SUPERFICIAL SOURCE AREA SURVEY
MILLSTONE SERVICE STATION
ACHD SITE NO. 54
Spring Gap, Allegany County, Maryland

ALWI Project No. AL7N001

1.0 INTRODUCTION

Advanced Land and Water, Inc. (ALWI) was retained by the Allegany County Health Department (ACHD) to prepare a surface water protection plan for Millstone Service Station, located on the south side of Oldtown Road, and immediately south of Brice Hollow Run in southern Allegany County, Maryland. This site, designated No. 54 by ACHD, is served by a surface water intake on Brice Hallow Run, at the south side of the property.

The draft MDE "Transient Water Systems Operations Guidance" manual (herein termed the "Guidance Manual") defines a Non-Transient Non-Community (NTNC) Water System as one that "...serves at least 25 regular consumers over 6 months per year." An informal interview with an employee suggested that the regular clientele (50 daily on average), the year-round operations, and the lack of nearby tourist attractions drawing transient customers all combine to suggest that this water system is indeed a non-transient non-community system (NTNC).

1.1 PURPOSE

The Safe Drinking Water Act (SDWA) of 1974 required the U.S. Environmental Protection Agency (EPA) to develop enforceable drinking water quality standards to protect the public health. In 1986, amendments made to the SDWA strengthened provisions for the protection of underground sources of drinking water. These amendments included provisions for establishing Wellhead Protection Programs by individual states under "umbrella" EPA oversight. The EPA approved a statewide Wellhead Protection Program developed by MDE in June 1991.

The MDE program originally applied to community well water supplies, only. A newly proposed broadening of the Federal Clean Water Act will have the result of expanding the MDE Wellhead Protection Program to encompass non-community well water supplies both transient and non-transient in nature. ACHD, in cooperation with MDE, established this program to bring existing non-community well water supplies into compliance with the coming regulations. At the direction of ACHD, ALWI applied appropriate provisions of the MDE Wellhead Protection Program to this surface water source assessment.

1.2 SCOPE

ALWI prepared this surface water source protection plan following ACHD requirements, which followed MDE guidelines for transient system operation and wellhead protection.

1. **Site Reconnaissance, Photographic Documentation and Interviews** – ALWI observed the on-site surface water source, storage, treatment, and distribution infrastructure to the degree exposed without excavation or exposure to personal hazards. ALWI used an ACHD-owned digital camera to photograph conditions surrounding the source at the time of the field reconnaissance. Said photographs are stored on ACHD's computer system. ALWI interviewed the owner/operator and/or employee(s) to document information on the use patterns, history, and problems associated with the supply.

2. **Baseline Water Quality Assessment** - ALWI purged the water system and collected samples for analysis in the ACHD laboratory that is affiliated with the Maryland Department of Health and Mental Hygiene (DHMH). ALWI performed this fieldwork in accordance with MDE potable water sampling criteria including in-field measurements of turbidity, chlorine, and pH. ACHD selected the analyte list based on countywide experience with potability concerns and the capabilities of the aforementioned laboratory. The analytes included total and fecal coliform bacteria, nitrates, nitrites, iron, sulfur and manganese (Appendix B).

3. **Contamination Hazard Assessment** – ALWI identified existing and potential contaminant hazards within the delineated source protection area based on visual observations and the techniques enumerated above. ALWI ranked these hazards in term of relative risk and provided concrete suggestions for their appropriate address. More generally, herein ALWI provides specific recommendations for source reduction measures, contingency plans, and other methods that may help better protect against occurrences of water contamination.

2.0 WATER QUALITY ASSESSMENT

Slaughter and Darling (1962) reported the water quality from the Hamilton Group as locally variable (iron concentrations range from 0.79 to as much as 8.2 micrograms per liter (mg/l); hardness ranges from 213 to 227 mg/l; and pH ranges from 7.1 to 7.7). ALWI interpreted that the slight reddish colors of the local rock exposures as likely attributable to the trace presence of iron.

At this location, ALWI collected baseline water samples on December 2, 1998, in accordance with the MDE sampling procedures specified in COMAR 26.08.05. ALWI was unable to collect raw water samples for bacteria analysis because an effort to do so would have negatively biased the sample. ACHD's laboratory analyzed the samples for those constituents of countywide concern. These included total coliform bacteria as specified in COMAR 26.04.01.11A-C, alkalinity, color, conductance, hardness, iron, manganese, nitrate-nitrite nitrogen (COMAR 26.04.01.14(4)(a)), nitrite nitrogen (COMAR 26.04.01.14(4)(b)), pH, and total dissolved solids. The results are included as Appendix A, and suggest potability relative to the samples collected.

3.0 DELINEATION OF SOURCE PROTECTION AREA

ALWI delineated a protection area surrounding this site's source using generalized criteria developed by MDE for non-community supplies. Brice Hollow Run extends several miles

upstream to the north, however. Negligible nitrate-nitrogen concentrations were detected in the sample ALWI collected. This obviated the need for a nitrate balance assessment.

4.0 CONTAMINANT THREATS ASSESSMENT

ALWI performed a site reconnaissance on December 2, 1998. During the reconnaissance, local land use conditions were observed with emphasis on the potential use, storage and disposal practices of hazardous materials and petroleum products. Such conditions may have included visual evidence for present or former spills, stained or discolored ground surfaces, stressed vegetation, unusual odors, or visible underground storage tank (UST) facilities. Adjacent and nearby properties were also visually scanned for such evidence from the property and nearby public right-of-ways. Off-site properties were not entered. ALWI relied upon the accuracy of historical interview information provided by the owner and his employees to provide context for some of its observations.

4.1 POTENTIAL HAZARDS AT THE SOURCE

Surface sources for drinking water are at high risk for surface water pathogens as defined in the MDE guidance document. This risk would be better quantified with better information on the potential for variance in surface water indicator parameters (raw water bacteria; temperature and turbidity) with differing precipitation regimes. Ultimate decisions regarding possible filtration retrofits are appropriately driven by economic considerations (the capital and operational costs filtration).

4.2 OTHER LOCAL CONTAMINATION RISKS

On December 2, 1998, ALWI observed several potential contamination sources in the delineated area. ALWI identified the following potential sources of contamination within the WHPA: on-site USTs, the proximity to the highway and an up-gradient cemetery. These limit the feasibility of a plan to convert to groundwater use.

5.0 CONCLUSION AND RECOMMENDATIONS

ALWI found that the supply is potable relative to the analyses performed. No discharge has been confirmed by any of the facilities or practices ALWI observed. ALWI has ranked its observation in decreasing order of overall relative risk. ALWI provides specific recommendations at the conclusion of each respective observation or interpretation.

1. **Surface Water Influence** - Property ownership interests should collect and analyze water samples for surface water parameters (e.g., turbidity, temperature, and bacteria analyses performed daily for four consecutive days immediately after a 0.5-inch rainfall event). Depending on the results of the analyses indicated above, business ownership interests should evaluate the cost and feasibility of retrofitting the existing water supply system

with appropriate filtration measures to better protect from human health pathogens typically found in surface water (e.g., *Giardia* and *Cryptosporidium*). If no action is taken to investigate and mitigate this risk, all water should be boiled for ten minutes before commercial use and appropriate placarding should be provided so as to warn against use of an untested source for potable purposes.

2. **Underground Storage Tanks (USTs)** – ALWI observed on-site USTs. Given the proximity of the USTs to the wells and their understood long history of use, one-time analytical testing to confirm the absence of fuel oil constituents (e.g., benzene, toluene, ethylbenzene, xylene, methyl-tertiary-butyl ether [MTBE], naphthalene, and totals for both gasoline- and diesel-range petroleum hydrocarbon compounds seems appropriate. Periodic monitoring and other corrective actions as necessary should then continue based on the findings.

3. **Cemetery** - ALWI observed a cemetery upgradient of the property. Grave sites may be sources of microbial and/or hydrocarbon contamination of water (e.g., aldehydes and ketones sometimes used in embalming practices). Embalming constituent sampling should be repeated during both seasonal high and low water table conditions, and then repeated bi-annually or more frequently if warranted by the findings.

4. **Highway and Parking Area Deicing** – Highway and parking area deicing practices may increase a seasonal risk of sodium and chloride contamination. The State Highway Administration (SHA) is unlikely to curtail or otherwise change deicing practices on Oldtown Road (Route 51). However, consideration should be given to using non-chemical abrasives on the parking lot for deicing to the degree possible. Baseline and bi-annual sampling for sodium and chlorides should be considered.

6.0 SELECTED REFERENCES

Cleaves, Emery T., Jonathan Edwards Jr. and John D. Glaser, 1968. Geologic Map of Maryland: Maryland Geologic Survey, 1:250,000.

MDE Public Drinking Water Program, 1998, Transient Water System Operations Guidance; Guidance For Counties With Delegated Responsibilities (Draft), 45p.

Slaughter, Turbit H. and John M. Darling, 1963, The Water Resources of Allegany and Washington Counties: Maryland Department of Geology, Mines, and Water Resources, Bulletin 24, p. 408.

NONCOMMUNITY WATER SUPPLY SANITARY SURVEY

1. System Name: Millstone Service Station

2. WAS: 54

3. System Information:

Address: 13901 Oldtown Road, S.E.

Cumberland, Maryland

Phone No.: (301) 724-2543

4. ADC Map/Grid: N/A

5. Tax Map/Plat: N/A

6. Population:
Transient unknown
Regular 50 +/-
Total unknown

7. Property Information:

Owner's Name Trace Chains, Inc.

Address: 13901 Oldtown Road, S.E.

Cumberland, Maryland

Phone No. (301) 724-2543

8. No. Service Connections:

9. Type of Facility:

Food Service _____
Church _____
Campground _____
Daycare _____
Other (specify) Convenience Store

10. Contact Person:
Name: Trace Chains, Inc.

Phone No. (301) 724-2543

11. Operator:
Name: _____

Cert. No. _____

12. Sample History (Has the system had any violations?):

Bacteria: None apparent or reported Nitrate: None apparent or reported

SURVEY RESULTS

13. Comments on System, Recommendations:

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14. Inspected by:
Mark W. Eisner

15. Date inspected:
12/03/98

16. System Vulnerability
Protected _____ Vulnerable yes (see report)

WATER PLANT INFORMATION

17. Type of Treatment:
(Check all that apply)

Disinfection
- Gas Chlorine: _____
- Sodium Hypochlorite: x
- Ultraviolet Radiation: _____

Iron Removal: _____
Nitrate Removal: _____
PH Neutralizer: _____
Other: _____
Unknown: _____

18. System Schematic (Process Flow):

NOTE: This diagram is a simplified schematic of operational process flow observed or described on the date of the reconnaissance. Many water systems possess malfunctioning, disconnected and/or occasionally/regularly-bypassed equipment. Actual treatment processes may differ, therefore, from those shown herein.

19. System Storage:

Ground Storage: _____
Elevated Storage: _____
Hydropneumatic Tank: x
Other: _____

20. Storage Capacity:

Typical Domestic

21. Untreated water sampling tap?

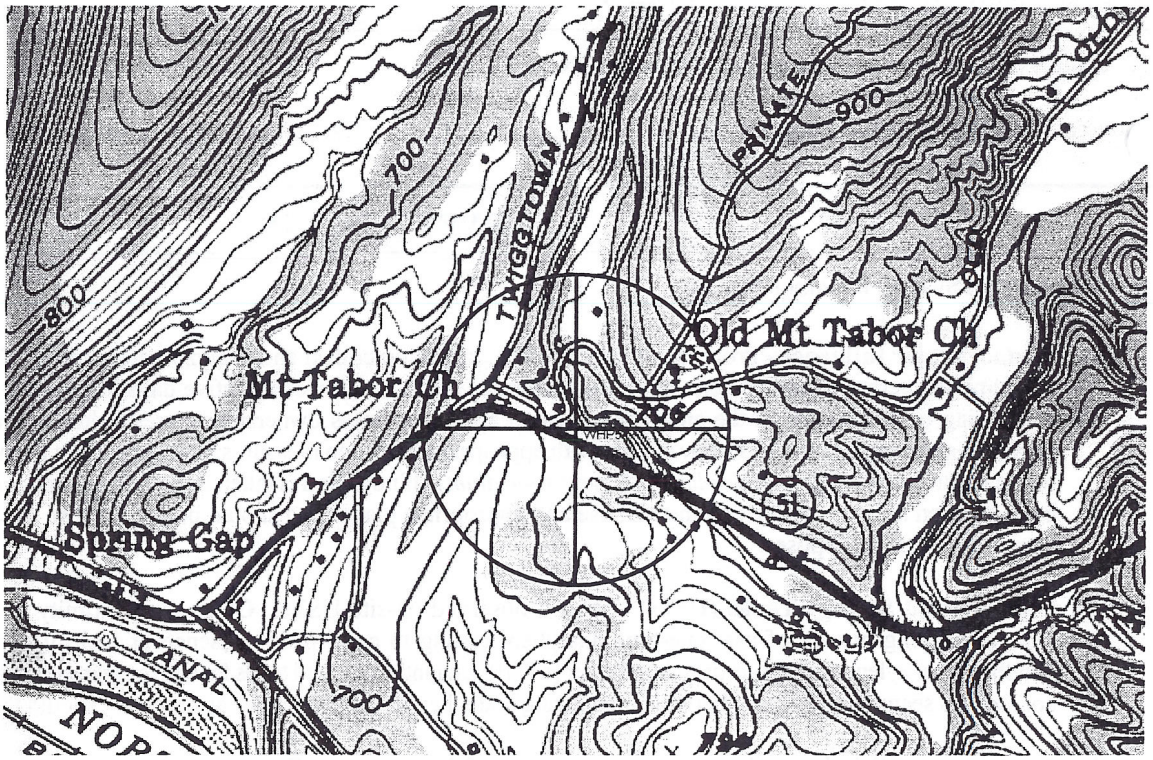
Yes _____ No x

WELL INFORMATION

22. Well Information:

Tag Number: uses spring
Year Drilled: _____
Casing Depth: _____
Well Depth: _____
Well Yield: _____
Casing Height: _____
Grout Depth: _____
Pitless Adapter? _____
Wiring OK? unknown
Pump OK? unknown

24. Well Location Diagram (1 in. = 1250 ft.) with Approximate Distances from Potential Contaminant Sources (i.e. septic, sewer lines, structures, petroleum storage, surface water bodies, etc.):



23. Well Type:

Drilled: x
Driven: _____
Dug: _____

25. Aquifer:
Name: Hamilton
GAP #: _____
Confined: _____
Unconfined: x
Semi-confined: _____

26. Quantity Used:

Daily Avg (gpd): unknown
Pumping Rate (gpm): unknown
Hours run per day: unknown

27. Well Cap:
Type? _____
Seal Tight? O.K.
Vented? O.K.
Screened? No
Conduit OK? O.K.

28. Casing Diameter:
2" _____
4" _____
6" x
Other _____

29. Casing Type:

PVC _____
Metal x
Concrete _____