city parks (with green areas)	X4	X4-1	A	Low	5	Far North Bicentennial Park	5	
Septic systems (serves one single-family home)	R2	R2-6	B	Very Low	6	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-7	B	Very Low	7	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-8	B	Very Low	8	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-13	B	Very Low	9	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-14	B	Very Low	10	Off of Griffith Street	5	
Residential Areas	R1	R1-1	A	Low		All residential areas located within Zone A	5	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Very Low		Lodge Pole Court	4	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Very Low		Nettleton Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Very Low		Panorama Drive	4	
Dog walking areas/foot trails	X46	X46-1	A	Low		Trail along Lodge Pole Court	4	
Residential Areas	R1	R1-2	B	Low		All residential areas located within Zone B	5	
Septic systems (serves one single-family home)	R2	R2-10	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-11	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-12	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-15	B	Very Low		Off of Griffith Street	5	

Table 2

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Bacteria and Viruses**

PWSID 213548.002

Septic systems (serves one single-family home)	R2	R2-16	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-17	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-18	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-19	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-20	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-21	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-22	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-23	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-24	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-25	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-26	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-27	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-28	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-29	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-30	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-31	B	Very Low		Off of White Drive	5	
Septic systems (serves one single-family home)	R2	R2-32	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-33	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-34	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-35	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-36	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-37	B	Very Low		Off of Downhill Circle	5	

Table 2

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Bacteria and Viruses**

PWSID 213548.002

Septic systems (serves one single-family home)	R2	R2-38	B	Very Low		Off of White Drive	5	
Septic systems (serves one single-family home)	R2	R2-39	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-40	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-41	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-42	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-43	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-44	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-45	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-46	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-47	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-48	B	Very Low		Off of Buddy Werner Drive	5	
Septic systems (serves one single-family home)	R2	R2-49	B	Very Low		Off of Buddy Werner Drive	5	
Septic systems (serves one single-family home)	R2	R2-5	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-9	B	Very Low		Off of Griffith Street	5	
Highways and roads, paved (cement or asphalt)	X20	X20-10	B	Very Low		Downhill Circle	4	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Very Low		Nordic Street	4	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Very Low		Buddy Werner Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Very Low		Griffith Street	4	
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	Very Low		Port Orford Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-6	B	Very Low		Ponderosa Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-7	B	Very Low		Port Orford Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-8	B	Very Low		White Drive	4	

Table 2**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Bacteria and Viruses****PWSID 213548.002**

Highways and roads, paved (cement or asphalt)	X20	X20-9	B	Very Low		Sugar Circle	4	
Residential Areas	R1	R1-3	C	Low		All residential areas located within Zone C	5	
Septic systems (serves one single-family home)	R2	R2-50-85	C	Very Low		All septic systems located within Zone C	5	
Highways and roads, paved (cement or asphalt)	X20	X20-13-16	C	Very Low		All roads located within Zone C	4	

Table 3

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Nitrates/Nitrites**

PWSID 213548.002

Contaminant Source Type	Contaminant Source ID	CS ID Tag	Zone	Risk Ranking for Analysis	Overall Rank After Analysis	Location	Map Number	Comments
Septic systems (serves one single-family home)	R2	R2-1	A	Very Low	1	Off of Nettleton Drive	5	
Septic systems (serves one single-family home)	R2	R2-2	A	Low	2	Off of Panorama Drive	5	
Septic systems (serves one single-family home)	R2	R2-3	A	Very Low	3	Off of Panorama Drive	5	
Septic systems (serves one single-family home)	R2	R2-4	A	Very Low	4	Off of Panorama Drive	5	
Municipal or city parks (with green areas)	X4	X4-1	A	Low	5	Far North Bicentennial Park	5	
Septic systems (serves one single-family home)	R2	R2-6	B	Very Low	6	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-7	B	Very Low	7	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-8	B	Very Low	8	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-13	B	Very Low	9	Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-14	B	Very Low	10	Off of Griffith Street	5	
Residential Areas	R1	R1-1	A	Low		All residential areas located within Zone A	5	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Very Low		Lodge Pole Court	4	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Very Low		Nettleton Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Very Low		Panorama Drive	4	
Dog walking areas/foot trails	X46	X46-1	A	Low		Trail along Lodge Pole Court	4	
Residential Areas	R1	R1-2	B	Low		All residential areas located within Zone B	5	
Septic systems (serves one single-family home)	R2	R2-10	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-11	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-12	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-15	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-16	B	Very Low		Off of Ponderosa Drive	5	

Table 3

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Nitrates/Nitrites**

PWSID 213548.002

Septic systems (serves one single-family home)	R2	R2-17	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-18	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-19	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-20	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-21	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-22	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-23	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-24	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-25	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-26	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-27	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-28	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-29	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-30	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-31	B	Very Low		Off of White Drive	5	
Septic systems (serves one single-family home)	R2	R2-32	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-33	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-34	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-35	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-36	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-37	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-38	B	Very Low		Off of White Drive	5	
Septic systems (serves one single-family home)	R2	R2-39	B	Very Low		Off of Sugar Circle	5	

Table 3

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Nitrates/Nitrites**

PWSID 213548.002

Septic systems (serves one single-family home)	R2	R2-40	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-41	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-42	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-43	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-44	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-45	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-46	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-47	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-48	B	Very Low		Off of Buddy Werner Drive	5	
Septic systems (serves one single-family home)	R2	R2-49	B	Very Low		Off of Buddy Werner Drive	5	
Septic systems (serves one single-family home)	R2	R2-5	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-9	B	Very Low		Off of Griffith Street	5	
Highways and roads, paved (cement or asphalt)	X20	X20-10	B	Very Low		Downhill Circle	4	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Very Low		Nordic Street	4	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Very Low		Buddy Werner Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Very Low		Griffith Street	4	
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	Very Low		Port Orford Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-6	B	Very Low		Ponderosa Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-7	B	Very Low		Port Orford Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-8	B	Very Low		White Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-9	B	Very Low		Sugar Circle	4	
Residential Areas	R1	R1-3	C	Low		All residential areas located within Zone C	5	
Septic systems (serves one single-family home)	R2	R2-50-85	C	Very Low		All septic systems located within Zone C	5	

Table 3

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Nitrates/Nitrites**

PWSID 213548.002

Highways and roads, paved (cement or asphalt)	X20	X20-13-16	C	Very Low		All roads located within Zone C	4	
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Table 4

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Volatile Organic Chemicals**

PWSID 213548.002

Contaminant Source Type	Contaminant Source ID	CS ID Tag	Zone	Risk Ranking for Analysis	Overall Rank After Analysis	Location	Map Number	Comments
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Very Low	1	Lodge Pole Court	4	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Very Low	2	Panorama Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Very Low	3	Nettleton Drive	4	
Septic systems (serves one single-family home)	R2	R2-1	A	Very Low	4	Off of Nettleton Drive	5	
Highways and roads, paved (cement or asphalt)	X20	X20-4	B	Very Low	5	Griffith Street	4	
Highways and roads, paved (cement or asphalt)	X20	X20-5	B	Very Low	6	Port Orford Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-6	B	Very Low	7	Ponderosa Drive	4	
Septic systems (serves one single-family home)	R2	R2-2	A	Low	8	Off of Panorama Drive	5	
Septic systems (serves one single-family home)	R2	R2-3	A	Very Low	9	Off of Panorama Drive	5	
Septic systems (serves one single-family home)	R2	R2-4	A	Very Low	10	Off of Panorama Drive	5	
Residential Areas	R1	R1-1	A	Low		All residential areas located within Zone A	5	
Residential Areas	R1	R1-2	B	Low		All residential areas located within Zone B	5	
Septic systems (serves one single-family home)	R2	R2-10	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-11	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-12	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-13	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-14	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-15	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-16	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-17	B	Very Low		Off of Griffith Street	5	

Table 4

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Volatile Organic Chemicals**

PWSID 213548.002

Septic systems (serves one single-family home)	R2	R2-18	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-19	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-20	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-21	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-22	B	Very Low		Off of Ponderosa Drive	5	
Septic systems (serves one single-family home)	R2	R2-23	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-24	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-25	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-26	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-27	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-28	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-29	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-30	B	Very Low		Port Orford Drive	5	
Septic systems (serves one single-family home)	R2	R2-31	B	Very Low		Off of White Drive	5	
Septic systems (serves one single-family home)	R2	R2-32	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-33	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-34	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-35	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-36	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-37	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-38	B	Very Low		Off of White Drive	5	
Septic systems (serves one single-family home)	R2	R2-39	B	Very Low		Off of Sugar Circle	5	

Table 4

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Volatile Organic Chemicals**

PWSID 213548.002

Septic systems (serves one single-family home)	R2	R2-40	B	Very Low		Off of Sugar Circle	5	
Septic systems (serves one single-family home)	R2	R2-41	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-42	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-43	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-44	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-45	B	Very Low		Off of Downhill Circle	5	
Septic systems (serves one single-family home)	R2	R2-46	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-47	B	Very Low		Off of Nordic Street	5	
Septic systems (serves one single-family home)	R2	R2-48	B	Very Low		Off of Buddy Werner Drive	5	
Septic systems (serves one single-family home)	R2	R2-49	B	Very Low		Off of Buddy Werner Drive	5	
Septic systems (serves one single-family home)	R2	R2-5	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-6	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-7	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-8	B	Very Low		Off of Griffith Street	5	
Septic systems (serves one single-family home)	R2	R2-9	B	Very Low		Off of Griffith Street	5	
Highways and roads, paved (cement or asphalt)	X20	X20-10	B	Very Low		Downhill Circle	4	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Very Low		Nordic Street	4	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Very Low		Buddy Werner Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-7	B	Very Low		Port Orford Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-8	B	Very Low		White Drive	4	
Highways and roads, paved (cement or asphalt)	X20	X20-9	B	Very Low		Sugar Circle	4	
Residential Areas	R1	R1-3	C	Low		All residential areas located within Zone C	5	

Table 4**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #2
Sources of Volatile Organic Chemicals****PWSID 213548.002**

Septic systems (serves one single-family home)	R2	R2-50-85	C	Very Low		All septic systems located within Zone C	5	
Highways and roads, paved (cement or asphalt)	X20	X20-13-16	C	Very Low		All roads located within Zone C	4	
Public utility easements/corridors	X42	X42-1	C	Low		currently transporting natural gas but has	5	

APPENDIX D

Contaminant Source Inventory and Risk Ranking for Hilltop Ski Area – Well #3

Table 1

**Contaminant Source Inventory for
Hilltop Ski Area Well #3**

PWSID 213548.003

Contaminant Source Category	Contaminant Source ID	CS ID Tag	Zone	Location	Map	Comments
Municipal or city parks (with green areas)	X4	X4-1	A	Far North Bicentennial Park	6	
Dog walking areas/foot trails	X46	X46-1	A	Trail within Bicentennial Park, intersecting Zone A.	6	
Residential Areas	R1	R1-1	B	Residential areas located within Zone B	6	
Septic systems (serves one single-family home)	R2	R2-1	B	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-10	B	Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-11	B	Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-12	B	Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-13	B	Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-14	B	Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-15	B	Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-16	B	Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-2	B	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-3	B	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-4	B	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-5	B	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-6	B	Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-7	B	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-8	B	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-9	B	Off of Slolom Drive	6	
Highways and roads, paved (cement or asphalt)	X20	X20-1	B	Buddy Werner Drive	6	
Highways and roads, paved (cement or asphalt)	X20	X20-2	B	Slolom Drive	6	

Table 1**Contaminant Source Inventory for
Hilltop Ski Area Well #3****PWSID 213548.003**

Highways and roads, paved (cement or asphalt)	X20	X20-3	B	Prospect Drive	6	
Dog walking areas/foot trails	X46	X46-2	B	Trail along Prospect Drive	6	
Residential Areas	R1	R1-2	C	Residential areas located within Zone C	6	
Highways and roads, paved (cement or asphalt)	X20	X20-4	C	Sidorof Lane	6	
Dog walking areas/foot trails	X46	X46-3	C	Trail intersecting Zone C	6	

Table 2

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #3
Sources of Bacteria and Viruses**

PWSID 213548.003

Contaminant Source Type	Contaminant Source ID	CS ID Tag	Zone	Risk Ranking for Analysis	Overall Rank After Analysis	Location	Map Number	Comments
Dog walking areas/foot trails	X46	X46-1	A	Low	1	Bicentennial Park, intersecting Zone A.	6	
Residential Areas	R1	R1-1	B	Low	2	Residential areas located within Zone B	6	
Municipal or city parks (with green areas)	X4	X4-1	A	Very Low	3	Far North Bicentennial Park	6	
Septic systems (serves one single-family home)	R2	R2-1	B	Very Low	4	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-4	B	Very Low	5	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-3	B	Very Low	6	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-2	B	Very Low	7	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-5	B	Very Low	8	Off of Buddy Werner Drive	6	
Highways and roads, paved (cement or asphalt)	X20	X20-1	B	Very Low	9	Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-6	B	Very Low	10	Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-10	B	Very Low		Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-11	B	Very Low		Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-12	B	Very Low		Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-13	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-14	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-15	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-16	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-7	B	Very Low		Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-8	B	Very Low		Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-9	B	Very Low		Off of Slolom Drive	6	

Table 2**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #3
Sources of Bacteria and Viruses****PWSID 213548.003**

Highways and roads, paved (cement or asphalt)	X20	X20-2	B	Very Low		Slolom Drive	6	
Highways and roads, paved (cement or asphalt)	X20	X20-3	B	Very Low		Prospect Drive	6	
Dog walking areas/foot trails	X46	X46-2	B	Low		Trail along Prospect Drive	6	
Residential Areas	R1	R1-2	C	Low		Residential areas located within Zone C	6	
Highways and roads, paved (cement or asphalt)	X20	X20-4	C	Very Low		Sidorof Lane	6	
Dog walking areas/foot trails	X46	X46-3	C	Low		Trail intersecing Zone C	6	

Table 3

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #3
Sources of Nitrates/Nitrites**

PWSID 213548.003

Contaminant Source Type	Contaminant Source ID	CS ID Tag	Zone	Risk Ranking for Analysis	Overall Rank After Analysis	Location	Map Number	Comments
Dog walking areas/foot trails	X46	X46-1	A	Low	1	Bicentennial Park, intersecting Zone A.	6	
Residential Areas	R1	R1-1	B	Low	2	Residential areas located within Zone B	6	
Municipal or city parks (with green areas)	X4	X4-1	A	Very Low	3	Far North Bicentennial Park	6	
Septic systems (serves one single-family home)	R2	R2-1	B	Very Low	4	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-4	B	Very Low	5	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-3	B	Very Low	6	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-2	B	Very Low	7	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-5	B	Very Low	8	Off of Buddy Werner Drive	6	
Highways and roads, paved (cement or asphalt)	X20	X20-1	B	Very Low	9	Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-6	B	Very Low	10	Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-10	B	Very Low		Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-11	B	Very Low		Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-12	B	Very Low		Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-13	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-14	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-15	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-16	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-7	B	Very Low		Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-8	B	Very Low		Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-9	B	Very Low		Off of Slolom Drive	6	
Highways and roads, paved (cement or asphalt)	X20	X20-2	B	Very Low		Slolom Drive	6	

Table 3**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #3
Sources of Nitrates/Nitrites****PWSID 213548.003**

Highways and roads, paved (cement or asphalt)	X20	X20-3	B	Very Low		Prospect Drive	6	
Dog walking areas/foot trails	X46	X46-2	B	Low		Trail along Prospect Drive	6	
Residential Areas	R1	R1-2	C	Low		Residential areas located within Zone C	6	
Highways and roads, paved (cement or asphalt)	X20	X20-4	C	Very Low		Sidorof Lane	6	
Dog walking areas/foot trails	X46	X46-3	C	Low		Trail intersecting Zone C	6	

Table 4

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #3
Sources of Volatile Organic Chemicals**

PWSID 213548.003

Contaminant Source Type	Contaminant Source ID	CS ID Tag	Zone	Risk Ranking for Analysis	Overall Rank After Analysis	Location	Map Number	Comments
Highways and roads, paved (cement or asphalt)	X20	X20-1	B	Very Low	1	Buddy Werner Drive	6	
Highways and roads, paved (cement or asphalt)	X20	X20-2	B	Very Low	2	Slolom Drive	6	
Residential Areas	R1	R1-1	B	Low	3	Residential areas located within Zone B	6	
Septic systems (serves one single-family home)	R2	R2-1	B	Very Low	4	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-4	B	Very Low	5	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-5	B	Very Low	6	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-2	B	Very Low	7	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-3	B	Very Low	8	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-6	B	Very Low	9	Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-7	B	Very Low	10	Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-10	B	Very Low		Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-12	B	Very Low		Off of Slolom Drive	6	
Septic systems (serves one single-family home)	R2	R2-13	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-14	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-15	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-16	B	Very Low		Off of Prospect Drive	6	
Septic systems (serves one single-family home)	R2	R2-8	B	Very Low		Off of Buddy Werner Drive	6	
Septic systems (serves one single-family home)	R2	R2-9	B	Very Low		Off of Slolom Drive	6	
Highways and roads, paved (cement or asphalt)	X20	X20-3	B	Very Low		Prospect Drive	6	
Residential Areas	R1	R1-2	C	Low		Residential areas located within Zone C	6	

Table 4

**Contaminant Source Inventory and Risk Ranking for
Hilltop Ski Area Well #3
Sources of Volatile Organic Chemicals**

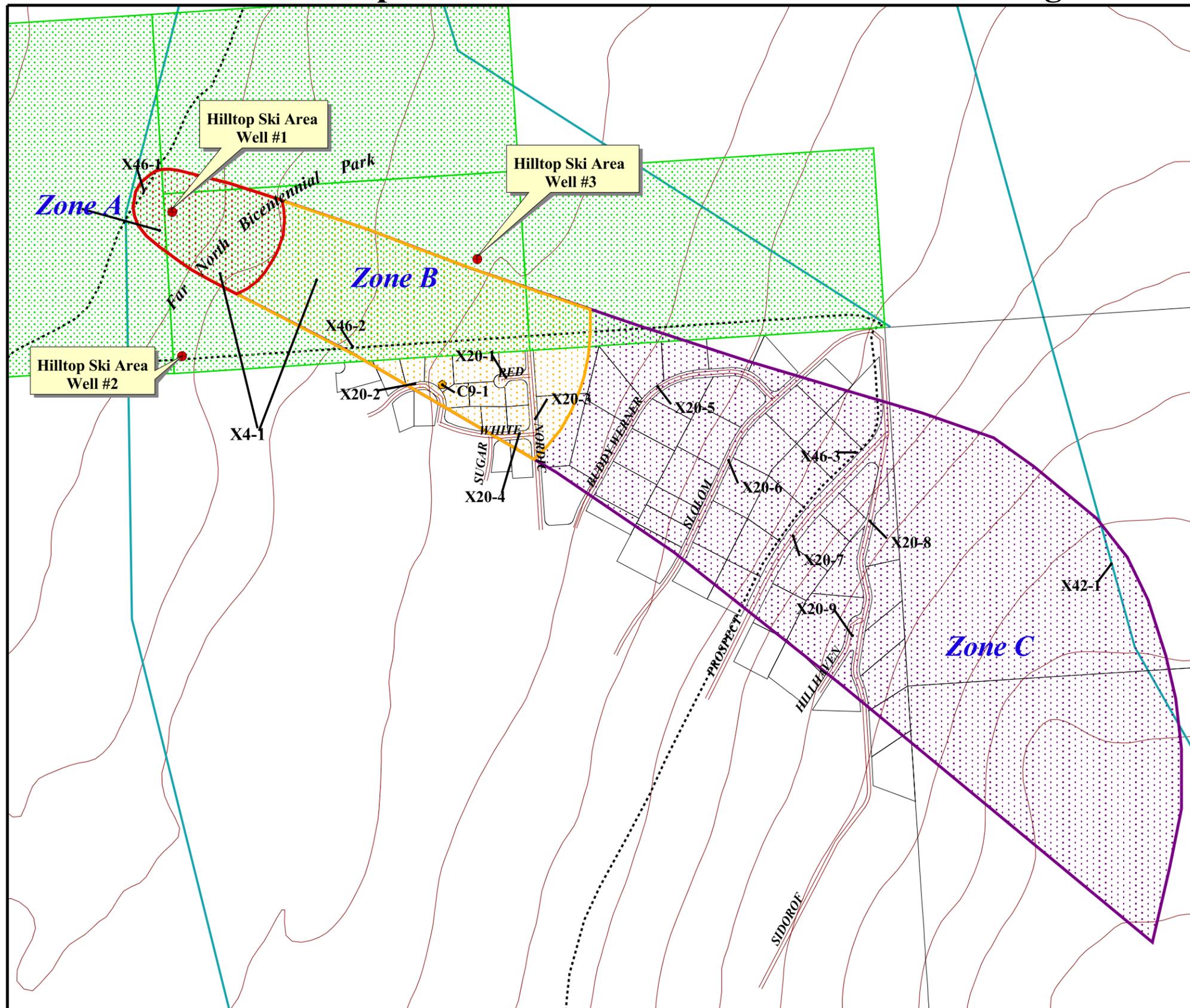
PWSID 213548.003

Highways and roads, paved (cement or asphalt)	X20	X20-4	C	Very Low		Sidorof Lane	6	
Septic systems (serves one single-family home)	R2	R2-11	B	Very Low		Off of Slolom Drive	6	

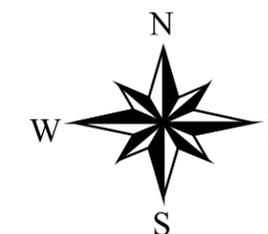
APPENDIX E

Hilltop Ski Area's Drinking Water Protection Areas and Potential & Existing Contaminant Sources

Drinking Water Protection Area for Hilltop Ski Area Well #1 and Potential & Existing Contaminant Sources



- Hilltop Ski Area DW Well #1
- Zone A Protection Area**
- Several Months Travel Time
- Zone B Protection Area**
- Less Than 2 Years Travel Time
- Zone C Protection Area**
- Less Than 5 Years Travel Time
- Anchorage Parks (X4)
- Potential and Existing Contaminant Sources**
- Construction Trade Areas and Materials (C9)
- Anchorage Land Parcels
- ⋯ Trails (X46)
- Public Utility Easements/Corridors (X42)
- Anchorage Roads (X20)
- Anchorage Streams
- Elevation Contours

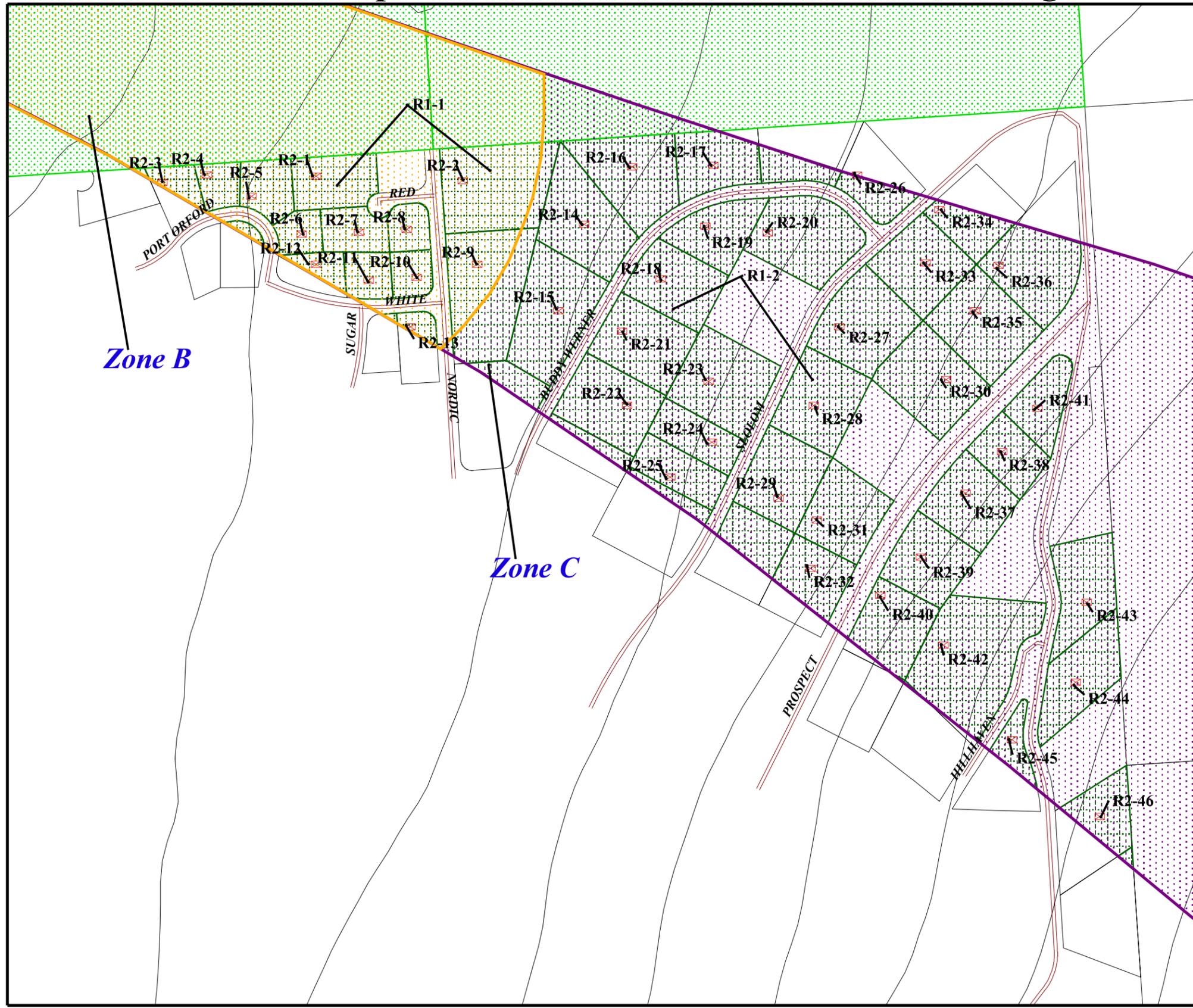


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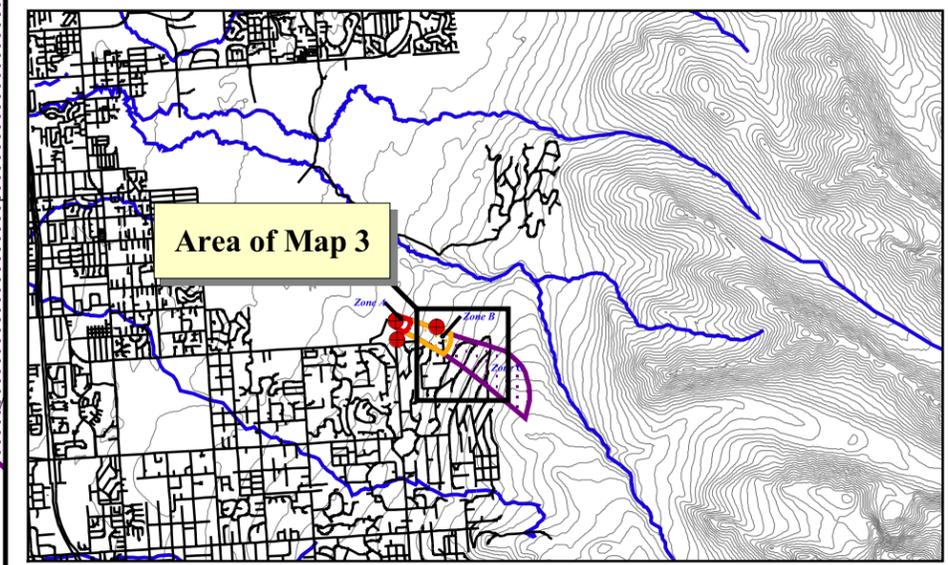
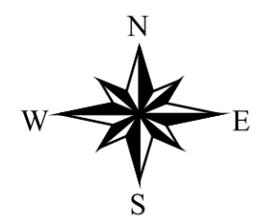
PWSID 213548.001

Map 2

Drinking Water Protection Area for Hilltop Ski Area Well #1 and Potential & Existing Contaminant Sources



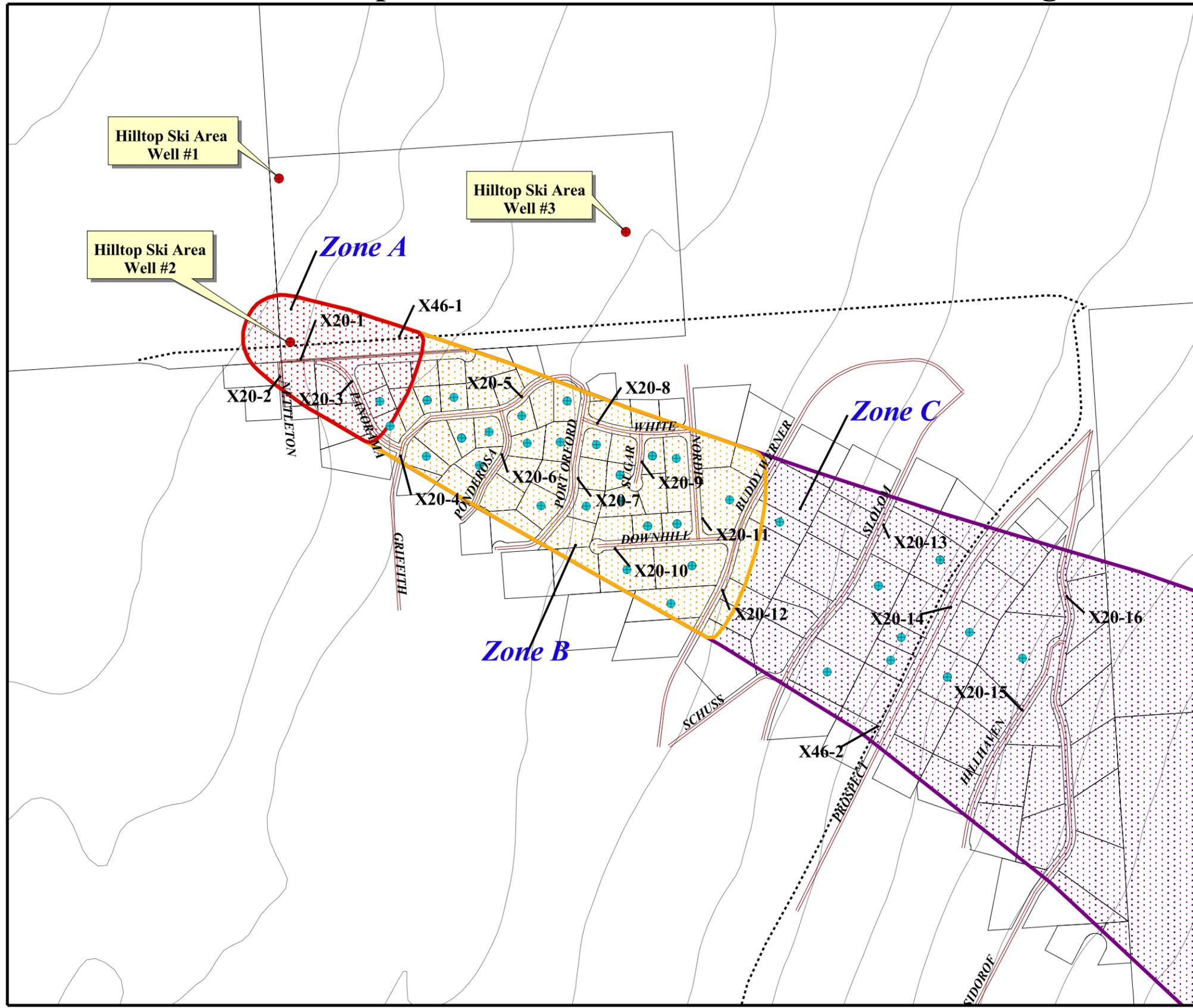
- Hilltop Ski Area DW Well #1
- Zone A Protection Area**
- Several Months Travel Time
- Zone B Protection Area**
- Less Than 2 Years Travel Time
- Zone C Protection Area**
- Less Than 5 Years Travel Time
- Anchorage Parks (X4)
- ⊠ Septic Systems (R2)
- Lawns and Gardens (R1)
- Anchorage Land Parcels
- Anchorage Roads (X20)
- Elevation Contours



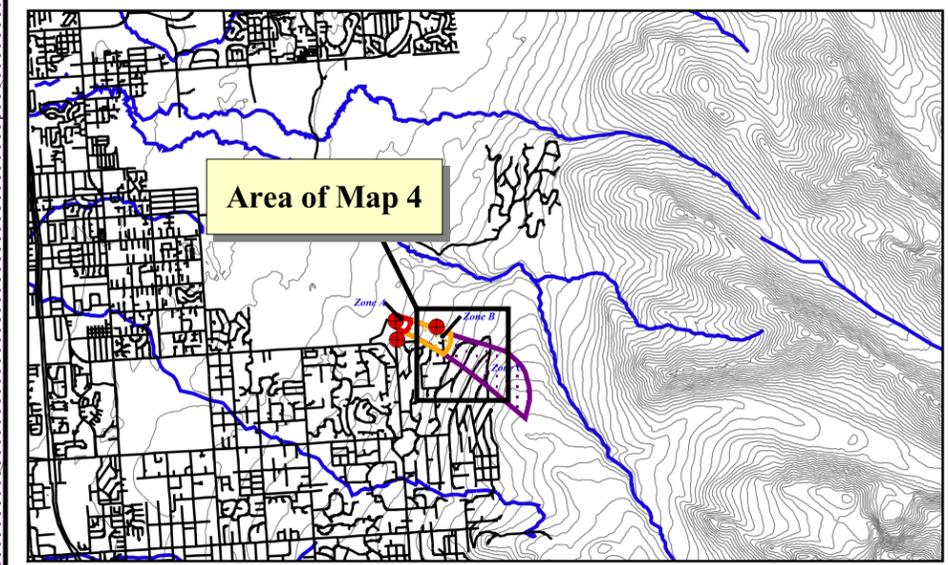
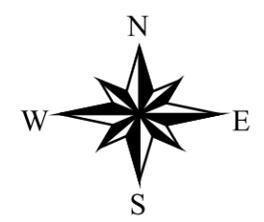
PWSID 213548.001

Map 3

Drinking Water Protection Area for Hilltop Ski Area Well #2 and Potential & Existing Contaminant Sources



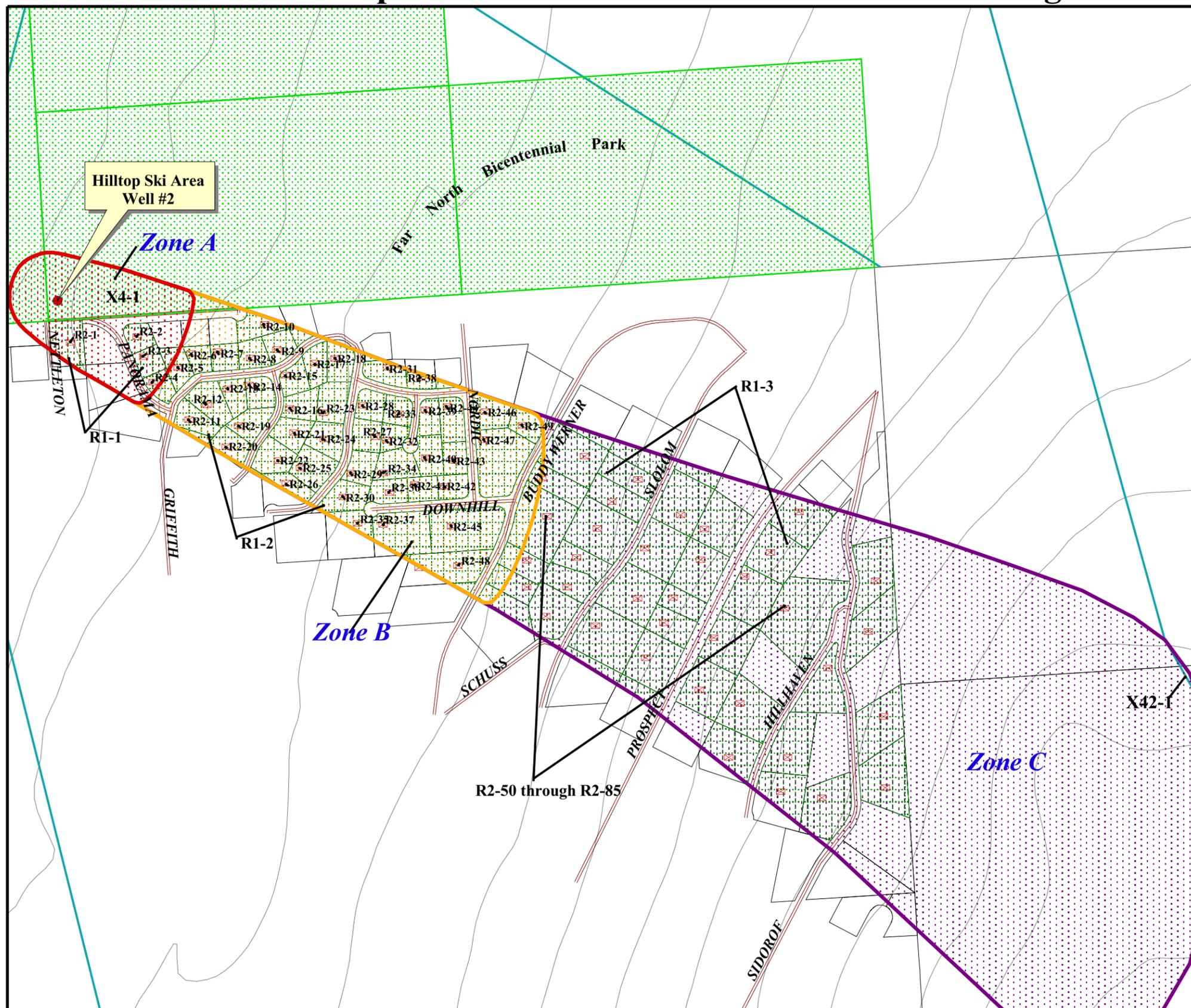
- Drinking Water Wells
- Private & Public Wells
- Zone A Protection Area**
- Several Months Travel Time
- Zone B Protection Area**
- Less Than 2 Years Travel Time
- Zone C Protection Area**
- Less Than 3 Years Travel Time
- Trails (X46)
- Anchorage Roads (X20)
- Anchorage Land Parcels
- Elevation Contours



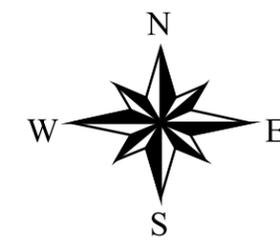
PWSID 213548.002

Map 4

Drinking Water Protection Area for Hilltop Ski Area Well #2 and Potential & Existing Contaminant Sources



- Drinking Water Wells
- Zone A Protection Area**
- Several Months Travel Time
- Zone B Protection Area**
- Less Than 2 Years Travel Time
- Zone C Protection Area**
- Less Than 3 Years Travel Time
- Anchorage Parks (X4)
- Public Utility Easements/Corridors (X42)
- Septic Systems (R2)
- Anchorage Roads (X20)
- Lawns and Gardens (R1)
- Anchorage Land Parcels
- Elevation Contours

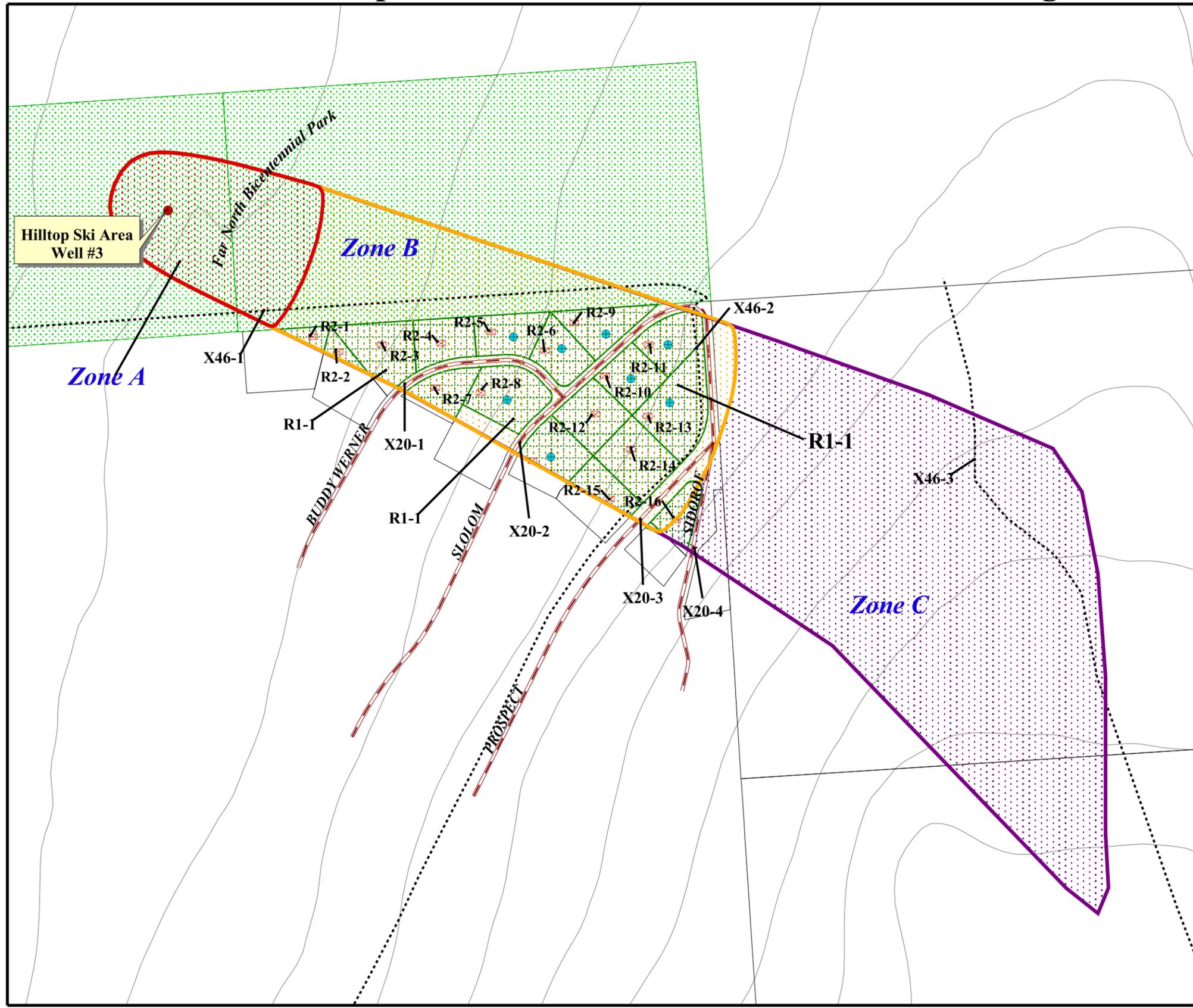


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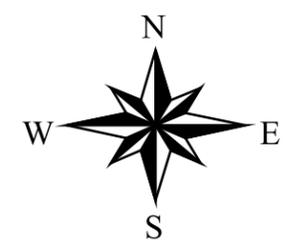
PWSID 213548.002

Map 5

Drinking Water Protection Area for Hilltop Ski Area Well #3 and Potential & Existing Contaminant Sources



- Drinking Water Wells
- Private and Public Wells
- Zone A Well #3
- Zone B Well #3
- Hilltop Ski Area
- Zone C Well #3
- Hilltop Ski Area
- Trails (X46)
- Anchorage Roads (X20)
- Septic Systems (R2)
- Lawns and Gardens (R1)
- Anchorage Parks (X4)
- Anchorage Land Parcels
- Elevation Contours
- Anchorage Streams
- Anchorage Lakes



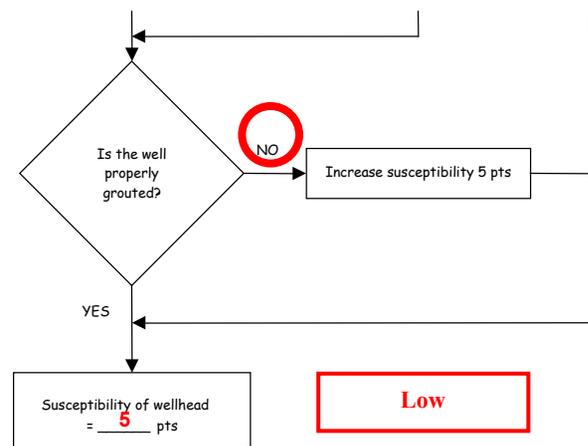
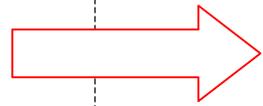
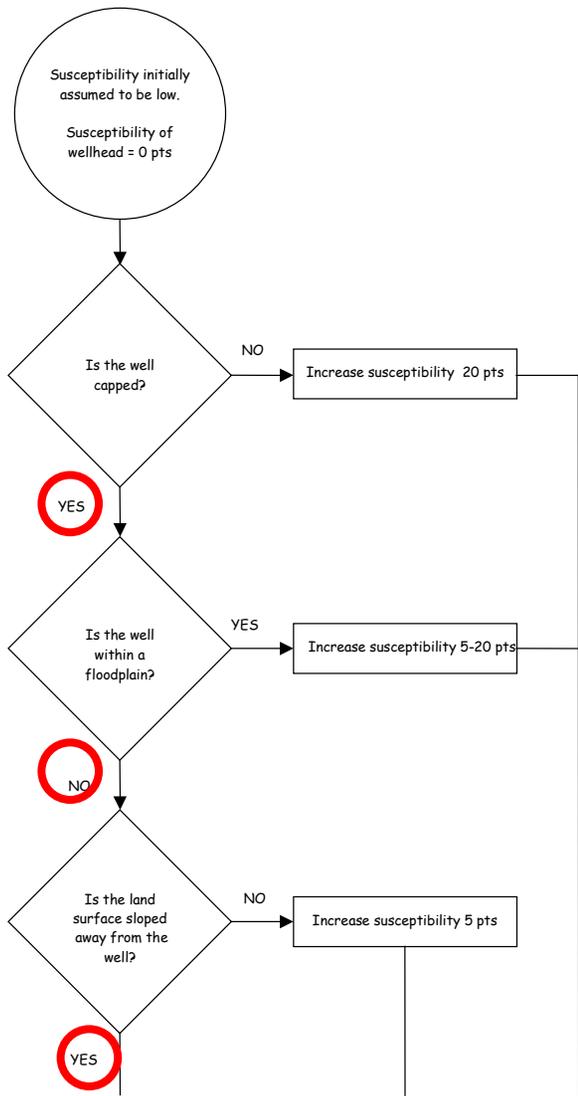
PWSID 213548.003

Map 6

APPENDIX F

Vulnerability Analysis for Hilltop Ski Area's Public Drinking Water Source – Well #1

Chart 1. Susceptibility of the wellhead – Hilltop Ski Area Well #1



Wellhead Susceptibility Ratings	
20 to 25 pts	very high
15 to < 20 pts	high
10 to < 15 pts	medium
< 10	low

It is not indicated that the well is grouted on the well log dated 11/29/83.

Chart 2. Susceptibility of the aquifer – Hilltop Ski Area Well #1

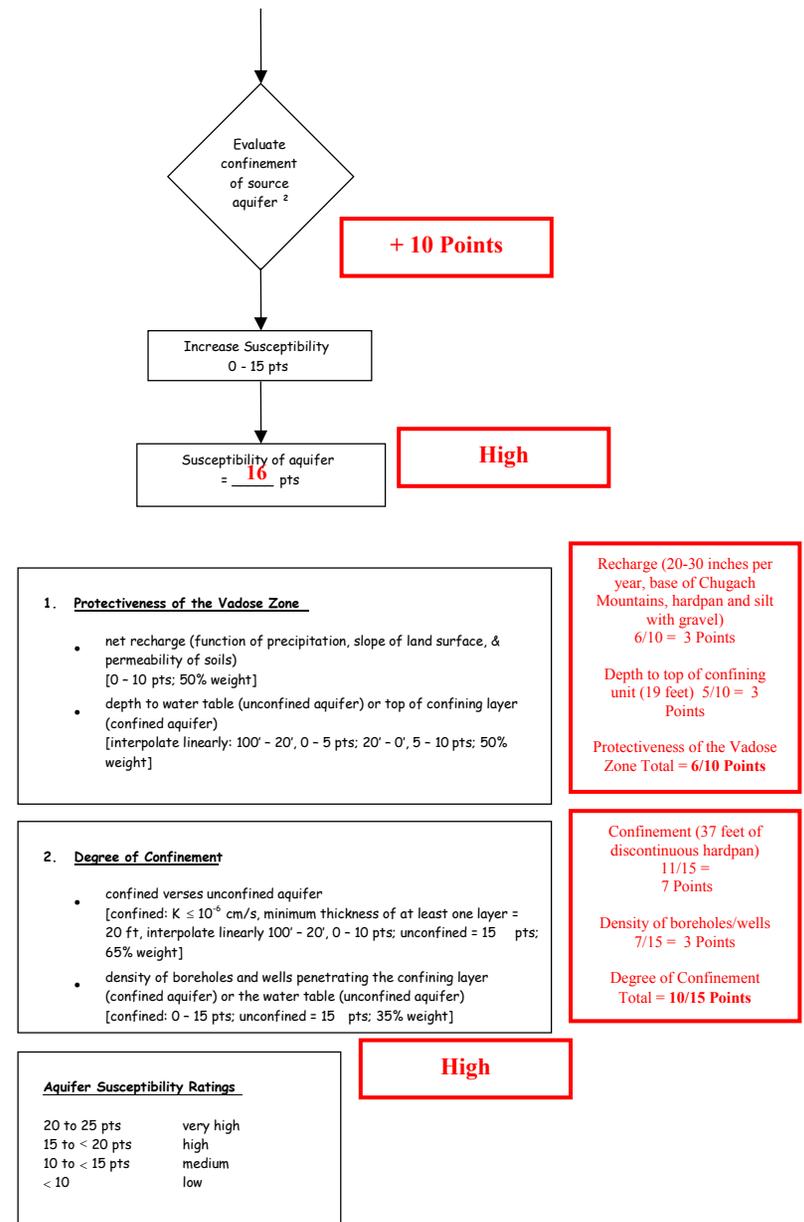
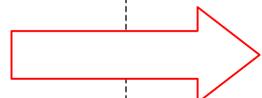
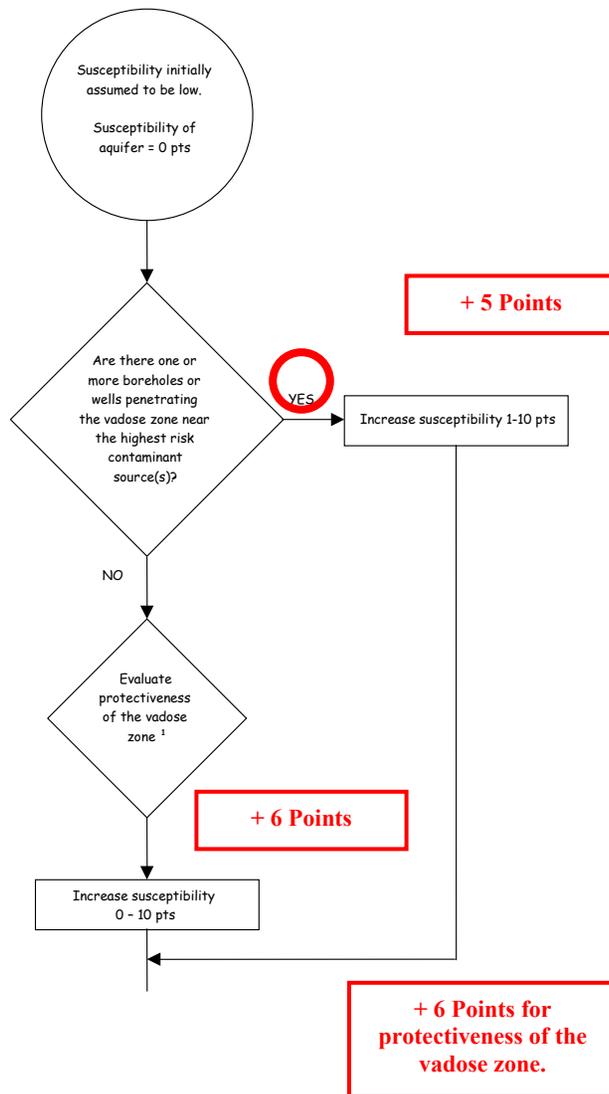


Chart 3. Contaminant risks for Hilltop Ski Area Well #1 – Bacteria & Viruses

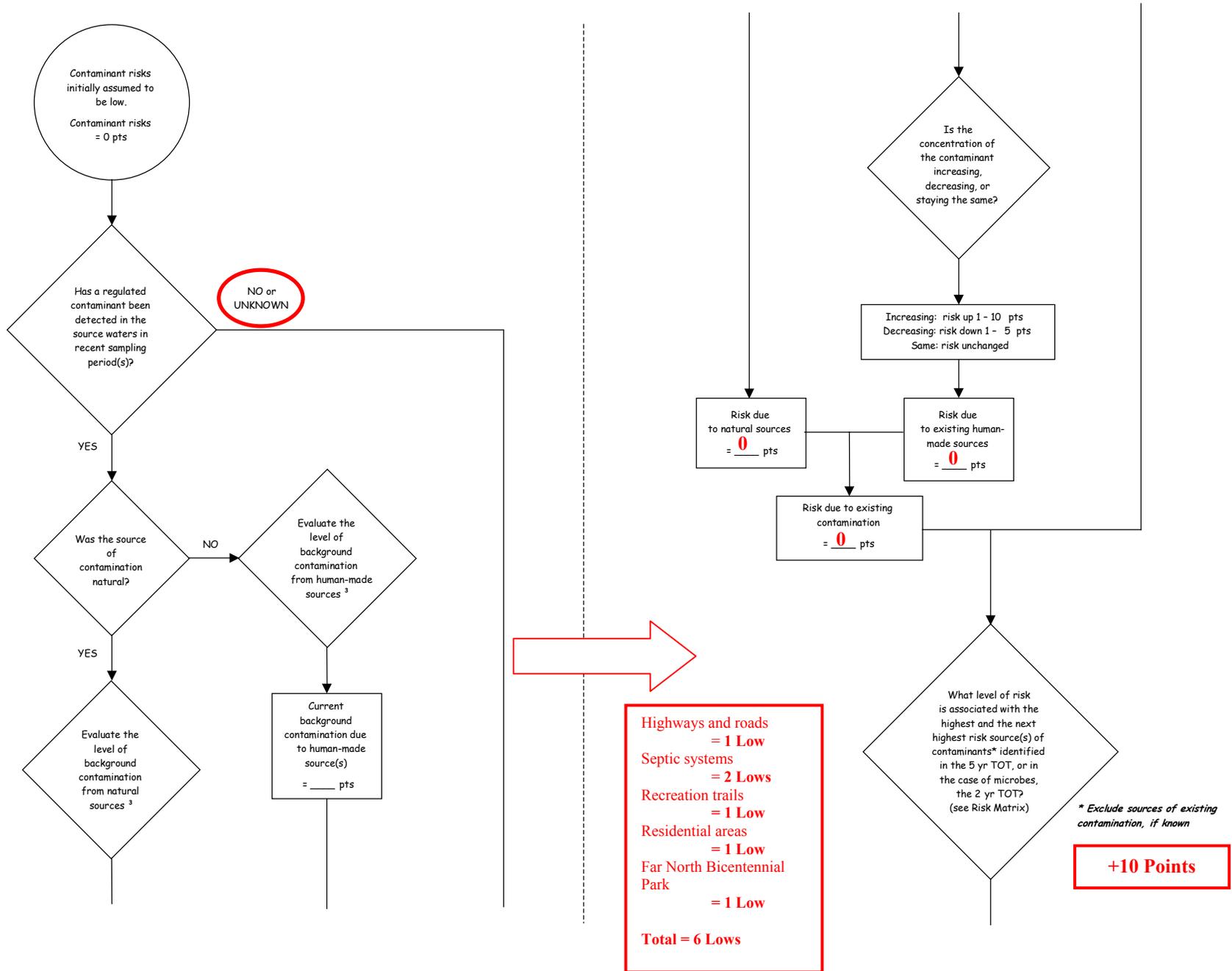


Chart 3. Contaminant risks for Hilltop Ski Area Well #1 – Bacteria & Viruses (Continued)

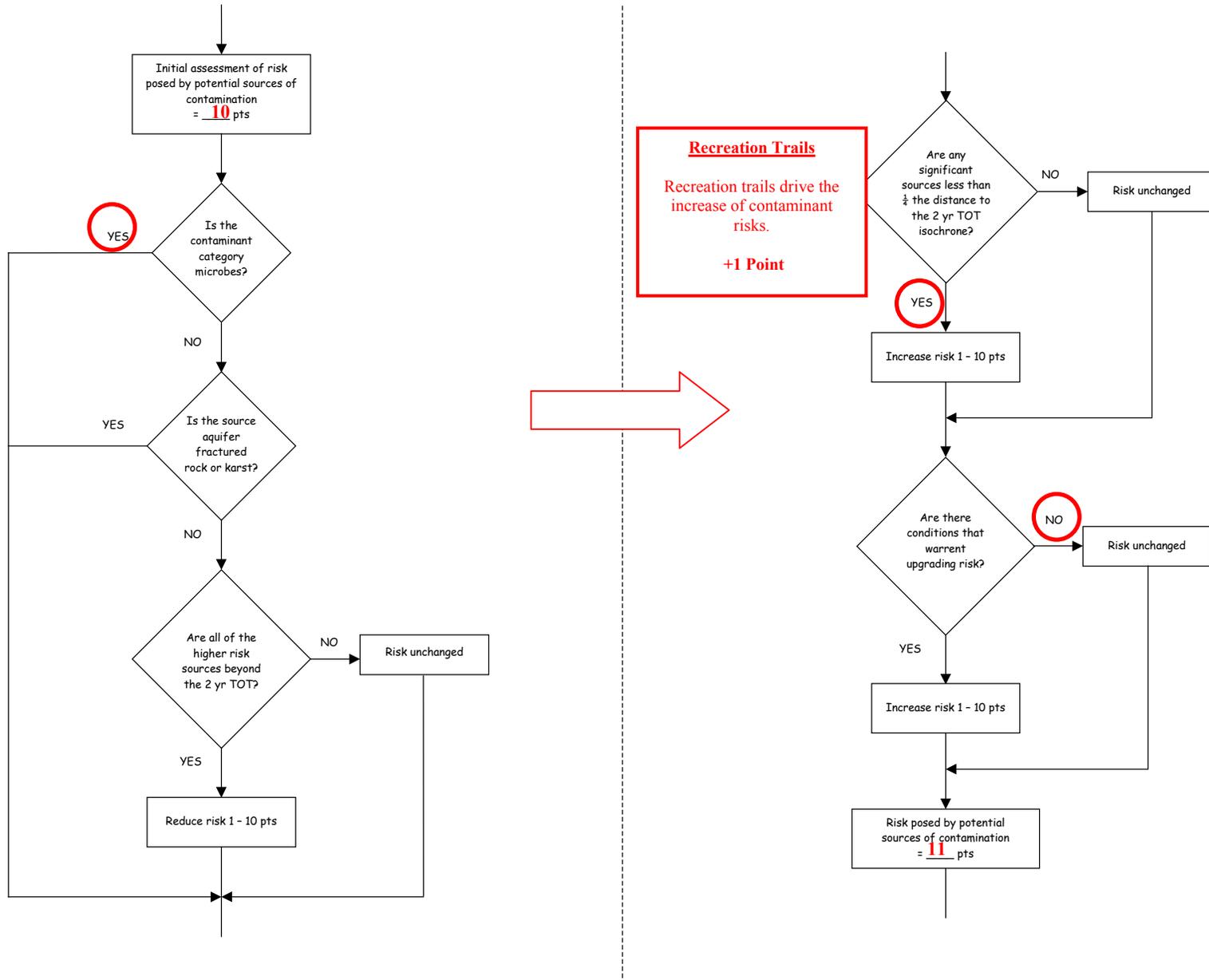
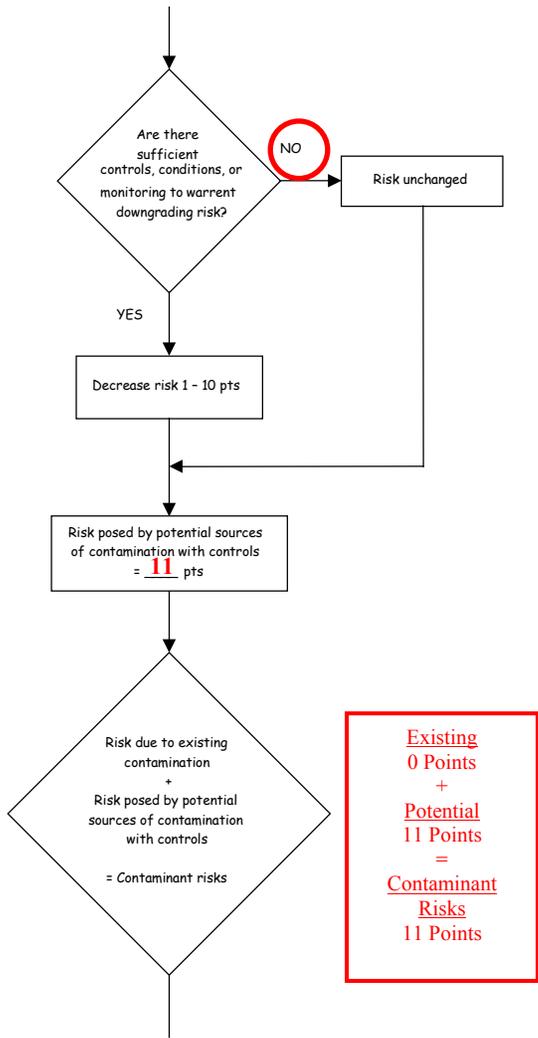


Chart 3. Contaminant risks for Hilltop Ski Area Well #1 – Bacteria & Viruses (Continued)



* Truncate risk at 50 pts

Contaminant risks* = **11** pts

Low

3. Level of Background Contamination	
> MCL	21 - 50 pts
0.5 MCL to < MCL	11 - 20 pts
0.2 MCL to < 0.5 MCL	6 - 10 pts
'detect' to < 0.2 MCL	0 - 5 pts

Contaminant Risk Ratings	
40 to 50 pts	very high
30 to < 40 pts	high
20 to < 30 pts	medium
< 20	low

Table 1. Risk Matrix for Contaminant Sources for Hilltop Ski Area Well #1 – Bacteria & Viruses

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Highways and roads, septic systems, recreation trails, residential areas, Far North Bicentennial Park	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

Chart 4. Vulnerability analysis for Hilltop Ski Area Well #1 – Bacteria & Viruses

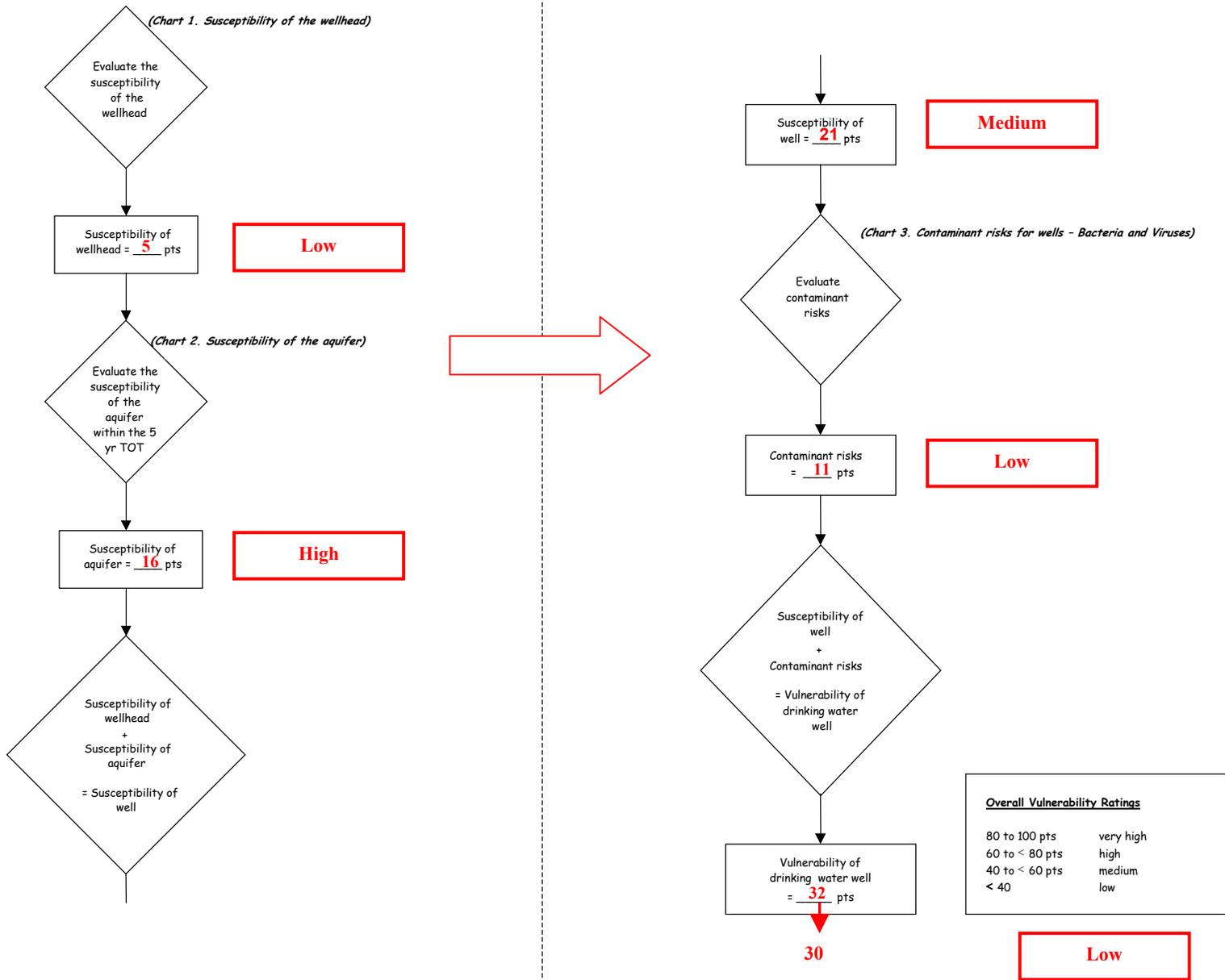


Chart 5. Contaminant risks for Hilltop Ski Area Well #1 – Nitrates and Nitrites

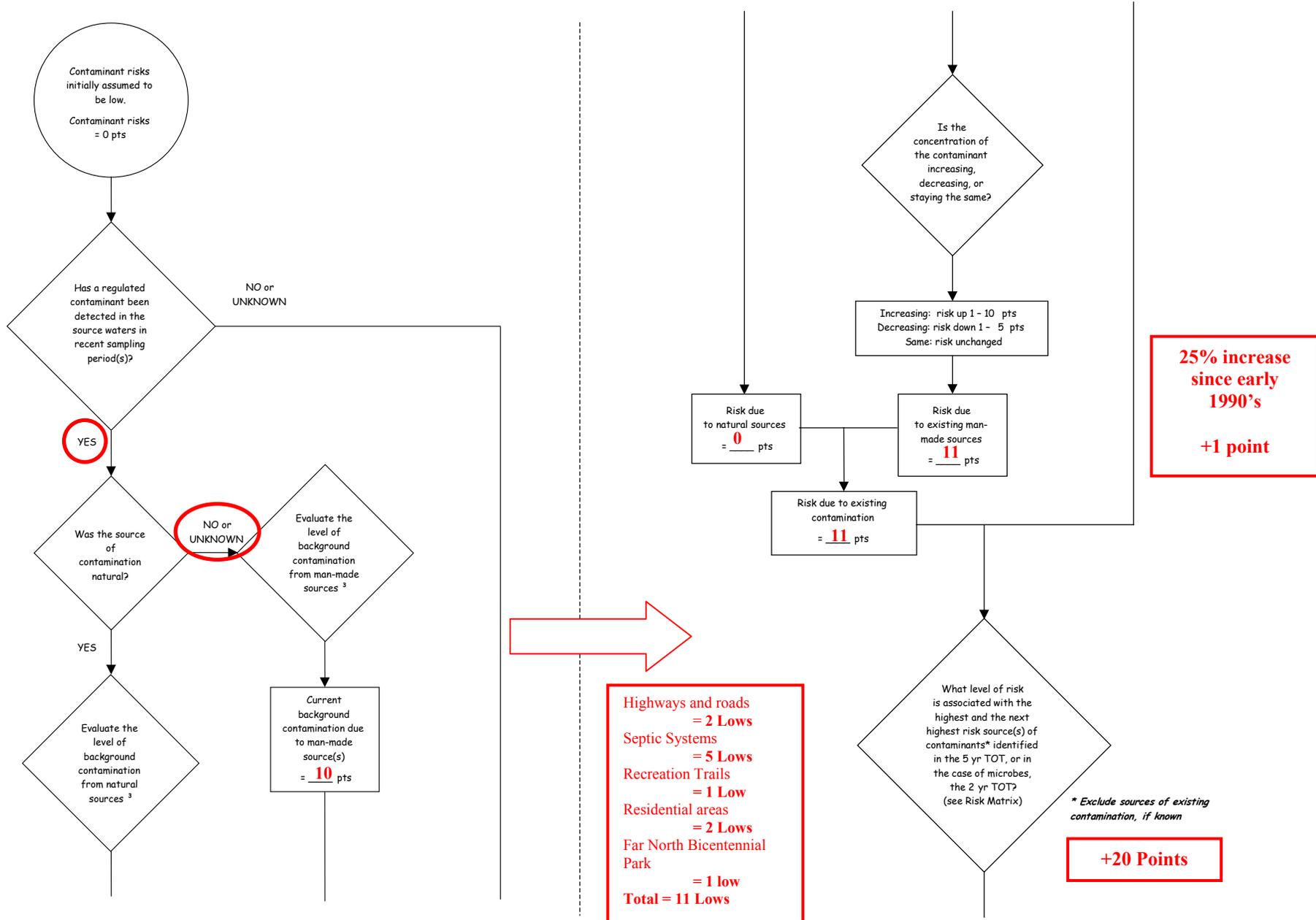


Chart 5. Contaminant risks for Hilltop Ski Area Well #1 – Nitrates and Nitrites (Continued)

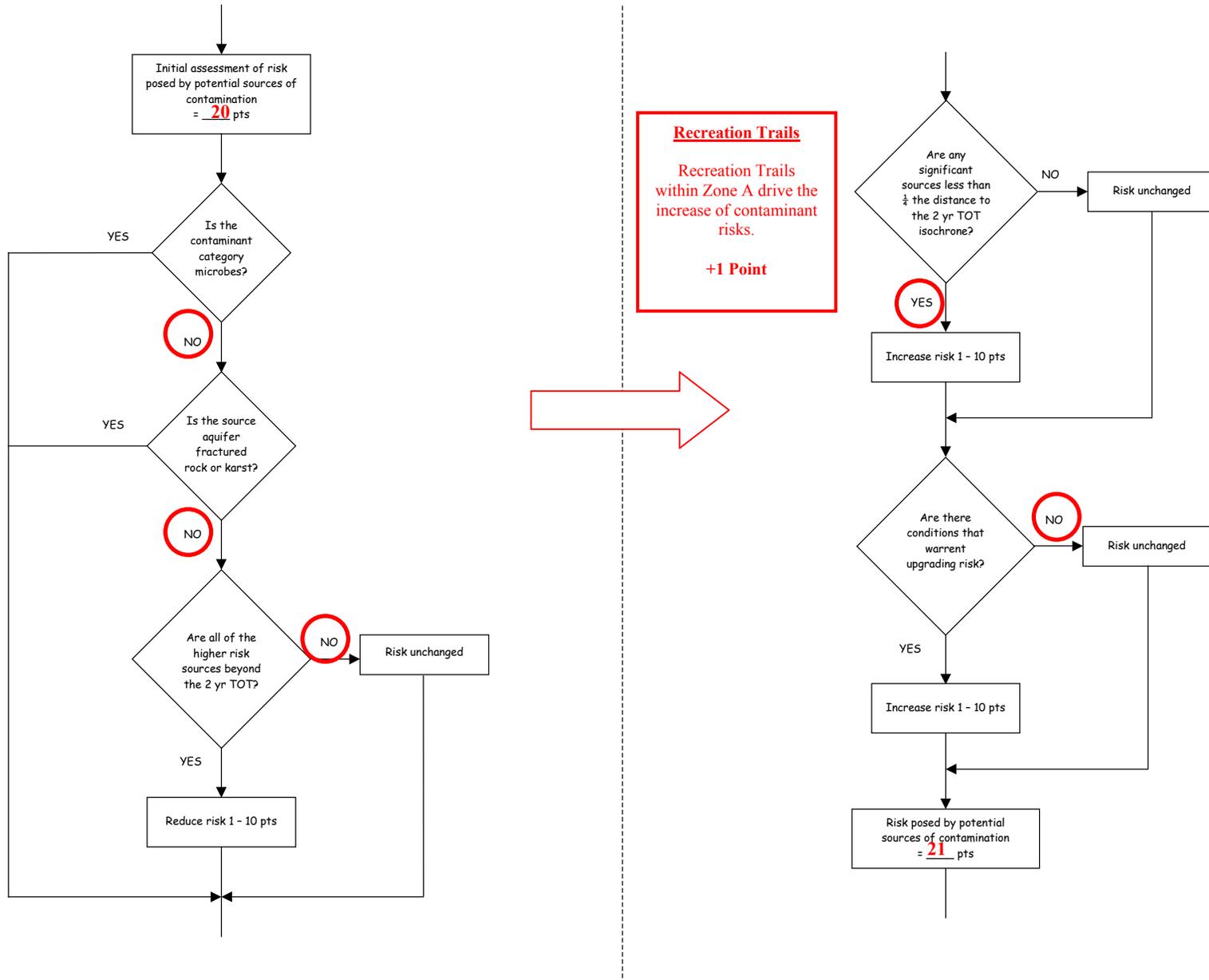
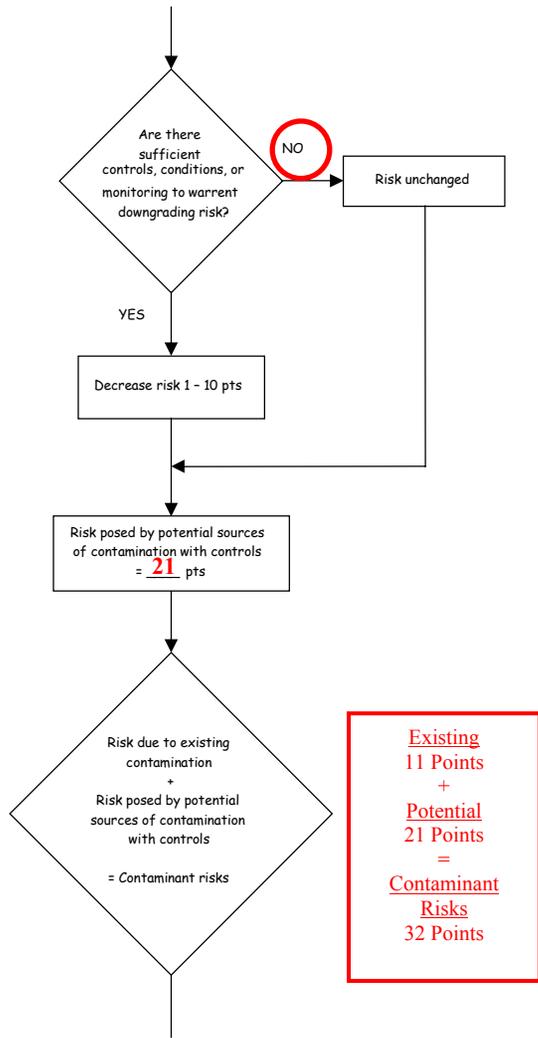


Chart 5. Contaminant risks for Hilltop Ski Area Well #1 – Nitrates and Nitrites (Continued)



* Truncate risk at 50 pts

Contaminant risks* = 32 pts

High

3. Level of Background Contamination

> MCL	50 pts
0.5 MCL to . MCL	20 pts
0.2 MCL to < 0.5 MCL	10 pts
'detect' to < 0.2 MCL	5 pts

Contaminant Risk Ratings

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

Nitrate

4.44 mg/L (05/16/01)
 3.40 mg/L (06/02/99)
 3.50 mg/L (02/28/97)
 3.70 mg/L (09/27/95)
 3.10 mg/L (02/12/93)
 3.00 mg/L (01/06/89)

Maximum Contaminant Level (MCL) = 10mg/L

4.40/10
 = 0.440 or 44% of MCL

+10 Points

Table 2. Risk Matrix for Contaminant Sources for Hilltop Ski Area Well #1 – Nitrates and Nitrites

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Highways and roads, septic systems, recreation trails, residential areas, Far North Bicentennial Park	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

Chart 6. Vulnerability analysis for Hilltop Ski Area Well #1 – Nitrates and Nitrites

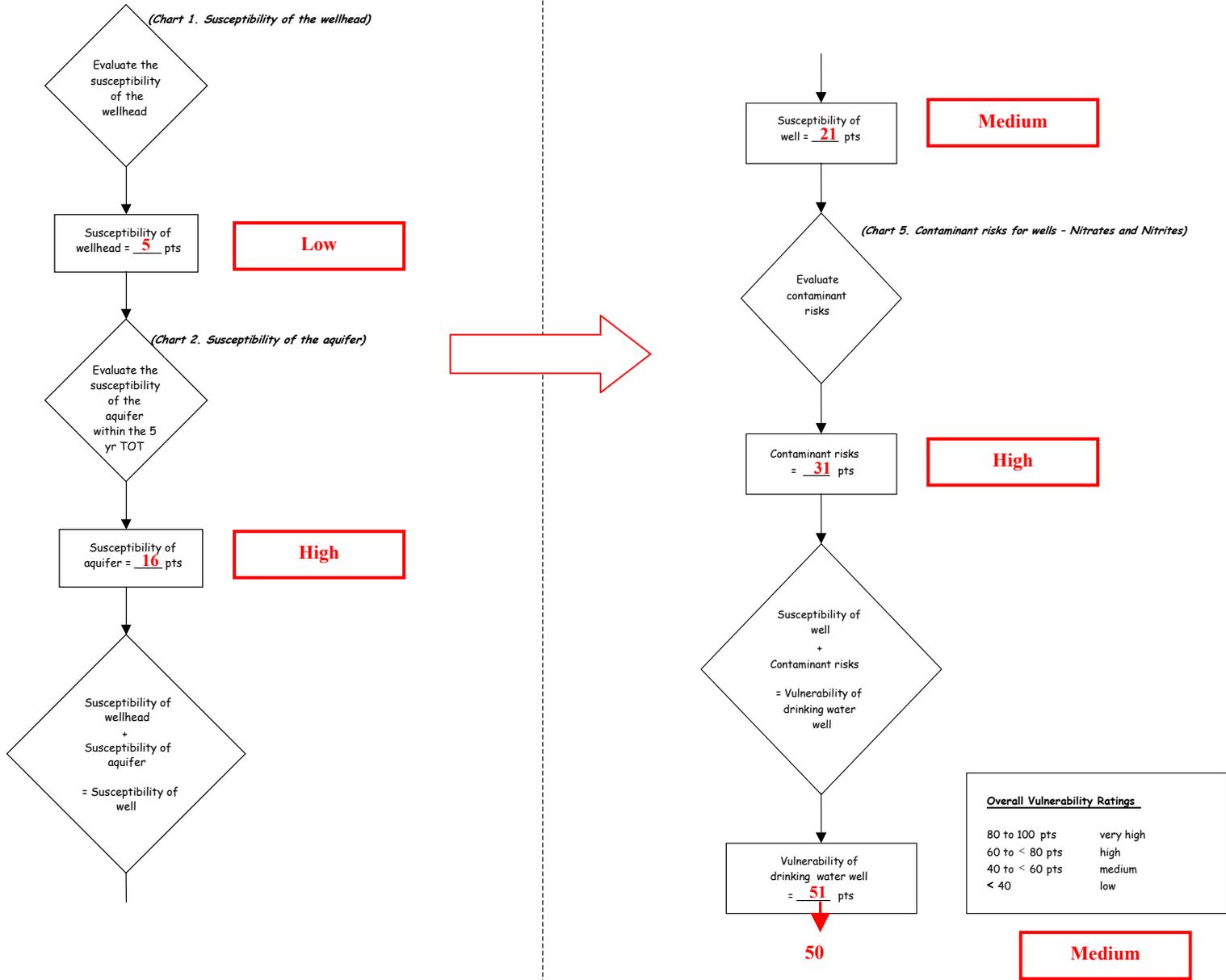


Chart 7. Contaminant risks for Hilltop Ski Area Well #1 – Volatile Organic Chemicals

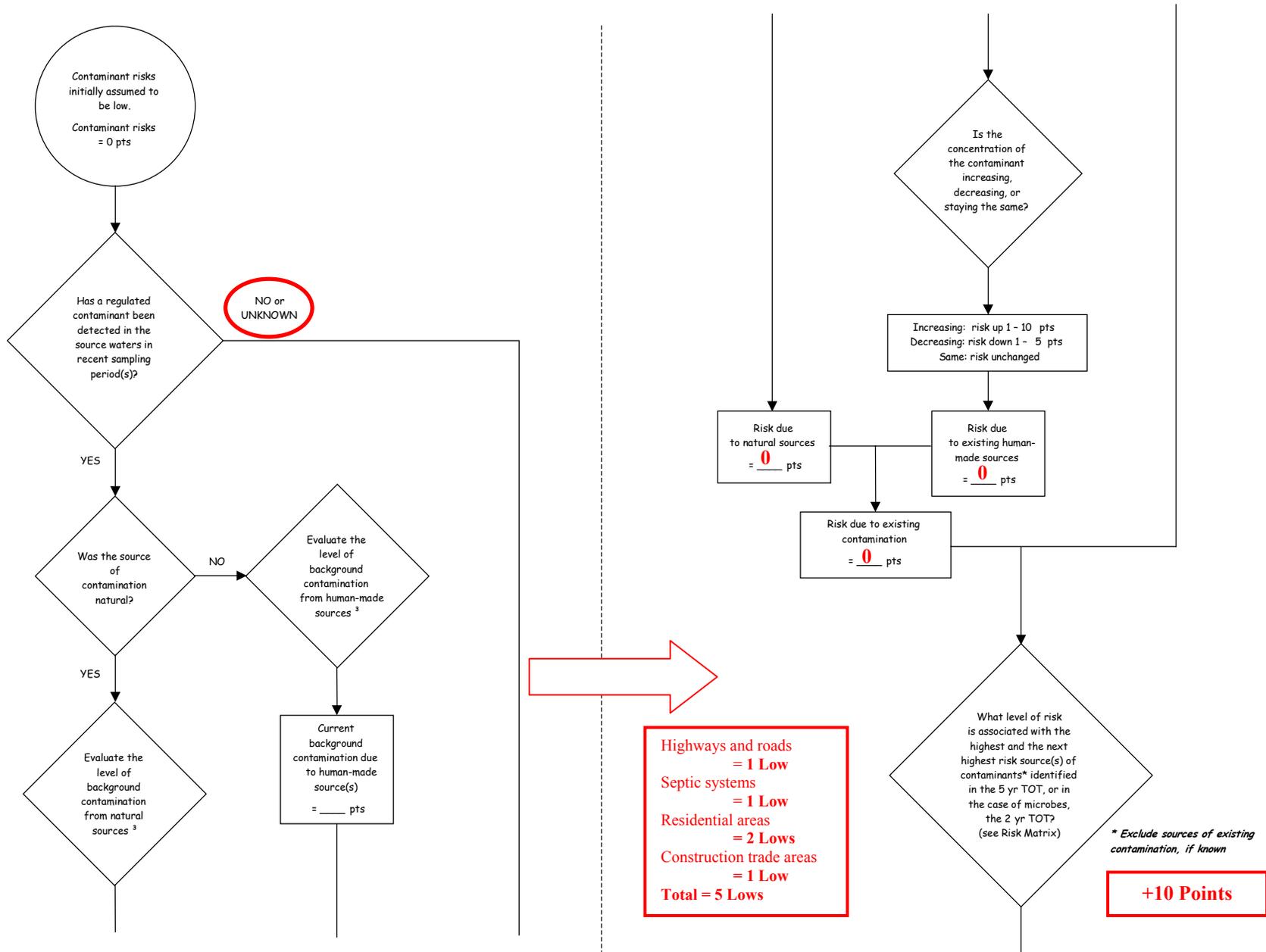


Chart 7. Contaminant risks for Hilltop Ski Area Well #1 – Volatile Organic Chemicals (Continued)

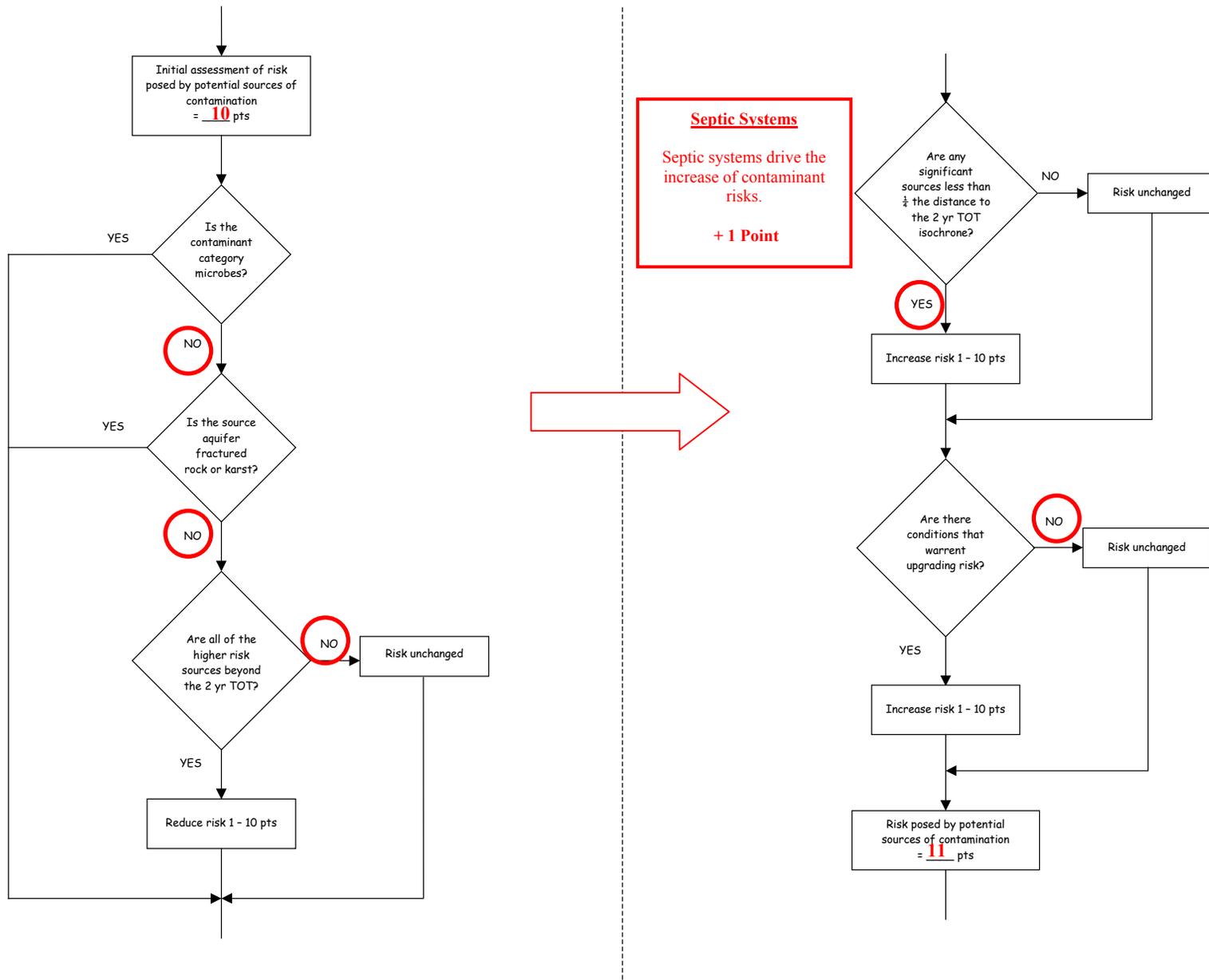


Chart 7. Contaminant risks for Hilltop Ski Area Well #1 – Volatile Organic Chemicals (Continued)

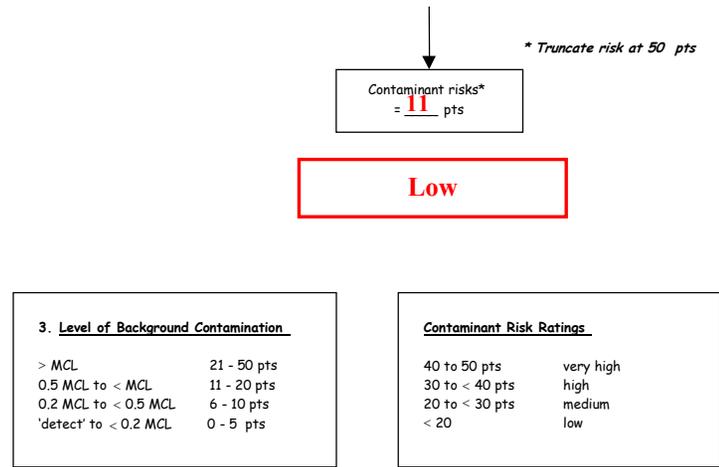
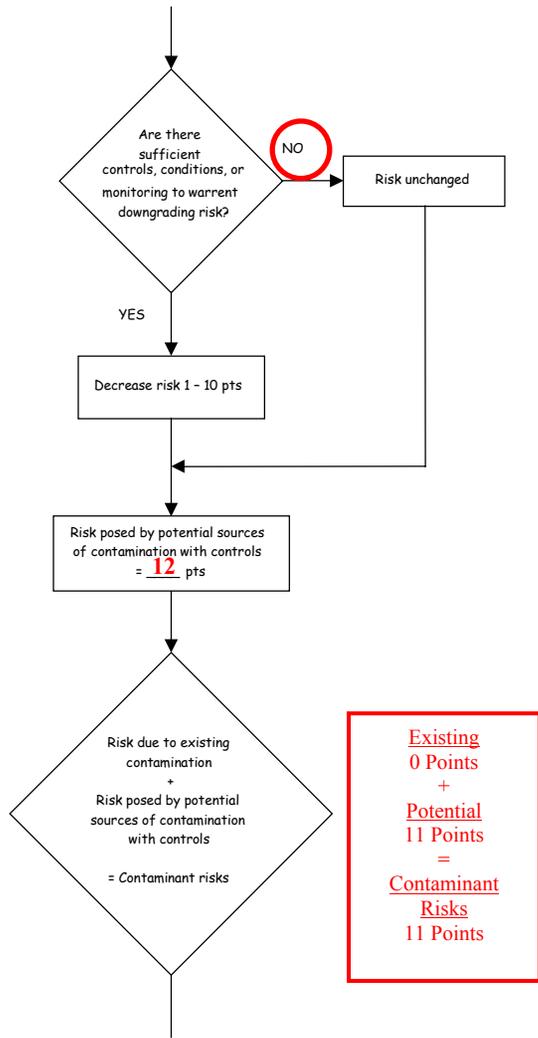
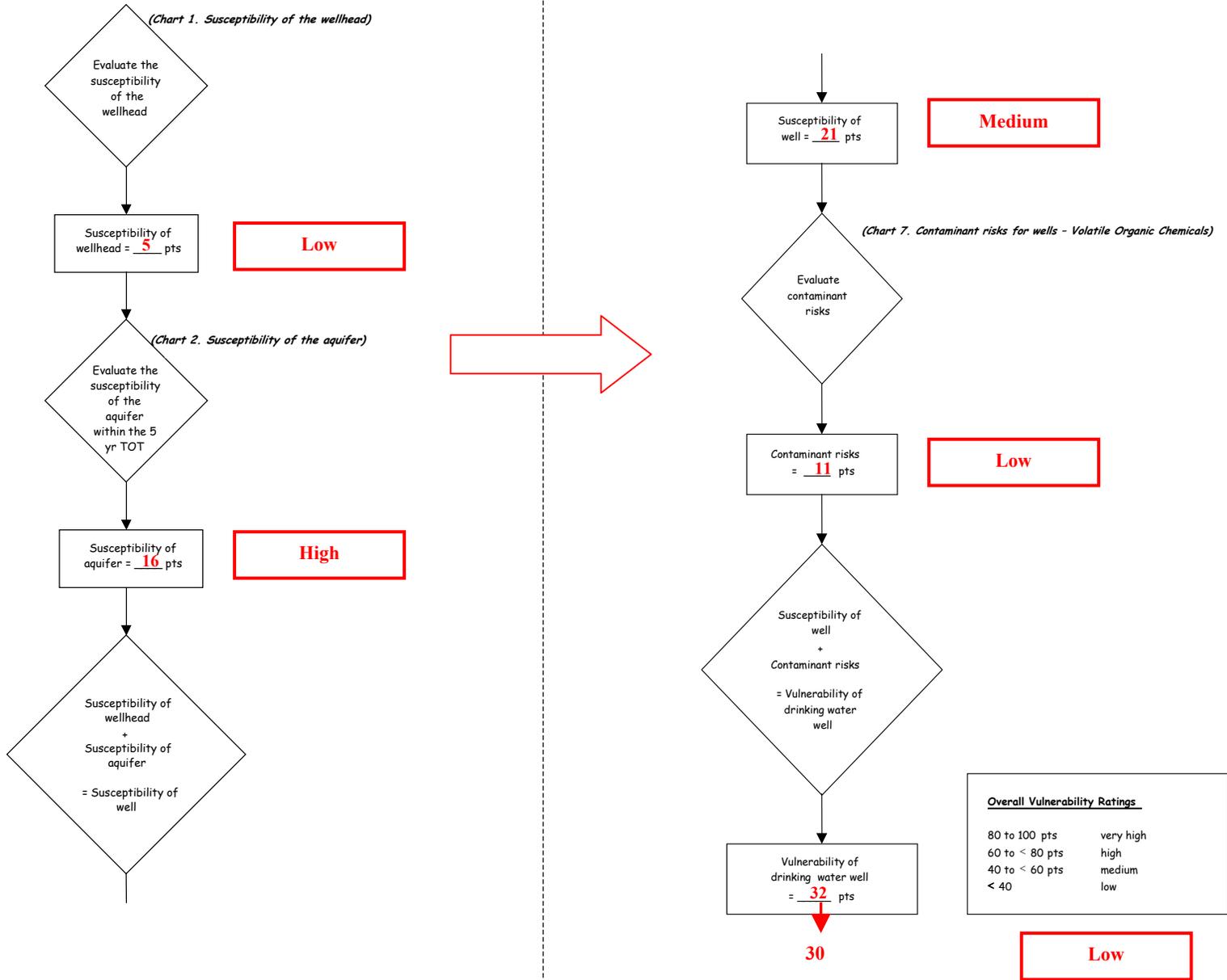


Table 3. Risk Matrix for Contaminant Sources for Hilltop Ski Area Well #1 – Volatile Organic Chemicals

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Highways and roads, septic systems, residential areas, construction trade areas	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

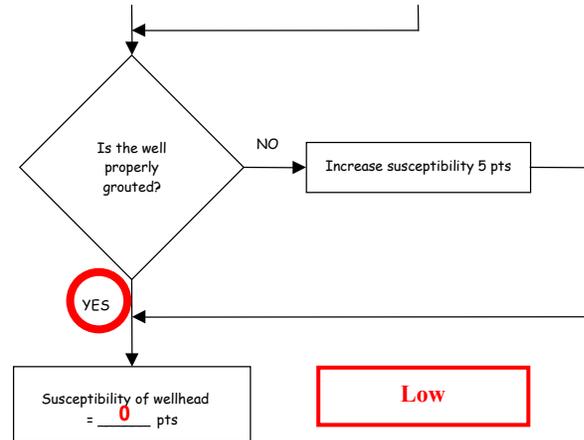
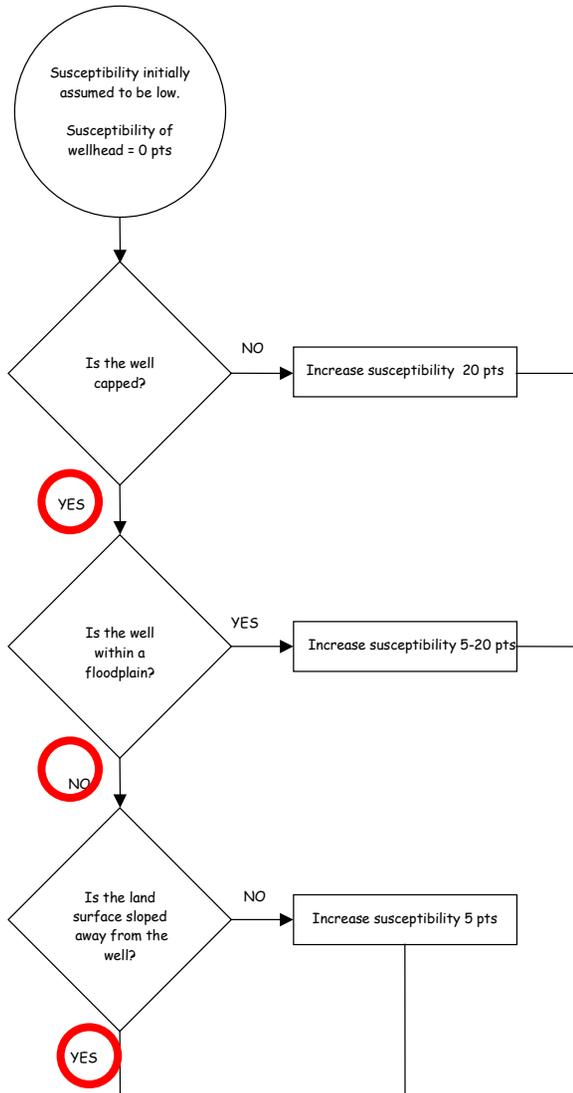
Chart 8. Vulnerability analysis for Hilltop Ski Area Well #1 – Volatile Organic Chemicals



APPENDIX G

Vulnerability Analysis for Hilltop Ski Area's Public Drinking Water Source – Well #2

Chart 1. Susceptibility of the wellhead – Hilltop Ski Area Well #2



<u>Wellhead Susceptibility Ratings</u>	
20 to 25 pts	very high
15 to < 20 pts	high
10 to < 15 pts	medium
< 10	low

Chart 2. Susceptibility of the aquifer – Hilltop Ski Area Well #2

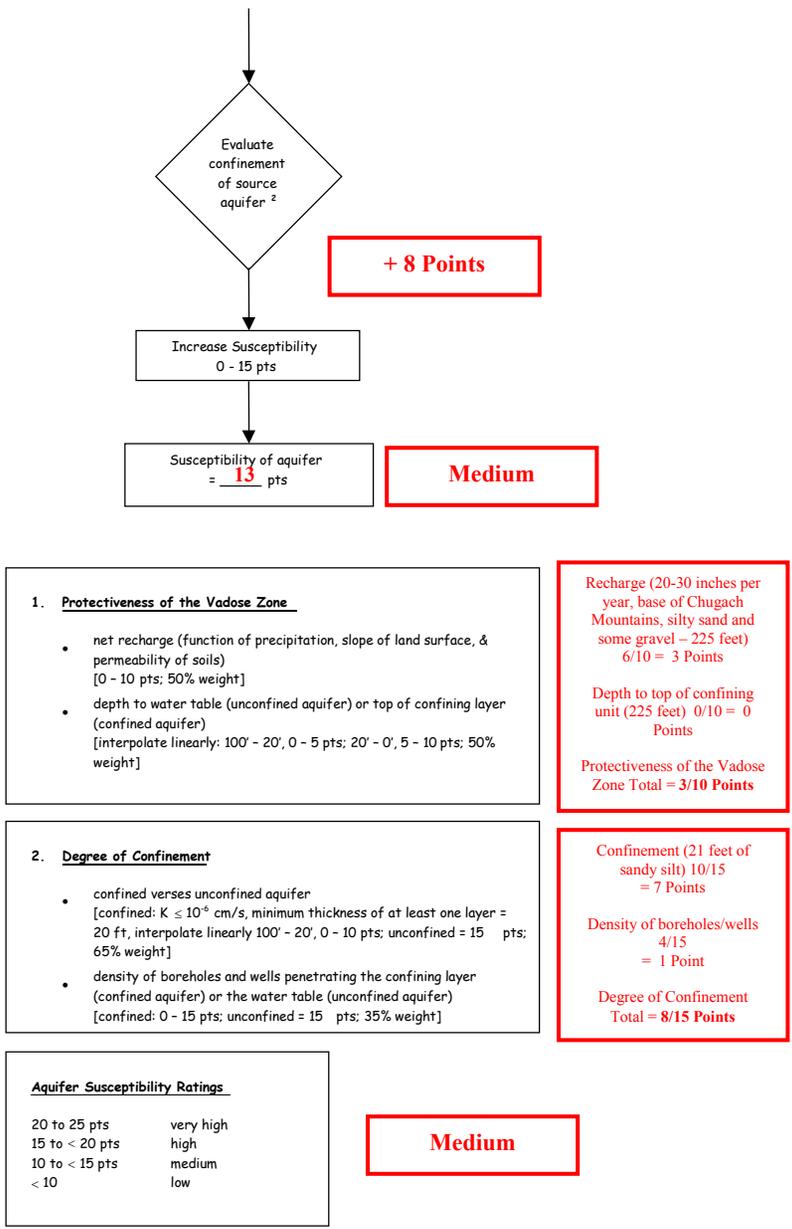
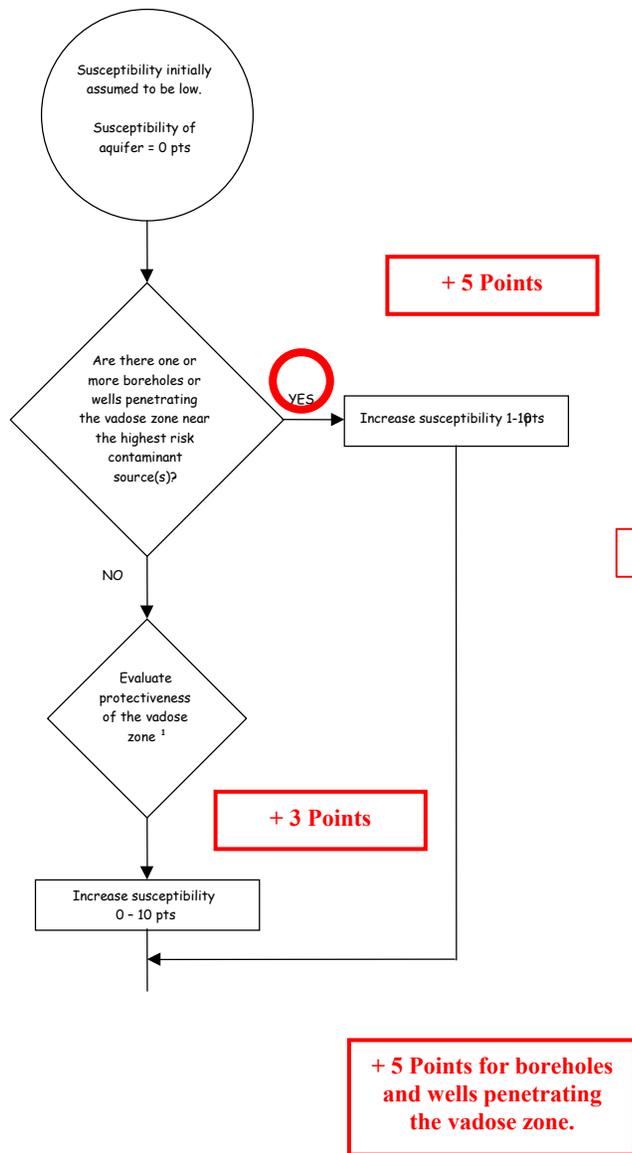


Chart 3. Contaminant risks for Hilltop Ski Area Well #2 – Bacteria & Viruses

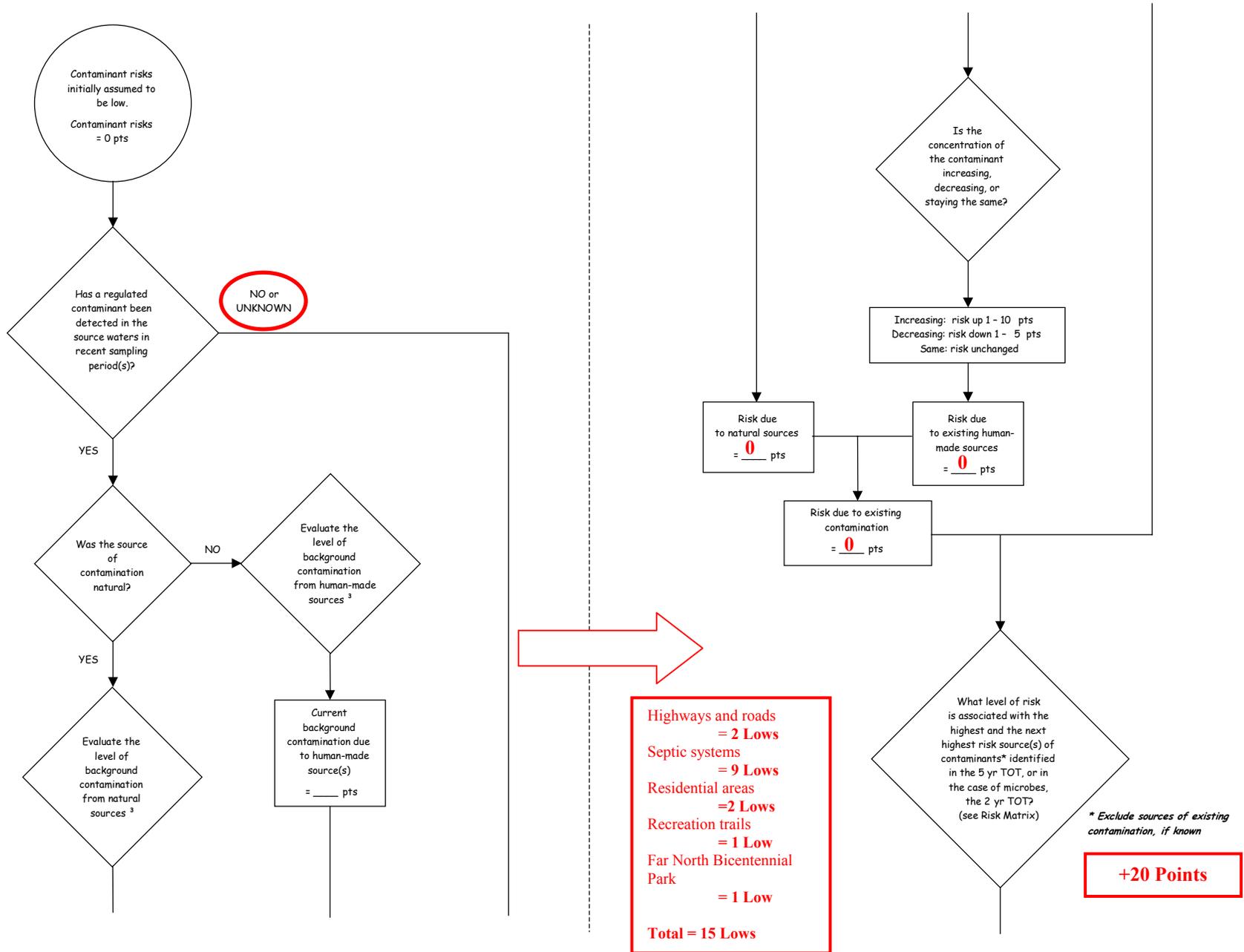


Chart 3. Contaminant risks for Hilltop Ski Area Well #2 – Bacteria & Viruses (Continued)

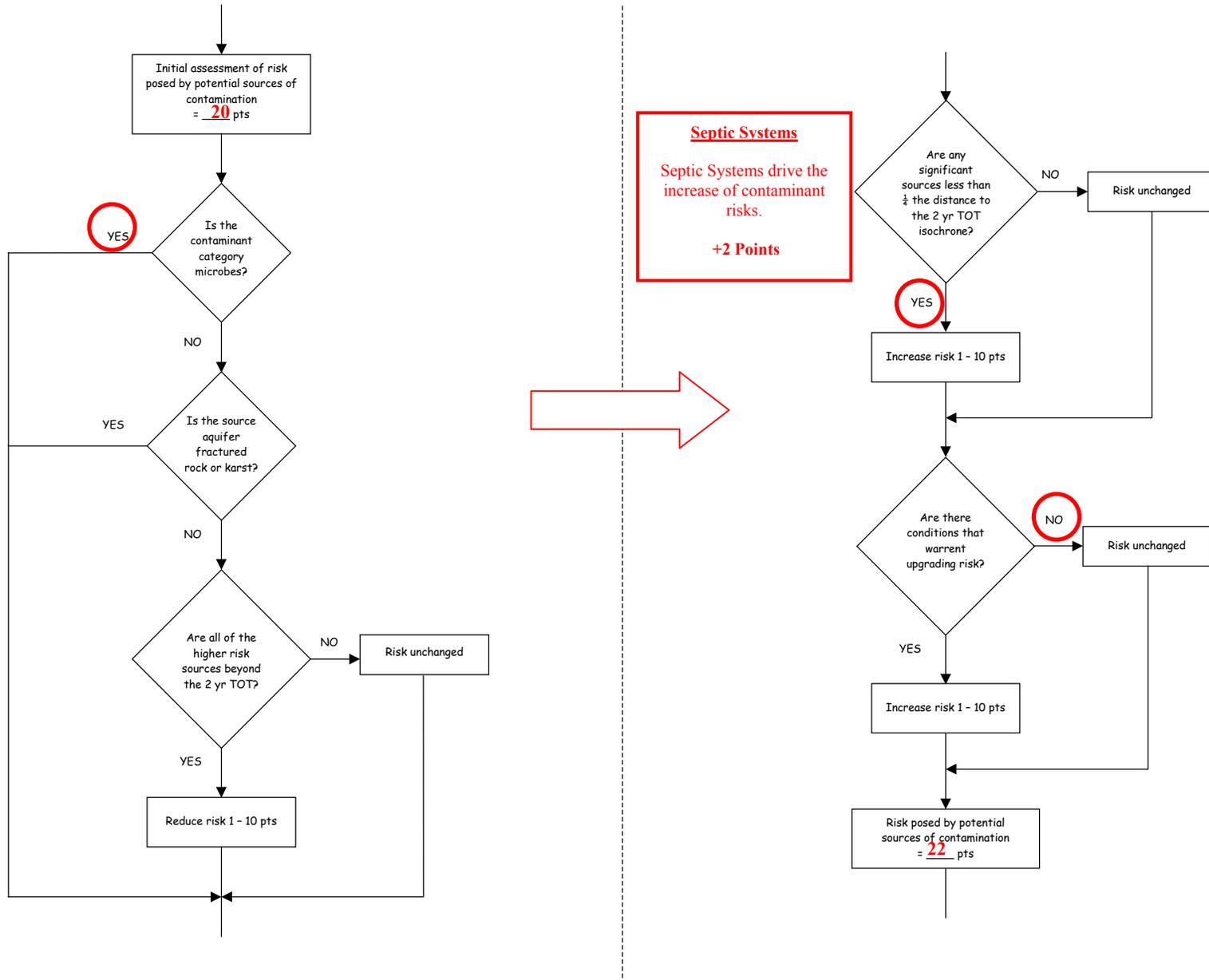


Chart 3. Contaminant risks for Hilltop Ski Area Well #2 – Bacteria & Viruses (Continued)

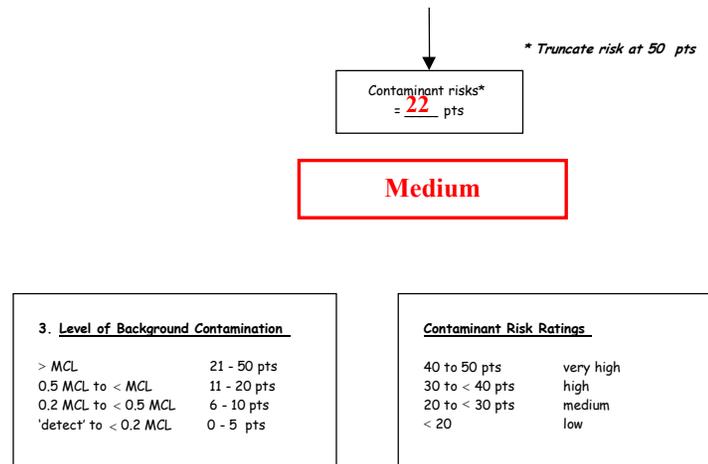
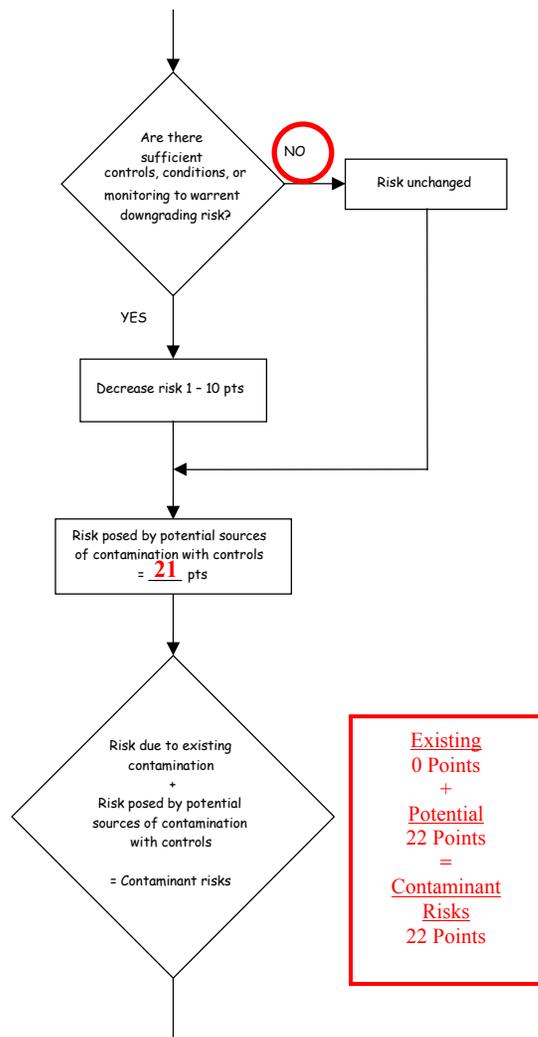


Table 1. Risk Matrix for Contaminant Sources for Hilltop Ski Area Well #2 – Bacteria & Viruses

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Highways and roads, septic systems, residential areas, and recreation trails	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

Chart 4. Vulnerability analysis for Hilltop Ski Area Well #2 – Bacteria & Viruses

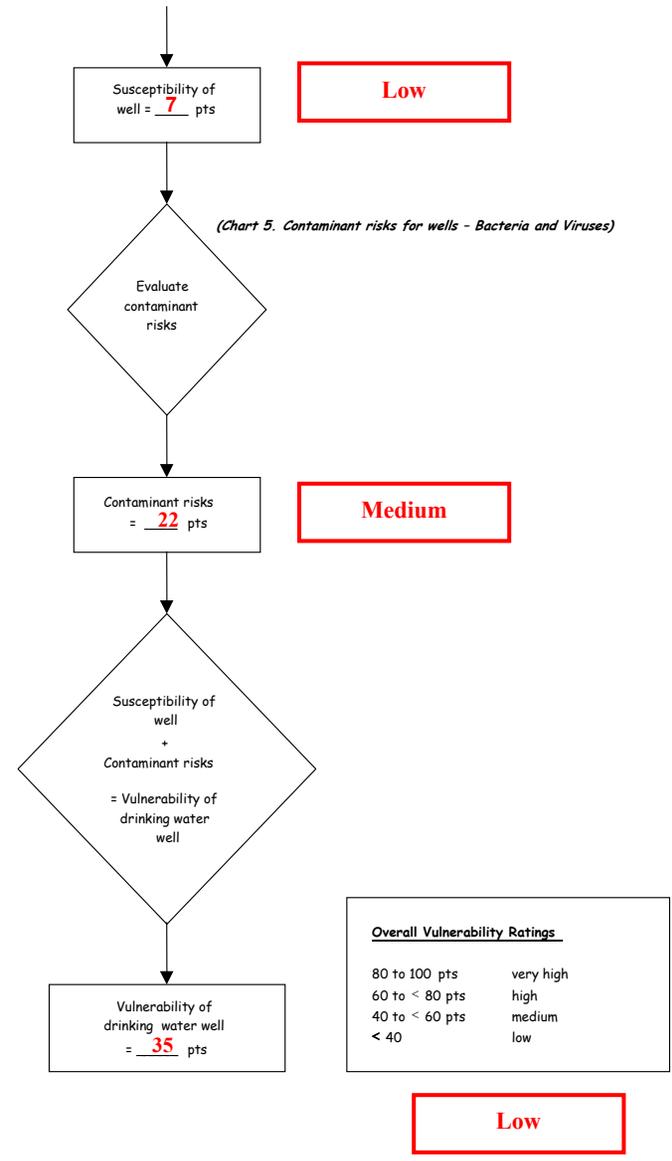
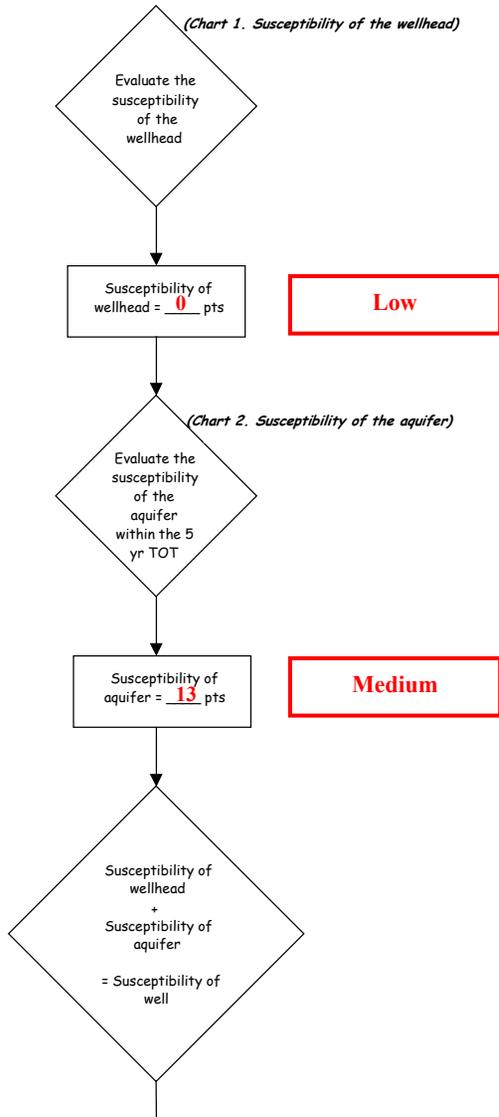


Chart 5. Contaminant risks for Hilltop Ski Area Well #2 – Nitrates and Nitrites

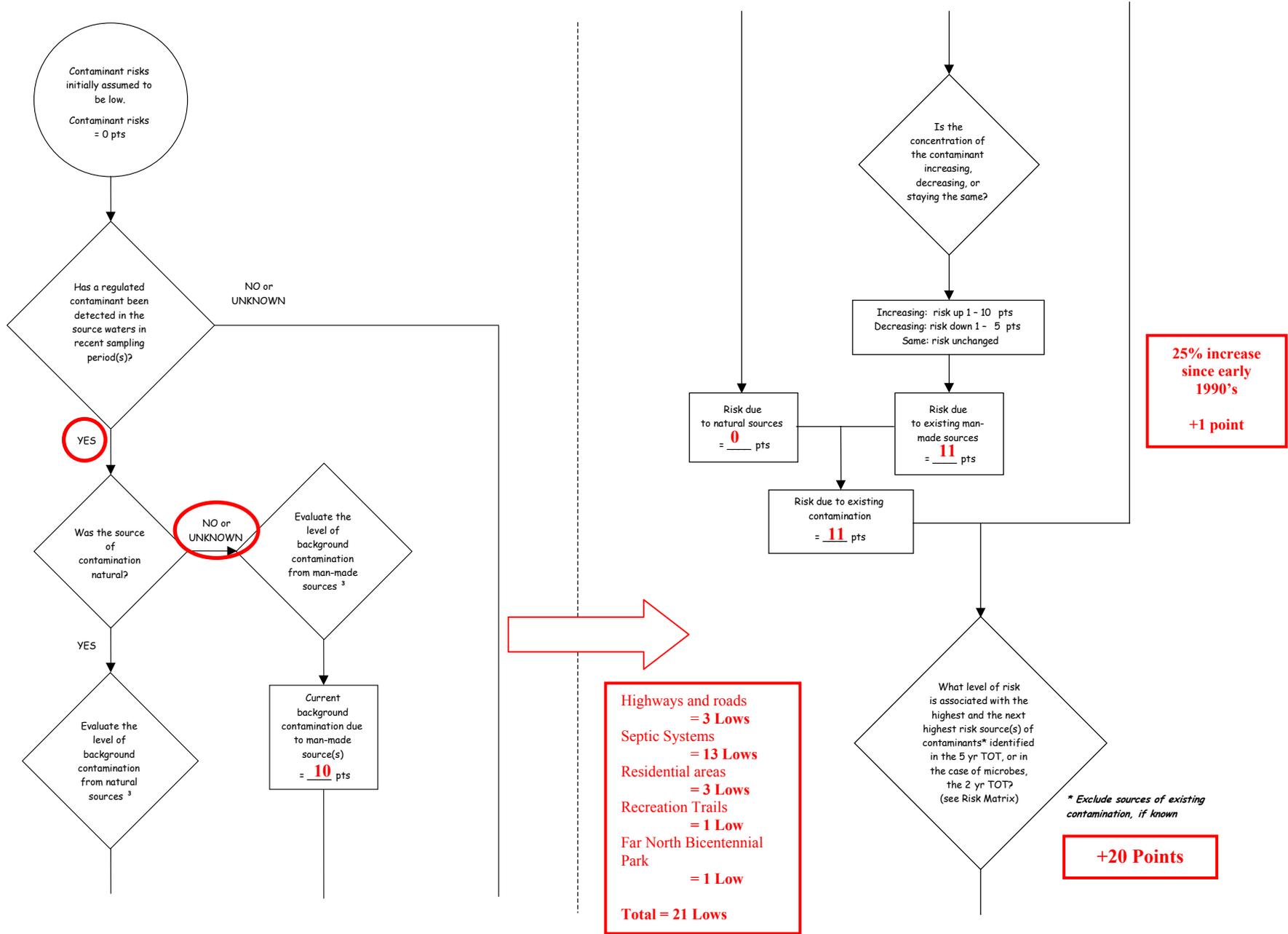


Chart 5. Contaminant risks for Hilltop Ski Area Well #2 – Nitrates and Nitrites (Continued)

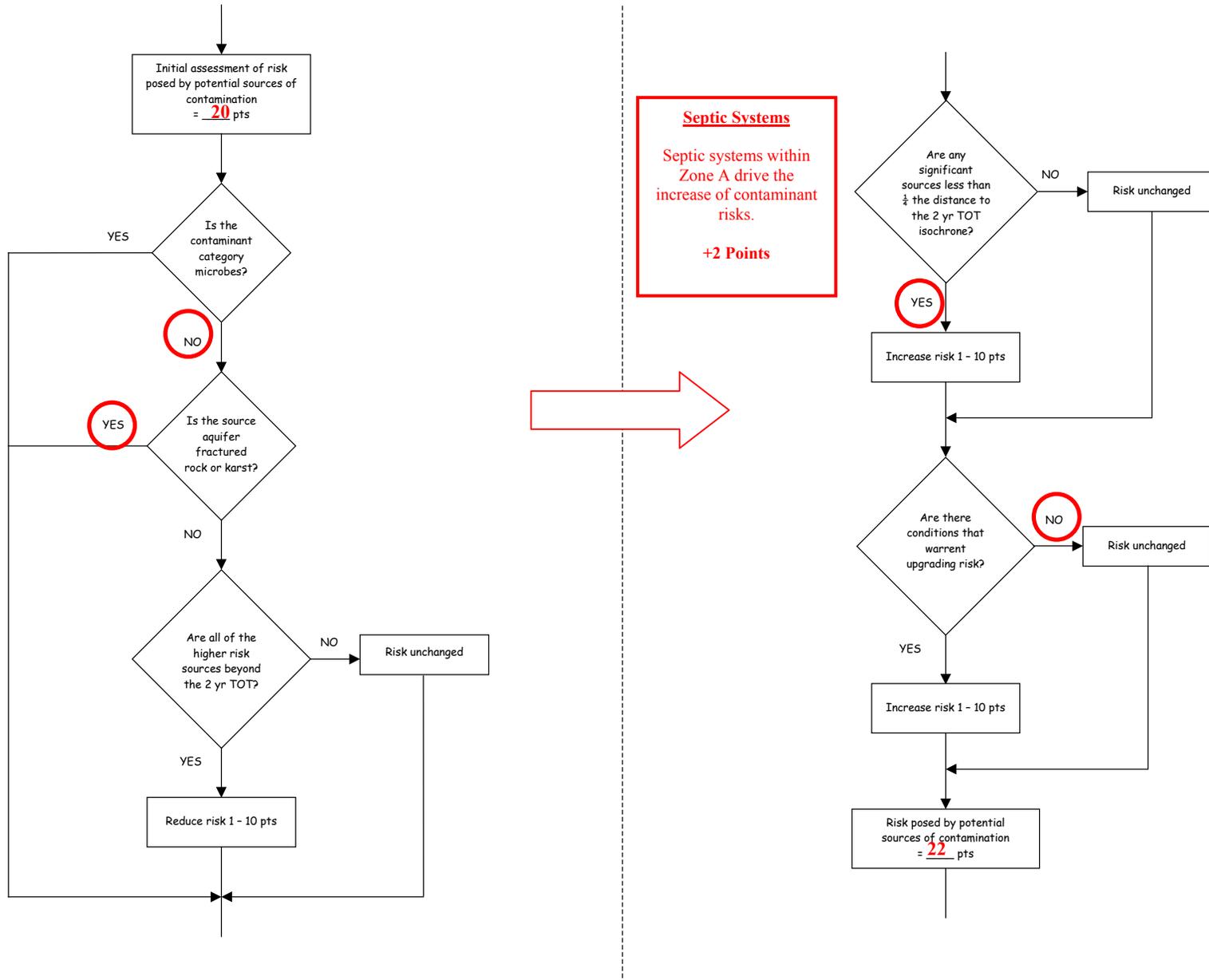


Chart 5. Contaminant risks for Hilltop Ski Area Well #2 – Nitrates and Nitrites (Continued)

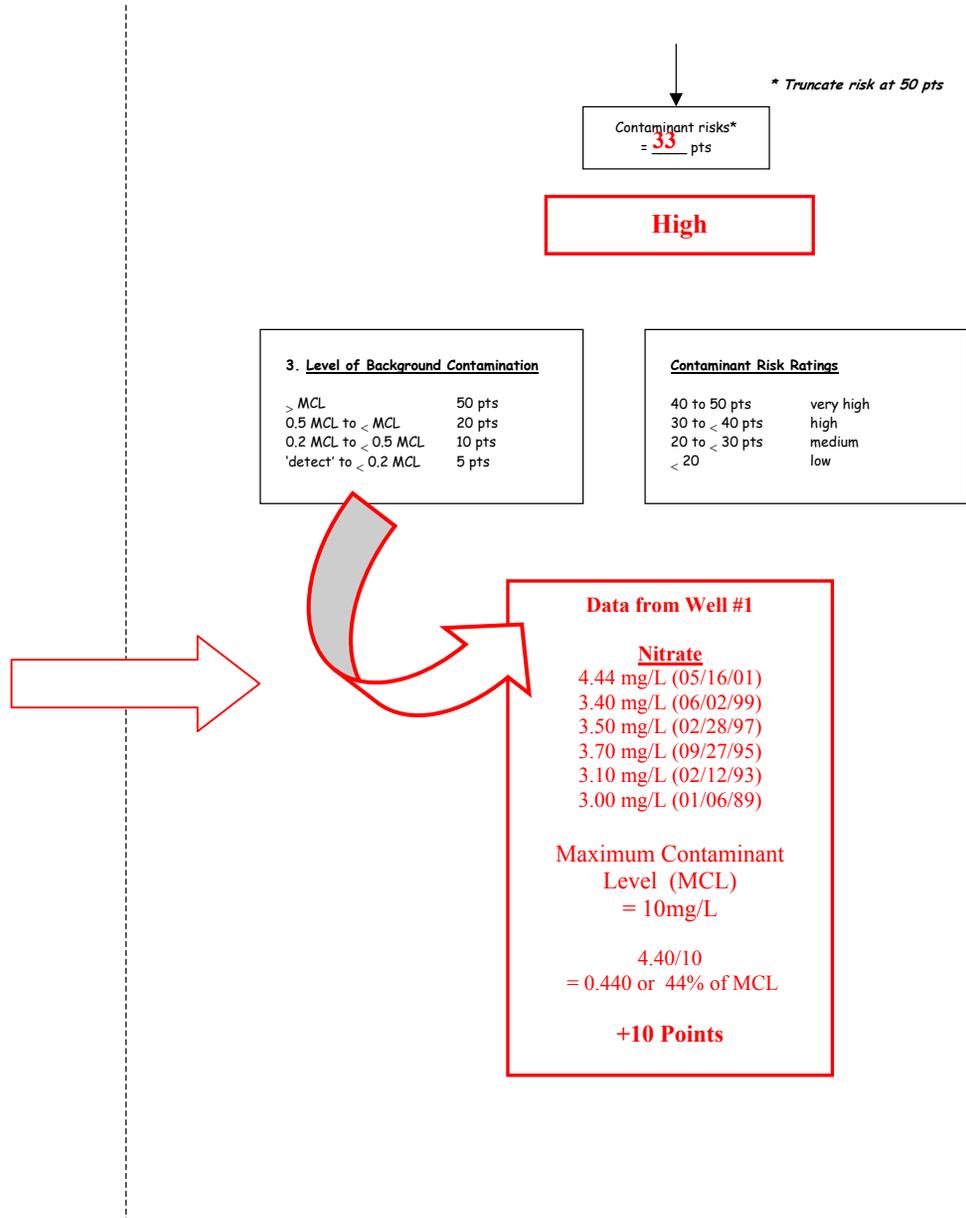
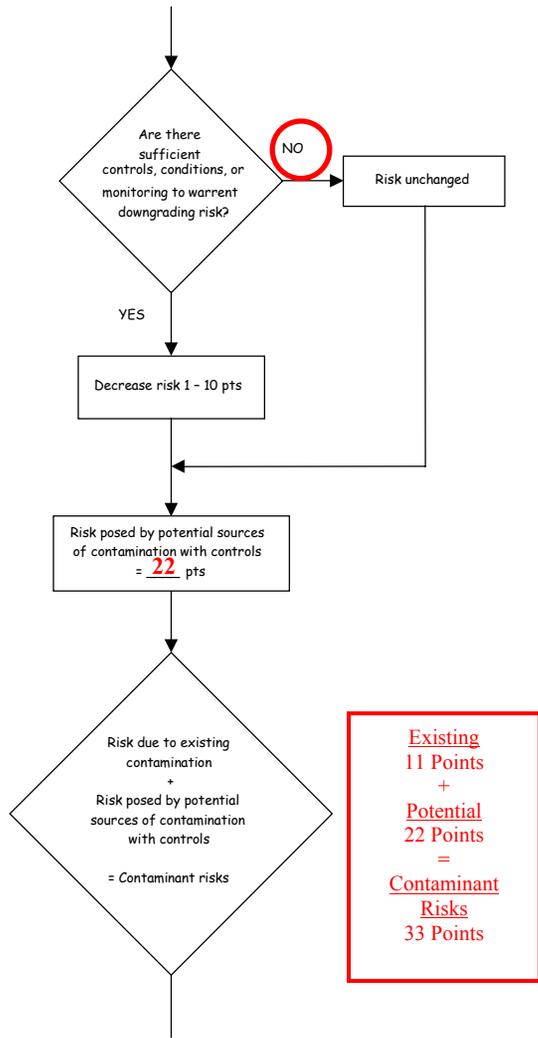


Table 2. Risk Matrix for Contaminant Sources for Hilltop Ski Area Well #2 – Nitrates and Nitrites

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Highways and roads, septic systems, residential areas, recreation trails	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

Chart 6. Vulnerability analysis for Hilltop Ski Area Well #2 – Nitrates and Nitrites

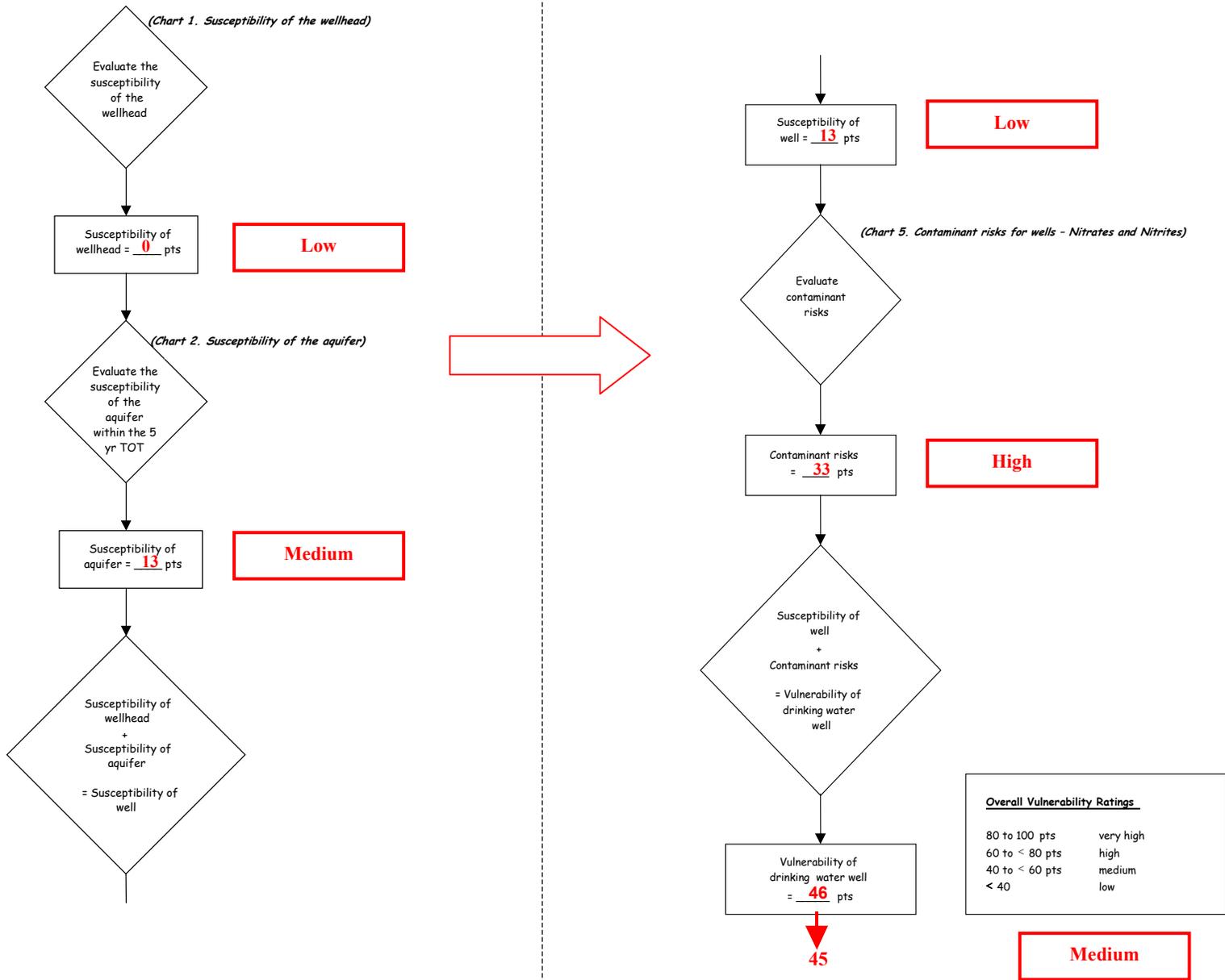


Chart 7. Contaminant risks for Hilltop Ski Area Well #2 – Volatile Organic Chemicals

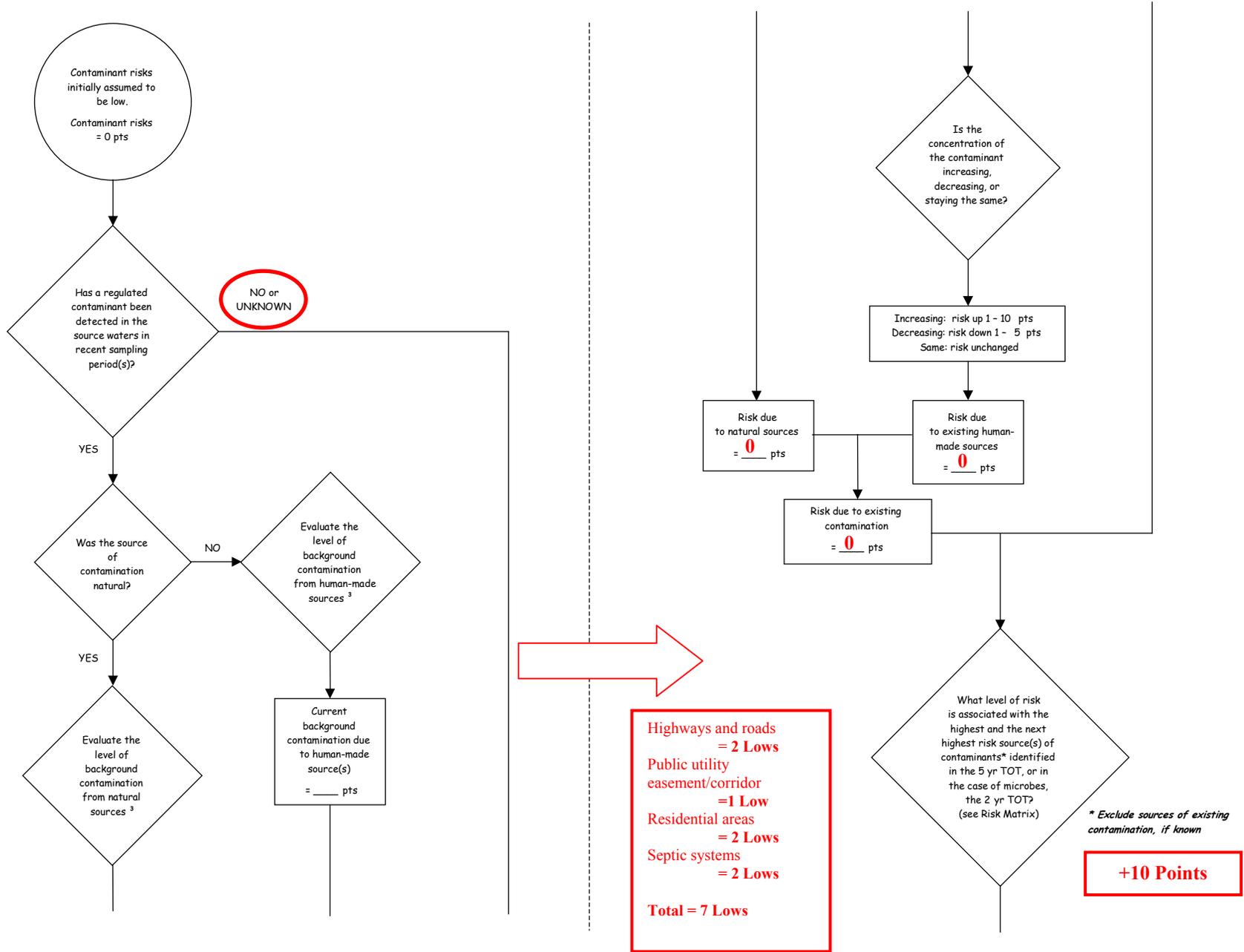


Chart 7. Contaminant risks for Hilltop Ski Area Well #2 – Volatile Organic Chemicals (Continued)

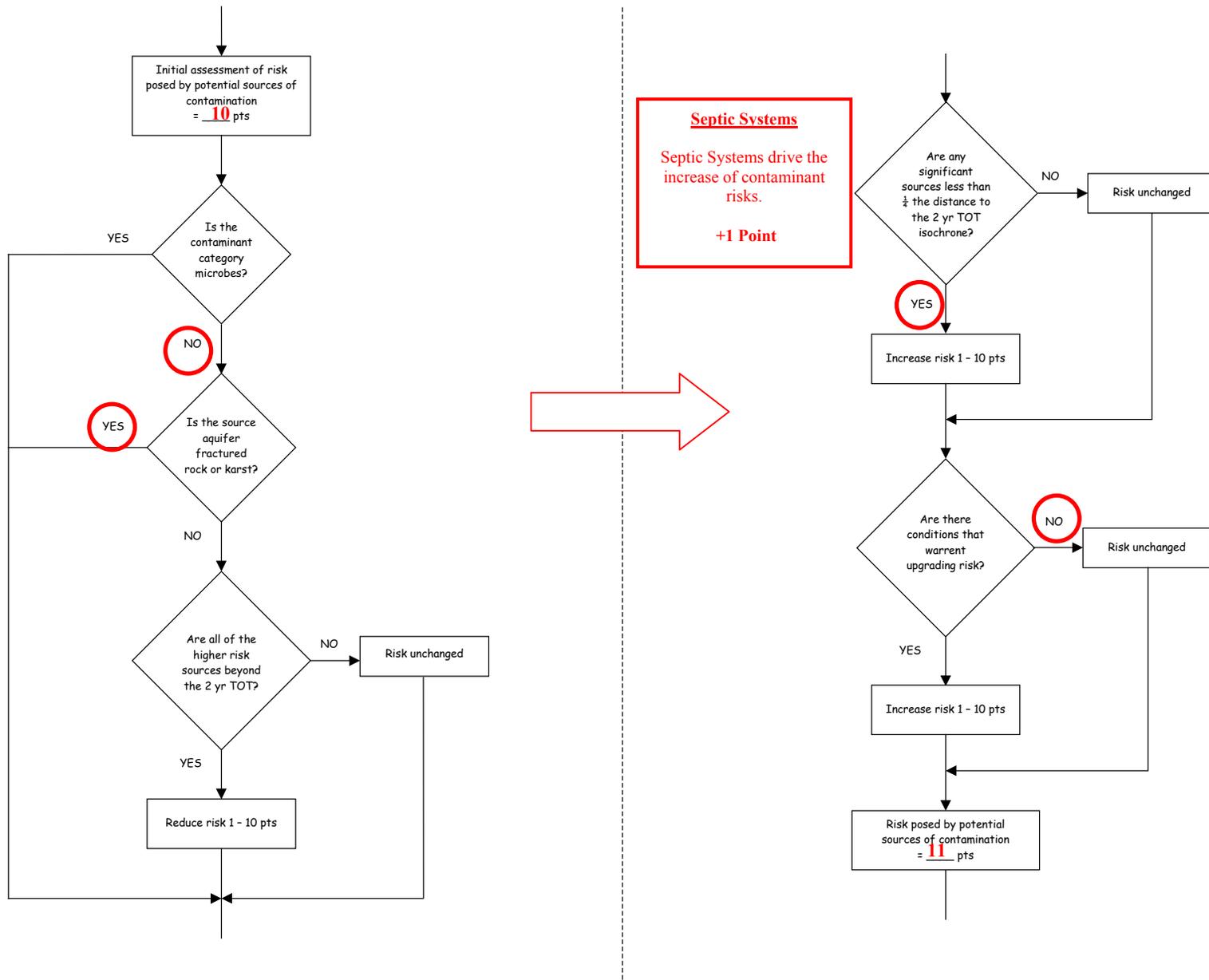


Chart 7. Contaminant risks for Hilltop Ski Area Well #2 – Volatile Organic Chemicals (Continued)

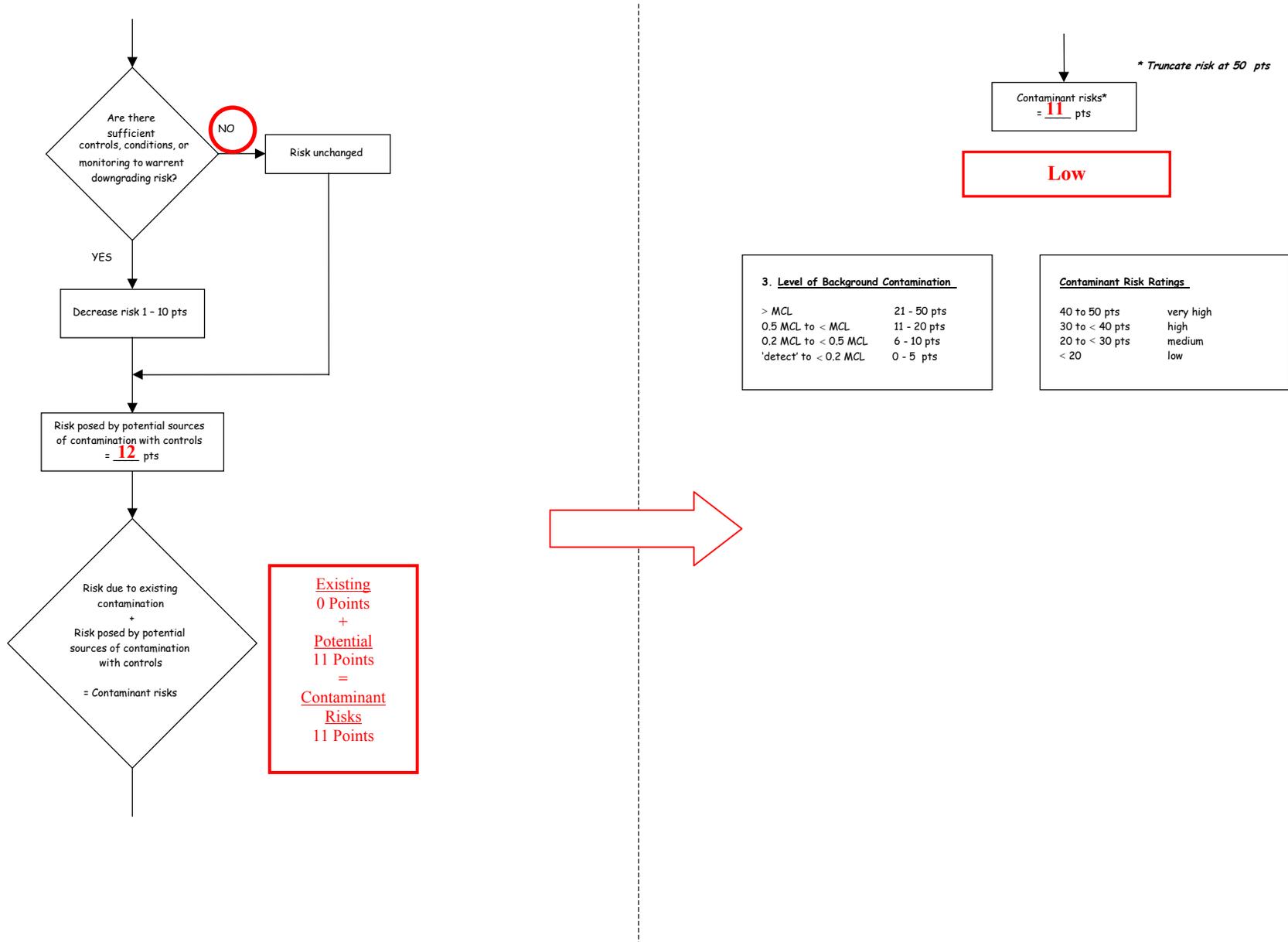
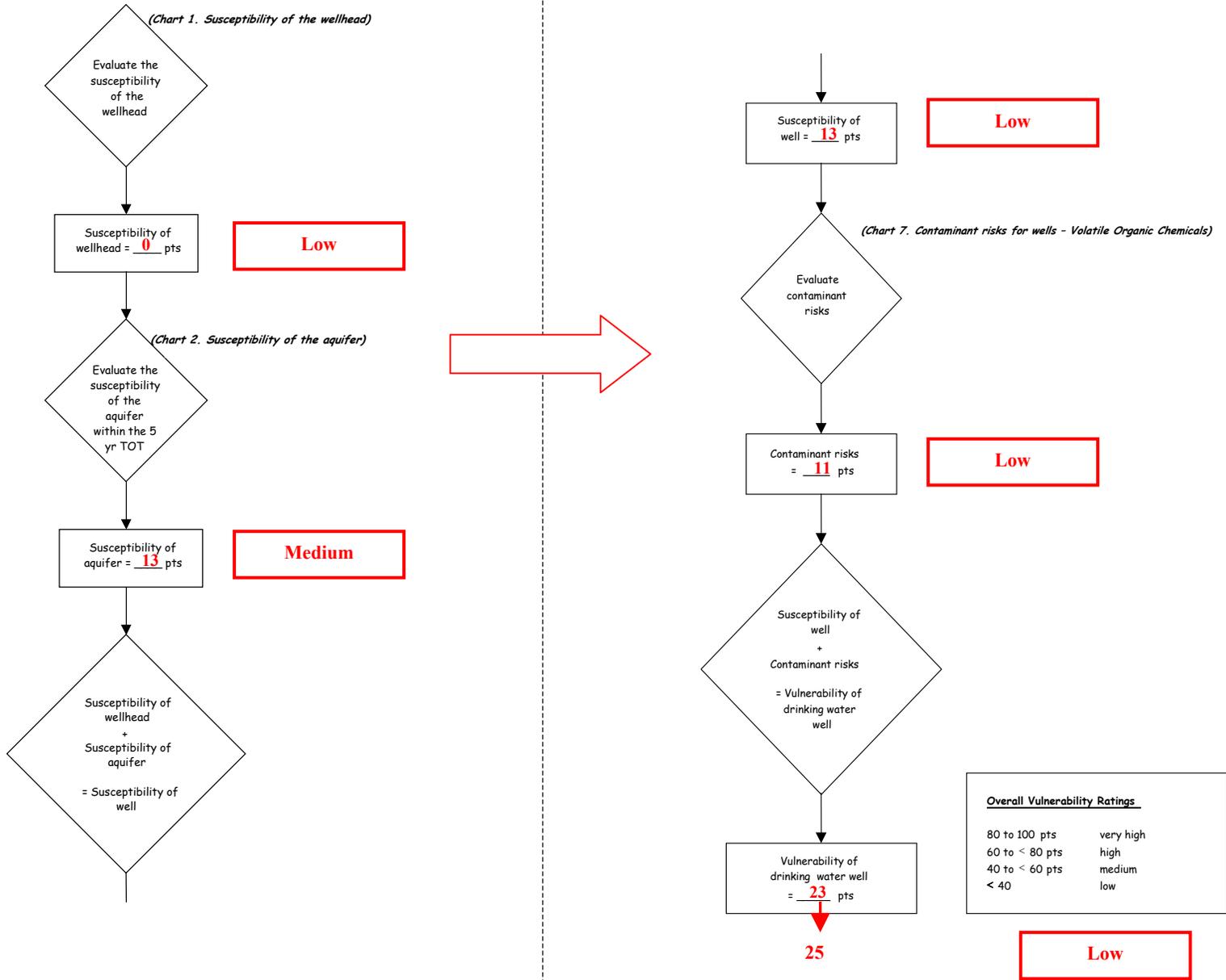


Table 3. Risk Matrix for Contaminant Sources for Hilltop Ski Area Well #2 – Volatile Organic Chemicals

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Highways and roads, construction trade areas, public utility easement, residential areas, septic systems	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

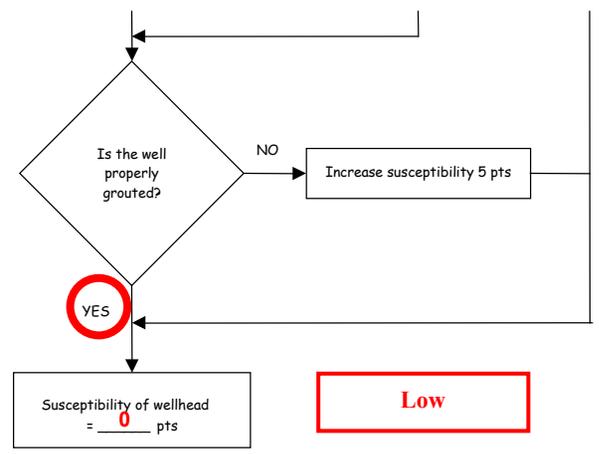
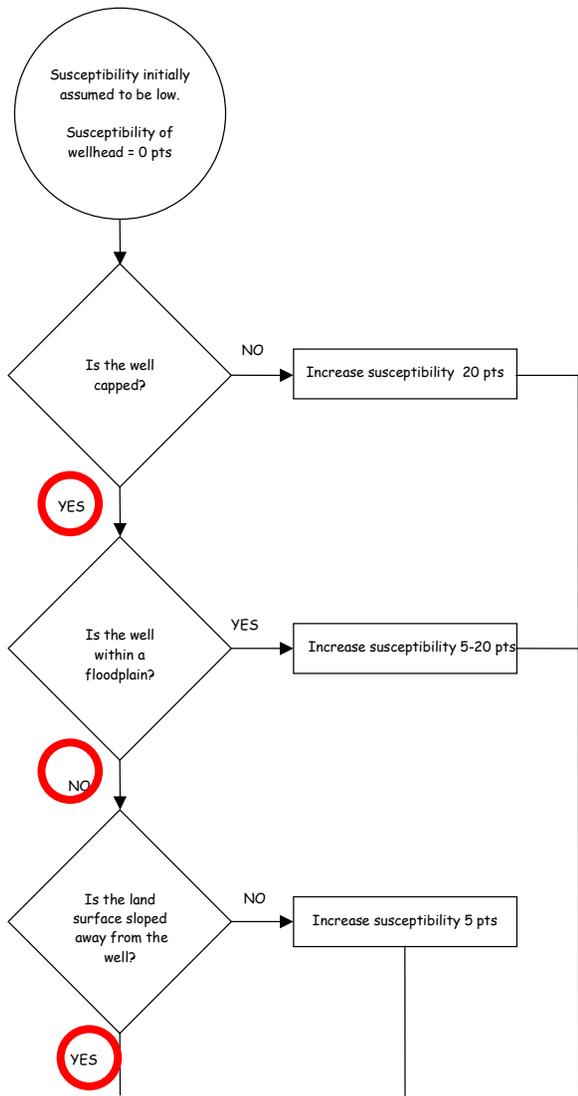
Chart 8. Vulnerability analysis for Hilltop Ski Area Well #2 – Volatile Organic Chemicals



APPENDIX H

Vulnerability Analysis for Hilltop Ski Area's Public Drinking Water Source – Well #3

Chart 1. Susceptibility of the wellhead – Hilltop Ski Area Well #3



<u>Wellhead Susceptibility Ratings</u>	
20 to 25 pts	very high
15 to < 20 pts	high
10 to < 15 pts	medium
< 10	low

Chart 2. Susceptibility of the aquifer – Hilltop Ski Area Well #3

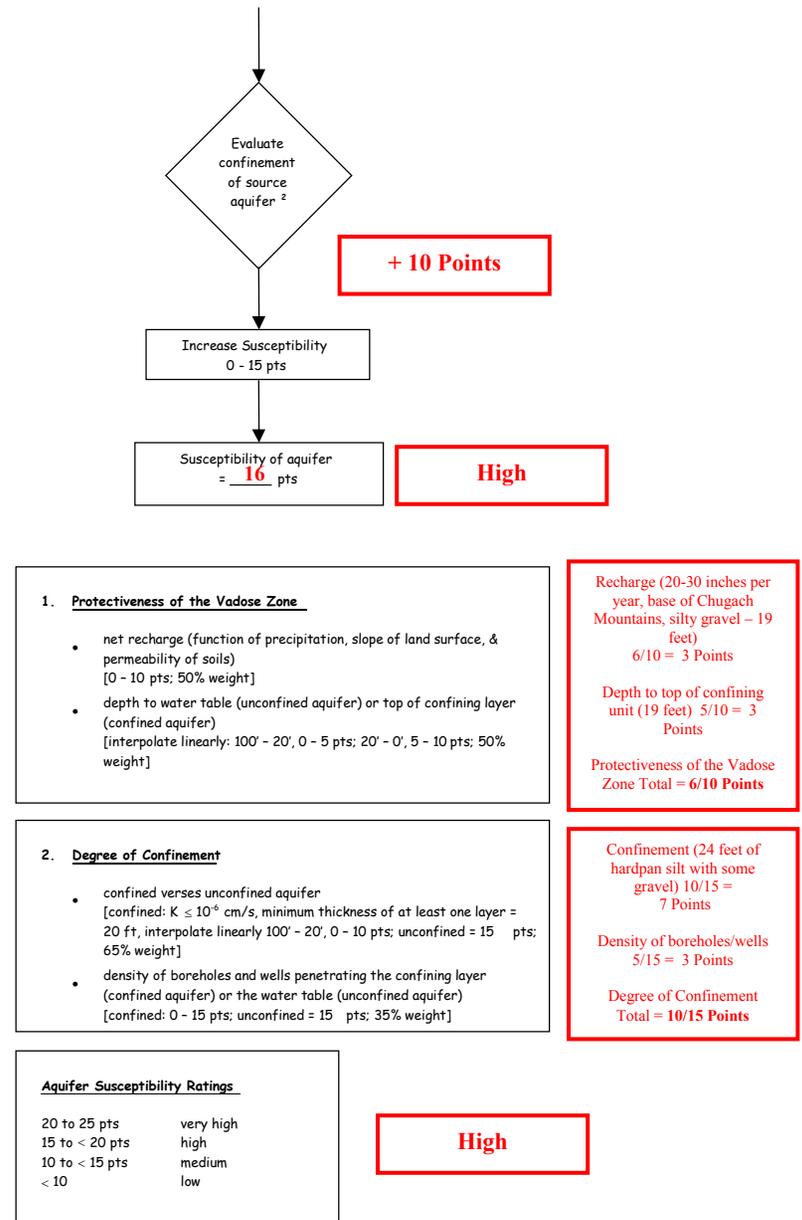
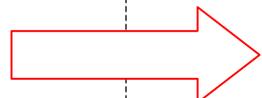
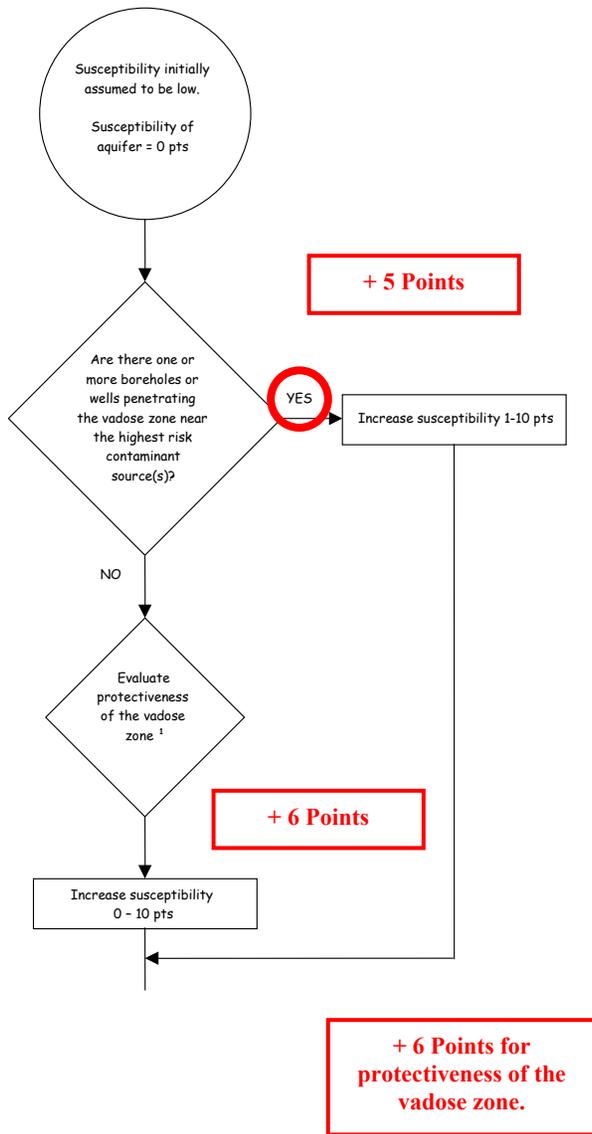


Chart 3. Contaminant risks for Hilltop Ski Area Well #3 – Bacteria & Viruses

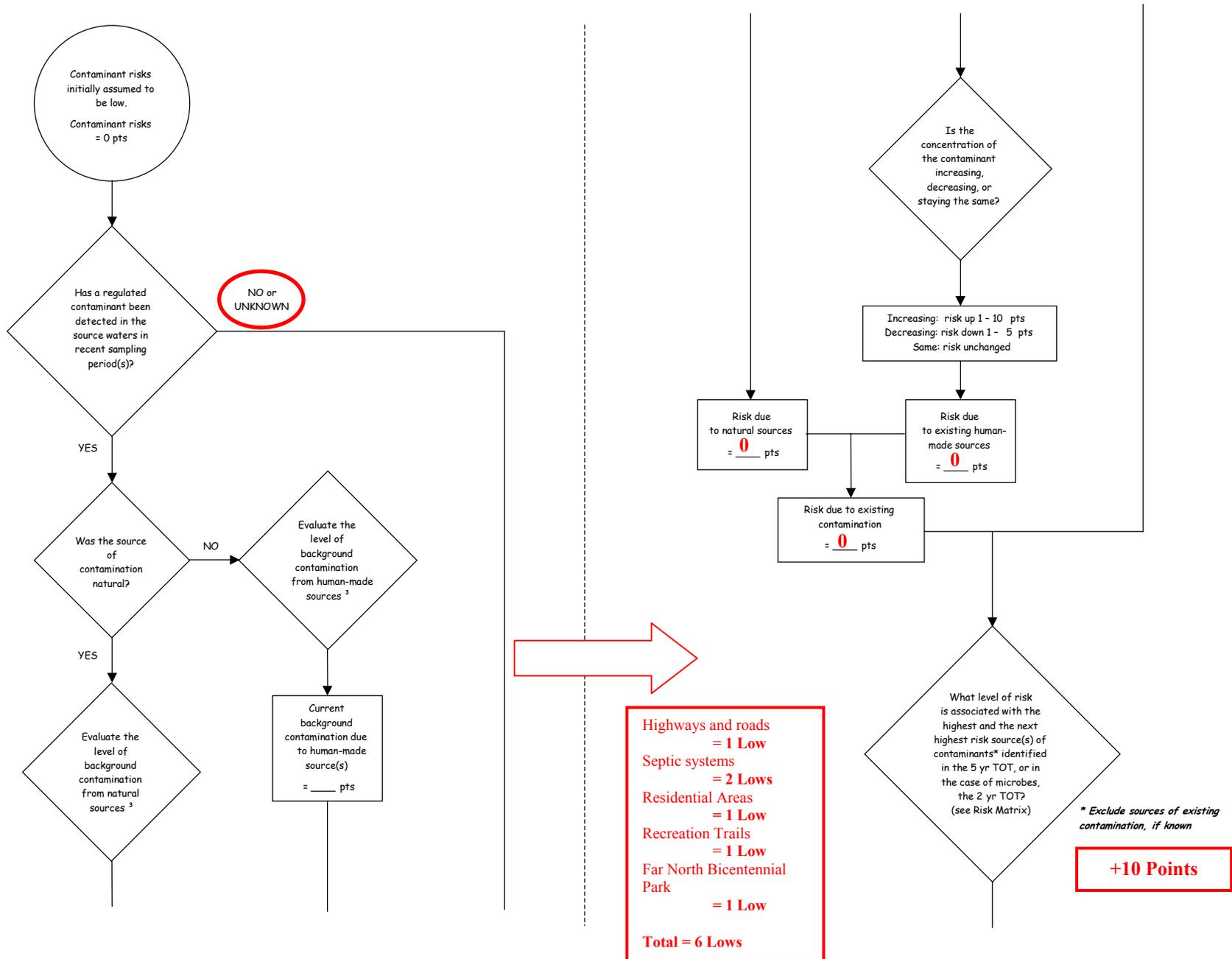


Chart 3. Contaminant risks for Hilltop Ski Area Well #3 – Bacteria & Viruses (Continued)

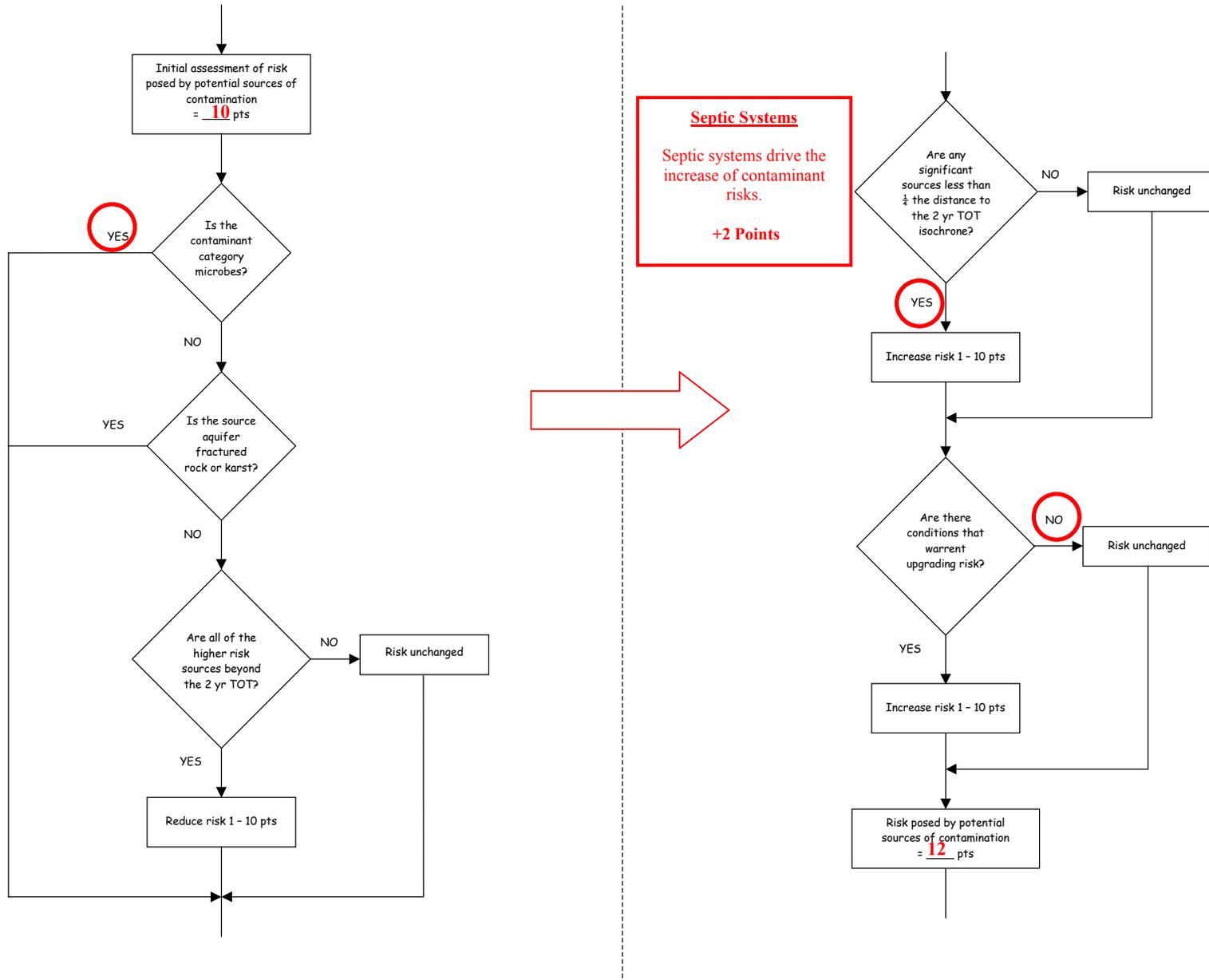


Chart 3. Contaminant risks for Hilltop Ski Area Well #3 – Bacteria & Viruses (Continued)

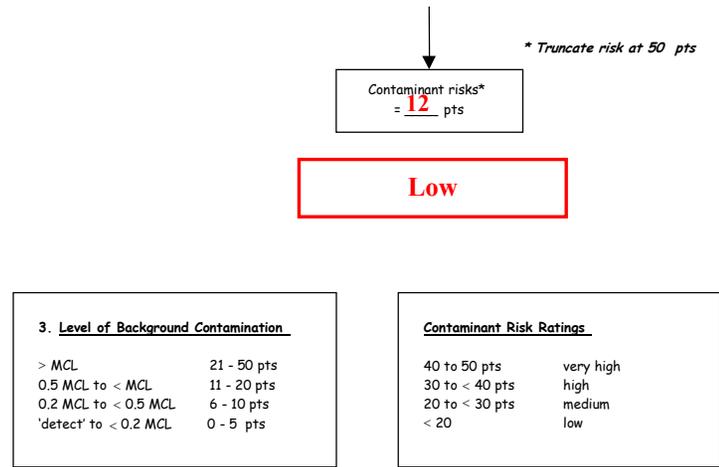
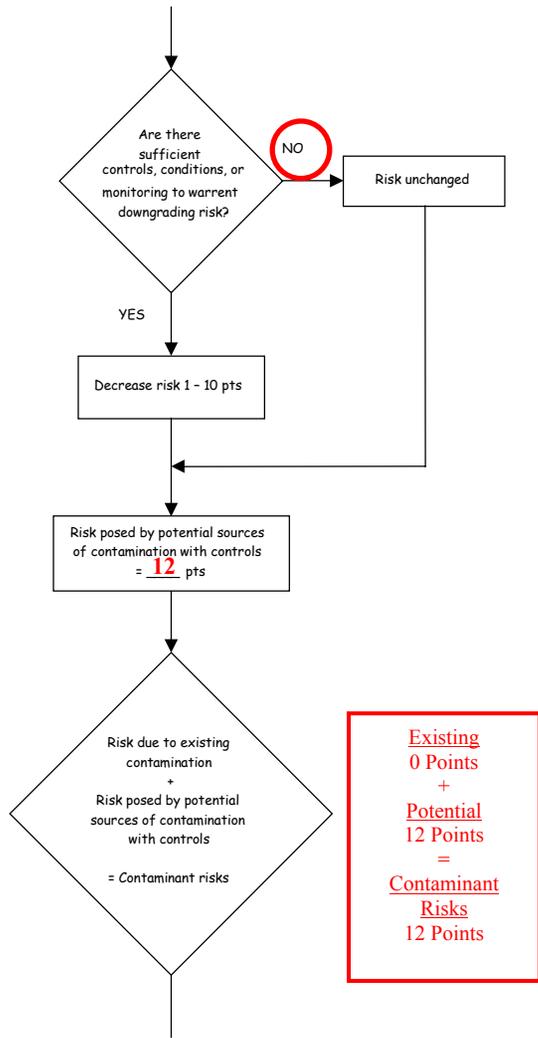


Table 1. Risk Matrix for Contaminant Sources for Hilltop Ski Area Well #3 – Bacteria & Viruses

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Highways and roads, septic systems, residential areas, recreation trails, Far North Bicentennial Park	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

Chart 4. Vulnerability analysis for Hilltop Ski Area Well #3 – Bacteria & Viruses

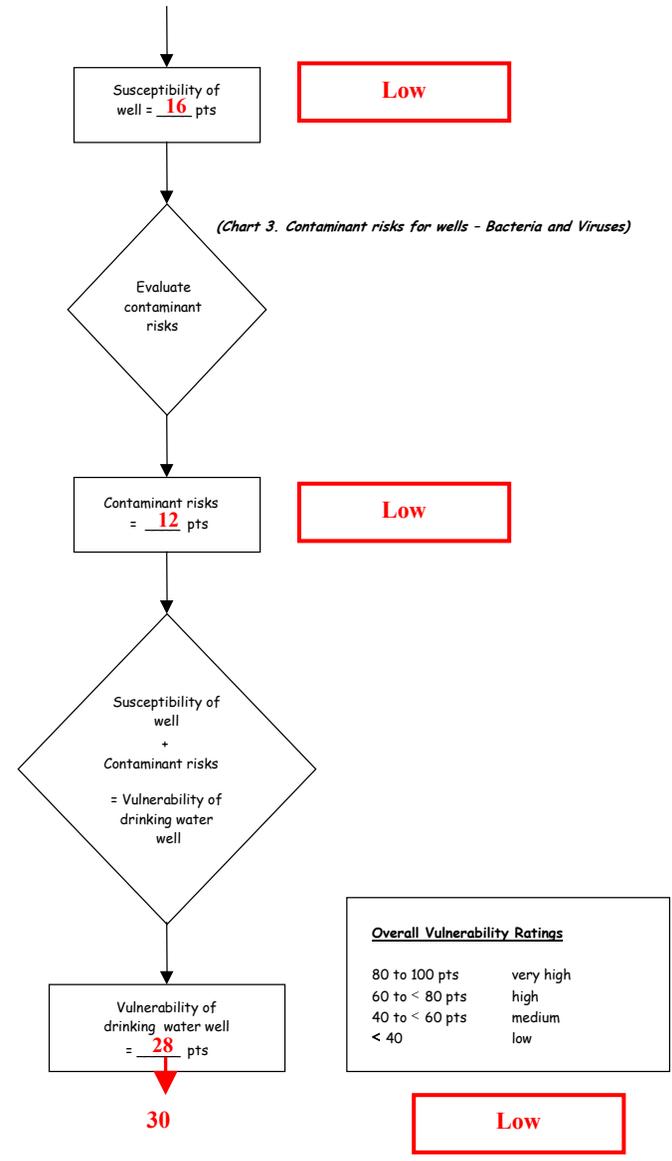
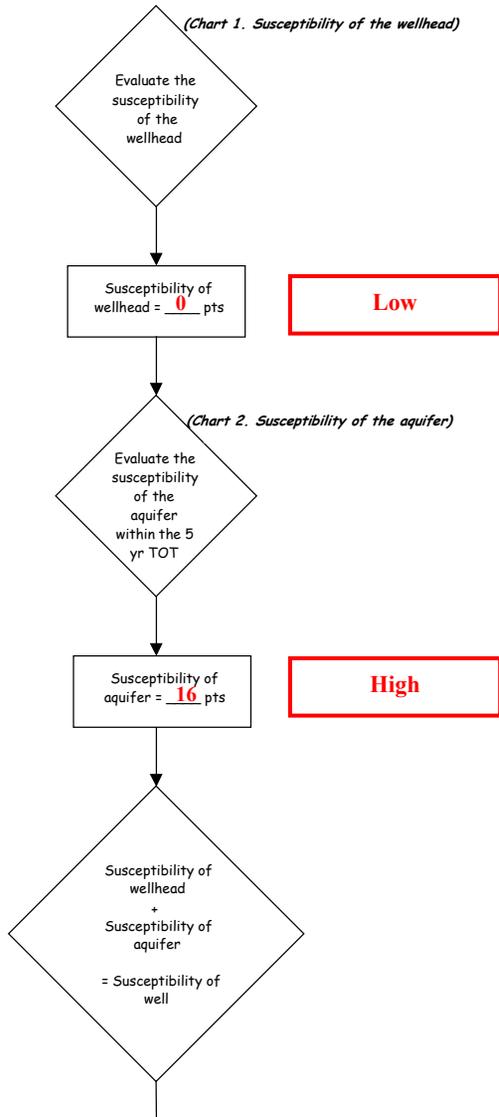


Chart 5. Contaminant risks for Hilltop Ski Area Well #3 – Nitrates and Nitrites

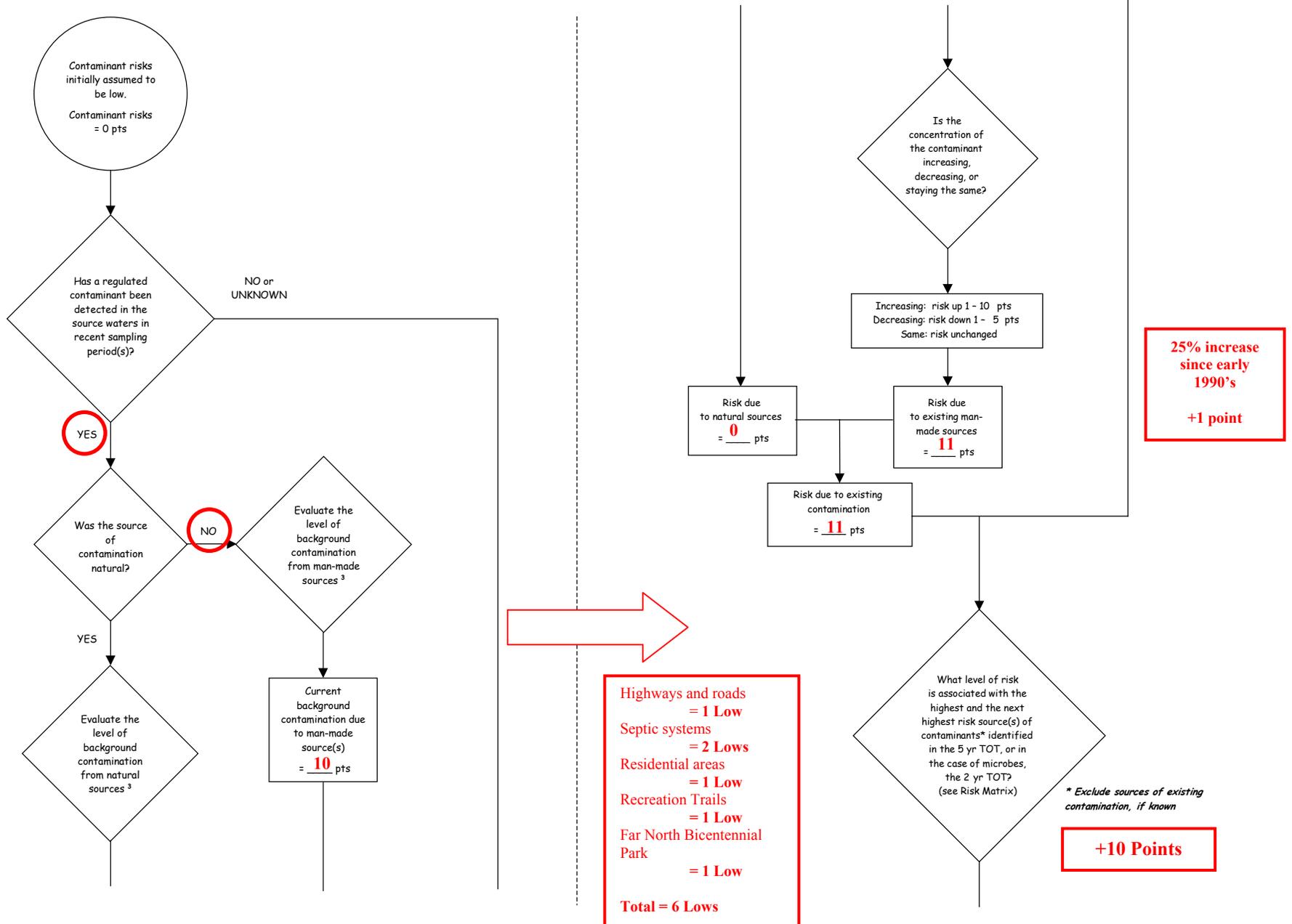


Chart 5. Contaminant risks for Hilltop Ski Area Well #3 – Nitrates and Nitrites (Continued)

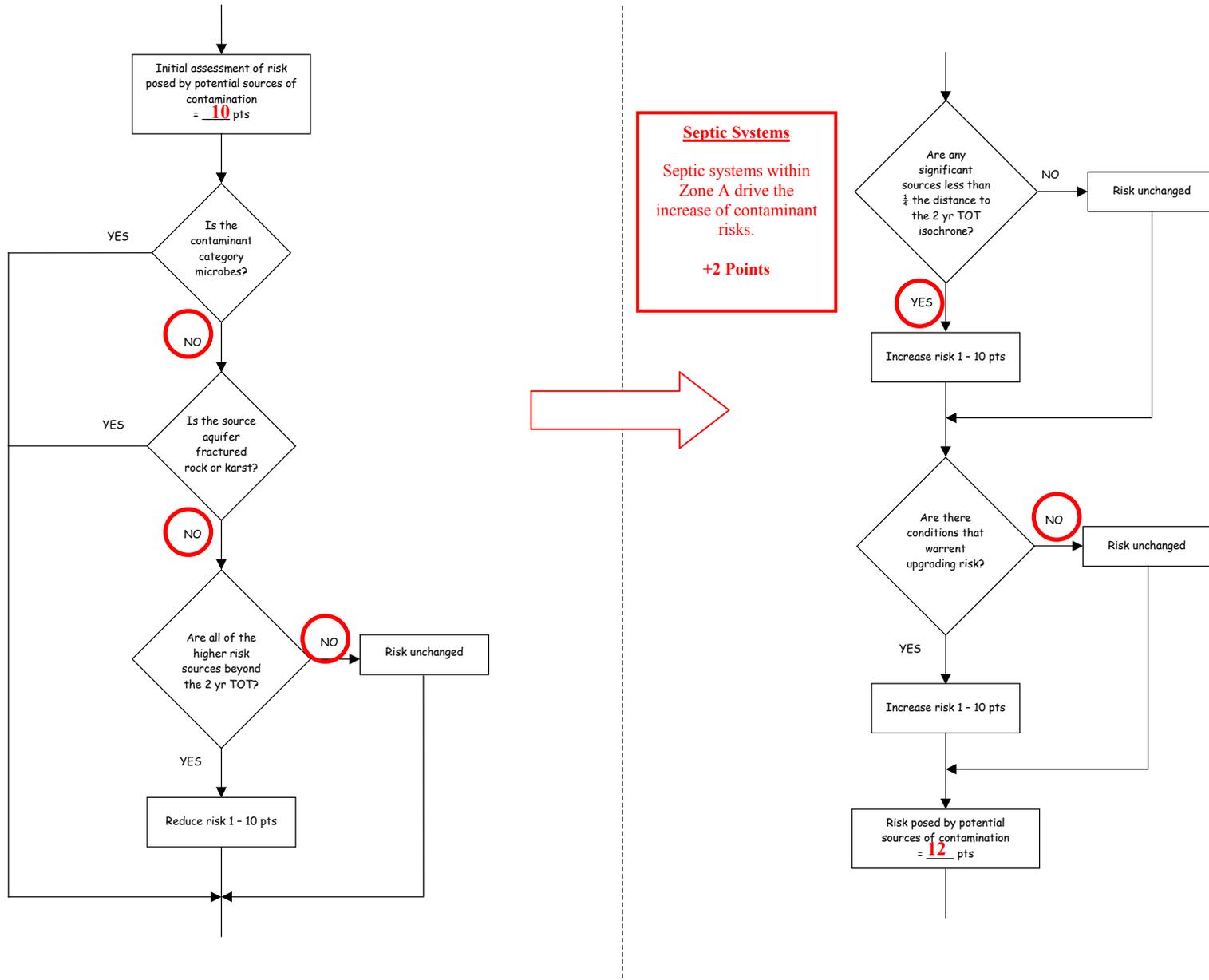
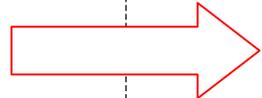
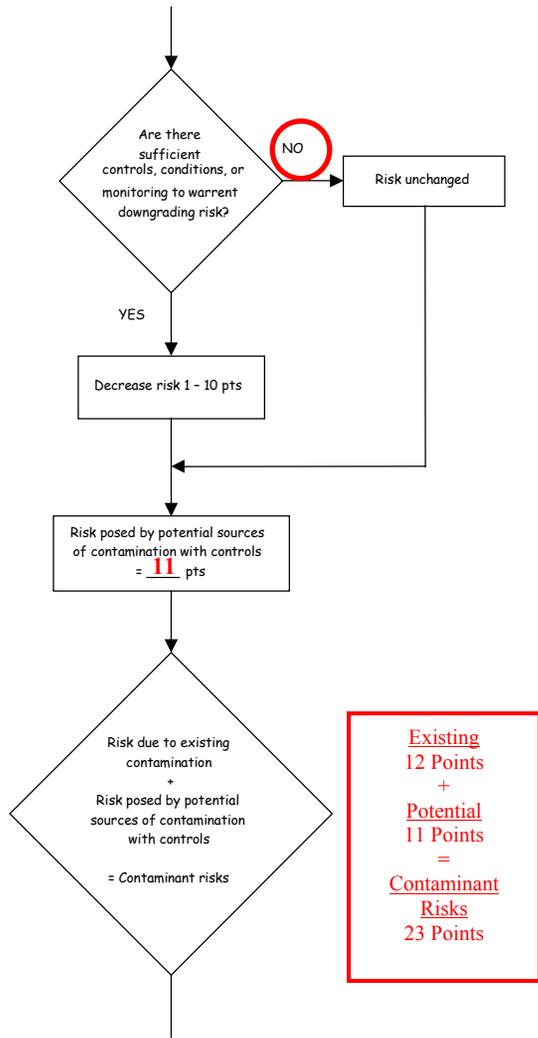


Chart 5. Contaminant risks for Hilltop Ski Area Well #3 – Nitrates and Nitrites (Continued)



* Truncate risk at 50 pts

Contaminant risks* = **23** pts

Medium

3. Level of Background Contamination

> MCL	50 pts
0.5 MCL to . MCL	20 pts
0.2 MCL to < 0.5 MCL	10 pts
'detect' to < 0.2 MCL	5 pts

Contaminant Risk Ratings

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

Data from Well #1 Nitrate

4.44 mg/L (05/16/01)
 3.40 mg/L (06/02/99)
 3.50 mg/L (02/28/97)
 3.70 mg/L (09/27/95)
 3.10 mg/L (02/12/93)
 3.00 mg/L (01/06/89)

Maximum Contaminant Level (MCL) = 10mg/L

4.40/10
 = 0.440 or 44% of MCL

+10 Points

Table 2. Risk Matrix for Contaminant Sources for Hilltop Ski Area Well #3 – Nitrates and Nitrites

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Highways and roads, septic systems, residential areas, recreation trails, Far North Bicentennial Park	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

Chart 6. Vulnerability analysis for Hilltop Ski Area Well #3 – Nitrates and Nitrites

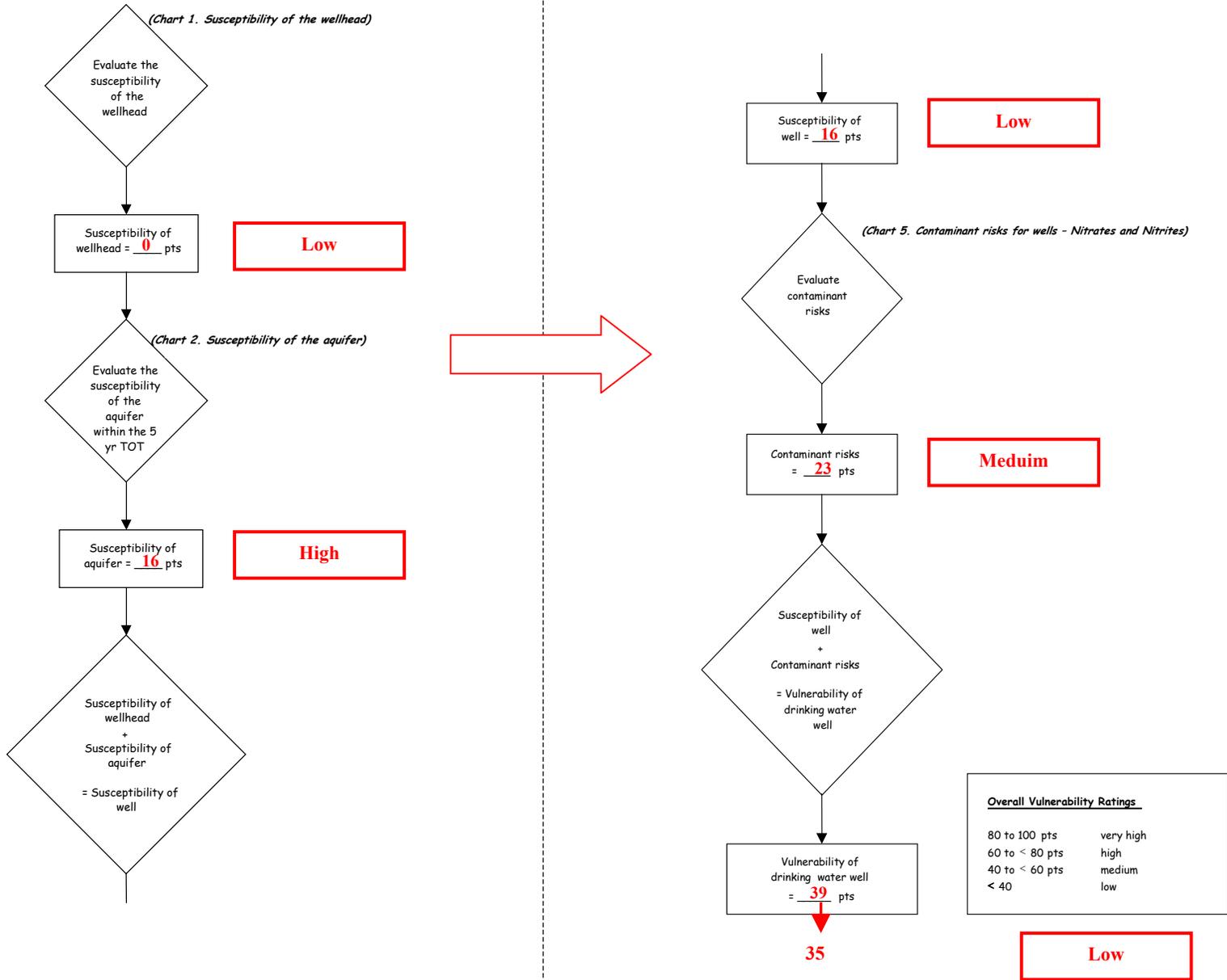


Chart 7. Contaminant risks for Hilltop Ski Area Well #3 – Volatile Organic Chemicals

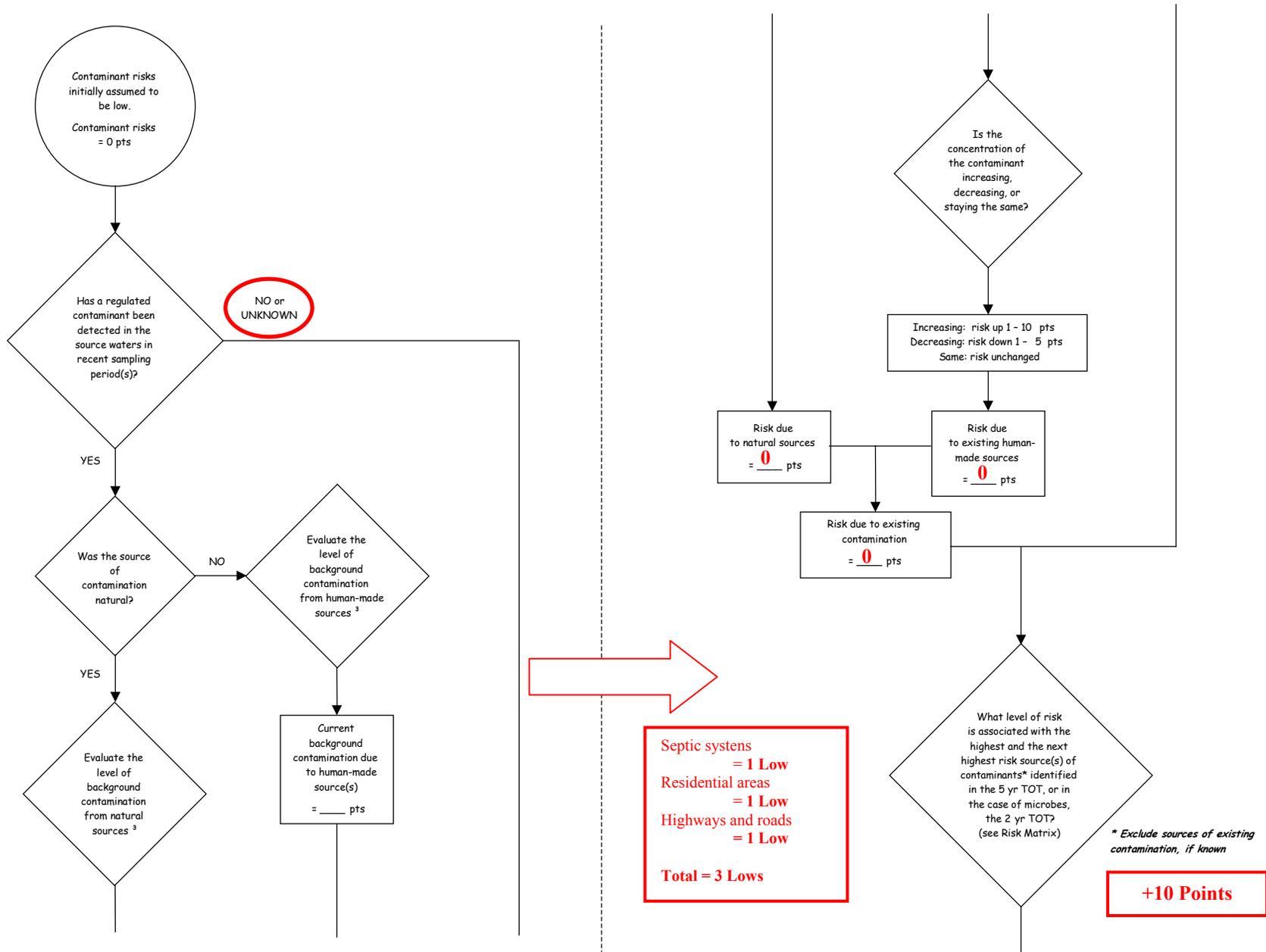


Chart 7. Contaminant risks for Hilltop Ski Area Well #3 – Volatile Organic Chemicals (Continued)

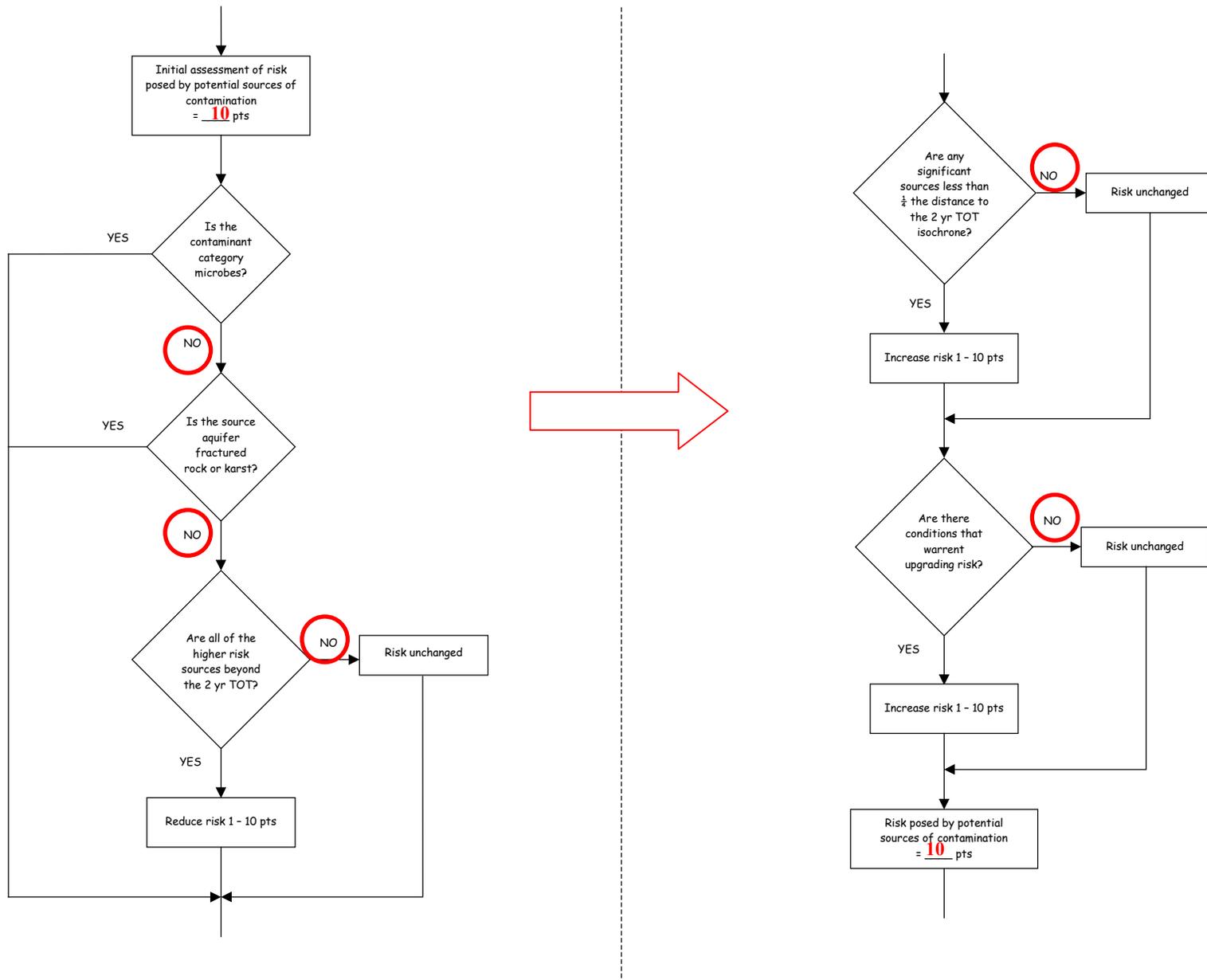


Chart 7. Contaminant risks for Hilltop Ski Area Well #3 – Volatile Organic Chemicals (Continued)

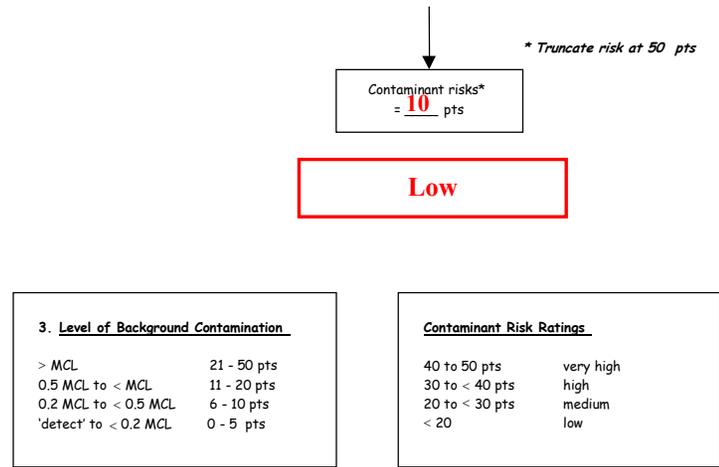
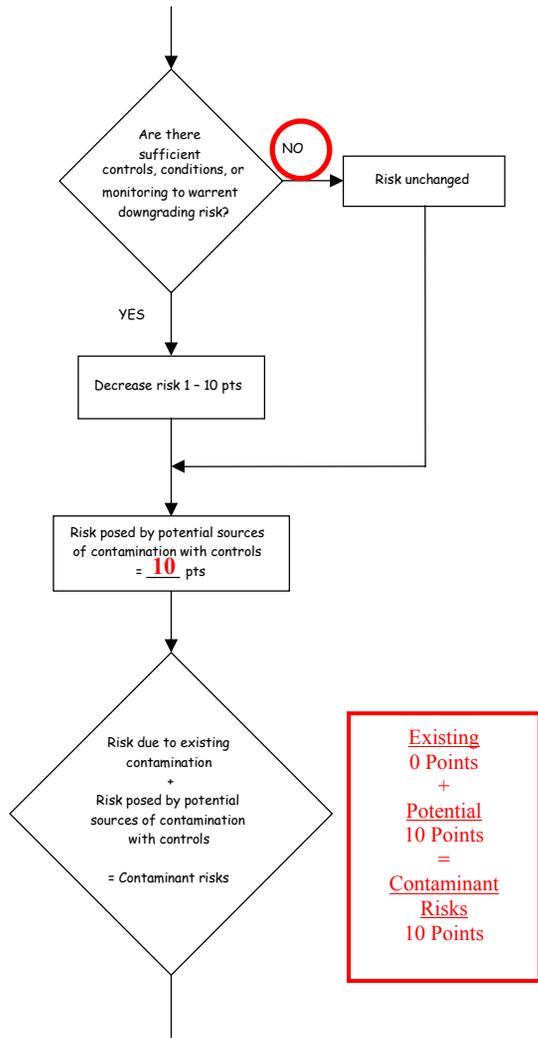


Table 3. Risk Matrix for Contaminant Sources for Hilltop Ski Area Well #3 – Volatile Organic Chemicals

Level of Risk Associated with the Highest Risk Sources

Next Highest Risk Sources(s)	Campbell airstrip,	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

Chart 8. Vulnerability analysis for Hilltop Ski Area Well #3 – Volatile Organic Chemicals

