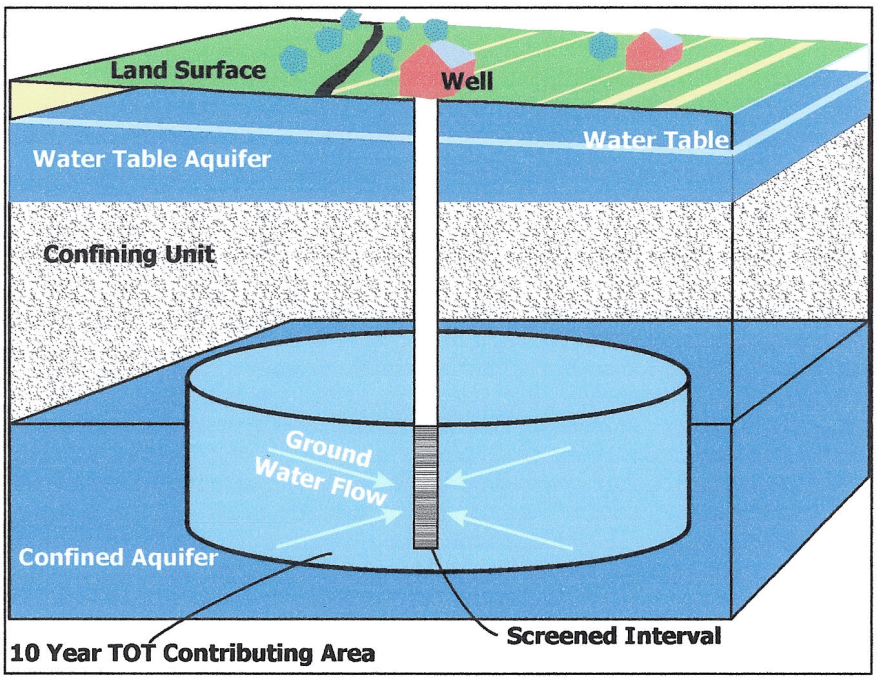
SOURCE WATER ASSESSMENT
for

SANDY COVE BIBLE CONFERENCE CENTER
Cecil County, MD



Prepared By
Water Management Administration
Water Supply Program
March 2006

MDE

Robert L. Ehrlich, Jr.
Governor

Kendl P. Philbrick
Secretary

Michael S. Steele
Lt. Governor

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SUMMARY

The Maryland Department of the Environment's Water Supply Program (WSP) has conducted a Source Water Assessment for Sandy Cove Bible Conference Center (Sandy Cove). The required components of this report as described in Maryland's Source Water Assessment Plan (SWAP) are: 1) delineation of an area that contributes water to the source, 2) identification of potential sources of contamination, and 3) determination of the susceptibility of the water supply to contamination. Recommendations for protecting the drinking water supply conclude this report.

The source of Sandy Cove's water supply is a confined aquifer, known as the Potomac aquifer. The system currently uses two wells for public supply. The Source Water Assessment Area was delineated by the Water Supply Program using U.S. EPA approved methods specifically designed for each source.

Potential sources of contamination within the assessment area were limited to on-site sewer dispoal. Previously drilled wells that are no longer in use, or that are poorly maintained, may provide a route for contaminants in the shallow aquifer to reach the confined aquifer. Figures showing land uses within the Source Water Assessment Area are attached at the end of the report.

The susceptibility analysis for Sandy Cove's water supply is based on a review of the water quality data, potential sources of contamination, aquifer characteristics, and well integrity. It was determined the Sandy Cove's water supply is not susceptible to contamination by inorganic compounds, volatile organic compounds, synthetic organic compounds, or microbiological contaminants. It is recommended, however, that Sandy Cove work with the Cecil County Environmental Health Department to ensure that all unused wells on their property are properly sealed.

INTRODUCTION

The Water Supply Program has conducted a source water assessment for the Sandy Cove Bible Conference Center (Sandy Cove) water supply in Cecil County (Figure 1). The Sandy Cove water supply is considered a nontransient noncommunity (NTNC) water system, which is defined as a public water system that regularly serves at least 25 of the same individuals over six months per year. The facility owns and operates its water supply system. The primary use for the water is drinking water and sanitary facilities for the conference center. There are 35 employees at the conference center.

WELL INFORMATION

There are six wells on the Sandy Cove property, however, only two of the wells are used to serve as public water supply for the conference center. Information about the wells was obtained from the Water Supply Program's database, site visits, well completion reports and sanitary survey inspection reports. A review of well data and sanitary surveys of Sandy Cove's water system indicates that the wells were drilled in 1988 and 1994 and should meet current well construction standards.

SOURCE ID	PERMIT NO	TOTAL DEPTH (ft)	CASING DEPTH (ft)	YEAR DRILLED
01	CE940143	97	77	1994
02	CE813759	93	83	1988

Table 1. Sandy Cove Well Information.

Sandy Cove has a Water Appropriation Permit that allows it to use an annual average of 46,000 gallons per day (gpd) and an average of 78,000 gpd during the month of maximum use. Most of the water is used for visitors at the conference center. It is estimated that the 35 employees of the conference center use an annual average of about 700 gpd and an average of 1000 gpd during the month of maximum use.

HYDROGEOLOGY

Sandy Cove is located in the Coastal Plain Physiographic Province. This region is underlain by unconsolidated gravel, sand, silt and clay. The strata, such as those that are composed primarily of sand and gravel, yield substantial quantities of water to wells and are termed aquifers. Confining beds are usually composed primarily of silt and clay. In areas like the Atlantic Coastal Plain, where alternating layers of sand and clay occur, water becomes stored at great depths by over and underlying impermeable layers. The hydrostatic pressure of the water in these layers is greater than atmospheric pressure. In a well drilled to

these layers the high hydrostatic pressure forces water in the well above the top of the aquifer. Such a well is known as an artesian well and the strata that the well is completed in is known as a confined or an artesian aquifer. The clays that confine the aquifer also protect the aquifer from contamination from surface sources.

Sandy Cove obtains its water supply from the Potomac Group of aquifers. The sediments of the Potomac Group are predominantly fine-grained sands, silt and clay with irregular sections of coarse sands and gravels. The coarser materials, which function as aquifers, tend to be white to orange-brown, crossbedded, moderately well sorted and composed mostly of quartz. The surrounding finer materials may partially to fully confine the aquifer. Sometimes a leaky connection occurs between aquifers that are connected directly or if separated by thin or silty layers. Sandy Cove's wells are completed in a confined aquifer that is protected from surface contamination by clayey strata.

SOURCE WATER ASSESSMENT AREA DELINEATION

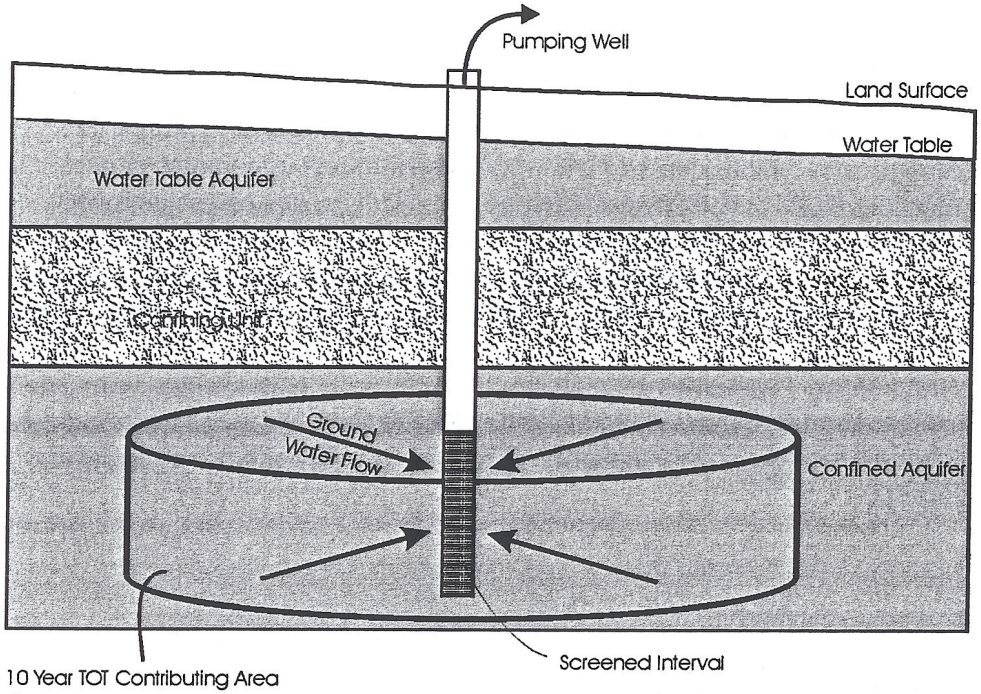
The Source Water Assessment Area (SWAA) for Sandy Cove was delineated using the methodology described in Maryland's Source Water Assessment Plan (1999) for confined Coastal Plain aquifers. The method is often referred to as the Florida Method. The Florida Method is an analytical method devised to calculate the radius of a cylinder of aquifer material needed to store a volume of water pumped from a well over a specified period of time. The SWWA was calculated for each well using the following equation:

$$r = \sqrt{\frac{Qt}{\pi n H}}$$

where r = calculated fixed radius (ft)
Q = pumping rate of well (ft ^{3}/yr)
n = aquifer porosity (dimensionless)
H = length of well screen (ft)
t = time of travel (yr.)

The area is a radial zone of transport in the aquifer. A ten-year time of travel is used and pumping rate and screened intervals are taken into account. Using this method, circular WHPAs were calculated for the two wells. Well 1 had a radius of 1,200 feet and well 2 had a radius of 1,700 feet.

Sandy Cove has a water appropriation and use permit (CE1962G001) which allows them to withdraw an annual average of 46,000 gpd. Their water system serves 35 employees and their water use is estimated to be about 700 gpd, or about 2% of the appropriation. The delineated WHPA (Figure 2) based on the full appropriation represents the aquifer zone of transport in the subsurface as illustrated below. The circles for each well were merged to produce on larger WHPA with an area of about 2,207 acres.



Conceptual illustration of a zone of transport for a confined aquifer

POTENTIAL SOURCES OF CONTAMINATION

In confined aquifer settings, sources of contamination at the land surface are generally not a threat unless there is a pathway for direct injection into the deeper aquifer such as unused wells or along well casing that are not intact or have no grout seal. Wells that are not being used or maintained will eventually corrode and provide a pathway for contaminants present in the shallow aquifers at higher-pressure heads to migrate to the deeper aquifers.

Potential sources of contamination identified at the land surface have the potential to impact the shallow water table aquifer. Based on the MDE databases and a field survey, wells that are no longer used or maintained present the greatest potential risk to the deep confined aquifer. Databases maintained by MDE and the Maryland Geological Survey indicate that at least 10 wells have been drilled on the property during the past century. The two wells listed in Table 1 are constructed to current standards and well maintained. Four other wells are believed to be abandoned; however, no well abandonment documentation is available. Four other wells that are not connected to the distribution system are in use but may not be regularly maintained. In addition, a supply well belonging to Reach for the Stars Daycare Center is also present fairly close to the production wells. The land use overlying the WHPA is primarily forested with lesser amounts of residential, agricultural and commercial land uses. The residential use is served by on-site septic systems, which are potential sources of nitrates and microbial contaminants to the shallow aquifer. These sources are not a risk to the deeper aquifer unless direct pathways are created.

WATER QUALITY DATA

Water Quality data was reviewed from the Water Supply Program's database and system files for Safe Drinking Water Act contaminants. The State's SWAP defines a threshold for reporting water quality data as 50% of the Maximum Contaminant Level (MCL). If a monitoring result is at or greater than 50% of a MCL, this assessment will describe the sources of such a contaminant and, if possible, locate the specific sources which may be the cause of the elevated contaminant level. All data reported is usually from the finished (treated) water unless otherwise noted. The only treatment used by Sandy Cove is pH adjustment.

A review of the monitoring data since 1993 for Sandy Cove's water supply indicates that it meets the current drinking water standards. The water quality sampling results are summarized in Table 2.

	Nitrate		SOCs		VOCs		IOCs (except nitrate)	
PLANT NO	No. of Samples Collected	No. of samples > 50% MCL	No. of Samples Collected	No. of samples > 50% MCL	No. of Samples Collected	No. of samples > 50% MCL	No. of Samples Collected	No. of samples > 50% MCL
01	18	0	3	0	12	0	5	0

Table 2. Summary of Water Quality Samples for Sandy Cove's Water Supply.

Inorganic Compounds (IOCs)

No IOCs above 50% of the MCL were detected in Sandy Cove's water supply.

Volatile Organic Compounds (VOCs)

No VOCs above 50% of the MCL have been detected in Sandy Cove's water supply.

Synthetic Organic Compounds (SOCs)

No SOCs above 50% of the MCL have been detected in Sandy Cove's water supply.

Microbiological Contaminants

All nontransient noncommunity systems are required to conduct quarterly routine bacteriological sampling for their water supply as required by the Safe Drinking Water Act, which measures total coliform bacteria. Total coliform bacteria are not pathogenic, but are used as an indicator organism for other disease-causing microorganisms. A positive routine sample could be a result of flooding a well, rupturing a water line, insects entering the well, or introducing contamination while maintaining the treatment system or coliform regrowth and would require follow-up total and fecal coliform analysis. Coliform bacteria have been detected in four of the 40 raw water samples that have been taken since 1996. The four detects occurred between May, 2000 and January, 2002. The well and distribution system were chlorinated in January 2002. No coliform has been measured since then.

SUSCEPTIBILITY ANALYSIS

The wells serving Sandy Cove's water supply pump water from a confined aquifer. Confined aquifers are naturally well protected from activity on the land surface due to the confining layers that provide a barrier for water movement from the surface into the aquifer below. A properly constructed well with the casing extended to the confining layer above the aquifer and with sufficient grout should be well protected from contamination at the land surface. Wells that are not being used or maintained will eventually corrode and provide a pathway for contaminants present in the shallow aquifers at higher-pressure heads to migrate to the deeper aquifers. Only direct injection into the aquifers from point sources within the source water assessment area like underground injection wells or improperly abandoned wells could cause a potential contamination threat to the supply. The information that was used to conduct the susceptibility analysis is as follows: (1) available water quality data (2) presence of potential contaminant sources in the WHPA (3) aquifer characteristics (4) well integrity and (5) the likelihood of change to the natural conditions. The susceptibility of Sandy Cove's water supply to the various contaminant groups in shown in Table 3, located at the end of this section.

Inorganic Compounds (IOCs)

While there are sources of nitrate in the shallow ground water in the wellhead protection area, the wells are screened in a confined aquifer and therefore, the supply **is not** susceptible to inorganic compounds.

Volatile Organic Compounds (VOCs)

No VOCs above 50% of the MCL have been detected in Sandy Cove's water supply. Based on the lack of identifiable sources the protected nature of the aquifer, Sandy Cove's water supply **is not** susceptible to VOC contamination.

Synthetic Organic Compounds (SOCs)

No SOCs have been detected in Sandy Cove's water supply. Based on the above analysis, Sandy Cove's water supply **is not** susceptible to SOC contamination.

Microbiological Contaminants

Raw water monitoring for microbiological contaminants is not required of water systems in confined aquifers because they are considered naturally protected from sources of pathogens at the land surface. Bacteriological testing for Sandy Cove's water supply, which only has treatment for pH, revealed four positive total coliform samples in the water supply for a period of 20 months. Subsequent chlorination of the well and the distribution system has remedied the problem.

Based on the above discussion, Sandy Cove's water supply **is not** susceptible to microbiological contaminants.

CONTAMINANT TYPE	Are Contaminant Sources present in the WHPA?	Are Contaminants detected in WQ samples at 50% of the MCL	Is Well Integrity a Factor?	Is the Aquifer Vulnerable?	Is the System Susceptible to the Contaminant
Nitrate	YES	NO	NO	NO	NO
Inorganic Compounds (except nitrate)	NO	NO	NO	NO	NO
Volatile Organic Compounds	NO	NO	NO	NO	NO
Synthetic Organic Compounds	YES	NO	NO	NO	NO
Microbiological Contaminants	YES	NO	NO	NO	NO

Table 3. Susceptibility Summary for Sandy Cove's water supply.

MANAGEMENT OF THE WHPA

Contaminant Source Inventory/Well Inspection

- The system owners should review the potential sources of contaminants within the WHPA and update them if necessary, including a consideration of historical uses.
- Periodic inspections and a regular maintenance program for the supply wells will ensure their integrity and protect the aquifer from contamination.
- All unused wells need to be abandoned and sealed.
- Wells that are not connected to the main distribution system also need to be maintained regularly.

Cooperative Efforts with Other Agencies

- Work closely with Cecil County Heath Department to identify any unused wells in the WHPA and to ensure that they are abandoned and sealed in compliance with the State's well construction standards.

Monitoring

- Continue to monitor for all Safe Drinking Water Act contaminants as required by MDE.

Changes in Use

- Any increase in pumpage or addition of new wells to the system may require revision of the WHPA. The system is required to contact the Water Supply Program when an increase pumpage is applied for or when new wells are being considered.

REFERENCES

Higgins, M.W. and L.B. Conant, 1990, The Geology Cecil County, Maryland, Maryland Geological Survey Bulletin 37, 183p.

Otton, E.G., R.E. Willey, R.A. McGreggor, G. Achmad, S.N. Hiortdahl, and J.M. Gerhart, 1988, Water Resources and Estimated Effects of Ground-Water Development, Cecil County, Maryland, Maryland Geological Survey Bulletin 34, 133p.

Maryland Department of the Environment, Water Supply Program, 1999, Maryland's Source Water Assessment Plan, 36p.

FIGURES

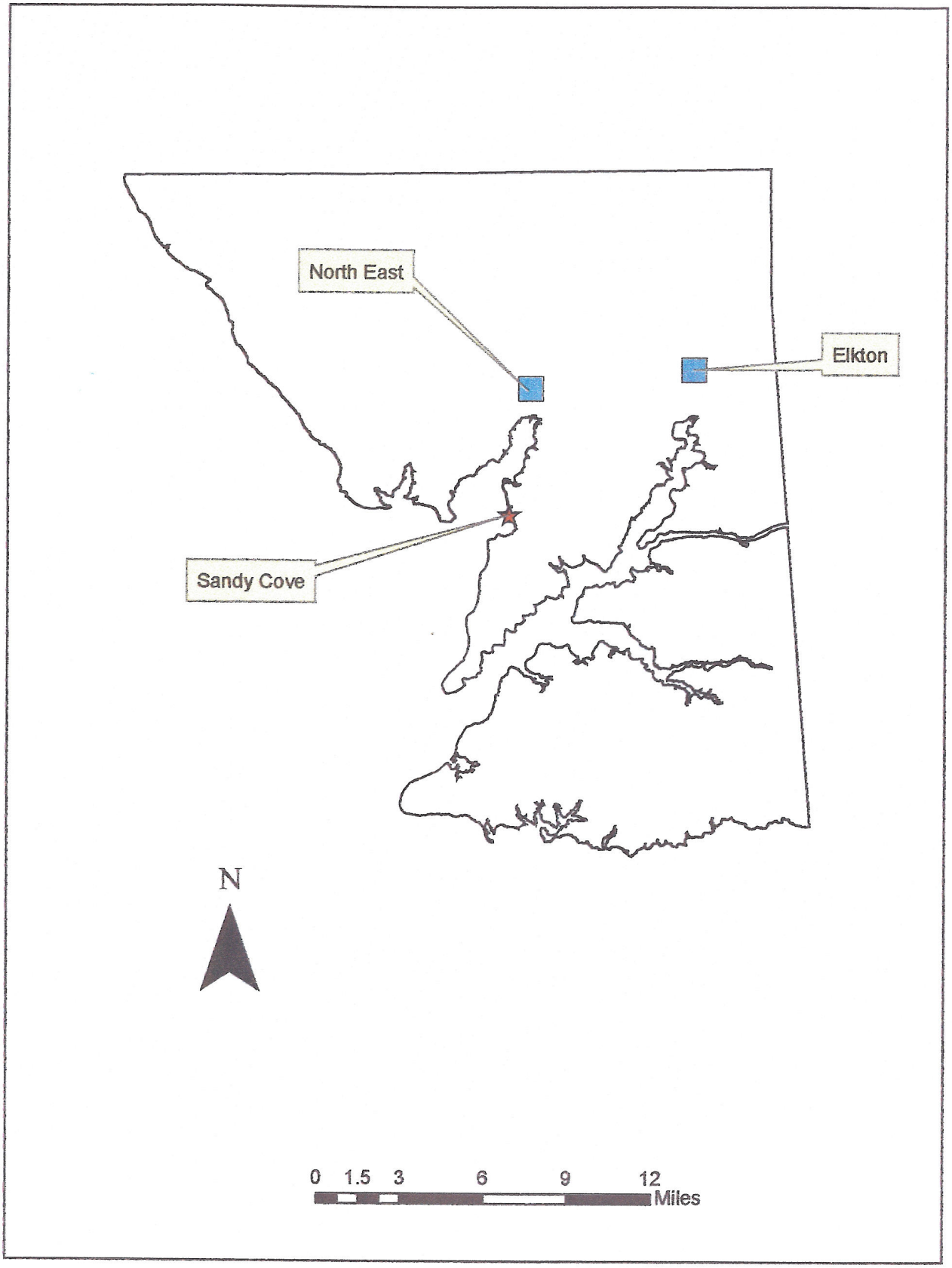


Figure 1. Location Map

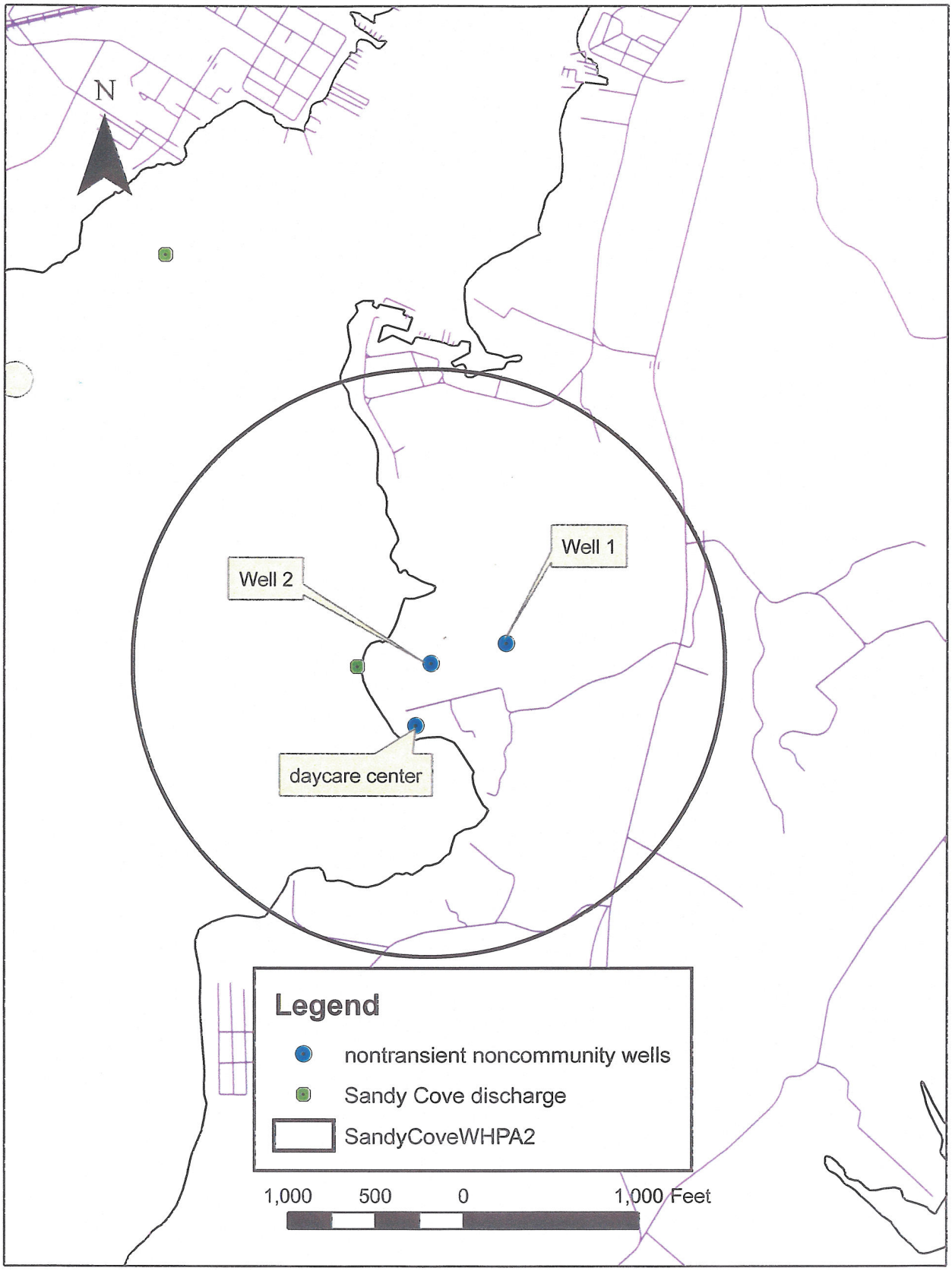


Figure 2. SandyCove Wellhead Protection Area

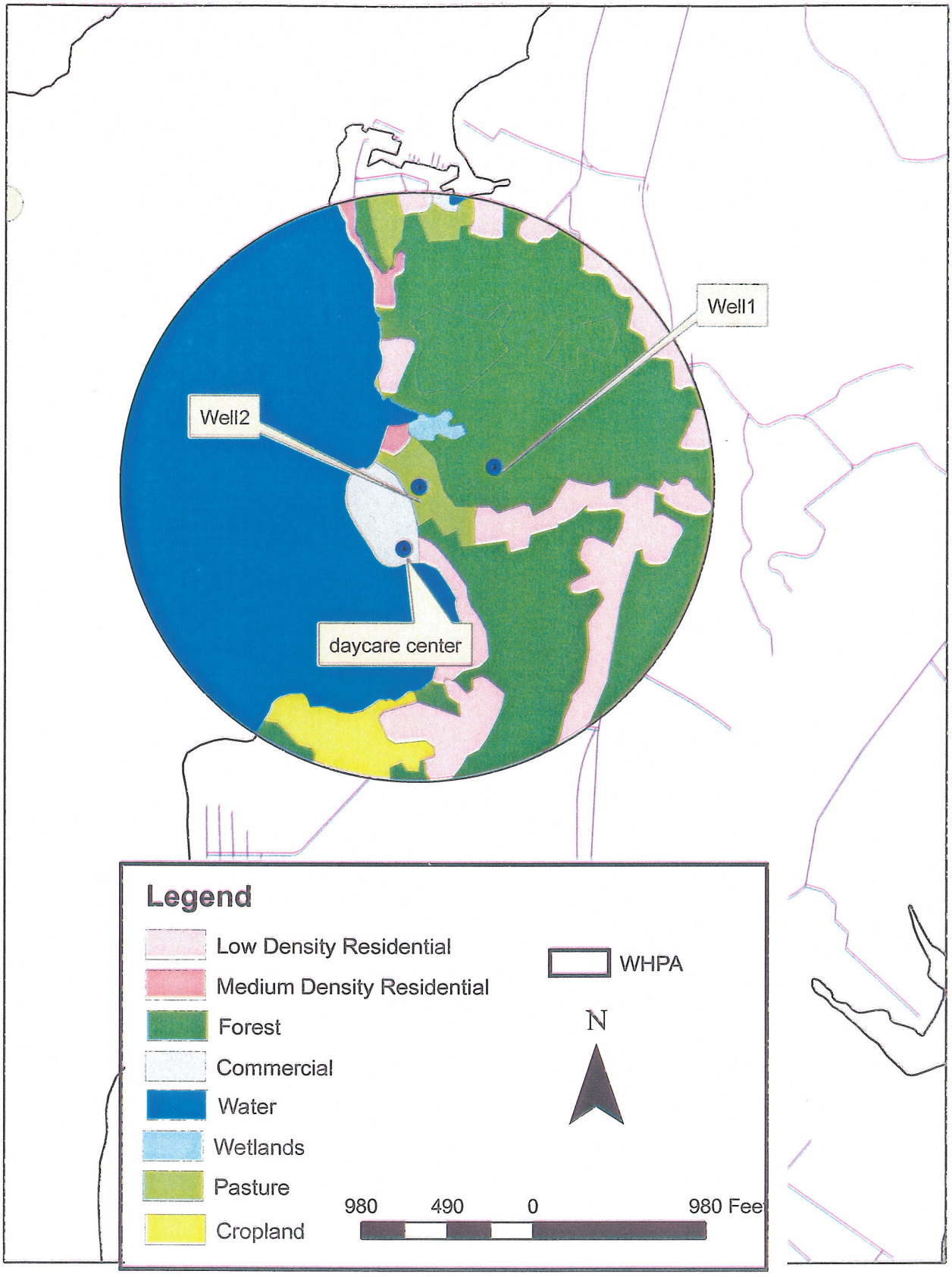


Figure 3. Land Use Map

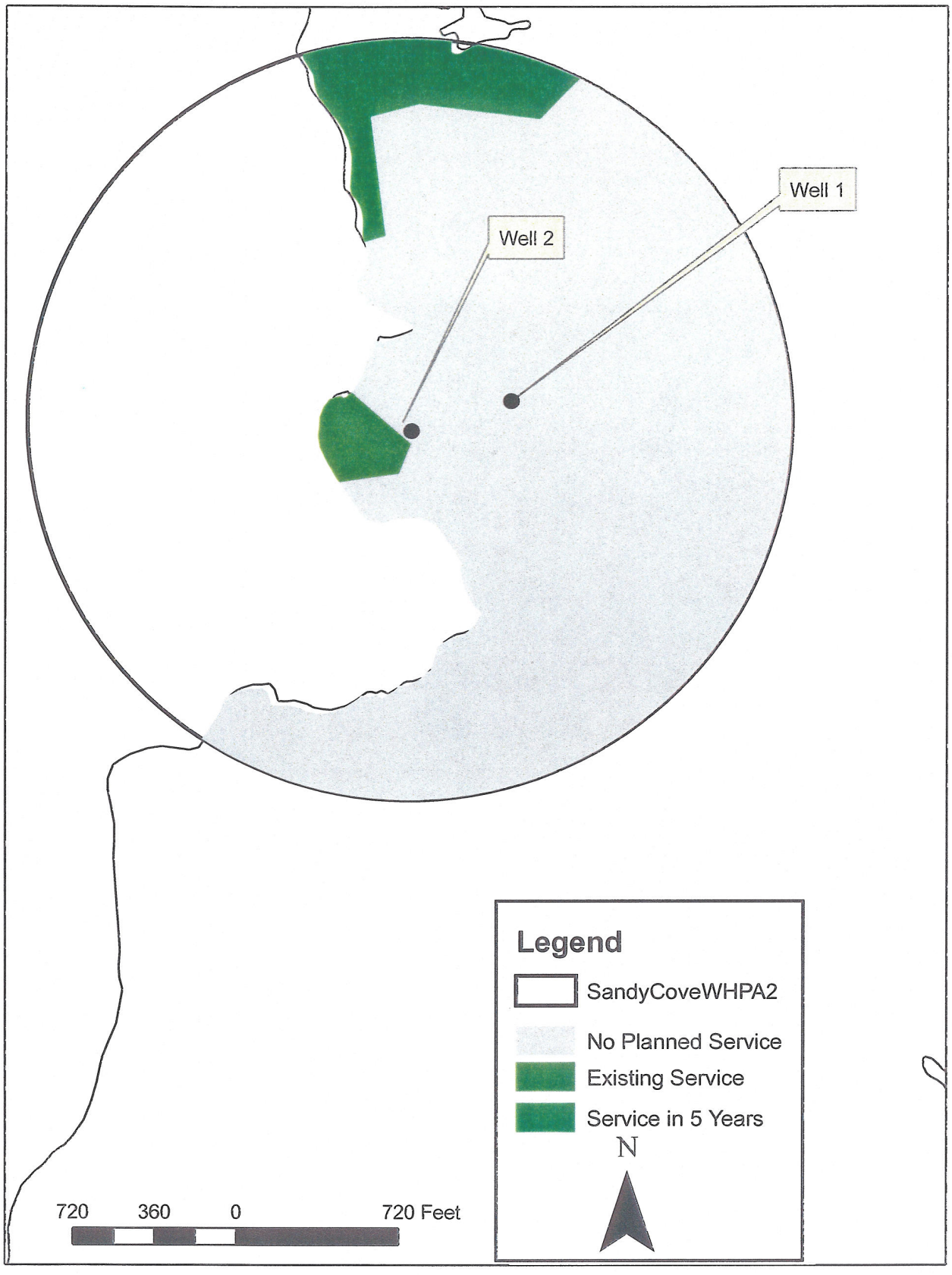


Figure 4. Sewer Service Areas

APPENDIX

Rd. 480, 612894 #44013-MSK EMERGENCY/TEMP NO. IF ANY well 1

B	1	03889	SEQUENCE NO. (DP USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please print or type

STATE PERMIT NUMBER: CE-94-0143
fill in this form completely

Date Received (APA): 062894

OWNER INFORMATION

Last Name / Owner / First Name: Morning Creek Inc
Street or RFD: PO Box D.
Town: North East State: MD Zip: 21901

DRILLER INFORMATION

Driller's Name: Timothy J Arnd License No.: 087
Firm Name: RT Seward And Son
Address: 158 Blackbird St. Rd. Townsend De 19734
Signature: Timothy J Arnd Date: 6/17/94

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 20
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 1000

B 3 LOCATION OF WELL

COUNTY: Cecil PNC Standby
SUBDIVISION: Sandy Cove
SECTION: ____ LOT: ____
NEAREST TOWN: NORTH EAST
MILES FROM TOWN (enter 0 if in town): 4 MI

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX): N, NE, E, SE, S, SW (circled), W, NW — TOWN

NEAR WHAT ROAD: ~~Flats of Sandy Cove~~ Sandy Cove Rd.

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH N (circled), WEST W, EAST E, SOUTH S

DISTANCE FROM ROAD: 50
ENTER FT or MI: FT

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
- I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOV. OTHER (REQUIRES APPROPRIATION PERMIT)
- P (circled) PUBLIC OR PRIVATE WATER COMPANY (REQUIRES APPROPRIATION PERMIT AND STATE HEALTH DEPARTMENT APPROVAL)
- T TEST, OBSERVATION, MONITORING (MAY REQUIRE APPROPRIATION PERMIT)

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

COUNTY NAME: Cecil COUNTY NO.:
STATE SIGNATURE: John Grace per CES INSERT S: S
DATE ISSUED: 070194 CO SIGNATURE: Charles E. Sm[illegible] EXP. DATE: 6/30/95
NORTH GRID: 624000 EAST GRID: 1091000

APPROXIMATE DEPTH OF WELL: 120 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR-ROTary | AIR-PERcussion | ROTARY (circled) (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other ______

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1. well at drill
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE
E 1090
N 620

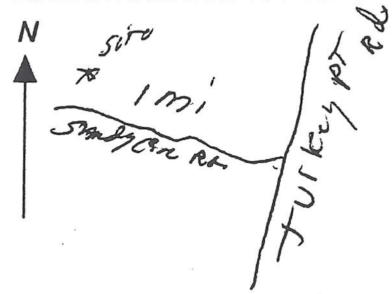
000
000

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S (circled) THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE): ____

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



Not to be filled in by driller (OEP USE ONLY)

APPROP. PERMIT NUMBER: CE62GAP001

FORCE: CS WRITE INITIALS IN BOX PERMIT No.: CE-94-0143

3

SPECIAL CONDITIONS

C 1 2244 SEQUENCE NO. (DENV. USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER PNC Standby Sandy Cov

ST/CO USE ONLY DATE Received [illegible]

DATE WELL COMPLETED 07/13/94

Depth of Well 97 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" CE-94-0143

OWNER MORNING CHEER INC
STREET OR RFD last name P.O. Box D first name TOWN NORTH EAST
SUBDIVISION ~~Alter~~ SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	Check if water bearing
TOP SOIL	0	6	
SAND & GRAVEL	6	35	
SAND CLAY MIX	35	60	
Yellow WHITE CLAY	60	70	
COARSE SAND	70	97	

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes (Y) no (N)
TYPE OF GROUTING MATERIAL
CEMENT (CM) BENTONITE CLAY (BC)
NO. OF BAGS 6 NO. OF POUNDS 300
GALLONS OF WATER 60
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. to 60 ft. (enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
(ST) STEEL (CO) CONCRETE (PL) PLASTIC (OT) OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PL	6	77

EACH CASING: OTHER CASING (if used) diameter inch / depth (feet) from / to

SCREEN RECORD
screen type or open hole insert appropriate code below
(ST) STEEL (BR) BRASS BRONZE (HO) OPEN HOLE (PL) PLASTIC (OT) OTHER

C 2

EACH SCREEN	screen type	DEPTH (nearest ft.)
1	PL	77 to 97
2		
3		

SLOT SIZE 1 30 2 3
DIAMETER OF SCREEN 6 (NEAREST INCH)

GRAVEL PACK from 77 to 97
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 4
PUMPING RATE (gal. per min. to nearest gal.) 20
METHOD USED TO MEASURE PUMPING RATE [illegible]
WATER LEVEL (distance from land surface)
BEFORE PUMPING 38
WHEN PUMPING 80
TYPE OF PUMP USED (for test)
(A) air (P) piston (T) turbine (C) centrifugal (R) rotary (O) other (describe below) (J) jet (S) submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO) YES NO
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS EXCEPT HOME USE
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX - SEE ABOVE:
CAPACITY: GALLONS PER MINUTE (to nearest gallon)
PUMP HORSE POWER
PUMP COLUMN LENGTH (nearest ft.)
CASING HEIGHT (circle appropriate box and enter casing height)
(+) above / (−) below LAND SURFACE (nearest foot)

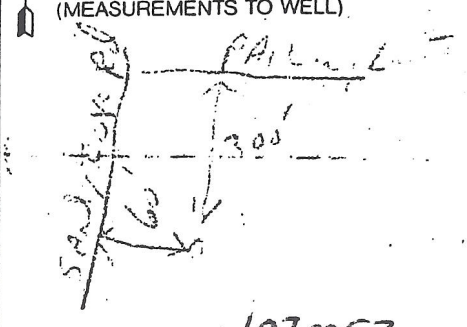
CIRCLE APPROPRIATE LETTER
A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
E ELECTRIC LOG OBTAINED
(P) TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS IDENT. NO. [illegible]
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION) [illegible]
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

OEP USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (TELESCOPE CASING) (E.R.O.S.) (LOG INDICATOR) W Q (OTHER DATA)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND/OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



P T 3482 — SEQUENCE NO. (OEP USE ONLY) — (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL

please print or type

OEP PERMIT NUMBER: CE-81-3759 — fill in this form completely

Date Received: 04 05 88

OWNER INFORMATION

Last Name: Manning — Owner — First Name: Check Inc

Street or RFD:

Town: Northeast — State: Md. — Zip:

LOCATION OF WELL

B 3

County: Cecil — Standby

Subdivision: Sandy Cove

Section: — Lot:

Nearest Town: Northeast

Miles from town (enter 0 if in town): 4.5 M I

DRILLER INFORMATION

Driller's Name: Donald S. Newnam — License No: 138

Firm Name: Shore Well Drillers

Address: Cecilton, Maryland 21913

Signature: Donald S. Newnam — Date: 4/4/88

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX): N, NE, E, SE, S, SW, W, NW, TOWN

Near what road: Md 272

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH, WEST, EAST, SOUTH

DISTANCE FROM ROAD: 1 — ENTER FT or MI: Mi

WELL INFORMATION

B 2

APPROX. PUMPING RATE (GAL. PER MIN.): 26

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 16000

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
- I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOV. OTHER (REQUIRES APPROPRIATION PERMIT)
- P PUBLIC OR PRIVATE WATER COMPANY (REQUIRES APPROPRIATION PERMIT AND STATE HEALTH DEPARTMENT APPROVAL)
- T TEST, OBSERVATION, MONITORING (MAY REQUIRE APPROPRIATION PERMIT)

Cecil — COUNTY NAME — COUNTY I.D.

OEP SIGNATURE — STATE HEALTH INSERT S

DATE ISSUED: 04 12 88 — CO SIGNATURE: Charles E. Simpson — EXP. DATE: 10/12/88

NORTH GRID: 624000 — EAST GRID: 109100

APPROXIMATE DEPTH OF WELL: 90 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) — JETTED — Jetted & DRIVEN

AIR-ROTary — AIR-PERcussion — ROTARY (Hydraulic Rotary)

CABLE — REVerse-ROTary — DRive-POINT

other

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1. Town - Cecilton
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

E 1090
N 620
000 000

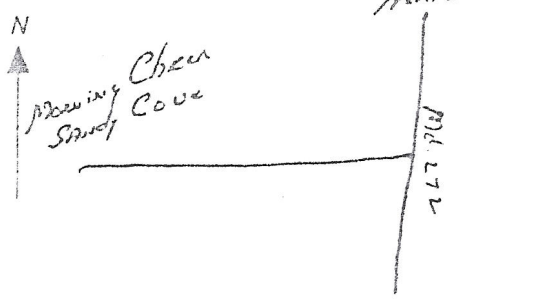
X

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENDED (IF AVAILABLE): CE-73-3229

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



Not to be filled in by driller (OEP USE ONLY)

APPROP. PERMIT NUMBER: CE62GAP001

FORCE: CS (WRITE INITIALS IN BOX) — PERMIT No: CE-81-3759

SPECIAL CONDITIONS

ORIGINAL

AC 7467 — SEQUENCE NO. (OEP USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER: Standby - MC Sandy Cove Bible Conf.

DATE Received: 1 JUL 1988

DATE WELL COMPLETED: 06/19/88

Depth of Well: 95 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": CE-81-3759

OWNER: Morning Cheer, Inc. (last name / first name)

TOWN: Northeast, Md.

STREET OR RFD

SECTION

LOT

SUBDIVISION

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	Check if water bearing
red-white-yellow clay	0	25	
yellow-white clay	25	74	
yellow-white sand	74	93	✓

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes (Y) / no (N)

TYPE OF GROUTING MATERIAL

CEMENT (CM) BENTONITE CLAY (BC)

NO. OF BAGS NO. OF POUNDS

GALLONS OF WATER NO ANNULAR SPACE

DEPTH OF GROUT SEAL (to nearest foot)

from ft. to ft. (enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

ST STEEL CO CONCRETE PL PLASTIC OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
ST	6	81

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to
ST	4	77	83

SCREEN RECORD
screen type or open hole — insert appropriate code below

ST STEEL BR BRASS BRONZE HO OPEN HOLE PL PLASTIC OT OTHER

EACH SCREEN		DEPTH (nearest ft.)	
1	ST	83	93
2			
3			

SLOT SIZE 1 15 2 3

DIAMETER OF SCREEN 4 (NEAREST INCH)

GRAVEL PACK from to

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 58

PUMPING TEST
HOURS PUMPED (nearest hour) 10

PUMPING RATE (gal. per min. to nearest gal.) 45

METHOD USED TO MEASURE PUMPING RATE bucket

WATER LEVEL (distance from land surface)

BEFORE PUMPING 35

WHEN PUMPING 62

TYPE OF PUMP USED (for test)

A air P piston T turbine

C centrifugal R rotary O other (describe below)

J jet S submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO): YES / NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS EXCEPT HOME USE

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX - SEE ABOVE:

CAPACITY: GALLONS PER MINUTE (to nearest gallon)

PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)

+ above / − below — LAND SURFACE — 1 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND/OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)

N

Chapel

Tower

CIRCLE APPROPRIATE LETTER
A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

E ELECTRIC LOG OBTAINED

P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 10.17.13 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS IDENT. NO. 138

Donald S. Flannery

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

OEP USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T TELESCOPE CASING

(E.R.O.S.) LOG INDICATOR

W O OTHER DATA

ORIGINAL