Source Water Assessment for Alaska's Best Water Products Anchorage, Alaska

A Hydrogeologic Susceptibility and Vulnerability Analysis

DRINKING WATER PROTECTION PROGRAM REPORT 417
PWSID 213556.001

April 2002

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ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION: 2002

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By Heather A. Hammond

Drinking Water Protection Program
Alaska Department of Environmental Conservation

EXECUTIVE SUMMARY

The Public Water System for Alaska's Best Water Products is a Class A (non-transient/non-community) water system consisting of one well in the Anchorage area. Identified potential and current sources of contaminants that present the most significant risk to Alaska's Best Water Products public water system includes approximately 67 acres of residential area, sewer lines, roads, heavy equipment rental/storage areas, medical/veterinary facilities, lawn/garden supply distributors, a metal fabrication facility, an electrical substation, railroad corridor, underground fuel storage tanks, Class V motor vehicle waste disposal wells, motor vehicle dealerships/repair shops, asphalt processing/storage facility, gasoline stations, and scrap/salvage or junk yards (See Table 1 in Appendix B for a complete list of potential and current sources of contaminants within the drinking water protection area). These identified potential and existing sources of contamination are considered sources of bacteria and viruses, nitrates and/or nitrites, volatile organic chemicals, heavy metals, synthetic organic chemicals, and other organic chemicals. Overall, the public drinking water source for Alaska's Best Water Products received a vulnerability rating of **medium** for bacteria and viruses, nitrates and/or nitrites, and synthetic organic chemicals; and **high** for volatile organic chemicals, heavy metals and other organic chemicals.

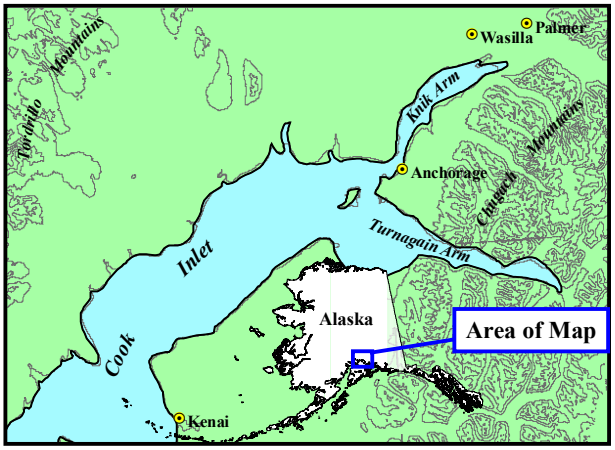

Figure 1. Index map showing the location of Anchorage, Alaska

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 the source of public drinking water serving Alaska's Best Water Products. This water system consists of one well 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 source to contamination. This assessment has been completed as a basis for local voluntary protection efforts and to assist agencies in their efforts to reduce risk to this public drinking water supply.

DESCRIPTION OF THE 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 Arm of Cook Inlet (Figure 1). In recent times, urban development has extended eastward along the flanks of the Chugach Mountains. This area, known locally as the Anchorage Hillside, contains development

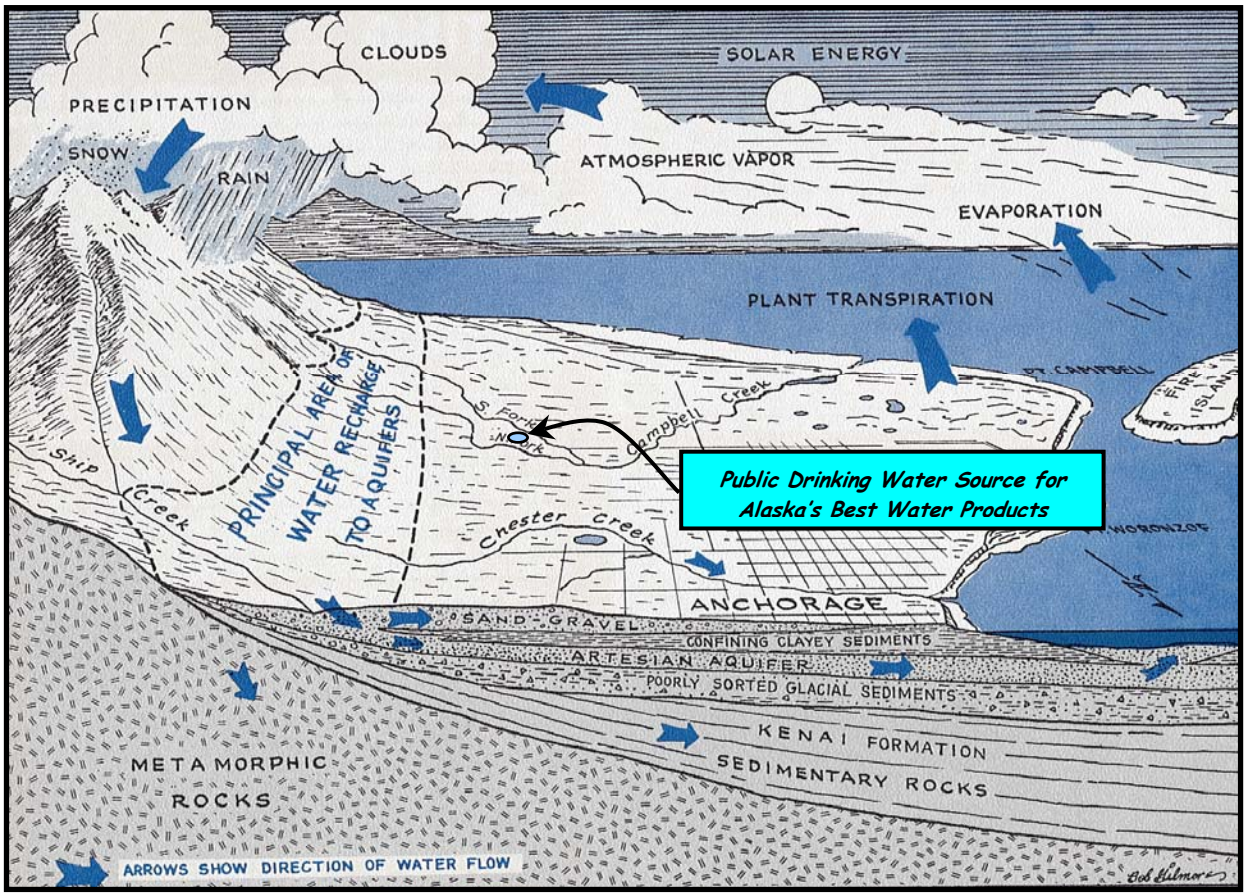

Figure 2. Generalized hydrologic cycle in the Anchorage area [*Barnwell, George, Dearborn,Weeks, and Zenone*, 1972].

at elevations exceeding 3,700 feet in elevation above sea level.

Climate

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

Physiography and Groundwater Conditions

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

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

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

Water enters or recharges these two aquifer systems in several different ways. Along the front of the Chugach

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

ALASKA'S BEST WATER PRODUCTS PUBLIC DRINKING WATER SYSTEM

Alaska's Best Water Products Public Drinking Water System is a Class A (non-transient/non-community) water system consisting of one well, which is located off of South Gambell Road (Lot 15 Block 2, Highland Road) at an elevation of approximately 200 feet above sea level (see Figure 3).

Installation of the well occurred September 9, 1983 to a total depth of 55 feet below ground surface and was completed in a 6-inch well casing. According to the most recent Sanitary Survey (06/20/97) there is no grouting or concrete pad surrounding the well casing. However, it was noted that the parking lot asphalt provides a protective seal around the well casing. Proper grouting provides added protection against contaminants traveling from the ground surface and along the well casing into source waters. Proper grading of the land surface away from the well casing can also provided added protection by diverting surface water from entering source waters along the well casing.

This system operates year round and serves approximately 1670 commercial customers through 1 service connection.

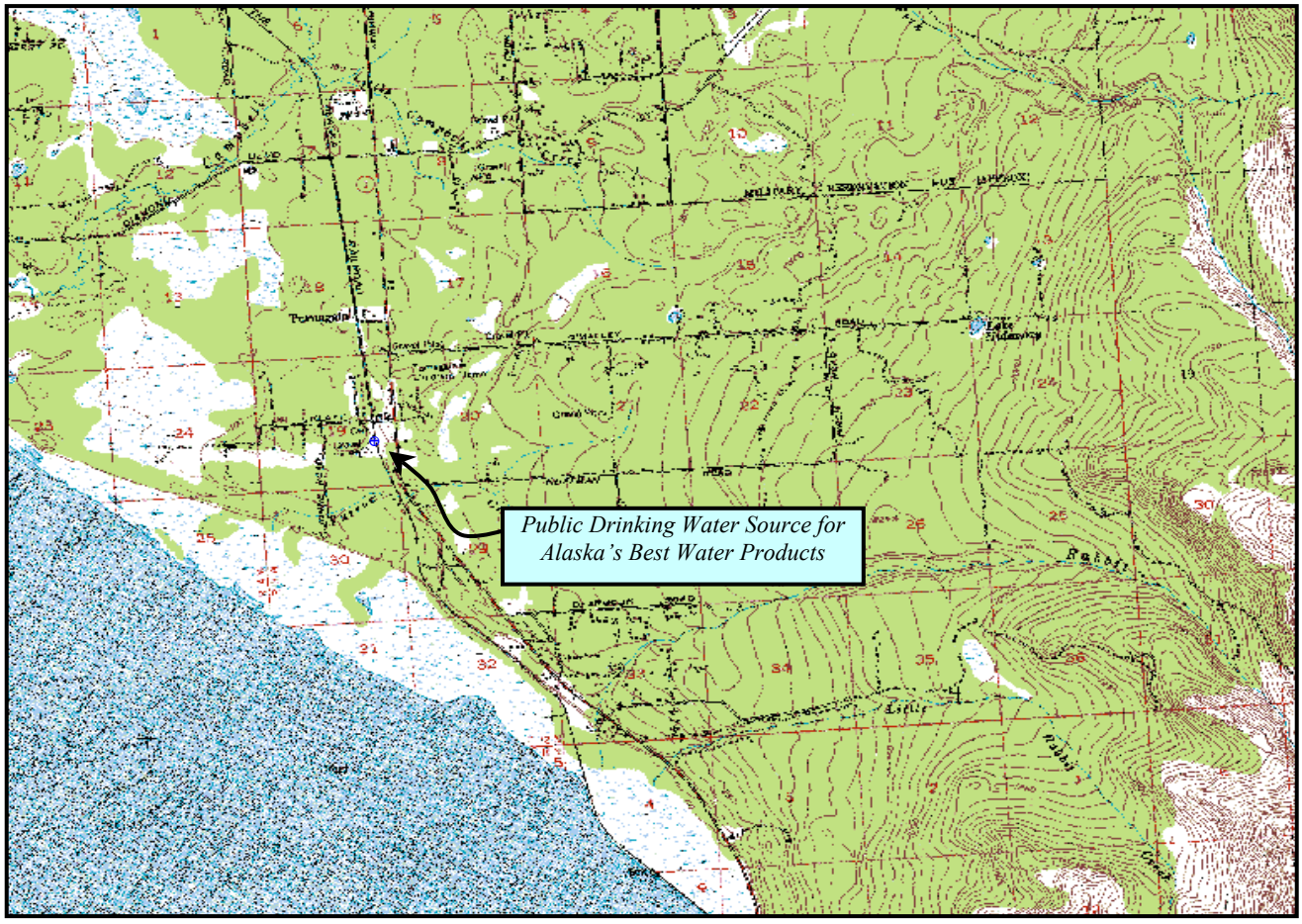

Figure 3. Map showing the location of the drinking water sources for Alaska's Best Water Products [Base: USGS Anchorage A8].

ASSESSMENT AND PROTECTION AREA FOR ALASKA'S BEST WATER PRODUCTS PUBLIC DRINKING WATER SOURCE

The Drinking Water Protection and Assessment Area that has been established for Alaska's Best Water Products source of public drinking water is the area that is most sensitive to contamination. This area serves as a basis for assessing the risk of the drinking water source to contamination. The zones around the drinking water source outline the most critical area for the preservation of the quality of the drinking water for this system. For simplicity, this area will be known as your Drinking Water Protection Area and will serve as the 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 determine the size and shape of the area that contributes water to the well. The input parameters describing the attributes of the aquifer in this calculation were adopted from the 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 area for each public drinking water source in Anchorage. 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 A 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 Area for Alaska's Best Water Products contains four zones, Zone A through Zone D (See Map 1 in Appendix A). Zone A corresponds to the area between the wells and the distance equal to ¼ of the distance of the 2-year time-of-travel. Depending on where a contaminant source is located within Zone A, travel time for a contaminant to the wells may be on the order of several days to several hours. Zone A also extends downgradient from the wells to take into account the area of the aquifer that is influenced by pumping of the wells. Zone B corresponds to a time-of-travel of less than two years. Zones C and D correspond to those areas between 5 years and 10 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 the Drinking Water Protection Area for Alaska's Best Water Products. This survey was completed through a search of agency records and other publicly available information. Potential sources of contamination to drinking water supplies cover a wide range of categories and types. Potential drinking water contaminants are found within agricultural, residential, commercial, and industrial areas, but can also occur within areas that have little or no development.

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

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

Maps 2 through 6 in Appendix C depict the Contaminant Source Inventory for Alaska's Best Water Products. Table 1 in Appendix B lists the inventoried potential sources of contamination within Zones A through D. Below is a summary of the contaminant sources inventoried:

- Approximately 67 acres of residential area;
- sewer lines;
- roads;
- heavy equipment rental storage areas;
- medical/veterinary facilities;
- lawn and garden supply distributors;
- a metal fabrication facility;
- an electrical substation;
- railroad corridor;
- underground fuel storage tanks;
- Class V motor vehicle waste disposal wells;
- motor vehicle dealerships/repair shops;
- an asphalt processing storage facility;
- gasoline stations;
- scrap, salvage or junk yards.

These potential and existing contaminant sources present the most significant risk for all six categories, respectively.

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 public drinking water wells.

VULNERABILITY OF ALASKA'S BEST WATER PRODUCTS PUBLIC DRINKING WATER SOURCE

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

- natural susceptibility; and
- contaminant risks.

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

Natural Susceptibility (0 – 50 points)

+

Contaminant Risks (0 – 50 points)

=

Vulnerability of the
Drinking Water Source to Contamination (0 – 100).

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

Susceptibility of the Wellhead (0 – 25 Points)
+
Susceptibility of the Aquifer (0 – 25 Points)

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

According to the well log the well was completed in a confined aquifer to a total depth of 55 feet below ground surface and had a static water level of 25 feet below ground surface at the time of drilling. The depth to the top of the confining layer is approximately 40 feet below ground surface and consists of a layer of sandy clay and has a thickness of approximately 7 feet. This confining layer may provide a protective barrier against the movement of contaminants in the subsurface. However, near the base of the Chugach Mountains, these clay layers tend to be discontinuous and thin toward the mountains. Therefore, contaminants that enter the subsurface near the base of the mountains may enter the confined aquifer uninhibited by the absence of any protective layer.

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 well to contamination (See Appendix D). Table 1 depicts the overall Susceptibility score and rating for the source of public drinking water serving Alaska's Best Water Products.

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

	Score	Rating
Susceptibility of the Wellhead	5	Low
Susceptibility of the Aquifer	13	Medium
Natural Susceptibility	18	Low

Contaminant risks to a drinking water source depend on the type, number or density, and distribution of contaminant sources. A score (0 – 50 points) and rating of Contaminant Risks (See Appendix D) is assigned based on the findings of the Contaminant Source Inventory (See Appendix B - Table 1 – Table 7). This portion of the analysis examines 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. Table 2 summarizes the Contaminant Risks for each category of drinking water contaminants.

Table 2. Contaminant Risks to Alaska's Best Water Products Public Drinking Water Source

Contaminant Risks	Score	Rating
Bacteria and Viruses	35	High
Nitrates and/or Nitrites	33	High
Volatile Organic Chemicals	50	Very High
Heavy Metals, Cyanide, And Other Inorganic Chemicals	50	Very High
Synthetic Organic Chemicals	35	High
Other Organic Chemicals	50	Very High

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

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

Table 3. Overall Vulnerability of Alaska's Best Water Products Public Drinking Water Source to Contamination by Category

Category	Score	Rating
Bacteria and Viruses	55	Medium
Nitrates and Nitrites	50	Medium
Volatile Organic Chemicals	70	High
Heavy Metals, Cyanide, and Other Inorganic Chemicals	70	High
Synthetic Organic Chemicals	55	Medium
Other Organic Chemicals	70	High

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

The contaminant risk for bacteria and viruses and nitrates and/or nitrites is high with residential areas, sewer lines, roads, and medical/veterinary facilities presenting the most significant risk to the drinking water well. Combining the contaminant risk for bacteria and viruses and nitrates and/or nitrites with the susceptibility of the well reduces the overall vulnerability of the well to contamiantion to medium.

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

Sampling history for Alaska's Best Water Products well indicates that low concentrations of nitrates have been detected. Nitrates were detected at the well in October of 1993 in a concentration of approximately 2% of the Maximum Contaminant Level or MCL. The 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, moving at approximately the same rate as water. Though existing nitrate contamination was detected at the site, concentrations remain at very safe levels with respect to human health.

Review of the historical sampling data indicates that no

bacteria and viruses or nitrates and/or nitrites have been detected in Alaska's Best Water Products drinking water within the past 5 years (See Charts 3 and 5 – Contaminant Risks for Bacteria and Viruses and Nitrates and/or Nitrites in Appendix D, respectively).

The contaminant risk for volatile organic chemicals is very high with Class V motor vehicle waste disposal wells, motor vehicle repair shops, gasoline stations, asphalt and tar processing/storage facilities, and roads presenting the most significant risk to the drinking water well. Combining the contaminant risk for volatile organic chemicals with the susceptibility of the well reduces the overall vulnerability of the well to contamiantion to high. There are three Class V motor vehicle waste disposal wells located within the Zone A protection area. According to the United States Environmental Protection Agency's (USEPA) Office on Water, a motor vehicle waste disposal well is a type of Class V injection well which is typically a shallow disposal system that receives or has received fluids from vehicular repair or maintenance activities, such as an auto body repair shop, automotive repair shops, new and used car dealerships, specialty repair shop (e.g., transmission and muffler

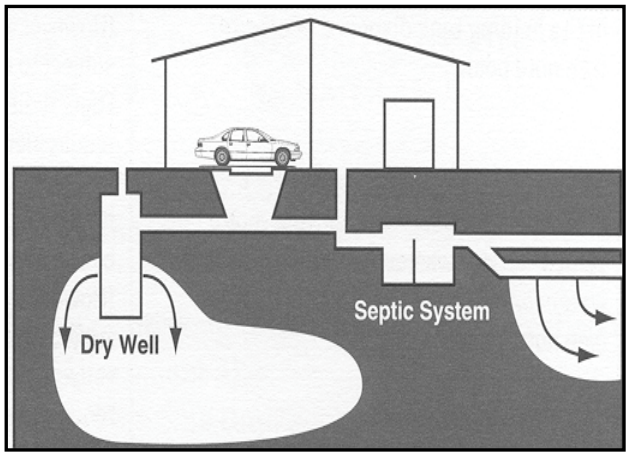

Figure 4. Motor vehicle waste disposal system

repair shop), or any area where vehicular repair work is performed.

The USEPA's Office on Water describes motor vehicle waste disposal wells as floor drains or sinks in service bays that are tied into a shallow disposal system (see Figure 4). Most commonly, these shallow systems are septic systems or drywells, but any underground system that receives motor vehicle waste would be considered a motor vehicle waste disposal well. A variety of names are used to describe shallow disposal systems including: cesspools, catchbasins, sink holes, underground vaults, or drain tanks.

Three ADEC recognized contaminated sites are located within the Zone D protection area or the ten year time-of-travel. Because of their distant proximity to the well these sources present a low potential risk for volatile organic chemicals.

In February of 1994 a Site Assessment report prepared by Shannon and Wilson for the Municipality of Anchorage related to the Lake Otis Parkway Improvement Project identified gasoline and diesel range contamination within and adjacent to the roadway (CS ID Tag U4-1). The report noted the presence of groundwater contamination and soils contaminated with high levels of diesel and gasoline. The sources of the contamination have been related to two regulated underground storage tanks which were removed from an adjacent property and to the spraying of roads ways for dust control.

In April of 1989 contaminated groundwater and soils were discovered among unidentified businesses along 112th Avenue and north of the O'Malley Airstrip and Klatt Road (CS ID Tag U4-2). The contamination was due to the spillage and overfilling of tanks on-site. Site stabilization and restoration activities took place in June of 1989. It is estimated that approximately 150 cubic yards of contaminated soils were excavated and secured on site. High levels of petroleum hydrocarbons and halocarbons were discovered in the stockpiled soil.

In October of 1988 two underground storage tanks (3,000 and 6,000 gallons, respectively) were extracted with soil contamination present only around the vent pipes (CS ID Tag U4-3). Approximately 150 tons of soil was excavated from the site. It was noted that no groundwater was encountered during the excavation. In addition to the presence of underground storage tanks it is suspected that duping of old batteries and waste oil has occurred at the site.

Review of the historical sampling data indicates that no volatile organic chemical contamination has been detected in Alaska's Best Water Products source waters at this time (See Chart 7 – Contaminant Risks for Volatile Organic Chemicals in Appendix D).

The contaminant risk for heavy metals is very high with Class V motor vehicle waste disposal wells, motor vehicle repair shops, scrap, salvage or junk yards, and leaking underground storage tanks associated with gasoline stations presenting the most significant risk to the drinking water well. Combining the contaminant risk for heavy metals with the susceptibility of the well reduces the overall vulnerability of the well to

contamiantion to high.

In January of 1999 minor petroleum hydrocarbon concentrations were encountered upon removal of two leaking underground storage tanks at the Tesoro Northstore #64, 11590 Old Seward Highway. A Site Assessment was completed upon the removal of the two underground storage tanks and as of March 2002 ADEC is in the process of responding to a request for no further action.

In April 1989 a confirmed release was reported at Tesoro – Tommy's Convenience Store, 11700 Old Seward Highway. Petroleum contaminated soil was encountered during the removal of a leaking underground fuel storage tank. It was noted that the contamination was limited to the excavation site and no further action is required for remediation.

The contaminant risk for synthetic organic chemicals is high with Class V motor vehicle waste disposal wells, motor vehicle repair shops, scrap, salvage or junk yards, and underground storage tanks associated with gasoline stations presenting the most significant risk to the drinking water well. Combining the contaminant risk for synthetic organic chemicals with the susceptibility of the well reduces the overall vulnerability of the well to contamiantion to medium.

The contaminant risk for other organic chemicals is very high with Class V motor vehicle waste disposal wells, scrap, salvage or junk yards, metal fabrication facilities, asphalt and tar processing/storage facilities, an electrical substation, and heavy equipment rental/storage areas presenting the most significant risk to the drinking water well. Combining the contaminant risk for other organic chemicals with the susceptibility of the well reduces the overall vulnerability of the well to contamiantion to high.

SUMMARY

A *Source Water Assessment* has been completed for the source of public drinking water serving Alaska's Best Water Products. The overall vulnerability of this source to contamination is **medium** for bacteria and viruses, nitrates and/or nitrites, and synthetic organic chemicals; and **high** for volatile organic chemicals, heavy metals and other organic chemicals. This assessment of contaminant risks can be used as a foundation for local voluntary protection efforts as well as a basis for the continuous efforts on the part of Alaska's Best Water Products 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 Alaska's Best Water Products public drinking water source.

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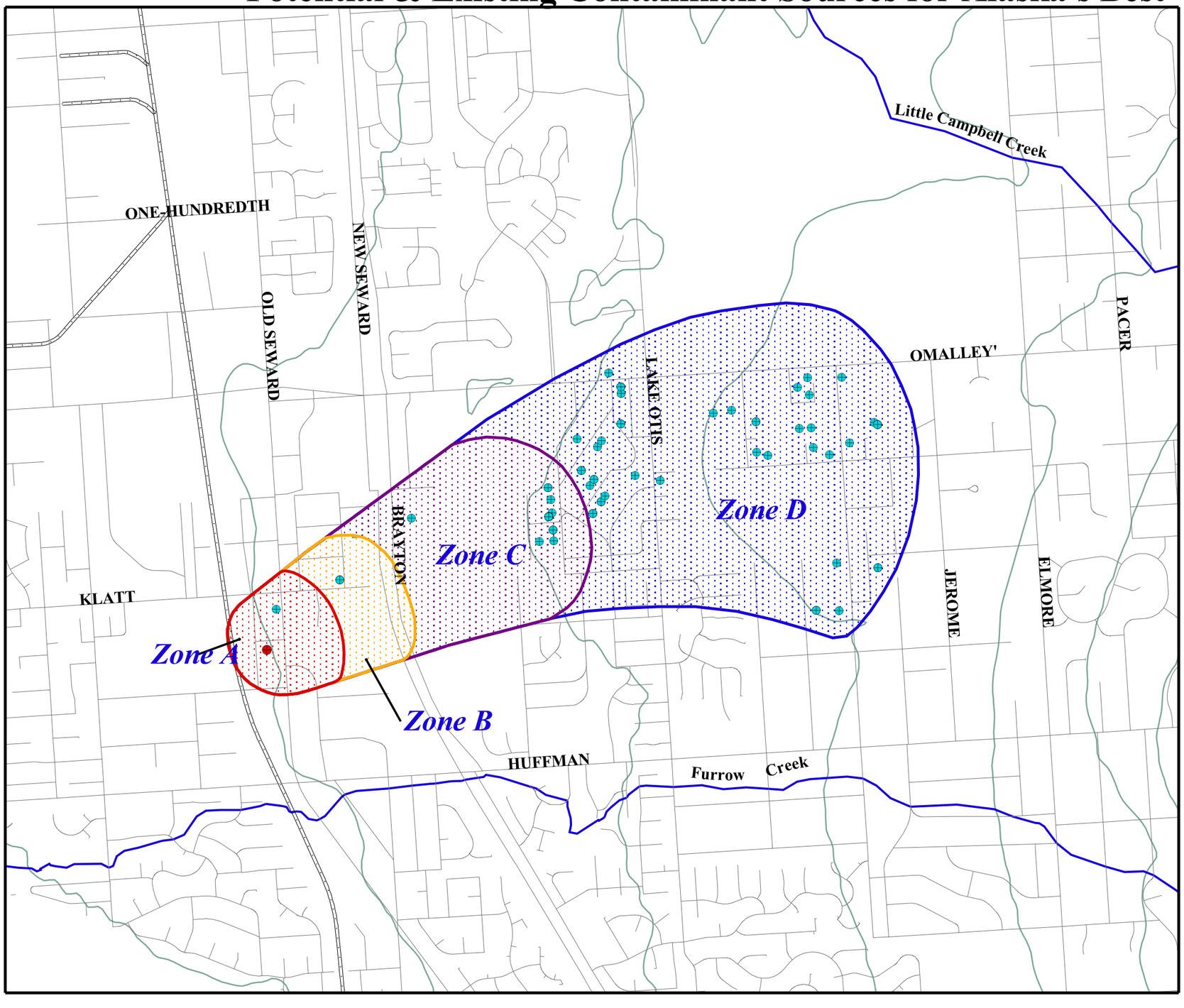
APPENDIX A

Alaska's Best Water Products
Drinking Water Protection Area

Drinking Water Protection Area and
Potential & Existing Contaminant Sources for Alaska's Best Water Products



- Alaska's Best Water Products Well
- Public and Private Wells

Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less Than 2 Months Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time

- Anchorage Roads
- MOA Rail Corridor (X30)
- Anchorage Streams
- Elevation Contours

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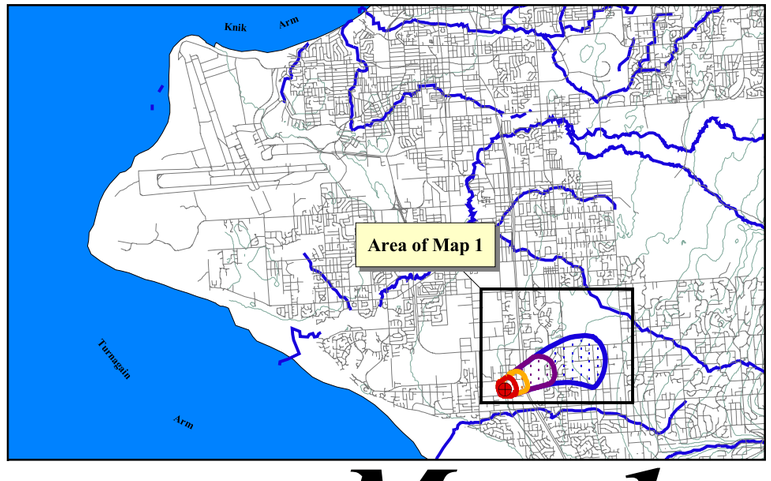

3000 0 3000 6000 Feet

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Map 1

APPENDIX B

Contaminant Source Inventory and Risk Ranking for Alaska's Best Water Products

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Location*	*Map Number*	*Comments*
Funeral services and crematories	C13	C13-1	A	Off of Old Seward Highway	3	
Gasoline stations (without repair shop)	C15	C15-1	A	Off of Old Seward Highway	3	Minor amounts of petroleum hydrocarbons were detected upon the removal of two underground fuel storage tanks.
Gasoline stations (without repair shop)	C15	C15-2	A	Off of Old Seward Highway	3	Petroleum contaminated soil was encountered upon removal of underground fuel storage tank. Contamination was limited to the excavation site.
Hardware stores	C17	C17-1	A	Off of Industry Way	3	
Heavy equipment rental/storage	C18	C18-1	A	Off of South Gambell Street	3	
Heavy equipment rental/storage	C18	C18-2	A	Off of South Gambell Street	3	
Heavy equipment rental/storage	C18	C18-3	A	Off of Industry Way	3	
Heavy equipment rental/storage	C18	C18-4	A	Off of South Gambell Street	3	
Lawn and garden supplies/services	C23	C23-1	A	Off of Old Seward Highway	3	
Lawn and garden supplies/services	C23	C23-2	A	Off of Klatt Road	3	
Lawn and garden supplies/services	C23	C23-3	A	Off of Daryl Street	3	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	A	Off of South Gambell Street	3	
Motor /motor vehicle repair shops	C31	C31-1	A	Off of South Gambell Street	3	
Motor /motor vehicle repair shops	C31	C31-2	A	Off of Daryl Street	3	
Motor /motor vehicle repair shops	C31	C31-3	A	Off of South Gambell Street	4	
Pet groomers	C34	C34-1	A	Off of Old Seward Highway	3	
Pharmacies (with on-site wastewater disposal)	C35	C35-1	A	Off of Old Seward Highway	3	
Taxidermists	C41	C41-1	A	Off of Industry Way	3	
Construction trade areas and materials	C09	C9-1	A	Off of South Gambell Street	3	
Construction trade areas and materials	C09	C9-2	A	Off of Industry Way	3	
Construction trade areas and materials	C09	C9-3	A	Off of Industry Way	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Location*	*Map Number*	*Comments*
Construction trade areas and materials	C09	C9-4	A	Off of Old Seward Highway	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Intersecting the head of Zone A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Along Industry Way	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Along Klatt Road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	A	Along Daryl Ave.	2	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	A	Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-2	A	Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-3	A	Off of Daryl Street	3	
Scrap, salvage, or junk yards	D59	D59-1	A	Off of South Gambell Street	4	
Scrap, salvage, or junk yards	D59	D59-2	A	Off of South Gambell Street	4	
Scrap, salvage, or junk yards	D59	D59-3	A	Off of Old Seward Highway	4	
Scrap, salvage, or junk yards	D59	D59-4	A	Off of One-hundred-twentieth Ave.	4	
Metal fabrication	I25	I25-1	A	Off of Old Seward Highway	3	
Asphalt and tar processing/storage	I03	I3-1	A	Off of South Gambell Street	3	
Residential Areas	R01	R1-1	A	Residential areas located within Zone A	4	Approximately 12 acres within Zone A
Tanks, gasoline (above ground)	T10	T10-1	A	Off of Old Seward Highway	3	
Tanks, gasoline (underground)	T12	T12-1	A	Off of Old Seward Highway	3	
Tanks, gasoline (underground)	T12	T12-2	A	Off of Old Seward Highway	3	
Tanks, gasoline (underground)	T12	T12-3	A	Off of Old Seward Highway	3	
Tanks, lubricants or other petroleum products (aboveground)	T18	T18-3	A	Off of South Gambell Street	3	
Tanks, diesel (underground)	T08	T8-1	A	Off of Old Seward Highway	3	
Tanks, diesel (underground)	T08	T8-2	A	Off of Old Seward Highway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Highland Park Ave.	2	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Location*	*Map Number*	*Comments*
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	South Gambell Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Old Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Klatt Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-5	A	One-hundred-twentieth Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-6	A	Industry Way	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-8	A	Daryl Ave.	2	
Motor vehicle/general storage yards/facilities	X27	X27-1	A	Off of Industry Way	3	
Motor vehicle/general storage yards/facilities	X27	X27-2	A	Off of Klatt Road	4	
Rail corridors	X30	X30-1	A	Anchorage railroad near the beginning of Zone A	3	
Electric substation	X37	X37-1	A	Off of South Gambell Street	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	A	Off of Industry Way	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-2	A	Off of Old Seward Highway	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-3	A	Off of Old Seward Highway	3	
Dog walking areas/foot trails	X46	X46-1	A	Trail running along the south side of Klatt Road	2	
Dog walking areas/foot trails	X46	X46-2	A	Trail runningn along the west side of the Old Seward Highway	2	
Dog walking areas/foot trails	X46	X46-3	A	Trail near the terminus of Zone A	2	
Heavy equipment rental/storage	C18	C18-3	B	Off of Broaddus Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-10	B	Near the terminus of Zone B	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Along Broaddus Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7	B	Along unknown road	2	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Location*	*Map Number*	*Comments*
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-8	B	Along Cornelia Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-9	B	Along Klatt Road	2	
Asphalt and tar processing/storage	I03	I3-2	B	Off of Cornelia Street	3	
Residential Areas	R01	R1-2	B	Residential areas located within Zone B	4	Approximately 18 acres within Zone B
Highways and roads, paved (cement or asphalt)	X20	X20-10	B	Broaddus Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Cornelia Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Unknown road name	2	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Brayton Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-9	B	Unknown road name	2	
Lawn and garden supplies/services	C23	C23-4	C	Off of Reader Road	5	
Construction trade areas and materials	C09	C9-5	C	Off of Hawkins Lane	5	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-11-15	C	Sewer lines located within Zone C	5	
Residential Areas	R01	R1-3	C	Redential areas located within Zone C	5	Approximately 37 acres within Zone C
Septic systems (serves one single-family home)	R02	R2-1-6	C	Septic systems located within Zone C	5	
Highways and roads, paved (cement or asphalt)	X20	X20-15-27	C	Roads located within Zone D	5	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Off of Bratyon Drive	5	
Dog walking areas/foot trails	X46	X46-6-8	C	Trails located within Zone C	5	
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-01	D	Lake Otis	6	Presence of GW contamination and soils contaminated with high levels of diesel and gasoline.
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-2	D	Off of One-hundred-twelfth Ave.	6	Contaminated soils and GW due to spillage and overlilling tanks on-site.
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-3	D	Off of Cange Street	6	Dumping of old batteries and waste oil suspected. Unremedied avgas leaking underground storage tank.

Table 2

Contaminant Source Inventory and Risk Ranking for Alaska's Best Water Products Sources of Bacteria and Viruses

PWSID 213556.001

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Overall Rank after Analysis	Location	Map Number	Comments
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Medium	1	Intersecting the head of Zone A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Medium	2	Along Industry Way	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Medium	3	Along Klatt Road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	A	Medium	4	Along Daryl Ave.	2	
Residential Areas	R01	R1-1	A	Low	5	Residential areas located within Zone A	4	Approximately 12 acres within Zone A
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	6	Highland Park Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	7	South Gambell Street	2	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	A	Medium	8	Off of Industry Way	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-2	A	Medium	9	Off of Old Seward Highway	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-3	A	Medium	10	Off of Old Seward Highway	3	
Pharmacies (with on-site wastewater disposal)	C35	C35-1	A	Low		Off of Old Seward Highway	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	A	Low		Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-2	A	Low		Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-3	A	Low		Off of Daryl Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low		Old Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low		Klatt Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-5	A	Low		One-hundred-twentieth Ave.	2	

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	X20-6	A	Low		Industry Way	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-8	A	Low		Daryl Ave.	2	
Dog walking areas/foot trails	X46	X46-1	A	Low		Trail running along the south side of Klatt Road	2	
Dog walking areas/foot trails	X46	X46-2	A	Low		Trail runningn along the west side of the Old Seward Highway	2	
Dog walking areas/foot trails	X46	X46-3	A	Low		Trail near the terminus of Zone A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-10	B	Medium		Near the terminus of Zone B	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Medium		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Medium		Along Broaddus Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7	B	Medium		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-8	B	Medium		Along Cornelia Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-9	B	Medium		Along Klatt Road	2	
Residential Areas	R01	R1-2	B	Low		Residential areas located within Zone B	4	Approximately 18 acres within Zone B
Highways and roads, paved (cement or asphalt)	X20	X20-10	B	Low		Broaddus Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low		Cornelia Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low		Unknown road name	2	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low		Seward Highway	2	

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	X20-14	B	Low		Brayton Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-9	B	Low		Unknown road name	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-11-15	C	Medium		Sewer lines located within Zone C	5	
Residential Areas	R01	R1-3	C	Low		Redential areas located within Zone C	5	Approximately 37 acres within Zone C
Septic systems (serves one single-family home)	R02	R2-1-6	C	Low		Septic systems located within Zone C	5	
Highways and roads, paved (cement or asphalt)	X20	X20-15-27	C	Low		Roads located within Zone D	5	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Medium		Off of Bratyon Drive	5	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Medium		Off of Bratyon Drive	5	
Dog walking areas/foot trails	X46	X46-6-8	C	Low		Trails located within Zone C	5	

Table 3

Contaminant Source Inventory and Risk Ranking for Alaska's Best Water Products Sources of Nitrates/Nitrites

PWSID 213556.001

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Overall Rank after Analysis	Location	Map Number	Comments
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Medium	1	Intersecting the head of Zone A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Medium	2	Along Industry Way	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Medium	3	Along Klatt Road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	A	Medium	4	Along Daryl Ave.	2	
Residential Areas	R01	R1-1	A	Low	5	Residential areas located within Zone A	4	Approximately 12 acres within Zone A
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	6	Highland Park Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	7	South Gambell Street	2	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	A	Low	8	Off of Industry Way	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-2	A	Low	9	Off of Old Seward Highway	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-3	A	Low	10	Off of Old Seward Highway	3	
Hardware stores	C17	C17-1	A	Low		Off of Industry Way	3	
Pharmacies (with on-site wastewater disposal)	C35	C35-1	A	Low		Off of Old Seward Highway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low		Old Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low		Klatt Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-5	A	Low		One-hundred-twentieth Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-6	A	Low		Industry Way	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-8	A	Low		Daryl Ave.	2	

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		Trail running along the south side of Klatt Road	2	
Dog walking areas/foot trails	X46	X46-2	A	Low		Trail runningn along the west side of the Old Seward Highway	2	
Dog walking areas/foot trails	X46	X46-3	A	Low		Trail near the terminus of Zone A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-10	B	Medium		Near the terminus of Zone B	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Medium		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Medium		Along Broaddus Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7	B	Medium		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-8	B	Medium		Along Cornelia Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-9	B	Medium		Along Klatt Road	2	
Residential Areas	R01	R1-2	B	Low		Residential areas located within Zone B	4	Approximately 18 acres within Zone B
Highways and roads, paved (cement or asphalt)	X20	X20-10	B	Low		Broaddus Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low		Cornelia Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low		Unknown road name	2	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low		Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Low		Brayton Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-9	B	Low		Unknown road name	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-11-15	C	Medium		Sewer lines located within Zone C	5	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Residential Areas	R01	R1-3	C	Low		Redential areas located within Zone C	5	Approximately 37 acres within Zone C
Septic systems (serves one single-family home)	R02	R2-1-6	C	Low		Septic systems located within Zone C	5	
Highways and roads, paved (cement or asphalt)	X20	X20-15-27	C	Low		Roads located within Zone D	5	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Low		Off of Bratyon Drive	5	
Dog walking areas/foot trails	X46	X46-6-8	C	Low		Trails located within Zone C	5	

Table 4

Contaminant Source Inventory and Risk Ranking for Alaska's Best Water Products Sources of Volatile Organic Chemicals

PWSID 213556.001

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	A	High	1	Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-2	A	High	2	Off of South Gambell Street	3	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	A	Medium	3	Off of South Gambell Street	3	
Asphalt and tar processing/storage	I03	I3-1	A	Medium	4	Off of South Gambell Street	3	
Gasoline stations (without repair shop)	C15	C15-2	A	High	5	Off of Old Seward Highway	3	Petroleum contaminated soil was encountered upon removal of underground fuel storage tank. Contamination was limited to the excavation site.
Gasoline stations (without repair shop)	C15	C15-1	A	High	6	Off of Old Seward Highway	3	Minor amounts of petroleum hydrocarbons were detected upon the removal of two underground fuel storage tanks.
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-3	A	High	7	Off of Daryl Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low	8	Highland Park Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low	9	South Gambell Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low	10	Old Seward Highway	2	
Hardware stores	C17	C17-1	A	Low		Off of Industry Way	3	
Heavy equipment rental/storage	C18	C18-1	A	Medium		Off of South Gambell Street	3	
Heavy equipment rental/storage	C18	C18-2	A	Medium		Off of South Gambell Street	3	
Heavy equipment rental/storage	C18	C18-3	A	Medium		Off of Industry Way	3	
Heavy equipment rental/storage	C18	C18-4	A	Medium		Off of South Gambell Street	3	
Motor /motor vehicle repair shops	C31	C31-1	A	Medium		Off of South Gambell Street	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Motor /motor vehicle repair shops	C31	C31-2	A	Medium		Off of Daryl Street	3	
Motor /motor vehicle repair shops	C31	C31-3	A	Medium		Off of South Gambell Street	4	
Pet groomers	C34	C34-1	A	Low		Off of Old Seward Highway	3	
Taxidermists	C41	C41-1	A	Medium		Off of Industry Way	3	
Construction trade areas and materials	C09	C9-1	A	Low		Off of South Gambell Street	3	
Construction trade areas and materials	C09	C9-2	A	Low		Off of Industry Way	3	
Construction trade areas and materials	C09	C9-3	A	Low		Off of Industry Way	3	
Construction trade areas and materials	C09	C9-4	A	Low		Off of Old Seward Highway	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low		Intersecting the head of Zone A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low		Along Industry Way	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Low		Along Klatt Road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	A	Low		Along Daryl Ave.	2	
Scrap, salvage, or junk yards	D59	D59-1	A	Low		Off of South Gambell Street	4	
Scrap, salvage, or junk yards	D59	D59-2	A	Low		Off of South Gambell Street	4	
Scrap, salvage, or junk yards	D59	D59-3	A	Low		Off of Old Seward Highway	4	
Scrap, salvage, or junk yards	D59	D59-4	A	Low		Off of One-hundred-twentieth Ave.	4	
Metal fabrication	I25	I25-1	A	Medium		Off of Old Seward Highway	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Residential Areas	R01	R1-1	A	Low		Residential areas located within Zone A	4	Approximately 12 acres within Zone A
Tanks, gasoline (above ground)	T10	T10-1	A	Medium		Off of Old Seward Highway	3	
Tanks, gasoline (underground)	T12	T12-1	A	High		Off of Old Seward Highway	3	
Tanks, gasoline (underground)	T12	T12-2	A	High		Off of Old Seward Highway	3	
Tanks, gasoline (underground)	T12	T12-3	A	High		Off of Old Seward Highway	3	
Tanks, diesel (underground)	T08	T8-1	A	High		Off of Old Seward Highway	3	
Tanks, diesel (underground)	T08	T8-2	A	High		Off of Old Seward Highway	3	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low		Klatt Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-5	A	Low		One-hundred-twentieth Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-6	A	Low		Industry Way	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-8	A	Low		Daryl Ave.	2	
Motor vehicle/general storage yards/facilities	X27	X27-1	A	Low		Off of Industry Way	3	
Motor vehicle/general storage yards/facilities	X27	X27-2	A	Low		Off of Klatt Road	4	
Rail corridors	X30	X30-1	A	Medium		Anchorage railroad near the beginning of Zone A	3	
Electric substation	X37	X37-1	A	Low		Off of South Gambell Street	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	A	Low		Off of Industry Way	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-2	A	Low		Off of Old Seward Highway	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-3	A	Low		Off of Old Seward Highway	3	
Heavy equipment rental/storage	C18	C18-3	B	Medium		Off of Broaddus Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-10	B	Low		Near the terminus of Zone B	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Low		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Low		Along Broaddus Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7	B	Low		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-8	B	Low		Along Cornelia Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-9	B	Low		Along Klatt Road	2	
Asphalt and tar processing/storage	I03	I3-2	B	Medium		Off of Cornelia Street	3	
Residential Areas	R01	R1-2	B	Low		Residential areas located within Zone B	4	Approximately 18 acres within Zone B
Highways and roads, paved (cement or asphalt)	X20	X20-10	B	Low		Broaddus Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low		Cornelia Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low		Unknown road name	2	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low		Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Low		Brayton Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-9	B	Low		Unknown road name	2	
Construction trade areas and materials	C09	C9-5	C	Low		Off of Hawkins Lane	5	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-11-15	C	Low		Sewer lines located within Zone C	5	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Residential Areas	R01	R1-3	C	Low		Redential areas located within Zone C	5	Approximately 37 acres within Zone C
Septic systems (serves one single-family home)	R02	R2-1-6	C	Low		Septic systems located within Zone C	5	
Highways and roads, paved (cement or asphalt)	X20	X20-15-27	C	Low		Roads located within Zone D	5	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Low		Off of Bratyon Drive	5	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Low		Off of Bratyon Drive	5	
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-01	D	Low		Lake Otis	6	Presence of GW contamination and soils contaminated with high levels of diesel and gasoline.
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-2	D	Low		Off of One-hundred-twelfth Ave.	6	Contaminated soils and GW due to spillage and overlilling tanks on-site.
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U4-3	D	Low		Off of Cange Street	6	Dumping of old batteries and waste oil suspected. Unremedied avgas leaking underground storage tank.

Table 5

Contaminant Source Inventory and Risk Ranking for Alaska's Best Water Products
Sources of Heavy Metals, Cyanide and Other Inorganic Chemicals

PWSID 213556.001

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Overall Rank after Analysis	Location	Map Number	Comments
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	A	High	1	Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-2	A	High	2	Off of South Gambell Street	3	
Motor /motor vehicle repair shops	C31	C31-1	A	Medium	3	Off of South Gambell Street	3	
Motor /motor vehicle repair shops	C31	C31-2	A	Medium	4	Off of Daryl Street	3	
Motor /motor vehicle repair shops	C31	C31-3	A	Medium	5	Off of South Gambell Street	4	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-3	A	High	6	Off of Daryl Street	3	
Scrap, salvage, or junk yards	D59	D59-1	A	High	7	Off of South Gambell Street	4	
Tanks, gasoline (underground)	T12	T12-3	A	Medium	8	Off of Old Seward Highway	3	
Tanks, gasoline (above ground)	T10	T10-1	A	Medium	9	Off of Old Seward Highway	3	
Tanks, gasoline (underground)	T12	T12-2	A	Medium	10	Off of Old Seward Highway	3	
Funeral services and crematories	C13	C13-1	A	Low		Off of Old Seward Highway	3	
Gasoline stations (without repair shop)	C15	C15-1	A	Low		Off of Old Seward Highway	3	Minor amounts of petroleum hydrocarbons were detected upon the removal of two underground fuel storage tanks.
Gasoline stations (without repair shop)	C15	C15-2	A	Low		Off of Old Seward Highway	3	Petroleum contaminated soil was encountered upon removal of underground fuel storage tank. Contamination was limited to the excavation site.
Hardware stores	C17	C17-1	A	Low		Off of Industry Way	3	
Heavy equipment rental/storage	C18	C18-1	A	Low		Off of South Gambell Street	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Heavy equipment rental/storage	C18	C18-2	A	Low		Off of South Gambell Street	3	
Heavy equipment rental/storage	C18	C18-3	A	Low		Off of Industry Way	3	
Heavy equipment rental/storage	C18	C18-4	A	Low		Off of South Gambell Street	3	
Lawn and garden supplies/services	C23	C23-1	A	Low		Off of Old Seward Highway	3	
Lawn and garden supplies/services	C23	C23-2	A	Low		Off of Klatt Road	3	
Lawn and garden supplies/services	C23	C23-3	A	Low		Off of Daryl Street	3	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	A	Low		Off of South Gambell Street	3	
Pharmacies (with on-site wastewater disposal)	C35	C35-1	A	Low		Off of Old Seward Highway	3	
Taxidermists	C41	C41-1	A	Low		Off of Industry Way	3	
Construction trade areas and materials	C09	C9-1	A	Low		Off of South Gambell Street	3	
Construction trade areas and materials	C09	C9-2	A	Low		Off of Industry Way	3	
Construction trade areas and materials	C09	C9-3	A	Low		Off of Industry Way	3	
Construction trade areas and materials	C09	C9-4	A	Low		Off of Old Seward Highway	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low		Intersecting the head of Zone A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low		Along Industry Way	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Low		Along Klatt Road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	A	Low		Along Daryl Ave.	2	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Scrap, salvage, or junk yards	D59	D59-2	A	High		Off of South Gambell Street	4	
Scrap, salvage, or junk yards	D59	D59-3	A	High		Off of Old Seward Highway	4	
Scrap, salvage, or junk yards	D59	D59-4	A	High		Off of One-hundred-twentieth Ave.	4	
Metal fabrication	I25	I25-1	A	Low		Off of Old Seward Highway	3	
Asphalt and tar processing/storage	I03	I3-1	A	Low		Off of South Gambell Street	3	
Residential Areas	R01	R1-1	A	Low		Residential areas located within Zone A	4	Approximately 12 acres within Zone A
Tanks, gasoline (underground)	T12	T12-1	A	Medium		Off of Old Seward Highway	3	
Tanks, lubricants or other petroleum products (aboveground)	T18	T18-3	A	Low		Off of South Gambell Street	3	
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low		Highland Park Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low		South Gambell Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-3	A	Low		Old Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low		Klatt Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-5	A	Low		One-hundred-twentieth Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-6	A	Low		Industry Way	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-8	A	Low		Daryl Ave.	2	
Rail corridors	X30	X30-1	A	Low		Anchorage railroad near the beginning of Zone A	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Electric substation	X37	X37-1	A	Low		Off of South Gambell Street	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	A	Low		Off of Industry Way	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-2	A	Low		Off of Old Seward Highway	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-3	A	Low		Off of Old Seward Highway	3	
Heavy equipment rental/storage	C18	C18-3	B	Low		Off of Broaddus Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-10	B	Low		Near the terminus of Zone B	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Low		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Low		Along Broaddus Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7	B	Low		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-8	B	Low		Along Cornelia Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-9	B	Low		Along Klatt Road	2	
Asphalt and tar processing/storage	I03	I3-2	B	Low		Off of Cornelia Street	3	
Residential Areas	R01	R1-2	B	Low		Residential areas located within Zone B	4	Approximately 18 acres within Zone B
Highways and roads, paved (cement or asphalt)	X20	X20-10	B	Low		Broaddus Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low		Cornelia Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low		Unknown road name	2	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low		Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Low		Brayton Drive	2	

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	X20-9	B	Low		Unknown road name	2	
Lawn and garden supplies/services	C23	C23-4	C	Low		Off of Reader Road	5	
Construction trade areas and materials	C09	C9-5	C	Low		Off of Hawkins Lane	5	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-11-15	C	Low		Sewer lines located within Zone C	5	
Residential Areas	R01	R1-3	C	Low		Redential areas located within Zone C	5	Approximately 37 acres within Zone C
Septic systems (serves one single-family home)	R02	R2-1-6	C	Low		Septic systems located within Zone C	5	
Highways and roads, paved (cement or asphalt)	X20	X20-15-27	C	Low		Roads located within Zone D	5	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Low		Off of Bratyon Drive	5	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Low		Off of Bratyon Drive	5	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Lawn and garden supplies/services	C23	C23-1	A	Medium	1	Off of Old Seward Highway	3	
Lawn and garden supplies/services	C23	C23-2	A	Medium	2	Off of Klatt Road	3	
Lawn and garden supplies/services	C23	C23-3	A	Medium	3	Off of Daryl Street	3	
Lawn and garden supplies/services	C23	C23-4	C	Medium	4	Off of Reader Road	5	
Rail corridors	X30	X30-1	A	Medium	5	Anchorage railroad near the beginning of Zone A	3	
Residential Areas	R01	R1-1	A	Low	6	Residential areas located within Zone A	4	Approximately 12 acres within Zone A
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low	7	Intersecting the head of Zone A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low	8	Along Industry Way	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Low	9	Along Klatt Road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	A	Low	10	Along Daryl Ave.	2	
Funeral services and crematories	C13	C13-1	A	Low		Off of Old Seward Highway	3	
Pet groomers	C34	C34-1	A	Low		Off of Old Seward Highway	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	A	Low		Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-2	A	Low		Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-3	A	Low		Off of Daryl Street	3	
Scrap, salvage, or junk yards	D59	D59-1	A	Medium		Off of South Gambell Street	4	
Scrap, salvage, or junk yards	D59	D59-2	A	Medium		Off of South Gambell Street	4	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Scrap, salvage, or junk yards	D59	D59-3	A	Medium		Off of Old Seward Highway	4	
Scrap, salvage, or junk yards	D59	D59-4	A	Medium		Off of One-hundred-twentieth Ave.	4	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-1	A	Low		Off of Industry Way	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-2	A	Low		Off of Old Seward Highway	3	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-3	A	Low		Off of Old Seward Highway	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-10	B	Low		Near the terminus of Zone B	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Low		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Low		Along Broaddus Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7	B	Low		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-8	B	Low		Along Cornelia Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-9	B	Low		Along Klatt Road	2	
Residential Areas	R01	R1-2	B	Low		Residential areas located within Zone B	4	Approximately 18 acres within Zone B
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-11-15	C	Low		Sewer lines located within Zone C	5	
Residential Areas	R01	R1-3	C	Low		Redential areas located within Zone C	5	Approximately 37 acres within Zone C
Septic systems (serves one single-family home)	R02	R2-1-6	C	Low		Septic systems located within Zone C	5	
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Low		Off of Bratyon Drive	5	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Medical/veterinary facilities (doctor or dentist offices, hospitals, nursing homes)	X40	X40-4	C	Low		Off of Bratyon Drive	5	

Table 7

Contaminant Source Inventory and Risk Ranking for Alaska's Best Water Products
Sources of Other Organic Chemicals

PWSID 213556.001

Contaminant Source Type	Contaminant Source ID	CS ID tag	Zone	Risk Ranking for Analysis	Overall Rank after Analysis	Location	Map Number	Comments
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-1	A	Medium	1	Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-2	A	High	2	Off of South Gambell Street	3	
Injection wells (Class V) Motor Vehicle Waste Disposal Well	D42	D42-3	A	High	3	Off of Daryl Street	3	
Scrap, salvage, or junk yards	D59	D59-1	A	High	4	Off of South Gambell Street	4	
Scrap, salvage, or junk yards	D59	D59-2	A	High	5	Off of South Gambell Street	4	
Scrap, salvage, or junk yards	D59	D59-3	A	High	6	Off of Old Seward Highway	4	
Metal fabrication	I25	I25-1	A	Medium	7	Off of Old Seward Highway	3	
Asphalt and tar processing/storage	I03	I3-1	A	High	8	Off of South Gambell Street	3	
Electric substation	X37	X37-1	A	High	9	Off of South Gambell Street	4	
Heavy equipment rental/storage	C18	C18-1	A	Medium	10	Off of South Gambell Street	3	
Gasoline stations (without repair shop)	C15	C15-1	A	Low		Off of Old Seward Highway	3	Minor amounts of petroleum hydrocarbons were detected upon the removal of two underground fuel storage tanks.
Gasoline stations (without repair shop)	C15	C15-2	A	Low		Off of Old Seward Highway	3	Petroleum contaminated soil was encountered upon removal of underground fuel storage tank. Contamination was limited to the excavation site.
Hardware stores	C17	C17-1	A	Low		Off of Industry Way	3	
Heavy equipment rental/storage	C18	C18-2	A	Medium		Off of South Gambell Street	3	
Heavy equipment rental/storage	C18	C18-3	A	Medium		Off of Industry Way	3	

Contaminant Source Type	*Contaminant Source ID*	*CS ID tag*	*Zone*	*Risk Ranking for Analysis*	*Overall Rank after Analysis*	*Location*	*Map Number*	*Comments*
Heavy equipment rental/storage	C18	C18-4	A	Medium		Off of South Gambell Street	3	
Motor vehicle dealerships - cars, trucks, motor cycles, ATV's, snow machines, boats (with service department)	C27	C27-1	A	Medium		Off of South Gambell Street	3	
Motor /motor vehicle repair shops	C31	C31-1	A	Medium		Off of South Gambell Street	3	
Motor /motor vehicle repair shops	C31	C31-2	A	Medium		Off of Daryl Street	3	
Motor /motor vehicle repair shops	C31	C31-3	A	Medium		Off of South Gambell Street	4	
Construction trade areas and materials	C09	C9-1	A	Low		Off of South Gambell Street	3	
Construction trade areas and materials	C09	C9-2	A	Low		Off of Industry Way	3	
Construction trade areas and materials	C09	C9-3	A	Low		Off of Industry Way	3	
Construction trade areas and materials	C09	C9-4	A	Low		Off of Old Seward Highway	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-1	A	Low		Intersecting the head of Zone A	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-2	A	Low		Along Industry Way	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-3	A	Low		Along Klatt Road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-4	A	Low		Along Daryl Ave.	2	
Scrap, salvage, or junk yards	D59	D59-4	A	High		Off of One-hundred-twentieth Ave.	4	
Residential Areas	R01	R1-1	A	Low		Residential areas located within Zone A	4	Approximately 12 acres within Zone A
Highways and roads, paved (cement or asphalt)	X20	X20-1	A	Low		Highland Park Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-2	A	Low		South Gambell Street	2	

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	X20-3	A	Low		Old Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-4	A	Low		Klatt Road	2	
Highways and roads, paved (cement or asphalt)	X20	X20-5	A	Low		One-hundred-twentieth Ave.	2	
Highways and roads, paved (cement or asphalt)	X20	X20-6	A	Low		Industry Way	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-7	A	Low		Birch Trail Circle	2	
Highways and roads, paved (cement or asphalt)	X20	X20-8	A	Low		Daryl Ave.	2	
Motor vehicle/general storage yards/facilities	X27	X27-1	A	Low		Off of Industry Way	3	
Motor vehicle/general storage yards/facilities	X27	X27-2	A	Low		Off of Klatt Road	4	
Rail corridors	X30	X30-1	A	Low		Anchorage railroad near the beginning of Zone A	3	
Heavy equipment rental/storage	C18	C18-3	B	Medium		Off of Broaddus Street	3	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-10	B	Low		Near the terminus of Zone B	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-5	B	Low		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-6	B	Low		Along Broaddus Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-7	B	Low		Along unknown road	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-8	B	Low		Along Cornelia Street	2	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-9	B	Low		Along Klatt Road	2	
Asphalt and tar processing/storage	I03	I3-2	B	High		Off of Cornelia Street	3	
Residential Areas	R01	R1-2	B	Low		Residential areas located within Zone B	4	Approximately 18 acres within Zone B

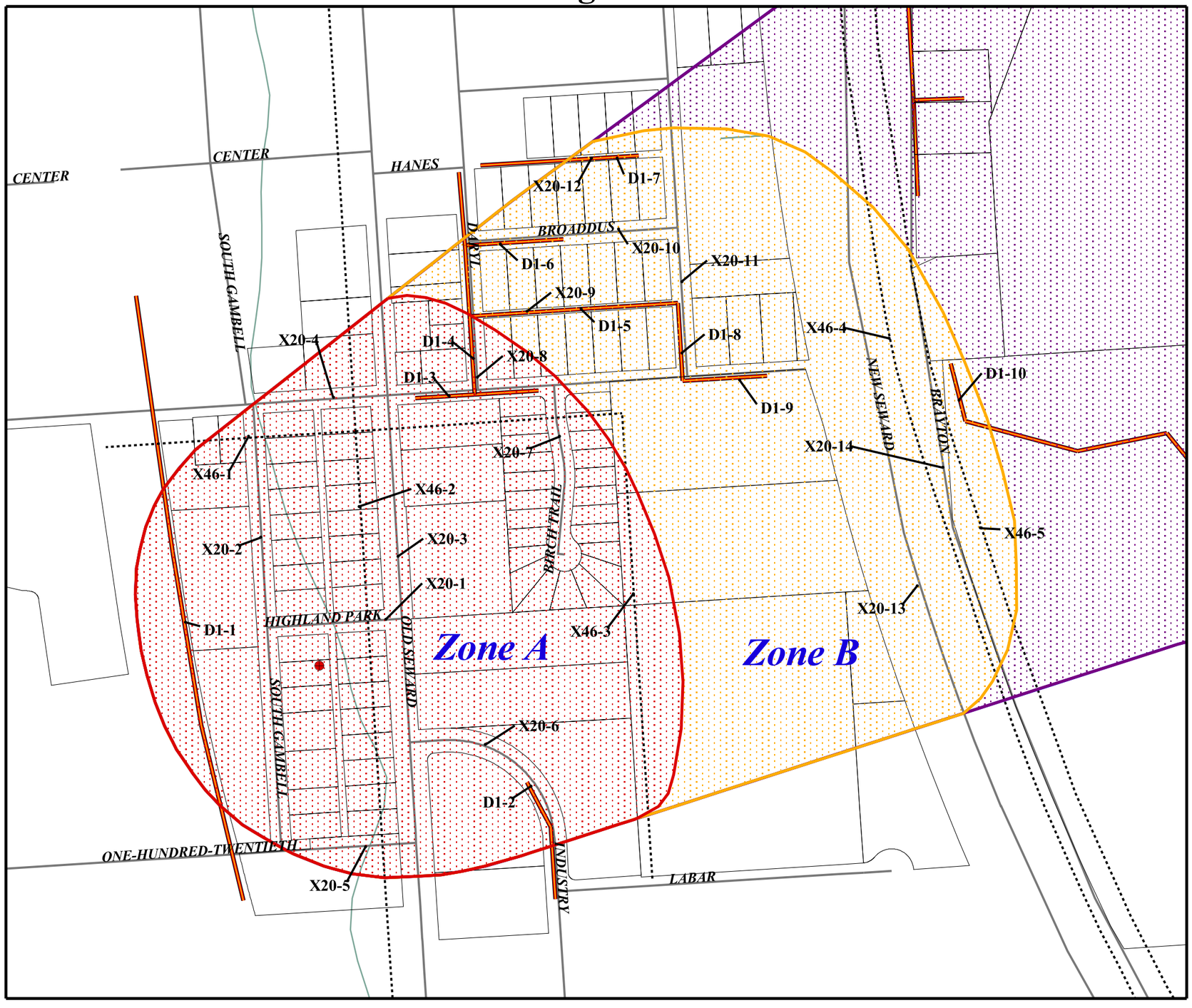
Contaminant Source Inventory and Risk Ranking for Alaska's Best Water Products
Sources of Other Organic Chemicals

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	X20-10	B	Low		Broaddus Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-11	B	Low		Cornelia Street	2	
Highways and roads, paved (cement or asphalt)	X20	X20-12	B	Low		Unknown road name	2	
Highways and roads, paved (cement or asphalt)	X20	X20-13	B	Low		Seward Highway	2	
Highways and roads, paved (cement or asphalt)	X20	X20-14	B	Low		Brayton Drive	2	
Highways and roads, paved (cement or asphalt)	X20	X20-9	B	Low		Unknown road name	2	
Construction trade areas and materials	C09	C9-5	C	Low		Off of Hawkins Lane	5	
Domestic wastewater collection systems (sewer lines or lift stations)	D01	D1-11-15	C	Low		Sewer lines located within Zone C	5	
Residential Areas	R01	R1-3	C	Low		Redential areas located within Zone C	5	Approximately 37 acres within Zone C
Septic systems (serves one single-family home)	R02	R2-1-6	C	Low		Septic systems located within Zone C	5	
Highways and roads, paved (cement or asphalt)	X20	X20-15-27	C	Low		Roads located within Zone D	5	

APPENDIX C

Alaska's Best Water Products
Drinking Water Protection Area
and Potential & Existing Contaminant Sources

Drinking Water Protection Area and
Potential & Existing Contaminant Sources for Alaska's Best Water Products



- Alaska's Best Water Products Well

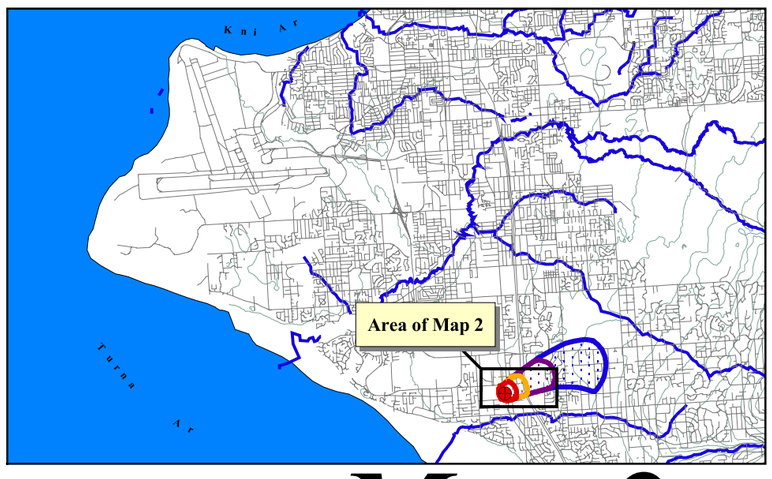
Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less Than 2 Months Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time
- Anchorage Land Parcels
- Trails (X46)
- Sewer Lines (D1)
- Anchorage Roads (X20)
- Elevation Contours

N W E S

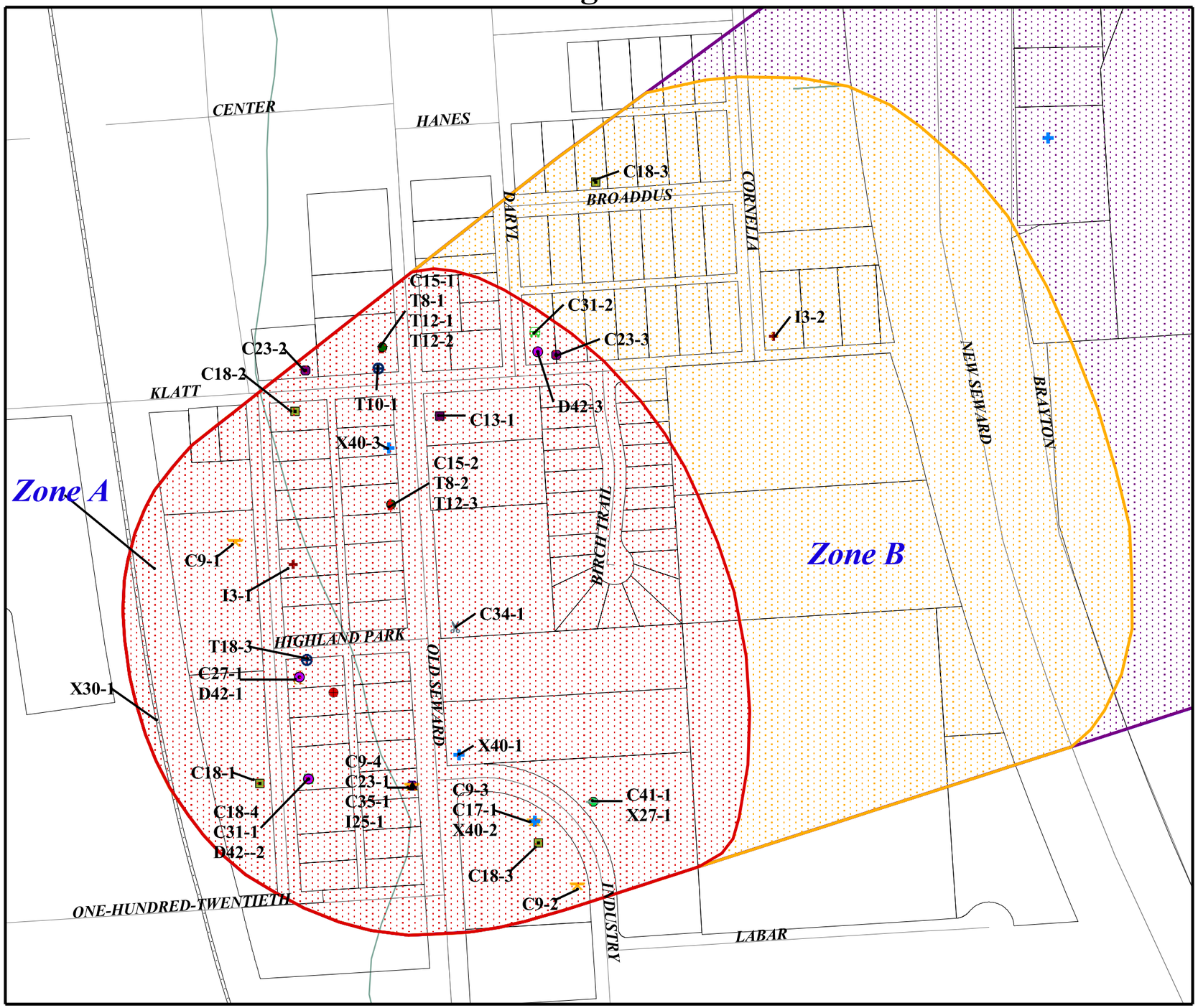


500 0 500 1000 Feet

PWSID 213556.001

Map 2

Drinking Water Protection Area and
Potential & Existing Contaminant Sources for Alaska's Best Water Products



500 0 500 1000 Feet

Alaska's Best Water Products Well
Zone A Protection Area
Several Months Travel Time
Zone B Protection Area
Less Than 2 Months Travel Time
Zone C Protection Area
Less Than 5 Years Travel Time
Zone D Protection Area
Less Than 10 Years Travel Time
Anchorage Land Parcels
Potential Contaminant Sources
Funeral Services and Crematories (C13)
Gasoline Stations - Without Repair Shops (C15)
Hardware Stores (C17)
Heavy Equipment Rental/Storage (C18)
Lawn and Garden Supplies (C23)
Motor Vehicle Repair Shops - With Service Departments (C27)
Motor/Motor Vehicle Repair Shops (C31)
Pet Groomers (C34)
Pharmacies (C35)
Taxidermists (C41)
Construction Trade Areas and Materials (C9)
Class V Injection Wells - Motor Vehicle Waste (D42)
Metal Fabrication (I25)
Asphalt and Tar Processing/Storage (I3)
Gasoline Tanks - Above Ground (T12)
Contaminated Sites - DEC Recognized (U4)
Motor Vehicle/General Storage Yards/Facilities (X27)
Medical/Veterinary Facilities (X40)
Anchorage Fire Department Fuel Tanks (T18)
Anchorage Roads (X20)
MOA Rail Corridor (X30)
Elevation Contours

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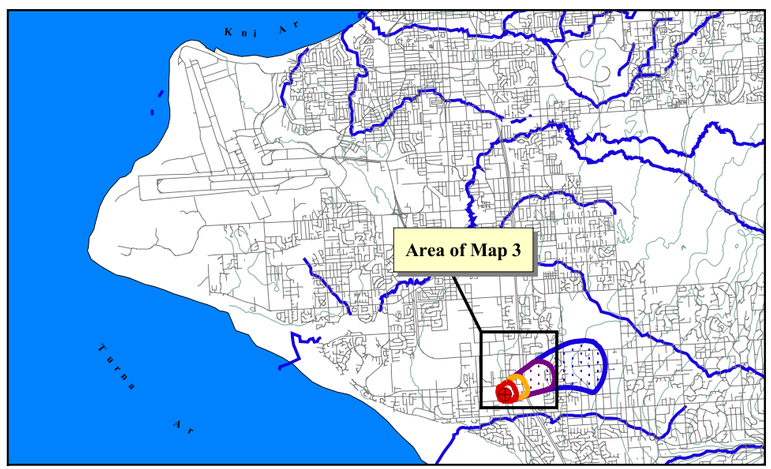

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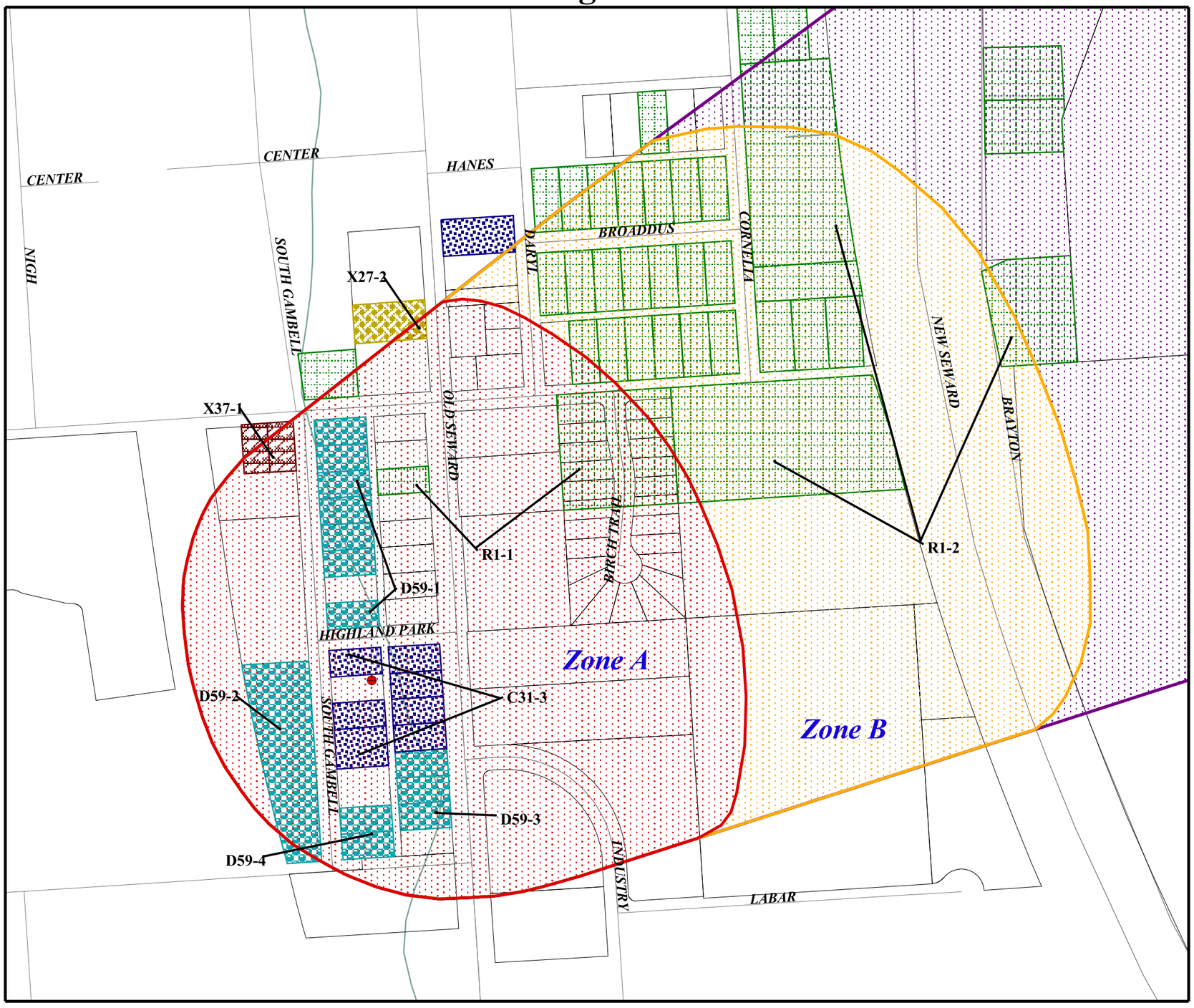
Map 3

Drinking Water Protection Area and
Potential & Existing Contaminant Sources for Alaska's Best Water Products



- Alaska's Best Water Products Well
- Zone A Protection Area
  - Several Months Travel Time
- Zone B Protection Area
  - Less Than 2 Months Travel Time
- Zone C Protection Area
  - Less Than 5 Years Travel Time
- Zone D Protection Area
  - Less Than 10 Years Travel Time
- Electric Substations (X37)
- Lawns and Gardens (R1)
- Motor/Motor Vehicle Repair Shops (C31)
- Motor Vehicle General Storage Yards/Facilities (X27)
- Scrap, Salvage or Junk Yards (D59)
- Anchorage Land Parcels
- Anchorage Roads (X20)
- Elevation Contours

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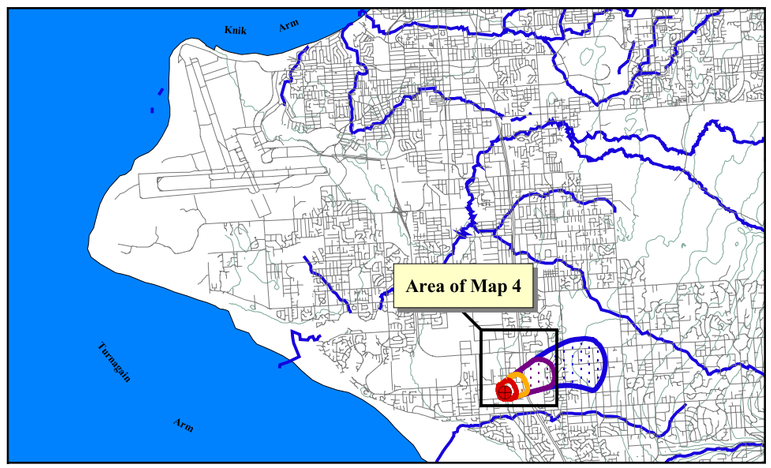
S



500 0 500 1000 Feet

PWSID 213556.001

Map 4

Drinking Water Protection Area and
Potential & Existing Contaminant Sources for Alaska's Best Water Products

Potential and existing contaminant sources identified within the Zone C protection area include approximately 37 acres of residential area, 12 roads, 5 sewer lines, 6 septic systems, a construction trade area, a medical/veterinary facility, a lawn/garden supply facility, and recreation trails.

C23-4
D1-11
D1-12
X46-6
C9-5
X40-4
IDDUS
NEW SEWARD
BRAYTON
Zone C
X20-17
D1-15
D1-13
X46-8
D1-14
X46-7

500 0 500 1000 Feet

PWSID 213556.001

- Alaska's Best Water Products Well

Zone A Protection Area
- Several Months Travel Time

Zone B Protection Area
- Less Than 2 Months Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time

Potential Contaminant Sources
- Funeral Services and Crematories (C13)
- Gasoline Stations - Without Repair Shops (C15)
- Hardware Stores (C17)
- Heavy Equipment Rental/Storage (C18)
- Lawn and Garden Supplies (C23)
- Motor Vehicle Repair Shops - With Service Departments (C27)
- Motor/Motor Vehicle Repair Shops (C31)
- Pet Groomers (C34)
- Pharmacies (C35)
- Taxidermists (C41)
- Construction Trade Areas and Materials (C9)
- Class V Injection Wells - Motor Vehicle Waste (D42)
- Metal Fabrication (I25)
- Asphalt and Tar Processing/Storage (I3)
- Gasoline Tanks - Above Ground (T12)
- Aviation Fuel Tanks - Underground (T8)
- Contaminated Sites - DEC Recognized (U4)
- Leaking Underground Fuel Storage Tanks - Closed (U8)
- Motor Vehicle/General Storage Yards/Facilities (X27)
- Medical/Veterinary Facilities (X40)
- Septic Systems (R2)
- Lawns and Gardens (R1)
- Anchorage Land Parcels
- Trails (X46)
- Sewer Lines (D1)
- Anchorage Roads (X20)
- Elevation Contours

N
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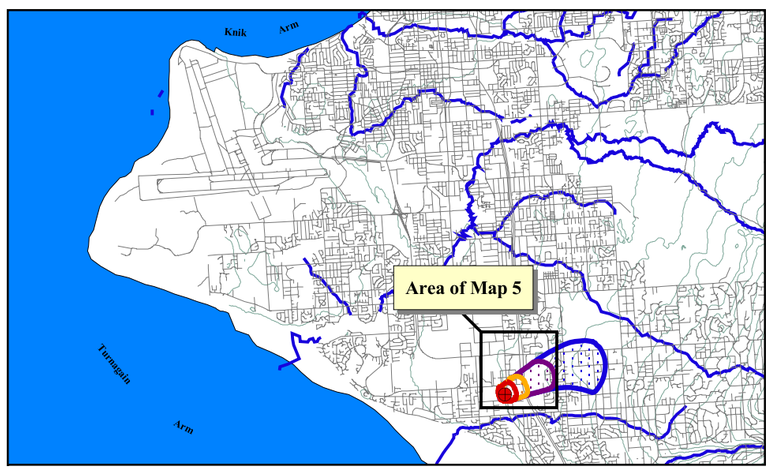
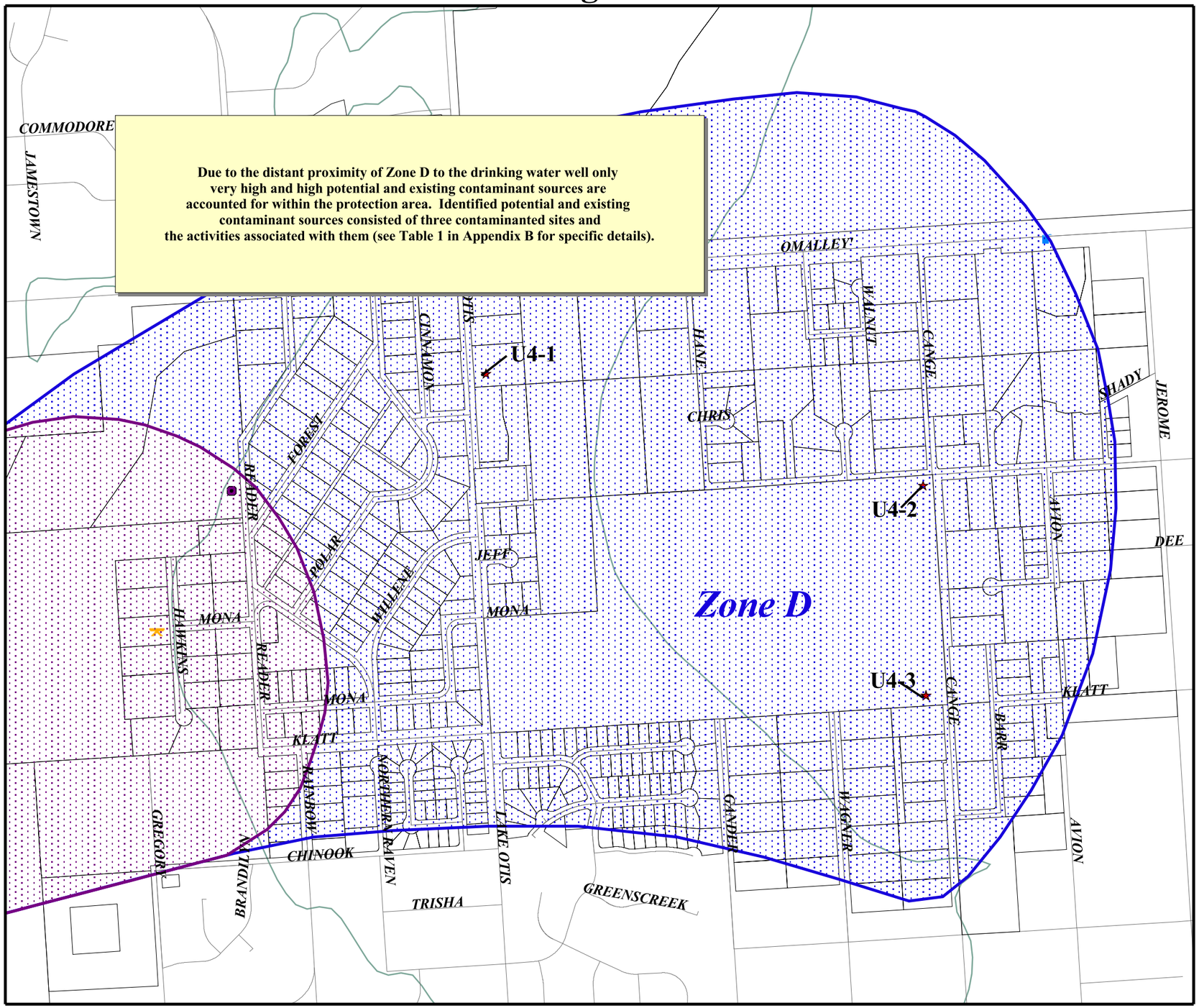


Map 5

Drinking Water Protection Area and
Potential & Existing Contaminant Sources for Alaska's Best Water Products



- Alaska's Best Water Products Well

Zone A Protection Area
- Several Months Travel Time

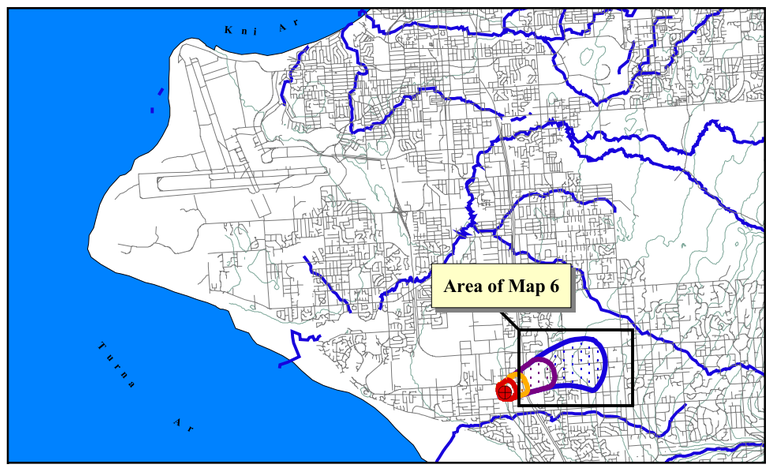
Zone B Protection Area
- Less Than 2 Months Travel Time

Zone C Protection Area
- Less Than 5 Years Travel Time

Zone D Protection Area
- Less Than 10 Years Travel Time

Potential Contaminant Sources
- Funeral Services and Crematories (C13)
- Gasoline Stations - Without Repair Shops (C15)
- Hardware Stores (C17)
- Heavy Equipment Rental/Storage (C18)
- Lawn and Garden Supplies (C23)
- Motor Vehicle Repair Shops - With Service Departments (C27)
- Motor/Motor Vehicle Repair Shops (C31)
- Pet Groomers (C34)
- Pharmacies (C35)
- Taxidermists (C41)
- Construction Trade Areas and Materials (C9)
- Class V Injection Wells - Motor Vehicle Waste (D42)
- Metal Fabrication (I25)
- Asphalt and Tar Processing/Storage (I3)
- Gasoline Tanks - Above Ground (T12)
- Aviation Fuel Tanks - Underground (T8)
- Contaminated Sites - DEC Recognized (U4)
- Leaking Underground Fuel Storage Tanks - Closed (U8)
- Motor Vehicle/General Storage Yards/Facilities (X27)
- Medical/Veterinary Facilities (X40)
- Anchorage Land Parcels
- Anchorage Roads (X20)
- Elevation Contours

N W E S



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Map 6

APPENDIX D

Vulnerability Analysis for Alaska's Best Water Products Public Drinking Water Source

Chart 1. Susceptibility of the wellhead - Alaska's Best Water Products

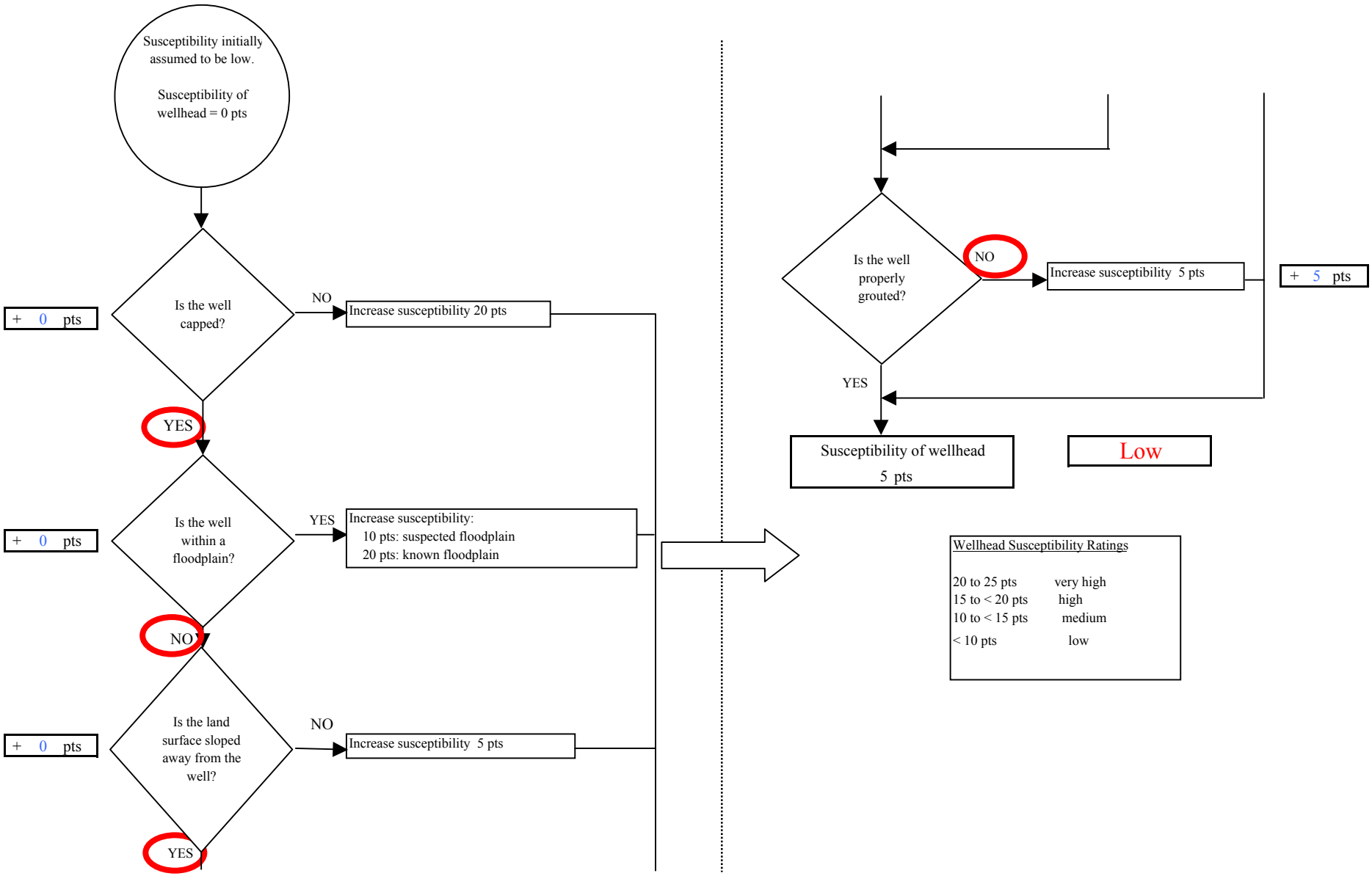


Chart 2. Susceptibility of the aquifer - Alaska's Best Water Products

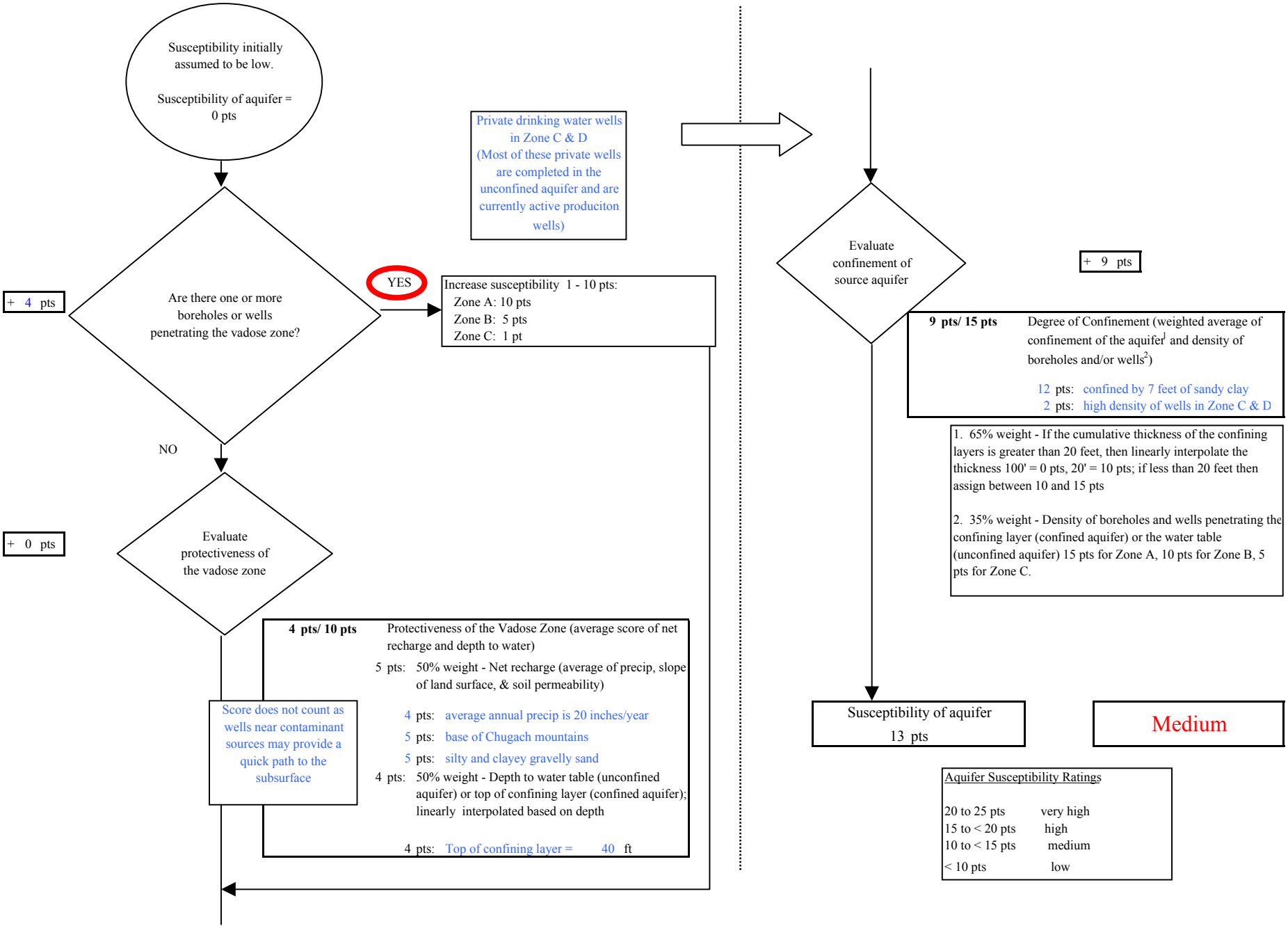
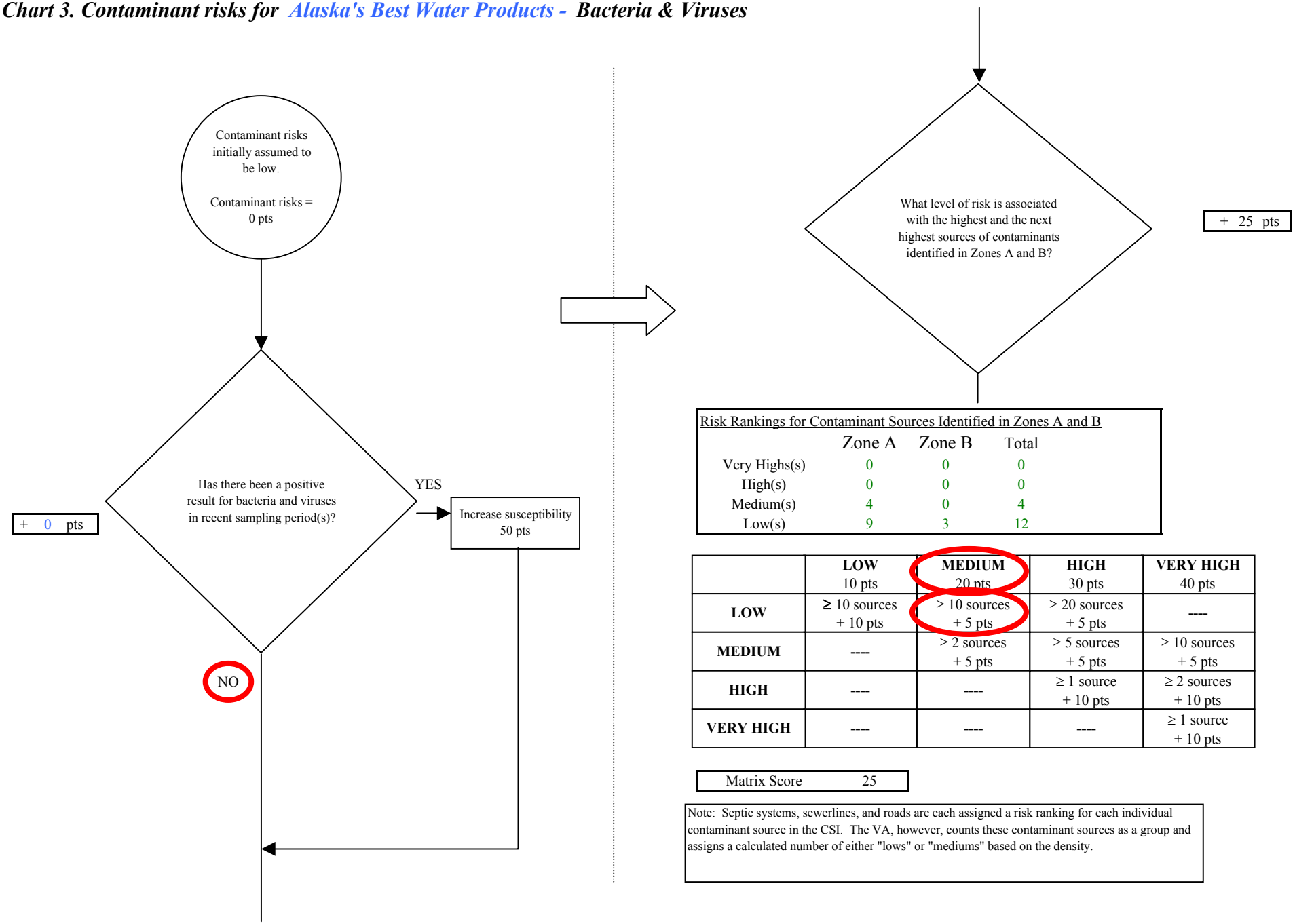


Chart 3. Contaminant risks for Alaska's Best Water Products - Bacteria & Viruses



Risk Rankings for Contaminant Sources Identified in Zones A and B

	Zone A	Zone B	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	4	0	4
Low(s)	9	3	12

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

Matrix Score 25

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

Chart 3. Contaminant risks for Alaska's Best Water Products - Bacteria & Viruses

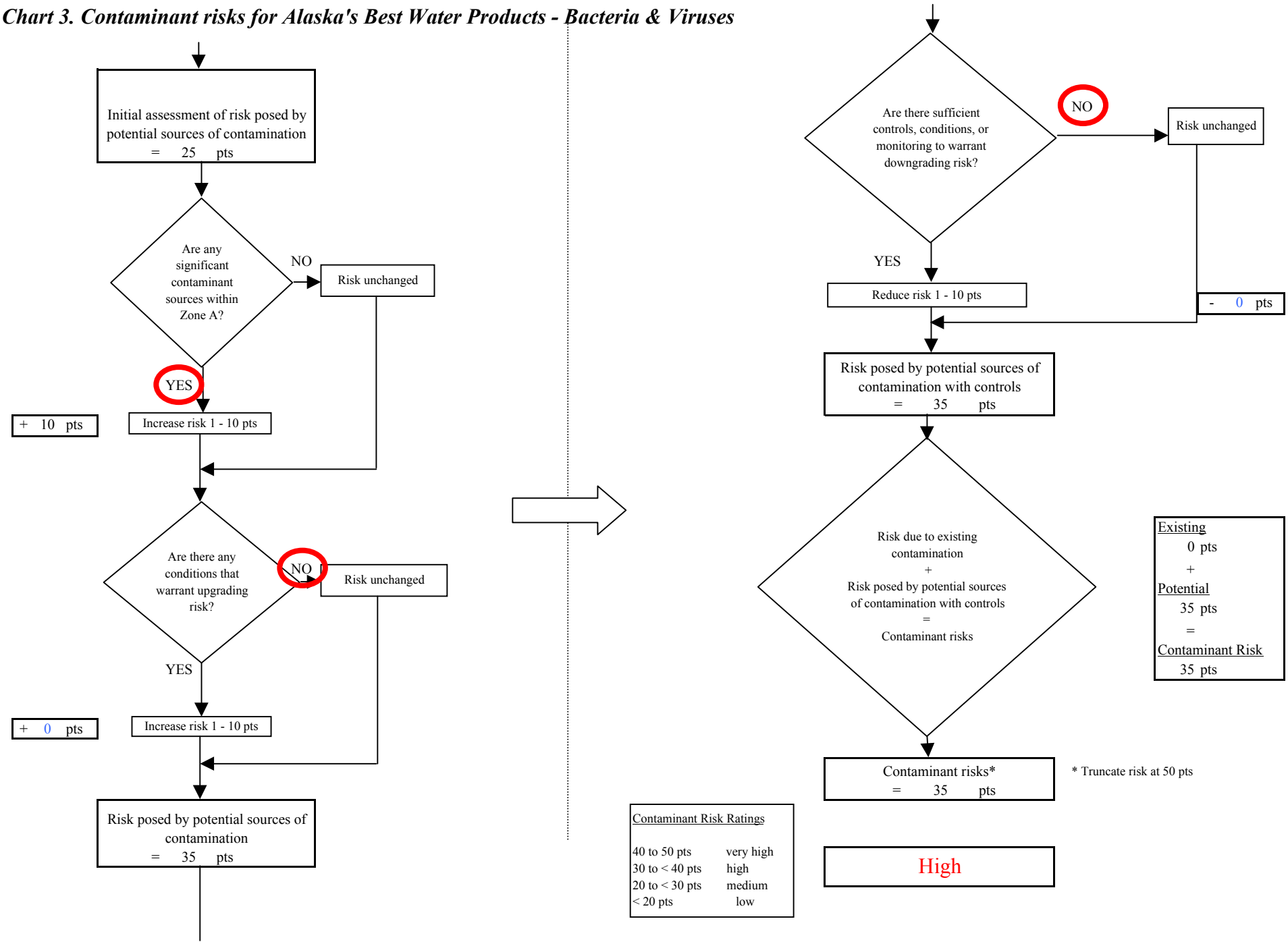


Chart 4. Vulnerability analysis for Alaska's Best Water Products - Bacteria & Viruses

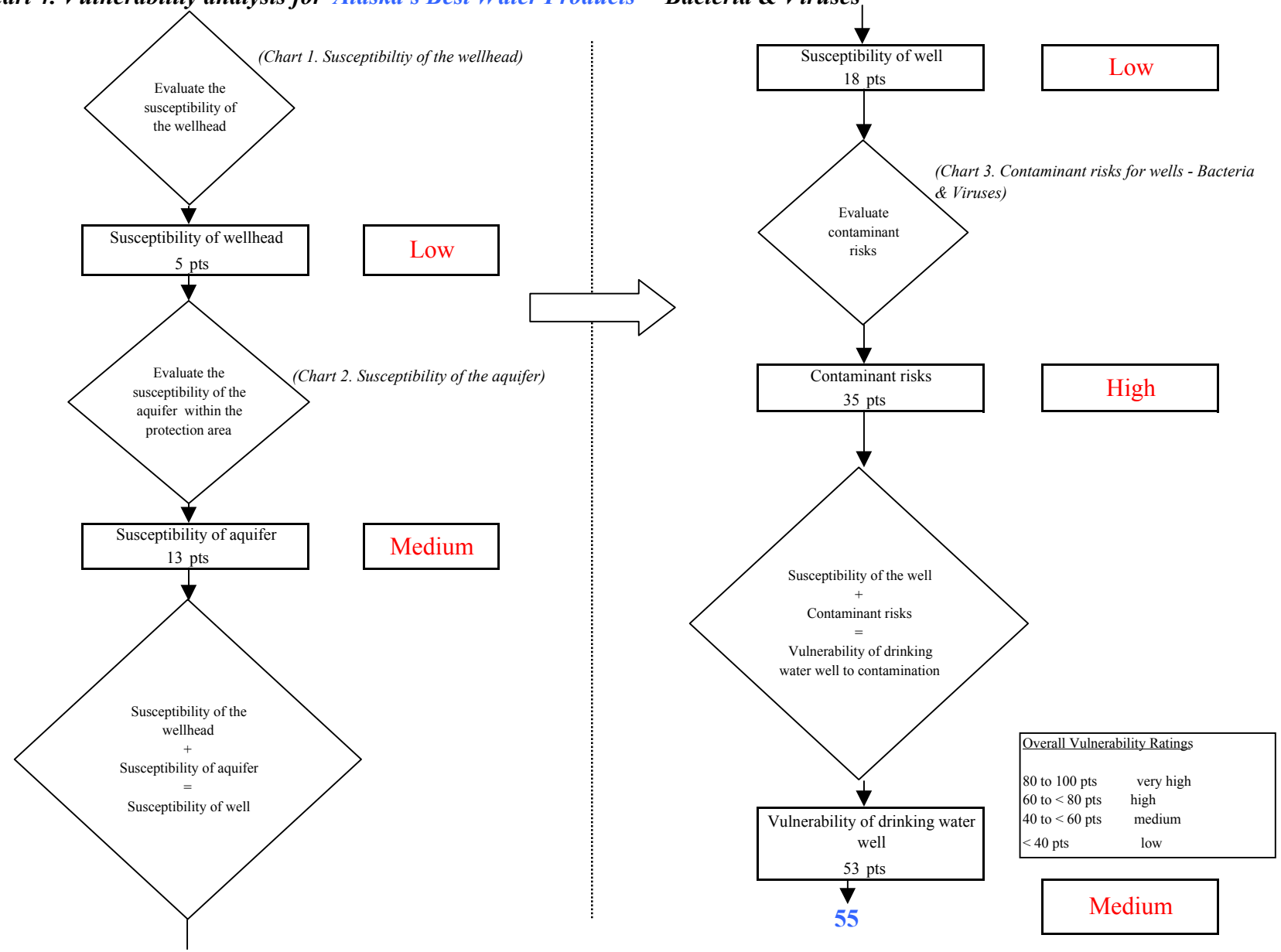


Chart 5. Contaminant risks for Alaska's Best Water Products - Nitrates and Nitrites

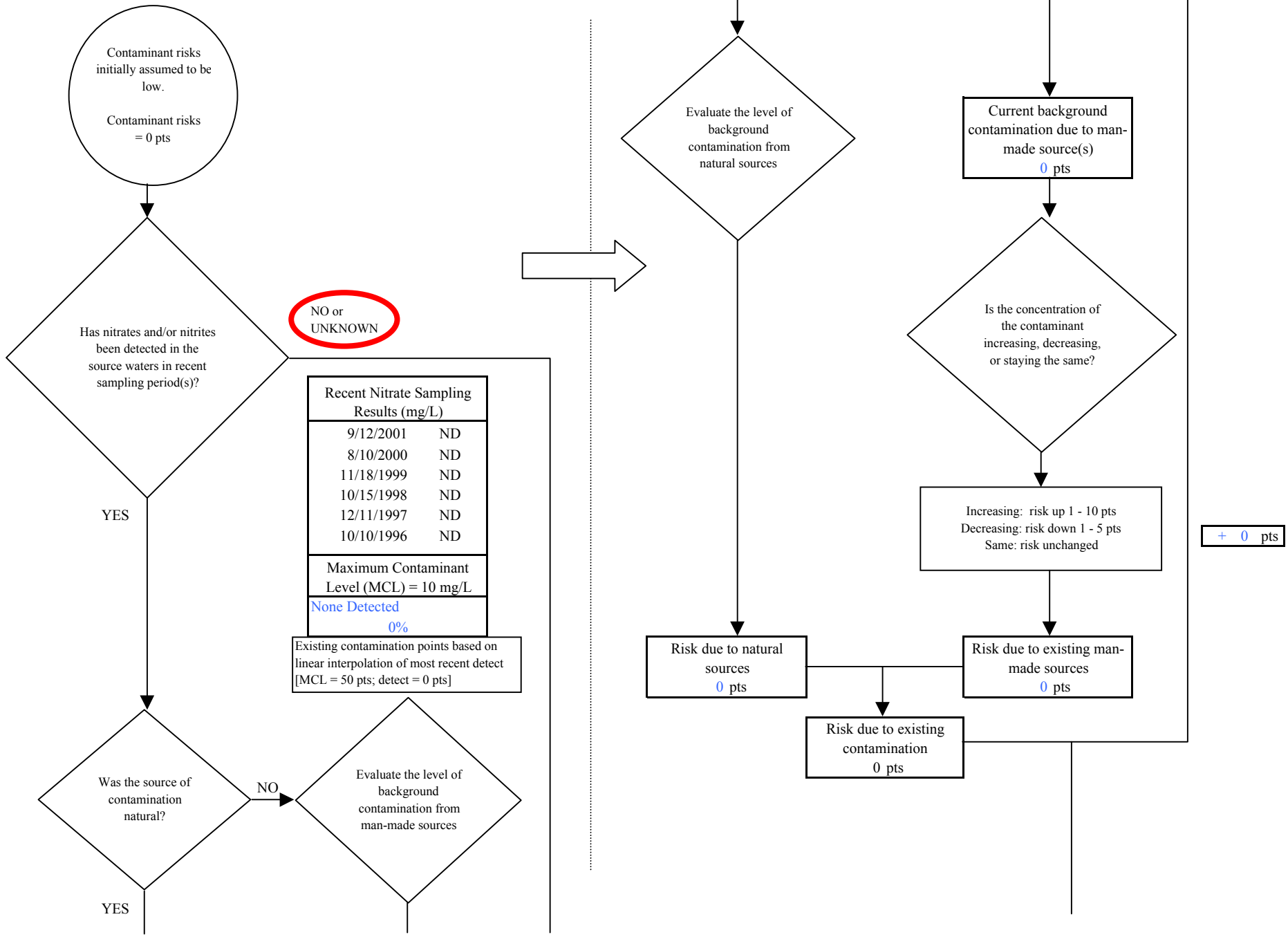


Chart 5. Contaminant risks for Alaska's Best Water Products - Nitrates and Nitrites

+ 25 pts

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

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

	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	1	0	1
Low(s)	10	5	15

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

Matrix Score 25

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

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

Is the source aquifer fractured rock or karst?

YES

NO

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

NO

Risk unchanged

YES

Decrease risk 1 - 10 pts

- 0 pts

Are any significant sources within Zone A?

NO

Risk unchanged

YES

Increase risk 1 - 10 pts

+ 8 pts

Chart 5. Contaminant risks for Alaska's Best Water Products - Nitrates and Nitrites

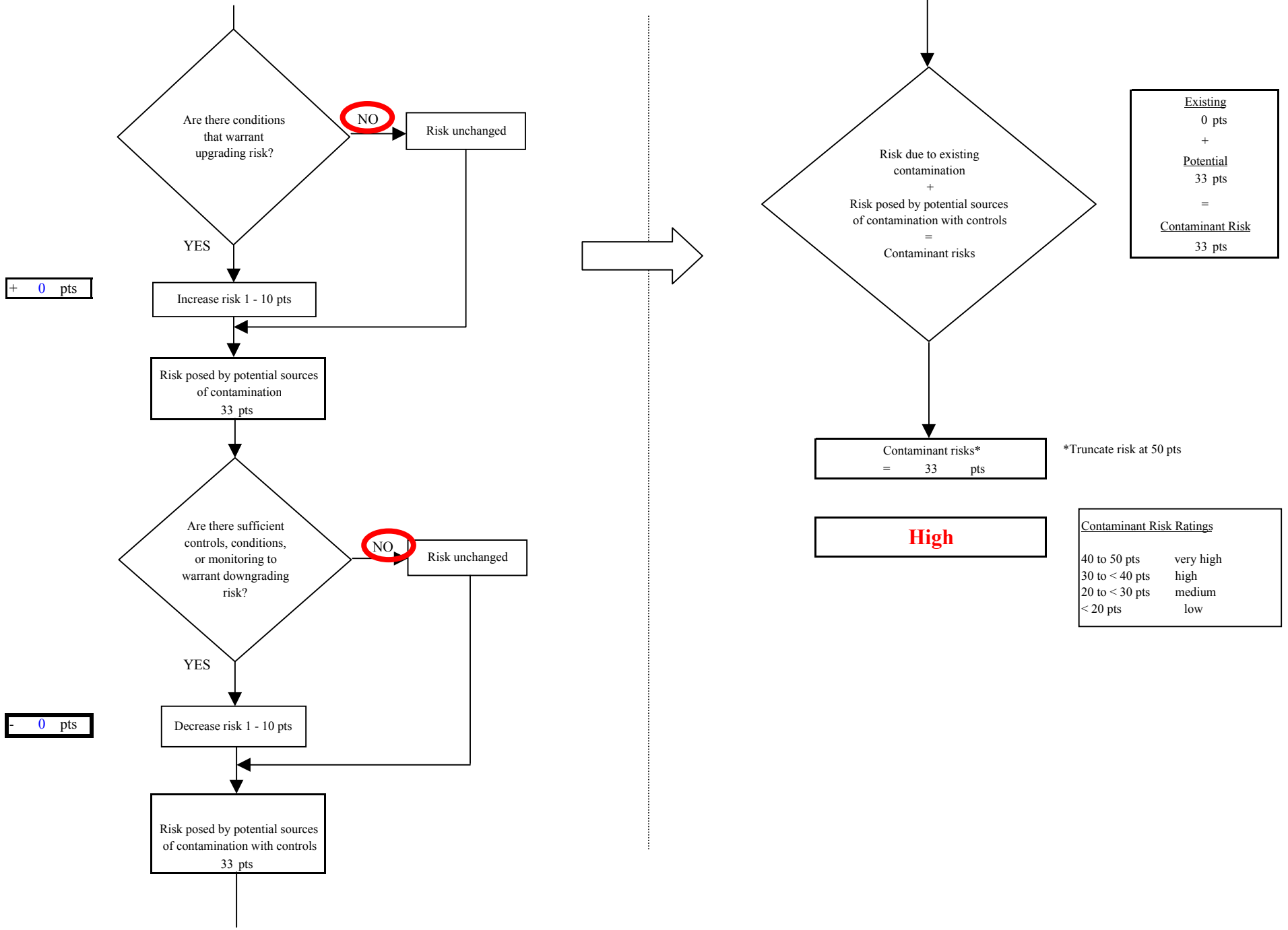


Chart 6. Vulnerability analysis for Alaska's Best Water Products - Nitrates and Nitrites

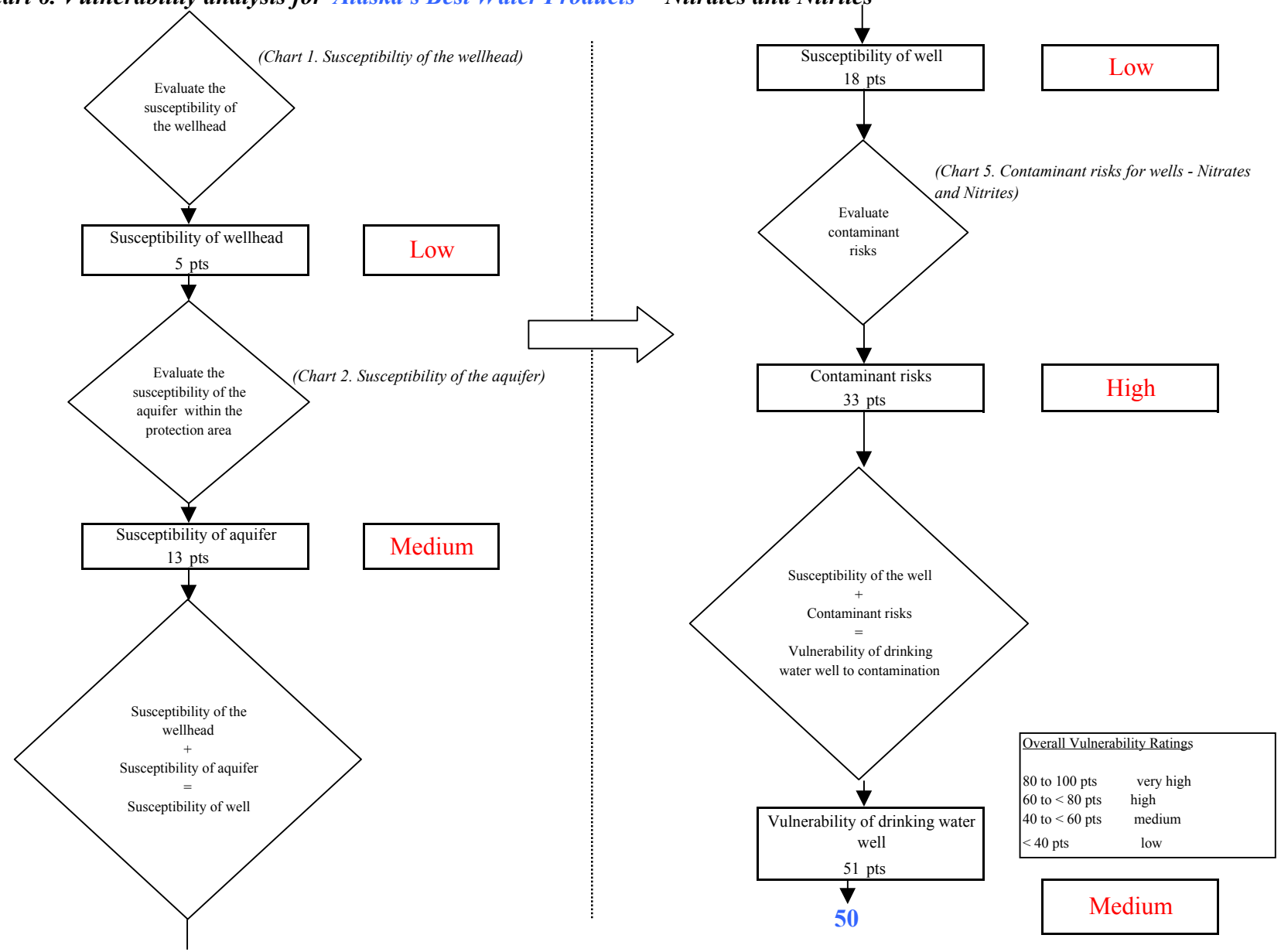


Chart 7. Contaminant risks for Alaska's Best Water Products - Volatile Organic Chemicals

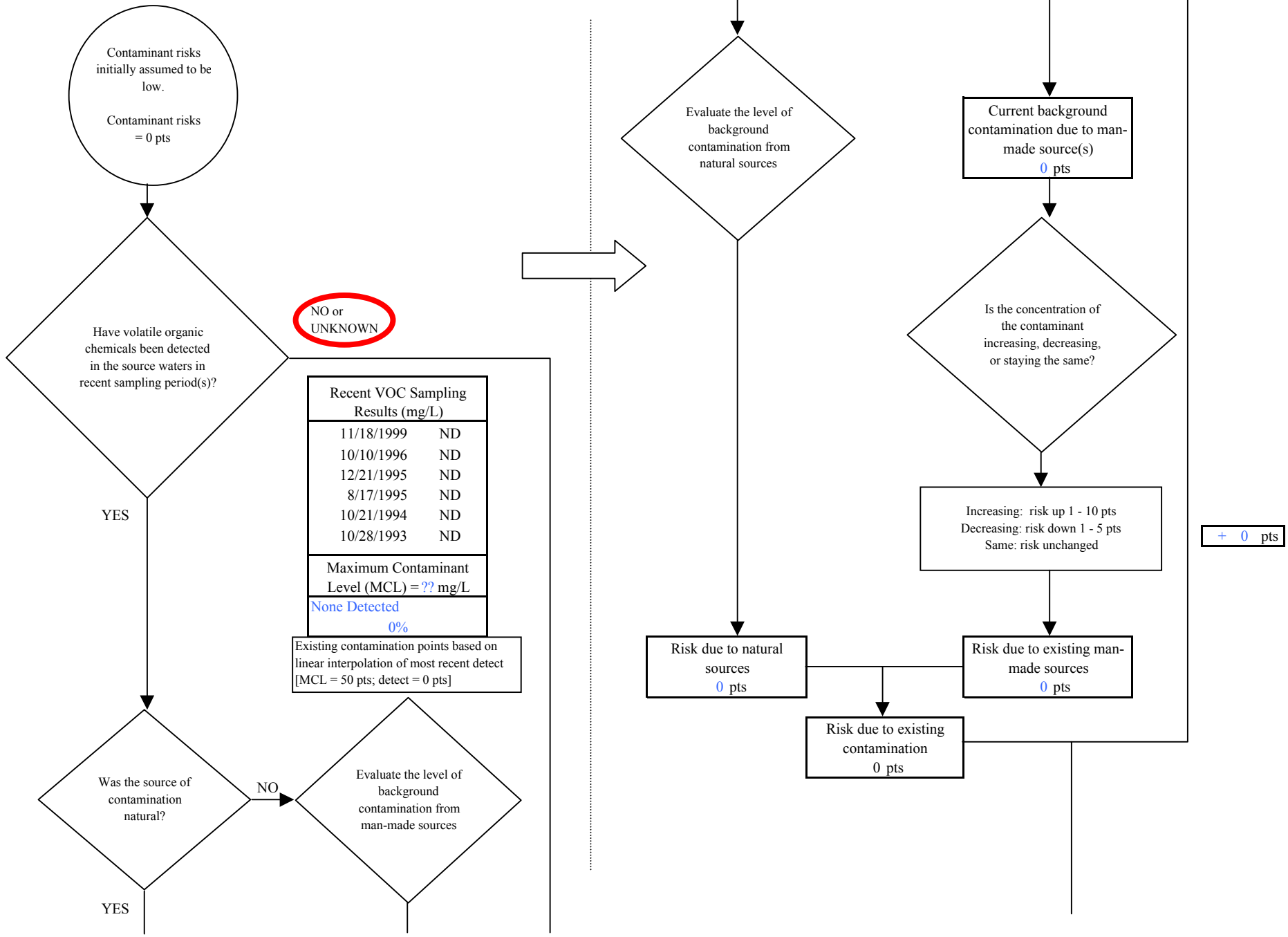


Chart 7. Contaminant risks for Alaska's Best Water Products - Volatile Organic Chemicals

+ 40 pts

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

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

	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	10	0	10
Medium(s)	13	2	15
Low(s)	19	7	26

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

Matrix Score 40

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

Initial assessment of risk posed by potential sources of contamination = 40 pts

Is the source aquifer fractured rock or karst?

YES

NO

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

NO

Risk unchanged

YES

Decrease risk 1 - 10 pts

- 0 pts

Are any significant sources within Zone A?

NO

Risk unchanged

YES

Increase risk 1 - 10 pts

+ 10 pts

Chart 7. Contaminant risks for Alaska's Best Water Products - Volatile Organic Chemicals

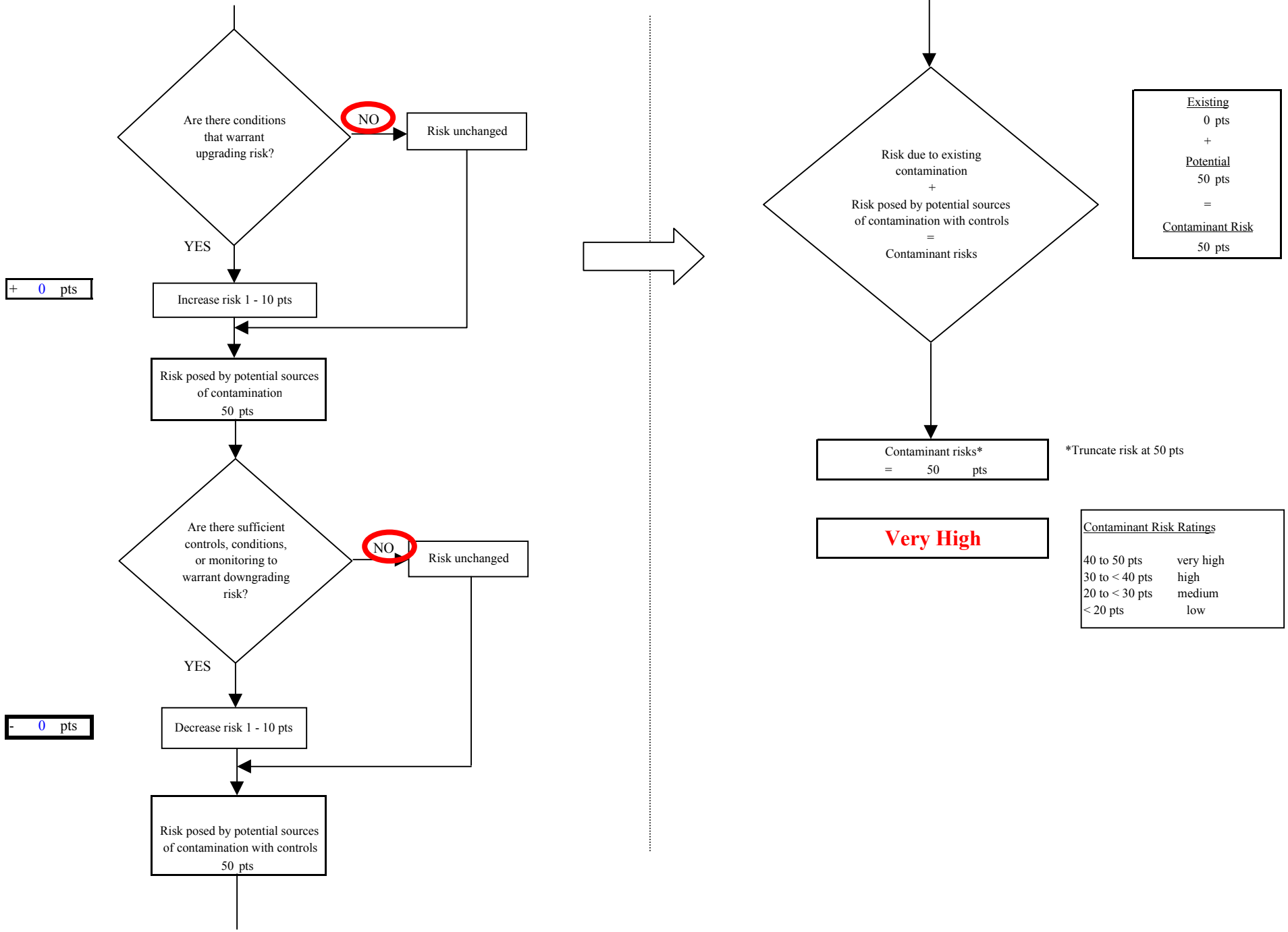


Chart 8. Vulnerability analysis for Alaska's Best Water Products - Volatile Organic Chemicals

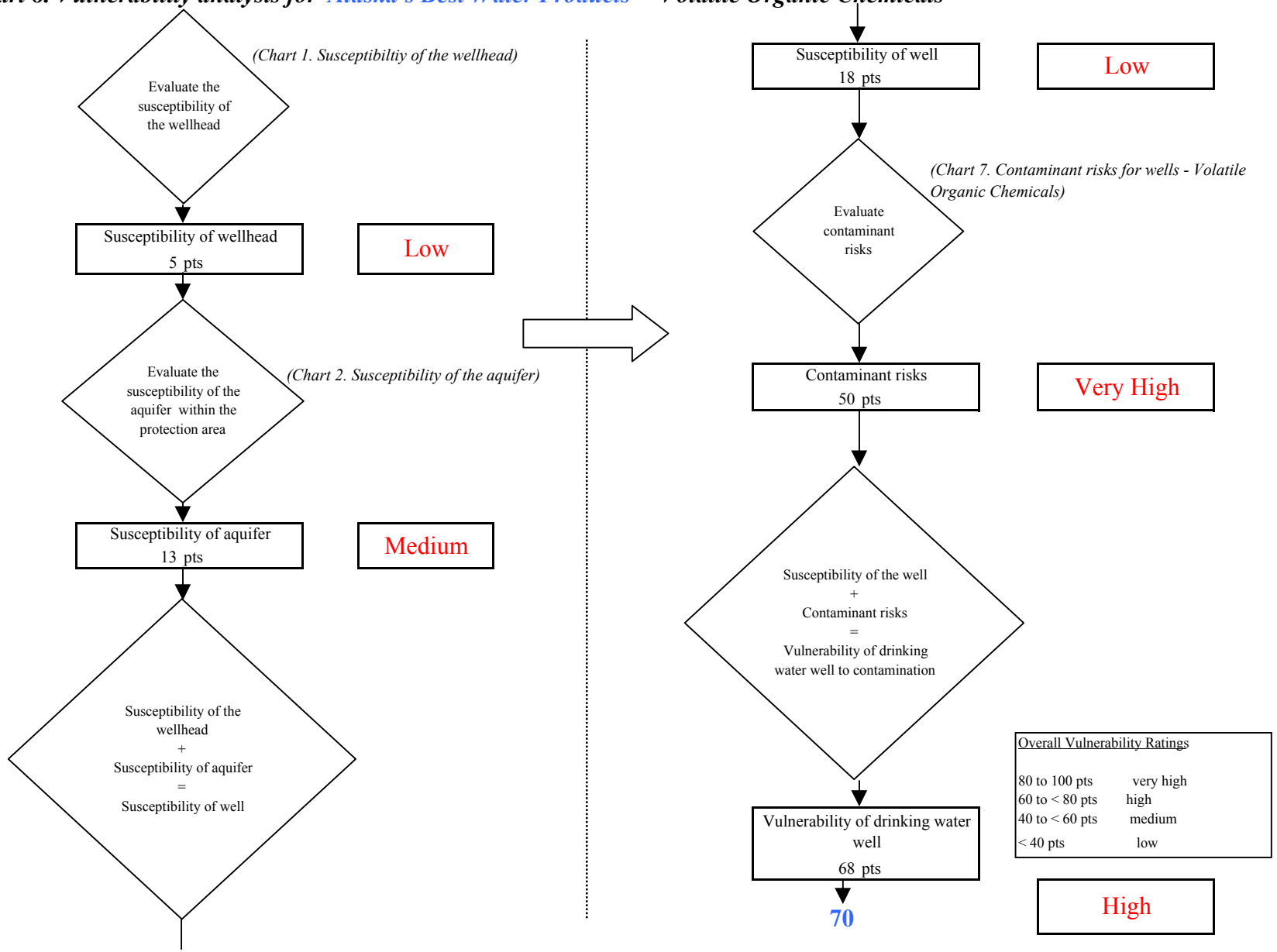


Chart 9. Contaminant risks for Alaska's Best Water Products - Heavy Metals, Cyanide and Other Inorganic Chemicals

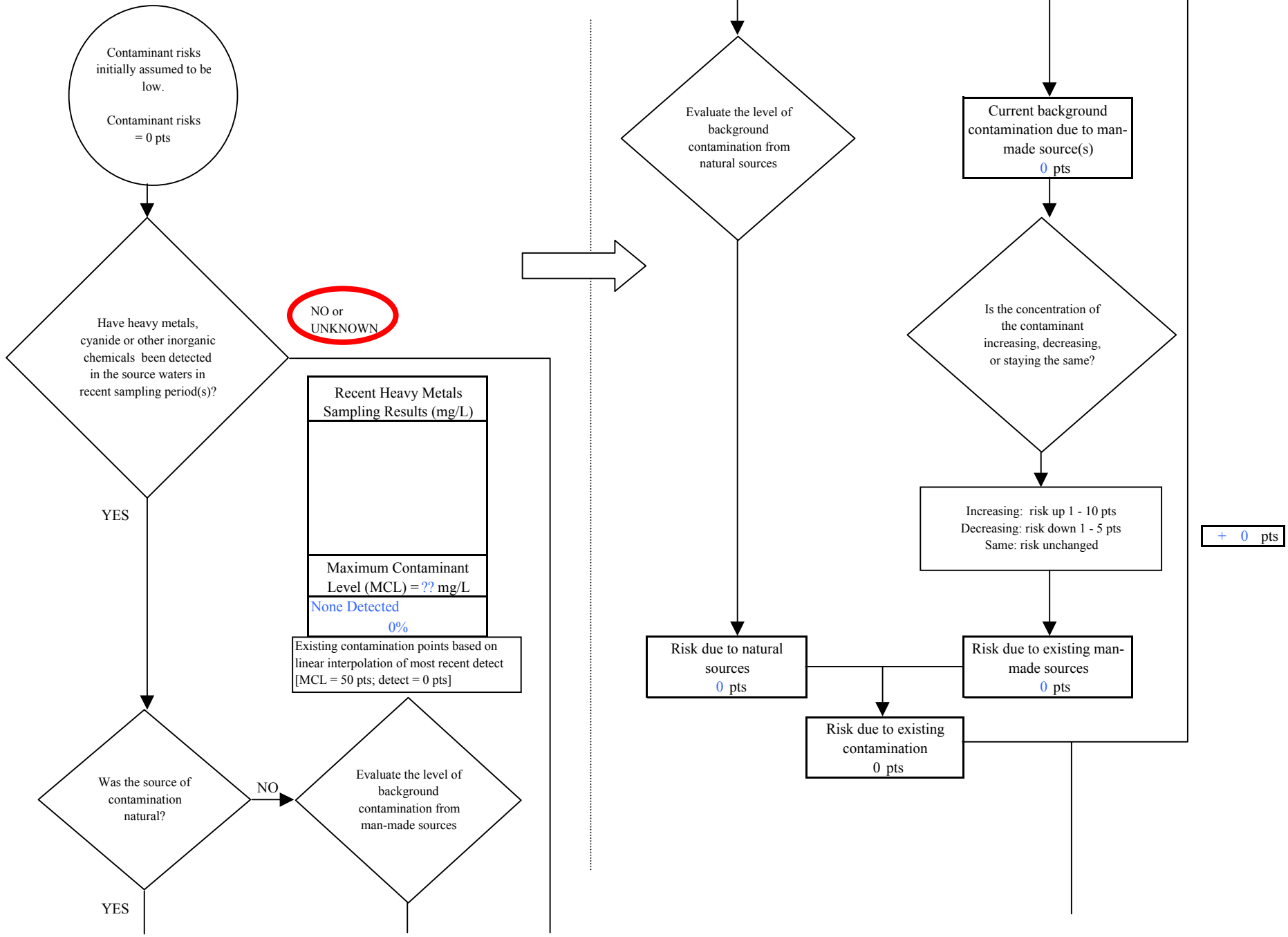


Chart 9. Contaminant risks for Alaska's Best Water Products - Heavy Metals, Cyanide and Other Inorganic Chemicals

+ 40 pts

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

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

	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	7	0	7
Medium(s)	7	0	7
Low(s)	29	10	39

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

Matrix Score 40

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

Initial assessment of risk posed by potential sources of contamination = 40 pts

Is the source aquifer fractured rock or karst?

YES

NO

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

NO

Risk unchanged

YES

Decrease risk 1 - 10 pts

- 0 pts

Are any significant sources within Zone A?

NO

Risk unchanged

YES

Increase risk 1 - 10 pts

+ 10 pts

Chart 9. Contaminant risks for Alaska's Best Water Products - Heavy Metals, Cyanide and Other Inorganic Chemicals

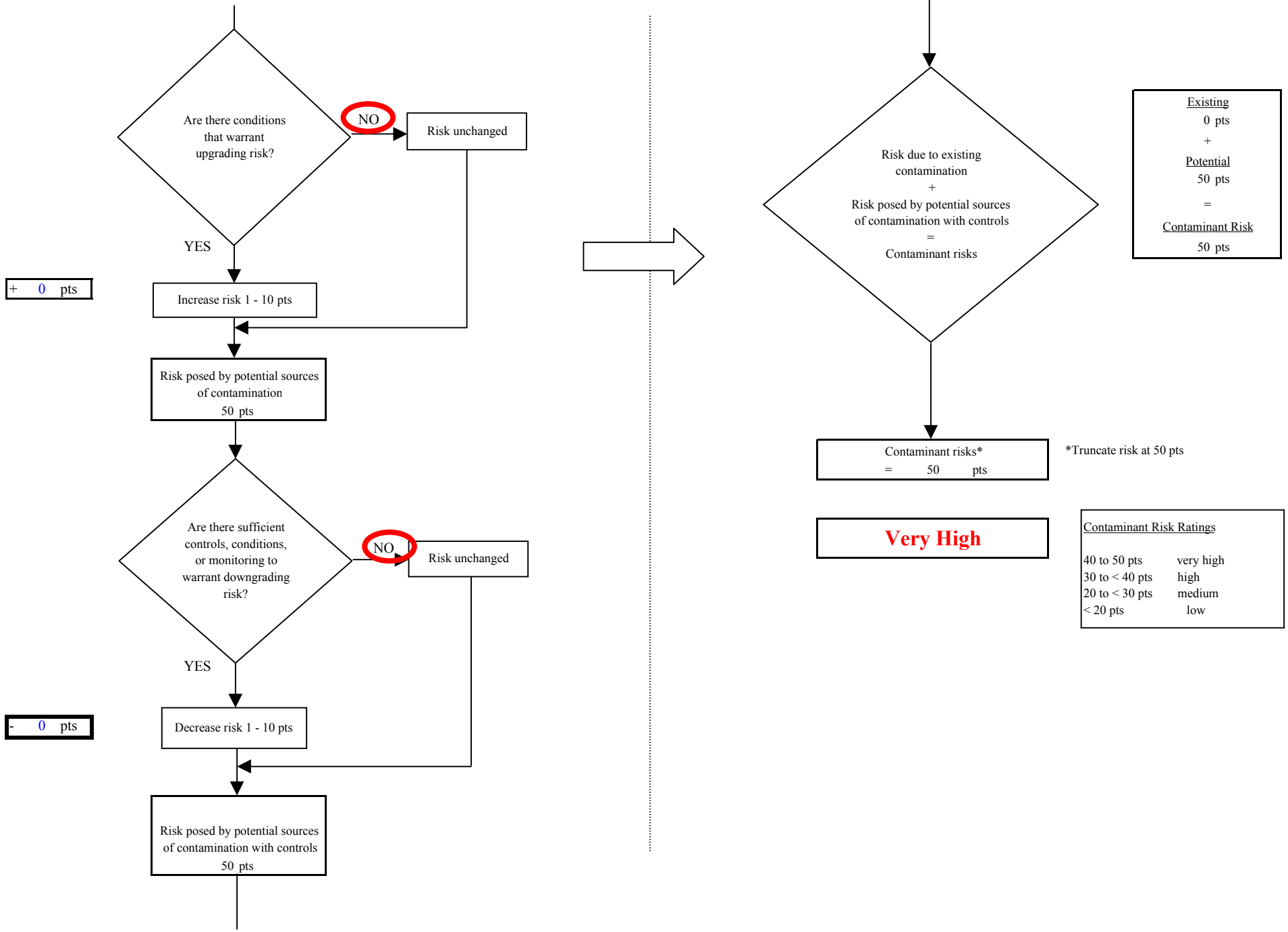


Chart 10. Vulnerability analysis for Alaska's Best Water Products - Heavy Metals, Cyanide and Other Inorganic Chemicals

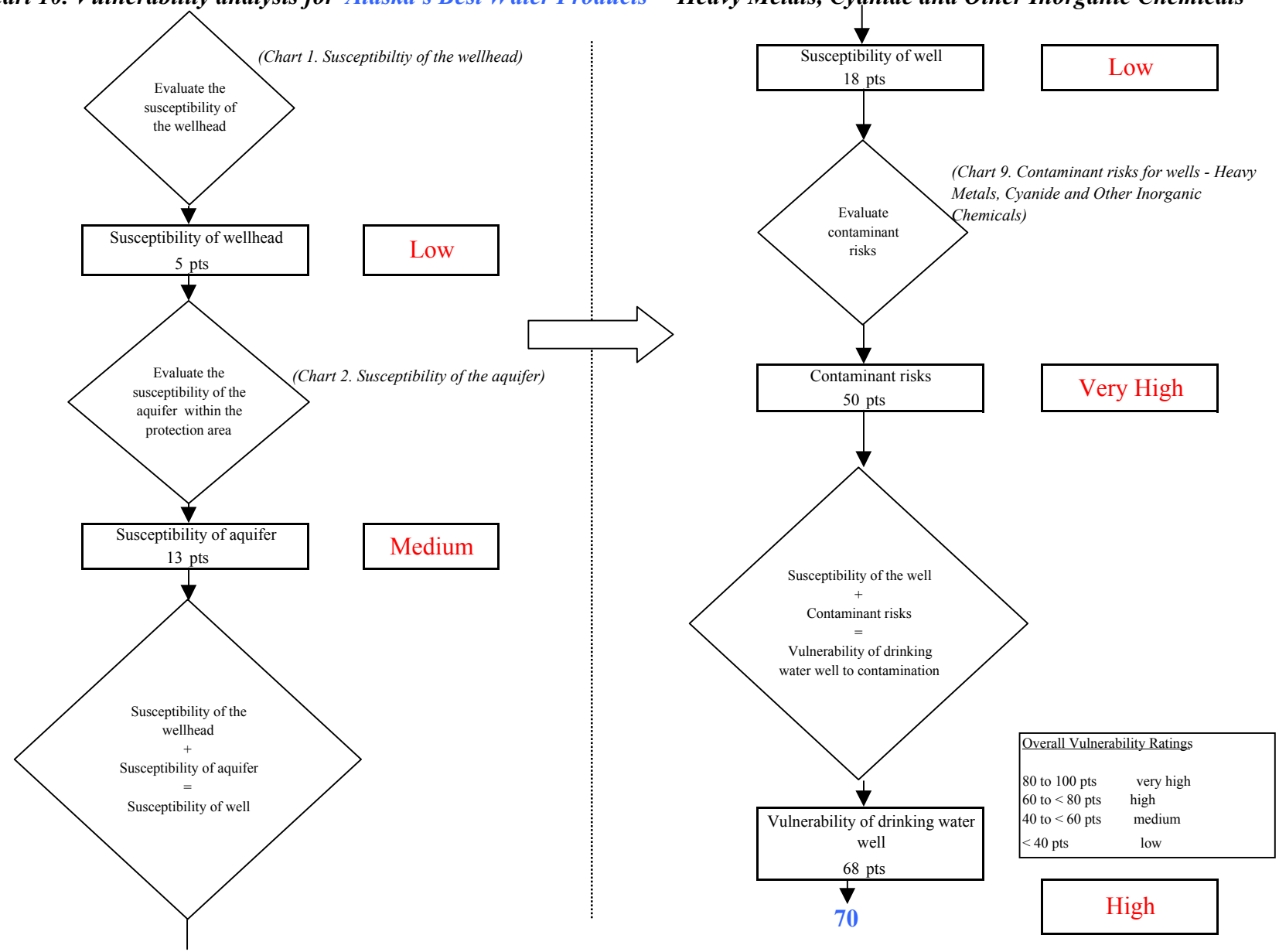


Chart 11. Contaminant risks for Alaska's Best Water Products - Synthetic Organic Chemicals

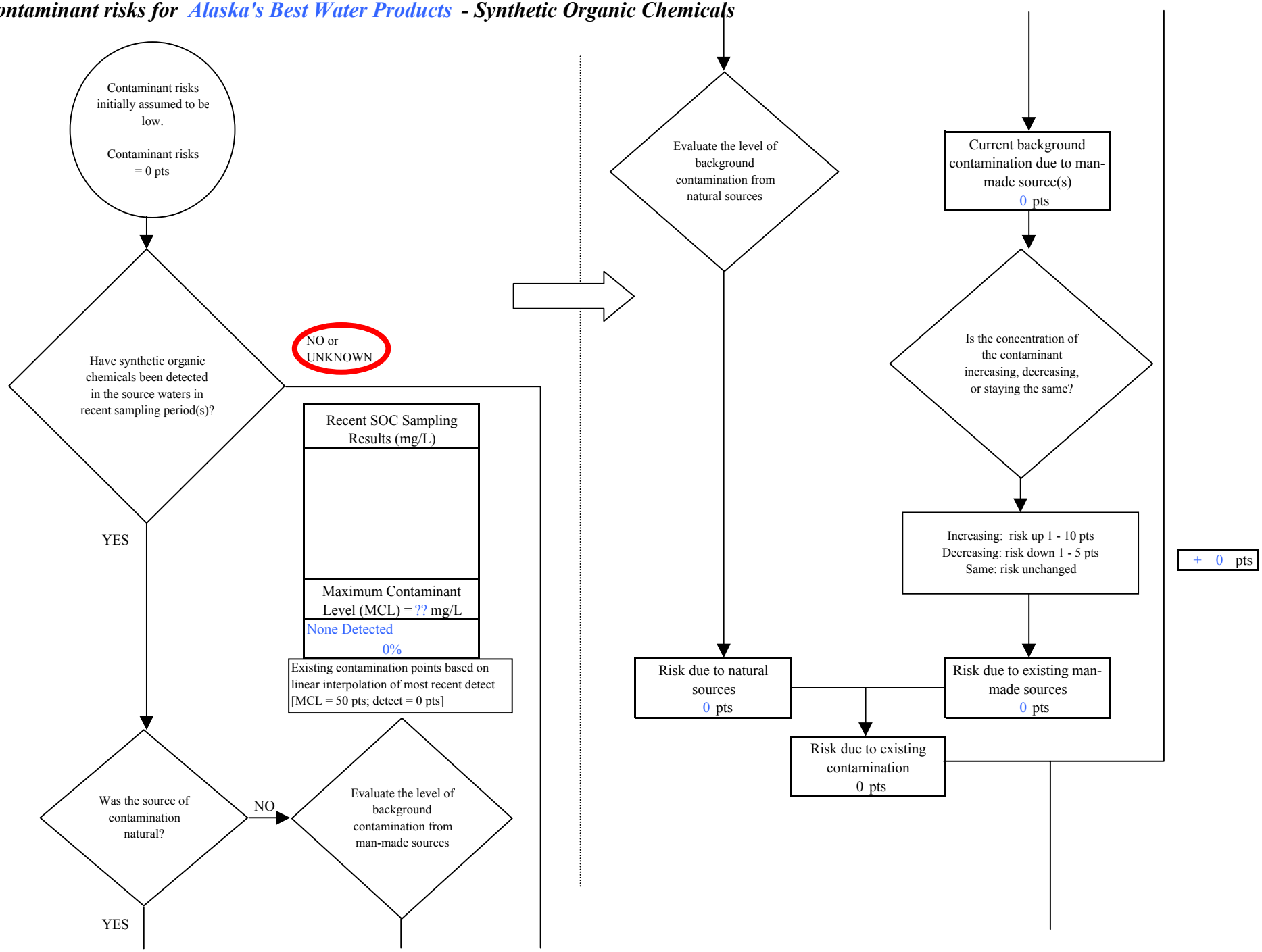


Chart 11. Contaminant risks for Alaska's Best Water Products - Synthetic Organic Chemicals

+ 25 pts

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

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

	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	0	0	0
Medium(s)	8	1	9
Low(s)	10	5	15

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

Matrix Score 25

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

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

Is the source aquifer fractured rock or karst?

YES

NO

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

NO

Risk unchanged

YES

Decrease risk 1 - 10 pts

- 0 pts

Are any significant sources within Zone A?

NO

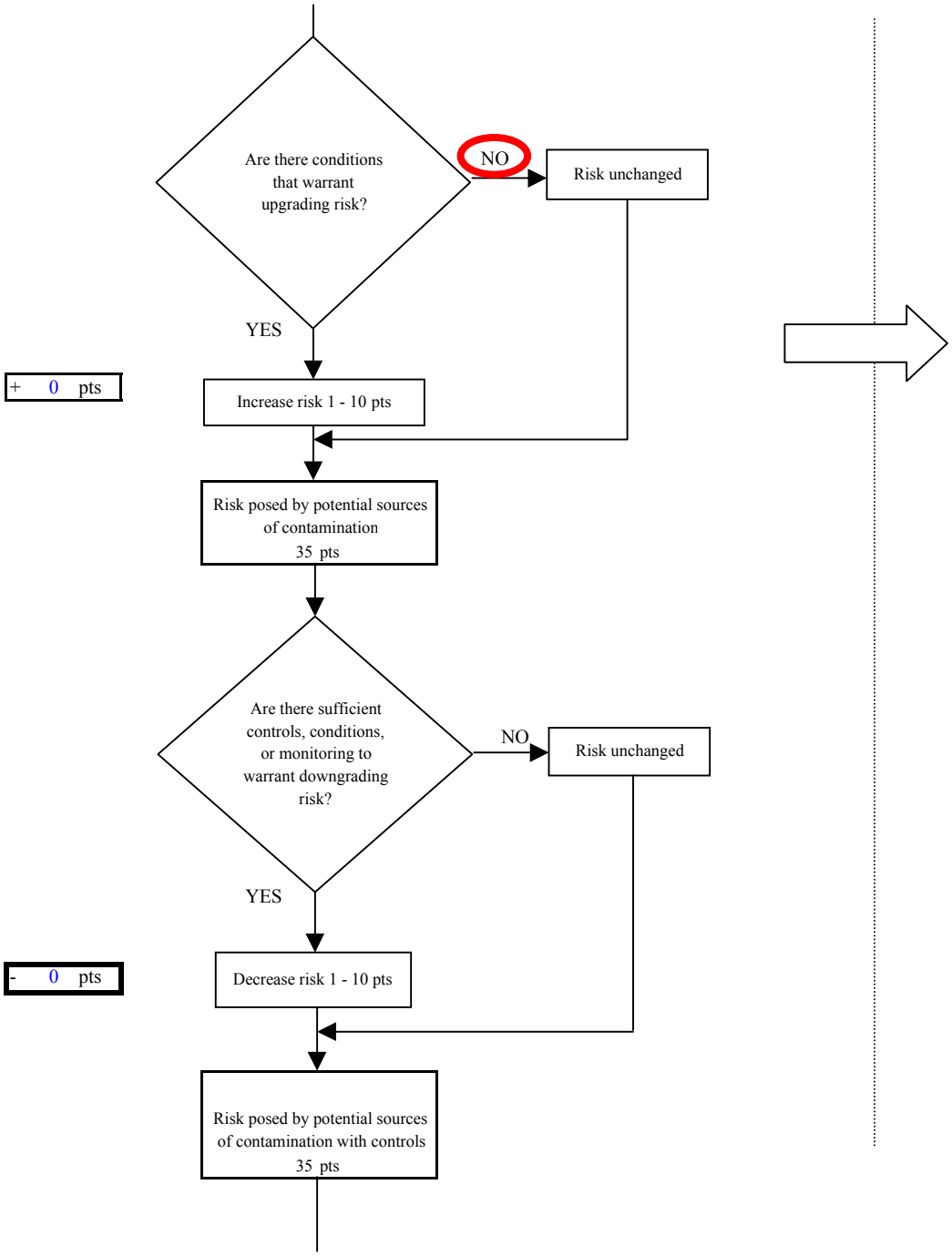
Risk unchanged

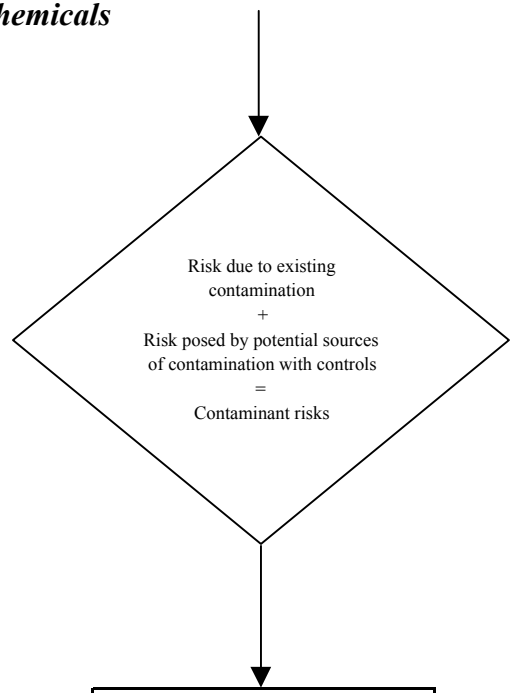
YES

Increase risk 1 - 10 pts

+ 10 pts

Chart 11. Contaminant risks for Alaska's Best Water Products - Synthetic Organic Chemicals





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

Contaminant risks*
= 35 pts

*Truncate risk at 50 pts

High

Contaminant Risk Ratings

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

Chart 12. Vulnerability analysis for Alaska's Best Water Products - Synthetic Organic Chemicals

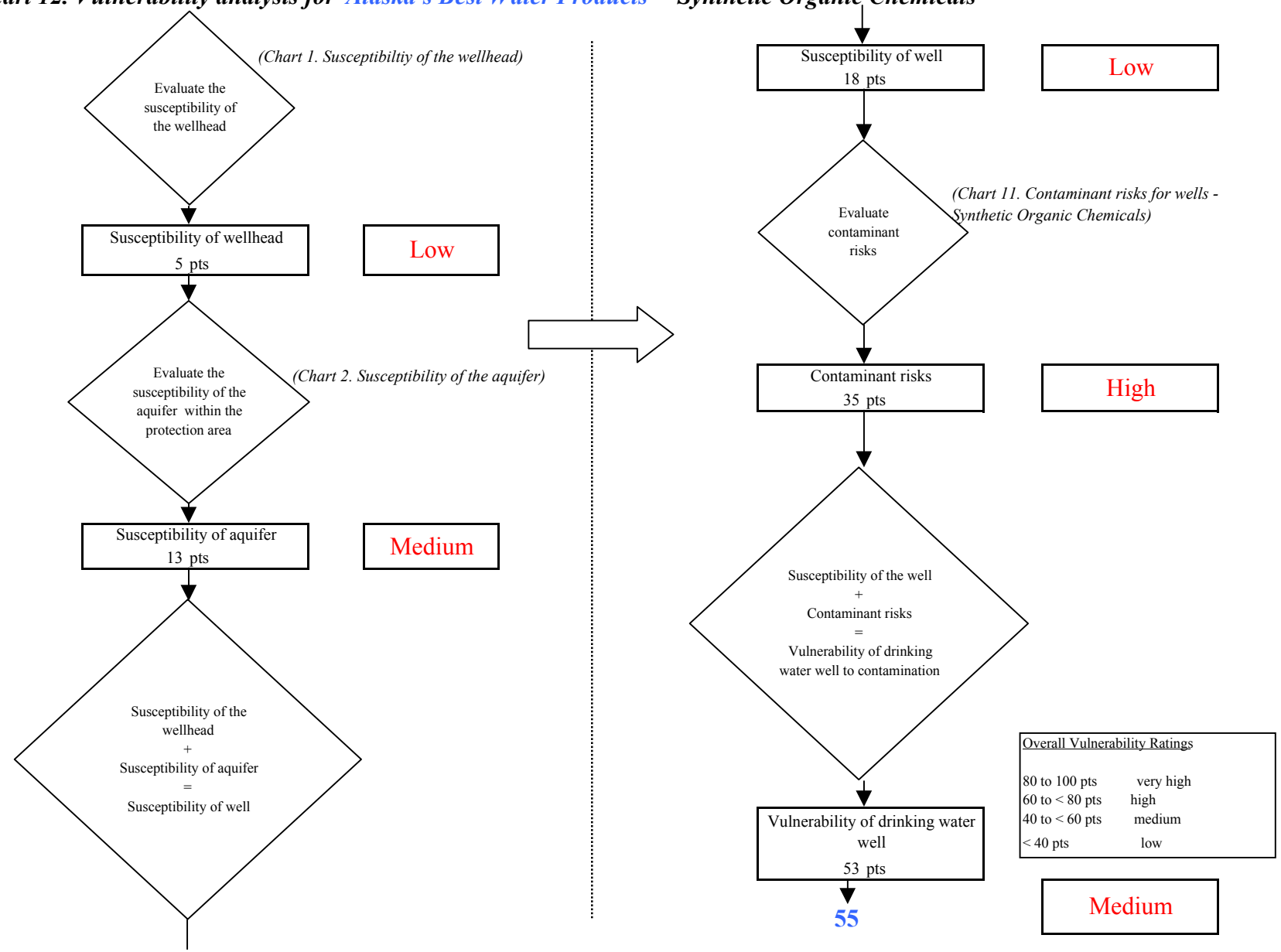


Chart 13. Contaminant risks for Alaska's Best Water Products - Other Organic Chemicals

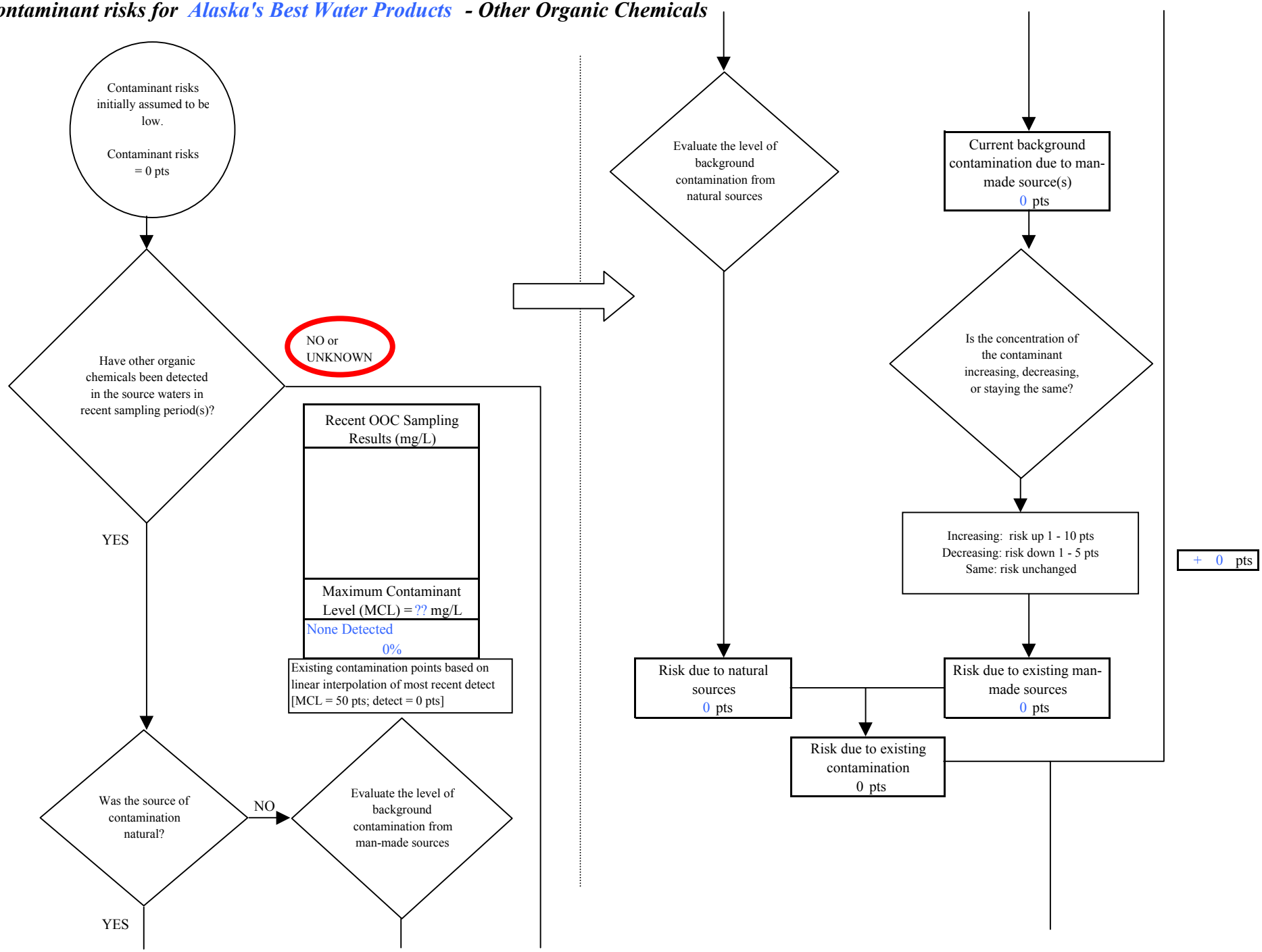


Chart 13. Contaminant risks for Alaska's Best Water Products - Other Organic Chemicals

+ 40 pts

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

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

	Zone A	Zones B&C	Total
Very Highs(s)	0	0	0
High(s)	8	1	9
Medium(s)	10	1	11
Low(s)	13	4	17

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

Matrix Score 40

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

Initial assessment of risk posed by potential sources of contamination = 40 pts

Is the source aquifer fractured rock or karst?

YES

NO

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

NO

Risk unchanged

YES

Decrease risk 1 - 10 pts

- 0 pts

Are any significant sources within Zone A?

NO

Risk unchanged

YES

Increase risk 1 - 10 pts

+ 10 pts

Chart 13. Contaminant risks for Alaska's Best Water Products - Other Organic Chemicals

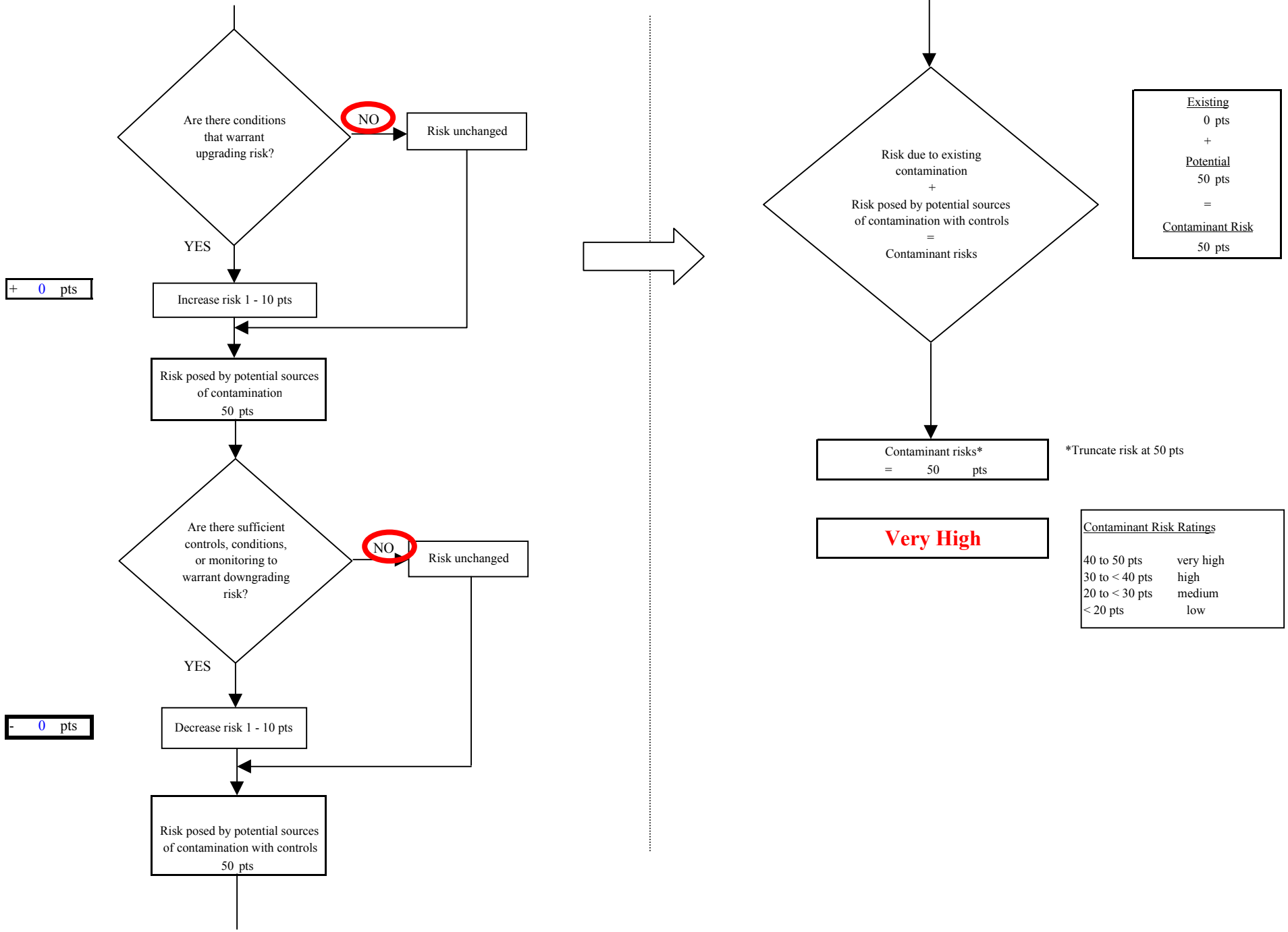


Chart 14. Vulnerability analysis for Alaska's Best Water Products - Other Organic Chemicals