A Source Water Assessment (SWA) for

PWSID #227220 – Camwell on the Green –Well 1

What is an SWA?

The Drinking Water Protection group of the Drinking Water Program is producing Source Water Assessments (SWAs) in compliance with the Safe Drinking Water Act (SDWA) Amendments of 1996. Each SWA includes:

- A delineation of the drinking water source area;
- Inventory of potential and existing sources of contamination;
- Risk ranking for the identified contaminants;
- Evaluation of the overall vulnerability to the PWS source.

What is a Protection Area?

The most probable area for contamination to reach the drinking water well is within the drinking water protection area (DWPA). The DWPA for a groundwater source is the area around the well (the area influenced by pumping) and also the area upgradient of the well, usually forming a parabola shape. Because releases of contaminants within the DWPA are most likely to impact the well, this area will serve as the focus for voluntary protection efforts.

The DWPAs established for wells by DEC are separated into 2 zones, limited by the watershed. The following is a summary of the two zones for wells and the estimated time-of-travel for each:

Zone	Definition
A	Several months time-of-travel
B	Less than the 2 year time-of-travel

Natural Susceptibility

Susceptibility of a groundwater source is a measure of a water supply's potential to become contaminated based on information gathered on the wellhead and the aquifer.

Table 1: Public Water System Source Information

PWS Name	Camwell on the Green
PWSID Number	227220
Federal Designation	Community water system (CWS)
State Assigned ID	WL001
Facility Name	Well 1
Source Type	Groundwater
Total Depth of Well (ft bls*)	161
Static Water Level (ft bls*)	96
Aquifer Type	Unconfined
Aquifer Formation	Gravel and sand
Description and Cumulative Thickness of Barrier (ft)	N/A
Date Well Completed	09/08/1983

**"ft bls" = feet below land surface

Executive Summary

The public water system (PWS) for Camwell on the Green is a Community water system (CWS) consisting of one (1) active well at the time of this report, and is located in Wasilla, Alaska. This report is an assessment of well WL001 (Well 1). An assessment of the susceptibility of the wellhead and aquifer to contamination, and the vulnerability of the well to potential and existing contamination were evaluated as of November, 2013. The wellhead for WL001 received a susceptibility rating of ***Low*** and the aquifer received a susceptibility rating of ***Very High***. Combining these two ratings produces a ***High*** rating for the natural susceptibility of the well and aquifer. Identified potential and existing sources of contamination for Camwell on the Green WL001 include cropland, orchards or nurseries, gasoline station(s), paint sales/services, a Class III Landfill, coal mining, quarries, residential areas, residential septic systems, underground diesel tanks, above and underground gasoline tanks, underground heating oil tanks, 2 contaminated sites, 2 open leaking underground fuel storage tanks, multiple water rights locations, golf courses, solvents storage, airports, paved roads and highways, and gravel roads. These are considered sources one or more of the following six (6) contaminant risk categories: 1) bacteria and viruses; 2) nitrates and/or nitrites; 3) volatile organic chemicals (VOCs); 4) heavy metals, cyanide, and other inorganic chemicals (inorganic chemicals); 5) synthetic organic chemicals (SOCs); and 6) other organic chemicals (OOCs).

Combining the natural susceptibility of the well and aquifer with the six (6) contaminant risk categories, Camwell on the Green WL001 received an overall vulnerability rating of ***High*** for bacteria and viruses; ***Very High*** for nitrates and/or nitrites; ***Very High*** for VOCs; ***Very High*** for inorganic chemicals; and a ***Very High*** for SOCs and ***Very High*** for OOCs.

Introduction

Source Water Assessments (SWAs) are intended to provide PWS operators, owners, communities, and local governments with the best available information that may be used to protect the quality of their drinking water. The SWA for Camwell on the Green WL001 is a tool to be used as the foundation or "stepping stone" to comprehensive management and protection of its groundwater resource. Protecting the quality of your drinking water is a sensible investment.

Drinking Water Protection Area

For groundwater sources, a combination of a numerical flow model and natural factors such as drainage divides, subsurface barriers, and manmade structures are used to determine the size and shape of the Drinking Water Protection Area (DWPA). The orientation of the DWPA is typically drawn using a groundwater surface, or a land surface, elevation map. Because of uncertainties and changing site conditions, a factor of safety is added in calculating the size of the DWPA. (See Map1 of the Appendices)

Natural Susceptibility (Wellhead and Aquifer)

The susceptibility of a wellhead to the introduction of contaminants to the drinking water is determined by, but not limited to, the following risk factors: presence of a sanitary seal, protection from flooding, drainage, and presence of adequate grouting.

The wellhead for Camwell on the Green WL001 received a ***Low*** susceptibility rating. The most recent sanitary survey (completed October 2010) indicates that the well is capped with a sanitary seal, is not in a floodplain, the land surface is sloped to drain away from the wellhead, but a subsurface grout seal is **not** installed. A sanitary seal prevents potential contaminants from entering the well while sloping of the land surface and grouting help to prevent potential contaminants from traveling down the outside of the well casing, or through casing seams/cracks to the inside of the well casing, and into the well and/or aquifer.

The susceptibility of an aquifer to the introduction of contaminants is determined by, but not limited to, the following risk factors: whether the aquifer is confined or unconfined, whether the well is completed in unconsolidated or fractured bedrock, whether other nearby wells and bore holes are penetrating the aquifer and if applicable the characteristics of the confining layer(s).

Camwell on the Green WL001 draws water from an unconfined aquifer completed in varying proportions of mainly sand and gravel. It received a ***Very High*** susceptibility rating primarily because of the many water wells and water rights located within the DWPA and the lack of a confining layer. A confined aquifer is generally more protected than an unconfined aquifer from the infiltration of surface water potentially carrying contaminants migrating downward to the aquifer. However, other wells that penetrate the confining layers create a potential pathway for surface water and contaminants to the aquifer.

The Natural Susceptibility of the well and aquifer to contamination is ***High***. Table 2 summarizes the susceptibility ratings for Camwell on the Green WL001.

Table 2: Susceptibility Ratings

Susceptibility of the wellhead	***Low***
+	
Susceptibility of the aquifer	***Very High***
=	
Natural susceptibility	***High***

Inventory of Potential and Existing Sources Contamination

The Drinking Water Protection (DWP) group has completed an inventory of potential and existing sources of contamination within the DWPA for Camwell on the green WL001. This inventory was completed through a search of agency records and other publicly available information. Potential sources of contamination include a wide range of categories and types. Potential drinking water contaminants are found within agricultural, residential, commercial, and industrial areas, but can also occur within areas that have little or no development. The identified potential sources of contamination are summarized in Table 3 and are portrayed in Map 2 of the Appendices.

Table 3: Contaminant Source Inventory

Contaminant Source Type	Contaminant Source ID	Zone	Comments
Cropland	A02-01	A	Lugdunum Properties LLC
Cropland	A02-02	A	
Gasoline stations (without repair shop)	C15-01	A	Hinchinbrook Chevron
Paint sales /service	C32-01	A	Aircraft Paint Services
Paint sales /service	C32-02	A	Aircraft Paint Services
Landfills (municipal; Class III)	D51-01	A	Landfillls (municipal; Class III)
Quarries	E10-01	A	Associated Aggregate Pit and Plant (surface)
Quarries	E10-03	A	Matanuska River Pit (surface)
Residential Areas	R01-01-600	A	Residential Areas (assumed less than 600 acres)
Septic systems (serves one single-family home)	R02-01-20	A	Assumed less than 20
Tanks, diesel (underground)	T08-01	A	Wood's Air Fuel
Tanks, diesel (underground)	T08-02	A	Hinchinbrook Chevron
Tanks, gasoline (above ground)	T10-01	A	APC/Old Bus Barn
Tanks, gasoline (underground)	T12-01	A	Wood's Air Fuel
Tanks, gasoline (underground)	T12-02	A	Wood's Air Fuel
Tanks, gasoline (underground)	T12-03	A	Hinchinbrook Chevron

Contaminant Source Type	Contaminant Source ID	Zone	Comments
Tanks, gasoline (underground)	T12-04	A	Hinchinbrook Chevron
Tanks, heating oil, nonresidential (underground)	T16-01	A	Hinchinbrook Chevron
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04-01	A	Briggs Property; Status: Active; Hazard ID: 2597; Contaminant of concern: TCE; Groundwater Ingestion: Low Potential Exposure ; http://dec.alaska.gov/Applications/SPAR/CCReports/Site_Report.aspx?Hazard_ID=2597
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07-01	A	Woods Air Fuel; Status: Cleanup complete - Institutional controls; Hazard ID: 25108; Contaminant of Concern: Benzene, DRO; Groundwater Ingestion: None; http://dec.alaska.gov/Applications/SPAR/CCReports/Site_Report.aspx?Hazard_ID=25108
Open Leaking Underground Fuel Storage Tank (LUST) Sites	U07-02	A	Woods Air Fuel; Status: Cleanup Complete; Hazard ID: 22957; Contaminant of Concern: BTEX, GRO, Lead (total); Groundwater Ingestion: None; http://dec.alaska.gov/Applications/SPAR/CCReports/Site_Report.aspx?Hazard_ID=22957
Water supply wells	W09-01	A	Multiple water rights locations
Golf courses	X02-01	A	Palmer Golf Course
Solvents (storage)	X13-01	A	Palmer Airport Paint Shop
Airports	X14-01	A	Palmer Municipal Airport
Highways and roads, paved (cement or asphalt)	X20-01-20	A	Assumed less than 20
Orchards or nurseries	A10-01	B	Bushes Bunches Greenhouses and Gardens
Coal mining	E01-01	B	(active or inactive?)
Quarries	E10-02	B	Lazy Mountain (unknown)
Residential Areas	R01-601-3600	B	Residential Areas (assumed less than 3,000 acres)
Septic systems (serves one single-family home)	R02-21-270	B	Assumed less than 250
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04-02	B	Former Mom and Pop's Grocery and Gas; Status: Active; Hazard ID: 22919; Contaminant of Concern: (none); Groundwater Ingestion: High Potential Exposure; http://dec.alaska.gov/Applications/SPAR/CCReports/Site_Report.aspx?Hazard_ID=22919
Water supply wells	W09-02	B	Multiple water rights locations
Highways and roads, paved (cement or asphalt)	X20-21-70	B	Assumed less than 50
Highways and roads, dirt/gravel	X24-01-50	B	Assumed less than 50

Contaminant Risks

Inventoried contaminant sources are sorted by the Drinking Water Protection (DWP) group according to the six (6) major categories of contaminants regulated for drinking water: 1) bacteria and viruses; 2) nitrates and/or nitrites; 3) volatile organic chemicals (VOCs); 4) heavy metals, cyanide, and other inorganic chemicals (inorganic chemicals); 5) synthetic organic chemicals (SOCs); and 6) other organic chemicals (OOCs). The contaminant sources are then given a ranking (within each category) according to the density of sources within the DWPA, the PWS sampling history, as well as the degree of risk posed to human health based on the volume, toxicity, persistence, and the mobility of the contaminants involved. The contaminant risk rankings are summarized in Table 4.

Table 4: Contaminant Risk Rankings

Contaminant Source Type	Contaminant	Zone	Bacteria	Nitrates	VOC	Metals	SOC	OOC
Cropland	A02-01	A	N/A	High	N/A	Medium	High	N/A
Cropland	A02-02	A	N/A	High	N/A	Medium	High	N/A
Gasoline stations (without repair shop)	C15-01	A	N/A	N/A	High	Low	N/A	Low
Paint sales /service	C32-01	A	N/A	N/A	Medium	Low	Low	N/A
Paint sales /service	C32-02	A	N/A	N/A	Medium	Low	Low	N/A
Landfills (municipal; Class III)	D51-01	A	High	Very High	High	High	Very High	Very High
Quarries	E10-01	A	N/A	Low	Low	N/A	N/A	Low
Quarries	E10-03	A	N/A	Low	Low	N/A	N/A	Low
Residential Areas	R01-01-600	A	Low	Low	Low	Low	Low	Low
Septic systems (serves one single-family home)	R02-01-20	A	Low	Low	Low	Low	Low	Low
Tanks, diesel (underground)	T08-01	A	N/A	N/A	High	N/A	N/A	N/A
Tanks, diesel (underground)	T08-02	A	N/A	N/A	High	N/A	N/A	N/A
Tanks, gasoline (above ground)	T10-01	A	N/A	N/A	Medium	Medium	N/A	N/A
Tanks, gasoline (underground)	T12-01	A	N/A	N/A	High	Medium	N/A	N/A
Tanks, gasoline (underground)	T12-02	A	N/A	N/A	High	Medium	N/A	N/A
Tanks, gasoline (underground)	T12-03	A	N/A	N/A	High	Medium	N/A	N/A
Tanks, gasoline (underground)	T12-04	A	N/A	N/A	High	Medium	N/A	N/A
Tanks, heating oil, nonresidential (underground)	T16-01	A	N/A	N/A	Low	Low	N/A	N/A
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04-01	A	N/A	N/A	Low	N/A	N/A	N/A
Golf courses	X02-01	A	N/A	Medium	N/A	Low	High	N/A
Solvents (storage)	X13-01	A	N/A	N/A	High	N/A	N/A	High
Airports	X14-01	A	N/A	Low	High	Low	Medium	Medium
Highways and roads, paved (cement or asphalt)	X20-01-20	A	Low	Low	Low	Low	N/A	Low
Orchards or nurseries	A10-01	B	N/A	Medium	N/A	Low	High	Low
Coal mining	E01-01	B	N/A	N/A	High	Very High	Medium	High
Quarries	E10-02	B	N/A	Low	Low	N/A	N/A	Low
Residential Areas	R01-601-3600	B	Low	Low	Low	Low	Low	Low

Contaminant Source Type	Contaminant	Zone	Bacteria	Nitrates	VOC	Metals	SOC	OOC
Septic systems (serves one single-family home)	R02-21-270	B	Low	Low	Low	Low	Low	Low
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04-02	B	N/A	N/A	Very High	N/A	N/A	N/A
Highways and roads, paved (cement or asphalt)	X20-21-70	B	Low	Low	Low	Low	N/A	Low
Highways and roads, dirt/gravel	X24-01-50	B	Low	Low	Low	Low	N/A	Low
Contaminant Category Risk Ranking			***Very High***	***Very High***	***Very High***	***Very High***	***Very High***	***Very High***

** Includes heavy metals, cyanide, and other inorganic chemicals.*
*** Scores based on additional factors, such as sampling history, and number/density of sources.*

The contaminant category risk ranking for Bacteria & Viruses is ***Very High***. This ranking is driven primarily by a Class III municipal landfill, and the density of residential septic systems, roads, and residential areas located within the DWPA. A positive Total Coliform (which may include fecal coliform and *E. Coli*, but not a confirmation of the presence of either) has not been detected in recent years. Coliforms are naturally present in the environment, as well as feces; fecal coliforms and *E. Coli* only come from human and animal fecal waste. Total Coliforms is not a health threat in itself; it is used to indicate whether other potentially harmful bacteria may be present.

The contaminant category risk ranking for Nitrates and/or Nitrites is ***Very High***. This ranking is driven primarily by cropland, orchards/nurseries, a Class III municipal landfill, quarries, a golf course, an airport, and the density of residential septic systems, roads, and residential areas located within the DWPA. Nitrates and/or nitrites have been detected in samples collected in recent years, but an increasing or decreasing trend is not apparent; the most recent sample collected January 2013, showed a total nitrate-nitrite concentration of 0.554 milligrams per liter (mg/L), which is 5.5% of the maximum contaminant level (MCL) of 10 mg/L for nitrate. Sources of nitrate and/or nitrite may include runoff from fertilizer use, leaking from septic tanks, sewage, and/or erosion from natural deposits. A relatively low concentration and absence of a clear trend implies that the source is natural, rather than anthropogenic. Potential health effects of Nitrates and/or Nitrites include serious illness and, if untreated, death for infants below the age of six months; symptoms include a shortness of breath and blue-baby syndrome.

The contaminant category risk ranking for VOCs is ***Very High***. This ranking is driven primarily by a gasoline station, paint sales/services, a Class III municipal landfill, area of coal mining, quarries, underground diesel tanks, above and below ground gasoline tanks, underground nonresidential heating oil tanks, a contaminated site, solvent storage, an airport, and the density of residential septic systems, roads, and residential areas located within the DWPA. VOCs have not been detected in samples collected in recent years. Sources of VOCs may be either natural or anthropogenic. Potential health effects are typically compounding long-term, and not acute.

The contaminant category risk ranking for Inorganic Chemicals is ***Very High***. This ranking is driven primarily by cropland, orchards/nurseries, a gasoline station, paint sales/services, a Class III municipal landfill, an area of coal mining, above and below ground gasoline tanks, underground nonresidential heating oil tanks, a golf course, an airport, and the density of residential septic systems, roads, and residential areas located within the DWPA. Barium and selenium have repeatedly been detected in samples taken in the past 5 years. The highest concentration detected of barium was .0165 mg/L, which is .83% of the MCL of 2 mg/L, in April 2010. Sources of barium may include erosion of natural deposits, discharge of drilling wastes, or discharge from metal refineries. Long-term exposure above the MCL may include an increase in blood pressure. The highest concentration detected of Selenium was .00197 mg/L, which is 3.9% of the MCL of .05 mg/L, in April 2010. Sources of Selenium may include discharge from petroleum refineries, erosion of natural

deposits, or discharge from mines. Potential health effects from long-term exposure above the MCL may include: hair or fingernail losses, numbness in fingers or toes, or problems with circulation.

The contaminant category risk ranking for SOCs is ***Very High***. This ranking is driven primarily by croplands, orchards/nurseries, paint sales/services, a Class III municipal landfill, quarries, and the density of residential septic systems, and residential areas located within the DWPA. This PWS has received an SOC Monitoring Waiver for compliance periods 2011-2013, 2008-2010, and 2005-2007.

The contaminant category risk ranking for OOCs is ***Very High***. This ranking is driven primarily by an orchard/nursery, a gasoline station, a Class III municipal landfill, areas of coal mining, quarries, solvents storage, airports, and the density of residential septic systems, roads, and residential areas located within the DWPA. This PWS has received an SOC Monitoring Waiver for compliance periods 2011-2013, 2008-2010, and 2005-2007.

Overall Vulnerability of the Drinking Water Source to Contamination

An overall vulnerability is determined by combining each of the contaminant category risk rankings with the natural susceptibility score:

Overall Vulnerability of the Drinking Water Source to Contamination = Natural Susceptibility + Contaminant Risks

Table 5 summarizes the overall vulnerability ratings for each of the six (6) contaminant categories.

Table 5: Overall Vulnerability

Category	*Rating*
Bacteria and Viruses	***High***
Nitrates and/or Nitrites	***Very High***
Volatile Organic Chemicals	***Very High***
Heavy Metals, Cyanide, and Other Inorganic Chemicals	***Very High***
Synthetic Organic Chemicals	***Very High***
Other Organic Chemicals	***Very High***

Using the Source Water Assessment

This assessment of contaminant risks and source vulnerability can be used as a foundation for local voluntary protection efforts as well as a basis for the continuous efforts on the part of the Camwell on the Green PWS to protect public health. Communities can use the Source Water Assessment (SWA) to create a drinking water protection plan to manage the identified potential and existing sources of regulated drinking water contaminants and to prevent or minimize new contaminant threats in the drinking water protection area.

The Camwell on the Green PWS can use a number of different drinking water protection methods to limit or prevent contamination of its drinking water source.

- *Non-Regulatory Options include:*
    - Public education about where drinking water comes from and the effects of contaminants is probably the most effective and least costly method of protection;

  - Household hazardous waste collection - household hazardous wastes are usually generated in small amounts but can have a big impact on the environment;
  - The source water assessment report is a tool that can be used to prioritize protection strategies identified in a drinking water protection plan;
  - Taking proactive measures towards proper waste storage and disposal can help eliminate the need to find an alternative drinking water source by preventing source water contamination;
  - Conservation easements - easements can assist in protecting the area by limiting development;
  - Make a written plan on what you will do if an accidental spill happens that could contaminate your source of drinking water; and
  - Local drinking water protection plan (an example or template is available from DEC).

- *Regulatory Options include:*
  - Source protection regulations prohibiting the presence or use of all or specific chemicals within the drinking water protection area;
  - Zoning ordinances to control development within the different protection areas around the source;
  - Subdivision ordinance; and
  - Operating standards for industrial and other activities within the different protection areas around the source.

Source Water Assessments can be updated to reflect any changes in the vulnerability and/or susceptibility of the Camwell on the Green WL001 source. The data that is used to generate the SWA is updated on an on-going basis as identified in the field or if changes are identified and brought to the attention of the Drinking Water Program.

Where to go from here?

The SWA is a comprehensive evaluation of the potential risk of contamination to the PWS and the source(s) of drinking water used by the system. Identifying potential sources of contamination and the vulnerability of the PWS is an important first step in protecting the drinking water source from contamination. However, in order to prevent contamination from occurring, action must be taken by the PWS owner and/or operator. The SWA can be used by the PWS to educate the local community and to prioritize community-driven protection strategies. Inviting community members, council members, and local government officials to help develop a drinking water protection plan is one essential component towards successful drinking water protection efforts. For questions regarding, or assistance to begin, the process of developing a drinking water protection plan, please contact the Drinking Water Protection group toll-free at #1-866-956-7656 (within Alaska only), or direct at #907-269-7656.

Other Resources

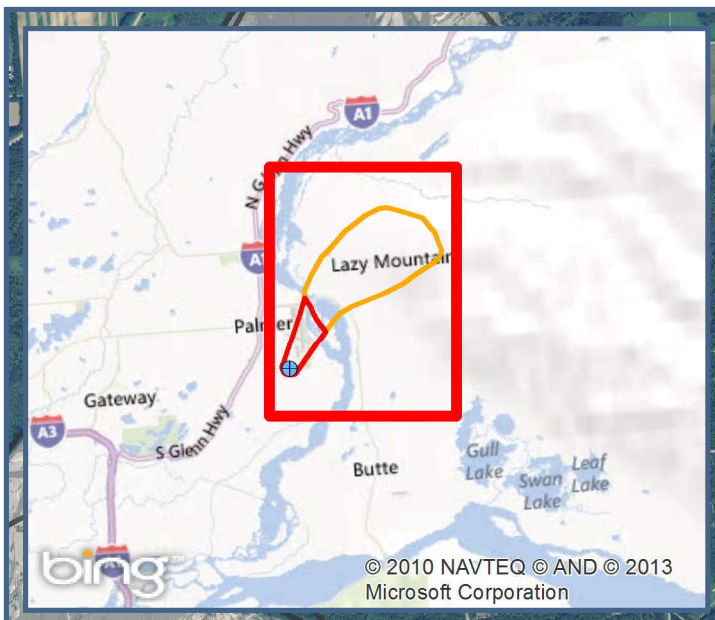
The Drinking Water Protection group, the Environmental Protection Agency (EPA), and local organizations are available to help you build on this SWA report as you continue to improve drinking water protection in your community.

- DEC, Drinking Water Protection - http://dec.alaska.gov/eh/dw/DWP/DWP_main.html
- EPA, Drinking Water Protection - http://cfpub.epa.gov/safewater/sourcewater/index.cfm
- Groundwater Foundation - http://www.groundwater.org
- Groundwater Protection Council- http://www.gwpc.org

- National Ground Water Association: http://www.ngwa.org/Pages/default.aspx

Appendices

- Camwell on the Green WL001 Drinking Water Protection Area Location Map (Map 1);
- Camwell on the Green WL001 Drinking Water Protection Area with Potential and Existing Contaminant Sources (Map 2);
- Example Best Management Strategies for Potential Contaminants Identified within a Drinking Water Protection Area.



1 inch = 5.15 miles

PWSID:220086.002
PWSID:220086.001
PWSID:227440.001
PWSID:226017.001
PWSID:226143.001
227220.001: CAMWELL ON THE GREEN (MHP)
PWSID:226020.002
PWSID:226020.005
PWSID:227482.001
PWSID:227490.001
PWSID:227220.001
PWSID:226035.001

Map 1 - Camwell on the Green

PWSID 227220
WL001

N
W E
S

1 inch = 2,500 feet

0 0.125 0.25 0.5 Miles

Legend

DWP-Regulated Water System Sources

- Community Water System (Formerly Class A)
- NonTransient/NonCommunity (Formerly Class A)
- NonCommunity (Formerly Class B)
- NonPublic (Class C-State Regulated)

Identified Drinking Water Protection Areas (DWPAs)

- Zone A (GW-Several Months Time of Travel or SW 1000 ft buffer)
- Zone B (GW-2 Yr Time of Travel or SW-1 mile buffer)

Other Relevant DWPAs

- Zone A (GW-Several Months Time of Travel or SW 1000 ft buffer)
- Zone B (GW-2 Yr Time of Travel or SW-1 mile buffer)

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE OF ALASKA

Data sources: Alaska DEC: Public Water System sources and Drinking Water Protection Areas; Alaska Mapped Best Data Layer Web Map Service: Aerial imagery.

Date Saved: 7/17/2013; Author: rmbaril

Additional Potential Sources of Contamination (Zone B)
R01: Residential Areas (Assumed less than 3,000 acres)
R02: Septic Systems (Assumed less than 250 septic systems)
X20: Roads and Highways (Paved - Assumed less than 50)
X24: Roads and Highways (dirt/gravel - Assumed less than 50)

PWSID:220086.002
PWSID:220086.001
PWSID:227440.001
U04-02
U04-01
U07-01 U07-02
PWSID:226020.002
PWSID:226020.005
PWSID:227482.001
PWSID:227220.001

Additional Potential Sources of Contamination (Zone A)
R01: Residential Areas (Assumed less than 600 acres)
R02: Septic Systems (Assumed less than 20)
X20: Highways and Roads (Paved - Assumed less than 20)

E01
D51
X14
A02
X02

Legend

Identified Existing and Potential Sources of Contamination

- Tanks, heating oil, nonresidential (underground) (T16)
- Tanks, gasoline (underground) (T12)
- Tanks, gasoline (above ground) (T10)
- Tanks, diesel (underground) (T08)
- Solvents (storage) (X13)
- Quarries (sand, gravel, rock, other) (E10)
- Open Leaking Underground Fuel Storage Tank (LUST) Sites (U07)
- Gasoline stations (without repair shop) (C15)
- Paint sales /service (C32)
- Orchards or nurseries (A10)
- Airports (X14)

Contaminated Sites

- Active
- Cleanup Complete
- Cleanup Complete - Institutional Controls
- A02--Cropland
- D51--Landfills (municipal; Class III)
- E01--Coal mining (active or inactive)
- X02--Golf courses
- X14--Airports/Airstrips

1 inch = 2,500 feet
0 750 1,500 3,000 Feet

Map 2 - Camwell on the Green
Well 1

PWSID 227220
WL001

Legend

DWP-Regulated Water System Sources
- Community Water System (Formerly Class A)
- NonTransient/NonCommunity (Formerly Class A)
- NonCommunity (Formerly Class B)
- NonPublic (Class C-State Regulated)

Identified Drinking Water Protection Areas (DWPAs)
- Zone A (GW-Several Months Time of Travel or SW 1000 ft buffer
- Zone B (GW-2 Yr Time of Travel or SW-1 mile buffer)

Other Relevant DWPAs
- Zone A (GW-Several Months Time of Travel or SW 1000 ft buffer)
- Zone B (GW-2 Yr Time of Travel or SW-1 mile buffer)

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Data sources: Alaska DEC: Public Water System sources and Drinking Water Protection Areas; Alaska Mapped Best Data Layer Web Map Service: Aerial imagery.

Date Saved: 8/30/2013; **Author**: rmbaril

Contaminant Source Inventory and Risk Ranking for

CAMWELL ON THE GREEN (MHP)

WL CAMWELL ON THE GREEN

AK2227220
WL001

Contaminant Source	CSID	CSID Tag	Zone	Map	Risk Rank	Comments
Bacteria and Viruses						
Landfills (municipal; Class III)	D51	D51-01	A	2	High	Landfillls (municipal; Class III)
Residential Areas	R01	R01-01-600	A	2	Low	Residential Areas (assumed less than 600 acres)
Residential Areas	R01	R01-601-3600	B	2	Low	Residential Areas (assumed less than 3,000 acres)
Septic systems (serves one single-family home)	R02	R02-01-20	A	2	Low	Assumed less than 20
Septic systems (serves one single-family home)	R02	R02-21-270	B	2	Low	Assumed less than 250
Highways and roads, paved (cement or asphalt)	X20	X20-01-20	A	2	Low	Assumed less than 20
Highways and roads, paved (cement or asphalt)	X20	X20-21-70	B	2	Low	Assumed less than 50
Highways and roads, dirt/gravel	X24	X24-01-50	B	2	Low	Assumed less than 50
Heavy Metals, Cyanide, and Other Inorganic Chemicals						
Cropland	A02	A02-01	A	2	Medium	Lugdunum Properties LLC
Cropland	A02	A02-02	A	2	Medium	
Orchards or nurseries	A10	A10-01	B	2	Low	Bushes Bunches Greenhouses and Gardens
Gasoline stations (without repair shop)	C15	C15-01	A	2	Low	Hinchinbrook Chevron
Paint sales /service	C32	C32-01	A	2	Low	Aircraft Paint Services
Paint sales /service	C32	C32-02	A	2	Low	Aircraft Paint Services
Landfills (municipal; Class III)	D51	D51-01	A	2	High	Landfillls (municipal; Class III)
Coal mining	E01	E01-01	B	2	Very High	(active or inactive?)
Residential Areas	R01	R01-01-600	A	2	Low	Residential Areas (assumed less than 600 acres)
Residential Areas	R01	R01-601-3600	B	2	Low	Residential Areas (assumed less than 3,000 acres)
Septic systems (serves one single-family home)	R02	R02-01-20	A	2	Low	Assumed less than 20
Septic systems (serves one single-family home)	R02	R02-21-270	B	2	Low	Assumed less than 250
Tanks, gasoline (above ground)	T10	T10-01	A	2	Medium	APC/Old Bus Barn
Tanks, gasoline (underground)	T12	T12-01	A	2	Medium	Wood's Air Fuel

Tanks, gasoline (underground)	T12	T12-02	A	2	Medium	Wood's Air Fuel
Tanks, gasoline (underground)	T12	T12-03	A	2	Medium	Hinchinbrook Chevron
Tanks, gasoline (underground)	T12	T12-04	A	2	Medium	Hinchinbrook Chevron
Tanks, heating oil, nonresidential (underground)	T16	T16-01	A	2	Low	Hinchinbrook Chevron
Golf courses	X02	X02-01	A	2	Low	Palmer Golf Course
Airports	X14	X14-01	A	2	Low	Palmer Municipal Airport
Highways and roads, paved (cement or asphalt)	X20	X20-01-20	A	2	Low	Assumed less than 20
Highways and roads, paved (cement or asphalt)	X20	X20-21-70	B	2	Low	Assumed less than 50
Highways and roads, dirt/gravel	X24	X24-01-50	B	2	Low	Assumed less than 50

Nitrates/Nitrites

Cropland	A02	A02-01	A	2	High	Lugdunum Properties LLC
Cropland	A02	A02-02	A	2	High	
Orchards or nurseries	A10	A10-01	B	2	Medium	Bushes Bunches Greenhouses and Gardens
Landfills (municipal; Class III)	D51	D51-01	A	2	Very High	Landfillls (municipal; Class III)
Quarries	E10	E10-01	A	2	Low	Associated Aggregate Pit and Plant (surface)
Quarries	E10	E10-02	B	2	Low	Lazy Mountain (unknown)
Quarries	E10	E10-03	A	2	Low	Matanuska River Pit (surface)
Residential Areas	R01	R01-01-600	A	2	Low	Residential Areas (assumed less than 600 acres)
Residential Areas	R01	R01-601-3600	B	2	Low	Residential Areas (assumed less than 3,000 acres)
Septic systems (serves one single-family home)	R02	R02-01-20	A	2	Low	Assumed less than 20
Septic systems (serves one single-family home)	R02	R02-21-270	B	2	Low	Assumed less than 250
Golf courses	X02	X02-01	A	2	Medium	Palmer Golf Course
Airports	X14	X14-01	A	2	Low	Palmer Municipal Airport
Highways and roads, paved (cement or asphalt)	X20	X20-01-20	A	2	Low	Assumed less than 20
Highways and roads, paved (cement or asphalt)	X20	X20-21-70	B	2	Low	Assumed less than 50
Highways and roads, dirt/gravel	X24	X24-01-50	B	2	Low	Assumed less than 50

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Other Organic Chemicals

Orchards or nurseries	A10	A10-01	B	2	Low	Bushes Bunches Greenhouses and Gardens
Gasoline stations (without repair shop)	C15	C15-01	A	2	Low	Hinchinbrook Chevron
Landfills (municipal; Class III)	D51	D51-01	A	2	Very High	Landfillls (municipal; Class III)
Coal mining	E01	E01-01	B	2	High	(active or inactive?)
Quarries	E10	E10-01	A	2	Low	Associated Aggregate Pit and Plant (surface)
Quarries	E10	E10-02	B	2	Low	Lazy Mountain (unknown)
Quarries	E10	E10-03	A	2	Low	Matanuska River Pit (surface)
Residential Areas	R01	R01-01-600	A	2	Low	Residential Areas (assumed less than 600 acres)
Residential Areas	R01	R01-601-3600	B	2	Low	Residential Areas (assumed less than 3,000 acres)
Septic systems (serves one single-family home)	R02	R02-01-20	A	2	Low	Assumed less than 20
Septic systems (serves one single-family home)	R02	R02-21-270	B	2	Low	Assumed less than 250
Solvents (storage)	X13	X13-01	A	2	High	Palmer Airport Paint Shop
Airports	X14	X14-01	A	2	Medium	Palmer Municipal Airport
Highways and roads, paved (cement or asphalt)	X20	X20-01-20	A	2	Low	Assumed less than 20
Highways and roads, paved (cement or asphalt)	X20	X20-21-70	B	2	Low	Assumed less than 50
Highways and roads, dirt/gravel	X24	X24-01-50	B	2	Low	Assumed less than 50

Synthetic Organic Chemicals

Cropland	A02	A02-01	A	2	High	Lugdunum Properties LLC
Cropland	A02	A02-02	A	2	High	
Orchards or nurseries	A10	A10-01	B	2	High	Bushes Bunches Greenhouses and Gardens
Paint sales /service	C32	C32-01	A	2	Low	Aircraft Paint Services
Paint sales /service	C32	C32-02	A	2	Low	Aircraft Paint Services
Landfills (municipal; Class III)	D51	D51-01	A	2	Very High	Landfillls (municipal; Class III)
Coal mining	E01	E01-01	B	2	Medium	(active or inactive?)
Residential Areas	R01	R01-01-600	A	2	Low	Residential Areas (assumed less than 600 acres)

Residential Areas	R01	R01-601-3600	B	2	Low	Residential Areas (assumed less than 3,000 acres)
Septic systems (serves one single-family home)	R02	R02-01-20	A	2	Low	Assumed less than 20
Septic systems (serves one single-family home)	R02	R02-21-270	B	2	Low	Assumed less than 250
Golf courses	X02	X02-01	A	2	High	Palmer Golf Course
Airports	X14	X14-01	A	2	Medium	Palmer Municipal Airport
Volatile Organic Chemicals						
Gasoline stations (without repair shop)	C15	C15-01	A	2	High	Hinchinbrook Chevron
Paint sales /service	C32	C32-01	A	2	Medium	Aircraft Paint Services
Paint sales /service	C32	C32-02	A	2	Medium	Aircraft Paint Services
Landfills (municipal; Class III)	D51	D51-01	A	2	High	Landfillls (municipal; Class III)
Coal mining	E01	E01-01	B	2	High	(active or inactive?)
Quarries	E10	E10-01	A	2	Low	Associated Aggregate Pit and Plant (surface)
Quarries	E10	E10-02	B	2	Low	Lazy Mountain (unknown)
Quarries	E10	E10-03	A	2	Low	Matanuska River Pit (surface)
Residential Areas	R01	R01-01-600	A	2	Low	Residential Areas (assumed less than 600 acres)
Residential Areas	R01	R01-601-3600	B	2	Low	Residential Areas (assumed less than 3,000 acres)
Septic systems (serves one single-family home)	R02	R02-01-20	A	2	Low	Assumed less than 20
Septic systems (serves one single-family home)	R02	R02-21-270	B	2	Low	Assumed less than 250
Tanks, diesel (underground)	T08	T08-01	A	2	High	Wood's Air Fuel
Tanks, diesel (underground)	T08	T08-02	A	2	High	Hinchinbrook Chevron
Tanks, gasoline (above ground)	T10	T10-01	A	2	Medium	APC/Old Bus Barn
Tanks, gasoline (underground)	T12	T12-01	A	2	High	Wood's Air Fuel
Tanks, gasoline (underground)	T12	T12-02	A	2	High	Wood's Air Fuel
Tanks, gasoline (underground)	T12	T12-03	A	2	High	Hinchinbrook Chevron
Tanks, gasoline (underground)	T12	T12-04	A	2	High	Hinchinbrook Chevron
Tanks, heating oil, nonresidential (underground)	T16	T16-01	A	2	Low	Hinchinbrook Chevron

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Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-01	A	2	Low	Briggs Property; Status: Active; Hazard ID: 2597; Contaminant of concern: TCE; Groundwater Ingestion: Low Potential Exposure ; http://dec.alaska.gov/Applications/SPAR/CCReports/Site_Report.aspx?Hazard_ID=2597
Contaminated sites, DEC recognized, non-Superfund, non-RCRA	U04	U04-02	B	2	Very High	Former Mom and Pop's Grocery and Gas; Status: Active; Hazard ID: 22919; Contaminant of Concern: (none); Groundwater Ingestion: High Potential Exposure; http://dec.alaska.gov/Applications/SPAR/CCReports/Site_Report.aspx?Hazard_ID=22919
Solvents (storage)	X13	X13-01	A	2	High	Palmer Airport Paint Shop
Airports	X14	X14-01	A	2	High	Palmer Municipal Airport
Highways and roads, paved (cement or asphalt)	X20	X20-01-20	A	2	Low	Assumed less than 20
Highways and roads, paved (cement or asphalt)	X20	X20-21-70	B	2	Low	Assumed less than 50
Highways and roads, dirt/gravel	X24	X24-01-50	B	2	Low	Assumed less than 50