Groundwater Use Investigation Report
Lockheed Martin Middle River Complex
2323 Eastern Boulevard
Middle River, Maryland

Prepared for:

Lockheed Martin Corporation

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ACRONYMS

BCDEP	Baltimore County Department of Environmental Protection and Resource Management
BCDPW	Baltimore County Department of Public Works
BCiDPW	Baltimore City Department of Public Works
bgs	below ground surface
COMAR	*Code of Maryland Regulations*
DW	drinking water
G	geothermal
I	industrial
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources
MGS	Maryland Geological Survey
MRC	Middle River Complex
Tetra Tech	Tetra Tech, Inc.
USGS	United States Geological Survey
USPS	United States Postal Service
VCP	Voluntary Cleanup Program

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Section 1
Introduction

This document presents the results of the groundwater use investigation conducted for Lockheed Martin Corporation's (Lockheed Martin) Middle River Complex (MRC) in Middle River, Maryland. This study is part of Lockheed Martin Corporation's investigation of eight contiguous properties at the Middle River Complex, and fulfils a requirement by the Maryland Department of the Environment (MDE) to locate private or public water-supply wells within a 0.5-mile radius of the Middle River Complex boundaries. This survey is conducted every three years; it was last conducted in 2010 and is scheduled again for 2016. Local areas receiving public water service within the study area are identified in this report, as well as the current use and construction of each off-site well.

Well records from state, county, and municipal government agency databases were obtained and used to tabulate selected well information and to plot well locations on a map. Well and groundwater-use data were obtained from the Maryland Department of the Environment well-database search and supplemented by reviews of well-completion reports, aerial photographs, topographic maps, and Maryland Geological Survey (MGS) publications. Tetra Tech, Inc. (Tetra Tech) contacted the utilities supplying public water to residences and businesses in the Middle River area of Baltimore County: the Baltimore County Department of Public Works (BCDPW) and the Baltimore City Department of Public Works (BCiDPW). Field visits to the area identified and confirmed the presence of wells and public water utilities.

Tetra Tech, Inc. completed the groundwater use survey according to Maryland Department of the Environment guidelines provided in their Voluntary Cleanup Program (VCP) application checklist (MDE, 2006). These guidelines recommend obtaining documentation from county, municipality, and the relevant water authority concerning existing potable wells, the availability of municipal water, and possible groundwater-use areas within 0.5-mile of the property boundary (hereinafter referred to as the "survey area"). This includes obtaining copies of county and municipality water-plan maps depicting existing service areas, planned service areas, and

no-service-planned areas within 0.5-mile of the property boundary. The guidelines also suggest contacting Maryland Department of the Environment to request a survey for all area wells and other available information pertaining to groundwater use within the survey area, and recommends locating each identified well (excluding test or observation wells) on a scaled map which provides the permit number, screen depth, and current use of each well, if available.

1.1 SURVEY AREA LOCATION

The Middle River Complex in southeastern Baltimore County, Maryland, is east of Baltimore City. It is bordered on the west and south by Cow Pen Creek and Dark Head Cove and on the north and east by Eastern Boulevard and Martin State Airport (Figure 1-1). The groundwater use investigation area includes all lands within 0.5-mile of the Middle River Complex property boundary.

Middle River, a tidal estuary of the Chesapeake Bay south of the property, is the major surface water feature in this region. Tributaries of Middle River in the survey area include Cow Pen Creek and Dark Head Cove. Commercial development in the survey area is concentrated along Eastern Boulevard; dense residential development, such as row houses and condominiums, is found in areas west and northwest of the Middle River Complex. Development south of Eastern Boulevard is primarily residential and concentrated along the waterfront on relatively narrow peninsulas west and south of these creeks. Open fields, undeveloped land, and sparse residential development lie north and northeast of the Middle River Complex.

1.2 GEOLOGIC SETTING

The survey area is in the Coastal Plain physiographic province, which is underlain by unconsolidated sediments of the Lower and Upper Cretaceous ages. Coastal Plain sediments were deposited unconformably on the southeastward-sloping surface of crystalline basement rocks, forming a wedge-shaped mass that thickens progressively from northwest to southeast. The strike of the Cretaceous Age formations parallels the boundary (also referred to as the Fall Line) between the Piedmont Plateau (or outcrop area for the crystalline rocks) and the Coastal Plain. The Cretaceous Age sediments (which generally consist of irregular and lenticular [i.e., lens-shaped] beds of sand, gravel, and clay of continental origin) may be divided into three formations: the Patuxent formation comprised of Lower Cretaceous Age materials, and the

Arundel and Patapsco formations of the Upper Cretaceous Age. Additional details of the geology and hydrogeology of the survey area are in Section 4.1.1.

1.3 LOCAL WATER SUPPLY

Drinking water in most of the survey area is supplied to Baltimore County by the Baltimore City Department of Public Works. Three reservoirs (Loch Raven, Pretty Boy, and Liberty) in the central, northern, and western part of Baltimore County are surface water impoundments for the public water supply (BCDPW, 2004a, 2004b). Water from these reservoirs is piped to the City of Baltimore reservoir, which serves the survey area. Most residential properties in the survey area are supplied with public water; currently, only a limited number of private potable wells appear to be in use.

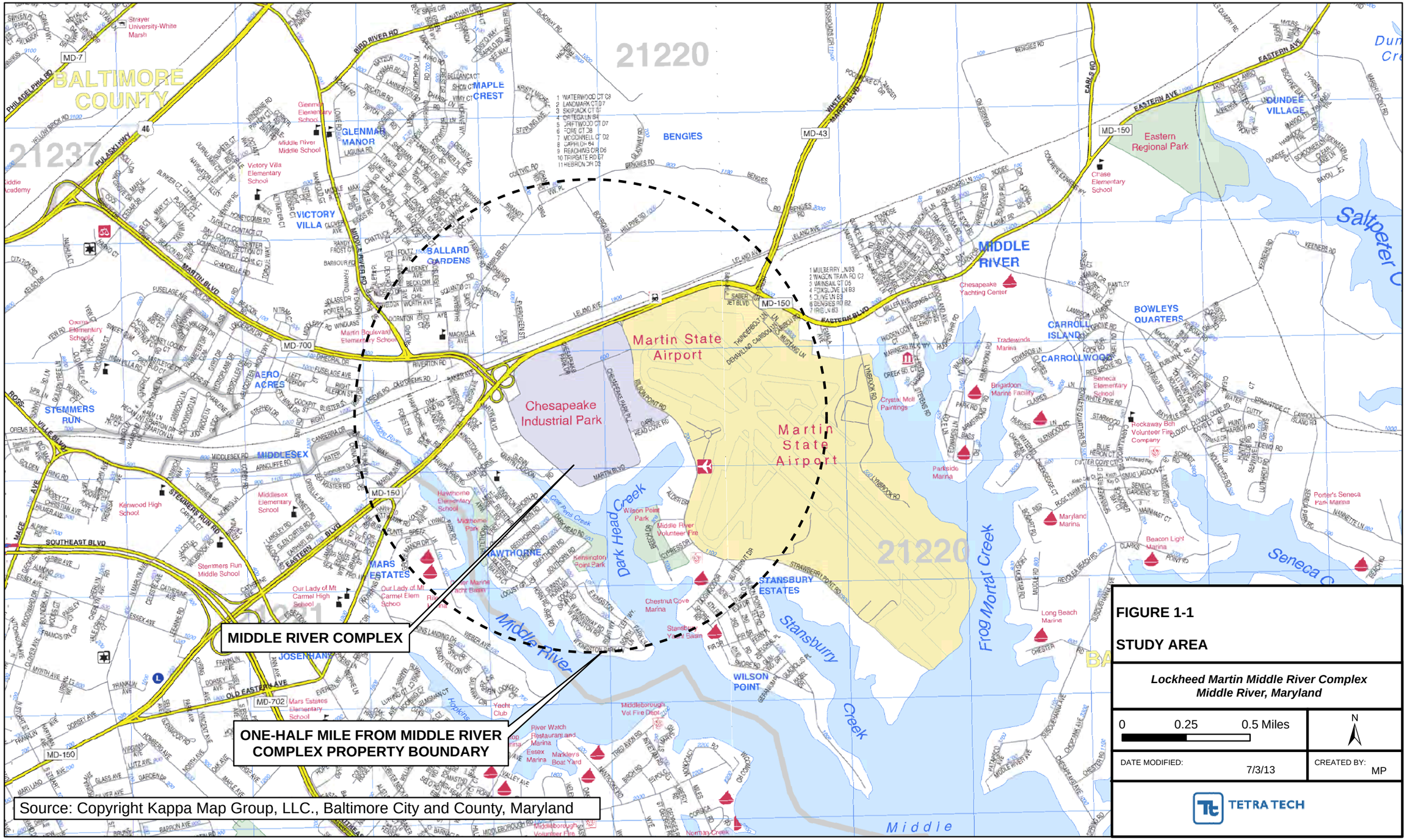

FIGURE 1-1

STUDY AREA

Lockheed Martin Middle River Complex
Middle River, Maryland

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Section 2
Groundwater Use Regulations

Tetra Tech, Inc. (Tetra Tech) contacted the Maryland Department of the Environment (MDE) and the Baltimore County Department of Environmental Protection and Sustainability (BCDEP) for their groundwater use regulations. State-promulgated regulations for wells are in *Code of Maryland Regulations* (COMAR) Title 26, Department of the Environment, Subtitle 04. COMAR 26.04.04, "Well Construction," which provides standards for well construction and development, equipment installation, yield testing, submittal of well-completion reports and, in the case of potable-water-supply wells, standards for disinfection and obtaining final approval of a well for use. COMAR pre-empts local authorities; therefore, they are the only procedures and standards governing well construction in Maryland.

Pertinent information from COMAR and summaries of conversations with regulators are below:

- Applicants for any new well (i.e., drinking water, industrial, geothermal, farming, monitoring wells, etc.) installed in Maryland must obtain approval in the form of a well construction permit and pre-printed well tag to drill and install a well.

- Well construction standards have been established for each of five hydrogeologic areas in the state. Wells near the Middle River Complex (MRC) fall in either Hydrogeologic Area 1 or Hydrogeologic Area 2, where unconfined or confined (artesian) aquifers of the Maryland Coastal Plain are of major importance.

- All water supply wells must meet certain bacteriological, chemical, and physical requirements to obtain a "Certificate of Potability." Certificates are issued at the county level for a domestic or commercial supply well. Following well installation, the well is sampled by either the county or the homeowner for coliforms and nitrate. The "Certificate of Potability" is issued once acceptable results (i.e., the results meet state standards) are received from the laboratory (BCDEP 2004a, 2004b, 2004c, and 2006).

- Regulations concerning well-abandonment standards are outlined in COMAR 26.04.04.11. A well-abandonment form must be submitted to the regulating agency once the procedure has been completed.

If requested by MDE, Baltimore County may sample an existing well for contaminants other than coliforms and nitrates; however, this rarely occurs. County records are not organized such that well-sampling data for a large area can be easily found, although records for a given street or residence can be retrieved upon request (BCDEP, 2004a, 2004b, 2004c, and 2006). Furthermore, MDE does not maintain a database of domestic well-sampling data. MDE only requires that wells be sampled for contaminants other than bacterium and nitrates if they feel that the well may be affected from activities at a nearby site.

Typically, when the county plans to provide public water to a given residential area, a letter is issued to the homeowners indicating that public water will be available. Homeowners have up to a year to connect to the public water supply and abandon their wells. Well-abandonment reports are often not submitted to the regulating authorities. Many homeowners are not aware that well abandonments should be performed by a licensed well driller; as a result, the well may have been removed by a plumber or another person not familiar with state regulations. The well-abandonment regulation in practice is often a "soft" requirement (BCDEP, 2004a, 2004b, 2004c).

Some homeowners will submit a request to the county to maintain their existing well after connecting to public water. The county will issue a letter approving such a request as long as the well is completely disconnected from the homeowner's water supply. The well may only be used to water gardens, wash cars, etc. Approval letters issued by the county have been maintained electronically for the past seven years. These records can be accessed by providing a specific residential address to the county (BCDEP, 2004a, 2004b, 2004c).

New homes in Baltimore County around the MRC must be connected to a public water supply, but special exceptions are allowed. A "Justification for Variation" of the *Master Water and Sewer Plan* is issued when public water is not directly available to a new residence, and the cost to extend the water line to the residence would be prohibitive. In this case, an interim agreement is established between the county and the homeowner where the homeowner is allowed to continue to operate a well until such time as the water line is extended. When the water line is installed within a reasonable distance, the homeowner must connect to the public water supply (BCDEP, 2004a, 2004b, 2004c, and 2006). Personnel from the Baltimore City Public Works Department read water meters and bill homeowners for their public water supply use, per an agreement between the City and Baltimore County. The public may search county records for a given

address via the city's utility billing section of the Water and Wastewater Department to determine if a residence is billed for public water use (BCiDPW, 2013).

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Section 3
Methodology

Several tasks were performed to list wells and document public water delivery in the survey area:

- obtaining and reviewing Maryland Department of the Environment (MDE) water-supply well records to identify installed and/or abandoned wells, determine the wells' current use, and locate well construction information
- obtaining and reviewing Baltimore County Department of Public Works (BCDPW) and Baltimore City Department of Public Works (BCiDPW) documents and water bill records to identify areas in the survey area with public water connections
- obtaining and reviewing aerial photos and topographic maps to identify historical and current well locations
- summarizing pertinent regulations and policies concerning permitting, compliance, and operating requirements for private and public groundwater well users in the survey area (see section 2)
- field reconnaissance to verify the status of the wells identified in the public records and document searches (specified above) and to locate additional wells that might be in the area. (All wells identified in the public records were checked in the field. No contacts were made with residents or business owners in the study area regarding wells or available water supplies.)

As an initial step, a map was produced showing the perimeter of the survey area: 0.5-miles from the Middle River Complex (MRC) property boundary (Figure 1-1). The base map shows the names of all roads in the survey area as of 2012.

Agency records—MDE and other Maryland agencies, such as the Maryland Geological Survey (MGS), maintain records of wells drilled in Maryland; permits have been required since June 1945. Originally, drillers furnished reports to the MGS. In May 1964, the permitting authority was relinquished to the Department of Water Resources, which was part of what is now the Maryland Department of Natural Resources (MDNR). Data available for wells installed before 1970 are limited, and well location information is referenced only by the nearest town

and/or property owner. Exact addresses (e.g., house number and street) are typically not provided.

In addition to requiring well-completion report forms and more detailed information on well permit applications, in 1970 the "Maryland Grid Coordinate" system began to be used to provide greater accuracy in locating newly installed wells. All well records were consolidated in 1995, when the MDNR Division of Water Rights (the former Department of Water Resources) merged with MDE; MDE now oversees the program. The Baltimore County Department of Environmental Protection (BCDEP) groundwater management section is responsible for issuing and approving qualified well-permit requests and maintaining a database of all groundwater users in Baltimore County.

Various MGS publications with information regarding Baltimore County wells were reviewed for this investigation (Bennett and Meyer, 1952; Laughlin, 1966; and MGS, 1978). However, the locations and the continued use of many wells in these reports are uncertain, and are therefore not included in the final well listing for this investigation. Active wells listed in these reports are assumed listed in the Maryland well database. A discussion of the literature search findings appears in Section 4.1.

An electronic list of well records from 1945–December 2012 (as well as copies of the well permit applications, and well completion and abandonment reports) were obtained from MDE. The database was searched by nearby towns and individual road names within the 0.5-mile search radius to reduce the number of well records for the study area. The list of wells in the MRC area (excluding MRC monitoring wells) is in Appendix A. Appendix A also provides a list of permit records for wells installed before 1970. Data fields from the list include the following:

- permit number (which is the same number posted on the completed well, in the form of a pre-printed well tag)
- Maryland state-grid coordinates: in many cases, coordinates are not measured precisely by the driller, and often only approximate the well location
- specific location of the well, optimally with a house or building number and street. (Occasionally, the house or property number is not listed in the road-name data field. Therefore, some wells may only be identified as being on a specific road, rather than at a specific property on that road.)

- other information obtained from the well completion report, such as the well completion date, total well depth, gallons per minute produced when the well was developed, and the water level before and during pumping.

This information is followed by a series of codes indicating: (1) what the well will be used for, (e.g., drinking water [DW], industrial [I], geothermal [G], public or private water company [municipal]), and (2) whether a well is replacing an existing well, whether the original well will be abandoned, or whether the original well will be used as a standby well. Finally, other codes describe the relative success of the drilling effort, such as whether an existing well was deepened, if the new well was unsuccessful, if more than one hole was drilled to obtain sufficient water, or if a successful well was later abandoned. A key to the codes used is at the front of Appendix A.

Well identification—The database search identified 49 wells within or near 0.5 mile of the MRC boundary. Each well listing was reviewed to determine whether the well was outside, near (requiring field confirmation), or inside the survey area. One of three factors would eliminate a well from further consideration: either (1) the street was outside the survey area, (2) the coordinates provided for a given well were on a street that crossed through the survey area but were well outside the survey area boundary, or (3) the house or commercial property number was outside the numbered blocks shown on the map. If a given well appeared to be inside the boundary, or if the address was incomplete, it was retained and its general location plotted on a survey area site map.

Nineteen properties with state-permitted water-supply wells, five properties with possible water-supply wells (1010 Hillpine Road, 1900 Leland Avenue, 1901 Old Eastern Boulevard, 1126 Beech Drive, and 1128 Beech Drive), and one property with an abandoned well (1002 Beech Drive) were retained for further investigation following the review. A well observed at 1010 Hillpine Road during the field reconnaissance but not initially found in MDE well records was included in the group of wells retained for further investigation. As a check, Tetra Tech also searched the BCDEP groundwater management division's well database to verify wells listed in the MDE database, and to search for any additional wells in the study area. Each street in the study area was researched using the county database to identify any possible wells not on the MDE list.

The search found a March 2001 abandonment report for a shallow (11 feet deep) hand-dug well at 1002 Beech Drive. The search also located a county well-inspection report for 4 Punte Lane. However, the well permit number on that report was the permit number for the well installed at 5 Punte Lane. The inspection report map indicates wells are at 3, 4, and 5 Punte Lane, but no permits or well completion reports were found for 3 and 4 Punte Lane in the county or MDE records. However, that portion of Punte Lane does not appear to be served by public water, so wells are likely in use at these residences. These Punte Lane addresses were not found in a search of the Baltimore City/County water billing records, and utility appurtenances such as water valves or water meters were not observed at these residences during the field reconnaissance.

Well completion, abandonment, and inspection reports on file at MDE and the county were obtained for wells confirmed present and for areas where the existence of a well was likely. These reports are organized numerically by permit number in Appendix B. No permit application or well completion report was found for the residential well observed at 1010 Hillpine Road.

Public water supply documentation—Tetra Tech visited the public works departments of Baltimore County and Baltimore City to obtain records and documentation of areas where public water is supplied to residences and businesses. Public-water supply maps (or key maps) and more detailed public-water distribution maps were obtained from the Baltimore County Department of Public Works (BCDPW, 1997). These maps describe which areas are supplied by public water and/or how far the water mains extend within a given area. Key maps and detailed distribution maps for the survey area are in Appendix C. The *Baltimore County Water Supply and Sewerage Plan Water Plan* (BCDPW, 2012; in Appendix D) was also reviewed for details regarding the County's present and planned water supply in the study area.

In a cooperative agreement with Baltimore County, Baltimore City invoices residences and businesses for public water supplied in the Middle River area. Baltimore City provides address-specific billing information on their web page; this information was used in this study to determine if a residence is on the public water system. In July 2013, Tetra Tech searched water bills for residences on the streets/addresses in the survey area (see Table 4-1 in Section 4) to determine if they currently receive public water (BCiDPW, 2013).

Property assessment records and United States Postal Service delivery addresses—Property assessment records provided by the Maryland Department of Assessments and Taxation and

United States Postal Service (USPS) delivery addresses were used to locate and confirm certain property addresses and locations. Property maps provided by the Maryland Department of Planning were used to locate properties based on parcel, tax block, and lot information in the property and taxation records and/or well completion reports.

***Aerial photographs*—**Historical aerial photographs reviewed at the MGS in Baltimore provided visual information regarding the relative distribution of undeveloped (such as farmland or apparently undisturbed forested areas) and developed lands over time. The resolution of these photographs (e.g., 1":20,000') does not provide sufficient detail to locate wells on specific properties, and could only identify possible domestic or farm well locations based on land use. Aerial photographs available on Google Earth™ were also reviewed to identify possible wells on properties where wells could not be viewed in the field. Wells casings or other well structures at the properties investigated could not be identified on Google Earth™ aerial photographs.

***Other reference reports*—**Water resource reports generated by the MGS in cooperation with the United States Geological Survey (USGS) were also reviewed, as was the geologic map of the Middle River quadrangle. These documents include well listings and/or geology information in the survey area and are in Appendix E.

***Field reconnaissance*—**Field reconnaissance conducted on March 15–16, 2006, October 15, 2010, and July 2–3, 2013, further investigated water-supply wells and locations identified through government records and by review of aerial photographs of the survey area. Field reconnaissance consisted of driving or walking by a given property to identify whether any wells could be located. Well locations to be field checked were compared to the county key maps to determine if they were in an area now supplied with public water. Key maps do not indicate a public water main in several instances; however, fire hydrants near the residences and water meters at some residences were observed. Such observations are noted on the final list of wells discussed in Section 4.

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Section 4
Discussion of Findings

This section summarizes information obtained from the literature search and review of aerial photographs and topographic maps. Results of the well survey and field reconnaissance are also presented in this section.

4.1 LITERATURE SEARCH

4.1.1 Geology and Hydrogeology of the Survey Area

Most of the geology and hydrogeology information for the Baltimore area was found in the Maryland Geological Survey (MGS) publication *Geology and Ground-Water Resources of the Baltimore Area* (Bennett and Meyer, 1952). This report focuses on the large groundwater developments found in industrial districts in and near Baltimore. The industrial area encompasses the tidal portion of the Patapsco River and includes portions of the Back River, both of which are large watersheds adjacent to and southwest of the Middle River Complex (MRC) survey area.

The 1977 geological map of the Middle River quadrangle (Reinhardt, 1977) was also consulted. It maps the entire survey area as either the clay or sand facies of the Patapsco Formation. The sands are more concentrated on the peninsulas east of Frog Mortar Creek and in areas north of Eastern Boulevard. All peninsulas west of the MRC are mapped as belonging to the clay facies.

Hydrogeologically, the sand and gravel in the Coastal Plain sediments form relatively uniform and widespread aquifers. Water table conditions generally occur in the outcrop areas of the sediments. However, down dip of the outcrops, groundwater occurs under artesian or confined conditions. In the outcrop areas, the water table generally conforms to the shape of the land surface (i.e., it is high in the inter-stream parts of the area and not far above stream level in the valleys). Before groundwater resources were developed in the Baltimore area, the configurations of piezometric surfaces (i.e., the imaginary surface to which water will rise in artesian wells) were relatively “featureless.” Although the exact shape of these surfaces before large

groundwater developments is not known, it is reasonably certain that in general they sloped "gently toward the southeast" (Bennett and Meyer, 1952), perpendicular to the trend of the aquifers' outcrops.

The Patuxent Formation is the most important water-bearing formation in the Baltimore area and is approximately 150–250 feet thick. Industrial wells in the southeastern part of the Baltimore area, specifically Curtis Bay and Sparrows Point, yield 500–900 gallons per minute. Transmissivities and measurements of the storage coefficient in confined portions of the aquifer in these industrialized areas average about 50,000 gallons per day per foot and 0.00026, respectively.

The Patapsco Formation is also an important water-bearing formation in industrialized Baltimore, where it is separated by clay into a lower and upper aquifer. The lower aquifer yields as much as 500–750 gallons per minute to industrial wells, with an estimated transmissivity of 25,000 gallons per day per foot. The upper aquifer yields quantities of water similar to those of industrial wells and, since it has a greater thickness than the lower aquifer, it likely has a higher overall transmissivity.

4.1.2 Well Information Obtained from Publications

Several MGS publications list well locations in Baltimore County. Pertinent information from these documents is in Appendix E. These documents were produced between the 1950s and 1970s, so well location information is not based on the standard United States Geological Survey (USGS) 7.5-minute topographic maps. Rather, it is based on five-minute quadrangles of latitude and longitude, designated from north to south in uppercase letters, and from west to east in lowercase letters. The private potable-well survey area includes portions of Baltimore County quadrangles Ef, Eg, Ff, and Fg.

MGS publications that reference wells within these quadrangles also include maps showing (as accurately as possible) well locations. However, Bennett and Meyer (1952) report that the well information "was obtained from many sources and is of varying degrees of completeness and accuracy. The wells are located as accurately as possible, but many old wells are no longer visible and can be located only approximately." Maps showing these well locations and the source well-data and logs are also in Appendix E. Many wells are believed to no longer exist or

to have been replaced with newer wells. However, data from these wells, such as the well logs, may provide a greater understanding of the geology in the survey area.

To prevent duplication and to maintain the integrity of the completed well survey listing, wells in the MGS reports are not included in the final survey list. Although wells included in the MGS publications may not have been included on the list of wells investigated as part of this study, wells in these reports are assumed to have been approved via the county application process and therefore are included in the Maryland well database searched for this investigation. The Maryland Department of the Environment (MDE) well database used for this study includes permit records for wells installed from 1970 through December 2012 and for wells installed before 1970. Except for one rural area north of the MRC, most of the surrounding area is connected to the public water supply.

Data from the MGS well logs indicate that most wells in the survey area are screened in the Patapsco Formation. Depths for these wells range from 57–140 feet below ground surface (bgs). In the area south of Eastern Boulevard, wells that extend into the Patuxent Formation generally range in depth from 176–224 feet bgs. North of Eastern Boulevard, two wells in the survey area (ranging in depth from 105–135 feet bgs) are described as being screened in the Patuxent Formation.

Limited chemical data for two wells in the survey area (wells Ff36 and Ff39) are also available from the MGS publication *Maryland Groundwater Information: Chemical Quality Data* (MGS, 1978). Analyses were performed for general groundwater characteristics such as hardness, conductivity, pH, iron, bicarbonate, and nitrate. Other sampling data were not requested from Baltimore County because the analyses include only coliforms and nitrates (generally not a concern at the MRC).

4.2 RESULTS OF REVIEW OF HISTORICAL AERIAL PHOTOGRAPHS AND TOPOGRAPHIC MAPS

Aerial photographs taken in 1938, 1952, 1964, 1971, 1994, 2005, and 2012 show the development progression in the survey area over time. The aerial photograph review is summarized below. Refer to Figure 4-1 for street names and locations discussed below.

1938 aerial photograph—The area south of Eastern Boulevard is relatively rural. MRC is in its infancy, and Martin State Airport does not yet exist. Most of the development, though somewhat less than the present day, is found along the waterfront of Middle River and its tributaries, with forested areas and open fields along the axes of the peninsulas. An area referred to as Bengies north of Eastern Boulevard is more developed in 1938 than it is today.

1952 aerial photograph—Major development of the area occurred between 1938–1952, likely in response to World War II and the Korean Conflict. The MRC has expanded significantly, and the U.S. Army Depot (on the north side of Eastern Boulevard) and most of Martin State Airport had been constructed by 1952. Increased residential development is along Wilson Point Road southeast of MRC and along Susquehanna Avenue on the east side of Frog Mortar Creek. What is now Stansbury Manor Apartments (Alder Road area directly southeast of the MRC) was developed with apartments in 1952 as well. The upper reaches of Dark Head Creek at the MRC were filled and Dark Head Cove has been constructed to its present day configuration.

1964 and 1971 aerial photographs—In the 1964 photograph, a drive-in movie theatre is southeast of the former Army Depot, and development of a fairly dense residential area in the northeastern part of the survey area (adjacent to Carroll Island Road) has begun. A mobile home development north of Eastern Boulevard and across from Carroll Island Road is under construction in the 1971 photograph. A shopping center is at the intersection of Carroll Island and Bowleys Quarters Road, and expansion of the residential development in areas east of the survey area and adjacent to Carroll Island Road is evident in the 1971 photograph. Southeast of MRC, apparent apartment buildings have been constructed in the area of what is now Wilson Point Park along Beech Drive (near well 16 on Figure 4-1). By 1971, construction of dense, row-house residences and Hawthorne Elementary School has been completed. The northern two-thirds of the Hawthorne peninsula southwest of the MRC between Cow Pen Creek and the mainstem of Middle River is developed by this time, but the southern third of the peninsula is largely undeveloped, except for small residences along the perimeter of the peninsula (near well 18 on Figure 4-1).

The area north of the MRC is still largely undeveloped in the 1971 photograph, but single-family residences have been constructed along Wampler Road (near wells 7, 8, and 14 on Figure 4-1), Bourque Road (near well 1 on Figure 4-1), and Hillpine Road (near wells 2–6 on Figure 4-1). A

few structures have been constructed in open areas beyond (i.e., south of) the intersection of Bourque Road and Hillpine Road. A well may be located there (see well 1 on Figure 4-1) but has not been located in the field because Bourque Road has been terminated at the intersection of Hillpine Road. Residences at 1900 and 1902 Leland Avenue appear to be the only residences/structures along present-day Leland Avenue.

1994 aerial photograph—A large apartment complex (Ballard Gardens) and other dense, residential development occupies the northwestern portion of the study area in this photograph. North of the MRC, more single-family residences have been built along Wampler Road farther northeast from the new apartment complex. The open areas with structures south of the intersection of Bourque Road and Hillpine Road (near well 1 on Figure 4-1) are still present in this aerial photograph. The aerial photograph also shows an open area and small structure immediately east of the intersection of Bourque Road and Hillpine Road, and a larger open area immediately west of this intersection. Warehouses have been constructed north of MRC in the eastern end of Leland Avenue (near wells 9-13 on Figure 4-1). Additional residences and a firehouse have been constructed east of the 1900 and 1902 Leland Avenue addresses. Southwest of the MRC, the interior of the southern third of the Hawthorne peninsula has been fully developed with dense, row house residences (near well 18 on Figure 4-1). Residential and commercial developments have been constructed west of MRC in the area between Eastern Boulevard (Maryland Route 150) and Martin Boulevard (Maryland Route 700). The aerial photograph also shows that only the concrete basement slab of Building D remained in the southern portion of MRC by 1994. Lockheed Martin documents indicate that demolition of Building D was complete by December 1971.

2005 aerial photograph—The study area did not generally change between 1994 and 2005; however, a few changes are notable. The 2005 aerial photograph shows an open area and small structure immediately east of the intersection of Bourque Road and Hillpine Road. The open area immediately west of this intersection (north of well 1 on Figure 4-1) that is shown on the 1994 aerial photograph is also apparent. However, these areas appear more vegetated than in 1994. By 2005, the apartments southeast of the MRC along Beech Drive (near well 16 on Figure 4-1) had been demolished and a park (Wilson Point Park) with open fields and trees had been developed. Senior living complexes have been constructed along the end of Grove Manor Road off Punte Lane southwest of the MRC (near well 15 on Figure 4–1) and farther west at

1813 Old Eastern Boulevard (across from the intersection with East Orville Road). Single-family residences have replaced older development west of the MRC near Mars Run Road and running north to Canberra Drive.

2012 aerial photograph—A few changes have occurred, but the study area did not largely change between 2005 and 2012. The former open areas at and south of the intersection of Bourque Road and Hillpine Road have become completely overgrown with vegetation. No structures are visible in this aerial photograph. Wilson Point Park has been fully constructed with a bulkhead, boardwalk, picnic shelters, boat ramp, and large parking lots on both sides of Beech Drive. A county-owned recreation field has been created along the south side of Cypress Drive in this area.

Topographic maps—The topographic map for the survey area is the USGS 7.5-minute quadrangle for Middle River, Maryland (USGS, 1982). No wells are noted on the current topographic map of the survey area.

4.3 IDENTIFICATION OF WELLS

Groundwater within the survey area is withdrawn from wells located on numerous small waterfront lots (MDE, 2004). Apparently, many residences used shallow, hand dug wells for their water supply. Given the density of residential development and the corresponding number of septic systems in the area (many of which have failed and contaminated shallow groundwater), public water and sewer were brought into the area primarily to address health concerns (Baltimore County Department of Environmental Protection [BCDEP], 2004).

MDE well completion reports for wells in the survey area indicate that approximately 90% of the wells are likely screened in the Patapsco Formation. Wells with depths ranging from 50–140 feet bgs appear to be screened in the Patapsco Formation. Lithologic descriptions indicate red and white clays inter-fingered with water-bearing sand units. The clays are the predominant lithology in the first 100 feet bgs. Shallower wells installed in the Patapsco appear driven more by economics than by lithology (i.e., the shallower wells are likely low yielding).

Well locations are shown on Figure 4-1. For field reconnaissance purposes, and to discuss the survey findings, wells within the survey area were divided into two regions:

- wells north of Eastern Boulevard
- wells south of Eastern Boulevard and west/southwest of the MRC

Each area is discussed below. Table 4-1 lists the wells retained in each area following the well records review and field reconnaissance.

4.3.1 Wells North of Eastern Boulevard

Most residences identified in this region as possibly having wells are in sparsely developed areas beyond the public water-supply mains (e.g., Hillpine Road), or in areas where public water is now available but where wells were in use at older residences before public water lines were available for newer nearby development (e.g., Leland Avenue and Wampler Road). Many roads in the Leland Avenue area that are currently overgrown and have no outlet were connected at one time.

Findings of groundwater user investigations for wells north of Eastern Boulevard (see Figure 4-1) are presented below:

- **Well 1** (Figure 4-1) is likely located farther south along Bourque Road than was indicated in the 2010 study. A review of aerial photographs and the well completion report indicates that the residence and well at 201 Bourque Road were likely located in an open area approximately 500 feet south of the intersection of Bourque Road and Hillpine Road. This area appears to have become overgrown with heavy vegetation in aerial photographs taken after 1994. Well 1 is beyond the Bourque Road terminus, which has been closed off with asphalt road debris. One abandoned house was observed beyond the road closure during field reconnaissance, and this former residence may have a well.

- Water meters were observed for the other residences on Bourque Road (300–322), and a county key map indicates that these residences are on the public water supply. Water bills were also found for residences at 300–322 Bourque Road. However, the 201 address is not listed in the water bill records. **Wells 2–6** are on the intersecting Hillpine Road, which is not supplied by public water; water bills were not found for any Hillpine Road addresses and county water valves or meters were not observed along the roadway or at residences. Of these, domestic wells were observed at 1004 and 1010 Hillpine. Decorative wooden “wishing well” covers were observed in the front yards at 919 and 1000 Hillpine Road (wells in this neighborhood are typically installed in front yards); actual well casings were obscured by the wooden covers and could not be directly observed. Well 6 (1012 Hillpine Road) is beyond the study area radius of 0.5 mile. The well at 919 Hillpine Road was replaced in August 2006 (see permit BA-95-1513; Table 4-1).

- **Wells 7 and 8** are off Wampler Road, down a narrow gravel road leading to three residences. One (535 Wampler Road) was thought to have been abandoned, but well records indicate that the original well was replaced. A well was observed in the front yard

of 601 Wampler Road, and a well permit was issued for another well at 601A Wampler Road. Water bills were not found for either residence.

- A Maryland Department of Planning property map and a Maryland Department of Assessment and Taxation map show a series of north–south and east–west crossing streets east of Wampler Road and north of Leland Avenue. Unpaved roads near Duke Street and Evergreen Street were apparent during the 2013 site reconnaissance and on aerial photographs, but other roads shown on the planning map do not appear to be present, are overgrown, or were never constructed. Magnolia Avenue is also shown on the property/taxation maps as extending eastward beyond its present terminus and extending across Duke Street, Evergreen Street, and other north–south streets shown on the property/taxation maps. Several of these streets (Duke Street, Evergreen Street, and Cactus Avenue) are referenced in property taxation assessment records from this area.

The following information relates to wells or possible wells in the Leland Avenue area:

- A water main is present on Leland Avenue, and water bills were found for most addresses on Leland Avenue. However, water bills were not found for the addresses of **location 9 and well 10-13**. No water main is indicated on the key map for Evergreen and Magnolia (one house is at the end of Evergreen; no evidence of the former Magnolia Avenue was found), so we assume that these homes are served by wells.

- An old house with a mailbox numbered "1900" was observed at the end of a small unpaved road listed as "Duke Street" on a Maryland Department of Planning property map and general road maps (see **location 9** on Figure 4-1). However, the address is considered a Leland Avenue address rather than a Duke Street address. The Maryland Department of Assessments and Taxation records show that 1900 Leland Avenue was purchased in 2010. Both it and the adjacent 1902 Leland Avenue property are owned by the same party. Furthermore, the United States Postal Service (USPS) has a delivery address for 1900 Leland Avenue, but not for 1900 Duke Street. A well may be in use at the 1900 Leland Avenue residence, but a record of a well installed here was not found in the MDE well database. Water bill records could not be found for any address on "Duke Street" or for 1900 Leland Avenue. A water valve or water meter for the property were not found at (a) the intersection of Leland Avenue and "Duke Street," (b) along the unpaved roadway that leads to the residence, or (c) in front of the residence (water meters in the study area are placed in a small metal flush-mounted vault in front of each residence or commercial property).

- **Well 10** is listed at 1902 Leland Avenue, and the residence faces Leland Avenue. A water meter leading to this property was not observed, and this address was not found in water bill records. Therefore, a well may be in use.

- **Well 11** is listed at 1906 Magnolia Avenue in the MDE well database and well completion report. It is along Evergreen Street near Leland Avenue. However, this address was originally considered 1906 Leland Avenue because of surrounding residences with similar Leland Avenue addresses (e.g., 1902, 1908, and 1910 Leland Avenue). The Maryland Department of Assessments and Taxation records show a property at 1906 Magnolia Avenue in Middle River and that address has a USPS delivery

address; 1906 Leland Avenue is not a USPS delivery address. The property is on the Maryland Department of Planning map (map 90, parcel 709, Block 11) where Magnolia Avenue (or former Magnolia Avenue) is shown to cross Evergreen Street. **Well 11** was observed at the 1906 Magnolia Avenue address. No water meter was observed on the property; therefore, the well may be in use.

- A well listed on Evergreen Street (no address provided) in the MDE database and in the well completion report is considered 1908 Leland Avenue (**well 12** on Figure 4-1); this street address is based on information from the well completion report and the Maryland Department of Assessments and Taxation record for 1908 Leland Avenue. Both documents list the same owner, tax block (block 11), and lot numbers (13–15). The location map in the well completion report contains sufficient information to verify this location as **well 12** on Figure 4-1. Furthermore, the USPS does not have any delivery addresses for Evergreen Street in the Middle River area, but does have a delivery address for 1908 Leland Avenue. **Well 13** is at the end of "Evergreen Street" but has the address of 1910 Leland Avenue, in both the well completion report and the property record (same owner name).

- **Well 14** at 808 Pineview Place is just beyond the northern boundary of the study area. This well was installed in February 2008 in a residential community supplied by public water. The well's use is listed as geothermal, which indicates it is used for heating and cooling, but not for drinking water. Public-supply-water valves were observed along Pineview Place and Grantwood Road. A water meter was observed at the adjacent property (810 Pineview Road) but not at 808 Pineview Road. Well 14 was not found during field reconnaissance. A water bill was found for this address, so this residence is probably served by public water.

4.3.2 Wells South of Eastern Boulevard and West/Southwest of MRC

This area is characterized primarily by residential development. Dense residential areas are found along the Wilson Point peninsula, east and southeast of MRC. An extensive townhouse development dating back to about the 1960s stands southwest of the MRC, between Middle River and Dark Head Creek.

The remaining land consists of waterfront areas along the west bank of Middle River and various peninsulas surrounded by tributaries of Middle River. These residential lots are somewhat larger, and development is organized into subdivisions encompassing an entire peninsula. These areas appear to have been provided access to public water some time ago. Findings from investigations of wells south of Eastern Boulevard and south–southwest of the MRC follow:

- **Well 15** at Cutter Marine Yacht Basin (1900 Old Eastern Boulevard) is a state-permitted well, but it was not observed at the marina during field reconnaissance. The area is served by public water, and water bill records indicate that 1900 Old Eastern Avenue is served by public water. However, a well may also be in use at the property.

- **Location 15A—**Location 15A is Riley's Marina at 1901 Old Eastern Boulevard. Water bill records were not found for this address, nor was this address found in the MDE well database. No water meter was observed at this property. Therefore, the source of water supplied to this property is unknown, but well use is possible, as this is an older facility in an area where water wells have been installed (e.g., wells 15 and 19).

- **Well 16** is a former hand-dug well at 1002 Beech Drive (see Figure 4-1). This well was sealed in accordance with state requirements in 2001; its well abandonment report is in Appendix B. This property was purchased by Baltimore County in 2001. It is now part of Wilson Point Park and served by public water. Chesapeake Bay Memories, Inc., a Chesapeake Bay educational organization, is in a house at 1000 Beech Drive. This residence (1000 Beech Drive) is served by public water, based on water bill records and a water meter observed in front of the property.

- Residences at 1126 and 1128 Beech Drive (near **location 17** on Figure 4-1) were identified during the 2013 field reconnaissance. Maryland Department of Assessments and Taxation property records list the 1128 Beech Drive address, but not 1126 Beech Drive. No water bill records were found for either of these addresses, nor were these addresses in the MDE well database. The USPS records show delivery addresses for both residences. No water meters for these addresses were observed along Beech Drive (all water meters in the area were recently marked with address numbers using blue paint, as part of a county study), but long driveways prohibited observation of possible water meters that may in front of the homes. Therefore, the water-supply sources for these properties are unknown, but wells are unlikely because public water is readily available nearby.

- **Well 18** is on former Kingston Park Road (currently Kingston Park Lane East) at a home with a small, asphalt-covered front yard. The well dates back to 1970, likely before the availability of public water, as the 1970 aerial photograph shows only a single road running through the Kingston peninsula to small cottages along its perimeter. The current row houses in the southern portion of the peninsula had not yet been built at that time. No well was observed during field reconnaissance, and the area is supplied with public water. However, no water bill for this address was found.

- **Well 19** is reportedly installed at 5 Punte Road; "No Trespassing" signs prevented access to the property. Seven small, single-story, cottage-style residences are at the end of Punte Lane beyond the public water main, which appears on the map to end at a hydrant near Cutter Marine Yacht Basin. No wells were observed during field reconnaissance (observing from the unpaved roadway in front of these homes). A 1989 county well-inspection report (see Appendix B) shows that a replacement well was installed at 4 Punte Lane, but the inspection report references the well permit number for the address 5 Punte Lane. The inspection report map also depicts wells at 3, 4, and 5 Punte Lane. These addresses are not found in the water bill records. Therefore, other wells are likely in this area.

4.4 PUBLIC WATER DISTRIBUTION

The *Baltimore County Water Supply and Sewerage Plan* (BCDPW, 2012) describes present and planned water-service areas for Baltimore County. Maps of current and planned public water

supply are in Appendix D. County water distribution maps (Appendix C) also provide details for installed public water utilities in the study area. These maps indicate that public water is supplied to most residential areas surrounding the MRC, including homes and apartments in the Village of Pawnee and Wampler Village north of MRC.

Parts of Hillpine Road in the northwestern corner of the study area, the southern end of Bourque Road, and a portion of Bengies Road are in the areas where public water lines are unavailable. Public water is shown as available along Leland Avenue, but several homes along Evergreen Street and Magnolia have chosen not to connect to the system. A search of public-water billing records for the residences north of Eastern Boulevard (Wells 1–13) indicates that these residences are not on the public water system. A water main and hydrants were observed along the undeveloped eastern portion of Leland Avenue. According to county representatives, any new development in this area will be required to connect to the public water supply.

Public water is available in the residential and commercial developments southeast of MRC along Wilson Point Road, and west of MRC along Kingston Road and west of Middle River. A search of public-water billing records for properties south of Eastern Boulevard listed as having wells indicates that several residences (all in the well 19 area) and two commercial marinas may use wells as a water supply, although water bill records indicate that the marina at 1900 Old Eastern Avenue is on the public water system. Wells 17 and 18 are in areas supplied by public water, and are either not present or may not be in active use. Wells near Well 19 (Punte Lane) likely remain in use. Well 15 may be used at Cutter Marine Yacht Basin (1900 Old Eastern Avenue), and a well may be in use at 1901 Old Eastern Avenue (Riley's Marina; location 15A).

Table 4-1

Map of Known and Possible Off-site Water-Supply and Geothermal Wells within One-half Mile of the Middle River Complex
Lockheed Martin Middle River Complex, Middle River Maryland

Well ID	List Ref. No.[1]	Map Ref. No.[2]	Address	Well Screen Interval (Feet) [3]	Well Observed?	Access	Well Type	Area Supplied by Public Water?	Construction Data[4]	Water Level Data[4]	Comments
Wells north of Eastern Boulevard											
BA-81-2047	32	1	201 Bourque Avenue	105 - 115	No	Private Property	Domestic	No	Yes	Yes	This address is beyond where the end of Bourque Avenue is blocked with asphalt road debris. A well may still be present near the abandoned and delapidated house on the property. However, the well could not be observed due to the presence of dense vegetation. This address (201 Bourque Avenue) was not found during a search of water bill records, which indicated that residences at 300-322 Bourque Avenue are serviced by public water.
BA-95-1513 (previously BA-71-0101)	20/45	2	919 Hillpine Rd	68 - 73	No*	Private Property	Domestic	No	Yes	Yes	There is no public water supply indicated for Hillpine Road, and no water bills were found for the addresses on Hillpine Road. The only residences are at 919, 1000, 1004, 1010, and 1012 Hillpine (the address numbers 1002, 1006, and 1008 are not present). Domestic wells were observed in the front yards at 1004 and 1010 Hillpine Road. Additionally, decorative wooden "wishing well" covers were observed at 919 and 1000 Hillpine Road in areas of the front yards where wells are typically installed in this neighborhood. However, the actual well casings were obscured and could not be directly observed. It is assumed that all of the houses on this road do not have public water. The residence at 1012 is beyond a metal gate (but it does have a mailbox) and cannot be seen. 1012 Hillpine Road is beyond the 0.5-mile study area radius. Permit number BA-71-0101 is listed as Wampler Road; however the map associated with the application shows the well to be on Hillpine. Based on the location, it is presumed this permit was for the original well at 919 Hillpine. A more recent permit (BA-95-1513) was found for 919 Hillpine Road for a well installed at this property in August 2006.
BA-73-5119	21	3	1000 Hillpine Rd (Gardner)	80 - 85	No*	Private Property	Domestic	No	Yes	Yes	
BA-73-5176	47	4	1004 Hillpine Rd (Preston)	74 - 81	Yes	Private Property	Domestic	No	Yes	Yes	
Unknown N/A	--	5	1010 Hillpine Rd	N/A	Yes	Private Property	Domestic	No	No	No	
BA-94-7179	34	6	1012 Hillpine Rd	73 - 80	No	Private Property	Domestic	No	Yes	Yes	
BA-94-2207	38	7	535 Wampler Rd	85 - 92	Yes	Private Property	Domestic	Yes	Yes	Yes	Three residences, accessed by a narrow gravel drive, are located behind houses bordering Wampler Road. The addresses are 535, 601 and 601A Wampler Road. An abandoned well was replaced by a new well drilled under permit BA-94-2207. A well was observed in the front yard of 601 Wampler, and a well was presumed to be present at 601A Wampler; these addresses were not found in the water bill records.
BA-88-0550	36	8	601 Wampler Rd (Harper)	115 - 125	Yes	Private Property	Domestic	Yes	Yes	Yes	
BA-88-3474	37	8 (collocated)	601A Wampler Rd (Kawich)	83 - 90	No	Private Property	Domestic	Yes	Yes	Yes	
--	--	9	1900 Leland Ave (Duke Street on map)	--	No	Private Property	--	Yes	--	--	Leland Avenue is supplied by public water. There is an old house at the end of Duke Street (as listed on maps) located off of Leland Avenue and east of Evergreen Street. The house address on the mailbox is 1900, and is a Leland address according to state property records. Water bill records were not found for either 1900 Leland Avenue or 1900 Duke Street. Water valves or a water meter were not observed leading to or at the property; therefore, public water does not appear to be supplied to this property. A well was not observed at the property, and a state well permit record was not found. However, the residence is an older structure and wells are used for water supplies the adjacent (1902 Leland Avenue) and nearby properties. Therefore, a well may be located at this property.
BA-81-6255	49	10	1902 Leland Ave (Hughes)	108 - 115	No	Private Property	Domestic	Yes	Yes	Yes	Leland Avenue is supplied by public water. 1902 Leland faces Leland Avenue. There are two houses with driveways fronting what is named Evergreen Street on street maps. A third house is at the end of Evergreen, where the maps show where Evergreen meets Magnolia. However, the addresses for two of these houses are 1908 and 1910 Leland Avenue according to state property records. A well was observed at the 1906 Magnolia Avenue address but not the other addresses. Water valves or meters were not observed leading to or at these properties, and these addresses were not found in the water bill records. Wells are likely in use at these residences.
BA-94-1468	35	11	1906 Magnolia Ave	113 - 120	Yes	Private Property	Domestic	Yes	Yes	Yes	
BA-81-4665	31	12	Evergreen Street (likely 1908 Leland)	80 - 90	No	Private Property	Domestic	Yes	Yes	Yes	
BA-73-5701	22	13	1910 Leland Ave (McDaniel)	90 - 95	No	Private Property	Domestic	Yes	Yes	Yes	

Table 4-1

Map of Known and Possible Off-site Water-Supply and Geothermal Wells within One-half Mile of the Middle River Complex
Lockheed Martin Middle River Complex, Middle River Maryland

Well ID	List Ref. No.[1]	Map Ref. No.[2]	Address	Well Screen Interval (Feet) [3]	Well Observed?	Access	Well Type	Area Supplied by Public Water?	Construction Data[4]	Water Level Data[4]	Comments
Wells north of Eastern Boulevard (continued)											
BA-70-0353	17	N/A	Martin Blvd (900 block)	123 - 130	Yes	Private Property	Commercial (Abandoned)	Yes	Yes	Yes	According to the well completion report, this well was installed at a former Twin-Kiss Ice Cream drive-in near the intersection of Martin Boulevard. (900 block) and Beacon Road. This location is northwest and outside of the invesigation area. The well was found in a grass median strip in a parking lot between a former Wendy's Restaurant and a former Blockbuster store in the Victory Village Shopping Center. The 9-inch steel casing and electrical conduit are cut flush with the ground surface and the casing is currently open with standing water and trash inside. The well is not in use and the casing appears to be backfilled. In 2009, cobble-size pieces of asphalt were observed in the casing about 2 feet below the ground surface.
BA-95-2310	46	14	808 Pineview Place	--	No	Private Property	Geothermal	Yes	No	No	This well was installed in February 2008 and is located in a residential community that is supplied with public water. The property is located just beyond the 0.5-mile study area radius. Well use is listed as geothermal, which indicates that the well is used for heating and cooling, but not for drinking water. Public supply water valves were observed along Pineview Place and Grantwood Road. A water meter was observed at the adjacent property (810 Pineview Road) but not at this address. However, water bill records indicate that this residence (808) is serviced by public water.
Wells south of Eastern Boulevard and south and west of Middle River Complex											
BA-72-0290	2	15	1900 Old Eastern Avenue	67 - 74	No	Private Property	Commerical	Yes	Yes	Yes	This is the address of Cutter Marine Yatch Basin. The well was not observed at the marina during the field reconnaissance. The area north of the marina along Punte Lane and Brett Court is serviced by public water. Water bill records indicates that 1900 Old Eastern Avenue is serviced by public water.
--	--	15A	1901 Old Eastern Avenue	--	--	Private Property	--	Yes	--	--	This is the address of Riley's Marina. No record of a well was found in the database search and water meters and water bill records were not found for this property. However, it is an older facility in an area where wells have been used at nearby properties (e.g., wells 15 and 19). However, the use of a well at this propery is uncertain.
BA-72-0157	48	N/A	1045 Beech Drive	77 - 84	No	Private Property	Domestic	Yes	Yes	Yes	There is a Beech Drive located southeast of the Middle River Complex within the investigation boundary. The property address (1045) could not be found during the reconnaissance. The apparent location for this address is an open parking lot for Wilson Point Park presently owned by Baltimore County. No well was observed on the property, which is located within an area supplied by public water. Additionally, a water bill record was not found for this address. The hand-drawn map on the well completion report indicates a "Beech Drive" off of Stevens Road and Allender Road near Bird River in White Marsh, Maryland. Upon reviewing a current map of this area, the road indicated on the well completion report map where the well was installed (near Stevens Road) is presently named Beach Road and Loreley Beach Road. Therefore, this well is considered to be located at the Beach Road or
--	53	16	1002 Beech Drive (well sealed and no longer in use)	--	No	Public Property (Currently Baltimore County)	--	Yes	--	--	A well abandonment report (March 2001) was found for a shallow, hand-dug well at 1002 Beech Drive in the Wilson Point subdivision (Appendix B). No well permit number for the installed well is on the abandonment report. Baltimore County is listed as the owner. 1002 Beech Drive is part of Wilson Point Park (the adjacent property is 1000 Beech Drive and is the current residence for Chesapeake Bay Memories). Water bill records were found for both 1000 and 1002 Beech Drive, and the presence of water valves and meters indicate that 1000 Beech Drive and the park are supplied by public water.

Table 4-1

Map of Known and Possible Off-site Water-Supply and Geothermal Wells within One-half Mile of the Middle River Complex
Lockheed Martin Middle River Complex, Middle River Maryland

Well ID	List Ref. No.(1)	Map Ref. No.(2)	Address	Well Screen Interval (Feet) (3)	Well Observed?	Access	Well Type	Area Supplied by Public Water?	Construction Data(4)	Water Level Data(4)	Comments
--	--	17	1126 and 1128 Beech Drive	--	--	Private Property	--	Yes	--	--	Water meters, water bill records, and well permit records were not found for 1126 and 1128 Beech Drive. These residences are set back from the main roadway, and water meters may be present closer to the houses where access is restricted. The use of wells at these properties is uncertain, but the presence of the public water supply in the immediate area and no record of installed wells make it unlikely that wells are in use at these properties.
BA-71-0011	6	18	136 Kingston Park Road (currently Kingston Park Lane East)	45 - 50	No	Private Property	Domestic	Yes	Yes	Yes	A well was not observed at this property, which is located in a dense residential area with a public water available. Water maps show this address connected to the public water system; however, water bill records were not found for this address.
BA-88-1848	13	19	5 Punte Lane	133 - 140	No	Private Property	Domestic	No	Yes	Yes	Seven small single-story, cottage-style residences are located at the end of Punte Lane beyond the public water main. No wells were observed on the properties, and water valves or water meters were not observed along the gravel road leading to the residences or at the residences. A 1989 County well inspection report (see Appendix B) shows that a replacement well was installed at 4 Punte Lane. The report map also depicts wells at 3, 4, and 5 Punte Lane. These addresses were not found in an October 2010 or July 2013 searches of the water bill records. Other wells may exist in this community.
Wells south of Eastern Boulevard and south and west of Middle River Complex (continued)											
BA-72-0077	23	N/A	Eastern Avenue (121 Hughes Shore Road)	N/A	N/A	Private Property	Domestic	Yes	Yes	Yes	This permit application is actually for 121 Hughs Shore Road, which is off of Eastern Avenue east of Frog Mortar Creek. This address is outside of the investigation area and is not included on Figure 4-1. The permit is stamped cancelled and a completion report was not available. However, it appears that a well was installed at this property by another drilling firm under permit BA-72-0092. The county key map shows houses in this street are not supplied by public water, but there are fire hydrants on either end of the area and water bill records were found for this and other Hughes Shore Road addresses.

N/A = Not available or not applicable.

* A wooden decorative "wishing well" cover was observed in the front yard where wells are typically installed in this neighborhood. However, a well casing was not observed.

(1) The numbers shown in this column refer to the well listing provided electronically by Maryland Department of the Environment (Appendix A).

(2) The numbers shown in this column identify the wells shown on Figure 4-1.

(3) The well depths are with respect to the ground surface and were taken from the well completion reports (Appendix B).

(4) The construction and water level data are shown on the well completion reports (Appendix B).

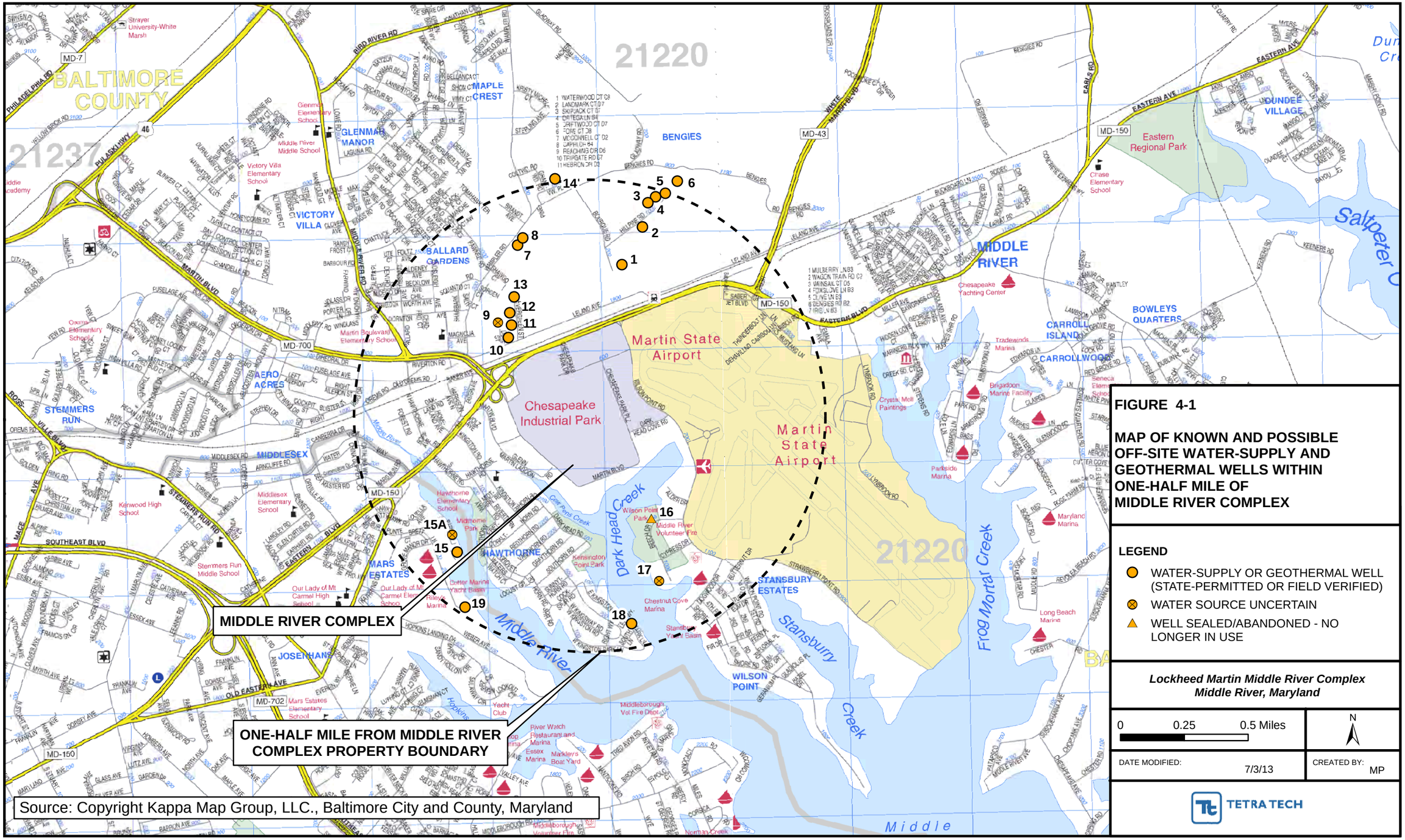

FIGURE 4-1

MAP OF KNOWN AND POSSIBLE OFF-SITE WATER-SUPPLY AND GEOTHERMAL WELLS WITHIN ONE-HALF MILE OF MIDDLE RIVER COMPLEX

LEGEND

- WATER-SUPPLY OR GEOTHERMAL WELL (STATE-PERMITTED OR FIELD VERIFIED)
- WATER SOURCE UNCERTAIN
- WELL SEALED/ABANDONED - NO LONGER IN USE

Lockheed Martin Middle River Complex
Middle River, Maryland

0 0.25 0.5 Miles

N

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Section 5
Conclusions

Nineteen properties with state-permitted water-supply wells, one property with a field-verified well (1010 Hillpine Road), four properties with possible water-supply wells (1900 Leland Avenue, 1901 Old Eastern Boulevard, 1126 Beech Drive, and 1128 Beech Drive), and one property with an abandoned well (1002 Beech Drive) were identified within a 0.5-mile radius of the Middle River Complex (MRC) property boundary and investigated. Upon further review of well completion reports, historical and current aerial photographs, state property records, and maps, five of these wells (1012 Hillpine Road, the 900 block of Martin Boulevard, 808 Pineview Place, 1045 Beech Drive, and Eastern Avenue) were deemed outside the survey area.

Baltimore City water billing records indicate that 17 addresses with wells or possible wells within the 0.5-mile survey area are not billed for water use, and are therefore considered not connected to the public water supply system. One property with a permitted well is billed for public water (1900 Old Eastern Boulevard). Site reconnaissance indicates that two of the permitted wells are likely not in use (Bourque Road and Kingston Park Lane East), and one well (1002 Beech Drive) is sealed and unused. Most properties apparently not connected to public water (i.e., the properties that lie beyond public lines) have records of drinking water wells. Residences north of the Middle River Complex on Hillpine Road are clearly not supplied by public water. Residences at the end of Punte Lane are also beyond the public water-supply area.

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Section 6
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APPENDIX A—MDE ELECTRONIC WELL LISTING

Table A-1
Selected Well Invormation From the Maryland Department of the Environment Well Datebase
Lockheed Martin Middle River Complex, Middle river, Maryland

No.	PERMIT	N_GRID27	E_GRID27	ROAD_NAME	ROAD_SIDE	ROAD_DISTANCE	TOTAL_DEPTH	PUMPING_RATE	LEVEL_BEFORE	LEVEL_DURING	CASING_DEPTH	LOT	COMPLETION_DATE	Use_for_water_simp	ABANDON_DATE	ABANDONED
1	HA731827	540000	955000	JARRETTSVILLE RD	E	40	200	2	22	190	71	17	09-Sep-74	DW		
2	**BA720290**	**540000**	**955000**	**1900 OLD EASTERN AVE**	**S**	**1600FT**	**74**	**35**	**9**	**74**	**69**		**22-Dec-71**	**I**		
3	HA731625	540000	955000	DUXBERRY CT	S	40 FT	140	2	18	60	27	15	19-Jun-74	DW		
4	BA737376	540000	955000	6624 MT VISTA RD	N	50 FT	250	2	28	200	21		05-Jun-80	DW		
5	HA730976	540000	955000	JARRETTSVILLE RD	E	40 FT	125	3	29	123	36	18	10-Oct-73	DW		
6	**BA710011**	**540000**	**960000**	**136 KINGSTON PARK RD**	**S**	**30 FT**	**50**	**20**	**13**		**50**		**12-Aug-70**	**DW**		
7	BA735786	540000	965000	EDWARD LA	S	25 FT	50	21	3	15	45		25-May-78	I		
8	BA920842	541000	958000	8 WEBER AVENUE	S	60 FT	50	20	11	21	43		14-Sep-92	DW		
9	BA942973	541000	959000	61 WEBER AVE	E	200 FT	110	60	16	22	103		09-Jan-98	DW		
10	BA883961	541000	959000	WEBER AVE	S	27 FT	80	20	15	26	73		15-Jan-93	DW		
11	BA883254	541000	959000	WEBER AVE	N	100 FT	108	20	16	28	101		25-Apr-91	DW		
12	BA883255	542000	957000	WEBER	N	100 FT	48	30	13	19	41		19-Apr-91	DW	16-Oct-98	Y
13	**BA881848**	**542000**	**958000**	**PUNTE LANE**	**E**	**100 FT**	**140**				**133**		**04-Jan-90**	**DW**		
14	BA883998	543000	958000	59 WEBER AVE	N	100 FT	87	20	15	22	80		16-Apr-93	DW		
15	BA941143	544000	955000	STEMMERS RUN RD	E	120 FT								DW		
16	BA947036	545000	955000	2026 ROCKY POINT RD	N	15 FT	110	75	20	31	103		22-Oct-02	DW		
17	**BA700353**	**545000**	**955000**	**MARTIN BLVD**	**N**	**75 FT**	**250**	**50**	**42**		**245**		**03-Jul-70**	**I**		
18	BA946534	545000	955000	2022 ROCKY POINT RD	W	15 FT	110	75	20	38	103		04-Jun-02	DW		
19	BA738064	545000	955000	GLADWAY	S	30 FT	55	30	11	21	45		24-Mar-81	DW		
20	**BA710101**	**545000**	**960000**	**WAMPLER ROAD**	**S**	**50 FT**	**65**	**10**	**31**	**38**	**58**	**X**	**24-Oct-70**	**DW**		
21	**BA735119**	**545000**	**960000**	**HILLPINE RD**	**S**	**120 FT**	**87**	**60**	**38**	**58**	**80**	**14**	**21-Nov-77**	**DW**		
22	**BA735701**	**545000**	**960000**	**LELAND AVE**	**N**	**3000FT**	**95**	**15**	**15**	**25**	**90**		**25-Apr-78**	**DW**		
23	**BA720077**	**545000**	**965000**	**EASTERN AVE**	**S**	**75 FT**						**X**		**DW**		
24	BA737310	545000	965000	STEVENS RD	S	20 FT	110	30	3	13	103		04-Mar-80	DW		
25	BA731592	545000	965000	119 HUGHES SHORE RD	S	25 FT	110	25	1	30	105		30-Sep-74	DW		
26	BA720092	545000	965000	HUGHES SHORE ROAD	S	50 FT								DW		
27	BA730108	545000	965000	STEVENS RD	E	25 FT	104	15	5	100	99		22-Aug-72	DW		
28	BA920216	546000	965000	222 STEVENS ROAD	E	40 FT	114	25	1	10	109	12	04-Mar-92	DW		
29	BA812012	546000	966000	HUGHES SHORE	S	20 FT	115	60	2	12	105		09-Sep-83	DW		
30	BA944581	547000	957000	CALLO LANE	W	45 FT	22				2		21-Sep-00	DW		
31	**BA814665**	**547000**	**959000**	**EVERGREEN ST**	**W**	**30 FT**	**90**	**60**	**12**	**21**	**80**	**13**	**14-Apr-86**	**DW**		
32	**BA812047**	**548000**	**961000**	**BOURQUE AVE**	**E**	**200 FT**	**115**	**30**	**22**	**32**	**105**		**26-Sep-83**	**DW**		
33	BA737964	548000	963000	HUGHES SHORE	E	80 FT	115	30	3	13	105		25-Feb-81	DW		
34	**BA947179**	**548000**	**963000**	**1012 HILLPINE ROAD**	**N**	**75 FT**	**80**	**40**	**40**	**52**	**73**	**4**	**23-Dec-02**	**DW**		
35	**BA941468**	**549000**	**957000**	**1906 MAGNOLIA AVE**	**S**	**1000FT**	**120**	**75**	**15**	**23**	**113**		**01-Feb-96**	**DW**		
36	**BA880550**	**549000**	**958000**	**WAMPLER RD**	**E**	**600 FT**	**125**	**50**	**20**	**30**	**115**		**23-Jan-89**	**DW**		
37	**BA883474**	**549000**	**959000**	**WAMPLER RD**	**E**	**100 FT**	**90**	**20**	**20**	**28**	**83**		**11-Jul-91**	**DW**		
38	**BA942207**	**549000**	**959000**	**535 WAMPLER RD**	**S**	**1000FT**	**92**	**60**	**19**	**31**	**85**		**31-Oct-96**	**DW**		
39	BA812662	549000	961000	BENGIES RD	S	800 FT	208	30	85	93	198		11-May-84	DW		
40	BA730365	550000	960000	EBENEZER RD	N	1 MI	80	14	14	30	73		15-Dec-73	DW		
41	BA733977	550000	960000	BENGIES RD	S	10 FT	85	20	40	50	78		12-Feb-77	DW		
42	BA710502	550000	960000	EARLES RD	S	200 FT	95	25	35	50	88	4	20-Jul-71	DW		
43	BA811481	550000	962000	149 BENGIES	E	200 FT	103	30	20	30	93		12-Apr-83	DW		
44	BA812212	550000	966000	3016 BENGIES RD	E	180 FT	97	15	41	51	87		25-Nov-83	DW		
45	**BA951513**	**548000**	**963000**	**919 HILLPINE RD**	**S**	**15 FT**	**73**	**60**	**1**	**27**	**68**	**19**	**18-Aug-06**	**DW**	**Replacement**	
46	**BA952310**	**591000**	**959000**	**808 PINEVIEW PL**	**S**		**210**						**28-Feb-08**	**G**		
47	**BA735176**	**595000**	**960000**	**HILLPINE RD**	**N**	**100 FT**	**85**	**40**	**18**	**38**	**74**	**B**	**17-Dec-77**			
48	**BA816255**	**560000**	**970000**	**1045 BEECH DR**	**E**	**30 FT**	**84**	**40**	**30**	**70**	**78**		**12-Aug-72**			
49	**BA720157**	**551000**	**965000**	**1902 LELAND AVE**	**N**	**100 FT**	**115**	**40**	**21**	**30**	**108**		**18-Mar-87**			

Highlighted wells were selected for further investigation in the study.

E = East
S = South
N = North
W = West

DW = Drinking water
G = Geothermal
FT = Feet
MI - Mile

Table A-2

Selected Information from Maryland Department of the Environment Well Database for Wells (Non-Monitoring) in Middle River - 1945-2009
Lockheed Martin Middle River Complex, Middle River, Maryland

PERMIT	Use_for_water_simp	WAPID	NEAREST_TOWN	TOWN_DISTANCE	ROAD_NAME	ROAD_SIDE	ROAD_DISTANCE	TAX_MAP	BLOCK	PARCEL	N_GRID27	E_GRID27	COMPLETION_DATE
BA000021	DW		MIDDLE RIVER										01-Nov-45
BA001743	DW		MIDDLE RIVER										18-Sep-47
BA000048	DW		MIDDLE RIVER										06-Dec-47
BA002547	DW		MIDDLE RIVER										26-May-48
BA002883	DW		MIDDLE RIVER										11-Jul-48
BA001247	I		MIDDLE RIVER										15-Nov-48
BA003546	DW		MIDDLE RIVER										18-Jan-49
BA003625	DW		MIDDLE RIVER										01-Jun-49
BA003696	DW		MIDDLE RIVER										01-Jul-49
BA005333	DW		MIDDLE RIVER										17-May-50
BA007230	DW		MIDDLE RIVER										18-Feb-51
BA007398	DW		MIDDLE RIVER										12-Mar-51
BA011635	DW		MIDDLE RIVER										18-Sep-52
BA011829	DW		MIDDLE RIVER										03-Mar-53
BA011831	DW		MIDDLE RIVER										09-Mar-53
BA011830	DW		MIDDLE RIVER										18-Mar-53
BA011967	DW		MIDDLE RIVER										30-Mar-53
BA012129	DW		MIDDLE RIVER										10-Apr-53
BA012128	DW		MIDDLE RIVER										14-Apr-53
BA012203	DW		MIDDLE RIVER										15-Jun-53
AA012928	I		MIDDLE RIVER	3 MI	OLD EASTERN AVE	S	100 FT						22-Jul-53
BA013032	I	BA1957G013	MIDDLE RIVER										06-Aug-53
BA013953	DW		MIDDLE RIVER										23-Dec-53
BA014719	DW		MIDDLE RIVER										09-Apr-54
BA014774	DW		MIDDLE RIVER										14-May-54
BA015965	DW		MIDDLE RIVER										26-Jul-54
BA015959	DW		MIDDLE RIVER										05-Aug-54
BA016000	I	BA1954G010	MIDDLE RIVER										10-Aug-54
BA015963	DW		MIDDLE RIVER										23-Oct-54
BA016883	DW		MIDDLE RIVER										28-Oct-54
BA017297	DW		MIDDLE RIVER										06-Dec-54
BA017295	DW		MIDDLE RIVER										23-Dec-54
BA018044	DW		MIDDLE RIVER										03-Apr-55
BA019871	DW		MIDDLE RIVER										29-Jul-55
BA021455	DW		MIDDLE RIVER										14-Jan-56
BA021456	DW		MIDDLE RIVER										30-Jan-56
BA026108	DW		MIDDLE RIVER										29-Mar-57
BA026109	DW		MIDDLE RIVER										15-Apr-57
BA031661	I	BA1959G017	MIDDLE RIVER										11-Dec-58
BA054519	I		MIDDLE RIVER										24-Nov-63
BA055736	I		MIDDLE RIVER										04-Feb-64
BA054518	I		MIDDLE RIVER										28-Mar-64
BA650390	DW		MIDDLE RIVER										08-Dec-64
BA650408	DW		MIDDLE RIVER										28-Dec-64
BA650488	I		MIDDLE RIVER										05-Feb-65
BA650565	DW		MIDDLE RIVER										14-Apr-65
BA660058	DW		MIDDLE RIVER										17-Aug-65
BA660156	DW		MIDDLE RIVER										20-Oct-65
BA660116	DW		MIDDLE RIVER										17-Dec-65
BA660172	I	BA1966G004	MIDDLE RIVER										27-May-66
BA660768	DW		MIDDLE RIVER										07-Oct-66
BA680060	I	BA1968G003	MIDDLE RIVER										21-Sep-67
BA690271	DW	BA1969G016	MIDDLE RIVER										17-Mar-69
BA710101	DW		MIDDLE RIVER	1 MI	WAMPLER ROAD	S	50 FT				545000	960000	24-Oct-70
BA710197	DW		MIDDLE RIVER	1 MI	RT 7	N	110 FT						10-Nov-70
BA732294	DW		MIDDLE RIVER	0 MI	EARLS RD	W	300 FT				550000	970000	16-Jul-75
BA732568	DW		MIDDLE RIVER	0 MI	1941 CAPE MAY RD	W	80				535000	965000	14-Nov-75
BA733977	DW		MIDDLE RIVER	2 MI	BENGIES RD	S	10 FT				550000	960000	12-Feb-77
BA734709	DW		MIDDLE RIVER	0 MI	WILDWOOD BEACH RD	S	30 FT				520000	960000	27-Jul-77
BA735701	DW		MIDDLE RIVER	0 MI	LELAND AVE	N	3000FT				545000	960000	25-Apr-78
BA736193	I	BA1978G037	MIDDLE RIVER	2 MI	BIRD RIVER RD	N	500 FT				555000	960000	29-Jun-79
BA810352	I	BA1972G007	MIDDLE RIVER	0 MI	LYNBROOK RD	E	250 FT				546000	967000	19-Nov-81
BA811788	DW		MIDDLE RIVER	0 MI	HUGHES SHORE	W	60 FT				546000	968000	07-Jul-83
BA812047	DW		MIDDLE RIVER	1.6 MI	BOURQUE AVE	E	200 FT				548000	961000	26-Sep-83
BA812290	DW		MIDDLE RIVER	1.2 MI	813 GLADWAY RD	N	150 FT				554000	962000	03-Jan-84
BA814760	DW		MIDDLE RIVER	4 MI	CARROLL ISLAND RD	N	.25 MI				546000	978000	08-Apr-86
BA814665	DW		MIDDLE RIVER	.4 MI	EVERGREEN ST	W	30 FT				547000	959000	14-Apr-86
BA815684	DW		MIDDLE RIVER	2.4 MI	CLAIRES LA	W	150 FT				546000	969000	22-Oct-86
BA816255	DW		MIDDLE RIVER	2 MI	1902 LELAND AVE	N	100 FT				551000	965000	18-Mar-87
BA816641	DW		MIDDLE RIVER	4.3 MI	ASHER RD	N	20 FT				546000	979000	27-Apr-87
BA816866	F		MIDDLE RIVER	3.7 MI	CHESTNUT RD	E	120 FT				543000	974000	12-Aug-87
BA817195	DW		MIDDLE RIVER	2.1 MI	STEVENS RD	E	40 FT				547000	967000	14-Sep-87
BA817318	DW		MIDDLE RIVER	2.2 MI	HUGHES SHORE RD	E	15 FT				546000	968000	29-Oct-87
BA880550	DW		MIDDLE RIVER	0 MI	WAMPLER RD	E	600 FT				549000	958000	23-Jan-89
BA880946	DW		MIDDLE RIVER	3 MI	800 MIDDLE RD	N	200 FT				542000	971000	26-Apr-89
BA881848	DW		MIDDLE RIVER	2 MI	PUNTE LANE	E	100 FT				542000	958000	04-Jan-90
BA882593	DW		MIDDLE RIVER	1 MI	STEVENS RD	E	15 FT				548000	967000	30-Jul-90
BA883474	DW		MIDDLE RIVER	1 MI	WAMPLER RD	E	100 FT				549000	959000	11-Jul-91
BA920216	DW		MIDDLE RIVER	MI	222 STEVENS ROAD	E	40 FT				546000	965000	04-Mar-92

Table A-2

Selected Information from Maryland Department of the Environment Well Database for Wells (Non-Monitoring) in Middle River - 1945-2009
Lockheed Martin Middle River Complex, Middle River, Maryland

PERMIT	Use_for_water_simp	WAPID	NEAREST_TOWN	TOWN_DISTANCE	ROAD_NAME	ROAD_SIDE	ROAD_DISTANCE	TAX_MAP	BLOCK	PARCEL	N_GRID27	E_GRID27	COMPLETION_DATE
BA920209	F		MIDDLE RIVER	5 MI	716 ASHER RD	N	100 FT				546000	978000	13-Mar-92
BA920335	DW		MIDDLE RIVER	2 MI	10101A BIRD RIVER RD	S	900 FT				552000	962000	20-Apr-92
BA920595	DW		MIDDLE RIVER	4 MI	838 LUTHARDT RD	S	21 FT				544000	974000	26-Jun-92
BA883960	DW		MIDDLE RIVER	3	81 WEBER AVE	S	15 FT				539000	959000	15-Jan-93
BA883961	DW		MIDDLE RIVER	3	WEBER AVE	S	27 FT				541000	959000	15-Jan-93
BA883998	DW		MIDDLE RIVER	3	59 WEBER AVE	N	100 FT				543000	958000	16-Apr-93
BA930154	DW		MIDDLE RIVER	5 MI	834 LUTHARDT RD	W	95 FT				544000	975000	16-Jun-93
BA940544	DW		MIDDLE RIVER	3	858 LUTHARDT RD	E	220 FT				544000	975000	11-Jul-94
BA941468	DW		MIDDLE RIVER	5	1906 MAGNOLIA AVE	S	1000FT				549000	957000	01-Feb-96
BA941528	DW		MIDDLE RIVER	2	3601 CLARAS LA	E	60 FT				548000	968000	21-Mar-96
BA941643	DW		MIDDLE RIVER	3	2343 BARRISON PT RD	E	15 FT				522000	967000	15-Apr-96
BA942207	DW		MIDDLE RIVER	1	535 WAMPLER RD	S	1000FT				549000	959000	31-Oct-96
BA942615	DW		MIDDLE RIVER	5	800 MIDDLE RD						542000	972000	22-May-97
BA942834	DW		MIDDLE RIVER	1	518 SPRING LANE	N	18 FT				548000	949000	15-Sep-97
BA947179	DW		MIDDLE RIVER	3	1012 HILLPINE ROAD	N	75 FT	90		558	548000	963000	23-Dec-02
BA947268	DW		MIDDLE RIVER	3	3601 CLAIRES LANE	W	15 FT				544000	969000	07-Mar-03
BA947430	DW		MIDDLE RIVER	3	2506 ISLAND VIEW RD	N	15 FT	105	9	80	523000	971000	30-May-03
BA948006	DW		MIDDLE RIVER	3	6840 LESLIE RD	N	15 FT	83	5	438	563000	978000	19-Apr-04
BA948511	I		MIDDLE RIVER	2	SENECA PARK ROAD	E	80 FT			139	545000	976000	18-Nov-04
BA948512	I		MIDDLE RIVER	2	SENECA PARK ROAD	E	90 FT			139	546000	976000	18-Nov-04
BA948513	I		MIDDLE RIVER	2	SENECA PARK ROAD	E	70 FT			139	546000	976000	19-Nov-04
BA948514	I		MIDDLE RIVER	2	SENECA PARK ROAD	E	40 FT			139	546000	976000	22-Nov-04
BA948515	I		MIDDLE RIVER	2	SENECA PARK ROAD	E	40 FT			139	545000	977000	25-Nov-04
BA948516	I		MIDDLE RIVER	2	SENECA PARK ROAD	E	50 FT			139	545000	977000	25-Nov-04
BA950230			MIDDLE RIVER		EASTERN BOULEVARD		2250FT				546000	964000	16-May-05
BA950957	DW		MIDDLE RIVER	3	6738 MALLARD RD	N	15 FT	83		428	564000	974000	02-Feb-06
BA951384	I	BA1975G012	MIDDLE RIVER		7620 MARSHY PT RD	E		91	6	40	549000	981000	15-Jun-06
BA951681	DW		MIDDLE RIVER	3	831 STUMPS RD	W	15 FT				549000	969000	27-Dec-06
BA951863	DW		MIDDLE RIVER	2	6713 MALLARD ROAD	S	200 FT				562000	974000	15-Jun-07
BA952022	I		MIDDLE RIVER	4	110 EARLS ROAD	W	85 FT	83	21	171	552000	974000	22-Sep-07
BA953064	DW		MIDDLE RIVER	3	506 BEACH DR		15 FT	91	12	280	548000	978000	25-Jun-09
BA946444	DW		MIDDLE RIVER	3	6204 A EBENZER RD	N	15 FT				558000	969000	
BA720077	DW		MIDDLE RIVER	1 MI	EASTERN AVE	S	75 FT				545000	965000	

See MDE database interpretive key at begiining of Appendix A.

Table A-2

Selected Information from Maryland Department of the Environment Well Database for Wells (Non-Monitoring) in Middle River - 1945-2009
Lockheed Martin Middle River Complex, Middle River, Maryland

PERMIT	TOTAL_DEPTH	CASING_DEPTH	TOP_SCREEN_1	BOTTOM_SCREEN_1	HRS_PUMPED	PUMPING_RATE	LEVEL_BEFORE	LEVEL_DURING	CLOSED	ABANDONED	ABANDON_DATE
BA000021	132	63				300	45	60			
BA001743	93	93			4	300	8	24			
BA000048	85	85			12	10	86	10			
BA002547	128	84			6	500	60	67			
BA002883	61	61			12	20	4	10			
BA001247	142	142			20	10	15	21			
BA003546	267	23			36	16	18	10			
BA003625	252	252			8	5	48	70			
BA003696	350	350			10	10	12	20			
BA005333	118	118			8	5	50	72			
BA007230	164	159			10	6	102	108			
BA007398	87	81			2	20	21	35			
BA011635	134	122			8	5	98	107			
BA011829	168	158			6	30	13	21			
BA011831	102	97			7	10	32	41			
BA011830	123	123			8	10	14	23			
BA011967	175	97			3	30	4	11			
BA012129	102	97			6	10	67	73			
BA012128	138	133			9	10	86	92			
BA012203	97	80			4	5	61	69			
AA012928	60				1	60	1	8			
BA013032	114	114			8	10	66	73			
BA013953	118	100			6	10	86	95			
BA014719	126	126			13	4	55	120			
BA014774	131	131			12	30	68	82			
BA015965	87	78			10	15	46	54			
BA015959	82	75			5	10	42	53			
BA016000	83	83			4	14	10	32			
BA015963	78	70			8	10	46	58			
BA016883	114	100			8	10	46	58			
BA017297	48	42			10	10	22	29			
BA017295	118	114			8	5	81	106			
BA018044	201	197			8	5	120	178			
BA019871	68	68			3	10	12	21			
BA021455	102	98			4	5	89	94			
BA021456	123	123			5	5	89	102			
BA026108	105	105			4	20	12	41			
BA026109	72	72			4	15	3	18			
BA031661	267	131			8	10	11	150			
BA054519	118	110			4	10	46	60			
BA055736	420	378			3	15	67	350			
BA054518	126	115			6	15	46	62			
BA650390	112	100			6	10	36	49			
BA650408	72	63			4	10	7	18			
BA650488	103	96			24	20	9	48			
BA650565	74	74			4	10	8	16			
BA660058	68	60			4	10	46	55			
BA660156	200	171			4	5	58	70			
BA660116	254	135			6	10	88	101			
BA660172	126	112			4	10	68	74			
BA660768	90	82			6	10	18	26			
BA680060	104	90			6	10	42	51			
BA690271	98	86			8	10	34	42			
BA710101	65	58	60	65	4	10	31	38			
BA710197	268	150	150	268	4	2	65	260			
BA732294	75	70	70	75	2	30	10	20			
BA732568	90	85	85	90	2	20	20	35			
BA733977	85	78	78	85	2	20	40	50			
BA734709	60	55	55	60	2	18	14	24			
BA735701	95	90	90	95	2	15	15	25			
BA736193	147	142	142	147	6	83	60	70			
BA810352	199	189	189	199	4	300	1	55			
BA811788	115	105	105	115	3	60	2	10			
BA812047	115	105	105	115	3	30	22	32			
BA812290	135	128	128	135	5	50	35	60			
BA814760	40	33	33	40	3	25	8	17			
BA814665	90	80	80	90	3	60	12	21			
BA815684	110	100	100	110	3	20	9	18			
BA816255	115	108	108	115	3	40	21	30			
BA816641	67	60	60	67	3	30	9	19			
BA816866	250	237	237	250	3	80	23	32			
BA817195	120	113	113	120	3	50	6	15			
BA817318	110	103	103	110	3	60	7	18			
BA880550	125	115	115	125	3	50	20	30			
BA880946	100	93	93	100	3	15	16	30		Y	21-Feb-97
BA881848	140	133	133	140	3	40	16	22			
BA882593	158	151	151	158							
BA883474	90	83	83	90	3	20	20	28			
BA920216	114	109	109	114	1	25	1	10			

Table A-2

Selected Information from Maryland Department of the Environment Well Database for Wells (Non-Monitoring) in Middle River - 1945-2009
Lockheed Martin Middle River Complex, Middle River, Maryland

PERMIT	TOTAL_DEPTH	CASING_DEPTH	TOP_SCREEN_1	BOTTOM_SCREEN_1	HRS_PUMPED	PUMPING_RATE	LEVEL_BEFORE	LEVEL_DURING	CLOSED	ABANDONED	ABANDON_DATE
BA920209	78	71	71	78	3	60	7	15			
BA920335	194	189	189	194	1	20	120	140			
BA920595	173	166	166	173	3	15	1	12			
BA883960	50	43	43	50	3	40	12	18			
BA883961	80	73	73	80	3	20	15	26			
BA883998	87	80	80	87	3	20	15	22			
BA930154	139	132	132	139							
BA940544	45	38	38	45	3	30	4	10			
BA941468	120	113	113	120	3	75	15	23			
BA941528	128	121	121	128	3	100	6	18			
BA941643	137	130	130	137	2	60	8	40			
BA942207	92	85	85	92	3	60	19	31	A		
BA942615	170	163	163	170	3	150	12	28			
BA942834	70	63	63	70	3	50	1	16			
BA947179	80	73	73	80	2	40	40	52			
BA947268	127	120	120	127	2	60	5	17	A		
BA947430	117	112	112	117	2	10	27	53			
BA948006	47	40	40	47	2	40	5	17			
BA948511	60	10	10	60	2	20	7	30			
BA948512	60	10	10	60	2	15	8	30			
BA948513	60	10	10	60	2	20	8	30			
BA948514	60	10	10	60	2	20	7	30			
BA948515	60	10	10	60	2	20	7	30			
BA948516	60	10	10	60	2	15	7	30			
BA950230	23	13	13	23	1	1	1	1			
BA950957	65	60	60	65	2	80	5	17	A		
BA951384	275	260	260	275	2	150	10	150			
BA951681	108	101	101	108	2	20	8	90			
BA951863	72	67	67	72	3	60	18	67			
BA952022	116	111	111	116	3	70	24	100			
BA953064	78	71	71	78	2	60	7	18			
BA946444											
BA720077									C		

Table A-3

Selected Information from the Maryland Department of the Environment Well Database for Additional Wells in the MRC Vicinity - 1970 - 2009
Lockheed Martin Middle River Complex, Middle River, Maryland

No.	PERMIT	Use_for_water_simp	REPLACEMENT	WAPID	NEAREST_TOWN	ROAD_NAME	ROAD_SIDE	ROAD_DISTANCE	N_GRID27	E_GRID27	COMPLETION_DATE	TOTAL_DEPTH	CASING_DEPTH	TOP_SCREEN_1	BOTTOM_SCREEN_1	HRS_PUMPED	PUMPING_RATE	LEVEL_BEFORE	LEVEL_DURING	ABANDONED	ABANDON_DATE
1	BA710011	DW	Y		HAWTHORNE	136 KINGSTON PARK RD		30 FT	540000	960000	12-Aug-70	50	50	45	50						
2	BA710101	DW	N		MIDDLE RIVER	WAMPLER ROAD	S	50 FT	545000	960000	24-Oct-70	65	58	60	65	4	10	6	12		
3	BA720077	DW	Y		MIDDLE RIVER	EASTERN AVE	S	75 FT	545000	965000						4	10	24	32		
4	BA720092	DW	S		BENGIES	HUGHES SHORE ROAD	S	50 FT	545000	965000						1	20	13			
5	BA720157	DW	S		WHITE MARSH	1045 BEECH DR	E	30 FT	560000	970000	12-Aug-72	84	78	77	84	4	10	31	38		
6	BA730108	DW	N		BOWLEYS QUARTERS	STEVENS RD	E	25 FT	545000	965000	22-Aug-72	104	99	99	104						
7	BA731592	DW	Y		BENGIES	119 HUGHES SHORE RD	S	25 FT	545000	965000	30-Sep-74	110	105	103	110						
8	BA733977	DW	N		MIDDLE RIVER	BENGIES RD	S	10 FT	550000	960000	12-Feb-77	85	78	78	85	40	30	70	A		
9	BA735119	DW	Y		ESSEX	HILLPINE RD	S	120 FT	545000	960000	21-Nov-77	87	80	80	87	2	15	5	100		
10	BA735176	DW	Y		ESSEX	HILLPINE RD	N	100 FT	595000	960000	17-Dec-77	85	74	74	81	1	25	1	30		
11	BA735701	DW	Y		MIDDLE RIVER	LELAND AVE	N	3000FT	545000	960000	25-Apr-78	95	90	90	95	2	20	40	50		
12	BA735786	I	Y	BA1978G019	BOWLEYS QUARTERS	EDWARD LA	S	25 FT	540000	965000	25-May-78	50	45	45	50	2	60	38	58		
13	BA737310	DW	Y		CHASE	STEVENS RD	S	20 FT	545000	965000	04-Mar-80	110	103	103	110	2	40	18	38		
14	BA737964	DW	Y		ESSEX	HUGHES SHORE	E	80 FT	548000	963000	25-Feb-81	115	105	105	115	2	15	15	25		
15	BA738262	DW	Y		ESSEX	STEVENS	S	15 FT	546000	967000	22-May-81	107	97	97	107	21	3	15	A		
16	BA810134	DW	Y		ESSEX	GEORGE STREET	S	10 FT	547000	967000	17-Aug-81	120	113	113	120	2	30	3	13		
17	BA810352	I	N	BA1972G007	MIDDLE RIVER	LYNBROOK RD	E	250 FT	546000	967000	19-Nov-81	199	189	189	199	2	30	3	13		
18	BA810596	DW	Y		ESSEX	HUGHES LA	N	50 FT	546000	970000	29-Mar-82	87	77	77	87	2	30	1	10		
19	BA811788	DW	Y		MIDDLE RIVER	HUGHES SHORE	W	60 FT	546000	968000	07-Jul-83	115	105	105	115	30	6	16	A		
20	BA812012	DW	Y		ESSEX	HUGHES SHORE	S	20 FT	546000	966000	09-Sep-83	115	105	105	115	4	300	1	55		
21	BA812047	DW	Y		MIDDLE RIVER	BOURQUE AVE	E	200 FT	548000	961000	26-Sep-83	115	105	105	115	3	15	10	20		
22	BA812212	DW	Y		ESSEX	3016 BENGIES RD	E	180 FT	550000	966000	25-Nov-83	97	87	87	97	3	60	2	10		
23	BA812662	DW	N		ESSEX	BENGIES RD	S	800 FT	549000	961000	11-May-84	208	198	198	208	3	60	2	12		
24	BA814665	DW	N		MIDDLE RIVER	EVERGREEN ST	W	30 FT	547000	959000	14-Apr-86	90	80	80	90	3	30	22	32		
25	BA815684	DW	Y		MIDDLE RIVER	CLAIRES LA	W	150 FT	546000	969000	22-Oct-86	110	100	100	110	15	41	51	A		
26	BA816255	DW	Y		MIDDLE RIVER	1902 LELAND AVE	N	100 FT	551000	965000	18-Mar-87	115	108	108	115	3	30	85	93		
27	BA817195	DW	Y		MIDDLE RIVER	STEVENS RD	E	40 FT	547000	967000	14-Sep-87	120	113	113	120	3	60	12	21		
28	BA817318	DW	Y		MIDDLE RIVER	HUGHES SHORE RD	E	15 FT	546000	968000	29-Oct-87	110	103	103	110	3	20	9	18		
29	BA880550	DW	Y		MIDDLE RIVER	WAMPLER RD	E	600 FT	549000	958000	23-Jan-89	125	115	115	125	3	40	21	30		
30	BA880946	DW	Y		MIDDLE RIVER	800 MIDDLE RD	N	200 FT	542000	971000	26-Apr-89	100	93	93	100	3	50	6	15		
31	BA882593	DW	Y		MIDDLE RIVER	STEVENS RD	E	15 FT	548000	967000	30-Jul-90	158	151	151	158	3	60	7	18		
32	BA883474	DW	Y		MIDDLE RIVER	WAMPLER RD	E	100 FT	549000	959000	11-Jul-91	90	83	83	90	3	50	20	30		
33	BA920216	DW	Y		MIDDLE RIVER	222 STEVENS ROAD	E	40 FT	546000	965000	04-Mar-92	114	109	109	114	3	15	16	30	Y	2/21/1997
34	BA920795	DW	Y		CHASE	EDWARDS LANE	W	40 FT	545000	968000	11-Aug-92	68	61	61	68						
35	BA941468	DW	S		MIDDLE RIVER	1906 MAGNOLIA AVE	S	1000FT	549000	957000	01-Feb-96	120	113	113	120	3	20	20	28		
36	BA941528	DW	Y		MIDDLE RIVER	3601 CLARAS LA	E	60 FT	548000	968000	21-Mar-96	128	121	121	128	1	25	1	10		
37	BA942207	DW	Y		MIDDLE RIVER	535 WAMPLER RD	S	1000FT	549000	959000	31-Oct-96	92	85	85	92	3	60	5	18		
38	BA942615	DW	N		MIDDLE RIVER	800 MIDDLE RD			542000	972000	22-May-97	170	163	163	170	3	75	15	23		
39	BA945206	DW	N		BALTIMORE	3621 CLAIRES LANE	N	15 FT	510000	950000	04-Nov-00	100	93	93	100	3	100	6	18		
40	BA946225	DW	Y		BALTIMORE	1100 BENGIES ROAD	N	15 FT	612000	982000	12-Feb-02	80	73	73	80	3	60	19	31		
41	BA946365	G	N		BALTIMORE	208 STEVENS ROAD	N	15 FT	546000	968000	14-Jun-02	200	200			3	150	12	28		
42	BA946379	DW	N		BALTIMORE	1018 BENGIES RD		15 FT	645000	954000	05-Apr-02	80	73	73	80	2	60	9	16		
43	BA947179	DW	N		MIDDLE RIVER	1012 HILLPINE ROAD	N	75 FT	548000	963000	23-Dec-02	80	73	73	80	2	30	40	53		
44	BA947268	DW	Y		MIDDLE RIVER	3601 CLAIRES LANE	W	15 FT	544000	969000	07-Mar-03	127	120	120	127						
45	BA951513	DW	Y		BALTIMORE	919 HILLPINE RD	S	15 FT	548000	963000	18-Aug-06	73	68	68	73	2	30	40	65		
46	BA952267	G	N		BALTIMORE	SHORE ROAD	E	120 FT	536000	974000	27-Feb-08	210				2	40	40	52		
47	BA952746	G	N		BOWLEYS QUARTERS	3301 EDWARDS LN	N	30 FT	554000	976000	23-Dec-08	250				2	60	5	17		
48	BA710036	DW	Y		WHITE MARSH	STEVENS RD	N	100 FT	565000	965000	05-Sep-70	45	45	45	45	2	60	1	27		
49	BA710196	DW	Y		BENGIES	BOWLEYS QUATERS RD		75 FT													
50	BA710202	DW	Y		BENGIES	BOWLEYS QUATERS RD		75 FT			27-Nov-70	122	115	117	122						
51	BA710211	DW	S		WHITE MARSH	STEVENS RD		100 FT			18-Dec-70	52	46	47	52	4	10	28	35		
52	BA710211	DW	S		WHITE MARSH	STEVENS RD	N	100 FT			18-Dec-70	52	46	47	52	4	10	24	32		
53	BA817379	F	N		WHITE MARSH	STEVENS RD	E	340 FT	567000	965000	10-Mar-88	500	92	92	500	3	30	90	150		
54	BA817285	DW	S		CHASE	BENGIES RD	E	500 FT	553000	968000	21-Dec-87	100	93	93	100	3	30	16	25		
55	BA817925	DW	Y		CHASE	BENGIES RD	E	.25 MI	552000	968000	12-Jul-88	100	93	93	100	3	30	28	40		
56	BA881848	DW	Y		MIDDLE RIVER	PUNTE LANE	E	100 FT	542000	958000	04-Jan-90	140	133	133	140	3	40	16	22		
57	BA942227	DW	Y		CHASE	125 BENGIES RD	E	200 FT	551000	969000	31-Dec-96	116	109	109	116	3	60	24	32		
58	BA700353	I	S	BA1970G016	VICTORY VILLA	MARTIN BLVD		75 FT	545000	955000	03-Jul-70	250	245	245	250	8	50	42			
59	BA710511	I	N	BA1971G013	ESSEX	ON EASTERN AVE	W	100 FT	535000	950000	20-Aug-71	98	93	93	98	8	20	28	45		
60	BA720297	DW	N		HOLLOFIELD	WRIGHT MILL RD	S	1 MI	540000	850000	23-Dec-71	175	45	45	175	6	4	60			

Table A-3

Selected Information from the Maryland Department of the Environment Well Database for Additional Wells in the MRC Vicinity - 1970 - 2009
Lockheed Martin Middle River Complex, Middle River, Maryland

No.	PERMIT	Use_for_water_simp	REPLACEMENT	WAPID	NEAREST_TOWN	ROAD_NAME	ROAD_SIDE	ROAD_DISTANCE	N_GRID27	E_GRID27	COMPLETION_DATE	TOTAL_DEPTH	CASING_DEPTH	TOP_SCREEN_1	BOTTOM_SCREEN_1	HRS_PUMPED	PUMPING_RATE	LEVEL_BEFORE	LEVEL_DURING	ABANDONED	ABANDON_DATE
61	BA735786	I	Y	BA1978G019	BOWLEYS QUARTERS	EDWARD LA	S	25 FT	540000	965000	25-May-78	50	45	45	50	2	21	3	15		
62	BA882538	T	N		MIDDLE RIVER	2000 LELAND AVE	N	75 FT	548000	961000	18-Jul-90	15	5	5	15	1	5	7	12		
63	BA883917	T	N		BALTIMORE CITY	WEST HAWTHORNE ROAD	W	50 FT	545000	957000	15-Jan-92	25	3	3	25	1	1	1	1		
64	BA883918	T	N		BALTIMORE CITY	WEST HAWTHORNE ROAD	W	40 FT	545000	957000	10-Jan-92	25	3	3	25	1	1	1	1		
65	BA920163	T	N		MIDDLE RIVER	12 LYNBROOK RD	W	20 FT	548000	964000	25-Feb-92	15	5	5	15	1	1	1	1		
66	BA920180	T	N		MIDDLE RIVER	500 WILSON POINT RD	W	300 FT	546000	963000	02-Mar-92	22	2	2	22	1	1	1	1		
67	BA920182	T	N		MIDDLE RIVER	500 WILSON POINT RD	W	300 FT	546000	963000											
68	BA930325	T	N		MIDDLE RIVER	2835 EASTERN BLVD	S	50 FT	547000	966000	03-Nov-93	30	3	4	30						
69	BA930327	T	N		MIDDLE RIVER	2835 EASTERN BLVD	S	50 FT	548000	967000	03-Nov-93	30	30	4	30						
70	BA930507	T	N		MIDDLE RIVER	EASTERN AVENUE	W	600 FT	548000	965000	16-Dec-93	35	20	20	30						
71	BA930508	T	N		MIDDLE RIVER	EASTERN AVENUE	W	250 FT	548000	964000	16-Dec-93	30	20	20	30						
72	BA930509	T	N		MIDDLE RIVER	EASTERN AVENUE	W	200 FT	546000	965000	16-Dec-93	18	8	8	18						
73	BA930510	T	N		MIDDLE RIVER	EASTERN AVENUE	W	300 FT	546000	965000	16-Dec-93	17	7	7	17						
74	BA942781	T	N		ESSEX	2333 EASTERN BLVD	S	100 FT	545000	969000											
75	BA942782	T	N		ESSEX	2333 EASTERN BLVD	S	50 FT	544000	952000											
76	BA942783	T	N		ESSEX	2333 EASTERN BLVD.	S	200 FT	548000	954000											
77	BA947275	T	N		MIDDLE RIVER 21220	N HAWTHORNE AVE	W	10 FT	545000	957000											
78	BA947276	T	N		MIDDLE RIVER 21220	N HAWTHORNE AVE	W		545000	957000											
79	BA947361	T			MIDDLE RIVER	N HAWTHORNE RD	W	100 FT	545000	954000											
80	BA947585	T	N		ESSEX	EDWARDS LANE	S	180 FT	546000	965000	21-Aug-03	8	12	8							
81	BA947863	T	N		ESSEX	EDWARDS LANE	S	190 FT	546000	964000	24-Feb-04	23	3	3	23	1	1	1	1		
82	BA947864	T	N		ESSEX	EDWARDS LANE	S	50 FT	548000	964000	24-Feb-04	23	3	3	23						
83	BA947865	T	N		ESSEX	EDWARDS LANE	S	140 FT	548000	964000	22-Feb-04	23	3	3	23	1	1	1	1		
84	BA811481	DW	S		CHASE	149 BENGIES	E	200 FT	550000	962000	12-Apr-83	103	93	93	103	3	30	20	30		
85	BA951005	DW	Y		BALTIMORE	133 BENGIES RD	E	15 FT	552000	967000	29-Mar-06	147	142	142	147	2	80	20	29		
86	BA952310	G	N		BALTIMORE	808 PINEVIEW PL	S		551000	959000	28-Feb-08	210									

1 Database is current as of December 2009. This is the latest database available from MDE obtained in October 2010.
See enclosed MDE interpretation codes for explanation of column headers.

County	County Code Abbreviation
Anne Arundel	AA
Allegany	AL
Baltimore	BA
Baltimore City	BC
Calvert County	CA
Caroline	CO
Carroll	CL
Cecil	CE
Charles	CH
Dorchester	DO
Frederick	FR
Garrett	GA
Harford	HA
Howard	HO
Kent	KE
Montgomery	MO
Prince George's	PG
Queen Anne's	QA
St. Mary's	SM
Somerset	SO
Talbot	TA
Washington	WA
Wicomico	WI
Worcester	WO

Interpretation of Well Codes

A successful well later abandoned
C Permit cancelled
D Deepened an existing well
U Unsuccessful new well
R Reworked or redrilled well under same permit
X More than one hole drilled before a sufficient yield

WATER USE CODE

DW Combination code for: Home or Public Use
F Farm (livestock watering & Agricultural Irrigation)
G Geo-thermal
I Industrial, Commercial, State and Federal Gov. (required an appropriation permit)
M Municipal
T Test, Observation, Monitoring (may require an appropriation)

REPLACEMENT OR DEEPEN WELLS

N This well will not replace an existing well (new well)
Y Yes, this well will replace a will that will be abandoned & sealed.
S This well will replace a well that will be used as a standby

LAST WELL # FOR EACH COUNTY – SERIES 88, 92 & 93

AA-88-9999	DO-88-2100	QA-88-2200
AA-92-2200	DO-92-0800	QA-92-0500
AA-93-1500	no 93 Series	No 93 Series
AA-94-9999	DO-94-1400	QA-94-3700
AL-88-0700	FR-88-5000	SM-88-2600
AL-92-0298	FR-92-0023	SM-92-0800
No 93 series	No 93 Series	SM-93-1000
AL-94-1500	FR-94-5200	SM-94-6000
BA-88-4082	GA-88-1500	SO-88-0400
BA-92-1100	GA-92-0499	SO-92-0400
BA-93-0700	No 93 Series	No 93 Serie
BA-94-9000	GA-94-2800	SO-94-1400
BC-88-2400	HA-88-2195	TA-88-1800
BC-92-0900	HA-92-1000	TA-92-0500
No 93 series	HA-93-1000	No 93 Series
BC-94-2200	HA-94-7400	TA-94-2500
CA-88-4600	HO-88-2400	WA-88-1600
CA-92-1100	HO-92-0723	WA-92-0400
No 93 series	HO-93-0400	WA-93-0400
CA-94-5800	HO-94-4800	WA-94-4800
CE-88-2700	KE-88-0900	WI-88-3200
CE-92-0500	KE-92-0300	WI-92-2338
CE-93-0400	No 93 Series	WI-93-1000
CE-94-6600	KE-94-1700	WI-94-6600
CH-88-2100	MO-88-2500	WO-88-1100
CH-92-1000	MO-92-0900	WO-92-0200
CH-93-0500	MO-93-0800	WO-93-0800
CH-94-7000	MO-94-3900	WO-94-3300
CL-88-3400	PG-88-3400	CO-88-1000
CL-92-0900	PG-92-1400	CO-92-0300
CL-93-0900	no 93 series	no 93 series
CL-94-5800	PG-94-3300	CO-94-3000

COLUMN_NAME	DESC_NAME	DATA_TYPE	DATA_LENG	DESCRIPTION
COUNTY_LETTER	COUNTY LETTER CODE	VARCHAR2	2	COUNTY IN WHICH PERMIT WAS ISSUED
PERMIT	WELL PERMIT	VARCHAR2	8	WELL TAG OR WELL PERMIT
MGS_ID	MGS ID	VARCHAR2	10	ID OF SOURCE ASSIGNED BY MD GEOLOGIC SURVEY/USGS
B1_SEQ	APPLICATION SEQUENCE NUMBER	VARCHAR2	4	B1 NUMBER ON PERMIT APPLICATION
B1_RECD	APPLICATION RECEIVED DATE	DATE	8	DATE (MMDDYYYY) APPLICATION RECEIVED BY STATE OR COUNTY
OWNER_NAME	OWNER'S NAME	VARCHAR2	30	NAME OF APPLICANT ON APPLICATION FOR PERMIT
ADDRESS1	ADDRESS LINE 1	VARCHAR2	30	LINE 1 OF APPLICANT ADDRESS
ADDRESS2	ADDRESS LINE 2	VARCHAR2	30	LINE 2 OF APPLICANT ADDRESS
CITY	CITY	VARCHAR2	30	APPLICANT ADDRESS - CITY
STATE	STATE	VARCHAR2	2	2-DIGIT ABBREVIATION - APPLICANT STATE
ZIP	ZIP	VARCHAR2	10	APPLICANT ZIPCODE

COLUMN_NAME	DESC_NAME	DATA_TYPE	DATA_LENG	DESCRIPTION
DRILLER_NAME	WELL DRILLER NAME	VARCHAR2	30	NAME OF WELL DRILLER
DRILLER_ID	WELL DRILLER ID	VARCHAR2	8	WELL DRILLER CERTIFICATION ID
EST_GPM_PRODUCED	ESTIMATED GPM PRODUCED	NUMBER	5	AN ESTIMATE OF HOW MUCH WATER THE WELL WILL PRODUCE
EST_GPM_NEEDED	ESTIMATED GPM NEEDED	NUMBER	7	AN ESTIMATE OF HOW MUCH WATER IS NEEDED
USE_FOR_WATER	INTENDED USE FOR WATER	VARCHAR2	1	CODED VALUE FOR TYPE OF USE FOR WATER
APPROX_DEPTH	APPROXIMATE DEPTH	NUMBER	5	ESTIMATED DEPTH OF WELL
DRILL_METHOD	WELL DRILLING METHOD	VARCHAR2	8	CODED VALUE FOR METHOD OF DRILLING
REPLACEMENT	REPLACEMENT_CODE	VARCHAR2	1	CODED VALUE FOR TYPE OF REPLACEMENT
REPLACE_PERMIT	REPLACED PERMIT	VARCHAR2	12	PERMIT OF WELL THAT IS BEING REPLACED
WAPID	WATER APPROPRIATION ID	VARCHAR2	12	WATER APPROPRIATION PERMIT (FORMERLY GAP)
WAPID_USE_PCT	WAPID USE PERCENTAGE	NUMBER	4	PERCENT OF APPROPRIATED AMOUNT WITHDRAWN FROM A PARTICULAR SOURCE

COLUMN_NAME	DESC_NAME	DATA_TYPE	DATA_LENG	DESCRIPTION
PWSID	PWSID	VARCHAR2	7	PWSID (7-DIGIT NUMERIC)
PLANT_ID	PLANT ID	VARCHAR2	2	STATE ASSIGNED PLANT ID (2-DIGIT NUMERIC)
SOURCE_ID	SOURCE ID	VARCHAR2	2	STATE ASSIGNED SOURCE ID (2-DIGIT NUMERIC)
SOURCE_WATER_TYPE	SOURCE WATER TYPE	VARCHAR2	2	CODED VALUE FOR TYPE OF SOURCE WATER
SOURCE_NAME	SOURCE NAME	VARCHAR2	30	NAME OF SOURCE
ENTITY_TYPE	ENTITY TYPE	VARCHAR2	1	CODED VALUE FOR TYPE OF SOURCE
USE_CODE	USE CODE	VARCHAR2	1	CODED VALUE FOR STATUS OR USE OF SOURCE BY PWS
HYDRO_UNIT	HYDROLOGIC UNIT	VARCHAR2	8	CODED VALUE FOR AQUIFER OR DRAINAGE BASIN
AQUIFER_TYPE	AQUIFER TYPE	VARCHAR2	1	CODED VALUE FOR AQUIFER TYPE (CONFINED,UNCONFINED)
STREAM_CODE	STREAM CODE	VARCHAR2	3	CODED VALUE FOR STREAM
RESERVOIR_CAPACITY	RESERVOIR CAPACITY	NUMBER	5	RESERVOIR CAPACITY IN MILLIONS OF GALLONS

COLUMN_NAME	DESC_NAME	DATA_TYPE	DATA_LENG	DESCRIPTION
SWTR_GROUP	SWTR GROUP	VARCHAR2	1	RISK ASSESSMENT CATEGORY FOR SURFACE WATER INFLUENCE
DISTANCE_FROM_SW	DISTANCE FROM SURFACE WATER	NUMBER	5	DISTANCE IN FEET TO NEAREST SURFACE WATER
SUBDIVISION	SUBDIVISION	VARCHAR2	20	SUBDIVISION IN WHICH WELL IS TO BE DRILLED
SECTION	SECTION	VARCHAR2	3	SECTION OF SUBDIVISION IN WHICH WELL IS TO BE DRILLED
LOT	LOT	VARCHAR2	3	SUBDIVISION LOT IN WHICH WELL IS TO BE DRILLED
NEAREST_TOWN	NEAREST TOWN	VARCHAR2	30	TOWN NEAREST TO THE WELL SITE
TOWN_DISTANCE	TOWN DISTANCE	VARCHAR2	6	DISTANCE (IN MILES) TO TOWN NEAREST TO WELL SITE
TOWN_DIRECTION	TOWN DIRECTION	VARCHAR2	2	CODED VALUE FOR DIRECTION FROM NEAREST TOWN
ROAD_NAME	ROAD NAME	VARCHAR2	30	NAME OF ROAD NEAREST WELL SITE
ROAD_SIDE	ROAD SIDE	VARCHAR2	1	CODED VALUE FOR SIDE OF THE ROAD THE WELL SITE IS ON
ROAD_DISTANCE	DISTANCE FROM ROAD	VARCHAR2	6	DISTANCE FROM ROAD TO WELL SITE

COLUMN_NAME	DESC_NAME	DATA_TYPE	DATA_LENG	DESCRIPTION
TAX_MAP	TAX MAP NUMBER	VARCHAR2	10	TAX MAP NUMBER FROM COUNTY TAX MAPS
BLOCK	TAX MAP BLOCK NUMBER	VARCHAR2	10	TAX MAP BLOCK NUMBER FROM COUNTY TAX MAP
PARCEL	TAX MAP PARCEL	VARCHAR2	60	TAX MAP PARCEL NUMBER(S) FROM COUNTY TAX MAP
N_GRID27	NORTH GRID NAD27 FEET	NUMBER	7	NORTHING IN STATE PLANE COORDINANTS NAD27 FEET
E_GRID27	EAST GRID NAD27 FEET	NUMBER	7	EASTING IN STATE PLANE COORDINANTS NAD27 FEET
N_GRID83	NORTH GRID NAD83 METERS	NUMBER	7	NORTHING IN STATE PLANE COORDINANTS NAD83 METERS
E_GRID83	EAST GRID NAD83 METERS	NUMBER	7	NORTHING IN STATE PLANE COORDINANTS NAD83 METERS
LAT_DEC_DEG	LATITUDE -DECIMAL DEGREES	NUMBER	8	LATITUDE - DECIMAL DEGREES NAD83
LON_DEC_DEG	LONGITUDE - DECIMAL DEGREES	NUMBER	9	LONGITUDE - DECIMAL DEGREES NAD83
MAD	METHOD/ACCURACY/DATUM	VARCHAR2	2	CODED VALUE FOR LAT-LON METHOD/ACCURACY/DATUM VALUES
STATE_APPROVAL	STATE APPROVAL	VARCHAR2	1	PERMIT REQUIRES STATE APPROVAL (Y/N)

COLUMN_NAME	DESC_NAME	DATA_TYPE	DATA_LENG	DESCRIPTION
ISSUE_DATE	ISSUE DATE	DATE	8	DATE PERMIT WAS ISSUED
SPECIAL_FLAG	SPECIAL FLAG	VARCHAR2	1	FLAG FOR SPECIAL CONDITIONS
C1_SEQ	COMPLETION REPORT SEQUENCE NUMBER	VARCHAR2	4	C1 NUMBER OF WELL COMPLETION REPORT
C1_RECD	COMPLETION REPORT RECEIVED DATE	DATE	8	DATE (MMDDYYYY) COMPLETION REPORT RECEIVED BY STATE
COMPLETION_DATE	WELL COMPLETION DATE	DATE	8	DATE (MMDDYYYY) WELL WAS COMPLETED
TOTAL_DEPTH	TOTAL DEPTH	NUMBER	5	TOTAL DEPTH (FEET) OF COMPLETED WELL
NUM_UNSUCCESSFUL	NUMBER OF UNSUCCESSFUL WELLS	NUMBER	2	NUMBER OF UNSUCCESSFULL (DRY) WELLS DRILLED
HYDROFRACTURE	HYDROFRACTURE	VARCHAR2	1	INDICATES WELL WAS HYDROFRACTURED (Y/N)
GROUTED	GROUTED	VARCHAR2	1	INDICATES WELL WAS GROUTED (Y/N)
GROUT_TYPE	GROUT TYPE	VARCHAR2	2	CODED VALUE FOR TYPE OF GROUT USED
GROUT_TOP	GROUT TOP	NUMBER	5	DISTANCE (FEET) FROM SURFACE TO TOP OF GROUTING

COLUMN_NAME	DESC_NAME	DATA_TYPE	DATA_LENG	DESCRIPTION
GROUT_BOTTOM	GROUT BOTTOM	NUMBER	5	DEPTH (FEET) TO WHICH WELL WAS GROUTED
CASING_TYPE	CASING TYPE	VARCHAR2	2	CODED VALUE FOR TYPE OF CASING
CASING_DIAM	CASING DIAMETER	NUMBER	2	DIAMETER OF CASING (INCHES)
CASING_DEPTH	CASING DEPTH	NUMBER	5	DEPTH (FEET) TO WHICH WELL IS CASED
CASING_HEIGHT	CASING HEIGHT	VARCHAR2	5	HEIGHT (FEET) CASING EXTENDS ABOVE GRADE
SCREEN_TYPE_1	SCREEN TYPE (FIRST SCREEN)	VARCHAR2	2	CODED VALUE FOR SCREEN TYPE (FIRST SCREEN)
TOP_SCREEN_1	TOP SCREEN 1	NUMBER	5	DISTANCE (FEET) TO TOP OF FIRST SCREEN
BOTTOM_SCREEN_1	BOTTOM SCREEN 1	NUMBER	5	DISTANCE (FEET) TO BOTTOM OF FIRST SCREEN
SCREEN_TYPE_2	SCREEN TYPE (SECOND SCREEN)	VARCHAR2	2	CODED VALUE FOR SCREEN TYPE (SECOND SCREEN)
TOP_SCREEN_2	TOP SCREEN 2	NUMBER	5	DISTANCE (FEET) TO TOP OF SECOND SCREEN
BOTTOM_SCREEN_2	BOTTOM SCREEN 2	NUMBER	5	DISTANCE (FEET) TO BOTTOM OF SECOND SCREEN

COLUMN_NAME	DESC_NAME	DATA_TYPE	DATA_LENG	DESCRIPTION
SCREEN_TYPE_3	SCREEN TYPE (THIRD SCREEN)	VARCHAR2	2	CODED VALUE FOR SCREEN TYPE (THIRD SCREEN)
TOP_SCREEN_3	TOP SCREEN 3	NUMBER	5	DISTANCE (FEET) TO TOP OF THIRD SCREEN
BOTTOM_SCREEN_3	BOTTOM SCREEN 3	NUMBER	5	DISTANCE (FEET) TO BOTTOM OF THIRD SCREEN
SCREEN_DIAM	SCREEN DIAMETER	NUMBER	5	DIAMETER (INCHES) OF SCREENS
FLOWING_WELL	FLOWING WELL	VARCHAR2	1	INDICATES WELL IS A FLOWING WELL (Y/N)
TELESCOPING	TELESCOPING	VARCHAR2	1	INDICATES TELESCOPE CASING (Y/N)
LOG_TYPE	LOG TYPE	VARCHAR2	1	INDICATES TYPE OF WELL LOG OBTAINED
HRS_PUMPED	HOURS PUMPED	NUMBER	2	HOURS OF PUMPING DURING WELL TEST
PUMPING_RATE	PUMPING RATE	NUMBER	5	PUMPING RATE (GPM) DURING WELL TEST
LEVEL_BEFORE	LEVEL BEFORE	NUMBER	5	WATER LEVEL (FEET) IN WELL BEFORE TEST
LEVEL_DURING	LEVEL DURING	NUMBER	5	WATER LEVEL (FEET) IN WELL DURING TEST

COLUMN_NAME	DESC_NAME	DATA_TYPE	DATA_LENG	DESCRIPTION
TEST_PUMP_TYPE	TEST PUMP TYPE	VARCHAR2	1	CODED VALUE FOR TYPE OF PUMP USED FOR TEST
PUMP_INSTALLED	PUMP INSTALLED	VARCHAR2	1	INDICATES A PUMP WAS INSTALLED (Y/N)
INSTALL_PUMP_TYPE	TYPE OF PUMP INSTALLED	VARCHAR2	1	CODED VALUE FOR TYPE OF PUMP INSTALLED
CAPACITY	CAPACITY	NUMBER	5	PUMPING CAPACITY OF THE WELL (GPM)
PUMP_HP	PUMP HORSEPOWER	NUMBER	5	HORSEPOWER RATING OF INSTALLED PUMP
COLUMN_LENGTH	COLUMN LENGTH	NUMBER	5	TOTAL LENGTH OF PUMP COLUMN PIPING
CLOSED	CLOSED	VARCHAR2	1	
ABANDONED	ABANDONED	VARCHAR2	1	INDICATES WELL HAS BEEN ABANDONED (Y/N)
ABANDON_DATE	ABANDONMENT DATE	DATE	8	DATE THE WELL WAS PROPERLY ABANDONED
REMARK	REMARK	VARCHAR2	80	MDE STAFF REMARKS (USUALLY INDICATING RECORD MODIFICATIONS)
PWS_SOURCE_KEY	PWS SOURCE KEY	VARCHAR2	9	CONCATENATION OF PWSID AND SOURCE_ID

APPENDIX B—WELL PERMITS AND COMPLETION REPORTS FOR THE SURVEY AREA ON FILE AT THE MDE

BA-E-47

101-19

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

PERMIT TO DRILL WELL

ISSUE DATE- 03/03/70
MO DA YR

****
* PERMIT NUMBER- BA-70-0353 *
****

ISSUED TO DRILLER-

WM LEONARD
742 BUSH ST
WHITE MARSH MD 21162

DRILLER
ID. NUMBER- 32

THE ABOVE NAMED DRILLER IS HEREBY AUTHORIZED TO DRILL A WELL TO BE OWNED BY-

BROWN, JOEL
530 BAY DR RT 15
BALTIMORE MD 21220

THIS WELL IS TO BE LOCATED IN BALTIMORE COUNTY,
VICORY VILLA SUBDIVISION, SECTION- , LOT- ,
NEAR THE TOWN OF VICTORY VILLA

THE WATER IS TO BE USED FOR A COMMERCIAL/INDUSTRIAL SUPPLY. "TWIN-KISS ICE CREAM" DRIVE-IN

THIS WELL WILL REPLACE A WELL WHICH WILL BE A STANDBY.

****SPECIAL CONDITIONS****

THIS PERMIT IS SUBJECT TO THE FOLLOWING SPECIAL CONDITIONS-

1. NOTIFY DEPT. 48 HOURS BEFORE DRILLING WELL, CALL 268-3371.
2. PROVIDE OPENING FOR TAPE MEASUREMENT OF WATER LEVELS (MIN. INSIDE DIAM. OF ONE-HALF INCH) SEALED BY REMOVABLE CAP/PLUG.
3. A TAP FOR RAW WATER SAMPLES MUST BE PLACED BEFORE WATER ENTERS A TREATMENT FACILITY, PRESSURE OR STORAGE TANK.

THIS PERMIT IS VALID UNTIL 09/03/70. A WELL COMPLETION REPORT MUST BE SUBMITTED TO THE DEPARTMENT WITHIN 30 DAYS AFTER COMPLETION OF THE WELL

GROUNDWATER APPROPRIATION
PERMIT NUMBER- BA70GAP016

PAUL W. MCKEE
DIRECTOR, MARYLAND
DEPARTMENT OF WATER
RESOURCES

DWR COPY

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
APPLICATION FOR PERMIT TO DRILL WELL

B 1 9742 — SEQUENCE NO. (DWR USE ONLY) — (SEQ. NO.) — (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

APPLICATION MUST BE SUBMITTED AND PERMIT RECEIVED BEFORE DRILLING IS STARTED.

FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWR USE ONLY) 022070

OWNER: Brown (COL 15 LAST NAME) Joel (FIRST NAME) COL 34

STREET OR RFD: 530 Bay Drive Rt 15 (COL 36) COL 55

POST OFFICE: Balto Md 21220 BA-70-0853 (COL 57) COL 80

6-13

B 2 DRILLER INFORMATION

(SEQ. NO.)

Wm (FIRST NAME) Leonard (DRILLER LAST NAME) IDENTITY NUMBER 32

74 Bush St (STREET OR RFD)

White Marsh Md 21162 (POST OFFICE, ZIP CODE)

DATE OF APPLICATION

B 3 WELL INFORMATION

(SEQ. NO.)

MAXIMUM PUMPING RATE (GALLONS PER MINUTE) 10

AVERAGE DAILY QUANTITY NEEDED (GALLONS PER DAY) 1500

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC, HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING, AGRICULTURE, IRRIGATION
- (I) INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOVERNMENT.
- M MUNICIPAL WATER SUPPLY
- P PRIVATE WATER COMPANY
- } MUST HAVE STATE HEALTH DEPT. APPROVAL
- T TEST

APPROXIMATE DEPTH OF WELL 100 FEET

METHOD OF DRILLING USED (CIRCLE APPROPRIATE METHOD)

BORED (OR AUGERED) JETTED DRIVEN

AIR-ROTARY AIR-PERCUSSION (ROTARY) (HYDRAULIC ROTARY)

CABLE REVERSE ROTARY

OTHER (DESCRIBE)

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- (R) 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 DEEPENED (IF AVAILABLE)

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

APPROPRIATION PERMIT NUMBER: BA7&GAP016 (GAP)

ENGINEER REVIEW (WRITE DISTRICT NO. IN BOX)

FORCE: AS (WRITE INITIALS IN BOX)

CONDITIONS: A E N S G W Q — N — WQ

B 4 LOCATION OF WELL

(SEQ. NO.)

COUNTY: Baltimore (DO NOT ABBREVIATE COUNTY NAME)

SUBDIVISION: ~~Aero Acres~~ Victory Villa

SECTION LOT

NEAREST TOWN: ~~Aero Acres~~ Victory Villa

MILES FROM TOWN (ENTER 0 IF IN TOWN): 0

B 5 DIRECTION FROM TOWN (CIRCLE APPROPRIATE BOX)

(SEQ. NO.)

N NORTH E EAST NE NORTHEAST SE SOUTHEAST

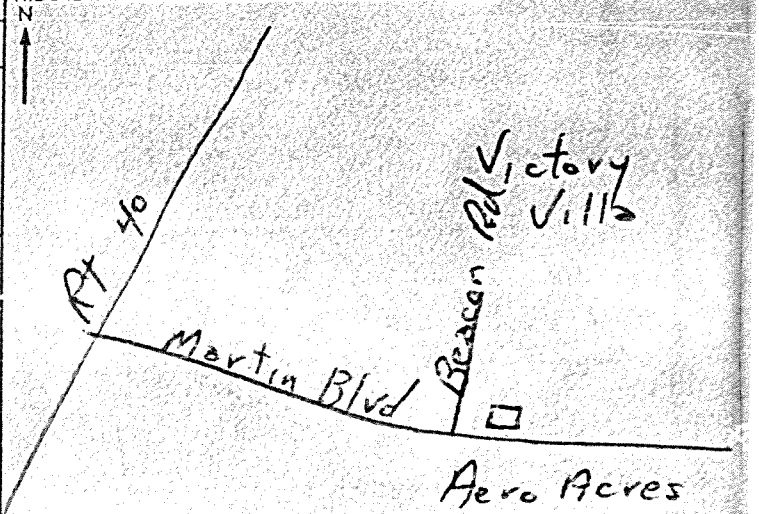
S SOUTH W WEST NW NORTHWEST SW SOUTHWEST

NEAR WHAT ROAD: Martin Blvd at Beacon Rd

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): (N) S E W

DISTANCE FROM ROAD (ENTER DISTANCE AND CIRCLE APPROPRIATE BOX): 75 (FT) MI

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS, ROADS AND STREAMS WITH NORTH IN THE DIRECTION OF THE ARROW, AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION OR STREAM CROSSING SHOWN ON THE SKETCH. DISTANCE MAY BE APPROXIMATE, BUT MUST BE INDICATED.



0955
545

B 5 CONTINUED

(SEQ. NO.)

(S) STATE DEPARTMENT OF HEALTH (CIRCLE BOX IF STATE HEALTH)

DATE (MO. DAY YR.): 02 17 70

HEALTH DEPARTMENT APPROVAL (NOT TO BE FILLED IN BY DRILLER)

Baltimore COUNTY DEPT. OF HEALTH

APPROVED BY: J. Fowler TITLE Sect. Chief

LATITUDE: 39 20 20 (DEG MIN SEC)

LONGITUDE: 076 27 00

ELEVATION AT WELL HEAD (FEET): 100

B 6

(SEQ. NO.) SPECIAL CONDITIONS 5-63 (DWR USE ONLY)

ORIGINAL

101-19

WR-W-4 5-69

C 1 4145 (SEQUENCE NO. DWR USE ONLY) (SEQ. NO.) (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER COMPLETION OF THE WELL

FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWR USE ONLY) 031370 — DATE WELL COMPLETED 2/27/70 — 022770

DEPTH OF WELL 130 (TO NEAREST FOOT)

PERMIT NO. FROM PERMIT TO DRILL WELL BA-70-0353

DRILLERS IDENTIFICATION NO. 32

OWNER (LAST NAME) Brown (FIRST NAME) Joel

STREET OR RFD 530 Bay Dr Rt 15 — POST OFFICE Belle Md 21220

WELL DESCRIPTION

WELL LOG

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

DESCRIPTION (USE ADDITIONAL SHEETS IF NECESSARY)	FEET FROM	FEET TO	CHECK IF WATER BEARING
Sand	0	15	
Red clay	15	63	
Sand	63	67	
Red Clay	67	83	
Sand	83	85	
Red Clay	85	123	
Sand	123	130	✓

3' Tail + packer

Special conditions do not apply as per instruction of Mr Schiffman

SEE CORRECTED COMPLETION REPORT

GROUTING RECORD

WELL HAS BEEN GROUTED (CIRCLE APPROPRIATE BOX) — YES (Y) — NO (N)

DEPTH OF GROUT SEAL (TO NEAREST FOOT)

FROM ~~26~~ 2 FT. TO 26 FT. (ENTER 0 IF FROM SURFACE)

CASING RECORD

CASING TYPES (INSERT APPROPRIATE CODE BELOW): STEEL (ST), CONCRETE (CO), PLASTIC (PL), OTHER (OT)

MAIN CASING TYPE	NOMINAL DIAMETER TOP (MAIN) CASING (NEAREST INCH)	TOTAL DEPTH OF MAIN CASING (NEAREST FOOT)
ST	4	125

OTHER CASING (IF USED)

	DIAMETER (INCH)	DEPTH (FEET) FROM	TO
EACH CASING			

SCREEN RECORD

SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW): STEEL (ST), BRASS OR BRONZE (BR), OPEN HOLE (HO), PLASTIC (PL), OTHER (OT)

C 2 (SEQ. NO.)

		DEPTH (NEAREST WHOLE FOOT) FROM	TO
EACH SCREEN	1 PL	123	130
	2		
	3		
	4		

SLOT SIZE .020 2. ____ 3. ____ 4. ____

IF WELL DRILLED WAS A FLOWING WELL CIRCLE BOX (F)

DWR USE ONLY (NOT TO BE FILLED IN BY DRILLER) (E.P.O.)

TELESCOPE CASING — LOG INDICATOR — OTHER DATA AVAILABLE

CIRCLE APPROPRIATE BOXES

(A) A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

(E) ELECTRIC LOG OBTAINED

(C) COPY OF ELECTRIC LOG ATTACHED

I HEREBY CERTIFY THAT I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAPTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLERS NAME Walter Frank

(PLEASE PRINT) Wm. Leonard

SIGNATURE Wm. Leonard

C 3 (SEQ. NO.)

PUMPING TEST

HOURS PUMPED (TO NEAREST HOUR) 2

PUMPING RATE (GALLONS PER MINUTE TO NEAREST GALLON) 5

METHOD USED TO MEASURE PUMPING RATE bucket

WATER LEVEL: (DISTANCE FROM LAND SURFACE)

BEFORE PUMPING 40 (NEAREST FOOT)

WHEN PUMPING ____ (NEAREST FOOT)

TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX): AIR (A), PISTON (P), TURBINE (T), CENTRIFUGAL (C), ROTARY (R), OTHER (DESCRIBE BELOW) (O), JET (J), SUBMERSIBLE (S)

PUMP INSTALLED

TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX — SEE ABOVE: A, C, J, P, R, S, T, O) S

CAPACITY: GALLONS PER MINUTE (TO NEAREST GALLON) 5

PUMP HORSE POWER 1/3

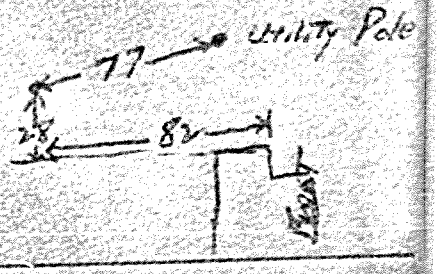
PUMP COLUMN LENGTH (NEAREST FOOT) 100

CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT)

(+) ABOVE / (−) BELOW LAND SURFACE 1 (NEAREST FOOT)

LOCATION OF WELL ON LOT

N — SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).



ORIGINAL

WR-W-4 3-69

CHECK OUT ! C

C 1 8253 SEQUENCE NO. (DWR USE ONLY)
1 2 3 (SEQ. NO.) 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER COMPLETION OF THE WELL
FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWR USE ONLY) 072070 8-13
DATE WELL COMPLETED 7/3/70 (0 7 0 3 7 0) 15 20
DEPTH OF WELL 250 (TO NEAREST FOOT) 22 26
PERMIT NO. FROM PERMIT TO DRILL WELL BA - 70 - 0363 28 29 30 31 32 33 34 35 36 37
DRILLERS IDENTIFICATION NO. 32

OWNER Brown Joe
LAST NAME FIRST NAME
STREET OR RFD 530 Bay Drive RT 15 POST OFFICE Ba/To Md 21110

WELL DESCRIPTION

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

DESCRIPTION (USE ADDITIONAL SHEETS IF NECESSARY)	FEET FROM	FEET TO	CHECK IF WATER BEARING
Sand	0	15	
Red clay	15	63	
Sand	63	67	
Red clay	67	83	
Sand	83	85	
Red clay	85	113	
Sand	113	130	
Red clay	130	154	
Sand	154	160	
White Clay	160	238	
Rock	238	240	
Sand	240	250	

Corrected Copy

GROUTING RECORD
WELL HAS BEEN GROUTED (CIRCLE APPROPRIATE BOX) YES (Y) 46 NO (N) 46
DEPTH OF GROUT SEAL (TO NEAREST FOOT) FROM 7 FT. (48 52) TO 74 FT. (54 58)
(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 (60 61)	4 (63 64)	245 (66 70)

OTHER CASING (IF USED)

EACH CASING	DIAMETER (INCH)	DEPTH (FEET) FROM	TO

SCREEN RECORD
SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW): ST STEEL; BR BRASS OR BRONZE; HO OPEN HOLE; PL PLASTIC; OT OTHER

C 2 (1 2 3 (SEQ. NO.) 6)

SCREEN	TYPE	DEPTH (NEAREST WHOLE FOOT) FROM	TO
EACH 1	PL (8 9)	245 (11 15)	250 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)
4	(53 54)	(56 60)	(62 66)

SLOT SIZE 1. .020 2. ____ 3. ____ 4. ____
IF WELL DRILLED WAS A FLOWING WELL CIRCLE BOX 68 F

DWR USE ONLY (NOT TO BE FILLED IN BY DRILLER) (E,R,O.)
70 T TELESCOPE CASING; LOG INDICATOR 72
OTHER DATA AVAILABLE 74 75 76 (W Q)

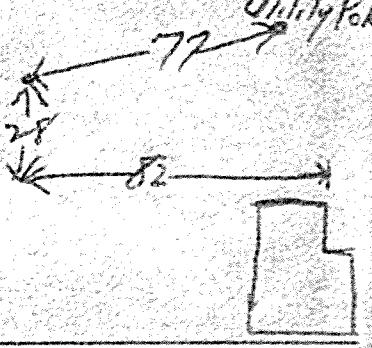
C 3 (1 2 3 (SEQ. NO.) 6)

PUMPING TEST
HOURS PUMPED (TO NEAREST HOUR) 8 (9 9)
PUMPING RATE (GALLONS PER MINUTE TO NEAREST GALLON) 50 (11 15)
METHOD USED TO MEASURE PUMPING RATE bucket
WATER LEVEL: (DISTANCE FROM LAND SURFACE)
BEFORE PUMPING 47 (17 20) (NEAREST FOOT)
WHEN PUMPING (22 25) (NEAREST FOOT)
TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX)
A (27) AIR; P (27) PISTON; T (27) TURBINE; C (27) CENTRIFUGAL; R (27) ROTARY; O (27) OTHER (DESCRIBE BELOW); J (27) JET; S (27) SUBMERSIBLE

PUMP INSTALLED
TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX — SEE ABOVE: A, C, J, P, R, S, T, O)
29 S
CAPACITY:
GALLONS PER MINUTE (TO NEAREST GALLON) 8 (31 35)
PUMP HORSE POWER 1/3 (37 41)
PUMP COLUMN LENGTH (NEAREST FOOT) 80 (43 47)

CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT)
(+) ABOVE; (-) BELOW (48) LAND SURFACE 3 (50 51) (NEAREST FOOT)

LOCATION OF WELL ON LOT
N
SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).



CIRCLE APPROPRIATE BOXES
A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
E ELECTRIC LOG OBTAINED
C COPY OF ELECTRIC LOG ATTACHED

I HEREBY CERTIFY THAT I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAPTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLERS NAME Walter Frank
(PLEASE PRINT) Wm. Leonard
SIGNATURE Wm Leonard

ORIGINAL

WR-W-1 3-89

B 1 9756 — SEQUENCE NO. (DWR USE ONLY) — (SEQ. NO.) (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
APPLICATION FOR PERMIT TO DRILL WELL

APPLICATION MUST BE SUBMITTED AND PERMIT RECEIVED BEFORE DRILLING IS STARTED.
FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWR USE ONLY): 070970

OWNER: Mc Neal (COL 15 LASTNAME) Clarence (FIRST NAME, COL 34) BA-71-0011 (COL 55)
STREET OR RFD: 810 Orems Rd (COL 36)
POST OFFICE: Balto Md 21221 (COL 57, COL 80)

B 2 DRILLER INFORMATION
Wm. (FIRST NAME) Leonard (DRILLER LAST NAME) IDENTITY NUMBER 32
74 Bush St (STREET OR RFD)
White Marsh Md 21162 (POST OFFICE, ZIP CODE)
DATE OF APPLICATION 7/6/70

B 4 LOCATION OF WELL
COUNTY: Baltimore (DO NOT ABBREVIATE COUNTY NAME)
SUBDIVISION: Kingston Park
SECTION: LOT:
NEAREST TOWN: Hawthorne
MILES FROM TOWN (ENTER 0 IF IN TOWN): 1/4 M

B 3 WELL INFORMATION
MAXIMUM PUMPING RATE (GALLONS PER MINUTE): 10
AVERAGE DAILY QUANTITY NEEDED (GALLONS PER DAY): 1000

B 5 DIRECTION FROM TOWN (CIRCLE APPROPRIATE BOX)
N NORTH · E EAST · NE NORTHEAST · SE SOUTHEAST · S SOUTH · W WEST · NW NORTHWEST · SW SOUTHWEST
NEAR WHAT ROAD: 136 Kingston Park Rd
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH · SOUTH · EAST · WEST
DISTANCE FROM ROAD (ENTER DISTANCE AND CIRCLE APPROPRIATE BOX): 30 F T M I

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- D DOMESTIC, HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING, AGRICULTURE, IRRIGATION
- I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOVERNMENT.
- M MUNICIPAL WATER SUPPLY
- P PRIVATE WATER COMPANY
- (M and P MUST HAVE STATE HEALTH DEPT. APPROVAL)
- T TEST

APPROXIMATE DEPTH OF WELL: 60 FEET

METHOD OF DRILLING USED (CIRCLE APPROPRIATE METHOD)
BORED (OR AUGERED) · JETTED · DRIVEN
AIR-ROTARY · AIR-PERCUSSION · ROTARY (HYDRAULIC ROTARY)
CABLE · REVERSE ROTARY
OTHER (DESCRIBE)

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 DEEPENED (IF AVAILABLE)

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS, ROADS AND STREAMS WITH NORTH IN THE DIRECTION OF THE ARROW, AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION OR STREAM CROSSING SHOWN ON THE SKETCH. DISTANCE MAY BE APPROXIMATE, BUT MUST BE INDICATED.

NOT TO BE FILLED IN BY DRILLER (DWR USE ONLY)
APPROPRIATION PERMIT NUMBER (G A P)
ENGINEER REVIEW (WRITE DISTRICT NO. IN BOX)
FORCE (WRITE INITIALS IN BOX)
CONDITIONS: A E N S G W Q

B 5 CONTINUED
STATE DEPARTMENT OF HEALTH (CIRCLE BOX IF STATE HEALTH)

HEALTH DEPARTMENT APPROVAL (NOT TO BE FILLED IN BY DRILLER)
Baltimore COUNTY DEPT. OF HEALTH
DATE: MO. 07 DAY 07 YR. 70
APPROVED BY: Tom J. Forrest TITLE: Asst. Chief
LATITUDE: 39 19 10 (DEG MIN SEC)
LONGITUDE: 076 25 50 (DEG MIN SEC)
ELEVATION AT WELL HEAD (FEET): 050

B 6
SPECIAL CONDITIONS 8-63 (DWR USE ONLY)

ORIGINAL

102-12

WR-W-4 3-69

C 1 2118 (SEQUENCE NO. (DWRUSE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER COMPLETION OF THE WELL
FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWRUSE ONLY) 081770

DATE WELL COMPLETED 8/27/70 (08/27/70)

DEPTH OF WELL 50 (TO NEAREST FOOT)

PERMIT NO. FROM PERMIT TO DRILL WELL KA-71-0611

DRILLER'S IDENTIFICATION NO. 37

OWNER McNeal (LAST NAME) Clarence (FIRST NAME)

STREET OR RFD 810 Orems Rd POST OFFICE Balto. Md 21221

WELL DESCRIPTION

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

DESCRIPTION (USE ADDITIONAL SHEETS IF NECESSARY)	FEET FROM	FEET TO	PURPOSE IF WATER BEARING
Sand	0	4	
Gray & White Clay	4	28	
Sand	28	50	✓

GROUTING RECORD
WELL HAS BEEN GROUTED (CIRCLE APPROPRIATE BOX) YES (Y) NO (N)

DEPTH OF GROUT SEAL (TO NEAREST FOOT)
FROM 0 FT. TO 22 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 FOR (MAIN) CASING (NEAREST INCH)	TOTAL DEPTH OF MAIN CASING (NEAREST FOOT)
ST	4	50

OTHER CASING (IF USED)

EACH CASING	DIAMETER (INCH)	DEPTH (FEET) FROM	TO

SCREEN RECORD
SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW): ST STEEL; BR BRASS OR BRONZE; HO OPEN HOLE; PL PLASTIC; OT OTHER

C 2 (SEQ. NO.)

DEPTH (NEAREST WHOLE FOOT)

EACH SCREEN		FROM	TO
1	PL	45	50
2			
3			
4			

SLOT SIZE .30 in. 3. 4.

IF WELL DRILLED WAS A FLOWING WELL CIRCLE BOX (F)

OWR USE ONLY (DO NOT TO BE FILLED IN BY DRILLER)
TELESCOPE OR STUB
LOG INDICATOR
OTHER DATA AVAILABLE

C 3 (SEQ. NO.)

PUMPING TEST
HOURS PUMPED (TO NEAREST HOUR) 1 hr
PUMPING RATE (GALLONS PER MINUTE TO NEAREST GALLON) 20
METHOD USED TO MEASURE PUMPING RATE Bucket
WATER LEVEL (DISTANCE FROM LAND SURFACE)
BEFORE PUMPING 13 (NEAREST FOOT)
WHEN PUMPING (NEAREST FOOT)

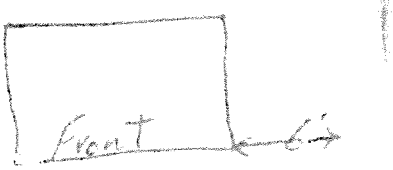
TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX)
A AIR; P PISTON; T TURBINE; C CENTRIFUGAL; R ROTARY; O OTHER (DESCRIBE BELOW); J JET; S SUBMERSIBLE

PUMP INSTALLED
TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX - SEE ABOVE): A, C, J, P, R, S, T, O
CAPACITY:
GALLONS PER MINUTE (TO NEAREST GALLON)
PUMP HORSE POWER
PUMP COLUMN LENGTH (NEAREST FOOT)

CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT)
+ ABOVE LAND SURFACE
− BELOW
2 (NEAREST FOOT)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).

N



CIRCLE APPROPRIATE BOXES
A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
E ELECTRIC LOG OBTAINED
C COPY OF ELECTRIC LOG ATTACHED

I HEREBY CERTIFY THAT I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAPTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLER'S NAME Walter Frank
(PLEASE PRINT) Wm Leonard
SIGNATURE Wm Leonard

ORIGINAL

WR-W-3 3-69

B 1 | 1983 | SEQUENCE NO. (DWR USE ONLY)

1 2 3 (SEQ. NO.) 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
APPLICATION FOR PERMIT TO DRILL WELL

APPLICATION MUST BE SUBMITTED AND PERMIT RECEIVED BEFORE DRILLING IS STARTED.
FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWR USE ONLY): 09 24 70

OWNER: Jean P. William P. (COL 15 LAST NAME / FIRST NAME COL 34)
STREET OR RFD: Box 17 Wampler Road (COL 36 / COL 58)
POST OFFICE: Baltimore Maryland 12220 (COL 57)
BA-71-0101 (COL 80)

B 2 — DRILLER INFORMATION
1 2 3 (SEQ. NO.) 6
William H. Eiler (8 FIRST NAME / DRILLER LAST NAME 27)
IDENTITY NUMBER: 27 (28 32)
XX River Neck Road (34 / STREET OR RFD 53)
Baltimore Maryland (55 / POST OFFICE)
ZIP CODE (60)
DATE OF APPLICATION: Sept. 26/70

B 3 — WELL INFORMATION
1 2 3 (SEQ. NO.) 6
MAXIMUM PUMPING RATE (GALLONS PER MINUTE): 15 (8 12)
AVERAGE DAILY QUANTITY NEEDED (GALLONS PER DAY): 300 (14 20)

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- D DOMESTIC, HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING, AGRICULTURE, IRRIGATION
- I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOVERNMENT
- M MUNICIPAL WATER SUPPLY
- P PRIVATE WATER COMPANY
  (MUST HAVE STATE HEALTH DEPT. APPROVAL)
- T TEST

22

APPROXIMATE DEPTH OF WELL: 100 FEET (24 28)

METHOD OF DRILLING USED (CIRCLE APPROPRIATE METHOD)
BORED (OR AUGERED) | JETTED | DRIVEN
30-37 AIR-ROTARY | AIR-PERCUSSION | ROTARY (HYDRAULIC ROTARY)
CABLE | REVERSE ROTARY
OTHER (DESCRIBE)

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

39

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE) (41 52)

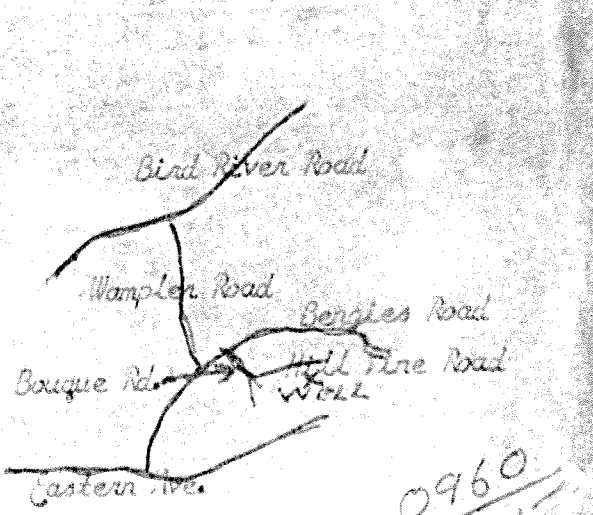
NOT TO BE FILLED IN BY DRILLER (DWR USE ONLY)
APPROPRIATION PERMIT NUMBER (54 63)
ENGINEER REVIEW (WRITE DISTRICT NO. IN BOX) (65)
FORCE (67 68) WRITE INITIALS IN BOX
CONDITIONS A S N S C W Q (70 71 72 73 74 75 76 77 78 79)

B 4 — LOCATION OF WELL
1 2 3 (SEQ. NO.) 6
COUNTY: Baltimore (8 / DO NOT ABBREVIATE COUNTY NAME 21)
SUBDIVISION (23 42)
SECTION (44 49) LOT: X (48 60)
NEAREST TOWN: Middle River (52 71)
MILES FROM TOWN (ENTER 0 IF IN TOWN): 1/2 (73 / M 1 76 77 78)

B 5 — DIRECTION FROM TOWN (CIRCLE APPROPRIATE BOX)
1 2 3 (SEQ. NO.) 6
N NORTH | E EAST | NE NORTHEAST | SE SOUTHEAST
S SOUTH | W WEST | NW NORTHWEST | SW SOUTHWEST
(8 8 8 9)

NEAR WHAT ROAD: WAMPLER ROAD (11 30)
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH (N) | SOUTH (S) | EAST (E) | WEST (W) (32 33 34 35)
DISTANCE FROM ROAD (ENTER DISTANCE AND CIRCLE APPROPRIATE BOX): 50 (34 37 / F T M 1 38 39)

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS, ROADS AND STREAMS. WITH NORTH IN THE DIRECTION OF THE ARROW, AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION OR STREAM CROSSING SHOWN ON THE SKETCH. DISTANCE MAY BE APPROXIMATE, BUT MUST BE INDICATED.



0960
545

B 5 CONTINUED
1 2 3 (SEQ. NO.) 6
41 S STATE DEPARTMENT OF HEALTH (CIRCLE BOX IF STATE HEALTH)
DATE: MO. 09 DAY 23 YR. 70 (45 / 48)

HEALTH DEPARTMENT APPROVAL (NOT TO BE FILLED IN BY DRILLER)
Baltimore COUNTY DEPT. OF HEALTH
APPROVED BY: [signature] TITLE: Sanitarian

LATITUDE: S 39 20 40 (50 51 52 53 54 55)
LONGITUDE: DEG 076 MIN 25 50 SEC (57 58 59 60 61 62 63)
ELEVATION AT WELL HEAD (FEET): 0050 (64 65 66 67)

B 6 — SPECIAL CONDITIONS (DWR USE ONLY)
1 2 3 (SEQ. NO.) 6
8 (63)

102-69

ORIGINAL

C 1 6456 SEQUENCE NO. (OWNUSE ONLY)
1 2 3 (SEQ. NO.) 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401

WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER COMPLETION OF THE WELL.
FILL IN THIS FORM COMPLETELY

DATE RECEIVED (OWNUSE ONLY) 2319783

DATE WELL COMPLETED: Oct 24/72
10 24 70
14 15

DEPTH OF WELL: 55 (TO NEAREST FOOT) 22 26

PERMIT NO. FROM PERMIT TO DRILL WELL: [A][-][1][1][-][0][1][-][1]
28 29 30 31 32 33 34 35 36 37

DRILLERS IDENTIFICATION NO.: 37

OWNER: Jean (LAST NAME) William L. (FIRST NAME)

STREET OR RFD: 2x N. Harper Rd. POST OFFICE: Baltimore, Md. 21229

WELL DESCRIPTION

WELL LOG

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

DESCRIPTION (USE ADDITIONAL SHEETS IF NECESSARY)	FEET FROM	FEET TO	CHECK IF WATER BEARING
Sand	0	21	
Red Clay	21	23	
Sand & Gravel	53	55	

GROUTING RECORD

WELL HAS BEEN GROUTED (CIRCLE APPROPRIATE BOX): YES Y (45) NO N (46)

DEPTH OF GROUT SEAL (TO NEAREST FOOT)

FROM 0 (48 52) FT. TO 50 (54 58) FT.

(ENTER 0 IF FROM SURFACE)

CASING RECORD

CASING TYPE (INSERT APPROPRIATE CODE BELOW): ST STEEL; CO CONCRETE; PL PLASTIC; OT OTHER

MAIN CASING TYPE: ST (60 61)

NOMINAL DIAMETER TOP (MAIN) CASING (NEAREST INCH): 4 (63 64)

TOTAL DEPTH OF MAIN CASING (NEAREST FOOT): 55 (66 70)

OTHER CASING (IF USED)

EACH CASING	DIAMETER (INCH)	DEPTH (FEET) FROM	TO
1			
2			
3			

SCREEN RECORD

SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW): ST STEEL; BR BRASS OR BRONZE; NO OPEN HOLE; PL PLASTIC; OT OTHER

C 2 (1 2 3 (SEQ. NO.) 6)

DEPTH (NEAREST FOOT)

EACH SCREEN		FROM	TO
1	BR (11 12)	60 (13 17)	65 (18 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)
4	(53 54)	(56 60)	(62 66)

SLOTSIZE 1. ____ 2. ____ 3. ____ 4. ____

IF WELL DRILLED WAS A FLOWING WELL CIRCLE BOX: A2 F

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

70 TELESCOPE CASING (T)

72 LOG INDICATOR (L, N, O)

74 75 76 OTHER DATA AVAILABLE (W, Q)

CIRCLE APPROPRIATE BOXES

A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

E ELECTRIC LOG OBTAINED

C COPY OF ELECTRIC LOG ATTACHED

I HEREBY CERTIFY THAT I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAPTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLER'S NAME (PLEASE PRINT): W. H. Eckert

SIGNATURE: W. H. Eckert

C 3 (1 2 3 (SEQ. NO.) 6)

PUMPING TEST

HOURS PUMPED (TO NEAREST HOUR): 3 (9 10)

PUMPING RATE GALLONS PER MINUTE (TO NEAREST GALLON): 10 (11 15)

METHOD USED TO MEASURE PUMPING RATE: Air Line

WATER LEVEL: (DISTANCE FROM LAND SURFACE)

BEFORE PUMPING: 31 (NEAREST FOOT) (17 20)

WHEN PUMPING: 38 (NEAREST FOOT) (22 25)

TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX)

A (A) B (27); P PISTON (27); T TURBINE (27); C CENTRIFUGAL (27); R ROTARY (27); O OTHER (DESCRIBE BELOW) (27); JET (27); S SUBMERSIBLE (27)

PUMP INSTALLED

TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX — SEE ABOVE: A, C, J, P, R, S, T, O)

29 J

CAPACITY:

GALLONS PER MINUTE (TO NEAREST GALLON): 5 (31 35)

PUMP HORSE POWER: 3/4 (37 41)

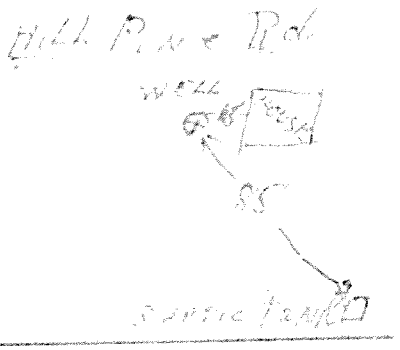
PUMP COLUMN LENGTH (NEAREST FOOT): 45 (43 47)

CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT)

+ ABOVE / − BELOW LAND SURFACE: 1 (INSERT FOOT) (49 50)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).



ORIGINAL

104-74

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

PERMIT TO DRILL WELL

****
* PERMIT NUMBER- BA-72-0077 *
****

ISSUE DATE- 07/27/71
MO DA YR

ISSUED TO DRILLER-

EASTERN WELL DRLG CO
824 BACK RIVER NECK RD
BALTIMORE MD 21221

DRILLER
ID. NUMBER- 27

THE ABOVE NAMED DRILLER IS HEREBY AUTHORIZED TO DRILL A WELL TO BE OWNED BY-

SAUERWALD, CHARLES E
121 HUGHES SHORE RD
BALTIMORE MD

THIS WELL IS TO BE LOCATED IN BALTIMORE COUNTY,
SUBDIVISION, SECTION- , LOT- X ,
NEAR THE TOWN OF MIDDLE RIVER

THE WATER IS TO BE USED FOR A DOMESTIC SUPPLY.

THIS WELL WILL REPLACE A WELL WHICH WILL BE ABANDONED & SEALED.

****SPECIAL CONDITIONS****

THIS PERMIT IS SUBJECT TO THE FOLLOWING SPECIAL CONDITIONS-

NONE.

THIS PERMIT IS VALID UNTIL
01/27/72. A WELL COMPLETION
REPORT MUST BE SUBMITTED TO
THE DEPARTMENT WITHIN 30 DAYS
AFTER COMPLETION OF THE WELL

PAUL W. MCKEE
DIRECTOR, MARYLAND
DEPARTMENT OF WATER
RESOURCES

Charge card processed

CANCELLED

DWR COPY

WR-W-3 9-70

B 1 4844 SEQUENCE NO. (DWR USE ONLY)
1 2 3 (SEQ. NO.) 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
APPLICATION FOR PERMIT TO DRILL WELL

BA-72-0077
FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWR USE ONLY) 07 26 71

OWNER Savearuld Charles E.
COL. 15 LAST NAME FIRST NAME COL. 34

STREET OR RFD 121 Hughes Shore Road COL. 55
COL. 36

POST OFFICE Baltimore Maryland 12220 COL. 76
COL. 57

8-13

DRILLER INFORMATION

B 1 CONTINUED
1 2 3 (SEQ. NO.) 6

DATE July 19 71 LICENSE NUMBER 27
77 80

William H. Eiler
FIRST NAME DRILLER LAST NAME

SIGNATURE W. H. Eiler

WELL INFORMATION

B 2
1 2 3 (SEQ. NO.) 6

MAXIMUM PUMPING RATE (GALLONS PER MINUTE) 5
8 12

AVERAGE DAILY QUANTITY NEEDED (GALLONS PER DAY) 500
14 20

USE FOR WATER (CIRCLE APPROPRIATE BOX)

(D) DOMESTIC, HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
F FARMING, AGRICULTURE, IRRIGATION
I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOVERNMENT.
22
M MUNICIPAL WATER SUPPLY } MUST HAVE STATE HEALTH DEPT. APPROVAL
P PRIVATE WATER COMPANY
T TEST

APPROXIMATE DEPTH OF WELL 90 FEET
24 28

APPROXIMATE DIAMETER OF WELL (NEAREST INCH)

METHOD OF DRILLING USED (CIRCLE APPROPRIATE METHOD)

BORED (OR AUGERED) JETTED DRIVEN
30-37 AIR-ROTARY AIR-PERCUSSION (ROTARY) (HYDRAULIC ROTARY)
CABLE REVERSE ROTARY DRIVE-POINT

OTHER (DESCRIBE)

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
39
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 DEEPENED (IF AVAILABLE)
41 52

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

APPROPRIATION PERMIT NUMBER GAP
54 63

ENGINEER REVIEW DISTRICT NO. 65

FORCE WRITE INITIALS IN BOX 67 68

CONDITIONS A E N S G W Q C L U
70 71 72 73 74 75 76 77 78 79

B 4 CONTINUED
1 2 3 (SEQ. NO.) 6

HEALTH DEPARTMENT APPROVAL

41 S STATE HEALTH (CIRCLE BOX)

COUNTY NAME Baltimore COUNTY NO.

DATE MO. 07 DAY 21 YR. 71
43 48

APPROVED BY Hoyt K. Brown

B 5
1 2 3 (SEQ. NO.) 6

SPECIAL CONDITIONS 8-03 (DWR USE ONLY)

LOCATION OF WELL

B 3
1 2 3 (SEQ. NO.) 6

COUNTY Baltimore (DO NOT ABBREVIATE COUNTY NAME)
8 23

SUBDIVISION
23 42

SECTION 44 46 LOT X 48 50

NEAREST TOWN Middle River
52 71

MILES FROM TOWN (ENTER 0 IF IN TOWN) One M I
73 76 77 78

DIRECTION FROM TOWN (CIRCLE APPROPRIATE BOX)

B 4
1 2 3 (SEQ. NO.) 6

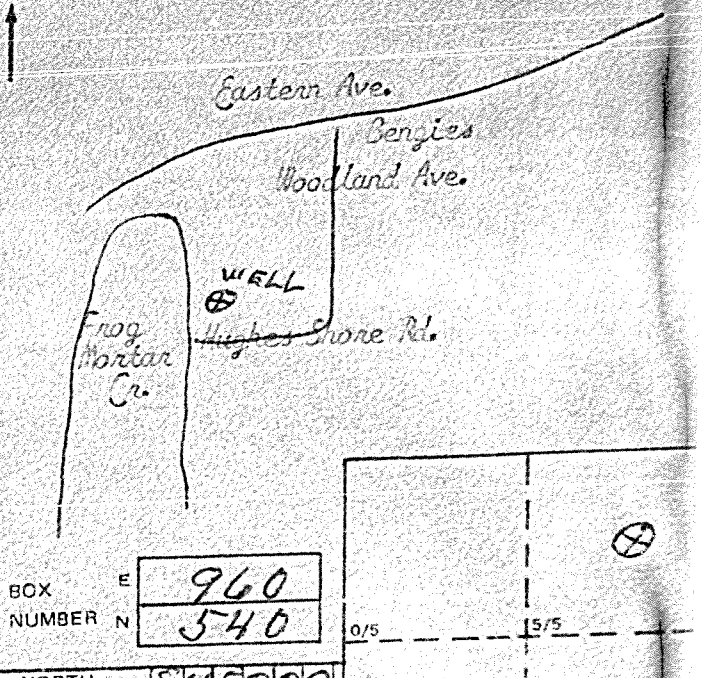
N NORTH (E) EAST NE NORTHEAST SE SOUTHEAST
S SOUTH W WEST NW NORTHWEST SW SOUTHWEST
8 8 8 9 8 9

NEAR WHAT ROAD Eastern Ave.
11 30

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX) NORTH (N) 32 SOUTH (S) 32 EAST (E) 32 WEST (W) 32

DISTANCE FROM ROAD (ENTER DISTANCE AND CIRCLE APPROPRIATE BOX) 75' F T M I
34 37 38 39

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS, ROADS AND STREAMS WITH NORTH IN THE DIRECTION OF THE ARROW, AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION OR STREAM CROSSING SHOWN ON THE SKETCH. ALSO SHOW, BY MEANS OF AN "X," THE WELL LOCATION IN THE BOX BELOW, AND THE BOX NUMBER FROM THE WELL LOCATION MAP.



BOX NUMBER E 960 N 540

NORTH CORDINATE 54 5000 (DEG MIN SEC)
50 51 52 53 54 55

EAST CORDINATE 0 96 5 000
57 58 59 60 61 62 63

ELEVATION AT WELL HEAD (FEET)
64 65 66 67 68

104-74

ORIGINAL

105-06

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

PERMIT TO DRILL WELL

****
* PERMIT NUMBER- BA-72-0157 *
****

ISSUE DATE- 09/08/71
MO DA YR

ISSUED TO DRILLER-

LEONARD WELL DRLG
BOX 742 BUSH STREET
WHITE MARSH MD 21162

DRILLER
ID. NUMBER- 32

THE ABOVE NAMED DRILLER IS HEREBY AUTHORIZED TO DRILL A WELL TO BE OWNED BY-

NICKERSON, HARRY
1045 BEECH DR
WHITE MARSH MD 21162

THIS WELL IS TO BE LOCATED IN BALTIMORE COUNTY,
NEAR THE TOWN OF WHITE MARSH

THE WATER IS TO BE USED FOR A DOMESTIC SUPPLY.

THIS WELL WILL REPLACE A WELL WHICH WILL BE A STANDBY.

****SPECIAL CONDITIONS****

THIS PERMIT IS SUBJECT TO THE FOLLOWING SPECIAL CONDITIONS-

NONE.

THIS PERMIT IS VALID UNTIL
03/08/72. A WELL COMPLETION
REPORT MUST BE SUBMITTED TO
THE DEPARTMENT WITHIN 30 DAYS
AFTER COMPLETION OF THE WELL

PAUL W. MCKEE
DIRECTOR, MARYLAND
DEPARTMENT OF WATER
RESOURCES

DWR COPY

WR-W-4 9/70

C 1 ~~2805~~ 2954 SEQUENCE NO. (DWR USE ONLY)

1 2 3 (SEQ. NO.) 6

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

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER WELL COMPLETION

FILL IN THIS FORM COMPLETELY

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA 7K 0152

28 29 30 31 32 33 34 35 36 37

DATE RECEIVED (DWR USE ONLY) 08237 8-13

DATE WELL COMPLETED 8/12/72 (15 20) 08/13/72

DEPTH OF WELL 84 (22 (TO NEAREST FOOT) 26)

DRILLERS IDENTIFICATION NO. 32

OWNER Nickerson (LAST NAME) Harry (FIRST NAME)

STREET OR RFD 1045 Beech Dr POST OFFICE White Marsh Md

WELL DESCRIPTION

WELL LOG

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

DESCRIPTION (USE ADDITIONAL SHEETS IF NECESSARY)	FEET FROM	FEET TO	CHECK IF WATER BEARING
Brown Dirt	0	6	
Clay	6	10	
Rock	10	13	
Red clay	13	30	
White Sand	30	38	
Red clay	38	58	
Fine Sand & clay	58	62	✓
Sand	62	84	✓

Corrected Copy
1st report void

GROUTING RECORD

WELL HAS BEEN GROUTED (CIRCLE APPROPRIATE BOX) [Y] [N] (46 44)

TYPE OF GROUTING MATERIAL (CIRCLE BOX) CEMENT [C M] (45 46) BENTONITE CLAY [B C] (45 46)

NO. OF BAGS 1 NO. OF POUNDS 100

GALLONS OF WATER 10

DEPTH OF GROUT SEAL (TO NEAREST FOOT)

FROM 0 (48 52) FT. TO 30 (54 58) FT.

(ENTER 0 IF FROM SURFACE)

CASING RECORD

CASING TYPES (INSERT APPROPRIATE CODE BELOW)

[S T] STEEL [C O] CONCRETE [P L] PLASTIC [O T] OTHER

MAIN CASING TYPE	NOMINAL DIAMETER TOP (MAIN) CASING (NEAREST INCH)	TOTAL DEPTH OF MAIN CASING (NEAREST FOOT)
S T (60 61)	4 (63 64)	78 (66 70)

OTHER CASING (IF USED)

EACH CASING	DIAMETER (INCH)	DEPTH (FEET) FROM	TO

SCREEN RECORD

SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW)

[S T] STEEL [B R] BRASS OR BRONZE [H O] OPEN HOLE [P L] PLASTIC [O T] OTHER

C 2 (1 2 3 (SEQ. NO.) 6)

DEPTH (NEAREST WHOLE FOOT)

EACH SCREEN		FROM	TO
1	P L (8 9)	77 (11 15)	84 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1. .020 2. ____ 3. ____

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK FROM [redacted] TO [redacted]

IF WELL DRILLED WAS A FLOWING WELL CIRCLE BOX (68 F)

DWR USE ONLY (NOT TO BE FILLED IN BY DRILLER) (F.R.O.S.)

(70 T) TELESCOPE CASING (72) LOG INDICATOR (74 75 76 W O) OTHER DATA AVAILABLE

C 3 (1 2 3 (SEQ. NO.) 6)

PUMPING TEST

HOURS PUMPED (TO NEAREST HOUR) 2 (8 9)

PUMPING RATE (GALLONS PER MINUTE TO NEAREST GALLON) 40 (11 15)

METHOD USED TO MEASURE PUMPING RATE Bucket

WATER LEVEL: (DISTANCE FROM LAND SURFACE)

BEFORE PUMPING 30 (17 20) (NEAREST FOOT)

WHEN PUMPING 70 (22 25) (NEAREST FOOT)

TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX)

[A] AIR (27) [P] PISTON (27) [T] TURBINE (27)

[C] CENTRIFUGAL (27) [R] ROTARY (27) [O] OTHER (DESCRIBE BELOW) (27)

[J] JET (27) [S] SUBMERSIBLE (27)

PUMP INSTALLED

TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX — SEE ABOVE: A, C, J, P, R, S, T, O) S (29)

DRILLER WILL INSTALL PUMP (CIRCLE APPROPRIATE BOX) [YES Y] [NO N]

CAPACITY:

GALLONS PER MINUTE (TO NEAREST GALLON) 7 (31 35)

PUMP HORSE POWER ¼ WEH (37 41)

PUMP COLUMN LENGTH (NEAREST FOOT) 60 (43 47)

CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT)

[+ ABOVE] [− BELOW] (49) LAND SURFACE / (50 51) (NEAREST FOOT)

LOCATION OF WELL ON LOT

N ↑ SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).

P.T less Adp.
Front of House

CIRCLE APPROPRIATE BOXES

[A] A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

[E] ELECTRIC LOG OBTAINED

[C] COPY OF ELECTRIC LOG ATTACHED

I HEREBY CERTIFY THAT I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAPTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLERS NAME (PLEASE PRINT) Wm. Leonard

SIGNATURE Wm Leonard

ORIGINAL

WR-W-3 9-70

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
APPLICATION FOR PERMIT TO DRILL WELL

B 1 0287 — SEQUENCE NO. (DWR USE ONLY) — (SEQ. NO.) — (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

BA-72-0157 — FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWR USE ONLY) 090871

OWNER Nickerson (COL 15 LAST NAME) Harry (FIRST NAME) COL. 34

STREET OR RFD 1045 Beech Dr (COL 36) COL. 55

POST OFFICE White Marsh Md 21162 (COL 57) COL. 76

8-13

B 1 CONTINUED — DRILLER INFORMATION

DATE 9/1/71 — LICENSE NUMBER 32 (77–80)

Wm. (FIRST NAME) Leonard (LAST NAME) — DRILLER

SIGNATURE Wm Leonard

B 2 — WELL INFORMATION

MAXIMUM PUMPING RATE (GALLONS PER MINUTE) (8–12)

AVERAGE DAILY QUANTITY NEEDED (GALLONS PER DAY) 750 (15–20)

USE FOR WATER (CIRCLE APPROPRIATE BOX)

(D) DOMESTIC, HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)

F FARMING, AGRICULTURE, IRRIGATION

I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOVERNMENT.

M MUNICIPAL WATER SUPPLY } MUST HAVE STATE HEALTH DEPT. APPROVAL

P PRIVATE WATER COMPANY }

T TEST

(22)

APPROXIMATE DEPTH OF WELL 70 FEET (24–28)

APPROXIMATE DIAMETER OF WELL 4 (NEAREST INCH)

METHOD OF DRILLING USED (CIRCLE APPROPRIATE METHOD)

BORED (OR AUGERED) — JETTED — DRIVEN

AIR-ROTARY — AIR-PERCUSSION — (ROTARY (HYDRAULIC ROTARY))

CABLE — REVERSE ROTARY — DRIVE-POINT

(30-37)

OTHER (DESCRIBE)

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 — Hand Dug

D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE) (4–52)

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

APPROPRIATION PERMIT NUMBER GAP (54–63) — ENGINEER REVIEW DISTRICT NO. (65)

FORCE (WRITE INITIALS IN BOX) (67–68) — CONDITIONS A E N S G W Q C L U (70–79)

B 4 CONTINUED — HEALTH DEPARTMENT APPROVAL

(41) (S) STATE HEALTH (CIRCLE BOX)

Baltimore — COUNTY NAME — COUNTY NO.

DATE MO. 09 DAY 03 YR. 71 (43–48)

Hoyt V. Bonner — APPROVED BY

B 5 — SPECIAL CONDITIONS 8-63 (DWR USE ONLY)

B 3 — LOCATION OF WELL

COUNTY Baltimore (DO NOT ABBREVIATE COUNTY NAME) (8–21)

SUBDIVISION (23–42)

SECTION (44–46) — LOT (48–50)

NEAREST TOWN White Marsh (52–71)

MILES FROM TOWN (ENTER 0 IF IN TOWN) ½ (73–75) — M I (76–78)

B 4 — DIRECTION FROM TOWN (CIRCLE APPROPRIATE BOX)

N NORTH — E EAST — (NE) NORTHEAST — SE SOUTHEAST

S SOUTH — W WEST — NW NORTHWEST — SW SOUTHWEST

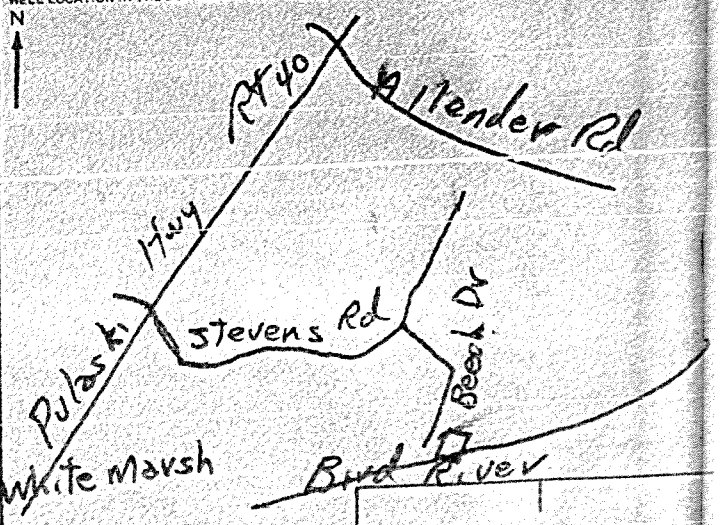
(8) (9)

NEAR WHAT ROAD 1045 Beech Dr (11–30)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX) — NORTH (N) (32) — SOUTH S (32) — EAST (E) (32) — WEST W (32)

DISTANCE FROM ROAD (ENTER DISTANCE AND CIRCLE APPROPRIATE BOX) 30 (34–37) — F T — M I (38–39)

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS, ROADS AND STREAMS WITH NORTH IN THE DIRECTION OF THE ARROW, AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION OR STREAM CROSSING SHOWN ON THE SKETCH. ALSO SHOW, BY MEANS OF AN "X," THE WELL LOCATION IN THE BOX BELOW, AND THE BOX NUMBER FROM THE WELL LOCATION MAP.



BOX NUMBER E 970 N 560

0/5 X 5/5

NORTH CORDINATE 560000 (50–55 DEG MIN SEC)

EAST CORDINATE 970000 (57–63)

ELEVATION AT WELL HEAD (FEET) (65–68)

0/0 5/0

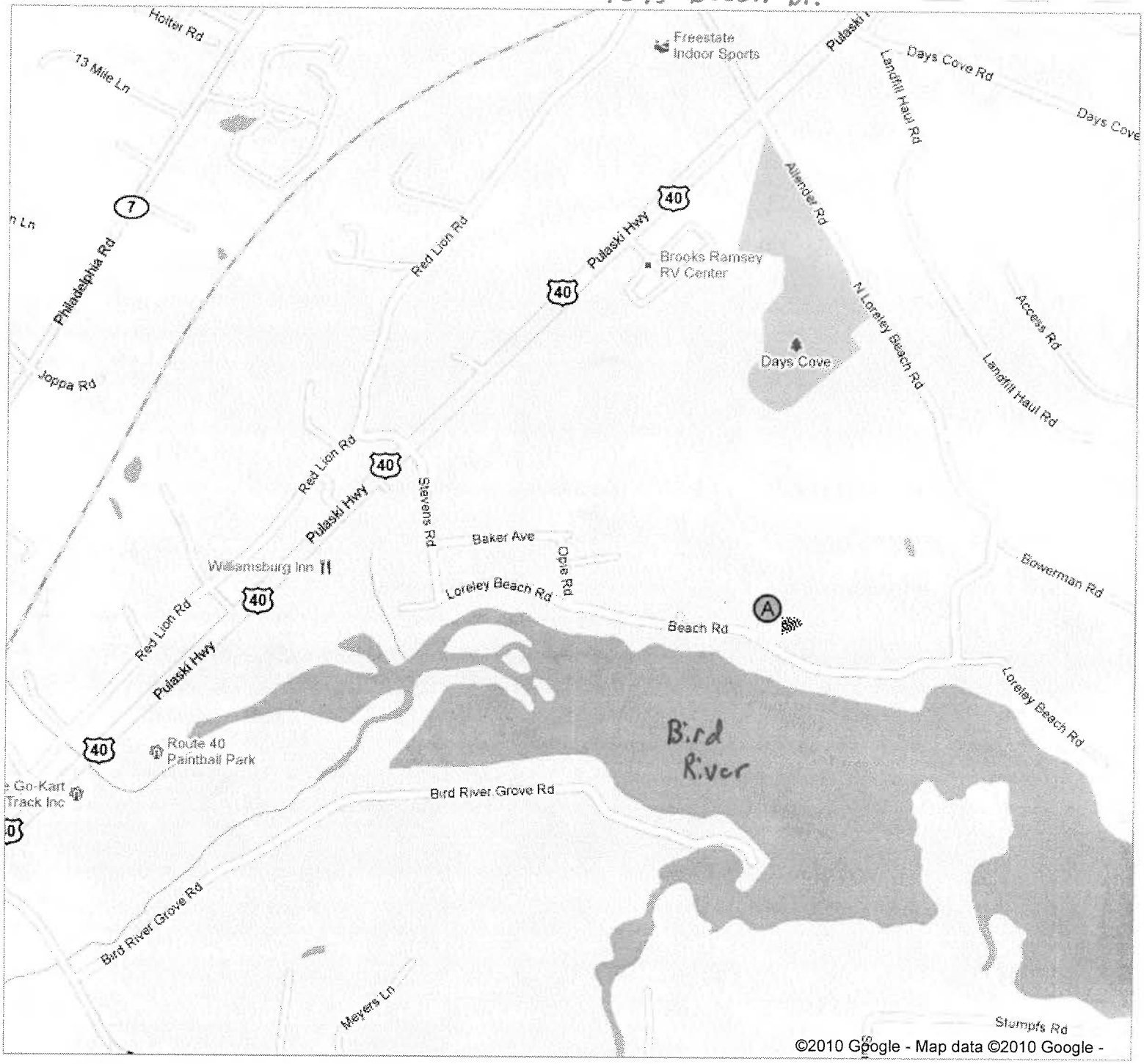
105-06

ORIGINAL

Google maps

BA-72-0157
1045 Beech Dr.

Get Directions My Maps Print Send Link



MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION
2500 BROENING HIGHWAY, BALTIMORE, MARYLAND 21224, (410) 631-3784

WATER WELL ABANDONMENT-SEALING REPORT FORM

SUBMIT COPIES OF COMPLETED FORM TO:

* COUNTY ENVIRONMENT AGENCY (contact MDE, WMA if address needed)
* WELL OWNER
* MDE, WATER MANAGEMENT ADMINISTRATION, WELL PROGRAM

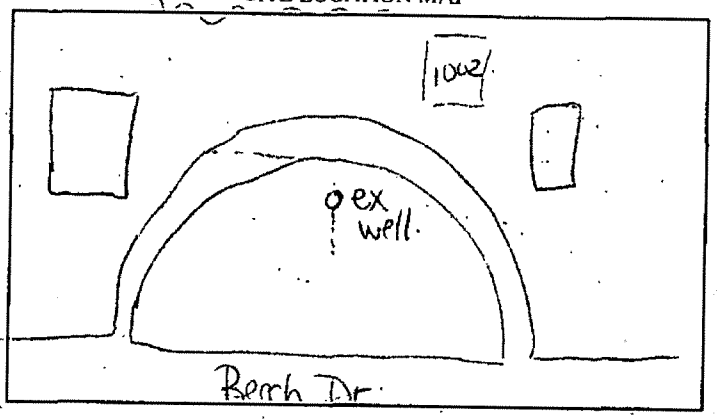
DATE WELL ABANDONED: 3/19/01 (month/day/year)

* PERMIT NUMBER OF ABANDONED WELL (if any): NONE -
* PERMIT NUMBER OF REPLACEMENT WELL: — —
* PERSON ABANDONING WELL: Mark Slowinski
* OWNER'S NAME: Balto Co.

WELL DRILLERS LICENSE NUMBER: _____
CIRCLE: MWD/MSD/MGD

* WELL LOCATION:
COUNTY: Balto.
NEAREST TOWN: _____
TAX MAP _____ BLOCK _____ PARCEL _____
SUBDIVISION: Wilson Point
SECTION: _____ LOT: _____
NEAREST ROAD: 1002 Beech Dr

SITE LOCATION MAP



* TYPE OF WELL BEING ABANDONED:

_____ DRILLED _____ JETTED
_____ BORED/AUGERED X HAND DUG
_____ OTHER (specify) _____

* USE CODE:

X DOMESTIC _____ MUNICIPAL/PUBLIC
_____ IRRIGATION _____ INDUSTRIAL
_____ TEST/OBSERVATION _____ GEOTHERMAL

* TYPE OF CASING:

_____ STEEL _____ PLASTIC
_____ CONCRETE X OTHER (specify) BRICK

* SIZE OF CASING: 36 INCHES IN DIAMETER
* DEPTH OF WELL: 11 FEET DEEP
* WAS ANY CASING REMOVED? ___ YES X NO
if yes, length removed, in feet: _____
* WAS CASING RIPPED OR PERFORATED? ___ YES X NO

LOG OF SEALING MATERIAL

MATERIAL	FEET FROM	FEET TO
Stone	11	6
Concrete	6	3
Top Soil	3	0

VOLUME OF MATERIAL USED

Insp 3/27/01

Dennis Hirniak RS 486 MWD/MSD/MGD 3/19/01
SIGNATURE-MASTER WELL DRILLER OR SUPERVISING SANITARIAN LICENSE # CIRCLE ONE DATE

DENV 828 JULY 1997 2) COUNTY ENVIRONMENTAL AGENCY

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

PERMIT TO DRILL WELL

****
* PERMIT NUMBER- BA-72-0290 *
****

ISSUE DATE- 12/08/71
MO DA YR

ISSUED TO DRILLER-

LEONARD WELL DRLG
BOX 742 BUSH STREET
WHITE MARSH MD 21162

DRILLER
ID. NUMBER- 32

THE ABOVE NAMED DRILLER IS HEREBY AUTHORIZED TO DRILL A WELL TO BE OWNED BY-

MARINE BASIN
1900 OLD EASTERN AVE
ESSEX MD 21121

THIS WELL IS TO BE LOCATED IN BALTIMORE COUNTY, NEAR THE TOWN OF MARS ESTATES

THE WATER IS TO BE USED FOR A COMMERCIAL/INDUSTRIAL SUPPLY.

THIS WELL WILL NOT REPLACE ANOTHER WELL.

****SPECIAL CONDITIONS****

THIS PERMIT IS SUBJECT TO THE FOLLOWING SPECIAL CONDITIONS-

1. DEPARTMENT REPRESENTATIVES SHALL HAVE ACCESS TO THE WELL TO CONDUCT SCIENTIFIC TESTS AND MEASUREMENTS DURING DRILLING.
2. NOTIFY DEPT. 48 HOURS BEFORE DRILLING WELL, CALL 267-5872.
3. PROVIDE OPENING FOR TAPE MEASUREMENT OF WATER LEVELS (MIN. INSIDE DIAM. OF ONE-HALF INCH) SEALED BY REMOVABLE CAP/PLUG.
4. A TAP FOR RAW WATER SAMPLES MUST BE PLACED BEFORE WATER ENTERS A TREATMENT FACILITY, PRESSURE OR STORAGE TANK.

GROUNDWATER APPROPRIATION
PERMIT NUMBER- BA72GAP008

THIS PERMIT IS VALID UNTIL 06/08/72. A WELL COMPLETION REPORT MUST BE SUBMITTED TO THE DEPARTMENT WITHIN 30 DAYS AFTER COMPLETION OF THE WELL

PAUL W. MCKEE
DIRECTOR, MARYLAND
DEPARTMENT OF WATER
RESOURCES

DWR COPY

WR-W-3 9-70

B | 9876 — SEQUENCE NO. (DWR USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
APPLICATION FOR PERMIT TO DRILL WELL

3A-72-0580

FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWR USE ONLY) 12071

OWNER: Marine Basin (Chester Weaver) — COL. 15 LAST NAME / FIRST NAME — COL. 34
STREET OR RFD: 1900 Old Eastern Ave — COL. 36 — COL. 55
POST OFFICE: Essex Md 21221 — COL. 57 — COL. 76

E-13

B 1 CONTINUED — DRILLER INFORMATION

DATE: 11/30/71 — LICENSE NUMBER: 32
FIRST NAME: Wm. — LAST NAME: Leonard
SIGNATURE: Wm Leonard

B 2 — WELL INFORMATION

MAXIMUM PUMPING RATE (GALLONS PER MINUTE): 40
AVERAGE DAILY QUANTITY NEEDED (GALLONS PER DAY): 5000

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC, HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING, AGRICULTURE, IRRIGATION
- I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOVERNMENT
- M MUNICIPAL WATER SUPPLY
- P PRIVATE WATER COMPANY
- T TEST

(M, P, T: MUST HAVE STATE HEALTH DEPT. APPROVAL)

APPROXIMATE DEPTH OF WELL: 100 FEET
APPROXIMATE DIAMETER OF WELL: 4 (NEAREST INCH)

METHOD OF DRILLING USED (CIRCLE APPROPRIATE METHOD)

BORED (OR AUGERED) — JETTED — DRIVEN
AIR-ROTARY — AIR-PERCUSSION — ROTARY (HYDRAULIC ROTARY)
CABLE — REVERSE ROTARY — DRIVE-POINT

OTHER (DESCRIBE)

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 — Replace Drive Point
- 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 DEEPENED (IF AVAILABLE)

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

APPROPRIATION PERMIT NUMBER: BA726AP00 (G A P) — ENGINEER REVIEW DISTRICT NO.
FORM: JV (WRITE INITIALS IN BOX)
CONDITIONS: A E N S G W Q C L U — A N WQ

B 4 CONTINUED — HEALTH DEPARTMENT APPROVAL

STATE HEALTH (CIRCLE BOX): S
DATE (MO. DAY YR.): 12 06 71
COUNTY NAME: Baltimore — COUNTY NO.
APPROVED BY: Hoyt V Bonner

B 3 — LOCATION OF WELL

COUNTY: Baltimore (DO NOT ABBREVIATE COUNTY NAME)
SUBDIVISION:
SECTION: — LOT:
NEAREST TOWN: Mars Estates
MILES FROM TOWN (ENTER 0 IF IN TOWN): 1

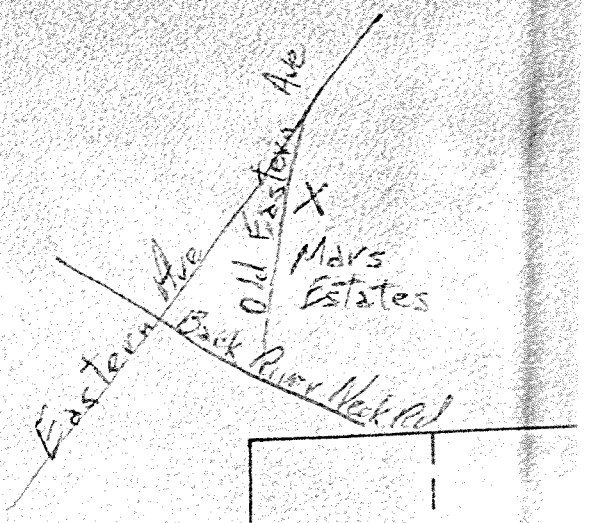
B 4 — DIRECTION FROM TOWN (CIRCLE APPROPRIATE BOX)

N NORTH — E EAST — NE NORTHEAST — SE SOUTHEAST
S SOUTH — W WEST — NW NORTHWEST — SW SOUTHWEST

NEAR WHAT ROAD: 1900 Old Eastern Ave
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH — SOUTH — EAST — WEST
DISTANCE FROM ROAD (ENTER DISTANCE AND CIRCLE APPROPRIATE BOX): 1600

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS, ROADS AND STREAMS WITH NORTH IN THE DIRECTION OF THE ARROW, AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION OR STREAM CROSSING SHOWN ON THE SKETCH. ALSO SHOW, BY MEANS OF AN "X," THE WELL LOCATION IN THE BOX BELOW, AND THE BOX NUMBER FROM THE WELL LOCATION MAP.

N



BOX NUMBER: E 950 — N 540

NORTH CORDINATE: S 40000
EAST CORDINATE: 085500 (DEG MIN SEC)
ELEVATION AT WELL HEAD (FEET):

0/5 — 5/5 — 0/0 — 5/0

B 5 — SPECIAL CONDITIONS 8-53 (DWR USE ONLY)

105-66

15

ORIGINAL

WR-W-4 9/70

C 1 5525 (SEQUENCE NO. (DWR USE ONLY)) (SEQ. NO.)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES
STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED IN 30 DAYS AFTER WELL COMPLETION

FILL IN THIS FORM COMPLETELY

DATE RECEIVED (DWR USE ONLY) 123071

DATE WELL COMPLETED 12/22/71 (15-20) 12/22/71

DEPTH OF WELL 74 (TO NEAREST FOOT) (22-26)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA-78-0580 (28-37)

DRILLERS IDENTIFICATION NO. 37

OWNER Marine Basin (LAST NAME) % Chester Weaver-Dicks Plbg (FIRST NAME)

STREET OR RFD 1900 Old Eastern Ave POST OFFICE Essex Md 21121

WELL DESCRIPTION

WELL LOG

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

DESCRIPTION (USE ADDITIONAL SHEETS IF NECESSARY)	FEET FROM	FEET TO	CHECK IF WATER BEARING
white clay	0	5	
Red+white cl	5	15	
Red cl	15	35	
Sand	35	37	
white clay	37	46	
Sand	46	48	
white clay	48	50	
Sand	50	74	✓

GROUTING RECORD

WELL HAS BEEN GROUTED (CIRCLE APPROPRIATE BOX) YES (Y) (44) NO (N) (44)

TYPE OF GROUTING MATERIAL (CIRCLE BOX):
CEMENT (C M) (45 46) BENTONITE CLAY (B C) (45 46)

NO. OF BAGS 3 NO. OF POUNDS 300

GALLONS OF WATER 30

DEPTH OF GROUT SEAL (TO NEAREST FOOT)
FROM 0 (48-52) FT. TO 25 (54-58) FT.
(ENTER 0 IF FROM SURFACE)

CASING RECORD

CASING TYPES (INSERT APPROPRIATE CODE BELOW): STEEL (S T), CONCRETE (C O), PLASTIC (P L), OTHER (O T)

MAIN CASING TYPE: S T (60 61)
NOMINAL DIAMETER TOP (MAIN) CASING (NEAREST INCH): 4 (63 64)
TOTAL DEPTH OF MAIN CASING (NEAREST FOOT): 69 (66-70)

OTHER CASING (IF USED)

EACH CASING	DIAMETER (INCH)	DEPTH (FEET) FROM	TO

SCREEN RECORD

SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW): STEEL (S T), BRASS OR BRONZE (B R), OPEN HOLE (H O), PLASTIC (P L), OTHER (O T)

C 2 (1 2 3) (SEQ. NO.) (6)

DEPTH (NEAREST WHOLE FOOT)

EACH SCREEN		FROM	TO
1	P L (8 9)	67 (11-15)	74 (17-21)
2	(23 24)	(26-30)	(32-36)
3	(38 39)	(41-45)	(47-51)

SLOT SIZE 1. 30 2. ____ 3. ____

DIAMETER OF SCREEN 2 (56-60) (NEAREST INCH)

GRAVEL PACK FROM 60 (61-65) TO 74 (67-71)

IF WELL DRILLED WAS A FLOWING WELL CIRCLE BOX (68 F)

DWR USE ONLY (NOT TO BE FILLED IN BY DRILLER)
(E.S.O.S.)
T (70) TELESCOPE CASING
(72) LOG INDICATOR
W Q (74 75 76) OTHER DATA AVAILABLE

CIRCLE APPROPRIATE BOXES

A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

E ELECTRIC LOG OBTAINED (Elliston)

C COPY OF ELECTRIC LOG ATTACHED

I HEREBY CERTIFY THAT I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAPTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLERS NAME Walter Franks (PLEASE PRINT) Wm Leonard

SIGNATURE Wm Leonard

C 3 (1 2 3) (SEQ. NO.) (6)

PUMPING TEST

HOURS PUMPED (TO NEAREST HOUR) 2 (8-9)

PUMPING RATE (GALLONS PER MINUTE TO NEAREST GALLON) 35 (11-15)

METHOD USED TO MEASURE PUMPING RATE Bucket

WATER LEVEL: (DISTANCE FROM LAND SURFACE)
BEFORE PUMPING 9 (17-20) (NEAREST FOOT)
WHEN PUMPING 74 (22-25) (NEAREST FOOT)

TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX)
AIR (A 27) PISTON (P 27) TURBINE (T 27)
CENTRIFUGAL (C 27) ROTARY (R 27) OTHER (DESCRIBE BELOW) (O 27)
JET (J 27) SUBMERSIBLE (S 27)

PUMP INSTALLED

TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX — SEE ABOVE: A, C, J, P, R, S, T, O) (29)

DRILLER WILL INSTALL PUMP (CIRCLE APPROPRIATE BOX) YES (Y) NO (N)

CAPACITY:
GALLONS PER MINUTE (TO NEAREST GALLON) (31-33)
PUMP HORSE POWER (37-41)
PUMP COLUMN LENGTH (NEAREST FOOT) (43-47)

CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT)

(+) ABOVE (−) BELOW (49) LAND SURFACE 2 (50-51) (NEAREST FOOT)

LOCATION OF WELL ON LOT

N ↑

SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).

P. T. less Adp.

ORIGINAL

FORM 131 (7-77) EMERGENCY NO. (If any) –

B 1 6236 SEQUENCE NO. (WRA USE ONLY)
1 2 3 (SEQ. NO.) 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 2-6 ON ALL CARDS)

STATE OF MARYLAND
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
APPLICATION FOR PERMIT TO DRILL WELL

WRA PERMIT NUMBER BA-73-5119
FILL IN THIS FORM COMPLETELY

DATE RECEIVED (WRA USE ONLY) 10 26 77

OWNER Milton Gardner (COL. 15 LAST NAME) (FIRST NAME COL. 34)
STREET OR RFD 1000 Hillpine Rd. (COL. 36) (COL. 55)
POST OFFICE Baltimore, Maryland 21220 (COL. 57) (COL. 76)

B 1 CONTINUED (1 2 3 SEQ. NO. 6)

DRILLER INFORMATION

DATE October 18, 1977 LICENSE NUMBER 80 (77 80)
John E. Branham (FIRST NAME DRILLER LAST NAME)
SIGNATURE John E Branham

B 2 (1 2 3 SEQ. NO. 6)

WELL INFORMATION

MAXIMUM PUMPING RATE (GALLONS PER MINUTE) 10 (8 12)
AVERAGE DAILY QUANTITY NEEDED (GALLONS PER DAY) 600 (14 20)

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- (D) HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING, AGRICULTURE, IRRIGATION
- I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOVERNMENT.
- M MUNICIPAL WATER SUPPLY
- P PRIVATE WATER COMPANY
  } MUST HAVE STATE HEALTH DEPT. APPROVAL
- T TEST

22

APPROXIMATE DEPTH OF WELL 85' (24 28) FEET
APPROXIMATE DIAMETER OF WELL 4" (NEAREST INCH)

METHOD OF DRILLING USED (CIRCLE APPROPRIATE METHOD)

BORED (OR AUGERED)	JETTED	DRIVEN	
30-37 AIR-ROTARY	AIR-PERCUSSION	(ROTARY)	(HYDRAULIC ROTARY)
CABLE	REVERSE-ROTARY	DRIVE-POINT	

OTHER (DESCRIBE) _____

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 DEEPENED (IF AVAILABLE)

38 (41 52)

NOT TO BE FILLED IN BY DRILLER (WRA USE ONLY)
APPROPRIATION PERMIT NUMBER C A P (54 55) ENGINEER REVIEW DISTRICT NO. (65)
FORCE (67 68) WRITE INITIALS IN BOX
CONDITIONS A E N S G W Q C L U (70 71 72 73 74 75 76 77 78 79)

B 4 CONTINUED (1 2 3 SEQ. NO. 6)

HEALTH DEPARTMENT APPROVAL

41 (S) STATE HEALTH (CIRCLE BOX)
BALTIMORE (COUNTY NAME) (COUNTY NO.)
DATE MO. 02 DAY 17 YR. 77 (43 48)
K.A. Schmid (APPROVED BY)

B 3 (1 2 3 SEQ. NO. 6)

LOCATION OF WELL

COUNTY Baltimore County (8 21) (DO NOT ABBREVIATE COUNTY NAME)
SUBDIVISION (23 42)
SECTION (44 46) LOT 14 (48 50)
NEAREST TOWN Essex (52)
MILES FROM TOWN (ENTER 0 IF IN TOWN) 3 (73 75) M (72)

B 4 (1 2 SEQ. NO. 6)

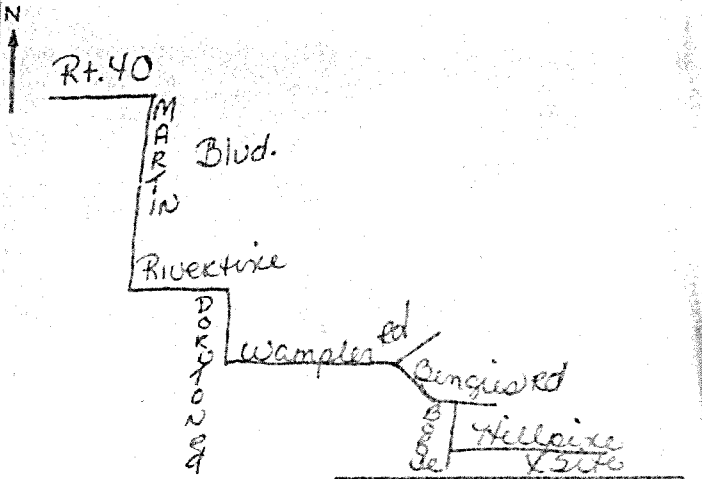
DIRECTION FROM TOWN (CIRCLE APPROPRIATE BOX)

N NORTH	E EAST	(N E) NORTHEAST	S E SOUTHEAST
S SOUTH	W WEST	N W NORTHWEST	S W SOUTHWEST

(8) (8) (8 9) (8 9)

NEAR WHAT ROAD Hillpine Rd. (11)
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX) NORTH (N) SOUTH (S) EAST (E) WEST (W) (32) (32) (32) (32) up 80
DISTANCE FROM ROAD (ENTER DISTANCE AND CIRCLE APPROPRIATE BOX) 120' (34 37) F T M (36 39)

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWN ROADS AND STREAMS WITH NORTH IN THE DIRECTION OF THE ARROW, AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION OR STREAM CROSSING SHOWN ON SKETCH. ALSO SHOW, BY MEANS OF AN "X", THE WELL LOCATION IN THE BOX BELOW AND THE BOX NUMBER FROM THE WELL LOCATION MAP.



BOX NUMBER E 960 N 540

NORTH COORDINATE 0195000 (50 51 52 53 54 55)
EAST COORDINATE 0960000 (57 58 59 60 61 62 63)
ELEVATION AT WELL HEAD (FEET) (65 66 67 68)

B 5 (1 2 3 SEQ. NO. 6) SPECIAL CONDITIONS S-63 (WRA USE ONLY)

ORIGINAL

15

PROPOSAL PLAN-REPLACEMENT Well

RECEIVED
JAN 5 1978
DIV. SANITARY ENGINEERING

CIRCLE APPROPRIATE BOXES

A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED

E ELECTRIC LOG OBTAINED

P YIELD WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAUTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLER'S NAME

(PLEASE PRINT)

SIGNATURE

CASING RECORD

CASING TYPES (INSERT APPROPRIATE CODE BELOW): ST STEEL; CO CONCRETE; PL PLASTIC; OT OTHER

MAIN CASING TYPE | NOMINAL DIAMETER FOR (MAIN) CASING (NEAREST INCH) | TOTAL DEPTH OF MAIN CASING (NEAREST FOOT)

OTHER CASING (IF USED) — EACH CASING: DIAMETER (INCH) | DEPTH (FEET) FROM | TO

SCREEN RECORD

SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW): ST STEEL; BR BRASS OR BRONZE; OH OPEN HOLE; PL PLASTIC; OT OTHER

C 2 (SLOT NO.)

DEPTH (NEAREST WHOLE FOOT) — EACH SCREEN: FROM | TO

SLOT SIZE 1. ____ 2. ____ 3. ____

DIAMETER OF SCREEN ____ (NEAREST INCH)

GRAVEL PACK FROM ____ TO ____

IF WELL DRILLED HAD A FLOWING WELL CIRCLE BOX F

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

TELESCOPE CASING | LOG INDICATOR | OTHER DATA AVAILABLE

TYPE OF GROUTING MATERIAL — CEMENT C M; BENTONITE CLAY B C

NO. OF BAGS ____ NO. OF POUNDS ____

GALLONS OF WATER ____

DEPTH OF GROUT SEAL (TO NEAREST FOOT)

FROM ____ FT. TO ____ FT. (ENTER 0 IF FROM SURFACE)

PUMPING RATE (GALLONS PER MINUTE TO NEAREST ____)

METHOD USED TO MEASURE PUMPING RATE ____

WATER LEVEL (DISTANCE FROM LAND SURFACE)

BEFORE PUMPING ____ (NEAREST FOOT)

WHEN PUMPING ____ (NEAREST FOOT)

TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX) (FOR PUMPING TEST)

A AIR; P PISTON; T TURBINE; C CENTRIFUGAL; R ROTARY; O OTHER (DESCRIBE BELOW); J JET; S SUBMERSIBLE

PUMP INSTALLED

TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX — SEE ABOVE: A, P, T, C, R, J, S, T, O)

DRILLER WILL INSTALL PUMP (CIRCLE APPROPRIATE BOX) YES Y NO N

CAPACITY: GALLONS PER MINUTE (TO NEAREST GALLON) ____

PUMP HORSE POWER ____

PUMP COLUMN LENGTH (NEAREST FOOT) ____

CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT): + ABOVE; − BELOW LAND SURFACE ____ (NEAREST FOOT)

LOCATION OF WELL ON LOT

N

SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).

Replacement 100H Wellpoint #2 15

HEALTH

-5176 Y

BALTIMORE COUNTY DEPARTMENT OF HEALTH
BUREAU OF ENVIRONMENTAL SERVICES
Location and Inspection of Private Water Well

Dist. 15
Date 12/1/77

Well Permit No. BA 73-5176 Bldg. Application No. _____

LOCATION OF PROPERTY (Road) 1004 Hillpine Rd. - Middle River

SUBDIVISION _____ LOT ___ BLOCK ___ PLAT ___ SECTION ___

DIRECTIONS WAMPLER TO BENFICK T.R. onto BOULOUG TL TO HILLPINE

686-9098

WELL DRILLER Brandau OWNER Calvin E. Preston

Note: Indicate on plan any streams or storm drains existing on the lot or adjacent properties.

PRELIMINARY COMMENTS: _____

well use for sprinkling

Exp. 11/4/77

Date each location.

TYPE OF WELL: DRILLED ___ ADDITIONAL ___ YIELD 40 HRS. 2
ORIGINAL ___ REPLACEMENT ✓ DEPTH 85'

IF ADDITIONAL OR REPLACEMENT, HAVE OTHERS BEEN ABANDONED AND PROPERLY BACKFILLED?
YES _____ NO _____

PUMP TEST - METHOD: _____ WITNESSED BY _____

PUMPING COMMENTS:

HAS WELL BEEN PROPERLY GROUTED: YES ___ NO ___
WITNESSED BY _____ NOT WITNESSED _____

IS WELL PROPERLY LOCATED AS SHOWN ON PLAN? YES ___ NO ___
IS WELL LOCATED ON HIGHEST ELEVATION ON LOT? YES ___ NO ___
IS WELL PROTECTED FROM SURFACE DRAINAGE? YES ___ NO ___
HAS TOP OF CASING BEEN TEMPORARILY CAPPED? YES ___ NO ___
DISTANCE FROM WELL TO EXISTING OR PROPOSED SEWAGE DISPOSAL SYSTEM _____
DO ANY POTENTIAL SOURCES OF POLLUTION EXIST ON ADJACENT PROPERTIES? _____
TYPE OF PUMP _____

FINAL INSPECTION COMMENTS: _____

cd 12/77

FINAL APPROVAL: YES ___ NO ___

_____
Sanitarian

_____
Date of Final Inspection

SEC 19A 1076

Over

C 1 9033 (WRA USE ONLY)
1 2 3 (SEQ. NO.) 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BLDG., ANNAPOLIS, MD. 21401
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
COUNTY NUMBER

DATE RECEIVED (WRA USE ONLY) 1-20577 6-13

DATE WELL COMPLETED November 21,1977 / 11/21/77 15 16

DEPTH OF WELL 87' (TO NEAREST FOOT) 22 26

PERMIT NO. FROM "PERMIT TO DRILL WELL" -(BA-183-S/77) 28 29 30 31 32 33 34 35 36 37

DRILLERS IDENTIFICATION NO. 80

OWNER Gardner, Milton (LAST NAME, FIRST NAME)

STREET OR RFD 1000 Hillpine Rd. POST OFFICE Balto.Maryland 21220

WELL DESCRIPTION

WELL LOG

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

DESCRIPTION (USE ADDITIONAL SHEETS IF NECESSARY)	FEET FROM	FEET TO	CHECK IF WATER BEARING
Brown Sand	0	10	
White Clay	10	30	
White Sand	30	40	
White Clay	40	65	
Brown Sand	65	87	x

GROUTING RECORD

WELL HAS BEEN GROUTED (CIRCLE APPROPRIATE BOX) (Y) N 44

TYPE OF GROUTING MATERIAL (CIRCLE B...) CEMENT (C M) 45 46 BENTONITE CLAY (B C) 45 46

NO. OF BAGS 1 NO. OF POUNDS 100

GALLONS OF WATER 50

DEPTH OF GROUT SEAL (TO NEAREST FOOT)

FROM 5 48 52 FT. TO 45 54 58 FT.

(ENTER 0 IF FROM SURFACE)

CASING RECORD

CASING TYPES (INSERT APPROPRIATE CODE BELOW)

(S T) STEEL (C O) CONCRETE (P L) PLASTIC (O T) OTHER

MAIN CASING TYPE	NOMINAL DIAMETER TOP (MAIN) CASING (NEAREST INCH)	TOTAL DEPTH OF MAIN CASING (NEAREST FOOT)
P L (60 61)	4" (63 64)	80' (66 70)

OTHER CASING (IF USED)

EACH CASING

	DIAMETER (INCH)	DEPTH (FEET) FROM	TO

SCREEN RECORD

SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW)

(S T) STEEL (B R) BRASS OR BRONZE (H O) OPEN HOLE (P L) PLASTIC (O T) OTHER

C 2 (1 2 3 SEQ. NO. 5)

DEPTH (NEAREST WHOLE FOOT)

EACH SCREEN

		FROM	TO
1	P L (8 9)	80 (11 15)	87 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1. .030 2. 3.

DIAMETER OF SCREEN 2" (56 60 NEAREST INCH)

GRAVEL PACK FROM 71 TO 87

IF WELL DRILLED WAS A FLOWING WELL CIRCLE BOX 68 F

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

T 70 TELESCOPE CASING (E.P.O.S.) 72 LOG INDICATOR W 74 75 A 76 OTHER DATA AVAILABLE

C 3 (1 2 3 SEQ. NO. 6)

PUMPING TEST

HOURS PUMPED (TO NEAREST HOUR) 2 (8 9)

PUMPING RATE (GALLONS PER MINUTE TO NEAREST GALLON) 60 (11 15)

METHOD USED TO MEASURE PUMPING RATE air

WATER LEVEL: (DISTANCE FROM LAND SURFACE)

BEFORE PUMPING 38 (17 20 NEAREST FOOT)

WHEN PUMPING 58 (22 25 NEAREST FOOT)

TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX) (FOR PUMPING TEST)

(A) AIR (P) PISTON (T) TURBINE (C) CENTRIFUGAL (R) ROTARY (O) OTHER (DESCRIBE BELOW) (J) JET (S) SUBMERSIBLE (27)

PUMP INSTALLED

TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX — SEE ABOVE: A, C, J, P, R, S, T, O) S 29

DRILLER WILL INSTALL PUMP (CIRCLE APPROPRIATE BOX) (Y) N

CAPACITY:

GALLONS PER MINUTE (TO NEAREST GALLON) 6 (31 35)

PUMP HORSE POWER 1/3 (37 41)

PUMP COLUMN LENGTH (NEAREST FOOT) 78' (43 47)

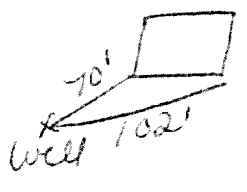
CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT)

(+) ABOVE (-) BELOW LAND SURFACE 1 (49 50 NEAREST FOOT) 51

LOCATION OF WELL ON LOT

N SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).

Hillpine Rd



CIRCLE APPROPRIATE BOXES

(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 I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAPTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLERS NAME (PLEASE PRINT) Doug Kinder

SIGNATURE John E. Braham

ORIGINAL

EMERGENCY NO. (if any) - BA-78-E?

STATE OF MARYLAND
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401

APPLICATION FOR PERMIT TO DRILL WELL

WRA PERMIT NUMBER: BA-73-5701

FILL IN THIS FORM COMPLETELY

B 1 | 4093 | SEQUENCE NO. (WRA USE ONLY)

1 2 3 (SEQ. NO.) 8 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-8 ON ALL CARDS)

DATE RECEIVED (WRA USE ONLY): APR 27 1978

OWNER: Daniel (LAST NAME) — C. Lanee (FIRST NAME)

STREET OR RFD: 1910 Leland Avenue

POST OFFICE: Baltimore, Md. 21220

DRILLER INFORMATION

B 1 CONTINUED

DATE: 4-24-78 LICENSE NUMBER: 5

DRILLER: WALTER J. FRANK (FIRST NAME, LAST NAME)

SIGNATURE: Walter J. Frank

LOCATION OF WELL

B 3

COUNTY: Baltimore (DO NOT ABBREVIATE COUNTY NAME)

SUBDIVISION:

SECTION: LOT:

NEAREST TOWN: Middle River

MILES FROM TOWN (ENTER 0 IF IN TOWN): 0 MI

WELL INFORMATION

B 2

MAXIMUM PUMPING RATE (GALLONS PER MINUTE): 10

AVERAGE DAILY QUANTITY NEEDED (GALLONS PER DAY): 1000

DIRECTION FROM TOWN
(CIRCLE APPROPRIATE BOX)

B 4

N NORTH | E EAST | NE NORTHEAST | SE SOUTHEAST

S SOUTH | W WEST | NW NORTHWEST | SW SOUTHWEST

NEAR WHAT ROAD: Leland Avenue

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

DISTANCE FROM ROAD (ENTER DISTANCE AND CIRCLE APPROPRIATE BOX): 300 FT / MI

USE FOR WATER (CIRCLE APPROPRIATE BOX)

(D) HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)

F FARMING, AGRICULTURE, IRRIGATION

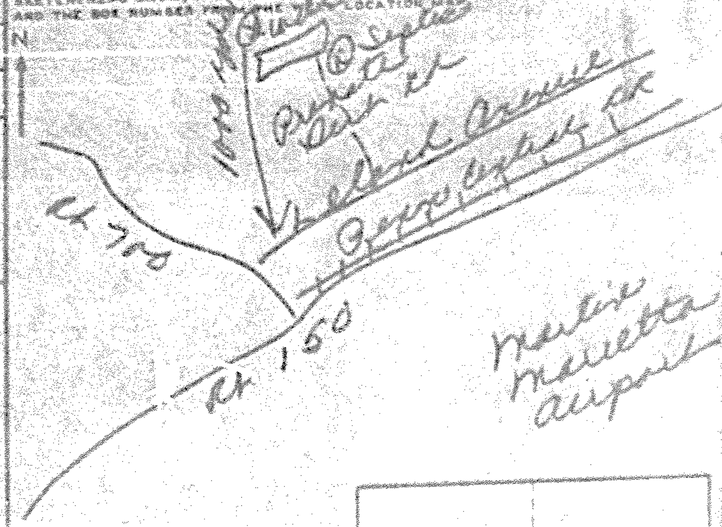
I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOVERNMENT

M MUNICIPAL WATER SUPPLY } MUST HAVE STATE HEALTH DEPT. APPROVAL

P PRIVATE WATER COMPANY

T TEST

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEAREST TOWN, ROADS AND STREAMS WITH NORTH IN THE DIRECTION OF THE ARROW, AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION OR STREAM CROSSING SHOWN ON THE SKETCH. ALSO SHOW, BY MEANS OF AN "X", THE WELL LOCATION IN THE BOX BELOW AND THE BOX NUMBER FROM THE WELL LOCATION MAP.



APPROXIMATE DEPTH OF WELL: 60 FEET

APPROXIMATE DIAMETER OF WELL: 4 (NEAREST INCH)

METHOD OF DRILLING USED (CIRCLE APPROPRIATE METHOD)

BORED (OR AUGERED) | JETTED | DRIVEN

AIR-ROTARY | AIR-PERCUSSION | (ROTARY) (HYDRAULIC ROTARY)

CABLE | REVERSE-ROTARY | DRIVE-POINT

OTHER (DESCRIBE)

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 DEEPENED (IF AVAILABLE)

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

APPROPRIATION PERMIT NUMBER

ENGINEER REVIEW DISTRICT NO.

A E N S G W Q C L U

FORCE | WRITE IN CODE | CONDITIONS

BOX NUMBER: E 960 / N 540

X

NORTH COORDINATE: 545000

EAST COORDINATE: 0960000

ELEVATION AT WELL HEAD (FEET):

HEALTH DEPARTMENT APPROVAL

B 4 CONTINUED

COUNTY NAME: BALTIMORE

STATE HEALTH CIRCLE BOX: 5

APPROVED BY: Thomas A. E[illegible]

DATE: 04 24 78

(WRA USE ONLY)

B 5 SPECIAL CONDITIONS

ORIGINAL

15

DNR 214 (7-77)

C 1 0125 (SEQ. NO.) SEQUENCE NO. (WRA USE ONLY)

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

STATE OF MARYLAND
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BLDG., ANNAPOLIS, MD. 21401
WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER WELL COMPLETION

FILL IN THIS FORM COMPLETELY

COUNTY NUMBER

DATE RECEIVED (WRA USE ONLY): SEP 20 1978

DATE WELL COMPLETED: 4-25-78

C 42578

DEPTH OF WELL (TO NEAREST FOOT): 95

PERMIT NO. FROM "PERMIT TO DRILL WELL": BA-73-1570

DRILLERS IDENTIFICATION NO.: 5

OWNER: McDaniel (LAST NAME) Larry E (FIRST NAME)

STREET OR RFD: 1910 Leland Avenue POST OFFICE: Balto, Md. 21220

WELL DESCRIPTION

WELL LOG

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

DESCRIPTION (USE ADDITIONAL SHEETS IF NECESSARY)	FEET FROM	FEET TO	CHECK IF WATER BEARING
Sand	0	8	
White clay	8	23	
Sand	23	40	
White clay	40	55	
Red clay	55	65	
White clay	65	90	
Water bearing sand	90	95	✓

GROUTING RECORD

WELL HAS BEEN GROUTED (CIRCLE APPROPRIATE BOX): YES (Y) circled / NO (N)

TYPE OF GROUTING MATERIAL (CIRCLE BOX): CEMENT C M / BENTONITE CLAY B C (circled)

NO. OF BAGS: 3 NO. OF POUNDS: 150

GALLONS OF WATER: 70

DEPTH OF GROUT SEAL (TO NEAREST FOOT): FROM 0 FT. TO 20 FT. (ENTER 0 IF FROM SURFACE)

CASING RECORD

CASING TYPES (INSERT APPROPRIATE CODE BELOW): S T STEEL; C O CONCRETE; P L PLASTIC; O T OTHER

MAIN CASING TYPE	NOMINAL DIAMETER TOP (MAIN) CASING (NEAREST INCH)	TOTAL DEPTH OF MAIN CASING (NEAREST FOOT)
P L	4	90

OTHER CASING (IF USED)

	DIAMETER (INCH)	DEPTH (FEET) FROM	TO

SCREEN RECORD

SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW): S T STEEL; B R BRASS OR BRONZE; H O OPEN HOLE; P L PLASTIC; O T OTHER

C 2 (SEQ. NO.)

EACH SCREEN	DEPTH (NEAREST WHOLE FOOT) FROM	TO
P L	90	95

SLOT SIZE: .030

DIAMETER OF SCREEN: 2 (NEAREST INCH)

GRAVEL PACK: 90 TO 95

IF WELL DRILLED WAS A FLOWING WELL CIRCLE BOX: F

WRA USE ONLY (NOT TO BE FILLED IN BY DRILLER): TELESCOPE CASING; LOG INDICATOR (E.R.O.G.L); W D OTHER DATA AVAILABLE

C 3 (SEQ. NO.)

PUMPING TEST

HOURS PUMPED (TO NEAREST HOUR): 2

PUMPING RATE (GALLONS PER MINUTE TO NEAREST GALLON): 15

METHOD USED TO MEASURE PUMPING RATE: 5 gal bucket

WATER LEVEL (DISTANCE FROM LAND SURFACE): BEFORE PUMPING 15 (NEAREST FOOT); WHEN PUMPING 25 (NEAREST FOOT)

TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX) (FOR PUMPING TEST): A AIR (circled); P PISTON; T TURBINE; C CENTRIFUGAL; R ROTARY; O OTHER (DESCRIBE BELOW); J JET; S SUBMERSIBLE

PUMP INSTALLED

TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX — SEE ABOVE: A, C, J, P, R, S, T, O): S

DRILLER WILL INSTALL PUMP (CIRCLE APPROPRIATE BOX): YES (Y) circled / NO (N)

CAPACITY: GALLONS PER MINUTE (TO NEAREST GALLON): 7

PUMP HORSE POWER: 1/3

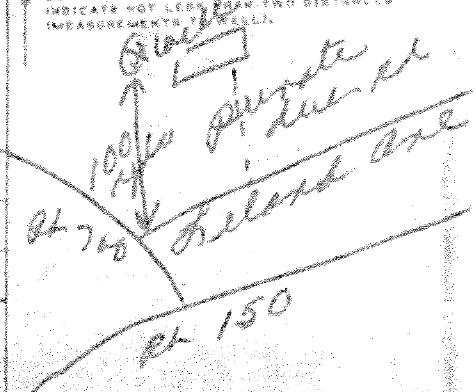
PUMP COLUMN LENGTH (NEAREST FOOT): 40

CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT)

+ ABOVE (circled) / − BELOW LAND SURFACE: 1 (NEAREST FOOT)

LOCATION OF WELL ON LOT

SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).



CIRCLE APPROPRIATE BOXES

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 I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAPTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLERS NAME (PLEASE PRINT): WALTER J. FRANK

SIGNATURE: Walter J. Frank

ORIGINAL

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES ADMINISTRATION
TAWES OFFICE BUILDING, ANNAPOLIS, MARYLAND

PERMIT TO DRILL WELL

ISSUE DATE- 11/22/77
MO DA YR

PERMIT NUMBER- BA-77-5176

ISSUED TO DRILLER-

BRANHAM WELL DRLG
8133 HOG NECK RD.
PASADENA, MD.

DRILLER
ID. NUMBER- 80

THE ABOVE NAMED DRILLER IS HEREBY AUTHORIZED TO DRILL A WELL TO BE OWNED BY-

PRESTON, CALVIN S
1004 HILLPINE RD
BALTIMORE MD 21220

THIS WELL IS TO BE LOCATED IN BALTIMORE COUNTY,
MIDDLE RIVER SUBDIVISION, SECTION- , LOT- B ,
NEAR THE TOWN OF ESSEX

THE WATER IS TO BE USED FOR A DOMESTIC SUPPLY.

THIS WELL WILL REPLACE A WELL WHICH WILL BE ABANDONED & SEALED.

SPECIAL CONDITIONS

FAILURE TO COMPLY WITH THE FOLLOWING CONDITIONS WILL CAUSE THIS PERMIT TO BECOME NULL AND VOID.

NONE.

THIS PERMIT IS VALID UNTIL
05/22/78. A WELL COMPLETION
REPORT MUST BE SUBMITTED TO
THE ADMINISTRATION WITHIN 30 DAYS
AFTER COMPLETION OF THE WELL

HERBERT M. SACHS
DIRECTOR, MARYLAND
WATER RESOURCES
ADMINISTRATION

DRILLER COPY

DNR-131 (7-77) EMERGENCY NO. (If any) –

B 1 6722 SEQUENCE NO. (WRA USE ONLY)

1 2 3 (SEQ. NO.) 6 (THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BLDG., ANNAPOLIS, MARYLAND 21401
APPLICATION FOR PERMIT TO DRILL WELL

WRA PERMIT NUMBER BA-73-5176

FILL IN THIS FORM COMPLETELY

DATE RECEIVED (WRA USE ONLY) 11 22 77

OWNER Preston, Calvin S. (COL 15 LAST NAME) (FIRST NAME COL. 34)

STREET OR RFD 1000 Hillpine Rd. (COL 38) (COL. 55)

POST OFFICE Baltimore, Maryland 21220 (COL 57) (COL. 76)

8-13

B 1 CONTINUED (1 2 3 SEQ. NO. 6)

DRILLER INFORMATION

DATE November 11, 1977 LICENSE NUMBER 80 (77 80)

John E. Branham (FIRST NAME DRILLER LAST NAME)

SIGNATURE John E Branham

B 2 (1 2 3 SEQ. NO. 6)

WELL INFORMATION

MAXIMUM PUMPING RATE (GALLONS PER MINUTE) 10 (8 12)

AVERAGE DAILY QUANTITY NEEDED (GALLONS PER DAY) 600 (14 20)

USE FOR WATER (CIRCLE APPROPRIATE BOX)

(D) HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)

F FARMING, AGRICULTURE, IRRIGATION

I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOVERNMENT.

22

M MUNICIPAL WATER SUPPLY

P PRIVATE WATER COMPANY } MUST HAVE STATE HEALTH DEPT. APPROVAL

T TEST

APPROXIMATE DEPTH OF WELL 85' (24 28) FEET

APPROXIMATE DIAMETER OF WELL 4" (NEAREST INCH)

METHOD OF DRILLING USED (CIRCLE APPROPRIATE METHOD)

BORED (OR AUGERED) JETTED DRIVE*

30-37 AIR-ROTARY AIR-PERCUSSION (ROTARY) (HYDRAULIC ROTARY)

CABLE REVERSE-ROTARY DRIVE-POINT

OTHER (DESCRIBE) _____

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

N THIS WELL WILL NOT REPLACE AN EXISTING WELL

38 (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 DEEPENED (IF AVAILABLE)

(41 52)

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

APPROPRIATION PERMIT NUMBER G A P (54 63) ENGINEER REVIEW DISTRICT NO. (65)

FORCE (67 68) WRITE INITIALS IN BOX

CONDITIONS A E N S G W Q C L U (70 71 72 73 74 75 76 77 78 79)

B 4 CONTINUED (1 2 3 SEQ. NO. 6)

HEALTH DEPARTMENT APPROVAL

41 S PRIVATE HEALTH (CIRCLE BOX)

BALTIMORE COUNTY NAME COUNTY NO.

DATE MO. 11 DAY 18 YR. 77 (43 46)

APPROVED BY R.A. Schmidt

B 3 (1 2 3 SEQ. NO. 6)

LOCATION OF WELL

COUNTY Baltimore County (8 21) (DO NOT ABBREVIATE COUNTY NAME)

SUBDIVISION Middle River (23 42)

SECTION (44 46) LOT B (48 50)

NEAREST TOWN Essex (52 70)

MILES FROM TOWN (ENTER 0 IF IN TOWN) 3 (73) (M) (I) (76 77 78)

B 4 (1 2 3 SEQ. NO. 6)

DIRECTION FROM TOWN (CIRCLE APPROPRIATE BOX)

N NORTH E EAST (NE) NORTHEAST SE SOUTHEAST

S SOUTH W WEST NW NORTHWEST SW SOUTHWEST

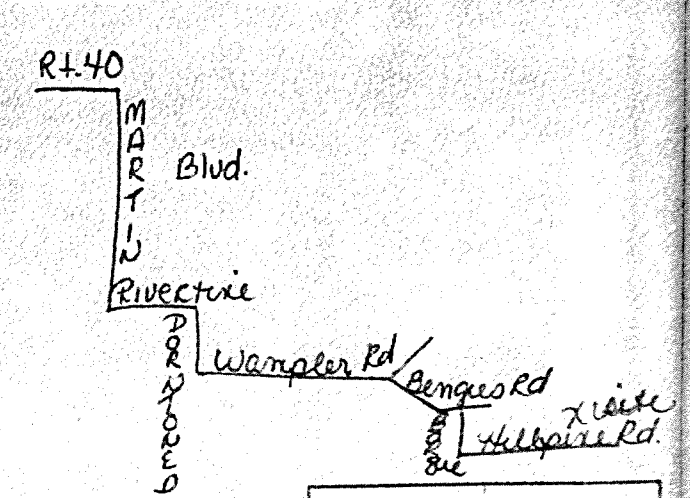
(8) (8) (8 9) (8 8)

NEAR WHAT ROAD Hillpine Rd. (11 30)

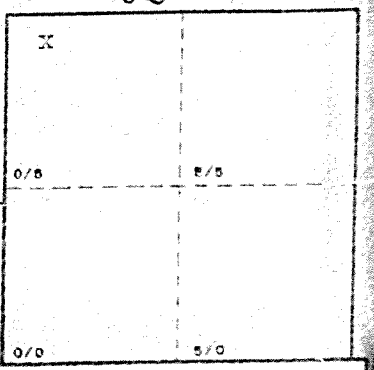
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX) (N) (S) (E) (W) (31) (32) (32) (32)

DISTANCE FROM ROAD (ENTER DISTANCE AND CIRCLE APPROPRIATE BOX) 100' (34 37) (FT) (MI) (38 39)

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS, ROADS AND STREAMS WITH NORTH IN THE DIRECTION OF THE ARROW, AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION OR STREAM CROSSING SHOWN ON SKETCH. ALSO SHOW, BY MEANS OF AN "X", THE WELL LOCATION IN THE BOX BELOW AND THE BOX NUMBER FROM THE WELL LOCATION MAP.



BOX NUMBER E 960 N 540



NORTH COORDINATE 7[illegible]000 (80 81 82 83 84 85)

EAST COORDINATE 0960000 (87 88 89 90 91 92 93)

ELEVATION AT WELL HEAD (FEET) (94 95 96 97 98)

B 5 (1 2 3 SEQ. NO. 6)

SPECIAL CONDITIONS 8-63 (WRA USE ONLY) (8 63)

ORIGINAL

15

DNR-214 (7-77)

C | 1 | 9588 — SEQUENCE NO. (WRA USE ONLY)
1 2 3 (SEQ. NO.) 6
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WATER RESOURCES ADMINISTRATION
TAWES STATE OFFICE BLDG., ANNAPOLIS, MD. 21401
WELL COMPLETION REPORT

THIS REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER WELL COMPLETION

FILL IN THIS FORM COMPLETELY

COUNTY NUMBER BA-73-5176

DATE RECEIVED BY WRA: JUL 21 1978
0 1 0 9 7 8
8-13

DATE WELL COMPLETED: December 17, 1977

DEPTH OF WELL: 85' (TO NEAREST FOOT) — 22 26

PERMIT NO. FROM "PERMIT TO DRILL WELL": BA-73-5176 ✓
28 29 30 31 32 33 34 35 36 37

DRILLERS IDENTIFICATION NO. 80

OWNER: Preston, Calvin S. (LAST NAME, FIRST NAME)

STREET OR RFD: 1004 Hillpine Rd. POST OFFICE: Balto. Maryland 21220

WELL DESCRIPTION

WELL LOG

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

DESCRIPTION (USE ADDITIONAL SHEETS IF NECESSARY)	FEET FROM	FEET TO	CHECK IF WATER BEARING
Brown Sand	0	20	
White Clay	20	70	
Brown Sand	70	85	x

GROUTING RECORD

WELL HAS BEEN GROUTED (CIRCLE APPROPRIATE BOX): YES (Y) NO (N) — 44

TYPE OF GROUTING MATERIAL (CIRCLE BOTH): CEMENT (C M) 45 46 — BENTONITE CLAY (B C) 45 46

NO. OF BAGS: 1/2 — NO. OF POUNDS: 50

GALLONS OF WATER: 25

DEPTH OF GROUT SEAL (TO NEAREST FOOT)

FROM 5 FT. (48 52) TO 25 FT. (54 58)

(ENTER 0 IF FROM SURFACE)

CASING RECORD

CASING TYPES (INSERT APPROPRIATE CODE BELOW): (S T) STEEL; (C O) CONCRETE; (P L) PLASTIC; (O T) OTHER

MAIN CASING TYPE	NOMINAL DIAMETER TOP (MAIN) CASING (NEAREST INCH)	TOTAL DEPTH OF MAIN CASING (NEAREST FOOT)
P L (60 61)	4" (63 64)	74' (66 70)

OTHER CASING (IF USED)

EACH CASING

	DIAMETER (INCH)	DEPTH (FEET) FROM	TO

SCREEN RECORD

SCREEN TYPE OR OPEN HOLE (INSERT APPROPRIATE CODE BELOW): (S T) STEEL; (B R) BRASS OR BRONZE; (H O) OPEN HOLE; (P L) PLASTIC; (O T) OTHER

C | 2 (1 2 3 (SEQ. NO.) 6)

DEPTH (NEAREST WHOLE FOOT)

EACH SCREEN

		FROM	TO
1	P L (8 9)	74 (11 15)	81 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1. .030 2. ____ 3. ____

DIAMETER OF SCREEN: 2" (56 60) (NEAREST INCH)

GRAVEL PACK: FROM 65 TO 85

IF WELL DRILLED WAS A FLOWING WELL CIRCLE BOX: 68 F

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

70 T — TELESCOPE CASING
72 (E.R.O.S.) — LOG INDICATOR
74 75 W O — OTHER DATA AVAILABLE

C | 3 (1 2 3 (SEQ. NO.) 6)

PUMPING TEST

HOURS PUMPED (TO NEAREST HOUR): 2 (8 9)

PUMPING RATE (GALLONS PER MINUTE TO NEAREST GALLON): 40 (11 15)

METHOD USED TO MEASURE PUMPING RATE: air

WATER LEVEL: (DISTANCE FROM LAND SURFACE)

BEFORE PUMPING: 18 (17 20) (NEAREST FOOT)

WHEN PUMPING: 38 (22 25) (NEAREST FOOT)

TYPE OF PUMP USED (CIRCLE APPROPRIATE BOX FOR PUMPING TEST)

(A) AIR 27 — (P) PISTON 27 — (T) TURBINE 27
(C) CENTRIFUGAL 27 — (R) ROTARY 27 — (O) OTHER (DESCRIBE BELOW) 27
(J) JET 27 — (S) SUBMERSIBLE 27

PUMP INSTALLED

TYPE OF PUMP (WRITE APPROPRIATE LETTER IN BOX — SEE ABOVE: A, C, J, P, R, S, T, O): S (29)

DRILLER WILL INSTALL PUMP (CIRCLE APPROPRIATE BOX): YES (Y) NO (N)

CAPACITY:

GALLONS PER MINUTE (TO NEAREST GALLON): 6 (31 35)

PUMP HORSE POWER: 1/3 (37 41)

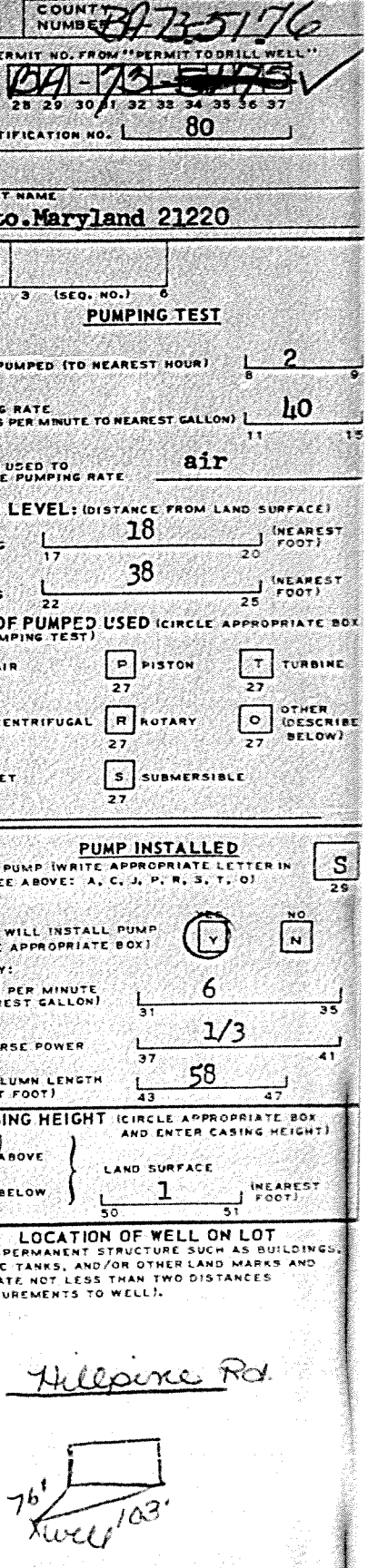
PUMP COLUMN LENGTH (NEAREST FOOT): 58 (43 47)

CASING HEIGHT (CIRCLE APPROPRIATE BOX AND ENTER CASING HEIGHT)

(+) ABOVE / (−) BELOW LAND SURFACE: 1 (49 50 51) (NEAREST FOOT)

LOCATION OF WELL ON LOT

N — SHOW PERMANENT STRUCTURE SUCH AS BUILDINGS, SEPTIC TANKS, AND/OR OTHER LAND MARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL).



CIRCLE APPROPRIATE BOXES

(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 I HAVE COMPLIED WITH ALL CONDITIONS STATED ON THE ABOVE-CAPTIONED "PERMIT TO DRILL WELL", AND THAT INFORMATION CONTAINED IN THIS REPORT IS TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

DRILLERS NAME

(PLEASE PRINT) Doug Kinder

SIGNATURE John E. Brahm

ORIGINAL

B 1 2108 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

BA-81-2047
fill in this form completely

Date Received [illegible]

OWNER INFORMATION

[illegible] James
Owner — First Name

201 Burque Avenue
Street or RFD

Middle River Maryland
Town — State

DRILLER INFORMATION

Walter J. Frank — License No. 5
Driller's Name

Frank's Well Drilling, Inc.
Firm Name

2001 E. Strathmore Road, 21224
Address

Walter J Frank 9-13-83
Signature — Date

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.) 10

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) 1000

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)

APPROXIMATE DEPTH OF WELL 70 FEET

APPROXIMATE DIAMETER OF WELL 4 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 ROTARY

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 Dug well
[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)

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

APPROP. PERMIT NUMBER GAP

FORCE [F] WRF INITIALS IN BOX PERMIT No. BA-81-2047

SPECIAL CONDITIONS

B 3 LOCATION OF WELL

Baltimore
8 COUNTY

23 SUBDIVISION

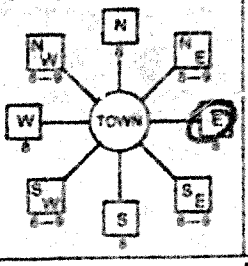
SECTION LOT

Middle River
32 NEAREST TOWN

MILES FROM TOWN (enter 0 if in town) 0.6 MI

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



Bourque Ave.
NEAR WHAT ROAD

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)

M 200 DISTANCE FROM ROAD

ENTER FT or MI FT

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

COUNTY NAME Baltimore COUNTY NO. 003

OEP SIGNATURE STATE HEALTH INSERT S

DATE ISSUED 09/30/83 Susan Fannick EXP DATE

NORTH GRID 5[illegible]8000 EAST GRID 0[illegible]6000

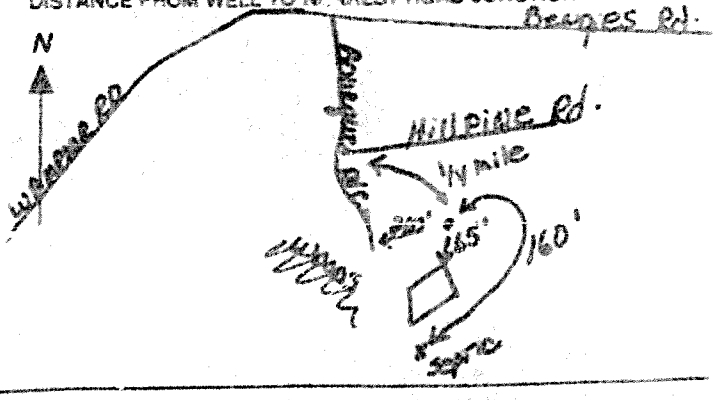
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

E 963
N 548
000 000

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



ORIGINAL

C 1 1705 SEQUENCE NO. (OEP USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-8 ON ALL CARDS)

WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

COUNTY NUMBER 003

DATE Received PE 12 9 1983

DATE WELL COMPLETED 09 26 83

Depth of Well 115 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WE BA-81-204

OWNER Hans James
STREET OR RFD 201 last name Bourgue Ave first name TOWN Middle River 21220
SUBDIVISION 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
sand	0	6	
sand, white clay	6	15	
white clay	15	20	
white clay	20	30	
sand, clay	30	40	
red clay	40	50	
red clay	50	65	
gray clay	65	70	
sand, white clay	70	80	
sand, red clay	80	90	
white clay	90	100	
white clay	100	105	
sand	105	110	
sand	110	115	✓

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) (YES) N
TYPE OF GROUTING MATERIAL
CEMENT CM BENTONITE CLAY BC
NO. OF BAGS 4 NO. OF POUNDS 200
GALLONS OF WATER 100
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. to 30 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: PL
Nominal diameter top (main) casing (nearest inch): 4
Total depth of main casing (nearest foot): 105

OTHER CASING (if used) — EACH CASING

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		DEPTH (nearest ft.)	
1	PL	105	115
2			
3			

SLOT SIZE: .01in
DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK from 105 to 115
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

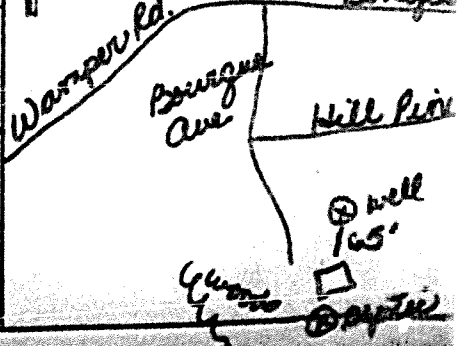
C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 3
PUMPING RATE (gal. per min. to nearest gal.) 30
METHOD USED TO MEASURE PUMPING RATE Sand line
WATER LEVEL (distance from land surface)
BEFORE PUMPING 22
WHEN PUMPING 32

TYPE OF PUMP USED (for test)
(A) air P piston T turbin
C centrifugal R rotary O other (descr below)
J jet S submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO) (YES) N
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: S
CAPACITY: GALLONS PER MINUTE (to nearest gallon) 7
PUMP HORSE POWER 1/3
PUMP COLUMN LENGTH (nearest ft.) 60
CASING HEIGHT (circle appropriate box and enter casing height)
(+) above (−) below LAND SURFACE (neare foot) 1

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



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. 5
Walter J Leach
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 WQ OTHER DATA

ORIGINAL

EMERGENCY/TEMP NO. IF ANY

B 1 2110 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: BA-81-4665

fill in this form completely

Date Received: 02 20 86

OWNER INFORMATION

DUMER (Last Name) JOHN (First Name)

200 WAMPLER RD (Street or RFD)

BALTIMORE (Town) MD (State) 21220 (Zip)

DRILLER INFORMATION

WALTER J. FRANK (Driller's Name) 5 (License No.)

FRANK'S WELL DRILLING (Firm Name)

7014 FT. SMALLWOOD RD. BALTO, MD. 21226 (Address)

Walter J. Frank (Signature) 2-11-86 (Date)

WELL INFORMATION

B 2

APPROX. PUMPING RATE (GAL. PER MIN.): 10

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 1000

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)

APPROXIMATE DEPTH OF WELL: 90 FEET

APPROXIMATE DIAMETER OF WELL: 4 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 _____

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)

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

APPROP. PERMIT NUMBER: GAP

FORCE: SE (WRITE INITIALS IN BOX) PERMIT No. BA-81-4665

LOCATION OF WELL

B 3

BALTIMORE (COUNTY)

23 SUBDIVISION

SECTION 71 LOT 13, 14+15 BLOCK 11

MIDDLE RIVER (NEAREST TOWN)

MILES FROM TOWN (enter 0 if in town): 0.4 MI

B 4

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

EVERGREEN ST. (NEAR WHAT ROAD)

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

DISTANCE FROM ROAD: 30

ENTER FT or MI: FT

NOT TO BE FILLED IN BY DRILLER

HEALTH DEPARTMENT APPROVAL

COUNTY NAME: Baltimore COUNTY NO: 03

OEP SIGNATURE _____ STATE HEALTH INSERT S

DATE ISSUED: 02 26 86 Duane Jarrett EXP DATE

NORTH GRID: 54700 EAST GRID: 09590

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER

1.

2.

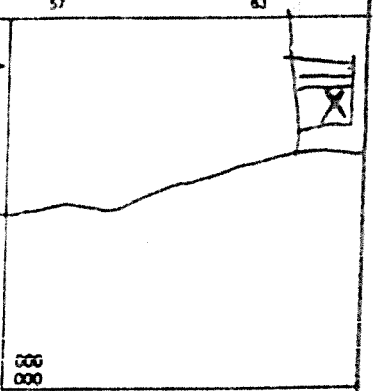
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

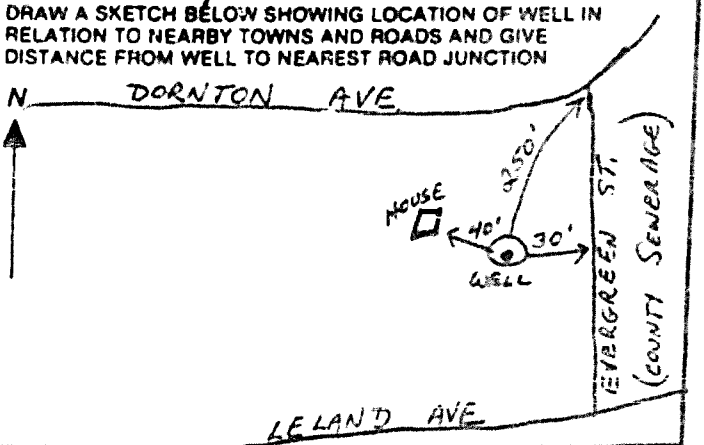
E 950

N 540

000 000



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



SPECIAL CONDITIONS

15

C 1 | 5211 — 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

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

COUNTY NUMBER

DATE Received: APR 22 1986
DATE WELL COMPLETED: 04 14 86
Depth of Well: 90 (TO NEAREST FOOT)
PERMIT NO. FROM "PERMIT TO DRILL WELL": BA-81-4665

OWNER: Dumer John
STREET OR RFD: 200 (last name) Wampler Rd (first name) TOWN: Balto 21220
SUBDIVISION: Evergreen St SECTION: LOT: 104 13-15

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 CLAY + SAND	0	20	
SAND	20	25	
RED CLAY	25	30	
RED + WHITE CLAY	30	40	
RED + WHITE CLAY, SAND	40	50	
WHITE CLAY	50	65	
GRAY CLAY	65	70	
GRAY CLAY	70	80	
SAND	80	90	XXX

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): (YES) Y N
TYPE OF GROUTING MATERIAL
CEMENT CM BENTONITE CLAY BC
NO OF BAGS 4 NO OF POUNDS 200
GALLONS OF WATER 100
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. to 30 ft. (BOTTOM)
(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	4	80

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	TYPE	DEPTH (nearest ft.)	
1	PL	80	90
2			
3			

SLOT SIZE .020
DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK from 80 to 90
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 3
PUMPING RATE (gal. per min. to nearest gal.) 60
METHOD USED TO MEASURE PUMPING RATE 5 Gal. Bucket
WATER LEVEL (distance from land surface)
BEFORE PUMPING 12
WHEN PUMPING 21
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 AT A LATER DATE.
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)

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

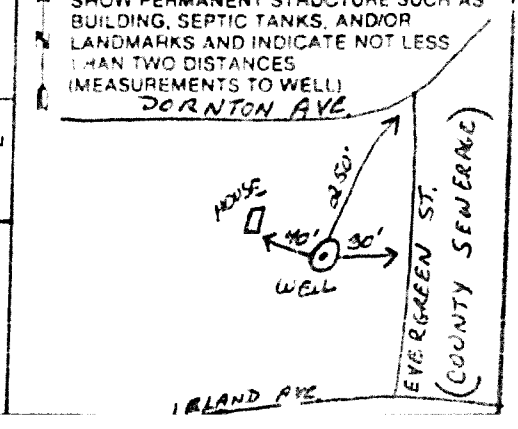
I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 10.17.13 WELL CONSTRUCTION AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE

DRILLERS IDENT. NO. 5
Walter J. Frank
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 (E.R.O.S.) W.Q.
TELESCOPE CASING LOG INDICATOR 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)



B 1 | 7964 | SEQUENCE NO. (DEP 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: BA-81-6255
fill in this form completely

Date Received: 01 06 87

OWNER INFORMATION

HUGHES STEPHEN
Last Name / First Name
5547 BEL AIR RD
Street or R.F.D.
KINGSVILLE MD 21087
Town / State / Zip

DRILLER INFORMATION

WALTER J. FRANK — License No. 5
Driller's Name
FRANK'S WELL DRILLING, INC.
Firm Name
7014 FT. SMALLWOOD RD, BALTO, MD 21226
Address
Walter J. Frank — 1-5-87
Signature / Date

WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 10
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 1000

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)

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 4 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

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 DUG WELL - OWNER WILL REAL
- 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)

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

APPROP. PERMIT NUMBER: GAP
FORCE: SF (WRITE INITIALS IN BOX) PERMIT No. BA-81-6255

LOCATION OF WELL

BALTIMORE — COUNTY
SUBDIVISION
SECTION — LOT
MIDDLE RIVER — NEAREST TOWN
MILES FROM TOWN (enter 0 if in town): 2 MI

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

1902 LELAND AVE. — NEAR WHAT ROAD

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

DISTANCE FROM ROAD: 100 — ENTER FT or MI: FT

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

COUNTY NAME: Balto — COUNTY NO.: 003
OEP SIGNATURE — STATE HEALTH INSERT #
DATE ISSUED: 01 20 87 — OEP SIGNATURE — OEP DATE

NORTH GRID: 5510000 — EAST GRID: 0945000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

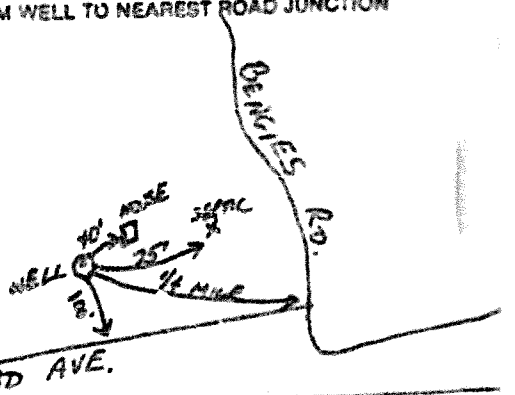
SOURCES OF DRILLING WATER
1
2
3

WRITE THE BOX NUMBER FROM THE MAP HERE

960 E — 960
550 N — 550

000 000 X

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



SPECIAL CONDITIONS: no pump fee

15

ORIGINAL

C1 8937 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

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

COUNTY NUMBER

DATE Received 4 20 1987

DATE WELL COMPLETED 03/18/87

Depth of Well 115 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA-87-1655

OWNER Hughes Stephen (surname / first name)

STREET OR RFD 11567 Bola Rd TOWN Kingsville 21087

SUBDIVISION 1902 Leland Ave 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
BROWN CLAY	0	8	
RED CLAY	8	15	
GRAY CLAY	15	20	
BROWN CLAY	20	30	
BROWN CLAY	30	35	
BROWN CLAY + SAND	35	50	
BROWN CLAY + SAND	50	60	
WHITE CLAY	60	70	
WHITE CLAY + SAND	70	80	
WHITE CLAY	80	90	
WHITE CLAY + SAND	90	100	
SAND	100	115	XXX

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) (YES) NO
TYPE OF GROUTING MATERIAL
CEMENT CM BENTONITE CLAY BC
NO. OF BAGS 3 NO. OF POUNDS 150
GALLONS OF WATER 25
DEPTH OF GROUT SEAL (to nearest foot) from 0 ft. to 30 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	4	108

OTHER CASING (if used)

	diameter inch	depth (feet) from	to
EACH CASING			

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

		DEPTH (nearest ft.)	
EACH SCREEN	PL	108	115

SLOT SIZE .020

DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK from 108 to 115

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

C3

PUMPING TEST
HOURS PUMPED (nearest hour) 3
PUMPING RATE (gal. per min. to nearest gal.) 40
METHOD USED TO MEASURE PUMPING RATE 5 GAL BUCKET
WATER LEVEL (distance from land surface)
BEFORE PUMPING 21
WHEN PUMPING 30

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 (YES) NO (CIRCLE) (YES or 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: S
CAPACITY GALLONS PER MINUTE (to nearest gallon) 7
PUMP HORSE POWER .33
PUMP COLUMN LENGTH (nearest ft.) 51
CASING HEIGHT (circle appropriate box and enter casing height) (+) above (−) below LAND SURFACE 1 (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

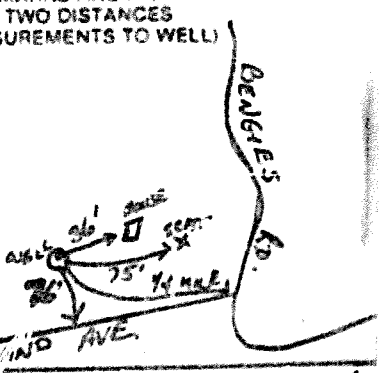
I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 10.17.13 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS IDENT. NO. 5

Walter J. Trout
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

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

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)



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

ORIGINAL

15

B 1 6907 SEQUENCE NO. (DP USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
PERMIT TO DRILL WELL
please print or type

STATE PERMIT NUMBER: BA-88-0550
fill in this form completely

Date Received (APA): 12 29 88

OWNER INFORMATION
HARPER (Last Name) JOYCE (First Name)
601 WAMPLER RD (Street or RFD)
BALTIMORE (Town) MD (State) 21220 (Zip)

DRILLER INFORMATION
WALTER J. FRANK (Driller's Name) 5 (License No.)
FRANK'S WELL DRILLING, INC. (Firm Name)
7014 FT. SMALLWOOD RD. BALTO 21226 (Address)
Walter J Frank (Signature) 12-28-88 (Date)

B 2 WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.): 10
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 1000

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)

APPROXIMATE DEPTH OF WELL: 60 FEET

APPROXIMATE DIAMETER OF WELL _____ 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 _____

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)

Not to be filled in by driller (OEP USE ONLY)
APPROP. PERMIT NUMBER GAP
FORCE MZ (WRITE INITIALS IN BOX) PERMIT No. BA-88-0550

SPECIAL CONDITIONS

B 3 LOCATION OF WELL
BALTIMORE (COUNTY)
(SUBDIVISION)
SECTION LOT
MIDDLE RIVER (NEAREST TOWN)
MILES FROM TOWN (enter 0 if in town): 0 MI

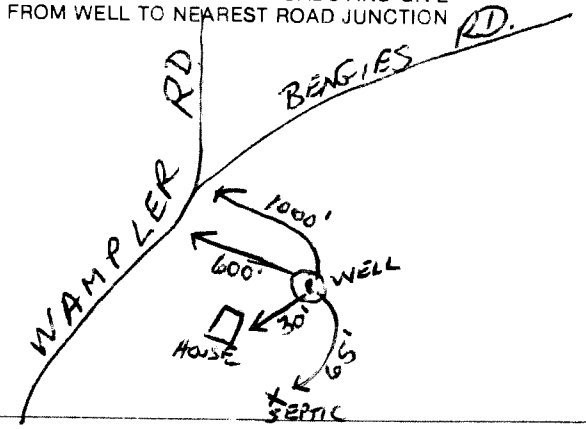
B 4
DIRECTION OF WELL FROM TOWN (CIRCLE BOX)
NW N NE W TOWN E SW S SE

WAMPLER ROAD (NEAR WHAT ROAD)
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH WEST EAST SOUTH
DISTANCE FROM ROAD: 600
ENTER FT or MI: FT

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
Balto (COUNTY NAME) 003 (COUNTY NO.)
STATE SIGNATURE _____ INSERT S
DATE ISSUED 123088
CO SIGNATURE M. Zenitoff EXP. DATE
NORTH GRID 549000 EAST GRID 0958000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X
SOURCES OF DRILLING WATER
1.
2.
3.
WRITE THE BOX NUMBER FROM THE MAP HERE
E 950
N 540
000 000

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



C 1 | 9691 | 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

DATE Received 01/26/89

DATE WELL COMPLETED 01/23/89

Depth of Well 125 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA-88-0550

OWNER Harper Joyce (last name / first name)

STREET OR RFD 601 Wampler Rd. TOWN Baltimore Md 21220

SUBDIVISION Wampler Rd. 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
BROWN CLAY	0	6	
GRAY CLAY	6	20	
GRAY CLAY	20	30	
GRAY CLAY+GRAVEL	30	35	
RED CLAY	35	50	
RED CLAY + SAND	50	70	
WHITE CLAY + SAND	70	90	
WHITE CLAY + SAND	90	110	
SAND	110	125	XXX

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 3 NO. OF POUNDS 150

GALLONS OF WATER 75

DEPTH OF GROUT SEAL (to nearest foot)

from 0 ft. (TOP) to 30 ft. (BOTTOM)
(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	4	115

OTHER CASING (if used) — EACH CASING

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

DEPTH (nearest ft.) — EACH SCREEN

		from	to
1	PL	115	125
2			
3			

SLOT SIZE 1. 020 2. 3.

DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK from 115 to 125

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 3

PUMPING RATE (gal. per min. to nearest gal.) 50

METHOD USED TO MEASURE PUMPING RATE 5 GAL. BUCKET

WATER LEVEL (distance from land surface)

BEFORE PUMPING 20

WHEN PUMPING 30

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: S

CAPACITY: GALLONS PER MINUTE (to nearest gallon) 7

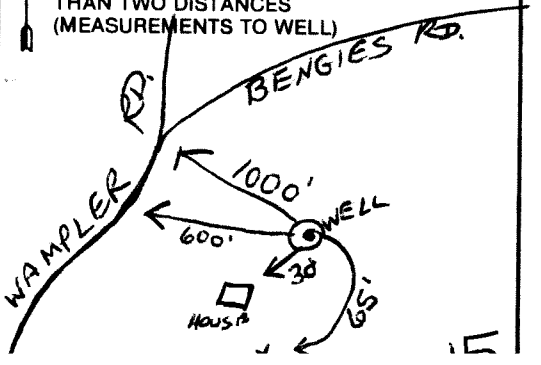
PUMP HORSE POWER .33

PUMP COLUMN LENGTH (nearest ft.) 50

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)



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. 5

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 (70) TELESCOPE CASING

(E.R.O.S.) (72) LOG INDICATOR

WQ (74 75 76) OTHER DATA

B 1 | 6307 | 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: BA-88-1848

fill in this form completely

Date Received (APA): 120489

OWNER INFORMATION

VLECK (Last Name) ANNABELLE (First Name)

5 PUNTE LANE (Street or RFD)

BALTIMORE (Town) MD 21221 (State Zip)

DRILLER INFORMATION

MICHAEL G. FRANK (Driller's Name) 467 (License No.)

FRANK'S WELL DRILLING, INC. (Firm Name)

7014 FT. SMALLWOOD RD, BALTO. 21226 (Address)

Michael G Frank (Signature) 11-29-89 (Date)

WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 10

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 1000

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)

APPROXIMATE DEPTH OF WELL: 60 FEET

APPROXIMATE DIAMETER OF WELL: 4 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

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)

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

APPROP. PERMIT NUMBER: GAP

FORCE: ME (WRITE INITIALS IN BOX) PERMIT No. BA-88-1848

SPECIAL CONDITIONS

LOCATION OF WELL

B 3

BALTIMORE (COUNTY)

SUBDIVISION

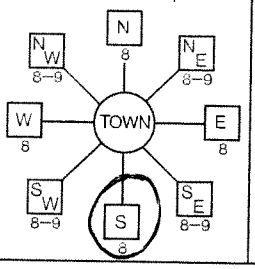
SECTION LOT

MIDDLE RIVER (NEAREST TOWN)

MILES FROM TOWN (enter 0 if in town): 2 MI

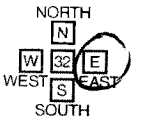
B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



PUNTE LANE (NEAR WHAT ROAD)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)



DISTANCE FROM ROAD: 100

ENTER FT or MI: FT

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

COUNTY NAME: Balto COUNTY NO.: 003

STATE SIGNATURE INSERT S

DATE ISSUED: 120489 CO SIGNATURE EXP. DATE

NORTH GRID: 54200 EAST GRID: 09580

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER

1.

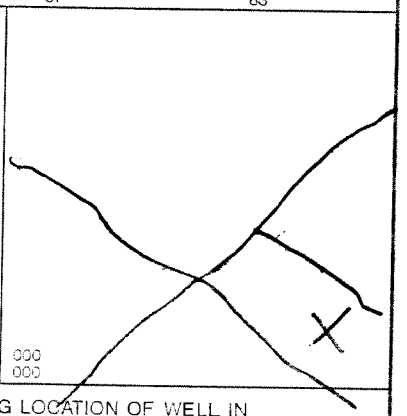
2.

3.

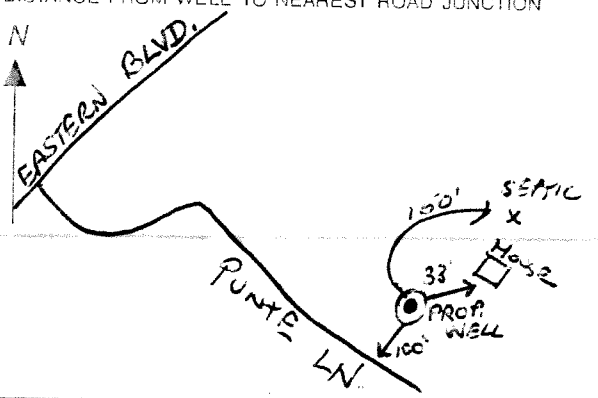
WRITE THE BOX NUMBER FROM THE MAP HERE

E 950

N 540



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



CTL 4014 (1 2 3 6) 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

ST/CO USE ONLY
DATE Received JAN x 9 1990 (8 13)

DATE WELL COMPLETED 01049 0 (15 20)

Depth of Well 22 140 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" PA-88-1848 (28 29 30 31 32 33 34 35 36 37)

OWNER Vleck Annabelle (last name, first name)

STREET OR RFD 5 Punte Ln. TOWN Bardo, Md. 21221

SUBDIVISION _____ 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
RED CLAY	0	20	
RED+WHITE CLAY	20	30	
RED+WHITE CLAY+SAND	30	50	
GRAY CLAY	50	70	
GRAY CLAY	70	75	
WHITE CLAY+SAND	75	90	
WHITE CLAY	90	100	
WHITE CLAY+SAND	100	110	
WHITE CLAY+ SAND	110	130	
SAND	130	140	XXX

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes (Y) no (N) (44)
TYPE OF GROUTING MATERIAL
CEMENT (C M) (45 46) BENTONITE CLAY (B C) (45 46)
NO. OF BAGS 4 NO. OF POUNDS 200
GALLONS OF WATER 100
DEPTH OF GROUT SEAL (to nearest foot)
from 0 (48 TOP 52) ft. to 30 (54 BOTTOM 58) 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 (60 61)	4 (63 64)	133 (66 70)

OTHER CASING (if used) — EACH CASING

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 (1 2)

EACH SCREEN		DEPTH (nearest ft.)	
1	PL (8 9)	133 (11 15)	140 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 .020 2 ____ 3 ____
DIAMETER OF SCREEN 4 (56 60) (NEAREST INCH)

GRAVEL PACK from 133 to 140
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 (68)

C 3 (1 2)

PUMPING TEST
HOURS PUMPED (nearest hour) 3 (8 9)
PUMPING RATE (gal. per min. to nearest gal.) 40 (11 15)
METHOD USED TO MEASURE PUMPING RATE 5 GAL. BUCKET
WATER LEVEL (distance from land surface)
BEFORE PUMPING 16 (17 20)
WHEN PUMPING 22 (22 25)
TYPE OF PUMP USED (for test)
A air (27); P piston (27); T turbine (27); C centrifugal (27); R rotary (27); O other (describe below) (27); J jet (27); S submersible (27)

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: S (29)
CAPACITY: GALLONS PER MINUTE (to nearest gallon) 7 (31 35)
PUMP HORSE POWER .75 (37 41)
PUMP COLUMN LENGTH (nearest ft.) 40 (43 47)
CASING HEIGHT (circle appropriate box and enter casing height) + above (49); − below (49)
LAND SURFACE 1 (50 51) (nearest foot)

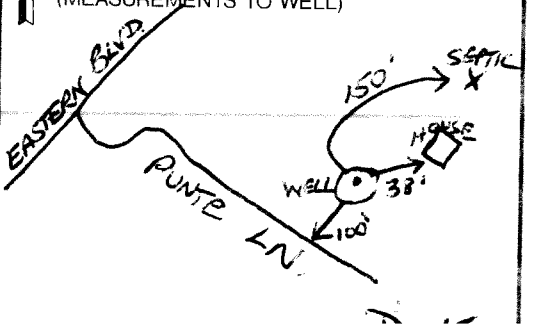
CIRCLE APPROPRIATE LETTER
A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
E ELECTRIC LOG OBTAINED
P TEST WELL CONVERTED TO PRODUCTION WELL

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. 467
Michael & Frank
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

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

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)



OEP USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (70) (E.R.O.S.) (72) W Q (74 75 76)
TELESCOPE CASING; LOG INDICATOR; OTHER DATA

BALTIMORE COUNTY
DEPARTMENT OF ENVIRONMENTAL PROTECTION & RESOURCE MANAGEMENT
COUNTY COURTS BUILDING - 401 Bosley Avenue, Towson, MD 21204

LOCATION AND INSPECTION OF A PRIVATE WATER WELL

Date of Request 12/14/89 Well Permit #BA-88-648 Bldg.App. # _____ District # 15

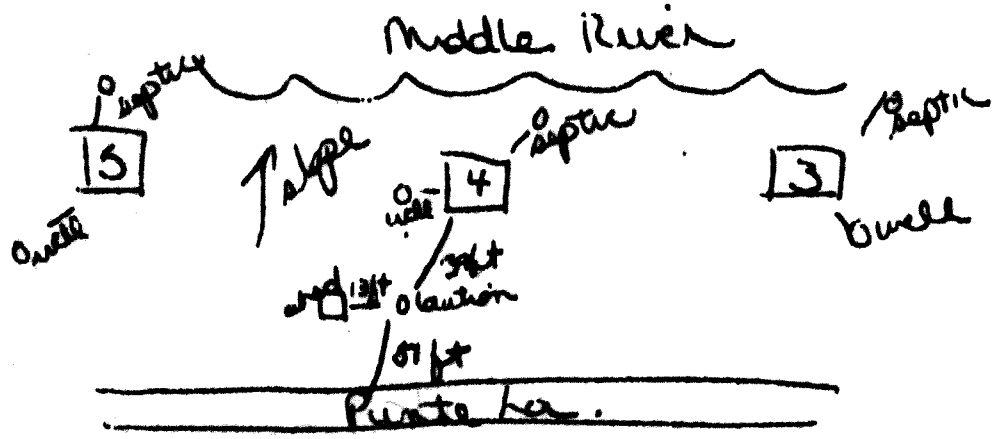
Original ☐ Replacement ☒ Additional ☐ Well Driller Founder

Location of Property (Road): 4 Punta Ln.

Subdivision Name _____ Lot ___ Block ___ Plat ___ Section ___

Preliminary Comments (place add'l comments on back): Well located 39 ft from house, 51 ft from road, 101 ft from p/line 13 ft from shed. old well in bad condition (pipe w/ottom up) located 75 ft from septic over 100 ft from neighbors septics. M. Epp. 12/14/89

WELL SITE LOCATED AS PER SKETCH BELOW:



Additional Information Request For Replacement Wells:

1. Describe the well that is being replaced (i.e. well number, year drilled, owner, physical description): shallow dulled well bad condition
2. State why the well is being replaced: community supply
3. Describe any water quantity problems: N/A
4. State how many people live in the house: 6 prepare to use water
5. Detail any high water use appliances (i.e. whirlpools, water treatment systems, etc.): N/A

WATER/SEWER 8-89

B 1 | 9285 | 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: BA-88-3474
fill in this form completely

Date Received (APA): 06 27 91

OWNER INFORMATION
KAWICH (Last Name) JAMES (First Name)
6014 WAMPLER RD (Street or RFD)
BALTIMORE (Town) MD (State) 21220 (Zip)

DRILLER INFORMATION
Driller's Name: Virgil S. Ensminger 233 (77 License No. 80)
Firm Name: FRANK'S WELL DRILLING, INC.
Address: 2014 FT. SMALLWOOD RD, BALTO 21226
Signature: Virgil S. Ensminger Date:

LOCATION OF WELL
B 3
8 COUNTY: BALTIMORE
23 SUBDIVISION: WAMPLER VILLAGE
SECTION: LOT:
52 NEAREST TOWN: MIDDLE RIVER
MILES FROM TOWN (enter 0 if in town): 1 MI

B 4
DIRECTION OF WELL FROM TOWN (CIRCLE BOX): N, NW, NE, W, TOWN, E, SW, S, SE
11 NEAR WHAT ROAD: WAMPLER RD 30
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH, WEST, EAST, SOUTH
DISTANCE FROM ROAD: 100 ENTER FT or MI: FT

WELL INFORMATION
B 2
APPROX. PUMPING RATE (GAL. PER MIN.): 10
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 1000

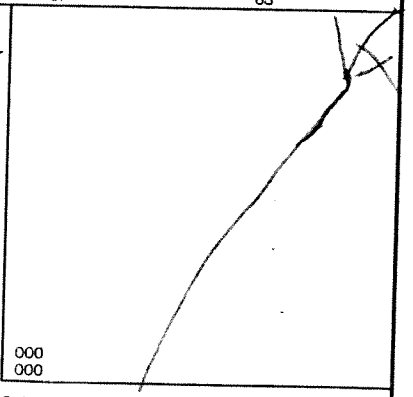
USE FOR WATER (CIRCLE APPROPRIATE BOX)
- D HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
- I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOV. OTHER (REQUIRES APPROPRIATION PERMIT)
- P PUBLIC OR PRIVATE WATER COMPANY (REQUIRES APPROPRIATION PERMIT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

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
COUNTY NAME: Balto COUNTY NO.: 003
STATE SIGNATURE: INSERT S
DATE ISSUED: 06 27 91 CO SIGNATURE: M. Epps EXP. DATE
NORTH GRID: 549000 EAST GRID: 095900

APPROXIMATE DEPTH OF WELL: 60 FEET
APPROXIMATE DIAMETER OF WELL: 4 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

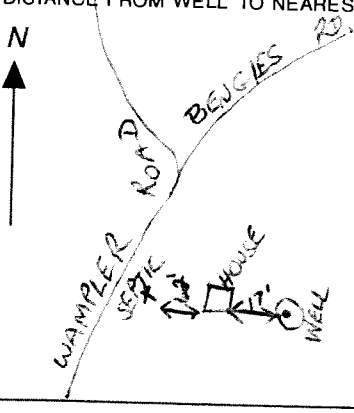
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X
SOURCES OF DRILLING WATER
1.
2.
3.
WRITE THE BOX NUMBER FROM THE MAP HERE
E 950
N 540



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 BY OWNER
- 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)

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: GAP
FORCE: ME (WRITE INITIALS IN BOX) PERMIT No.: BA-88-3474

SPECIAL CONDITIONS

C 1 | 7746 | 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

ST/CO USE ONLY
DATE Received: JUN 17 1991

DATE WELL COMPLETED: 07/1/91

Depth of Well: 90 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": 94-88-3474

OWNER Kanwisher, James
STREET OR RFD 6001 A Wampler Rd. TOWN Bento, Md. 21220
SUBDIVISION _____ 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
SAND	0	3	
BROWN, RED CLAY AND SAND	3	10	
BROWN + WHITE CLAY	10	20	
SAND	20	28	
WHITE CLAY	28	30	
WHITE + RED CLAY	30	50	
RED CLAY	50	70	
RED CLAY	70	82	
SAND	82	90	XXX

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. 233
Virgil L Ensberg
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): (yes) Y | no N
TYPE OF GROUTING MATERIAL
CEMENT C M | BENTONITE CLAY B C
NO. OF BAGS 3 NO. OF POUNDS 150
GALLONS OF WATER 25
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. to 30 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	4	83

OTHER CASING (if used)

EACH CASING	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	TYPE	DEPTH (nearest ft.)	
1	PL	83	90
2			
3			

SLOT SIZE 1 020 2 _____ 3 _____
DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK from 83 to 90
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

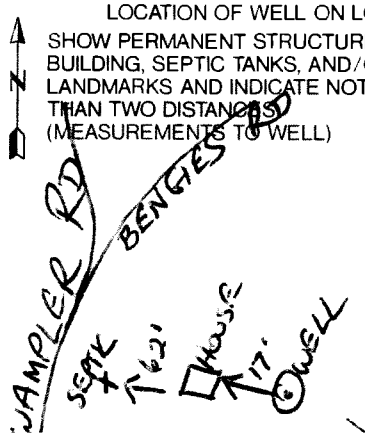
OEP USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T | (E.R.O.S.) | W Q

C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 3
PUMPING RATE (gal. per min. to nearest gal.) 20
METHOD USED TO MEASURE PUMPING RATE 5 GAL. BUCKET
WATER LEVEL (distance from land surface)
BEFORE PUMPING 10
WHEN PUMPING 48
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: S
CAPACITY: GALLONS PER MINUTE (to nearest gallon) 7
PUMP HORSE POWER .33
PUMP COLUMN LENGTH (nearest ft.) 45
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)



B 1 — 5250 — 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: BA-94-1468
fill in this form completely

Date Received (APA): 01/24/96

OWNER INFORMATION
Owner: DUMER C JOHN JR
Street or RFD: 1906 MAGNOLIA AVE
Town: BALTIMORE MD 21220

DRILLER INFORMATION
Driller's Name: MICHAEL G FRANK MSD 32
Firm Name: FRANK'S WELL DRILLING INC
Address: 8260 CRAIN HWY LA PLATA, MD 20646
Signature: Michael G Frank Date: 1/24/96

WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.): 10
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 1000

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)

APPROXIMATE DEPTH OF WELL: 50 FEET

APPROXIMATE DIAMETER OF WELL: 4 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

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)

Not to be filled in by driller (OEP USE ONLY)
APPROP. PERMIT NUMBER: GAP
FORCE: ME (WRITE INITIALS IN BOX) PERMIT No. BA-94-1468

SPECIAL CONDITIONS

LOCATION OF WELL
8 COUNTY: BALTIMORE
23 SUBDIVISION:
SECTION: LOT:
52 NEAREST TOWN: MIDDLE RIVER
MILES FROM TOWN (enter 0 if in town): 5 MI

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)
(NW 8–9) (N 8) (NE 8–9) (W 8) (TOWN) (E 8) (SW 8–9) (S 8) (SE 8–9)

NEAR WHAT ROAD: 1906 MAGNOLIA AVE

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)
NORTH (N) WEST (W) (32) (E) EAST (S) SOUTH

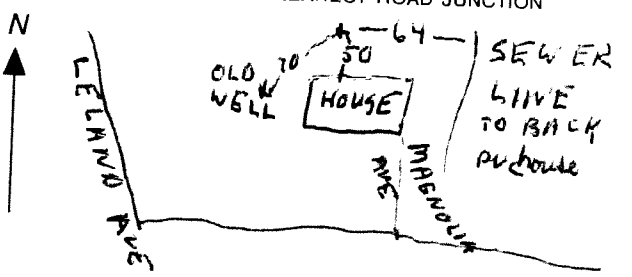
DISTANCE FROM ROAD: 1000
ENTER FT or MI: FT

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
COUNTY NAME: Balto COUNTY NO.: 003
STATE SIGNATURE: INSERT S:
DATE ISSUED: 01/24/96 CO SIGNATURE: M. Epps EXP. DATE:
NORTH GRID: 549000 EAST GRID: 957000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X
SOURCES OF DRILLING WATER
1.
2.
3.
WRITE THE BOX NUMBER FROM THE MAP HERE
E 959
N 546
000 000

X

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



C 1 | 7650 — SEQUENCE NO. (MDE 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 BA

ST/CO USE ONLY
DATE Received FEB 15 1995

DATE WELL COMPLETED 02 01 96

Depth of Well 120 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA - 94 - 1468

OWNER DUMER (last name) JOHN (first name)
STREET OR RFD 1906 MAGNOLIA AVE TOWN MIDDLE RIVER
SUBDIVISION _____ 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
RED+WHITE CLAY	0	5	
RED+WHITE CLAY + SAND	5	10	
WHITE CLAY+SAND	10	20	
SAND	20	30	
WHITE CLAY	30	45	
WHITE CLAY+SAND	45	50	
WHITE CLAY	50	65	
GRAY CLAY	65	82	
SAND+GRAY CLAY	82	90	
GRAY/WHITE CLAY AND SAND	90	108	
SAND	108	120	XXX

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes (Y) no (N)

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.

TYPE: MWD/(MSD)/MGD
DRILLERS LIC. NO. 32
Michael B Frank
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)
LIC. NO. _____
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes (Y) no (N)
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT (CM) BENTONITE CLAY (BC)
NO. OF BAGS 2 NO. OF POUNDS 100
GALLONS OF WATER 50
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. to 30 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	4	113

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	depth (feet) 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	TYPE	DEPTH (nearest ft.)	
1	PL	113	120
2			
3			

SLOT SIZE 1 .020 2 _____ 3 _____
DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK from 113 to 120
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
TELESCOPE LOG

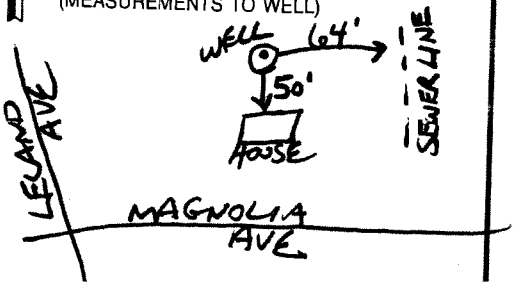
C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 3
PUMPING RATE (gal. per min.) 75.
METHOD USED TO MEASURE PUMPING RATE 5 GAL. BUCKET
WATER LEVEL (distance from land surface)
BEFORE PUMPING 15 ft.
WHEN PUMPING 23 ft.

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.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. S
CAPACITY: GALLONS PER MINUTE (to nearest gallon) 7
PUMP HORSE POWER .5
PUMP COLUMN LENGTH (nearest ft.) 50
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)



EMERGENCY / TEMP NO. IF ANY

B 1 (1 2 3 6) 04059 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 (70) BA-94-2207 (79)
fill in this form completely

Date Received (APA) (8) 10 29 96 (13)

OWNER INFORMATION

STAHL (15 Last Name) D (Owner) WARDEN (First Name) (34)
535 WAMPLER RD (36 Street or RFD 55)
BALTIMORE (57 Town) MD (70 State 72) 21220 (Zip 76)

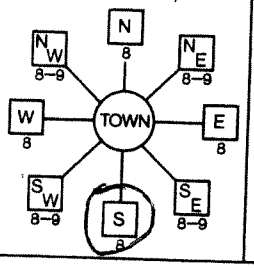
DRILLER INFORMATION

MICHAEL G FRANK (Driller's Name) MSP 032 (77 License No. 80)
FRANK'S WELL DRILLING INC. (Firm Name)
8260 CRAIN HWY LA PLATA MD 20646 (Address)
Michael G Frank (Signature) 10/28/96 (Date)

LOCATION OF WELL

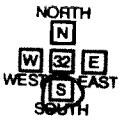
B 3 (1 2)
BALTIMORE (8 COUNTY 21)
(23 SUBDIVISION 42)
SECTION (44 46) LOT (48 50)
MIDDLE RIVER (52 NEAREST TOWN 71)
MILES FROM TOWN (enter 0 if in town) 1 MI (73 76 77 78)

B 4 (1 2)
DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



535 WAMPLER RD (11 NEAR WHAT ROAD 30)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)



(34) 1000 (37) DISTANCE FROM ROAD
ENTER FT or MI FT (38 39)

WELL INFORMATION

B 2 (1 2)
APPROX. PUMPING RATE (GAL. PER MIN.) 10 (8 12)
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) 1000 (14 20)

USE FOR WATER (CIRCLE APPROPRIATE BOX)

(D) HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
[F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
(22) [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)

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Balto (COUNTY NAME) 003 (COUNTY NO.)
STATE SIGNATURE _____ INSERT S [ ] (41)
DATE ISSUED 10 29 96 (43 48) CO SIGNATURE M-Epp
NORTH GRID 5490000 (50 55) EAST GRID 0959000 (57 63) EXP. DATE

APPROXIMATE DEPTH OF WELL 80 FEET (24 28)

APPROXIMATE DIAMETER OF WELL 4" NEAREST INCH

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE
E 950
N 540
000 000

METHOD OF DRILLING (circle one)

BORED (or Augered) JETTED Jetted & DRIVEN
(30) (37) AIR-ROTary AIR-PERcussion (ROTARY) (Hydraulic Rotary)
CABLE REVerse-ROTary DRive-POINT

other _____

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
(39) [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) (41 52)

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 (54 63) GAP
FORCE [ ] (67 68) WRITE INITIALS IN BOX PERMIT No. (70 71 72 73 74 75 76 77 78 79) BA-94-2207

SPECIAL CONDITIONS

C 1 | 1645 | SEQUENCE NO. (MDE 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

ST/CO USE ONLY
DATE Received NOV X6 1996

DATE WELL COMPLETED 10 31 96

Depth of Well 92 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA-94-2207

OWNER STAHL (last name) WARDEN (first name)

STREET OR RFD 535 WAMPLER RD TOWN BALTIMORE

SUBDIVISION _____ 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
WHITE CLAY	0	2	
WHITE CLAY/SAND	2	10	
WHITE CLAY	10	15	
WHITE CLAY/SAND	15	30	
WHITE CLAY	30	35	
SAND	35	36	
WHITE/RED CLAY	36	65	
WHITE CLAY/SAND	65	82	
SAND	82	92	XXX

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [Y] no (N)

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.

TYPE: MWD (MSD) MGD

DRILLERS LIC. NO. 032

Michael B. Ford

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. _____

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

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] no (N)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] BENTONITE CLAY [BC]

NO. OF BAGS 3 NO. OF POUNDS 150

GALLONS OF WATER 75

DEPTH OF GROUT SEAL (to nearest foot)

from 0 ft. to 30 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	4	85

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) 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		DEPTH (nearest ft.)	
1	PL	85	92
2			
3			

SLOT SIZE 1 .020 2 _____ 3 _____

DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK from 85 to 92

IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

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

T [ ] (E.R.O.S.) [ ] W Q [ ] [A]

TELESCOPE LOG OTHER DATA

C 3

PUMPING TEST

HOURS PUMPED (nearest hour) 3

PUMPING RATE (gal. per min.) 60

METHOD USED TO MEASURE PUMPING RATE 5 GAL. BUCKET

WATER LEVEL (distance from land surface)

BEFORE PUMPING 19 ft.

WHEN PUMPING 31 ft.

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.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. S

CAPACITY: GALLONS PER MINUTE (to nearest gallon) 10

PUMP HORSE POWER .5

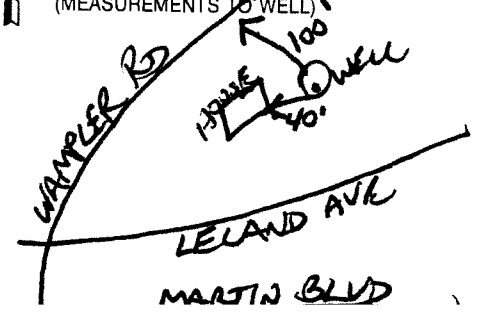
PUMP COLUMN LENGTH (nearest ft.) 50

CASING HEIGHT (circle appropriate box and enter casing height)

(+) above LAND SURFACE
(–) below 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)



MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION
2500 BROENING HIGHWAY, BALTIMORE, MARYLAND 21224, (410) 631-3784

****

WATER WELL ABANDONMENT-SEALING REPORT FORM

****

NOV 1996
Received
Ind. Septic
Systems & Wells

SUBMIT COPIES OF COMPLETED FORM TO:

* COUNTY ENVIRONMENT AGENCY (contact MDE, WMA if address needed)
* WELL OWNER
* MDE, WATER MANAGEMENT ADMINISTRATION, WELL PROGRAM

DATE WELL ABANDONED: 10-31-96 (month/day/year)

* PERMIT NUMBER OF ABANDONED WELL (if any)

* PERMIT NUMBER OF REPLACEMENT WELL BA-94-2207

* PERSON ABANDONING WELL: MICHAEL G. FRANK

WELL DRILLERS LICENSE NUMBER: 032

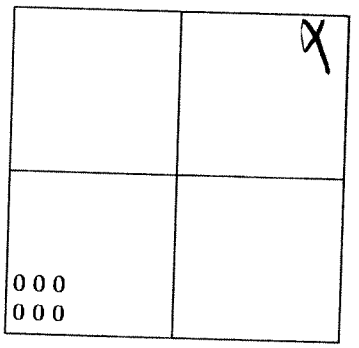
* OWNER'S NAME: WARDEN STAHL

CIRCLE: MWD/MSD/MGD

* WELL LOCATION:

COUNTY: BALTIMORE
NEAREST TOWN: MIDDLE RIVER
TAX MAP ____ BLOCK ____ PARCEL ____
SUBDIVISION: ____
SECTION: ____ LOT: ____

MARYLAND GRID COORDINATES
BOX NUMBER
E 950
N 540



SHOW WELL LOCATION BY X WITHIN BOX

* TYPE OF WELL BEING ABANDONED:

✓ DRILLED ____ JETTED
____ BORED/AUGUERED ____ HAND DUG
____ OTHER (specify) ____

* USE CODE:

✓ DOMESTIC ____ MUNICIPAL/PUBLIC
____ IRRIGATION ____ INDUSTRIAL
____ TEST/OBSERVATION

* TYPE OF CASING:

✓ STEEL ____ PLASTIC
____ CONCRETE ____ OTHER (specify)
____

* SIZE OF CASING: 4 INCHES IN DIAMETER

* DEPTH OF WELL: 96 FEET DEEP

* WAS ANY CASING REMOVED? ____ YES ✓ NO
if yes, length removed, in feet: ____

* WAS CASING RIPPED OR PERFORATED? ____ YES ✓ NO

LOG OF SEALING MATERIAL

MATERIAL	FEET FROM	FEET TO
CEMENT	96	3
BACKFILL	3	0

Michael G Frank
SIGNATURE-MASTER WELL DRILLER OR SUPERVISING SANITARIAN

MSD032
LICENSE #

MWD/MSD/MGD
CIRCLE ONE

11-5-96
DATE

DENV 828 JULY 1993

B 1 1239 — SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: BA-94-7179

fill in this form completely

Date Received (APA): 11/20/02

OWNER INFORMATION
Epps (Last Name) Duane (First Name)
715 Wampler Road (Street or RFD)
Middle River (Town) MD (State) 21220 (Zip)

DRILLER INFORMATION
Robert P Copsey — MSD 1161 (License No.)
Wolford's Well + Pump Svc (Firm Name)
4429 Mountain Rd - 21122 (Address)
Robert P. Copsey (Signature) 11/8/02 (Date)

B 2 — WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.): 8
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 300

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- (D) DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST, OBSERVATION, MONITORING
- [G] GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 100 FEET

APPROXIMATE DIAMETER OF WELL: 4" 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

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-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

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

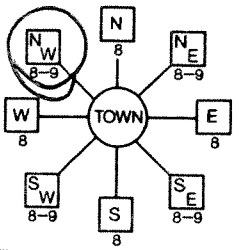
Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER

PERMIT No. BA-94-7179

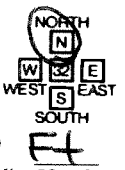
LOCATION OF WELL
B 3
Baltimore (COUNTY)
Middle River Garden Farms (SUBDIVISION)
SECTION — LOT 4
Middle River (NEAREST TOWN)
MILES FROM TOWN (enter 0 if in town): 3

B 4
DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



1012 Hillpine Road
11 ON ~~NEAR~~ WHAT ROAD 30

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)



DISTANCE FROM ROAD: 75 FT (ENTER FT OR MI)

TAX MAP: 90 BLK: PARCEL 558

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
COUNTY NAME: Balto — COUNTY NO.: 03
STATE SIGNATURE — INSERT S
DATE ISSUED: 12/02 — CO SIGNATURE: Susan Tarnetta — EXP. DATE
NORTH GRID: 548 000 — EAST GRID: 963 000

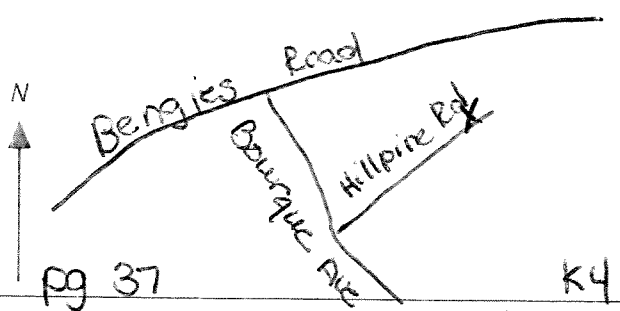
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

We do Not have map

SOURCES OF DRILLING WATER
1. AA-81-0980
2. AA-81-9800
3.

WRITE THE BOX NUMBER FROM THE MAP HERE
E 960
N 540
000 000

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



SPECIAL CONDITIONS
NOTE: APPROPRIATE AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

D-15

DENV-Permit 97

C 1 5645 (1 2 3 6) SEQUENCE NO. (MDE USE ONLY)

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

THIS REPORT MUST BE SUBMITTED AFTER WELL IS COMPLETED.

COUNTY NUMBER 003

ST/CO USE ONLY
DATE Received MM FEB DD 25 YY 2005 (8 13)

DATE WELL COMPLETED MM 12 DD 23 YY 02 (15 20)

Depth of Well 22 80' 26 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA - 94 - 7179 (28 29 30 31 32 33 34 35 36 37)

OWNER Epps (last name) Duane (first name)

STREET OR RFD 715 Wampler Rd.(1012 Hillpine Rd.) TOWN Middle River, MD 21220

SUBDIVISION _____ 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	2	
White Sand	2	20	
White Clay	20	30	
White Sand & Gravel	30	80	X

NUMBER OF UNSUCCESSFUL WELLS: _____

WELL HYDROFRACTURED (yes Y / no N)

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 LIC. NO. MSD 161
Robert D. Capsey
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. JSDOLL
Jerry L. Simpson
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) (yes Y / no N) (44 44)

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT CM (45 46) BENTONITE CLAY BC

NO. OF BAGS 3 1/2 NO. OF POUNDS 175

GALLONS OF WATER 80

DEPTH OF GROUT SEAL (to nearest foot)
from 3 (48) TOP (52) ft. to 30 (54) BOTTOM (58) 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 (60 61)	4 (63 64)	73 (66 70)

OTHER CASING (if used) — EACH CASING

	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

EACH SCREEN

		DEPTH (nearest ft.)	
1	PL (8 9)	73 (11 15)	80 (17 21)
2	(23 24)	(26 30)	(32 36)
3	(38 39)	(41 45)	(47 51)

SLOT SIZE 1 .014 2 _____ 3 _____

DIAMETER OF SCREEN 2 (56 60) (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 — from 65 to 80

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (70) (E.R.O.S.) (72) W Q (74 75 76)
TELESCOPE CASING; LOG INDICATOR; OTHER DATA

C 3 — PUMPING TEST
HOURS PUMPED (nearest hour) 2 (8 9)

PUMPING RATE (gal. per min.) 40 (11 15)

METHOD USED TO MEASURE PUMPING RATE AIR

WATER LEVEL (distance from land surface)

BEFORE PUMPING 40' (17 20) ft.

WHEN PUMPING 52' (22 25) ft.

TYPE OF PUMP USED (for test) (27)
- A air
- P piston
- T turbine
- C centrifugal
- R rotary
- O other (describe below)
- J jet
- S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. (29)

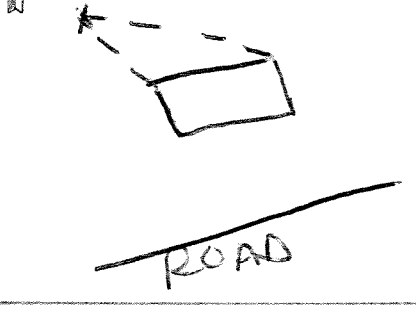
CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31 35)

PUMP HORSE POWER (37 41)

PUMP COLUMN LENGTH (nearest ft.) (43 47)

CASING HEIGHT (circle appropriate box and enter casing height)
+ above (49) / – below (49) LAND SURFACE
1 (nearest foot) (50 51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURES AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



C 1 | 5893 | SEQUENCE NO. (MDE USE ONLY)

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

THIS REPORT MUST BE SUBMITTED AFTER WELL IS COMPLETED.

COUNTY NUMBER 003

ST/CO USE ONLY
DATE Received MM DD YY

DATE WELL COMPLETED 08 18 06

Depth of Well 73 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" BA 95 1513

OWNER Shock Douglas B.

STREET OR RFD 919 Hillpine Road TOWN Baltimore, MD 21220

SUBDIVISION Middle River Garden Farms SECTION LOT 19

WELL LOG
Not required for driven well:

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
Brown White Sand	0	32	
White Clay	32	38	
Brown White Sand	38	73	****

NUMBER OF UNSUCCESSFUL WELLS:

WELL HYDROFRACTURED (Y) (N)

CIRCLE APPROPRIATE LETTER
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 LIC. NO. MD 1661
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)
LIC. NO. MD 038
Michael Donovan
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) (Y) (N)
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT (C M) BENTONITE CLAY (B C)
NO. OF BAGS 3 NO. OF POUNDS 38
GALLONS OF WATER 15
DEPTH OF GROUT SEAL (to nearest foot)
from 0 (TOP) ft. to 40 (BOTTOM) 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	4	68

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 (HO) OPEN HOLE (PL) PLASTIC (OT) OTHER

C 2

EACH SCREEN	DEPTH (nearest ft.)	
1	PL 68	73
2		
3		

SLOT SIZE 1 .010 2 3

DIAMETER OF SCREEN 2 (NEAREST INCH)

GRAVEL PACK from 58 to 73
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 58

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

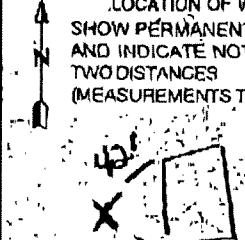
C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 2
PUMPING RATE (gal. per min.) 60
METHOD USED TO MEASURE PUMPING RATE AIR
WATER LEVEL (distance from land surface)
BEFORE PUMPING 18 ft.
WHEN PUMPING 27 ft.

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 INSTALLED PUMP (CIRCLE) (YES or NO) YES NO
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. S
CAPACITY: GALLONS PER MINUTE (to nearest gallon) 12
PUMP HORSE POWER .50
PUMP COLUMN LENGTH (nearest ft.) 60
CASING HEIGHT (circle appropriate box and enter casing height) (+) above (—) below LAND SURFACE (nearest foot) 1

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURES AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



15

MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION
2500 BROENING HIGHWAY, BALTIMORE, MARYLAND 21224, (410) 631-3784

WATER WELL ABANDONMENT-SEALING REPORT FORM

SUBMIT COPIES OF COMPLETED FORM TO:
- COUNTY ENVIRONMENT AGENCY (contact MDE, WMA if address needed)
- WELL OWNER
- MDE, WATER MANAGEMENT ADMINISTRATION, WELL PROGRAM

DATE WELL ABANDONED: 8-18-06 (month/day/year)

PERMIT NUMBER OF ABANDONED WELL (if any)

PERMIT NUMBER OF REPLACEMENT WELL: BA-95-15-13

PERSON ABANDONING WELL: Robert P Copsey

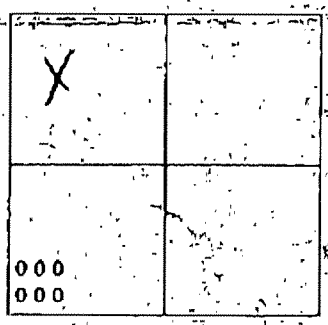
WELL DRILLERS LICENSE NUMBER: 161
CIRCLE: MWD/MSD/MGD

OWNER'S NAME: Douglas Shook

WELL LOCATION: 919 Dupin Rd

COUNTY: Baltimore
NEAREST TOWN: Baltimore
TAX MAP 90 BLOCK PARCEL 0552
SUBDIVISION: Middle River Manor Farms
SECTION: LOT: 19

MARYLAND GRID COORDINATES
BOX NUMBER E 960 N 540



SHOW WELL LOCATION BY X WITHIN BOX

TYPE OF WELL BEING ABANDONED:
X DRILLED ____ JETTED
____ BORED/AUGUERED ____ HAND DUG
____ OTHER (specify)

USE CODE:
X DOMESTIC ____ MUNICIPAL/PUBLIC
____ IRRIGATION ____ INDUSTRIAL
____ TEST/OBSERVATION

TYPE OF CASING:
X STEEL ____ PLASTIC
____ CONCRETE ____ OTHER (specify)

SIZE OF CASING: 4 INCHES IN DIAMETER

DEPTH OF WELL: 30 FEET DEEP

WAS ANY CASING REMOVED? X YES ____ NO
if yes, length removed, in feet: 4

WAS CASING RIPPED OR PERFORATED? ____ YES ____ NO

LOG OF SEALING MATERIAL

MATERIAL	FEET FROM	FEET TO
Bentonite	30	3
Clay		
Clean fill	3	0

Robert Copsey — 161 — MWD/MSD/MGD — 8-18-06
SIGNATURE-MASTER WELL DRILLER OR SUPERVISING SANITARIAN — LICENSE # — CIRCLE ONE — DATE

DENV 828 JULY 1993

2) COUNTY ENVIRONMENTAL AGENCY

APPENDIX C—BALTIMORE COUNTY PUBLIC WATER SUPPLY DISTRIBUTION MAPS

BALTIMORE COUNTY, MARYLAND

INTER-OFFICE CORRESPONDENCE

DATE: January 9, 2013

TO: Edward C. Adams, Jr., Director
Department of Public Works

FROM: Steven A. Walsh, Chief SAW
Bureau of Engineering & Construction

SUBJECT: 2013 Basic Services Map

In accordance with your January 4, 2013 request, there are no changes to be made to the prior year's basic services map.

Water Status:
Currently, there are no areas that have deficiencies in regard to public water.

Sewer Status:
In accordance with the provisions of the Consent Decree, we continue to do the required post monitoring for a minimum of eighteen (18) months for the sanitary sewer relief points that have been eliminated.

All of the remaining sewer relief point locations are being metered. We have completed several rehabilitation projects and are now performing post-monitoring to determine the projects' effectiveness. In addition, we have projects still in construction and in design which will eventually eliminate the areas of concern.

Everyone should be aware that the removal of an area of special concern does not mean that an area has unlimited development potential. All developments are evaluated hydraulically on a case-by-case basis, and determinations are made to see if the development will need downstream supplementation.

SAW:GAK:MJM:bjk

cc: David L. Thomas – Assistant to the Director
Glen A. Keller – Chief, Sewer Design Section
Michael J. Mazurek – Chief, Water Design Section

Department of Public Works

2013 Basic Services Map
Water Supply Area

Legend
- URDL
- Water Supply

Note: There are currently no areas in Baltimore County that have deficiencies in regard to public water.

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 24-13 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED May 6, 2013. EFFECTIVE May 20, 2013.

COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

Scale 1 inch = 4,000 feet

0 2,000 4,000 8,000 12,000 16,000 Feet

Feature Class Production Dates
Water Supply Area 2013
Urban Rural Demarcation Line 2012
Roads 2013
County Boundary..... 2008

Produced by the Baltimore County Department of Public Works

North American Datum 1983 HARN, U.S. Survey Foot

Published May 24, 2013

APPENDIX D—BALTIMORE COUNTY
10-YEAR WATER SUPPLY AND SEWERAGE PLAN 2010–2015

Water & Sewerage Plan

Staff Report to the Baltimore County Planning Board

Amendment Cycle 30 July 19, 2012

AMENDMENT CYCLE XXX

BALTIMORE COUNTY WATER SUPPLY & SEWERAGE PLAN

STAFF REPORT

to the

BALTIMORE COUNTY PLANNING BOARD

July 19, 2012

CONTENTS

INTRODUCTION

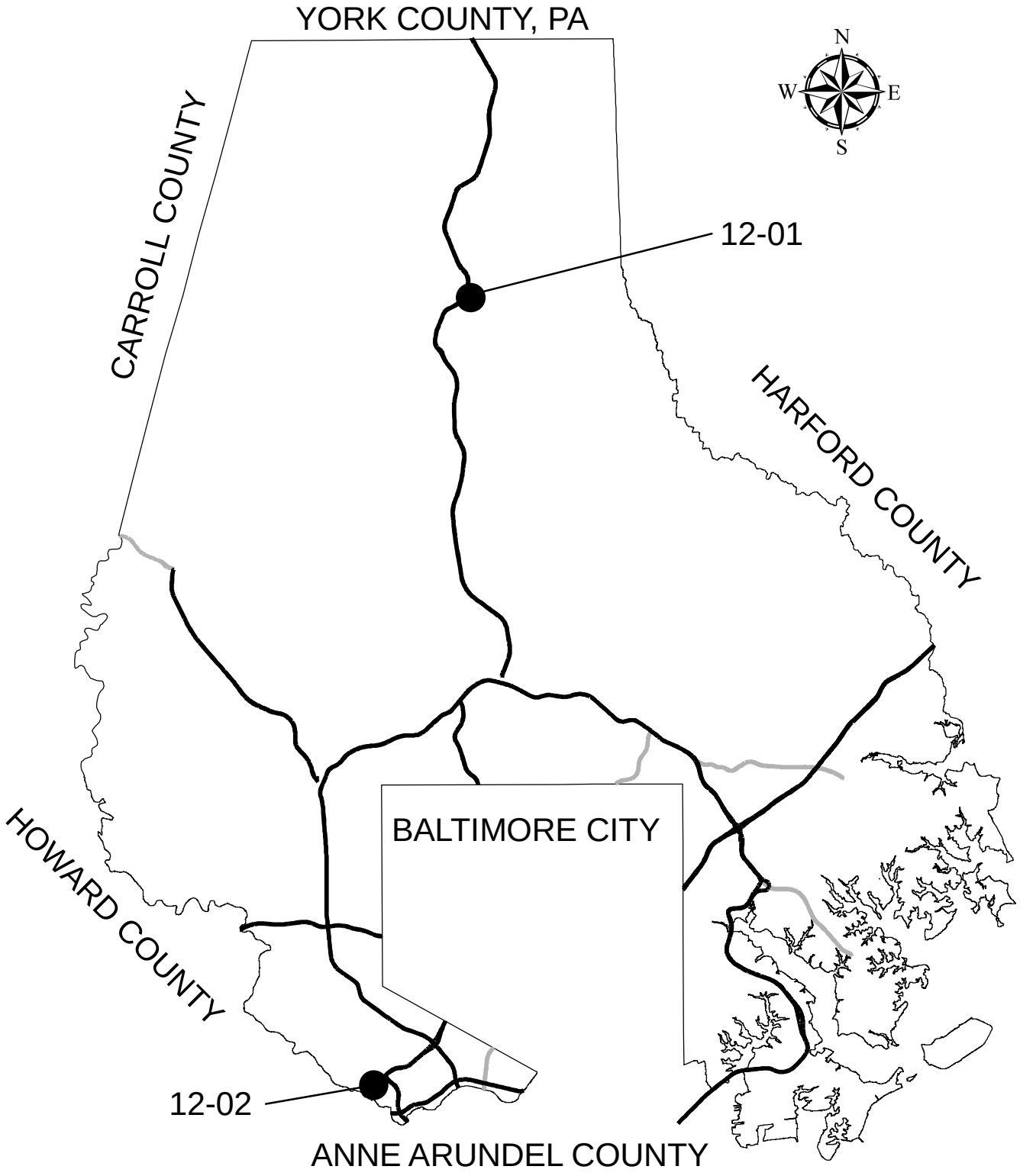
Under the Authority of the Executive Order issued on April 11, 1990, the Director of the Department of Public Works must review reports transmitted to him by the Department of Planning and the Department of Environmental Protection and Sustainability and, in turn, submit a report to the Planning Board with the recommendations of the Department of Public Works.

In compliance with that order, two petitions to amend the Water & Sewerage Plan (designated Amendment Cycle 30) have been carefully reviewed by the staff of the three departments and the following pages of supporting material, analyses and recommendations are now offered to the Baltimore County Planning Board.

Edward C. Adams, Jr., Director
Department of Public Works

PUBLIC NOTICE

BALTIMORE COUNTY, MARYLAND - WATER SUPPLY & SEWERAGE PLAN
AMENDMENT CYCLE 30



A PUBLIC HEARING WILL BE HELD BY THE BALTIMORE COUNTY PLANNING BOARD AT 5:00 PM ON JULY 19, 2012 IN ROOM 104, JEFFERSON BUILDING 105 WEST CHESAPEAKE AVENUE, TOWSON, MD. ON THE FOLLOWING TWO ISSUES COMPRISING AMENDMENT CYCLE 30 OF THE BALTIMORE COUNTY WATER SUPPLY & SEWERAGE PLAN. ADDITIONAL INFORMATION IS AVAILABLE AT THE DEPARTMENT OF PUBLIC WORKS, ROOM 307, COUNTY OFFICE BUILDING, 111 WEST CHESAPEAKE AVENUE IN TOWSON. PERSONS IN NEED OF SPECIAL ACCOMMODATIONS FOR DISABILITIES SHOULD CALL (410) 887-3495.

ISSUE 12-01 HEREFORD HIGH SCHOOL
ISSUE 12-02 ARBOR RIDGE

Executive Order
Baltimore County Water & Sewerage Plan
Amendment Process

WHEREAS, the County Executive is responsible for the proper and efficient administration of the affairs of the County and is charged with the duty to supervise, direct and control the administrative services of the County; and

WHEREAS, Baltimore County, Maryland has adopted the 1981 Master Water & Sewerage Plan for a two (2) year period, pursuant to Title 9, Subtitle 5, County Plan of the Health-Environmental Volume of the Annotated Code of Maryland (formerly Article 43, Section 387C); and

WHEREAS, for good cause, interested parties may desire to request changes in the Master Water & Sewerage Plan during the interim period;

NOW, THEREFORE, under the authority vested in the County Executive by the Baltimore County Charter, it is this 11th day of April, 1990, by the County Executive of Baltimore County, Maryland, ordered as follows:

For the purpose of considering contemporaneous petitions for amendment to the Baltimore County Water & Sewerage Plan in relation to each other and according to a standard schedule, the following annually recurring schedule periods are hereby established, to be applicable on and after July 1, 1982, subject to the provisions hereinafter set forth.

PERIOD I - MAY (Inter-agency Review)
PERIOD II - JUNE (Compile Report)
PERIOD III - JULY 1 - SEPT 30 (PB Action)

(a) A petition for amendment to the Water & Sewerage Plan of a property (amendment petition) may be filed with the Department of Public Works only by the legal owner of such property, or by his legally authorized representative. Each such petition shall be filed no later than May 1 of each year and shall include an explanation of the reasons why, in the petitioner's opinion, the amendment sought should be made, set forth in sufficient detail to properly advise the County authorities required to review the petition. Any allegations of change in conditions as justification for the action sought shall be supported in the petition by precise description of such change, and any allegations of error shall be so supported in similar detail and as further required by Subsection (g).

(b) With the exception of those amendment petitions exempted under the procedure set forth in Subsection (f), copies of all amendment petitions accepted for filing by the Department of Public Works shall be transmitted to the Directors of Planning and Zoning and Department of Environmental Protection and Resource Management within the first five (5) days of Period 1. Within fifteen (15) days thereafter, the Director of Public Works shall publish information in two (2) newspapers of general circulation in the County for a period of at least two (2) weeks including the following:

(1) A listing of all such petitions;
(2) A map showing the locations of all properties under petition;
(3) The date, time and place of the July Planning Board hearing on the petitions.

They also shall make such listing and map available in the form of a press release and for a period of at least three (3) weeks, shall publicly display a copy of such listing and map in the County Office Building or other appropriate place for public inspection.

(c) During each Period I, the Directors of the Office of Planning and Zoning and the Department of Environmental Protection and Resource Management shall review the petitions and each shall submit a report to the Director of Public Works containing at least the following information:

(1) Maps showing properties under petition and the amendment sought therefor;
(2) The technical feasibility of each petition;
(3) Recommendations on each petition;
(4) Supporting data for the recommendations.

(d) During each Period II, the Director of Public Works shall review the departmental reports and shall prepare for submission to the Planning Board a report thereon containing at least the following information:

(1) Maps showing properties under petition and the amendment sought therefore; such maps may also identify groups of such properties located close to each other and show other indications of the inter-relation of petitions with respect to planning considerations.

(2) Recommendations on the petition;

(3) Supporting data for the recommendations, including any pertinent data and comments or recommendations submitted by other interested parties of County agencies.

(e) During each Period III, the Planning Board shall:

(1) Hold a hearing (which shall be construed as a public hearing on the amendment petitions) at their regularly scheduled July meeting;

(2) Publish and submit to the County Executive a report on all the amendment petitions submitted during the preceding filing period except those exempted under Subsection (f), such report to contain the Planning Board's recommendations on such petitions, appropriate maps, and supporting data.

(f) In any case where the Directors of Public Works, Planning and Zoning, and Environmental Protection and Resource Management certify to the County Executive that early action upon an amendment petition is required in the public interest or because of emergency, such petition shall be exempted from the regular cycle time frame and shall be processed through subsections (a) through (e) as quickly as possible.

(g) Before any property is reclassified pursuant to this Order, the Planning Board must find the following:

(1) That there has occurred a substantial change in the character of the neighborhood in which the property is located, or a danger to public health, or that the last classification of the property was established in error; and

(2) That the prospective reclassification of the property is warranted by that change or error;

(3) Any findings of such change, danger or error and any finding that the prospective reclassification is warranted may be made only upon findings of consistency with the adopted County Master Plan, including, but not limited to, all of the following: population trends, availability and adequacy of existing and proposed water supply and sewerage facilities, transportation and other public facilities, and the capital program.

Upon the report of the Planning Board, the County Executive shall review their recommendations and may submit the proposed amendment to the Master Water & Sewerage Plan to County Council for their action.

Signed by the Baltimore County Executive, the Executive Secretary, the County Attorney, and the Directors of Public Works, Planning and Zoning, and Environmental Protection and Resource Management on April 11, 1990.

D E F I N I T I O N S

Areal designations noted on each page of analysis and on the petition exhibits:

W-1 or S-1 EXISTING SERVICE AREAS *Areas in which Metropolitan water and sewerage facilities are presently available to 90 % of the properties.*

W-3 or S-3 CAPITAL FACILITIES AREAS *Areas in which water and sewerage facilities are required, and are possible, within the framework of the six-year capital program, subject to annual budgeting, neighborhood petitions, determination of health hazards and the negotiation of Public Works Agreements.*

W-4 or S-4 STUDY AREAS *Areas, rural centers, outside the Metropolitan District which shall be studied to determine the feasibility of future community water supply and sewer service.*

W-5 or S-5 MASTER PLAN AREAS *Areas in which water and sewerage facilities are required and are intended within the framework of the Baltimore County Master Plan.*

W-5 X or S-5 X MASTER PLAN AREAS *Areas to become CAPITAL FACILITIES AREAS upon annexation into the Baltimore County Metropolitan District.*

W-6 or S-6 AREAS OF FUTURE CONSIDERATION *Areas which are to be considered in the design of major facilities for growth and development beyond the Land Use Master Plan.*

W-7 or S-7 NO PLANNED COMMUNITY OR MULTI-USE SERVICE (NPS) *Areas of planned, low-density growth (also known as "Resource Conservation Zoning") for which Metropolitan water and sewerage facilities are neither planned nor intended.*

The following definitions have been derived from Maryland State Law and the Baltimore County Code and are set forth here as they relate specifically to Water Supply and Sewerage Planning in Baltimore County:

INDIVIDUAL WATER SUPPLY *A water supply well and plumbing system within a single property, intended for domestic use of less than 5,000 gallons of ground water per day.*

INDIVIDUAL SEWERAGE SYSTEM *A sewerage system, within a single property, comprising a treatment system (septic tank) which receives waste water from a plumbing system and has a ground water recharge system of less than 5,000 gallons per day.*

MULTI-USE SYSTEM *A water supply or sewerage system which is identical to an individual system, as defined above, except that use and recharge of ground water is equal to or greater than 5,000 gallons per day.*

COMMUNITY SYSTEM (Public or Private)
A system of water supply or sewerage disposal involving two or more property owners, regardless of the quantity or point of disposal.

Note: Any of the above may be a community system under the Clean Water Act of the Federal Government relative to the required water quality and frequency of testing.

Water & Sewer Plan Map Symbols

URDL (Urban - Rural Demarcation Line)

Metropolitan District Boundary

Sewer Plan Designations

S-1 Existing Service Area

S-3 Capital Facilities Area

S-4 Study Area

S-5 Master Plan Area

S-5 X Master Plan Area (to become S-3 Capital Faciities Area upon Annexation into the Metropolitan District)

S-6 Area of Future Consideration

S-7 No Planned Community or Multi-Use Service (NPS)

Water Plan Designations

W-1 Existing Service Area

W-3 Capitial Facilities Area

W-4 Study Area

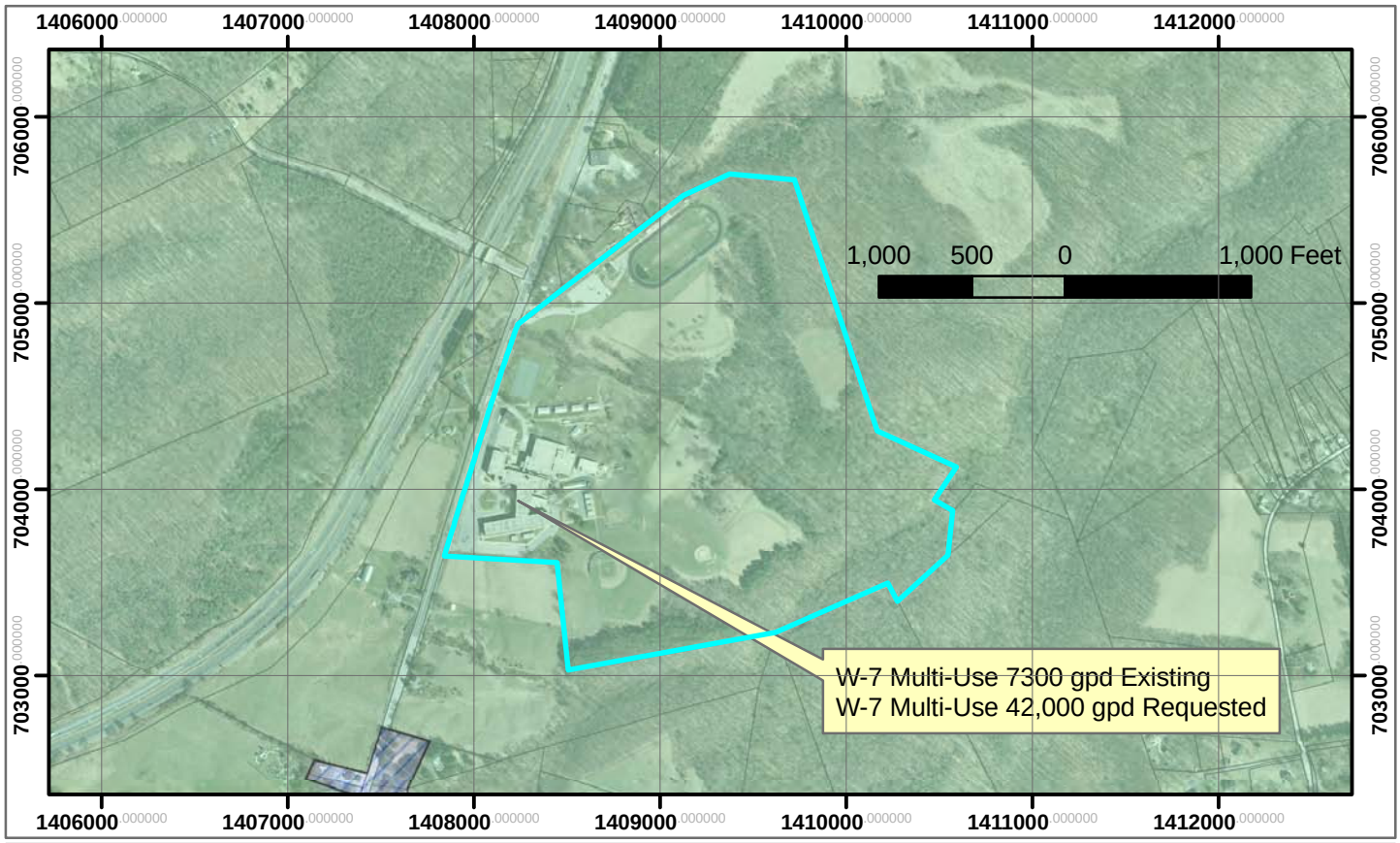
W-5 Master Plan Area

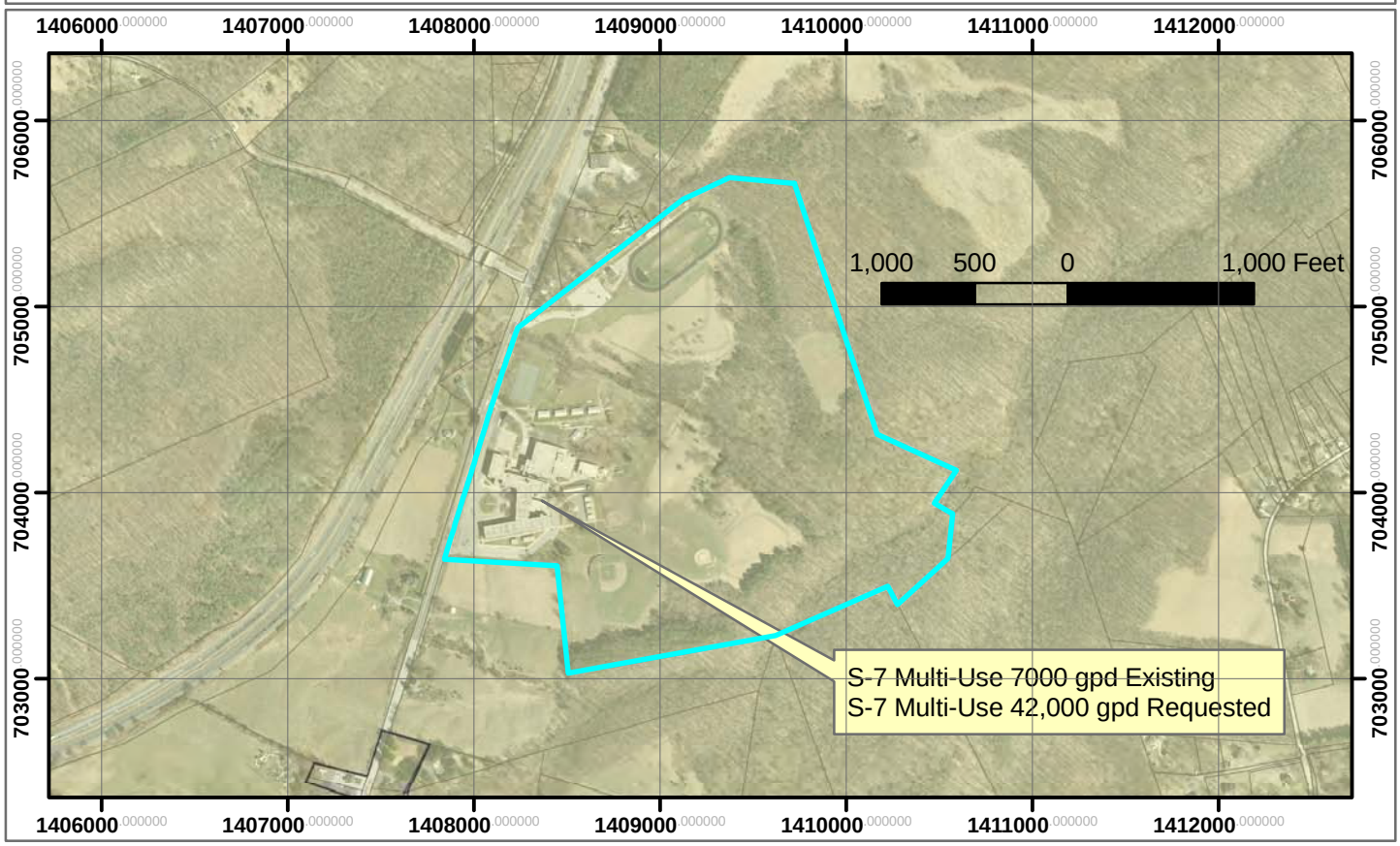
W-5 X Master Plan Area (to become W-3 Capital Facilities Area upon Annexation into the Metropolitan District)

W-6 Area of Future Consideration

W-7 No Planned Community or Multi-Use Service (NPS)

Properties, Maps & Recommendations





Cycle 30 Issue 12-01 Hereford High School

Hereford High School

Reference Number: 12-01

Property: Hereford High School

Acreage: 103.97 ac.

Location: 17301 York Road, Parkton, MD 21120

Election District: 7th Council District: 3rd

Zoning Classification: RC 7

Tax Map: 22 Parcel: 158 Tax ID No. 07-02-057275

Water Supply & Sewerage Plan Map: W-10B, S-10B

Location Relative to:

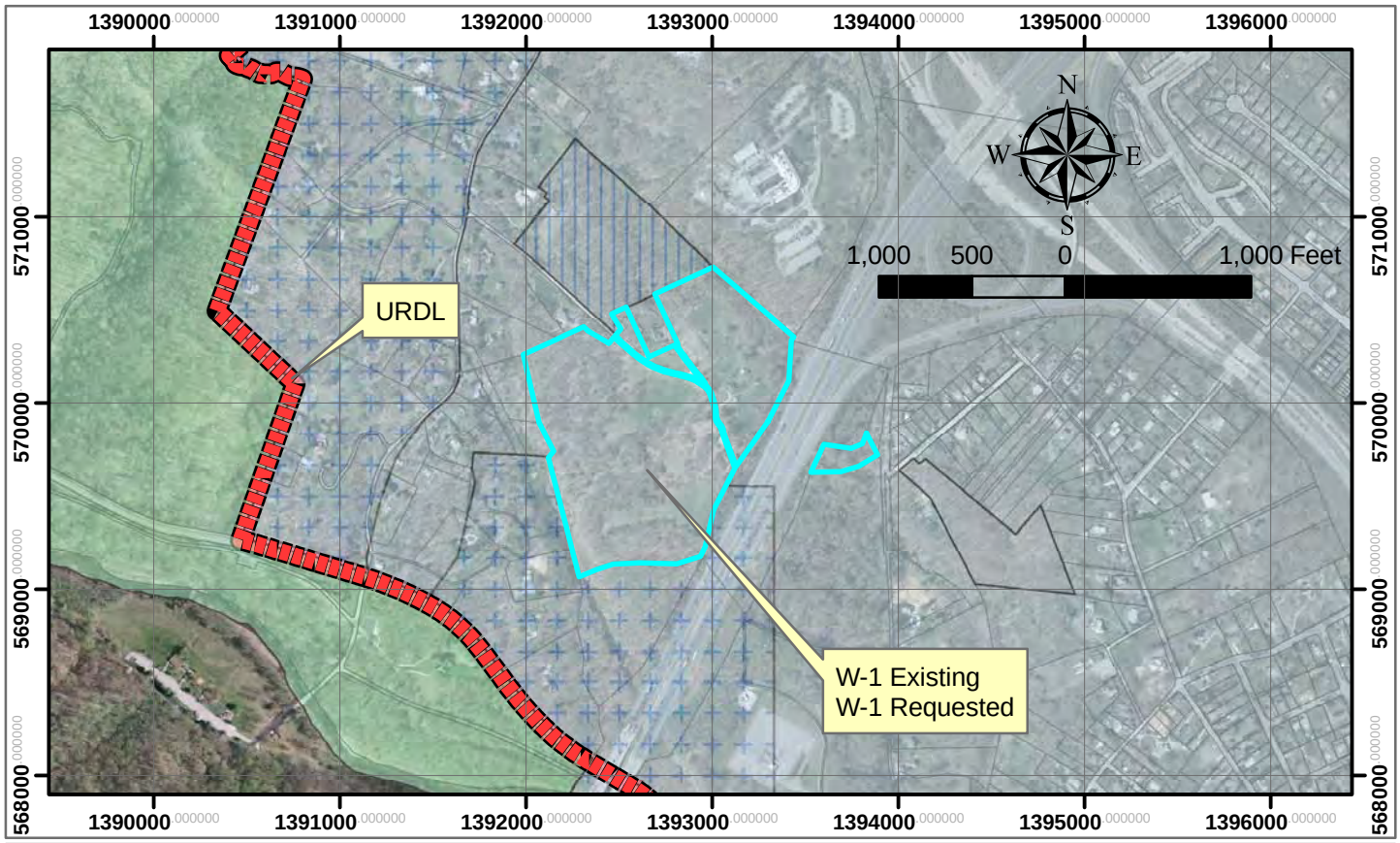
- Urban Rural Demarcation Line: Outside
- Metropolitan District boundary: Outside

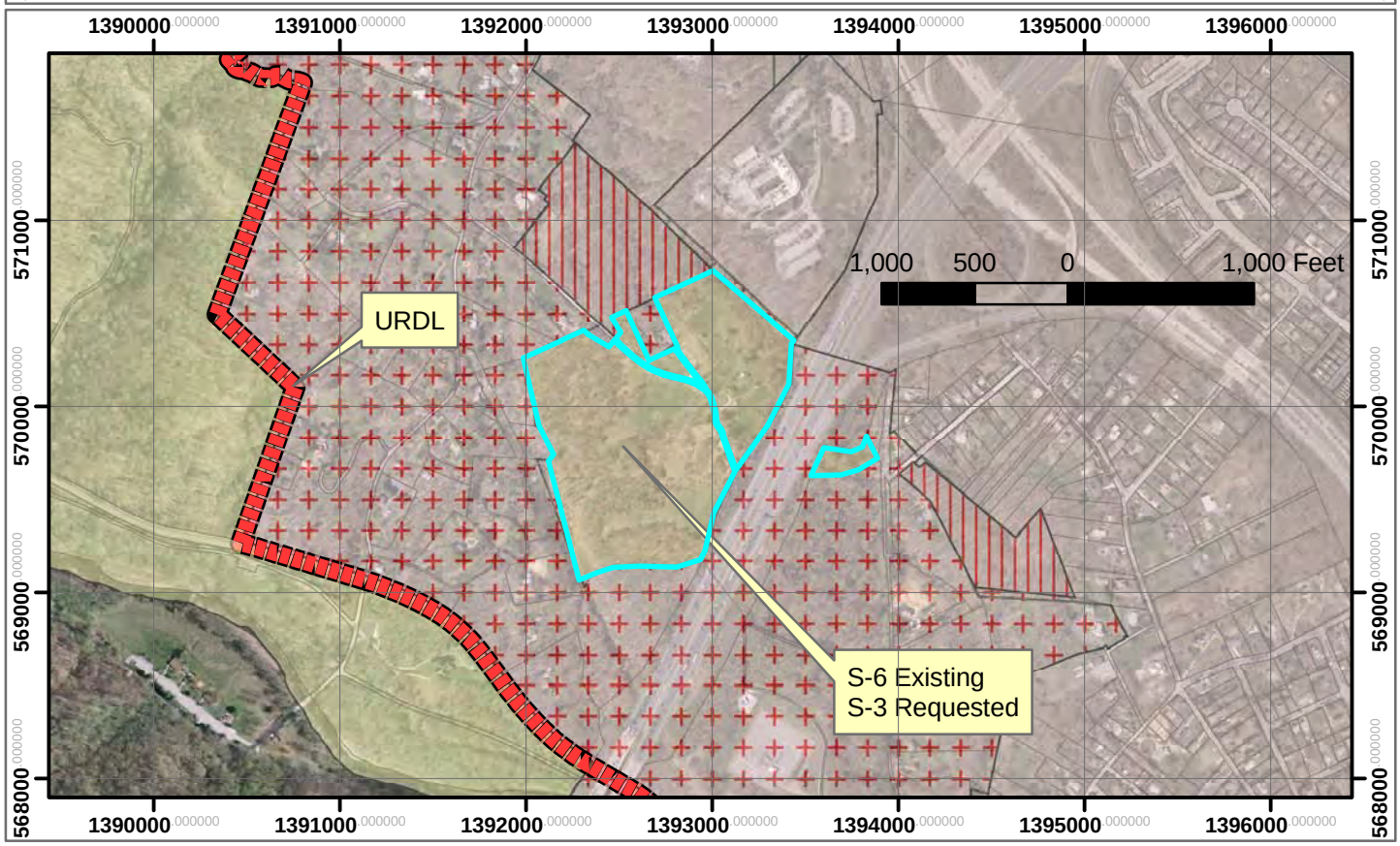
Water Supply and Sewerage Plan Designations:

- Existing: W-7 Multi-Use 7300 gpd, S-7 Multi-Use 7000 gpd
- Requested: W-7 Multi-Use 42,000 gpd, S-7 Multi-Use 42,000 gpd

Baltimore County Staff Recommendations:

- **DEPS:** Supports the requested increase to W-7/S-7 Multi-use system with 42,000 gallons per day discharge.
- **PLANNING:** Supports upgrading the capacity for the funded addition and limited renovation to W-7/S-7 Multi-use system with 42,000 gallons per day discharge.
- **DPW:** Not served by County's water and sewer systems. No objection to W-7/S-7 Multi-use system with 42,000 gallons per day discharge.





Cycle 30 Issue 12-02 Arbor Ridge

Arbor Ridge

Reference Number: 12-02

Property: Arbor Ridge (Formerly known as Keech Property)

Acreage: 34.8 ac.

Location: End of Keech Road 1000' S of Gun Road

Election District: 13th Council District: 1st

Zoning Classification: RC 5

Tax Map: 108 Parcel: 258 Tax ID No. 13-11-150280

Water Supply & Sewerage Plan Map: W-22A&B, S-22A&B (Divided by grid boundary)

Location Relative to:

- Urban Rural Demarcation Line: Inside
- Metropolitan District boundary: Inside

Water Supply and Sewerage Plan Designations:

- Existing: W-1, S-6
- Requested: W-1, S-3

Baltimore County Staff Recommendations:

- **DEPS:** W-1, S-3 if proposed zoning change to DR 1 is approved.
- **PLANNING:** Designations to correspond to zoning as to be determined by the County Council on August 28, 2012
- **DPW:** W-1, S-3 only if zoning is changed to DR 1 for entire site in CZMP 2012.

Section A

Amendment Petitions

SITE RESOURCES
incorporated
Comprehensive Land Planning & Site Design Services

April 30, 2012

Mr. David Thomas, P.E.
Baltimore County Department of Public Works
Directors Office
111 Chesapeake Avenue, Room 307
Baltimore, MD 21204

Re: Hereford High School
Master Water and Sewerage Plan Amendment
Tax Map 22 Grid 9 Parcel 158
SRI Project No: 08014

Dear Mr. Thomas,

On behalf of our client, the Baltimore County Public Schools (BCPS); please accept this request for an amendment to the Baltimore County Master Water and Sewerage Plan. The amendment would allow Hereford High School located at 17301 York Road, Parkton, MD to increase their water and sewerage capacity. Hereford High School, Parcel 158, Zoned RC-7 is currently listed in the 2011 triennial review update plan under Table 10-A as a small sewage treatment facility with an approved design flow of 7,000 gallons per day.

The proposed building improvements to Hereford High School will require that the existing septic system be replaced; upgraded in capacity and have a pretreatment system added per standards approved by the Maryland Department of the Environment (MDE). The new design flow required is 42,000 gallons per day.

Please contact me if you need further information to process this plan amendment request.
Sincerely,
SITE RESOURCES, INC.

Fritz Behlen, PLA, ASLA
Senior Associate

Enclosure: Tax Map

Cc: Merril Plait, BCPS
Leslie Lasseri, BCPS
John DiMenna, Rubeling Associates

14315 Jarrettsville Pike, P.O. Box 249 Phoenix, MD 21131-0249
(410) 683•3388 • fax (410) 683•3389

BALTIMORE COUNTY WATER SUPPLY AND SEWERAGE PLAN
AMENDMENT PETITION
CYCLE XXX

Attachment to letter of petition:

Reference Number: 12-01

Property: Hereford High School

Acreage: 103.97

Location: 17301 York Road, Parkton, MD 21120

Election District: 7 Councilmanic District: 3

Zoning Map: 022B2, 022A2, 022A1, 022B1 Zoning Classification: RC7

Tax Map: 22 Parcel Number: 158

Tax Account Number: 0702057275

Water Supply & Sewerage Plan Map: Maps W-10B & S-10B

Location Relative to:

Urban Rural Demarcation Line as established by Planning Board, 1985:

Inside: _____ Outside: X

Metropolitan District Boundary:

Inside: _____ Outside: X

Water Supply and Sewerage Plan Designations:

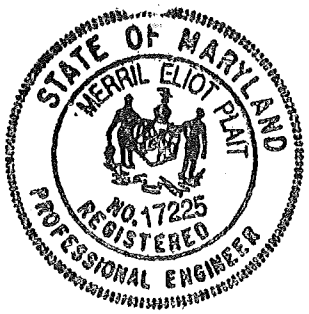
Existing:

W- 7 , S- 7

Requested by Petitioners:

W- 7 , S- 7

Justification: Requesting the approval to upgrade an existing multi-use facility from a design flow of 7,000 gallons per day to 42,000 gallons per day to meet the Maryland Department of the Environment standards. Upgrades to system are required with proposed building renovations and addition. See attached letter.



Submitted by:

Signature & seal

Date 5.3.12

FAXED TO DAVE THOMAS, BALTO. COUNTY ON 4/23/12
(410) 887-3406

BALTIMORE COUNTY WATER SUPPLY AND SEWERAGE PLAN
AMENDMENT PETITION
CYCLE XXX

Attachment to letter of petition:
Reference Number: _____ (to be assigned by B.C.)

Property: KEECH PROPERTY

Acreage: 34.8 ACRES

Location: END OF KEECH ROAD, 1000 FT. SOUTH EAST OF GUN ROAD ARBUTUS, MD. 212

Election District: 13 Councilmanic District: 1ST

Zoning Map: SW 6E & 7E Zoning Classification: RC-5, APPLIED FOR DR-1 IN CZMP-2012.

Tax Map: 108 Parcel Number: 258

Tax Account Number:

Water Supply & Sewerage Plan Map: 22A
Location Relative to:

Urban Rural Demarcation Line as established by Planning Board, 1985:

Inside: ✓ Outside:

Metropolitan District Boundary:

Inside: ✓ Outside:
ALSO INSIDE PREFERRED FUNDING AREA.
Water Supply and Sewerage Plan Designations:
Existing:
W-1&6, S-6
Requested by Petitioners:
W-3, S-3

Justification: PLEASE SEE ATTACHED

Submitted by:

B. Mentaf, for CBM, LLC.
Signature & seal ~~OWNER~~ MANAGING MEMBER

Date 4/23/12

RECEIVED
APR 23 2012
DIRECTORS OFFICE
PUBLIC WORKS BALTIMORE COUNTY

ATTACHMENT TO BALTIMORE COUNTY WATER SUPPLY AND SEWERAGE PLAN AMENDMENT PETITION BY CBM, LLC FOR 5301 KEECH RD., ARBUTUS, MD. 21227

Justification: This property being inside URD Line, inside Metropolitan District and inside Preferred Funding area has the right to have public sewer based on funding availability by Baltimore County.

Since we are willing to put the public sewer line totally at our cost, build it per County approval and codes and dedicate it to the county, question of county funding does not arise. Hence, our petition should be approved per county regulations.

B. Mehta.
Barry mehta
Managing member, CBM, LLC.
4/23/12

Section B

Analyses & Recommendations

of the

Department of Environmental Protection

and

Sustainability

BALTIMORE COUNTY, MARYLAND

Inter-Office Memorandum

DATE: June 6, 2012

TO: Edward C. Adams, Jr., Director
Department of Public Works

FROM: Vincent J. Gardina, Director
Department of Environmental Protection & Sustainability

SUBJECT: Master Water & Sewerage Plan – Cycle 30 Amendments

The Department of Environmental Protection and Sustainability (EPS) submits the following recommendations and comments on the subject petitions:

12-01 Hereford High School – 17301 York Rd

Recommendation: EPS supports the requested increase to the design flow for the water and waste disposal systems.

12-02 Keech Property – End of Keech Rd, southeast of Gun Rd

Recommendation: The property is zoned RC-5 but is located inside the URDL and the Metropolitan District. EPS would support the requested change if the proposed zoning change to DR-1 is approved.

Vincent J. Gardina 6/12/12
Vincent J. Gardina, Director

S:\Master Water & Sewer Plan\Cycle 29 Amendments\Cycle 30 Memo 6-6-11.doc

Section C

Analyses & Recommendations

of the

Planning Department

BALTIMORE COUNTY, MARYLAND

INTER-OFFICE CORRESPONDENCE

TO: David L. Thomas
Assistant to the Director
Department of Public Works

DATE: June 14, 2012

FROM: Andrea Van Arsdale
Director
Department of Planning

SUBJECT: Recommendations on Water and Sewerage Plan Amendments Cycle 30

12-01 Hereford High School (Tax ID: 0702057275):

The site (103.97 acres) is zoned RC 7. It is located outside the URDL and Metropolitan District Boundary. The current designations are W-7 and S-7. The requested designations are W-7 and S-7 for upgrading an existing multi-use facility from a design flow of 7,000 gallons per day to 42,000 gallons per day for the funded school addition and limited renovation. To maintain consistency with zoning and URDL, the Department of Planning recommends the designations be W-7 and S-7 and supports upgrading the capacity in this multi-use facility for the funded school addition and limited renovation.

12-02 Arbor Ridge (former Keech Property) (Tax ID: 1311150280):

The site (34.8 acres) is zoned RC 5. It is located inside URDL and Metropolitan District Boundary. The current designations are W-1/W-6 and S-6. The requested designations are W-3 and S-3. This property is part of an issue (1-007) in the 2012 Comprehensive Zoning Map Process (CZMP). The County Council, on August 28, 2012, will decide whether to retain the existing zoning or enact a different zone on each of the CZMP issues. The Department of Planning recommends that the water and sewer designations correspond to the zoning.

Section D

Analyses & Recommendations

of the

Department of Public Works

BALTIMORE COUNTY, MARYLAND

INTER-OFFICE CORRESPONDENCE

DATE: May 30, 2012

TO: David L. Thomas
Assistant to the Director

FROM: Steven A. Walsh, Chief SAW
Bureau of Engineering & Construction

SUBJECT: Cycle 30 Water and Sewer Plan Amendments

The following constitutes the recommendations of the Department of Public Works regarding the referenced petitions:

12-01 Hereford High School

Water Supply and Sewerage Plan Designations:

Existing:

W-7 No Planned Service (Multi-Use Facility)
S-7 No Planned Service (Multi-Use Facility)

Requested by Petitioner:

W-7 No Planned Service (Multi-Use Facility)
S-7 No Planned Service (Multi-Use Facility)

Technical Discussion:

Facility is not served be Baltimore County's water or sewer systems.

Recommendation:

W-7 No Planned Service (Multi-Use Facility)
S-7 No Planned Service (Multi-Use Facility)

12-02 Arbor Ridge

Water Supply and Sewerage Plan Designations:

Existing:

W-1 Existing Service Area
S-6 Areas of Future Consideration

Requested by Petitioner:

W-1 Existing Service Area
S-3 Capital Facilities Area

Technical Discussion:

Water and sewer service are both technically feasible.

Recommendation:

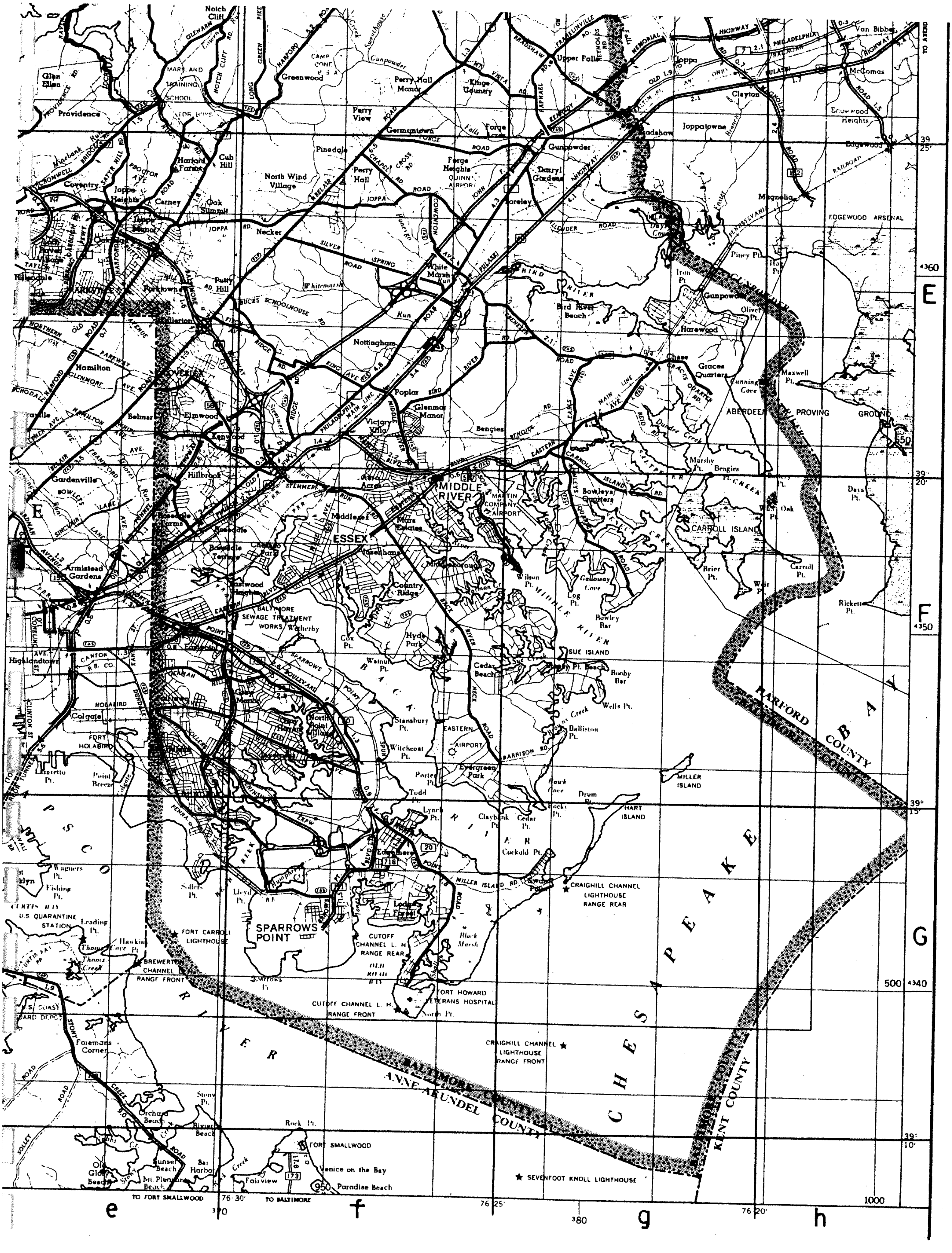
W-1 Existing Service Area
S-3 Capital Facilities Area only if zoning for the entire site is changed from RC5 to DR1 in CZMP 2012 as requested in Issue 1-007

SAW:GAK:MJM:bjk

APPENDIX E—PERTINENT INFORMATION FROM MARYLAND GEOLOGICAL SURVEY RECORDS

Appendix E - Pertinent information obtained from Maryland Geological Survey Records

QUADRANGLE MAP


Notch Cliff
Glen Ellen
Providence
Greenwood
Perry Hall Manor
Kings Country
Upper Falls
Joppa
Van Bibber
McComas
Clayton
Perry View
Germantown
Bradshaw
Joppatowne
Edgewood Heights
Edgewood
Pinedale
Perry Hall
Forge Heights
Gunpowder
Daryl Gardens
North Wind Village
Coventry
Harford Farms
Cub Hill
Carney
Oak Summit
Joppa Heights
Magnolia
EDGEWOOD ARSENAL
Necker
White Marsh
Perry Hill
Parkville
Piney Pt.
Iron Pt.
Bird River Beach
Gunpowder
Oliver Pt.
Harewood
Nottingham
Chase
Graces Quarters
Maxwell Pt.
Hamilton
Overlea
Poplar
Glenmar Manor
ABERDEEN PROVING GROUND
Belmar
Elmwood
Kenwood
Victory Villa
Bengies
Hillbrook
Gardenville
MIDDLE RIVER
MARTIN COMPANY AIRPORT
Bowleys Quarters
Marshy Pt.
Days Pt.
Middlesex
ESSEX
CARROLL ISLAND
Rosedale
Armistead Gardens
Country Ridge
Wilson Pt.
Galloway Cove
Log Pt.
Brier Pt.
Carroll Pt.
Rickett Pt.
BALTIMORE SEWAGE TREATMENT WORKS
Cox Pt.
Hyde Park
Bowley Bar
Highlandtown
Cedar Beach
SUE ISLAND
Booby Bar
Wells Pt.
Colgate
FORT HOLABIRD
Stansbury Pt.
EASTERN AIRPORT
Ballistion Pt.
Witchcoat Pt.
Porter Pt.
Evergreen Park
MILLER ISLAND
Todd Pt.
Hawk Cove
Drum Pt.
Lazaretto Pt.
Point Breeze
Lynch Pt.
Claybank Pt.
Cedar Pt.
HART ISLAND
HARFORD COUNTY
BALTIMORE COUNTY
Edgemere
Cuckold Pt.
CRAIGHILL CHANNEL LIGHTHOUSE RANGE REAR
Wagners Pt.
Fishing Pt.
Sollers Pt.
Lloyd Pt.
SPARROWS POINT
CUTOFF CHANNEL L. H. RANGE REAR
Black Marsh
U.S. QUARANTINE STATION
Leading Pt.
FORT CARROLL LIGHTHOUSE
Hawkins Pt.
BREWERTON CHANNEL RANGE FRONT
FORT HOWARD VETERANS HOSPITAL
North Pt.
CUTOFF CHANNEL L. H. RANGE FRONT
Foremans Corner
CRAIGHILL CHANNEL LIGHTHOUSE RANGE FRONT
CHESAPEAKE BAY
BALTIMORE COUNTY
ANNE ARUNDEL COUNTY
KENT COUNTY
Stony Pt.
Orchard Beach
Riviera Beach
Rock Pt.
FORT SMALLWOOD
Sunset Beach
Bar Harbor
Venice on the Bay
Old Glory Beach
Mt. Pleasant Beach
Fairview
Paradise Beach
SEVENFOOT KNOLL LIGHTHOUSE
TO FORT SMALLWOOD
76°30'
TO BALTIMORE
76°25'
76°20'
370
380
1000
500
4340
4350
4360
39° 25'
39° 20'
39° 15'
39° 10'
e
f
g
h
E
F
G

WELL RECORDS

OFFICE NO._____ FIELD NO. Bal-Bf 10

United States
DEPARTMENT OF THE INTERIOR
Geological Survey
in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

Location_____

WELL RECORD

1. OWNER.....ADDRESS Middle River, Wampler Rd.
2. OWNER'S WELL NO.....DEPTH /35'
3. LOCATION.....SURFACE ELEVATION.....
4. DATE COMPLETED 1943 DRILLER Filer
5. METHOD OF DRILLING Jetting
6. CASING RECORD 2" @ 90'
7. SCREEN RECORD
8. GEOLOGIC FORMATION
9. PUMPING EQUIPMENT
   Type Hand pump Capacity.....gal/min.....
   How driven.....Horse power.....RPM.....
   Depth of pump in well.....Depth of footpiece in well.....
10. STATIC WATER LEVEL 30'.....feet reported, measured.....19...
    above, below.....
    which is.....feet above, below the land surface
11. PUMPING WATER LEVEL.....feet reported, measured.....19...
    above, below.....
    which is.....feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM OF PUMP SUCTION.....feet.
13. YIELD.....gal/min.....19...
14. DRAWDOWN.....feet. SPECIFIC CAPACITY.....gal/foot of drawdown
15. QUALITY OF WATER.....Temp.....
16. USE Household AMOUNT: Average.....gal/d
    Maximum.....ga
    Minimum.....ga
    Average number of hours a day well is in use.....
17. LOG.....Samples.....
18. SOURCE OF DATA Filer, Driller
19. DATA OBTAINED BY R.R.M. Date September 1, 1944
20. REMARKS See field notes

Log:

10' Sand
70' Red clay
35' Sand

OFFICE NO._____ FIELD NO. Bal-Bf 10

United States
DEPARTMENT OF THE INTERIOR
Geological Survey
in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY? MINES AND WATER RESOURCES

Location_____

WELL RECORD

1. OWNER.....ADDRESS Middle River, Wampler Rd.
2. OWNER'S WELL NO.....DEPTH 135
3. LOCATION.....SURFACE ELEVATION.....
4. DATE COMPLETED 1943 DRILLER Eiler
5. METHOD OF DRILLING Jetting
6. CASING RECORD 2" @ 90'
7. SCREEN RECORD
8. GEOLOGIC FORMATION
9. PUMPING EQUIPMENT
   Type Hand pump Capacity.....gal/min.....
   How driven.....Horse power.....RPM.....
   Depth of pump in well.....Depth of footpiece in well.....
10. STATIC WATER LEVEL 30' feet reported, measured.....
    above, below.....
    which is.....feet above, below the land surface
11. PUMPING WATER LEVEL.....feet reported, measured.....
    above, below.....
    which is.....feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM OF PUMP SUCTION.....feet
13. YIELD.....gal/min.....
14. DRAWDOWN.....feet. SPECIFIC CAPACITY.....gal/foot of drawdown
15. QUALITY OF WATER.....Temp.....
16. USE Household AMOUNT: Average.....gal/day
    Maximum.....gal/day
    Minimum.....gal/day
    Average number of hours a day well is in use.....
17. LOG.....Samples.....
18. SOURCE OF DATA Eiler, Driller
19. DATA OBTAINED BY R.R.M. Date September 1, 1944
20. REMARKS See field notes

Log:

10' Sand
70' Red clay
35' Sand

OFFICE NO._____

United States
DEPARTMENT OF THE INTERIOR
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in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

FIELD NO. Bal-Bf 22

Location_____

WELL RECORD

1. OWNER ... Mr. Shiebeck ... ADDRESS ... Wampler Road ...
2. OWNER'S WELL NO. ... DEPTH ... 105 ...
3. LOCATION ... Approximate ... SURFACE ELEVATION ... 60 ...
4. DATE COMPLETED ... 1943 ... DRILLER ... N. Filer ...
5. METHOD OF DRILLING ...
6. CASING RECORD ... 2 or 3 inch ...
7. SCREEN RECORD ...
8. GEOLOGIC FORMATION ...
9. PUMPING EQUIPMENT
   Type ... Capacity ... gal/min ...
   How driven ... Horse power ... RPM ...
   Depth of pump in well ... Depth of footpiece in well ...
10. STATIC WATER LEVEL ... feet reported, measured ... 19...
    above, below ...
    which is ... feet above, below the land surface.
11. PUMPING WATER LEVEL ... feet reported, measured ... 19...
    above, below ...
    which is ... feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM PUMP SUCTION ... feet.
13. YIELD ... gal/min ... 19...
14. DRAWDOWN ... feet. SPECIFIC CAPACITY ... gal/foot of drawdown
15. QUALITY OF WATER ... Temp. ...
16. USE ... Household ... AMOUNT: Average ... gal/day
    ... Maximum ... gal/day
    ... Minimum ... gal/day
    Average number of hours a day well is in use ...
17. LOG. See reverse side ... Samples ...
18. SOURCE OF DATA ... N. Filer ...
19. DATA OBTAINED BY ... R.R.M. ... Date ... 1945 ...
20. REMARKS ...

Log:

0	- 10	Light red clay	10
10	- 20	Fine sand	10
20	- 35	Red clay	15
35	- 36	Sandstone	1
36	- 39	Red clay	3
39	- 40	Sandstone	1
40	- 46	Red clay	6
46	- 47	Sandstone	1
47	- 50	Red clay	3
50	- 51	Sandstone	1
51	- 63	Red clay	11
63	- 64	Sandstone	1
64	- 86	Red clay	22
86	- 87	Sandstone	1
87	- 90	Red clay	3
90	- 91	Sandstone, very hard	1
91	- 95	Yellow clay	4
95	- 96	Sandstone, very hard	1
96	- 102	Red clay	6
102	- 103	Cavity	
103	- 105	Coarse sand	

OFFICE NO._____ FIELD NO. Bal-Pr 7

United States
DEPARTMENT OF THE INTERIOR
Geological Survey
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MARYLAND DEPARTMENT OF GEOLOGY? MINES AND WATER RESOURCES

Location_____

WELL RECORD

1. OWNER.....ADDRESS....Cape May Pt. Back River Neck
2. OWNER'S WELL NO.....DEPTH....76
3. LOCATION.....SURFACE ELEVATION.....
4. DATE COMPLETED....1943....DRILLER....Eiler
5. METHOD OF DRILLING....Jetting
6. CASING RECORD ..2" @ 76 feet
7. SCREEN RECORD
8. GEOLOGIC FORMATION
9. PUMPING EQUIPMENT
   Type Hand pump.....Capacity.....gal/min.
   How driven.....Horse power.....
   Depth of pump in well.....Depth of footpiece in well.....
10. STATIC WATER LEVEL 20' below surface.....feet reported measured.....
    above below
    which is.....feet above, below the land surface.
11. PUMPING WATER LEVEL.....feet reported, measured.....
    above, below.....
    which is.....feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM OF PUMP SUCTION.....
13. YIELD.....gal/min.....
14. DRAWDOWN.....feet. SPECIFIC CAPACITY.....gal/foot of drawdown
15. QUALITY OF WATER.....Temp.....
16. USE...Household..... AMOUNT: Average.....gal/day
    ..... Maximum.....gal/day
    ..... Minimum.....gal/day
    Average number of hours a day well is in use.....
17. LOG.....Samples.....
18. SOURCE OF DATA....Eiler, Driller
19. DATA OBTAINED BY....R.R.M.....Date September 1, 1944
20. REMARKS....See field notes.....Log and data for well 500' away on reverse side

Log:

30' Sand
40' Red clay
8' Sand

Data for well 500' away:

W. L. 15' below surface
Casing 2" - 102'

Log:

15' Sand
86' Red clay
10' Sand

OFFICE NO._____ FIELD NO. Bal. Co. 11

United States
DEPARTMENT OF THE INTERIOR
Geological Survey
in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

Location_____

WELL RECORD

1. OWNER..... ADDRESS Middleborough, Miles Rd.
2. OWNER'S WELL NO..... DEPTH 68
3. LOCATION..... SURFACE ELEVATION.....
4. DATE COMPLETED 1943 DRILLER Eiler
5. METHOD OF DRILLING Jetting
6. CASING RECORD 2"
7. SCREEN RECORD
8. GEOLOGIC FORMATION
9. PUMPING EQUIPMENT
   Type Hand pump Capacity ..... gal/min.
   How driven ..... Horse power ..... RPM
   Depth of pump in well ..... Depth of footpiece in well .....
10. STATIC WATER LEVEL ..... feet reported, measured .....
    above, below .....
    which is ..... feet above, below the land surface.
11. PUMPING WATER LEVEL ..... feet reported, measured .....
    above, below .....
    which is ..... feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM OF PUMP SUCTION .....
13. YIELD ..... gal/min.
14. DRAWDOWN ..... feet. SPECIFIC CAPACITY ..... gal/foot of drawdown
15. QUALITY OF WATER ..... Temp .....
16. USE Household AMOUNT: Average .....
    Maximum .....
    Minimum .....
    Average number of hours a day well is in use .....
17. LOG ..... Samples .....
18. SOURCE OF DATA Eiler, driller
19. DATA OBTAINED BY R.R.M. Date September 1, 1944
20. REMARKS See field notes

Log:

15' Loamy sand
45' Red clay
8' Sand

OFFICE NO._____

United States
DEPARTMENT OF THE INTERIOR
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MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

FIELD NO. Bal-Ff 16

Location_____

WELL RECORD

1. OWNER ...Mrs. Patterson.....ADDRESS.Miles Rd. Middleborough, Md.
2. OWNER'S WELL NO.....DEPTH.....140
3. LOCATION.By Eiler - approximate.....SURFACE ELEVATION....10
4. DATE COMPLETED.....1944.....DRILLER.....Eiler
5. METHOD OF DRILLING.....Jetting
6. CASING RECORD.....2 or 3 inch
7. SCREEN RECORD.....None
8. GEOLOGIC FORMATION
9. PUMPING EQUIPMENT
   Type.....Capacity.....gal/min.....
   How driven.....Horse power.....RPM.....
   Depth of pump in well.....Depth of footpiece in well.....
10. STATIC WATER LEVEL.....feet reported, measured.....19..
    above,below.....
    which is.....feet above, below the land surface.
11. PUMPING WATER LEVEL.....feet reported, measured.....19..
    above, below.....
    which is.....feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM PUMP SUCTION.....feet.
13. YIELD.....gal/min.....19..
14. DRAWDOWN.....feet. SPECIFIC CAPACITY.....gal/foot of drawdown
15. QUALITY OF WATER.....Temp.....
16. USE....Household..... AMOUNT: Average.....gal/day
    ..... Maximum.....gal/day
    ..... Minimum.....gal/day
    Average number of hours a day well is in use.....
17. LOG....See reverse side.....Samples.....at 140.....
18. SOURCE OF DATA.....W. Eiler.....
19. DATA OBTAINED BY.....R.R.M.....Date.....1945.....
20. REMARKS.....Well not visited.....

Log:

0	- 10	Coarse sand
10	- 20	Light red clay
20	- 34	Red clay
34	- 64	Fine sand
64	- 80	Light red clay
80	- 100	Hard gray clay
100	- 130	Loamy clay
130	- 140	Sand, changing to coarse

OFFICE NO._____

United States
DEPARTMENT OF THE INTERIOR
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in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

FIELD NO. Bal-Ff 17

Location_____

WELL RECORD

1. OWNER ..R. Niller.....ADDRESS....Middleborough, Md.....
2. OWNER'S WELL NO.....DEPTH.....200.5.....
3. LOCATION.....By Eiler - approximate.....SURFACE ELEVATION....10.....
4. DATE COMPLETED.....1944.....DRILLER.....W. Eiler.....
5. METHOD OF DRILLING....Jetting.....
6. CASING RECORD.....2 or 3 inch.....
7. SCREEN RECORD.....None.....
8. GEOLOGIC FORMATION.....
9. PUMPING EQUIPMENT
   Type.....Capacity.....gal/min.....
   How driven.....Horse power.....RPM.....
   Depth of pump in well.....Depth of footpiece in well.....
10. STATIC WATER LEVEL.....feet reported, measured.....19..
    above, below.....
    which is.....feet above, below the land surface.
11. PUMPING WATER LEVEL.....feet reported, measured.....19..
    above, below.....
    which is.....feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM PUMP SUCTION.....feet.
13. YIELD.....gal/min.....19..
14. DRAWDOWN.....feet. SPECIFIC CAPACITY.....gal/foot of drawdown
15. QUALITY OF WATER.....Temp.....
16. USE.....Household..... AMOUNT: Average.....gal/day
    ..... Maximum.....gal/day
    ..... Minimum.....gal/day
    Average number of hours a day well is in use.....
17. LOG..See reverse side.....Samples.....at 200 feet.....
18. SOURCE OF DATA.....Eiler.....
19. DATA OBTAINED BY.....R.R.M.....Date.....1945.....
20. REMARKS....Well not visited.....

Log:

0 - 10	Sand
15 - 25	Light red clay
25 - 40	Red clay
40 - 42	White clay
42 - 58	Fine sand
58 - 60	Pink clay
60 - 80	Fine sand
80 - 82	Yellow clay
82 - 94	Fine sand
94 - 95	Pink clay
95 -105	Fine sand
105 -108	Light red clay
108 -119	Fine sand
119 -120	Light clay
120 -129	Fine sand
129 -130.5	Cavity
130.5 - 133.5	Pink clay
133.5 - 143.5	Fine sand
143.5 - 145.5	Yellow clay
145.5 - 153.5	Fine sand
153.5 - 156.5	Light red clay
156.5 - 160.5	Fine sand
160.5 - 170.5	Fine sand
170.5 - 172.5	White clay
172.5 - 180.5	Fine sand
180.5 - 183.5	White clay
183.5 - 190.5	Fine sand
190.5 - 194.5	White sand
194.5 - 199.5	Fine sand
199.5 - 200.5	Gravel

OFFICE NO._____

United States
DEPARTMENT OF THE INTERIOR
Geological Survey
in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

FIELD NO. Bal-Ff 18

Location_____

WELL RECORD

1. OWNER Dr. Helldorfer ADDRESS Middleborough, Md.
2. OWNER'S WELL NO. DEPTH 176
3. LOCATION Piney Pt. SURFACE ELEVATION 10
4. DATE COMPLETED 1943 DRILLER Eiler
5. METHOD OF DRILLING Jetting
6. CASING RECORD 2 inch
7. SCREEN RECORD None
8. GEOLOGIC FORMATION
9. PUMPING EQUIPMENT
   Type Capacity gal/min
   How driven Horse power RPM
   Depth of pump in well Depth of footpiece in well
10. STATIC WATER LEVEL feet reported, measured 19..
    above, below
    which is feet above, below the land surface.
11. PUMPING WATER LEVEL feet reported, measured 19..
    above, below
    which is feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM PUMP SUCTION feet.
13. YIELD gal/min 19..
14. DRAWDOWN feet. SPECIFIC CAPACITY gal/foot of drawdown
15. QUALITY OF WATER Temp
16. USE Household AMOUNT: Average gal/day
    Maximum gal/day
    Minimum gal/day
    Average number of hours a day well is in use
17. LOG See reverse side Samples at 176
18. SOURCE OF DATA Eiler
19. DATA OBTAINED BY R.R.M. Date 1945
20. REMARKS Well visited during drilling operations

Log:

0	10	Coarse sand
10	16	Gray clay
16	17	Sandstone
17	21	Gray clay mixed with charcoal
21	33	Gray clay
33	35	Red clay
35	40	White clay
40	41	Fine sand
41	45	Brown clay
45	50	Orange clay
50	70	Fine sand
70	77	Light red clay
77	90	Fine sand
90	95	Light red clay
95	105	Fine sand
105	107	Red clay
107	151	Fine sand
151	152	Sandstone
152	154	Red clay
154	164	Light red clay
164	165	Gravel
165	170	Fine sand
170	171	Light clay
171	176	Coarse sand

OFFICE NO._____

United States
DEPARTMENT OF THE INTERIOR
Geological Survey
in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

FIELD NO. Bal-Ff 20

Location_____

WELL RECORD

1. OWNER ....Mrs. Meyers.....ADDRESS....Wilson Point.....
2. OWNER'S WELL NO.....DEPTH.....224.....
3. LOCATION..By Eiler - Approximate.....SURFACE ELEVATION.....10.....
4. DATE COMPLETED.....1944.....DRILLER.....W. Eiler.....
5. METHOD OF DRILLING.....Jetting.....
6. CASING RECORD.....2 or 3 inch.....
7. SCREEN RECORD.....None.....
8. GEOLOGIC FORMATION.....
9. PUMPING EQUIPMENT
   Type.....Capacity.....gal/min.....
   How driven.....Horse power.....RPM.....
   Depth of pump in well.....Depth of footpiece in well.....
10. STATIC WATER LEVEL.....feet reported, measured.....19..
    above, below.....
    which is.....feet above, below the land surface.
11. PUMPING WATER LEVEL.....feet reported, measured.....19..
    above, below.....
    which is.....feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM PUMP SUCTION.....feet.
13. YIELD.....gal/min.....19..
14. DRAWDOWN.....feet. SPECIFIC CAPACITY.....gal/foot of drawdown
15. QUALITY OF WATER.....Temp.....
16. USE..Household..... AMOUNT: Average.....gal/day
    ..... Maximum.....gal/day
    ..... Minimum.....gal/day
    Average number of hours a day well is in use.....
17. LOG.....See reverse side.....Samples.....at 224.....
18. SOURCE OF DATA...W. Eiler.....
19. DATA OBTAINED BY....R.R.M.....Date.....1945.....
20. REMARKS.....Well not visited.....

Log:

0	15	Red clay
15	22	Coarse sand
22	58	Red clay
58	61	Sandstone, First foot very hard
61	64	Fine sand
64	70	Red clay
70	74	Coarse sand
74	80	Red clay
80	84	Fine sand
84	94	Red clay
94	100	Fine sand
100	101	Sandstone, very hard
101	220	Red clay
220	224	Sandstone, first foot very hard Coarse sand

OFFICE NO._____

United States
DEPARTMENT OF THE INTERIOR
Geological Survey
in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

FIELD NO. Bal-Ff 25

Location_____

WELL RECORD

1. OWNER .....ADDRESS....Cape May Rd. - Back River Neck
2. OWNER'S WELL NO.....DEPTH.....102.....
3. LOCATION.....SURFACE ELEVATION....15.±.....
4. DATE COMPLETED...1943.....DRILLER.....Eiler.....
5. METHOD OF DRILLING.....
.....
6. CASING RECORD.....2 inch.....
.....
.....
7. SCREEN RECORD.....
.....
.....
8. GEOLOGIC FORMATION.....
9. PUMPING EQUIPMENT
   Type.....Capacity.....gal/min.....
   How driven.....Horse power.....RPM.....
   Depth of pump in well.....Depth of footpiece in well.....
10. STATIC WATER LEVEL.....18.....feet reported, ~~measured~~.....19..
   ~~above~~, below.....Land surface.....
   which is.....feet above, below the land surface.
11. PUMPING WATER LEVEL.....feet reported, measured.....19..
   above, below.....
   which is.....feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM PUMP SUCTION.....feet.
13. YIELD.....gal/min.....19..
14. DRAWDOWN.....feet. SPECIFIC CAPACITY.....gal/foot of drawdown
15. QUALITY OF WATER.....Temp.....
.....
.....
16. USE...Household..... AMOUNT: Average.....gal/day
.....Maximum.....gal/day
.....Minimum.....gal/day
   Average number of hours a day well is in use.....
17. LOG..See reverse side.....Samples.....
18. SOURCE OF DATA....W. Eiler.....
19. DATA OBTAINED BY.....R.R.M.....Date....9/1/44.....
20. REMARKS.....

Log:

0 - 15	Sand
15 -100	Red clay
100 -110	Sand

QUADRANGLE Middle River 7½ FIELD NO. Bal-Ff 36

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY P. 12,928
in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

WELL RECORD

1. OWNER Mr. John Polek ADDRESS Middle River, Md.
2. OWNER'S WELL NO. DEPTH 60 ft.
3. LOCATION SURFACE ELEVATION 3 ft.
4. DATE COMPLETED 7/22/53 DRILLER H. H. Bunker, Jr.
5. METHOD OF DRILLING rotary
6. CASING RECORD 4" galv. pipe to 55 ft.
7. SCREEN RECORD 2" bronze screen 55 - 60 ft.
8. GEOLOGIC FORMATION
9. PUMPING EQUIPMENT
   Type jet Capacity 5 gal/min rept.
   How driven elec. Horse power R.P.M.
   Depth of pump in well 15 ft Depth of footpiece in well
10. STATIC WATER LEVEL 1 feet reported, measured July 1953
    above, below land surface
    which is feet above, below the land surface.
11. PUMPING WATER LEVEL 8 feet reported, measured July 1953
    above, below land surface
    which is feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM OF PUMP SUCTION ft.
13. YIELD rept. 60 gal/min on 1 hour test July 19 53
14. DRAWDOWN 7 ft. SPECIFIC CAPACITY 9± gal/min/foot of drawdown
15. QUALITY OF WATER See partial analysis Sample Yes
    Fe = 0.25 ppm Temp.
    pH = 6.4
16. USE Domestic AMOUNT Average gal/day
    Maximum gal/day
    Minimum gal/day
    Average number of hours a day well is in use
17. LOG (see over) Samples No
18. SOURCE OF DATA Compl. rept. and field observation
19. DATA OBTAINED BY E.O. DATE 5-7-54
20. REMARKS Well buried under lawn near main building in boatyard.

WELL LOG

Sand	0 - 3
Pink and white clay	3 - 8
Sand	8 - 10
White clay	10 - 15
Paint rock	15 - 17
Red clay	17 - 19
Gray clay	19 - 25
Red clay	25 - 30
Sand and clay	30 - 45
Sand	45 - 60

CHEMICAL ANALYSIS

SKETCH MAP

QUADRANGLE Middle River 7½ FIELD NO. Bal-Ff 39

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY P. 3940
in cooperation with
MARYLAND DEPARTMENT OF GEOLOGY, MINES AND WATER RESOURCES

WELL RECORD

1. OWNER Emil Horn ADDRESS
2. OWNER'S WELL NO. DEPTH 88 ft.
3. LOCATION Box 68C Wilson Pt. Rd. SURFACE ELEVATION 10± (E).
4. DATE COMPLETED May 1949 DRILLER MarylandDrilling Co.
5. METHOD OF DRILLING cable tool
6. CASING RECORD
   6" to 80 ft.
7. SCREEN RECORD 4 ft. of 6"(?) screen 84 to 88 ft.
   4 ft. of liner tube 80 to 84 ft.
8. GEOLOGIC FORMATION Patapsco fm.
9. PUMPING EQUIPMENT
   Type jet Capacity gal/min
   How driven electric Horse power R.P.M.
   Depth of pump in well Depth of footpiece in well
10. STATIC WATER LEVEL 3 feet reported, measured May 19 49
    above, below land surface
    which is feet above, below the land surface.
11. PUMPING WATER LEVEL feet reported, measured 19
    above, below
    which is feet above, below the land surface.
12. DISTANCE BETWEEN PUMPING LEVEL AND BOTTOM OF PUMP SUCTION ft.
13. YIELD 15 gal/min reported on bailer test May 1949
14. DRAWDOWN ft. SPECIFIC CAPACITY gal/min/foot of drawdown
15. QUALITY OF WATER See partial analysis Sample yes
    Temp.
16. USE domestic AMOUNT Average gal/day
    Maximum gal/day
    Minimum gal/day
    Average number of hours a day well is in use
17. LOG see over Samples No
18. SOURCE OF DATA Completion report and field observation
19. DATA OBTAINED BY E.O. DATE May 1954
20. REMARKS Located in pit at side of frame house

WELL LOG

Sandy earth	0 -	10
Gray clay	10 -	17
Sand	17 -	24
Red clay	24 -	50
Sand - some water	50 -	62
Red clay	62 -	69
Sand - water	69 -	88

CHEMICAL ANALYSIS

SKETCH MAP

WELL LISTING

MARYLAND GEOLOGICAL SURVEY

WATER RESOURCES BASIC DATA REPORT NO. 1

Kenneth N. Weaver, *Director*

RECORDS OF WELLS AND SPRINGS IN BALTIMORE COUNTY, MARYLAND

by

Charles P. Laughlin

GEOLOGICAL SURVEY
UNITED STATES DEPARTMENT OF THE INTERIOR

in cooperation with the

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS

Baltimore, Maryland

1966

Maps Showing Well Locations (Continued)

RECORDS OF WELLS AND SPRINGS IN BALTIMORE COUNTY, MARYLAND

by Charles P. Laughlin

Introduction

Baltimore County is in north-central Maryland. It is bounded on the north by the Pennsylvania border, on the west by Carroll and Howard Counties, on the south by Baltimore City and the Chesapeake Bay and on the east by Harford County. About 80 percent of the area of Baltimore County lies in the Piedmont physiographic province. The remaining 20 percent of the area is in the Coastal Plain province. Baltimore City is not a political subdivision of Baltimore County, but is a political unit equivalent to a county. The county has a land area of 610 square miles, of which approximately 65 percent is used for agricultural purposes. The population of the county was 492,428 in 1960, most of which is concentrated in the urbanized areas adjacent to Baltimore City. Approximately 20 percent of the industry of Maryland is located in Baltimore County, and most of that is in the Coastal Plain segment.

This report presents well and spring records collected by the U.S. Geological Survey in cooperation with the Baltimore County Department of Public Works, and the Maryland Geological Survey. It makes available basic ground-water data that will be useful in the planning of water-resources development. The report is the result of an inventory of 5,265 wells and 48 springs. The fieldwork was done chiefly during 1952–54 and 1964-65. The basic source of the well information is the permits and completion reports furnished by the drillers to the Maryland Geological Survey during the period June 1945 to May 1964. Since 1964 well permits have been issued by the Maryland Department of Water Resources and a few wells included are based on records from this agency.

The earliest discussion of water resources of the area is in a report on the water resources of Maryland, Delaware, and the District of Columbia, by Clark, Mathews and Berry (1918, p. 413-420). The ground-water resources of the Coastal Plain part of the county were evaluated by R.R. Bennett and R. R. Meyer, and the results of that investigation were published as Bulletin 4 of the Maryland Department of Geology, Mines and Water Resources (1952, 573 p.).

The water resources of the County were studied extensively by R. J. Dingman, H. F. Ferguson and R.O.R. Martin, and the results of that study appear as Bulletin 17 of the Maryland Department of Geology, Mines and Water Resources (1956, 233 p.). The water resources of the Baltimore metropolitan area are described in U.S. Geological Survey publication, Water-Supply Paper 1499-F by E. G. Otton, R.O.R. Martin and W. H. Durum (1964, 105 p.).

Acknowledgments

The cooperation of the well drillers and well owners in supplying information is gratefully acknowledged. Thanks are due to personnel of the State and County agencies who assisted in providing the well-completion reports and the various plates and maps used. The support of Alfred B. Kaltenbach, Director of the Baltimore County Department of Public Works is acknowledged.

Special thanks are due to Mrs. Bettye Smith for the typing of the many pages of well tables and to Miss Catherine Manly for the able job of drafting.

Well-Numbering and Location System

The wells and springs inventoried are numbered according to a coordinate system in which the county is divided into 5-minute quadrangles of latitude and longitude designated from north to south in uppercase letters and from west to east in lowercase letters. The quadrangle designation is preceded by the abbreviation of the county name. To assist in locating a particular well, each 5-minute quadrangle is divided into four quarters designated NW, SW, SE, and NE. Thus, well Bal-Bc 25 NW is the twenty fifth well inventoried in quadrangle Bc and lies in the northwest quarter of the quadrangle.

Because of the large number of wells inventoried, a single map of the entire area could not be published on a usable scale that would show accurately the location of the wells. Therefore, a separate map was prepared to show wells and springs in each 5-minute quadrangle. In some cases, particularly in housing developments, the wells are so crowded they could not be mapped clearly on the 5-minute quandrangle. Therefore, wells in these developments are shown on a plat which is named on the 5-minute quadrangle. In cases where a development lies in more than one

5-minute quadrangle, the plat is designated as in the quadrangle containing the majority of wells in the development.

The source of the 5-minute quadrangle maps was the Baltimore County topographic map of the Maryland Geological Survey (original scale 1:62,500).

Records of inventoried wells are shown in table 3, which includes dry holes, test holes and water wells no longer in use. An exception to this is the Gf quadrangle, where more than 200 wells are known to have been drilled at the Bethlehem Steel Company plant at Sparrows Point. However, about 160 of these wells are now (1965) filled and abandoned, and the well location map of Sparrows Point shows only those wells known to be in existence in 1965. The locations of most of the filled and abandoned wells are shown in Maryland Department of Geology, Mines and Water Resources Bulletin 4 (1952, plate 4). The records of inventoried springs are in table 4. It is likely that other springs exist in the county of which no record is availahle.

General Geology and Hydrology

Baltimore County is underlain by crystalline rocks of Precambrian or early Paleozoic age, which are chiefly schist, gneiss and gabbro, with smaller amounts of quartzite, marble, granite, serpentine and dikelike intrusives of pegmatite and diabase. A mantle of disintegrated and decomposed rock overlies the fresh rock; in places this material is more than 100 feet thick, although average thickness is on the order of 20 to 30 feet.

Water commonly occurs in the crystalline rocks in joints, crevices, and related fractures. In the overlying mantle of weathered rock material water occurs in the pore spaces between the particles. Most of the ground water circulates in the more permeable mantle rock and in fractures in the upper part of the undecomposed rock. The upper few hundred feet of earth material thus constitutes the ground-water reservoir.

In the southeastern part of the county the crystalline rocks lie beneath Coastal Plain sediments which include the Patuxent Formation, the Arundel Clay, and the Patapsco Formation. These layered sediments dip to the southeast at a few tens of feet per mile forming a wedgelike mass which attains its maximum thickness of about 800 feet near Sparrows Point. Small areas near the southeast edge of the Piedmont are covered by strata of Cretaceous or Quaternary age which generally occur as isolated remnants capping hills.

In places thin deposits of gravel, sand and clay of Quaternary age cap hills, form valley-side terrace deposits, or occur as alluvium in the bottoms of valleys.

Water in the unconsolidated sedimentary deposits occurs in the pore spaces of the sand and gravel. Circulation of ground water is greatest in the permeable beds of sand and gravel, and least in the relatively impermeable beds of clay and sandy clay. Large volumes of ground water are stored in the sand and gravel aquifers, and these are tapped by many wells in the southeast part of the county.

The boundary between the Coastal Plain and Piedmont physiographic provinces is called the Fall Zone, which roughly coincides with the boundary between the crystalline rocks and the unconsolidated sediments.

Figure 1 is a generalized geologic map adapted from a similar map compiled by Dingman and Ferguson (1956, Pl. 3). The determination of the geologic units yielding water to wells and springs as shown on table 3 was made from a geologic map of Baltimore County published at a scale of 1:62,500 (1925). This map provides the basic knowledge of the geology of the area. Tables 1 and 2 describe the geologic units, their lithology and their water-bearing properties.

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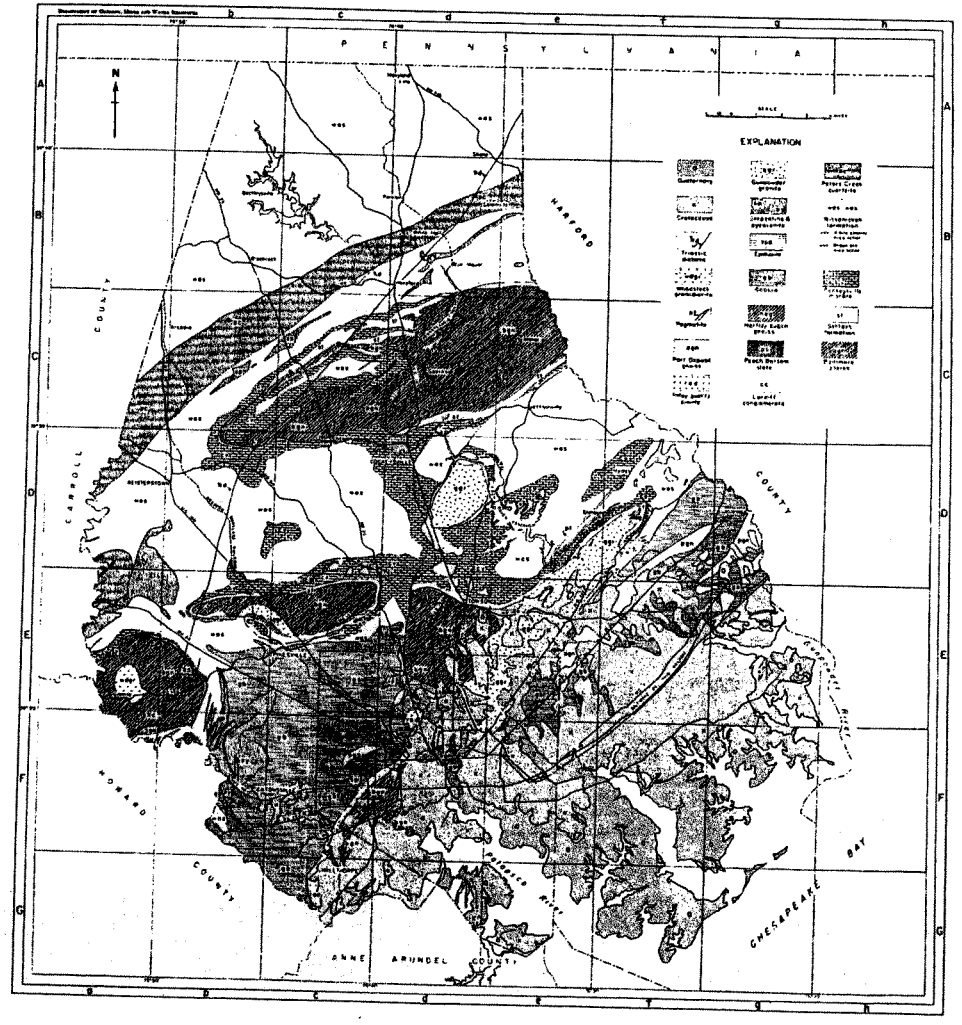


Figure 1—Generalized Geologic Map of Baltimore County

Table 1. Crystalline rocks in Baltimore County and their water-bearing properties[1]

Rock type	Geologic unit[2]	Map symbol	Lithology	Water-bearing properties
Schist	Wissahickon Formation, albite facies	was	Banded quartz-muscovite schist and phyllite with various mineralogic constituents. Relatively soft and easy to drill. Contains quartz layers up to 3 feet thick in places.	Domestic supplies available in most areas. Large supplies available only in a few places. Yields of wells are lowest on ridges, highest in valleys.
	Wissahickon Formation, oligoclase facies	wos		
Gneissic and Granitic rocks (including pegmatites)	Baltimore Gneiss	bgn	Gneissic rocks are banded or foliated, highly crystalline and contain much biotite. Granitic rocks are massive, highly siliceous, and gneissic. Drill-properties variable; siliceous zones drill hard.	Domestic well supplies available almost everywhere.
	Gunpowder Granite	ggr		
	Port Deposit Gneiss	pgn		
	Woodstock Granodiorite	wdgr		
	Hartley Augen Gneiss	hag		
	Relay Quartz Diorite of Knopf and Jonas (1929)	rgd		
Gabbro	Gabbro	gb	Gabbroic rocks are dark, massive and hard. Unweathered gabbro difficult to drill. Greenish, soft and in places highly fractured.	Domestic supplies available almost everywhere. Weathered zone thin and clayey. Well yields may decline in summer.
Serpentine	Serpentine	sp		
Marble	Cockeysville Marble	cv	Coarsely crystalline white marble and limestone; dolomitic in places. Weathers to more than 50 feet locally. Relatively soft and easy to drill.	Probably the best crystalline rock aquifer. Moderately large supplies available in some areas.
Quartzite	Peters Creek Quartzite	pc	Coarse-grained quartzite with associated mica schist and gneiss. Siliceous zones hard to drill.	Domestic supplies available almost everywhere. Larger supplies available in some areas.
	Setters Formation	st		

[1] Adapted from p. 8–9, Dingman and Ferguson, 1956.
[2] Not in order of superposition.

Table 2. Sedimentary rocks in Baltimore County and their water-bearing properties[1]

System	Series	Group	Geologic unit	Map symbol	Physical character	Water-bearing properties
Quaternary	Recent and Pleistocene		Lowland deposits	Q	Gray clay, sand and gravel.	May yield large quantities to wells where recharge can be induced from nearby streams.
			Upland deposits		Clay, sand and gravel.	Not an important aquifer because of limited areal extent.
Cretaceous	Upper Cretaceous	Potomac	Patapsco Formation		Lenticular beds of sand, variegated clay and gravel.	Yields large supplies of water to drilled wells in industrial area.
			Arundel Clay	K	Gray to red clay with some indurated layers of ironstone.	Not an important water-bearing formation.
	Lower Cretaceous		Patuxent Formation		Lenticular beds of sand, silt and clay.	Largest producer of water in Baltimore County. Wells yield up to 1,000 gpm in industrial area.

[1] Adapted from p. 7, Dingman and Ferguson, 1956.

Abbreviations Used in Tables 3 and 4

Pumping equipment

A = Airlift
B = Bucket
C = Cylinder
J = Jet
NI = (Not installed)
Sb = Submersible
Sc = Suction
T = Turbine

Use of water

C = Commercial (stores, gas stations, restaurants, etc.)
D = Domestic (homes)
Ind = Industrial (manufacturing, etc.)
Ins = Institutional (schools, churches, convents, etc.)
Irr = Irrigation
M = Military
N = None
PS = Public supply
S = Stock

Type of power

E = Electricity
G = Gasoline
H = Hand

Example: Sb,E (submersible, electric)

Water level or depth

^{m} = Measured (depth, altitude, water level)

Example: 32.65^{m}

Note: Altitudes of the wells were estimated from U.S. Geological Survey 7½-minute topographic quadrangles, except where a higher degree of accuracy is indicated.

Use of Maps with Tables

Well-location maps follow the well and spring tables and are arranged by 5-minute quadrangles in alphabetical order; the development maps follow quadrangles in which they are located.

Table 3. Records of Wells in Baltimore County—Continued

Well number Bal-	State permit number	Owner or name	Driller	Date completed	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Length of casing (feet)
Ef 1 SW	-	Baltimore Brick Co.	——	1900	90	Drilled	87	6	-
Ef 2 SW	-	do.	——	-	90	do.	90	6	
Ef 3 SW	-	do.	——	-	90	do.	-	-	-
Ef 4 SW	-	—— Kruse	G. E. Harr Sons	1944	125	do.	123	6	123
Ef 5 SW	-	Joseph Foreacre	do.	1944	125	do.	138	6	138
Ef 6 SW	-	do.	——	-	130	Dug	12	-	-
Ef 7 SW	-	Louis Madl	——	-	105	do.	91.4[m]	48	-
Ef 8 SW	-	——	G. E. Harr Sons	1944	105	Drilled	115	6	115
Ef 9 NE	-	——	W. H. Eiler	1943	120	do.	134	2	-
Ef 10 SE	-	——	do.	1943	60	do.	135	2	90
Ef 11 SE	-	H. T. Campbell & Sons	G. E. Harr Sons	1944	70	do.	199	6	112
Ef 12 SW	-	Joseph J. Hofmeister	do.	1944	140	do.	128	6	128
Ef 13 SE	-	H. T. Campbell & Sons	——	1942	20	do.	385	6	-
Ef 14 SW	-	John H. Kopleman	—— Hoshall	1921	40	do.	227	6	-
Ef 15 SW	-	——	——	1904	80	do.	52	6	-
Ef 16 SW	-	——	——	-	100	Dug	7.5[m]	36	-
Ef 17 SW	-	——	——	-	100	do.	36.5[m]	36	-
Ef 18 SW	-	John R. Dodson	——	-	120	Dug & Drilled	92	-	92
Ef 19 SE	-	United Clay Mines Corp.	——	1933	100	Drilled	66	6	-
Ef 20 SE	-	H. T. Campbell & Sons	G. E. Harr Sons	1944	80	do.	492	6	139.5
Ef 21 SE	-	do.	——	-	80	do.	400(?)	-	-
Ef 22 SE	-	—— Shiebeck	W. H. Eiler	1943	60	do.	105	3	-
Ef 23 SE	21	C. H. Scheeler	do.	1945	85	do.	59	2	-
Ef 24 NE	7681	Herbert LaBudd	G. E. Harr Sons	1951	180	do.	210	6	-
Ef 25 NW	5136	H. V. Scheide	Maryland Drilling Co.	1949	240	do.	155	6	67
Ef 26 NE	10999	A. Reichert	Werneke Bros.	1952	250	do.	62	6	50
Ef 27 NE	-	do.	——	1927	250	do.	40	36	-
Ef 28 NW	1837	Nicholas Regert	Maryland Drilling Co.	1947	280	do.	83	6	38
Ef 29 NE	4678	F. M. Gambrill	G. E. Harr Sons	1949	240	do.	75	6	23
Ef 30 NE	8177	William E. Bauscher	Werneke Bros.	1951	100	do.	160	6	100
Ef 31 NW	7266	William Gross	G. E. Harr Sons	1951	160	do.	255	6	152
Ef 32 NW	7049	Baltimore Gas & Electric Co.	——	1950	320	do.	196	6	-
Ef 33 NW	10266	Harry Bickford	Howard Dillon	1952	300	do.	76	6	45
Ef 34 NE	3582	Little Chef Restaurant	Maryland Drilling Co.	1948	20	do.	122	6	76
Ef 35 NE	3660	Thomas Digregorio	do.	1949	150	do.	53	6	46
Ef 36 NW	1904	—— Woods	do.	1947	240	do.	80	6	57
Ef 37 NW	-	Herbert Kline	——	-	290	Dug	10	48	-

Well number Bal-	Water-bearing formation or unit	Water level (feet below land surface) Static	Pumping	Date	Pumping equipment	Yield (gpm)	Date	Length of test (hours)	Specific capacity (gpm/ft)	Use of water	Remarks
Ef 1 SW	Kpx	-	-	-	C,E	50	1944	-	-	Ind	
Ef 2 SW	do.	31.30[m]	-	4/25/44	N	-	4/25/44	-	-	N	
Ef 3 SW	-	-	-	-	N	-	-	-	-	N	
Ef 4 SW	Kpx	-	-	-	-,E	10	8/-/44	-	-	D	
Ef 5 SW	do.	106	-	8/-/44	-,E	15	8/-/44	-	-	D	
Ef 6 SW	Kpm	-	-	-	-,E	-	-	-	-	D	Dry in 1943-44.
Ef 7 SW	pKx	90.8[m]	-	8/23/44	C,E	-	-	-	-	D	
Ef 8 SW	do.	80	-	8/31/44	-,E	-	-	-	-	D	
Ef 9 NE	do.	-	-	-	-,E	-	-	-	-	N	
Ef 10 SE	Kpx(?)	30	-	1943	C,E	-	-	-	-	D	
Ef 11 SE	gb	-	-	-	N1	1.5	9/-/44	-	-	D	
Ef 12 SW	Kpx	99.5	-	9/-/44	-,E	-	-	-	-	D	
Ef 13 SE	gb	-	-	-	C,E	-	-	-	-	Ind	
Ef 14 SW	Kpx	-	-	-	-	15	1921	-	-	-	
Ef 15 SW	-	52	-	1904	C,E	-	-	-	-	D	
Ef 16 SW	Kpx	7.13[m]	-	11/18/44	N	-	-	-	-	N	Observation well.
Ef 17 SW	do.	36.46[m]	-	11/18/44	N	-	-	-	-	N	
Ef 18 SW	do.	81	-	11/18/44	-	-	-	-	-	D	
Ef 19 SE	do.	60.05[m]	-	11/18/44	N	-	-	-	-	N	Observation well.
Ef 20 SE	gb	37.18[m]	-	11/1/44	-	24	10/25/44	-	-	D,F	
Ef 21 SE	do.	-	-	-	-	4	1944	-	-	D	
Ef 22 SE	Kpm	-	-	-	-	-	-	-	-	D	
Ef 23 SE	do.	-	-	-	-	-	-	-	-	D	
Ef 24 NE	gb	60	-	4/20/51	C,E	.5	4/20/51	-	-	D	
Ef 25 NW	do.	50	-	12/-/49	C,E	2.5	12/-/49	-	-	D	
Ef 26 NE	do.	30	50	9/18/52	J,E	1	9/18/52	1	0.05	D	
Ef 27 NE	do.	27.34[m]	-	2/25/53	C,E	-	-	-	-	S	Reported contaminated.
Ef 28 NW	do.	35	-	4/12/47	C,E	-	-	-	-	D	
Ef 29 NE	do.	37	60	11/1/49	C,E	.5	11/1/49	2	.02	D	
Ef 30 NE	do.	60	130	7/7/51	C,E	1	7/7/51	2	.01	D	
Ef 31 NW	do.	50	200	2/3/51	C,E	.5	2/3/51	3	.00	D	
Ef 32 NW	pgn	3	120	11/25/50	J,E	4	11/25/50	12	.03	C	
Ef 33 NW	Kpx	5	-	5/15/52	J,E	-	-	-	-	D	
Ef 34 NE	gb	8	-	2/-/48	J,E	4	2/-/48	-	-	C	
Ef 35 NE	do.	36	-	4/-/49	J,E	-	-	-	-	D	
Ef 36 NW	pgn	14	-	9/30/47	J,E	-	-	-	-	D	9004 Hines Road.
Ef 37 NW	Kpx	-	-	-	Sc,E	-	-	-	-	D	

✓ = wells in survey area

Table 3. Records of Wells in Baltimore County—Continued

Well number Bal-	State permit number	Owner or name	Driller	Date completed	Altitude (feet)	Type of well	Depth of well (feet)	Diameter of well (inches)	Length of casing (feet)
Ff 1 NW	-	City of Baltimore Sewage Disposal Plant	— Hoshall	1909	20	Drilled	156	6	-
Ff 2 SW	-	Richard Scott	—	-	20	Dug	14	48	-
Ff 3 SW	-	— Diehl	—	1900	25	Drilled	65	8	-
Ff 4 SW	-	do.	—	1875	25	Dug	25	-	-
Ff 5 SW	-	George G. Stratman	— Hoshall	1932	25	Drilled	28	-	-
Ff 6 SW	-	do.	—	-	25	do.	180	6	-
Ff 7 NE	-	—	— Eiler	1943	10	do.	76	2	-
Ff 8 SE	-	—	do.	1943	20	do.	57	2	-
Ff 9 SE	-	— Thomas	do.	1943	10	do.	90	2	-
Ff 10 SW	-	Joe Mariettes Farm	do.	1943	20	do.	51	2	-
Ff 11 NE	-	—	do.	1943	20	do.	68	2	-
Ff 12 SW	-	H. B. Stengel	—	-	20	do.	100	-	-
Ff 13 NW	-	Hollywood Park Inn	— Newkirk	1911	6	do.	133	-	-
Ff 14 NW	-	—	—	-	85	Dug	10	36	-
Ff 15 SE	-	— Thomas	G. E. Harr	1944	8	Drilled	216	6	216
Ff 16 NE	-	Mrs. Patterson	— Eiler	1944	10	do.	140	-	-
Ff 17 NE	-	R. Miller	do.	1944	10	do.	200	-	-
Ff 18 NE	-	Dr. Helldorfer	do.	1943	10	do.	176	2	-
Ff 19 SE	-	Evergreen Park	do.	1944	10	do.	40	-	-
Ff 20 NE	-	Mrs. Meyers	do.	1944	10	do.	224	-	-
Ff 21 SE	-	Mr. Yeatmen	do.	1944	10	do.	90	-	-
Ff 22 SW	-	Roy Zang	do.	1944	10	do.	67	-	-
Ff 23 SW	-	Mr. Smith	do.	1944	10	do.	73	-	-
Ff 24 SW	-	Battle Park	Shannahan Artesian Well Co.	1944	10-20	do.	232	6	-
Ff 25 NE	-	—	— Eiler	1924	10	do.	102	2	-
Ff 26 SW	-	Baltimore Holding Co.	— Dietz	1943	15	do.	215	6	-
Ff 27 SW	-	do.	do.	1926	15	do.	215	6	-
Ff 28 SW	-	I. J. Bolton Co.	—	1927	10	do.	91	6	-
Ff 29 SW	-	do.	—	1939	10	do.	90	6	-
Ff 30 NW	-	Essex School	—	1937	10	do.	-	-	-
Ff 31 NW	-	do.	—	1916	15	do.	135	-	-
Ff 32 NW	-	do.	—	1922	15	do.	-	-	-
Ff 33 NE	-	W. H. Eiler	— Eiler	-	15	do.	100	-	-
Ff 34 SE	-	Board of Education	—	1943	18	do.	341	8-6	-
Ff 35 NW	-	Carl Caplan	Ralph Ault	1943	30	do.	64	6	49
Ff 36 NE	12928	John Polek	H. H. Burker	1953	20	do.	60	4	55
Ff 37 NW	4440	William Diesel	Maryland Drilling Co.	1953	3	do.	64	6	59
Ff 38 NW	4990	Carlo Perseghin	do.	1949	20	do.	144	6	137
Ff 39 NE	3940	Emil Horn	do.	-	30	do.	88	6	80
				1949	10				

Well number Bal-	Water-bearing formation or unit	Water level (feet below land surface) Static	Pumping	Date	Pumping equipment	Yield (gpm)	Date	Length of test (hours)	Specific capacity (gpm/ft)	Use of water	Remarks
Ff 1 NW	Kpx	43.44	-	3/1/45	-	14	-	-	-	N	
Ff 2 SW	Qt	10	-	1943	-	-	-	-	-	D	
Ff 3 SW	Kpx	24	-	-	-	-	-	-	-	D	
Ff 4 SW	Qt	20	-	-	H	-	-	-	-	D	
Ff 5 SW	do.	-	-	-	-	-	-	-	-	N	
Ff 6 SW	Kpe	-	-	-	-	-	-	-	-	-	
Ff 7 NE	do.	20	-	-	H	-	-	-	-	D	
Ff 8 SE	do.	12	-	-	H	-	-	-	-	D	
Ff 9 SE	do.	11	-	-	H	-	-	-	-	D	
Ff 10 SW	do.	12	-	-	H	-	-	-	-	D	
Ff 11 NE	do.	-	-	-	H	-	-	-	-	D	
Ff 12 SW	do.	-	-	-	N	-	-	-	-	D	
Ff 13 NW	Kpx	10	-	-	N	-	-	-	-	N	
Ff 14 NW	Kpe	4	-	11/18/44	-	60	-	-	-	N	
Ff 15 SE	Kpx	22.43[m]	-	11/15/44	-	10-	-	-	-	D	
Ff 16 NE	-	-	-	-	-	15	-	-	-	D	
Ff 17 NE	Kpx	-	-	-	-	-	-	-	-	D	
Ff 18 NE	do.	-	-	-	-	-	-	-	-	D	
Ff 19 SE	Kpe	-	-	-	-	-	-	-	-	D	
Ff 20 NE	Kpx	-	-	-	-	-	-	-	-	D	
Ff 21 SE	Qt	-	-	-	-	-	-	-	-	D	
Ff 22 SW	Kpe	-	-	-	-	-	-	-	-	D	
Ff 23 SW	do.	-	-	-	-	-	-	-	-	D	
Ff 24 SW	Kpx	-	-	-	-	90	-	-	-	N	
Ff 25 NE	Kpe	18	-	1943	-	-	-	-	-	D	
Ff 26 SW	Kpx	60	-	1945	-	-	-	-	-	PS	Screened from 205 feet to 215 feet.
Ff 27 SW	do.	-	57.5	4/23/45	-	60	1927	-	-	PS	do.
Ff 28 SW	Kpe	3.87	-	5/2/45	-	8	1945	-	-	N	Screened from 80 feet to 90 feet.
Ff 29 SW	do.	-	-	-	-	50	-	-	-	N	do.
Ff 30 NW	do.	-	-	-	-	50	-	-	-	N	
Ff 31 NW	do.	-	-	-	-	-	-	-	-	N	
Ff 32 NW	do.	-	-	-	-	-	-	-	-	N	
Ff 33 NE	do.	42.26[m]	-	1/25/46	-	-	-	-	-	N	
Ff 34 SE	Kpx	35.26[m]	-	1/25/46	-	-	-	-	-	PS	
Ff 35 NW	Qt	29	43	1953	-	25	-	-	-	-	Screened from 331 feet to 341 feet.
Ff 36 NE	Kpe	1	8	7/-/53	-	50	-	10	3.57	C	do. 50 feet to 60 feet.
Ff 37 NW	do.	29	42	6/-/49	-	60	-	1	8.56	-	do. 55 feet to 60 feet.
Ff 38 NW	do.	32	-	11/-/49	J,E	5	6/-/49	1	.38	-	do. 60 feet to 64 feet.
Ff 39 NE	do.	3	-	5/-/49	J,E	15	11/-/49	-	-	D	do. 137 feet to 141 feet.
						15	-	-	-	D	do. 84 feet to 88 feet.

CHEMICAL DATA

Department of Natural Resources
MARYLAND GEOLOGICAL SURVEY
Kenneth N. Weaver, Director

WATER RESOURCES
BASIC-DATA REPORT NO. 10

MARYLAND GROUND-WATER INFORMATION:

CHEMICAL QUALITY DATA

compiled by
RICHARD S. WOLL

Prepared in cooperation with the
UNITED STATES GEOLOGICAL SURVEY
Department of the Interior

1978

Table 1.—Geologic unit codes used in this report.

Geologic Age	Code		Geologic Unit
Quaternary	110	QRNR	Quaternary System
	110	ALVM	Alluvium
Pleistocene	112	PLSC	Pleistocene Series
	112	SLBR	Salisbury aquifer
	112	TLBT	Talbot Formation
	112	UPLD	Upland Deposits
Miocene	122	CLVR	Calvert Formation
	122	CPNK	Choptank Formation
	122	MNKN	Manokin aquifer
	122	MOCN	Micene Series
	122	PCMK	Pocomoke aquifer
	122	YRKN	Yorktown Formation
Eocene	124	EOCN	Eocene Series
	124	NNJM	Nanjemoy Formation
	124	PNPN	Piney Point Formation
Paleocene	125	AQUI	Aquia Formation
	125	PLCN	Paleocene Series
Cretaceous	210	CRCS	Cretaceous System
Upper Cretaceous	211	CRCSU	Upper Cretaceous Series
	211	MGTY	Magothy Formation
	211	MLRL	Mount Laurel Sand
	211	MNMT	Monmouth Formation
	211	MTWN	Matawan Formation
	211	RRTN	Raritan Formation
Lower Cretaceous	217	CRCSL	Lower Cretaceous
	217	NNMR	Nonmarine Cretaceous Series
	217	PPSC	Patapsco Formation
	217	PTMC	Potomac Group
	217	PTXN	Patuxent Formation
Upper Triassic	231	DIBS	Diabase dikes and sills
	231	GBRG	Gettysburg Shale
	231	NOXF	New Oxford Formation
	231	NOXFB	New Oxford Formation basal conglomerate
Paleozoic	300	BLDR	Boulder Gneiss
	300	BLMR	Baltimore Gabbro Complex
	300	CCKV	Cockeysville Marble
	300	ELCC	Ellicott City Granodiorite
	300	GPDR	Gunpowder Granite
	300	IJVM	Ijamsville Formation—Marburg Schist
	300	LBRN	Libertytown Metarhyolite
	300	LPLC	Lower pelitic schist
	300	MBAB	Metagabbro and amphibolite
	300	MCGM	Metaconglomerate
	300	MGCK	Metagraywacke
	300	MQMG	Muscovite quartz monzonite gneiss
	300	MRBG	Marburg Schist
	300	PGMT	Pegmatite dikes
	300	PLZC	Paleozoic Erathem
	300	PRDP	Port Deposit Gneiss

Table 1.—Geologic unit codes used in this report (continued).

Geologic Age	Code		Geologic Unit
	300	PZPC	Early Paleozoic-Late Precambrian Erathem
	300	SMCK	Sams Creek Metabasalt
	300	STRS	Setters Formation
	300	UFGB	Ultramafic and gabbroic rocks
	300	UMFC	Ultramafic rocks
	300	UPPC	Upper pelitic schist
	300	URBN	Urbana Formation
	300	WKFD	Wakefield Marble
	300	WSCK	Wissahickon Formation
Upper Pennsylvania	321	CNMG	Conemaugh Formation
Middle Pennsylvania	324	PVAG	Pottsville-Allegheny Formations
Upper Mississippian	331	GRBR	Greenbrier Formation
Lower Mississippian	337	POCN	Pocono Group
Upper Devonian	341	DVNNU	Upper Devonian Series
	341	HMPR	Hampshire Formation
Middle Devonian	344	DVNNM	Middle Devonian Series
Lower Devonian	347	ORSK	Oriskany Group
Upper Silurian	351	WLCK	Wills Creek Shale
	351	TNLY	Tonoloway Limestone
Middle Silurian	354	RSHL	Rose Hill Formation
Ordovician	360	PCBM	Peach Bottom Slate
Upper Ordovician	361	MRBG	Martinsburg Shale
Middle Ordovician	364	STPL	St. Paul Group
Lower Ordovician	367	GROV	Grove Limestone
	367	RCKR	Rockdale Run Formation
	367	SNNG	Stonehenge Limestone
Upper Cambrian	371	CCCG	Conococheague Limestone
	371	CMBRU	Upper Cambrian Series
	371	ELBK	Elbrook Formation
Lower Cambrian	377	ANTM	Antietam Formation
	377	FDCK	Frederick Limestone
	377	HRPR	Harpers Formation
	377	LUDN	Loudoun Formation
	377	TMSN	Tomstown Dolomite
	377	WSBR	Waynesboro Formation
	377	WVRN	Weverton Formation
Precambrian	400	CTCN	Catoctin Metabasalt
	400	GBGG	Granodiorite and biotite granite gneiss
	400	JMSR	James Run Gneiss
	400	MTRL	Metarhyolite and associated pyroclastic sediments
	400	PCMP	Precambrian Erathem

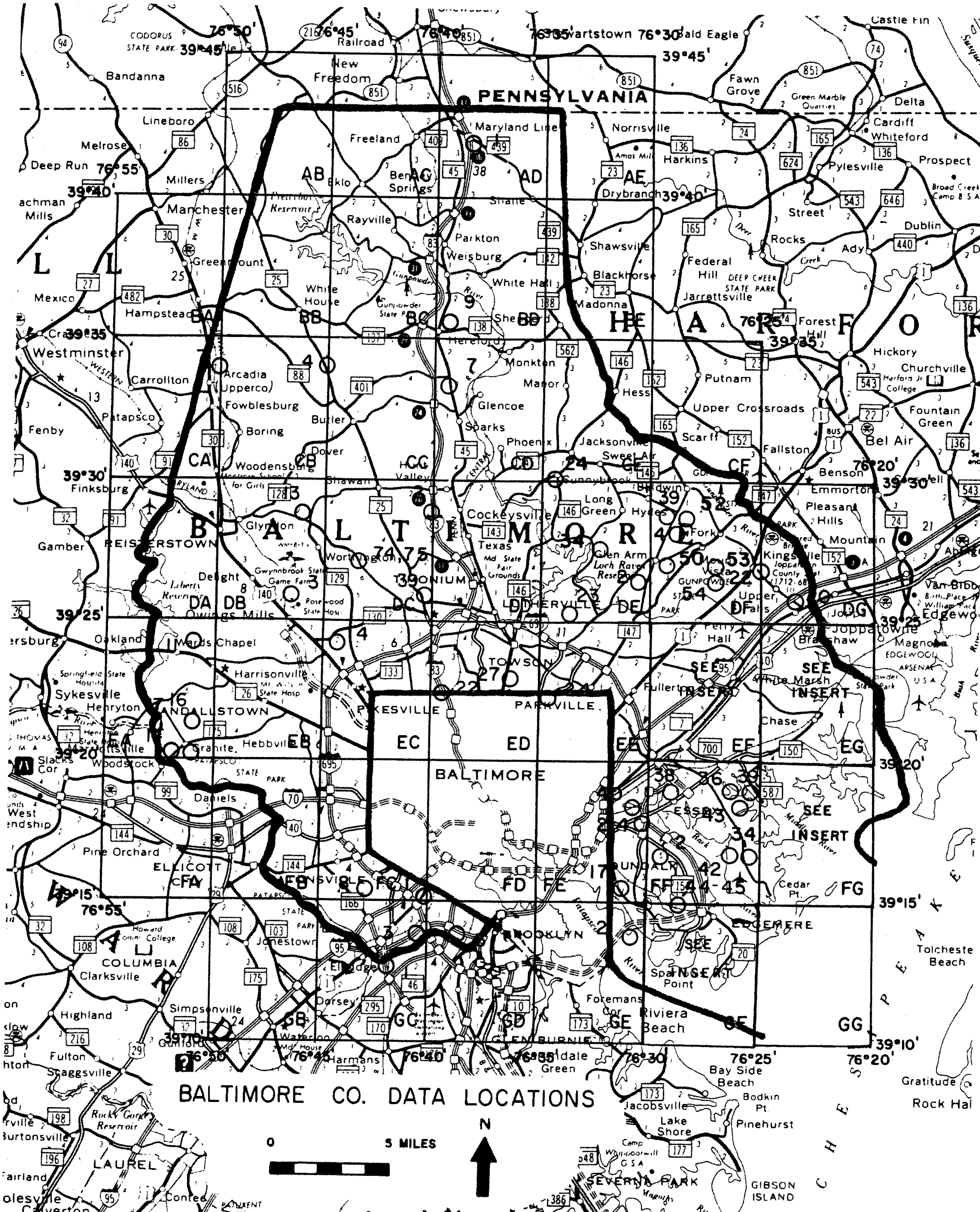
UNITS OF MEASUREMENTS APPEARING IN TABLES

Milligrams per liter (MG/L) and micrograms per liter (UG/L) are units for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the weight (milligrams) of solute per unit volume (liter) of water. Micrograms per liter represent the weight (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter. Milligrams or micrograms per liter may be converted to milliequivalents (one thousandth of a gram—equivalent weight of a constitutent) per liter by multiplying by the factors in table 2.

Table 2 — Factors for converting milligrams per liter to milliequivalents per liter.

Ion	Multiply by
Aluminum (Al^{+3})*	0.11119
Ammonia as NH^{+1}	.05544
Bicarbonate (HCO_3^{-1})	.01639
Calcium (Ca^{+2})	.04990
Carbonate (CO_3^{-2})	.03333
Chloride (Cl^{-1})	.02821
Chromium (Cr^{+6})*	.11539
Cobalt (Co^{+2})*	.03394
Copper (Cu^{+2})*	.03148
Cyanide (CN^{-1})	.03844
Fluoride (F^{-1})	.05264
Hydrogen (H^{+1})	.99209
Iron (Fe^{+3})*	.05372
Lead (Pb^{+2})*	.00965
Magnesium (Mg^{+2})	.08226
Manganese (Mn^{+2})*	.03640
Nickel (Ni^{+2})*	.03406
Nitrate (NO_3^{-1})	.01613
Nitrite (NO_2^{-1})	.02174
Phosphate (PO_4^{-3})	.03159
Potassium (K^{+1})	.02557
Sodium (Na^{+1})	.04350
Sulfate (SO_4^{-2})	.02082
Zinc (Zn^{+2})*	.03060

*Constituent reported in micrograms per liter; multiply by factor and divide results by 1,000 to obtain milliequivalents per liter.


BALTIMORE CO. DATA LOCATIONS
0
5 MILES
N
PENNSYLVANIA
BALTIMORE
TOWSON
PARKVILLE
PIKESVILLE
REISTERSTOWN
RANDALLSTOWN
COCKEYSVILLE
LUTHERVILLE
TIMONIUM
BROOKLYN
ESSEX
DUNDALK
GLEN BURNIE
ELLICOTT CITY
COLUMBIA
LAUREL
Westminster
Bel Air
Manchester
Hampstead
Finksburg
Sykesville
Owings Mills
Glyndon
Hereford
Monkton
Parkton
Maryland Line
Freeland
Jacksonville
Fallston
Kingsville
Joppatowne
Edgewood
White Marsh
Chase
Sparrows Point
Riviera Beach
Cedar Pt.
Edgemere
Catonsville
Arbutus
Elkridge
Jessup
Dorsey
Harmans
Woodstock
Granite
Daniels
76°50'
76°45'
76°40'
76°35'
76°30'
76°25'
76°20'
76°55'
39°45'
39°40'
39°35'
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39°25'
39°20'
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AB
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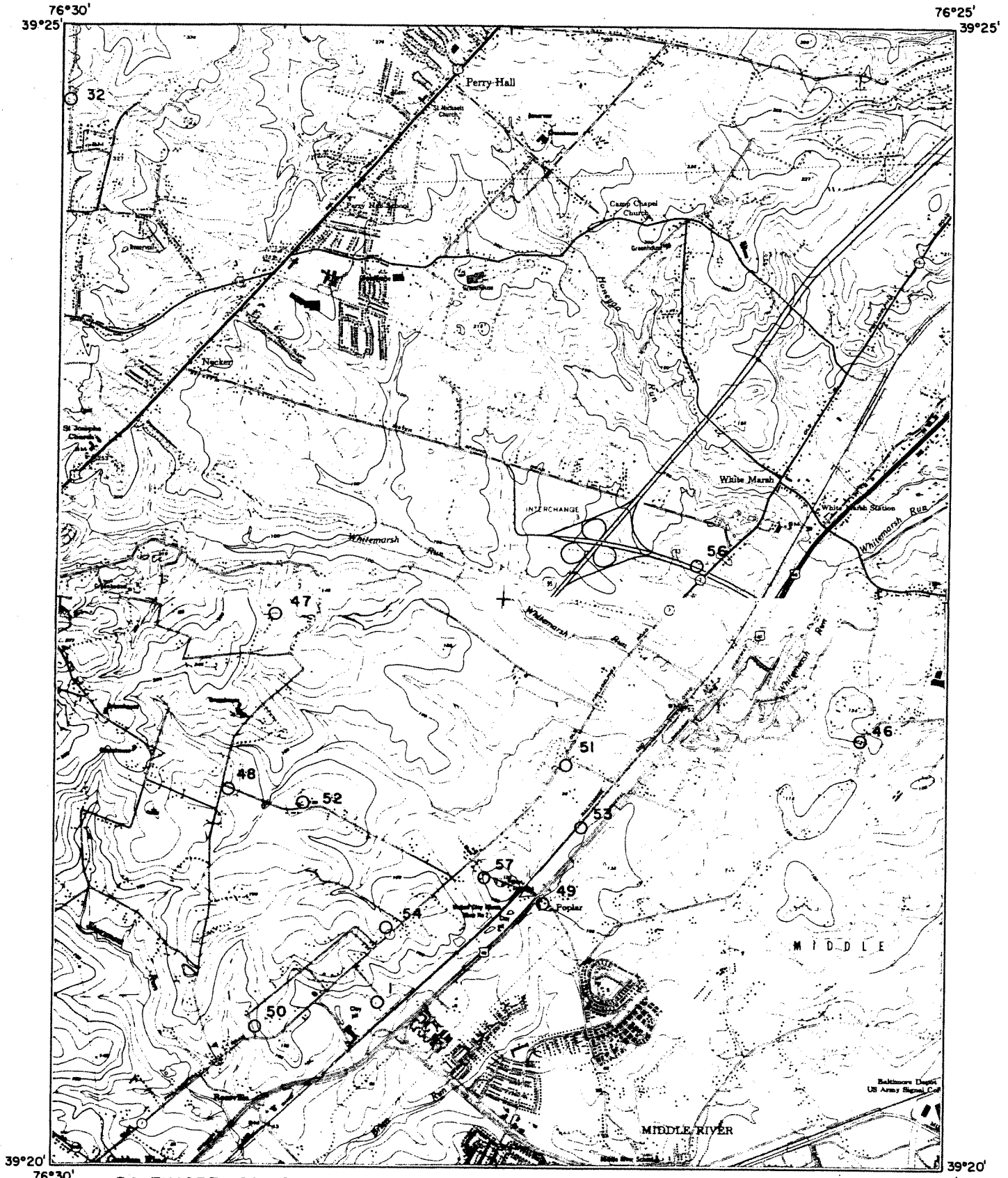
SEE INSERT



BALTIMORE CO. EF INSERT

1 1/2 0 1 Mile

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet

1 5 0 1 Kilometer

TABLE 7 BALTIMORE CO. GROUND WATER QUALITY

DATA SITE		GEO-LOGIC UNIT	DATE OF SAMPLE	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT)	DIS-SOLVED SILICA (SIO2) (MG/L)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
AD	1	300WSCK	51-03-09	790	125	7.2	600	30	30	2.8	1.1	1.7	.4	14	.2
BD	9	300WSCK	53-05-06	610	308	9.2	<50	70	20	2.8	1.1	3.1	1.4	22	1.9
CA	7	300WSCK	54-05-12	810	223	14	<50	160	20	3.1	1.2	3.3	.8	21	1.2
CB	4	300WSCK	53-05-04	660	90	14	400	120	20	5.4	1.3	3.4	.8	27	1.6
CD	7	300STRS	54-05-12	680	90	25	<50	<5	<5	4.6	3.5	6.9	2.8	35	1.4
CE	24	300PLTCL	60-05-12	564	350	19	--	--	--	6.5	4.3	--	--	26	16
DB	3	300PLTCL	53-05-04	570	180	15	100	2100	10	5.2	1.9	2.5	1.1	24	2.0
DB	13	300CCKV	54-05-11	420	--	9.4	<50	40	20	31	6.9	1.9	1.0	125	2.6
DC	39	300PLTCL	53-05-08	430	148	12	200	70	<5	3.5	.1	2.7	.8	15	2.2
DC	74	300PLTCL	60-07-10	667	400	31	--	--	--	8.5	2.6	--	--	45	9.6
DC	75	300PLTCL	60-07-05	664	350	28	--	--	--	4.5	2.2	--	--	28	4.0
DE	2	300CCKV	53-05-05	260	95	17	300	160	10	64	9.4	3.4	2.0	223	19
DE	23	300PLTCL	53-05-05	460	103	17	100	1000	200	11	5.8	2.3	1.9	48	20
DE	34	300CCKV	55-06-17	270	144	--	--	20	--	--	--	--	--	257	6.2
DF	4	300PLTCL	55-06-17	330	--	--	--	50	--	--	--	--	--	11	1.7
DF	22	300BLMR	54-03-17	400	99	14	500	90	40	4.9	3.0	1.6	.3	32	2.6
DF	39	300CCKV	54-02-24	335	127	11	<50	90	<5	29	14	1.8	.5	127	8.2
DF	50	300CCKV	55-06-17	320	53	--	--	160	--	--	--	--	--	80	8.2
DF	52	300PLTCL	55-06-17	410	133	--	--	100	--	--	--	--	--	30	.1
DF	53	300PLTCL	55-06-17	380	--	--	--	20	--	--	--	--	--	12	2.8
DF	54	300BLMR	60-05-03	240	199	8.8	--	--	--	8.0	4.5	--	--	26	<.0
DG	10	300PRDP	53-03-25	180	167	31	200	2700	220	28	1.9	6.8	4.2	121	1.4
EA	11	300UMFC	54-05-13	520	76	33	100	90	<5	11	53	4.0	.2	183	57
EA	14	400BLMR	54-03-17	400	248	24	--	40	20	22	8.2	7.5	3.5	81	33
EA	16	300WDCK	60-10-12	509	150	30	50	90	20	5.5	1.3	--	--	31	.2
EA	17	300WDCK	60-10-12	488	250	28	<50	390	10	12	3.9	--	--	50	7.8
EC	4	300CCKV	53-01-16	410	--	11	<50	140	<5	29	5.0	2.0	1.5	113	2.2
ED	22	300UMFC	54-03-19	350	140	31	200	60	<5	9.5	51	4.0	2.2	276	2.6
ED	27	400BLMR	55-07-18	470	160	--	--	<5	--	--	--	--	--	60	37
EE	24	300GPDR	55-07-08	320	133	--	--	--	--	--	--	--	--	86	3.8
EF	1	217PTXN	44-04-25	90	87	--	--	170	--	--	--	--	--	7	1.0
EF	32	300PRDP	53-01-15	320	196	16	2700	1600	20	2.7	.4	3.8	1.1	33	11
EF	46	217PTXN	54-05-13	95	160	--	--	830	--	--	--	--	--	40	--
EF	47	300BLMR	54-05-14	185	200	--	--	760	--	--	--	--	--	150	--
EF	48	300BLMR	54-05-13	130	115	--	--	280	--	--	--	--	--	42	--
EF	49	217PTXN	54-05-13	100	126	--	--	1400	--	--	--	--	--	10	--
EF	50	217PTXN	54-05-14	80	116	--	--	3300	--	--	--	--	--	26	--
EF	51	217PTXN	54-05-13	85	88	--	--	640	--	--	--	--	--	9	--
EF	52	217PTXN	54-05-14	150	105	--	--	3700	--	--	--	--	--	9	--
EF	53	217PTXN	54-05-14	95	114	--	--	2900	--	--	--	--	--	14	--
EF	54	217PTXN	54-05-14	135	124	--	--	3500	--	--	--	--	--	13	--
EF	56	300BLMR	54-05-14	70	200	--	--	350	--	--	--	--	--	116	--
EF	57	217PTXN	54-05-07	100	97	--	--	650	--	--	--	--	--	2	--
✓EG	15	217PTXN	54-03-19	10	320	6.4	800	940	100	1.2	1.4	1.6	.3	13	1.4
EG	17	110QRNR	54-09-24	20	22	--	--	870	--	--	--	--	--	104	--
EG	18	217PPSC	54-08-03	5.0	75	--	--	20000	--	--	--	--	--	11	--
EG	21	217PPSC	54-09-23	15	93	--	--	19000	--	--	--	--	--	42	--
EG	22	110QRNR	54-08-03	20	22	--	--	110	--	--	--	--	--	38	--
EG	24	217PPSC	54-09-23	10	103	--	--	15000	--	--	--	--	--	17	--
EG	26	217PPSC	54-09-23	10	94	--	--	9300	--	--	--	--	--	18	--
✓EG	29	217PPSC	54-09-24	20	142	--	--	9200	--	--	--	--	--	2	--
EG	30	110QRNR	55-06-17	140	16	--	--	80	--	--	--	--	--	25	.1
FC	1	217PTXN	43-10-19	150	250	--	--	--	--	--	--	--	--	4	1.0
FC	8	300BLMR	54-03-18	260	157	42	--	350	20	36	15	12	3.9	182	12
FE	2	217PTXN	43-05-03	40	175	--	--	--	--	--	--	--	--	11	6.0
FE	3	217PTXN	45-06-05	40	--	8.5	--	530	--	1.4	.9	4.5	.8	8	5.0
FE	4	217PTXN	43-05-03	40	--	--	--	--	--	--	--	--	--	6	6.0
FE	17	217PTXN	43-05-04	50	374	--	--	--	--	--	--	--	--	5	3.0
FE	40	110QRNR	54-08-06	10	70	--	--	20000	--	--	--	--	--	34	--
FF	2	110QRNR	43-09-08	20	14	--	--	--	--	--	--	--	--	7	95
FF	34	217PTXN	46-01-25	30	341	7.1	--	2300	--	1.5	1.0	5.3	1.0	6	6.5
✓FF	36	217PPSC	54-05-07	3.0	60	--	--	250	--	--	--	--	--	22	--
FF	38	217PPSC	54-05-07	30	144	--	--	19000	--	--	--	--	--	11	--
✓FF	39	217PPSC	54-05-07	10	88	--	--	450	--	--	--	--	--	54	--
FF	42	110QRNR	54-05-11	10	212	--	--	270	--	--	--	--	--	75	--

✓ = wells in survey area

TABLE 7 BALTIMORE CO. GROUND WATER QUALITY

DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS_SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TOTAL COPPER (CU) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DATA SITE
3.1	.1	4.5	30	28	12	0	38	7.0	--	2	--	--	--	AD 1
3.2	.1	9.5	56	43	12	0	72	6.6	12.0	4	30	--	8300	BD 9
2.4	.0	.40	37	37	13	0	41	6.3	--	4	<5	100	180	CA 7
4.9	.1	.20	51	45	19	0	71	6.6	--	3	10	100	2200	CB 4
11	<.0	1.2	76	74	26	0	95	7.0	--	7	20	300	1400	CD 7
2.5	.2	2.5	70	--	34	13	96	7.0	--	0	--	--	--	CE 24
3.2	<.0	2.5	48	45	21	1	59	6.2	--	4	10	200	<5	DB 3
2.1	<.0	2.3	128	119	110	3	217	7.7	--	3	10	100	<5	DB 13
1.8	<.0	.90	35	31	9	0	33	6.2	9.5	3	10	200	<5	DC 39
4.5	.3	<.05	90	--	32	0	108	7.4	--	0	--	--	--	DC 74
4.5	.2	3.8	70	--	20	0	72	7.0	--	0	--	--	--	DC 75
5.6	.1	.60	242	231	200	16	394	7.6	--	3	50	300	40	DE 2
.1	<.0	.20	88	82	51	12	118	7.1	--	8	20	100	<5	DE 23
2.0	--	.60	--	--	214	3	385	7.6	--	10	--	--	--	DE 34
3.6	--	8.0	--	--	17	8	59	6.0	--	8	--	--	--	DF 4
2.5	.1	1.4	44	46	25	0	57	6.6	--	8	<5	<50	1800	DF 22
5.8	<.0	18	139	151	130	26	246	7.9	13.0	5	20	200	<5	DF 39
6.0	--	7.0	--	--	76	10	176	7.4	--	8	--	--	--	DF 50
1.2	--	8.0	--	--	25	0	69	6.5	--	8	--	--	--	DF 52
9.5	--	.60	--	--	25	15	87	6.0	--	9	--	--	--	DF 53
12	.1	15	75	--	39	17	114	6.8	19.0	0	--	--	--	DF 54
1.0	.1	.20	146	134	78	0	192	6.9	--	18	10	400	<5	DG 10
13	<.0	36	305	297	250	96	459	7.9	13.0	7	20	100	200	EA 11
7.0	.1	.10	142	145	89	22	215	7.0	13.5	5	--	500	--	EA 14
8.0	.1	3.0	79	--	19	0	86	6.5	--	3	410	--	200	EA 16
4.5	.1	8.8	103	--	46	5	135	6.8	--	3	50	--	900	EA 17
2.5	.1	1.9	111	111	93	0	188	7.6	12.0	2	<5	200	50	EC 4
12	<.0	6.8	240	255	230	7	427	8.3	13.5	7	<5	300	50	ED 22
14	--	48	--	--	88	39	320	6.6	--	2	--	--	--	ED 27
3.0	--	.30	--	--	50	0	146	6.7	--	5	--	--	--	EE 24
6.0	--	10	--	--	18	12	59	7.1	13.5	--	--	--	--	EF 1
2.7	<.0	1.3	56	55	8	0	69	7.1	--	3	<5	<50	8800	EF 32
--	--	.20	--	--	6	0	83	6.4	--	--	--	--	--	EF 46
--	--	.10	--	--	92	0	227	7.9	--	--	--	--	--	EF 47
--	--	38	--	--	38	4	129	6.8	--	--	--	--	--	EF 48
--	--	29	--	--	14	6	57	5.9	--	--	--	--	--	EF 49
--	--	.30	--	--	10	0	48	6.5	--	--	--	--	--	EF 50
--	--	3.0	--	--	6	0	30	6.0	--	--	--	--	--	EF 51
--	--	25	--	--	15	8	71	5.8	--	--	--	--	--	EF 52
--	--	35	--	--	9	0	43	6.1	--	--	--	--	--	EF 53
--	--	25	--	--	16	5	71	6.2	--	--	--	--	--	EF 54
--	--	.20	--	--	50	0	243	7.5	--	--	--	--	--	EF 56
--	--	76	--	--	59	57	257	4.8	--	--	--	--	--	EF 57
3.5	.1	.10	28	22	9	0	39	6.2	13.0	20	--	100	--	EG 15
--	--	--	--	--	136	51	437	7.1	--	--	--	--	--	EG 17
--	--	--	--	--	5	0	34	5.8	--	--	--	--	--	EG 18
--	--	--	--	--	12	0	138	6.1	--	--	--	--	--	EG 21
--	--	--	--	--	60	29	205	7.2	--	--	--	--	--	EG 22
--	--	--	--	--	8	0	35	6.8	--	--	--	--	--	EG 24
--	--	--	--	--	4	0	37	6.4	--	--	--	--	--	EG 26
--	--	--	--	--	4	2	25	6.3	--	--	--	--	--	EG 29
.8	--	5.5	--	--	23	2	63	6.1	--	13	--	--	--	EG 30
12	--	25	--	--	30	27	108	5.2	--	--	--	--	--	FC 1
17	.2	.20	219	228	150	2	341	7.5	13.5	7	--	600	--	FC 8
6.5	<.0	1.8	--	--	16	7	51	5.4	13.5	--	--	--	--	FE 2
4.5	<.0	1.1	30	31	7	1	45	5.3	--	--	--	--	--	FE 3
3.0	<.0	.10	--	--	9	4	29	5.5	--	--	--	--	--	FE 4
3.0	<.0	.20	--	--	15	11	27	5.4	--	--	--	--	--	FE 17
--	--	--	--	--	54	26	199	6.7	--	--	--	--	--	FE 40
82	.1	25	--	--	92	86	553	5.4	--	--	--	--	--	FF 2
7.2	<.0	.90	33	33	8	3	49	5.3	--	--	--	--	--	FF 34
--	--	25	--	--	14	0	76	6.4	--	--	--	--	--	FF 36
--	--	.60	--	--	11	2	41	5.9	--	--	--	--	--	FF 38
--	--	.10	--	--	4	0	151	6.8	--	--	--	--	--	FF 39
--	--	.20	--	--	9	0	153	6.9	--	--	--	--	--	FF 42

TABLE 7 BALTIMORE CO. GROUND WATER QUALITY CONTINUED

DATA SITE		GEO-LOGIC UNIT	DATE OF SAMPLE	ELEV. OF LAND SURFACE DATUM (FT. ABOVE MSL)	DEPTH TO BOT-TOM OF SAMPLE INTER-VAL (FT)	DIS-SOLVED SILICA (SIO2) (MG/L)	TOTAL ALUM-INUM (AL) (UG/L)	TOTAL IRON (FE) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)
FF	43	217PPSC	54-05-11	5.0	103	--	--	4200	--	--	--	--	--	10	--
FF	44	217PPSC	55-07-07	10	200	--	--	50	--	--	--	--	--	10	3.8
FF	45	217PPSC	55-07-07	10	229	--	--	620	--	--	--	--	--	10	2.6
FG	17	217PTMC	54-05-13	10	223	--	--	11000	--	--	--	--	--	13	--
FG	20	217PTMC	54-05-11	20	379	--	--	16000	--	--	--	--	--	18	--
FG	21	217PTMC	54-05-11	10	211	--	--	40	--	--	--	--	--	230	--
FG	22	217PTMC	54-05-11	8.0	316	--	--	3300	--	--	--	--	--	9	--
FG	23	217PTMC	54-09-24	10	88	--	--	14000	--	--	--	--	--	35	--
FG	24	217PTMC	54-09-24	10	96	--	--	18000	--	--	--	--	--	21	--
FG	25	217PTMC	54-09-24	15	208	--	--	3100	--	--	--	--	--	10	--
FG	26	110QRNR	54-09-24	5.0	12	--	--	720	--	--	--	--	--	28	--
GC	1	110QRNR	43-10-06	10	33	--	--	7600	--	--	--	--	--	56	10
GC	3	217PTXN	44-08-10	100	59	--	--	3300	--	--	--	--	--	7	27
GD	3	217PTXN	54-05-11	85	142	--	--	280	--	--	--	--	--	42	--
GE	2	217PTXN	43-06-30	10	600	--	--	E13000	--	--	--	--	--	12	7.0
GF	8	217PTXN	43-04-09	10	618	9.6	--	--	--	4.4	2.7	7.8	2.2	17	9.3
		217PTXN	54-03-19	10	618	--	--	19000	--	--	--	--	--	18	10
GF	9	217PTXN	43-04-09	10	454	--	--	7400	--	--	--	--	--	10	10
		217PTXN	54-03-19	10	454	--	--	19000	--	--	--	--	--	11	9.8
GF	12	217PTXN	43-05-14	12	677	--	--	E7700	--	--	--	--	--	23	10
GF	14	217PTMC	43-05-14	10	323	--	--	95000	--	--	--	--	--	--	24
GF	16	217PTXN	43-05-14	10	659	--	--	E8600	--	--	--	--	--	22	10
GF	18	217PPSC	43-05-14	10	320	--	--	101000	--	--	--	--	--	--	24
GF	28	217PPSC	44-02-03	10	172	12	--	56000	--	33	18	113	--	--	14
GF	32	217PTXN	43-07-16	10	668	--	--	E10000	--	--	--	--	--	18	10
		217PTXN	44-01-24	10	66A	9.4	--	10000	--	5.2	3.3	--	--	20	11
GF	35	217PTXN	43-07-16	10	675	--	--	E8600	--	--	--	--	--	18	8.0
GF	93	217PTXN	44-03-11	10	513	8.0	--	9200	--	5.4	5.0	27	--	8	20
GF	137	217PPSC	44-01-24	10	281	7.7	--	27000	--	15	25	--	--	8	50
GF	139	217PTXN	44-01-24	10	615	9.7	--	9600	--	4.4	2.6	--	--	19	9.8
GF	175	217PPSC	44-01-24	10	300	8.5	--	21000	--	5.2	4.9	--	--	15	13
		217PPSC	54-03-18	10	300	--	--	37000	--	--	--	--	--	16	13
GF	176	217PPSC	44-03-03	10	332	8.0	--	15000	--	5.4	4.1	14	--	--	15
		217PPSC	54-03-18	10	332	--	--	50000	--	--	--	--	--	6	21
GF	179	217PPSC	43-06-03	10	400	--	--	E23000	--	--	--	--	--	18	1.0
		217PPSC	45-10-22	10	400	7.7	--	11000	--	2.6	2.0	1.9	1.5	8	11
		217PPSC	55-06-30	10	400	7.5	--	6500	--	1.7	2.0	--	--	8	11
GF	180	217PPSC	43-06-03	12	399	--	--	E14000	--	--	--	--	--	11	10
GF	192	217PPSC	44-03-07	10	280	6.2	--	53000	--	18	16	158	--	--	46
GF	200	217PTMC	55-07-07	12	187	--	--	--	--	--	--	--	--	--	4.2

TABLE 7 BALTIMORE CO. GROUND WATER QUALITY CONTINUED

DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRATE (NO3) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TOTAL COPPER (CU) (UG/L)	TOTAL LITHIUM (LI) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DATA SITE
--	--	.10	--	--	6	0	24	5.9	--	--	--	--	--	FF 43
23	--	.40	--	--	14	6	102	5.8	--	5	--	--	--	FF 44
4.0	--	.50	--	--	8	0	35	5.8	--	2	--	--	--	FF 45
--	--	.60	--	--	8	0	29	6.1	--	--	--	--	--	FG 17
--	--	.60	--	--	8	0	48	6.2	--	--	--	--	--	FG 20
--	--	.10	--	--	1	0	381	7.6	--	--	--	--	--	FG 21
--	--	.10	--	--	10	3	29	6.1	--	--	--	--	--	FG 22
--	--	--	--	--	6	0	95	6.7	--	--	--	--	--	FG 23
--	--	--	--	--	12	0	69	5.5	--	--	--	--	--	FG 24
--	--	--	--	--	1	0	22	5.7	--	--	--	--	--	FG 25
--	--	--	--	--	116	93	958	6.2	--	--	--	--	--	FG 26
10	--	1.0	--	--	45	0	151	6.6	18.0	--	--	--	--	GC 1
10	--	11	--	--	51	45	139	7.3	15.0	--	--	--	--	GC 3
--	--	20	--	--	16	0	104	6.6	--	--	--	--	--	GD 3
18	--	<.05	--	--	18	8	98	5.9	--	--	--	--	--	GE 2
13	<.0	<.05	55	64	22	8	93	5.9	--	--	--	--	--	GF 8
10	--	<.05	--	--	18	3	84	6.2	17.0	--	--	--	--	
8.0	<.5	<.05	--	--	24	16	65	5.8	--	--	--	--	--	GF 9
7.0	--	.20	--	--	14	5	65	6.0	16.5	--	--	--	--	
9.0	.1	<.05	--	--	30	11	83	7.8	17.0	--	--	--	--	GF 12
240	<.0	--	--	--	84	--	1270	2.8	15.5	--	--	--	--	GF 14
9.0	<.0	<.05	--	--	30	12	84	6.8	17.0	--	--	--	--	GF 16
245	<.0	--	--	--	84	--	1080	2.9	15.0	--	--	--	--	GF 18
320	--	<.05	507	--	156	--	1450	2.9	--	--	--	--	--	GF 28
14	--	<.05	--	--	32	17	103	5.9	--	--	--	--	--	GF 32
8.6	--	<.05	50	--	26	10	96	5.9	--	--	--	--	--	
13	--	<.05	--	--	26	11	98	7.6	--	--	--	--	--	GF 35
47	--	<.05	122	116	34	27	225	6.0	--	--	--	--	--	GF 93
398	--	.50	728	--	140	130	1430	3.8	--	--	--	--	--	GF 137
5.5	--	<.05	45	--	22	6	81	6.0	--	--	--	--	--	GF 139
70	--	<.05	127	--	33	21	350	3.5	--	--	--	--	--	GF 175
107	--	.10	--	--	72	59	434	6.0	--	--	--	--	--	
57	--	.40	118	--	30	--	353	4.3	--	--	--	--	--	GF 176
170	--	.10	--	--	94	89	658	5.5	--	--	--	--	--	
4.0	.5	<.05	--	--	16	1	68	6.8	15.5	--	--	--	--	GF 179
1.6	.2	.10	33	33	15	8	46	5.9	--	--	--	--	--	
1.6	.6	.20	36	--	12	6	45	6.2	--	1	--	--	--	
2.0	.1	<.05	--	--	18	9	46	6.7	16.0	--	--	--	--	
355	--	1.0	623	--	111	--	1660	3.7	--	--	--	--	--	GF 180
245	--	5.5	--	--	175	--	901	3.6	--	200	--	--	--	GF 192
														GF 200