

Health Consultation

Private Well Survey

BOOMSNUB/AIRCO SUPERFUND SITE

VANCOUVER, CLARK COUNTY, WASHINGTON

EPA FACILITY ID: WAD009624453

MAY 24, 2004

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members.

This document has previously been released for a 30 day public comment period. Subsequent to the public comment period, ATSDR addressed all public comments and revised or appended the document as appropriate. The health consultation has now been reissued. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR TOLL FREE at
1-888-42ATSDR

or

Visit our Home Page at: <http://www.atsdr.cdc.gov>

HEALTH CONSULTATION

Private Well Survey

BOOMSNUB/AIRCO SUPERFUND SITE

VANCOUVER, CLARK COUNTY, WASHINGTON

EPA FACILITY ID: WAD009624453

Prepared by:

Washington State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Table of Contents

Foreword.....	ii
Glossary	iii
Purpose.....	1
Background and Statement of Issues	1
Discussion.....	2
Table 1. Mail Well Survey near the Boomsnub/Airco Superfund site, Hazel Dell, Washington 2003.	3
Table 2. Private Well Area of Concern near the Boomsnub/Airco Superfund Site, Hazel Dell, Washington 2003.	4
Child Health Considerations	4
Conclusions.....	4
Recommendations.....	5
Public Health Action Plan.....	5
Authors, Technical Advisors	6
References.....	8
A. Appendix A — Letter and Well Survey	A-1
B. Appendix B — Map of Boomsnub Survey Area, Hazel Dell, Washington.	B-1

Foreword

The Washington State Department of Health (DOH) has prepared this public health consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste sites. This health consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

A health consultation identifies, and makes recommendations to prevent, harmful human health effects resulting from exposure to hazardous substances in the environment. Health consultations focus on specific health issues, allowing DOH to respond to requests from concerned residents or agencies for health information on hazardous substances. DOH evaluates sampling data collected from a hazardous waste site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health. The findings in this health consultation are relevant to conditions at the site during the time of its preparation, and should not necessarily be relied upon if site conditions or land use change in the future.

For additional information or questions regarding DOH or the contents of this public health consultation, please call the health advisor who prepared this document:

Lenford O'Garro

Washington State Department of Health
Office of Environmental Health Assessments
P.O. Box 47846
Olympia, WA 98504-7846
(360) 236-3376
FAX (360) 236-3383
1-877-485-7316
Web site: www.doh.wa.gov/ehp/oehas/sashome.htm

For more information about ATSDR, contact the ATSDR Information Center at 1-888-422-8737 or visit the agency's Web site: www.atsdr.cdc.gov/.

Glossary

Agency for Toxic Substances and Disease Registry (ATSDR)	The principal federal public health agency involved with hazardous waste issues, responsible for preventing or reducing the harmful effects of exposure to hazardous substances on human health and quality of life. ATSDR is part of the U.S. Department of Health and Human Services.
Aquifer	An underground formation composed of materials such as sand, soil, or gravel that can store or supply groundwater to wells and springs.
Contaminant	A substance that is either present in an environment where it does not belong or is present at levels that might cause harmful (adverse) health effects.
Environmental Protection Agency (EPA)	The federal agency that develops and enforces environmental laws to protect the environment and the public's health.
Exposure	Contact with a substance by swallowing, breathing, or touching the skin or eyes. Exposure may be short-term [acute exposure], of intermediate duration, or long-term [chronic exposure].
Groundwater	Water beneath the earth's surface in the spaces between soil particles and between rock surfaces [compare with surface water].
Hazardous substance	Any material that poses a threat to public health or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.
Monitoring wells	Special wells drilled at locations on or off a hazardous waste site so water can be sampled at selected depths and studied to determine the movement of groundwater and the amount, distribution, and type of contaminant.

No apparent public health hazard	A category used in ATSDR's public health assessments for sites where human exposure to contaminated media might be occurring, might have occurred in the past, or might occur in the future, but where the exposure is not expected to cause any harmful health effects.
Plume	A volume of a substance that moves from its source to places farther away from the source. Plumes can be described by the volume of air or water they occupy and the direction they move. For example, a plume can be a column of smoke from a chimney or a substance moving with groundwater.
Remedial investigation	The CERCLA process of determining the type and extent of hazardous material contamination at a site.
Route of exposure	The way people come into contact with a hazardous substance. Three routes of exposure are breathing [inhalation], eating or drinking [ingestion], or contact with the skin [dermal contact].
Volatile organic compound (VOC)	Organic compounds that evaporate readily into the air. VOCs include substances such as benzene, toluene, methylene chloride, and methyl chloroform.

Purpose

This public health consultation was developed to follow-up on recommendations made in previous health assessments concerning this site. This health consultation summarizes the procedure and results of the well survey. A subsequent health consultation will evaluate the results of private well water analysis and the potential health effects of possible exposure to chemicals in private well water in the survey area. DOH prepares health consultations under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR).

Background and Statement of Issues

In 2003 the Washington State Department of Health (DOH) conducted a well survey to identify private wells near the Boomsnub/Airco Superfund site located in Hazel Dell, an unincorporated (urban growth area) town next to and north of the city of Vancouver, Clark County, Washington. Previous health assessments prepared by DOH recommended a well survey to identify all existing wells in or close to the identified path of groundwater contamination plumes in the Alluvial and Upper Troutdale aquifer [1], [2]. The survey area comprises the former Boomsnub facility and BOC Gases properties which are located south of the intersection of NE 47th Avenue and NE 78th Street. Additionally, two other areas of groundwater contamination extend west of NE 47th Avenue. The Boomsnub metal plating facility operated from 1967 to 1994 and contaminated the soil with chromium. AIRCO, which later became BOC Gases, is a compressed gas manufacturing facility that began operations in 1964. BOC Gases is responsible for introducing volatile organic compounds (VOCs) including TCE, PCE, and Freon II into the groundwater. The Washington State Department of Ecology (DOE) began investigating the chromium contamination at the Boomsnub property in 1987 and installed a groundwater treatment system in the alluvial aquifer in 1990 to collect and remove chromium. During the operation of the system VOCs were detected in the groundwater. The groundwater treatment system was expanded to treat the additional contaminants [1], [2], [3]. In 1991, chromium ranging from 0.0112 parts per million (ppm) to 0.292 ppm was discovered in a few private wells near Boomsnub that were connected to a municipal water system.[1]. By December 1993, monitoring of the private well with chromium—which was at a level of 0.292 ppm in 1991—revealed the level had dropped to 0.03 ppm [1].

In 1994, the Environmental Protection Agency (EPA) took over as the lead regulatory agency for the Boomsnub/Airco site. Many monitoring wells have been installed in the area, and a Site-Wide Groundwater Operable Unit has identified contaminated groundwater in the Alluvial and Upper Troutdale aquifers [2]. In July 1994, the movement of the contamination plume in the Alluvial aquifer and concerns about the quality of the groundwater in private wells in or near the plume prompted DOH, in cooperation with the Southwest Washington Health District, DOE, the City of Vancouver, Clark Public Utilities, and the EPA, to issue a news release advising residents using private wells in the vicinity of the Boomsnub/Airco site to connect to the public water system [1], [2]. The recommendation was made to ensure a safe water supply for people who had

wells in or adjacent to the contamination plume [1], [2]. In 1994 the EPA then excavated and removed about 6000 tons of chromium-contaminated soil from the site. An additional 2500 cubic yards of contaminated soil was later removed from the site in 2001.

In 2003, the DOH undertook a survey to confirm the lack of private drinking water wells in the area near the Boomsnub/Airco Superfund site. The survey area was defined using Arcview® geographical information system (GIS) software to draw a 7000 by 3645-foot rectangular area around the location of the plume (Appendix B). The resulting map was provided to the Clark County Department of Assessment and Geographical Information Systems to obtain a list of tax parcel numbers, names and addresses of the property owners within the area to be surveyed. The list of names and addresses were then sent to the two municipal water systems serving the survey area. Clark County Utilities and the City of Vancouver Utility crosschecked their database of public water use against the assessor's names and addresses for verification. To further reduce the number of survey letters owners received, DOH accessed Clark County's online Geographical Information System (GIS) for records of land use, property type and aerial photos of the remaining parcel numbers. This process removed undeveloped lots, and railroad and utility rights-of-way. All remaining property owners (tax parcel numbers) in the survey area were sent the attached letter and survey form (see Appendix A) to obtain well information. To enhance the mail survey results, a door-to-door follow-up survey was done to find all those who did not respond. This included returned mail and "don't know" categories. When possible, DOH also accessed the Washington State Department of Ecology (DOE) water well log search and viewer to obtain well logs and other information.

Discussion

In two previous health assessments DOH recommended a door-to-door survey of wells in the area near the Boomsnub/Airco Superfund site. No record of a private well survey for the Boomsnub/Airco area was located. DOH did, however, obtain a summary of private wells in the Boomsnub/BOC gases vicinity from the Clark Public Utilities [4]. Clark had conducted this survey to identify any private wells that might be an exposure point for contaminants in groundwater originating at Boomsnub/Airco site.

The number of parcels within the survey area totaled 685. After cross-checking the parcel numbers against databases for the two municipal water systems that serve the survey area, a total of 119 parcel numbers were identified as not served by municipal water systems. By eliminating vacant parcels and parcels with no water supply, GIS aerial photographs and land use descriptions further reduced this total to 57. Consequently, on May 19, 2003, 57 mail surveys were sent to the owners of those parcels.

Table 1 contains the results of the mail survey. Of the 19 respondents, 14 said their homes were connected to a municipal water system, two had private wells, two had no water source present, and one checked the "don't know" category. Only one of the two respondents with a private well was listed in the Clark Public Utilities private wells summary as having a well.

Table 1. Mail Well Survey near the Boomsnub/Airco Superfund site, Hazel Dell, Washington 2003.

	<i>Number of owners (parcel numbers)</i>	<i>Effective sample</i>
Survey Sample	57	NA
Non-Respondents	37	65%
Respondents	19	33%
Returned Mail No forwarding address	1	2%

NA - Not applicable

With only 33% of owners responding to the mail survey, on July 1, 2003, DOH conducted a door-to-door follow-up survey to reach the 39 non-respondents (i.e., did not respond, returned mail, “don’t know” categories). Visual inspection of the area eliminated 16 of the 39 owners or parcel numbers (10 had no buildings, three had only sheds, one had an unoccupied industrial building, one had an unoccupied or abandoned home, and one was a PUD well area). The remaining 23 homes and businesses in the survey area were connected to municipal water systems.

The door-to-door follow-up found no other private wells located in the survey area. The mail survey provided more information than did the door-to-door survey because the respondents were likely to answer more questions. That said, both survey methods provided the essential information—whether the residence used a private well for drinking water.

Table 2 contains the final results of the well survey. Residences on parcel numbers or 0.3% used private wells, 603 parcel numbers or 88.0% were connected to municipal water systems and 80 parcel numbers or 11.7% were eliminated (e.g., undeveloped lots, railroad and utility rights-of-way, no buildings or open field area, sheds, unoccupied industrial type building, unoccupied or abandon homes, and PUD well area). The two private wells are on parcels adjacent to the contaminated groundwater plume.

Clark Public Utilities’ records indicate that some of the residents with water supply wells near the contaminant plume have connected their homes to one of the municipal water systems [4]. EPA’s Monitoring Well Description and Location Data show several other private wells located in the area [5]. Most of the homes on these parcels have also connected to one of the two municipal water systems serving the area. Ecology’s water well log search and viewer showed that none of the private wells in the area have been abandoned. Therefore, it is possible that some of these wells could still be in use even though the homes are connected to one of the municipal water systems.

Table 2. Private Well Area of Concern near the Boomsnub/Airco Superfund Site, Hazel Dell, Washington 2003.

	<i>Number of owners (parcel numbers)</i>	<i>Effective sample</i>
Surveyed Sample	685	NA
Municipal Water System	603	88.0%
Private Wells	2	0.3%
Eliminated lots	80	11.7%

NA - Not applicable

Child Health Considerations

In communities faced with air, water, or food contamination, the many physical differences between children and adults demand special emphasis. Children could be at greater risk than are adults from certain kinds of exposure to hazardous substances. Children play outdoors and sometimes engage in hand-to-mouth behaviors that increase their exposure potential. Children are shorter than are adults; this means they breathe dust, soil, and vapors close to the ground. A child's lower body weight and higher intake rate results in a greater dose of hazardous substance per unit of body weight. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Finally, children are dependent on adults for access to housing, for access to medical care, and for risk identification. Thus adults need as much information as possible to make informed decisions regarding their children's health.

ATSDR and DOH recognize that children are susceptible to developmental toxicity, and that it can occur at levels much lower than those causing other types of toxicity. Nevertheless, the purpose of this health consultation was to evaluate well survey responses, not to evaluate chemical data. A subsequent health consultation will evaluate the results of private well water analysis and the potential health effects on children.

Conclusions

Two private drinking water wells, or 0.3% of all parcels, were identified in the well survey area. While the initial mail response rate to the well survey was only 33%, the door-to-door follow-up survey provides reassurance that no other drinking water wells are located in the contaminated groundwater plume. Several other private wells shown to be located in the area are now

connected to one of the municipal water systems. Until sampling data from the two private wells in the survey area is available and evaluated, exposure to environmental contamination in private well water at this site is categorized as an indeterminate public health hazard.

Recommendations

DOH recommends sampling data be collected and evaluated for the private water wells in the survey area.

Because of the existence of chemicals in area groundwater, DOH recommends against drilling any new water wells in the area of contamination.

Public Health Action Plan

DOH will evaluate subsequent sampling data for those wells identified in the survey.

DOH will follow-up with EPA to obtain and evaluate sampling data for the two wells identified in the survey.

Authors, Technical Advisors

Author

Lenford O'Garro

Washington State Department of Health
Office of Environmental Health Assessments
Site Assessment Section

Designated Reviewer

Robert Duff, Manager

Site Assessment Section
Office of Environmental Health Assessments
Washington State Department of Health

ATSDR Technical Project Officer

Debra Gable

Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

Certification

This Health Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

Debra Gable
Technical Project Officer,
SPS, SSAB, DHAC
ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.

Roberta Erlwein
Section Chief,
SPS, SSAB, DHAC
ATSDR

References

1. Washington State Department of Health. Public health assessment for Boomsnub/Airco, Vancouver, Clark County, Washington. CERCLIS No. WAD009624453; July 18, 1995.
2. Washington State Department of Health. Public Health Assessment for Boomsnub/Airco Superfund site (a/k/a Boomsnub/Airco), Vancouver, Clark County, Washington, EPA Facility WAD009624453; September 28, 2001.
3. ICF Kaiser Engineers, Inc. Remedial Investigation/ Feasibility Study Boomsnub/AIRCO Superfund Site, Hazel Dell, Washington. Seattle, Washington; November 1997, revision 1.
4. ICF Kaiser Engineers, Inc. Remedial Investigation/ Feasibility Study Boomsnub/AIRCO Superfund Site, Hazel Dell, Washington. Seattle, Washington; November 1997, revision 1.
5. Prather S. Summary of private wells in the Boomsnub/BOC Gases vicinity. Vancouver, Washington: Clark County Public Utilities; April 19, 1999.

A. Appendix A — Letter and Well Survey

May 19, 2003

Dear Resident:

The Washington State Department of Health is requesting information on drinking water wells in your area. We need this information to determine whether all drinking water wells have been identified near the Boomsnub/Airco Superfund site where contaminated groundwater exists.

Information about your well will not be used for any other purpose and will be available to the public only by formal request. Your participation in this survey is voluntary. You will not lose any services or benefits if you choose not to participate. If you do use a private well, your participation will allow us to assess the need for sampling and, if necessary, evaluate sample results.

Please take a few minutes and fill out the enclosed form and return it to us by June 16th. We ask that you fill it out regardless of your water source so that we know you have received this request. We have included a self-addressed stamped envelope for your convenience.

If you have any questions, please do not hesitate to call me toll-free at 1-877-485-7316 or (360) 236-3376. Your cooperation is appreciated.

Sincerely,

Lenford O'Garro
Public Health Advisor
Site Assessment Section

Office of Environmental Health Assessments

Washington State Department of Health

Enclosure (Survey)

Boomsnub/Airco Neighborhood Water Well Survey

Please answer all questions on the survey. Thank you.

We will contact you if you have a well that should be tested.

1. Your name:

2. Your *physical* address:

(Please make address corrections directly on this form)

3. Your telephone number: __

What are the best times to call you? __

4. Property Information: Parcel # and Site or Legal Address:

(Label with address and parcel #)

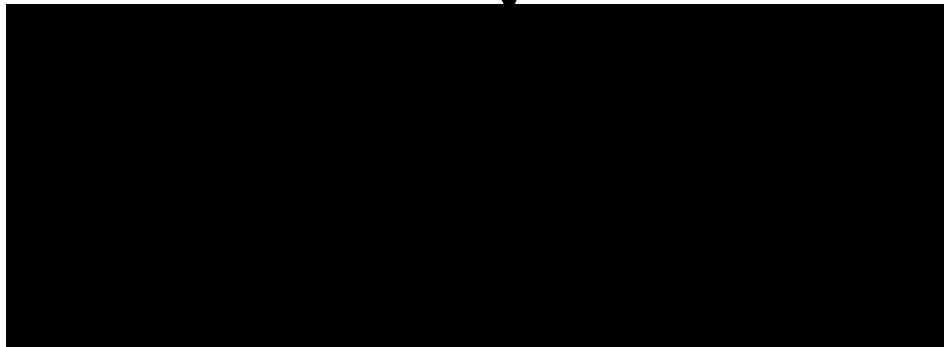
5. What is your source of tap water? (**check only one**)

- _____ No Water Source Present
- _____ Municipal (city) water system
- _____ Small community (neighborhood) water system
- _____ Private well (serving 1 or 2 houses)
- _____ Don't know

Water system name:

Operator's name:

Operator's phone #:

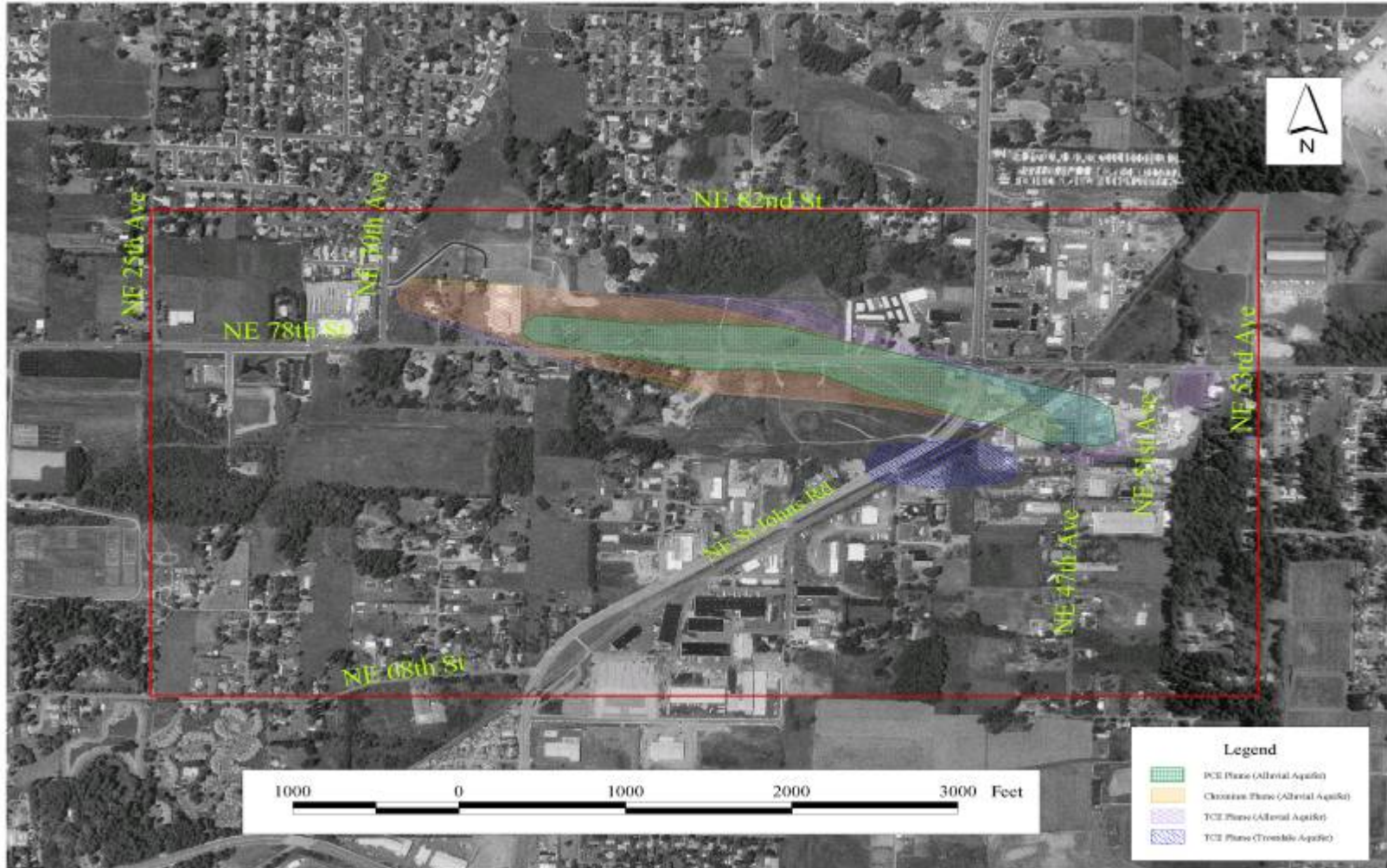


Please Return Survey by June 16 to: Lenford O'Garro, Department of Health, PO Box 47846,
Olympia, WA 98504

If you have questions call 1-877-485-7316 or 360-236-3376

B. Appendix B — Map of Boomsnub Survey Area, Hazel Dell, Washington.

B-1



Appendix B

Table 1. Analytic results of drinking water sample ($\mu\text{g/l}$) taken in 1996 from PW 1 and 2002 from PW 2, Hazel Dell, Clark County, Washington.

Contaminant	PW 1	PW 2	Comparison value	EPA cancer class	Comparison value reference
(Total) Chromium	5U	3.4B	100	D	LTHA
Tetrachloroethylene	1U	0.5U	100	UR	RMEG
Trichloroethylene	1U	0.5U	0.09	UR	CREG
Cis-1,2-Dichloroethene	1U	0.5U	3000	D	EMEG
CFC-11	1U	0.5U	3000	D	RMEG
1,1-Dichloroethylene	1U	0.5U	0.06	C	CREG
1,1,1-Trichloroethane	1U	0.5U	200		LTHA

LTHA - EPA's Lifetime Health Advisory for drinking water
 CREG - ATSDR's Cancer Risk Evaluation Guide
 RMEG - ATSDR's Reference Dose Media Evaluation Guide
 EMEG - ATSDR's Environmental Media Evaluation Guide
 B - Lab qualifier: analyte detected above method detection limit but below reporting detection limit
 U - Lab qualifier: The analyte was not detected at or above the reported result.
 C - EPA: Possible human carcinogen (no human, limited animal studies)
 D - EPA: Not classifiable as to health carcinogenicity
 UR - EPA: Under review