SOURCE WATER ASSESSMENTS

FOR THE PERDUE FARMS, INC.

MAIN OFFICE & FEED MILL WATER SYSTEMS

WICOMICO COUNTY, MD

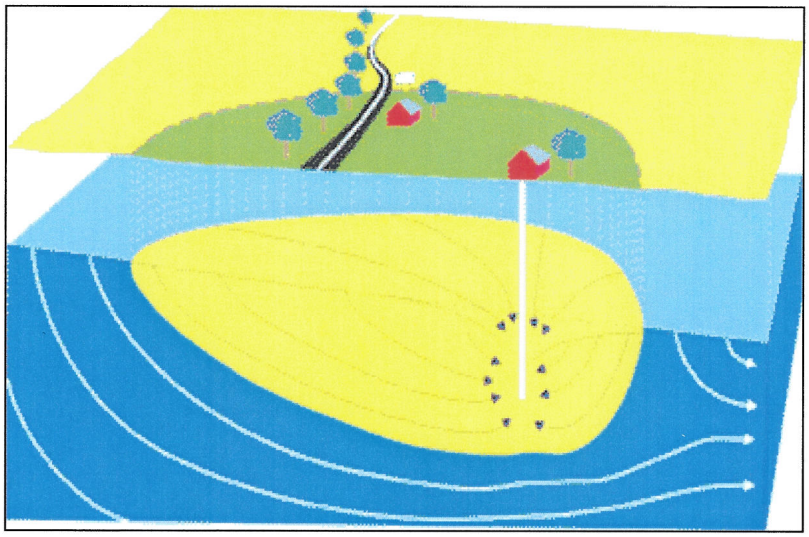

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TABLE OF CONTENTS

Page

Summary 1

Introduction 2

Well Information 2

Hydrogeology 2

Source Water Assessment Area Delineation 3

Potential Sources of Contamination 4

Water Quality Data 5

Susceptibility Analysis 6

Management of the Source Water Assessment Area 8

References 9

Other Sources of Data 10

TABLES

Table 1. Well Information
Table 2. Potential Contaminant Point Sources within or near Wellhead Protection Areas
Table 3a. Land Use in the Perdue Farms Main Office WHPA Zones 1 & 2
Table 3b. Land Use in the Perdue Farms Feed Mill WHPA Zones 1 & 2
Table 4a. Treatment Methods
Table 4b. Total Water Quality Samples
Table 5a. IOC detections above 50% of the MCL in Perdue Farms Main Office Water Supply
Table 5b. IOC detections above 50% of the MCL for Perdue Farms Feed Mills Water Supply
Table 6a. Susceptibility Analysis Summary for Perdue Farms Main Office Water Supply
Table 6b. Susceptibility Analysis Summary for Perdue Farms Feed Mills Water Supply

TABLE OF CONTENTS (CONTD.)

FIGURES

Figure 1. Perdue Farms Main Office & Feed Mill Wellhead Protection Areas With Potential Contaminant Sources

Figure 2. Land Use in the Perdue Farms Main Office & Feed Mill Wellhead Protection Areas

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APPENDICES

Appendix A. Photos

Appendix B. Summaries of open cases within the Perdue Farms, Inc – Main Offices & Feed Mill WHPAs from the MDE Oil Control Program

Appendix C. Database Summaries of discharge permit sites located within and Near Perdue Farms, Inc. Main Office & Feed Mill WHPAs

Appendix D. EPA WHPA Code model input parameters for Perdue Farms- Feed Mill WHPA delineations

SUMMARY

The Maryland Department of the Environment's Water Supply Program (WSP) has conducted a Source Water Assessment for the water systems serving Perdue Farms Inc. – Main Office and Perdue Farms, Inc. – Feed Mill in Wicomico County. The required components of this report as described in Maryland's Source Water Assessment Program (SWAP) are 1) delineation of an area that contributes water to each source, 2) identification of potential sources of contamination within the areas, and 3) determination of the susceptibility of each water supply to contamination. Recommendations for protecting the drinking water supplies conclude this report.

The water supply source of these two water systems is an unconfined aquifer, the Quaternary sediments of the Atlantic Coastal Plain physiographic province. The two systems are currently using four wells for water supply. The Source Water Assessment areas were delineated by the WSP using U.S. EPA approved methods specifically designed for sources in unconfined aquifers.

Potential point sources of contamination were researched and identified within the assessment areas from field inspections, contaminant and well inventory databases, and land use maps. Well information and water quality data were also reviewed. Maps and aerial photographs showing Source Water Assessment areas are included in this report.

The susceptibility analysis is based on a review of the existing water quality data for each water system, the presence of potential sources of contamination in the individual assessment areas, well integrity, and aquifer characteristics. It was determined that both water systems are susceptible to nitrate, volatile organic compounds and naturally occurring iron, but not to synthetic organic compounds, microbiological contaminants or other inorganic compounds.

INTRODUCTION

The Maryland Department of the Environment's Water Supply Program (WSP) has conducted a Source Water Assessment for the water systems serving Perdue Farms, Inc. – Main Office and Perdue Farms, Inc. – Feed Mill, located near Salisbury, Wicomico County (Figure 1). These water systems are considered nontransient noncommunity water systems since they serve at least twenty-five persons on a regular basis. Both systems are owned and operated by Perdue Farms, Inc. The Main Office system serves 275 persons while the Feed Mill system serves 306 persons.

WELL INFORMATION

Well information for each system was obtained from the Water Supply Program's database, site visits, well completion reports, and sanitary survey inspection reports and published reports. A total of four wells are currently in use for water supply for the two systems (one for the Main Office and three for the Feed Mill). In addition, the Main Office also has a well for fire protection and irrigation, and the Feed Mill has one well for cooling and an unused well. The supply well for the Main Office (Well No. 2) and Well No. 3 for the Feed Mill were drilled after 1973 and should comply with Maryland's well construction regulations. The Feed Mill Well Nos. 4 and 2 were drilled prior to 1973 and may not meet the current well construction standards for grouting and casing. A review of the well completion report for Well No 4. indicated that this well was grouted with cement. Each supply well at the Feed Mill has its own water treatment plant. Table 1 contains a summary of well information for each of the systems.

Based on site visits, the supply wells were in good condition and appeared to be regularly maintained, sealed and protected to insure integrity. The Feed Mill Well No. 1 is unused and has been disconnected from the system. An unfastened metal cover covers the wellhead.

HYDROGEOLOGY

Wicomico County lies within the Atlantic Coastal Plain physiographic province. This province, which in Maryland includes roughly the area east of Interstate 95, is underlain by unconsolidated clastic sediments of Lower Cretaceous to recent age, which thicken to the southeast so that they appear wedge-shaped. The thickness of these sediments is greater than 8,500 feet beneath the Atlantic shore.

Ground water flows through pores between gravel, sand and silt grains in unconsolidated sedimentary rock aquifers such as those used by the two Perdue Farms, Inc. water systems in Wicomico County. An aquifer is any formation that is capable of yielding a significant amount of water. The transmissivity is a measure of the amount of water an aquifer is capable of producing and is related to the hydraulic conductivity and the thickness of the aquifer. An unconfined aquifer is one which has no confining beds between the zone of saturation and the surface. A water table is present in an unconfined aquifer and often this type of aquifer is also referred to as a water table aquifer. Recharge

for an unconfined aquifer comes from infiltration of precipitation, so that the level of the water table may vary seasonably.

Recently, two studies were conducted on this aquifer by the Maryland Geological Survey (MGS) (Andreasen and Smith, 1997, Andreasen and Fewster, 2001). The Quaternary sediments are mostly surficial and the aquifer functions as a water-table aquifer. The Quaternary sediments are of fluvial and estuarine origin and are composed predominantly of sand and gravel with some layers of silty clay and clay. The altitude of the aquifer rand from about 40 feet below west of the Perdue Farms, Inc facilities to about 70 feet east of these sites. Based on the MGS studies and a review of the well completion reports, the thickness of the aquifer is approximately 100 feet. Ground water flows from regions of higher elevation to lower elevation. In the region of Perdue Farms the ground water flow direction is northeast to southwest.

SOURCE WATER ASSESSMENT AREA DELINEATION

For ground water systems, a Wellhead Protection Area (WHPA) is considered to be the source water assessment area for the system. The main objective for the two MGS hydrogeologic studies was to delineate the contributing areas (WHPAs) for the wells supplying water to the City of Salisbury. A three-dimensional ground water flow model (MODFLOW and particle tracking routine (MODPATH) were used to determine the contributing areas. As part of the study large users of the aquifer like Purdue Farms, Inc. were included in the model and their contributing areas were also delineated. For the Main Office facility the permitted average pumpage of 16,000 gpd was used in the ground water model. At the Feed Mill a pumpage of 565,000 gpd was used out of the permitted 1.7 million gallons per day and all the pumpage was attributed to one pumping center. For this assessment, the Main Office WHPA is the same as the one delineated from the MGS study (Figure 1).

Since the permitted daily average and pumpage from three wells were not used for MGS's MODFLOW model, the WHPA for the Feed Mill was delineated using EPA's WHPA Code ground water model. The Maryland's Source Water Assessment Plan (MDE, 1999), recommends using EPA's WHPA Code for delineation of systems using a daily average of >10,000 gallons per day from unconfined Coastal Plain aquifers (Figure 2). The WHPA Code is a semi-analytical model and provides a good estimated of time of travel zones for a well in an unconfined aquifer in the Coastal Plain. The model takes into account well interference effects and the pumpage was assigned to each well supplying the facility based on well yield. Input parameters used for the WHPA Code were pumping rate, transmissivity of the aquifer, porosity, hydraulic gradient, ground water flow direction, and aquifer thickness (Appendix D). Both systems have two delineated WHPA zones (1 and 2) based on time of travel (TOT). The total area for the Main Office WHPA is about 49 acres and for the Feed Mill, the WHPA is about 788 acres.

DELINEATION ZONES

Zone 1: Zone 1 is the WHPA delineated using a 1-year time-of-travel (TOT) criterion. Zone 1 serves as the first zone of protection. The one-year criterion was selected base on the maximum known survival times of microbial organisms in ground water.

Zone 2: Zone 2 is the WHPA delineated using a 10-year TOT criterion. It would take any chemical contaminant present at the Zone 2 boundary 10 years to reach the well (if it moves at the same rate as the ground water). Zone 2 provides adequate time for facilities outside the WHPA to address chemical contamination before it could reach the well.

POTENTIAL SOURCES OF CONTAMINATION

Potential sources of contamination are classified as either point or non-point sources. Examples of point sources of contamination are leaking underground storage tanks, landfills, ground water discharge permits, large scale feeding operations and Superfund sites. These sites are generally associated with commercial or industrial facilities that use chemical substances that may, if inappropriately handled, contaminate ground water via discrete point location. Non-point sources of contamination are associated with certain types of land use practices such as the use of pesticides, application of fertilizers or animal wastes, or septic systems that are spaced out over a larger area.

Point Sources

A review of MDE contaminant databases as well as the field survey revealed several point sources of contamination in and adjacent to the WHPA. Figure 1 identifies Underground Storage Tanks (UST) sites, Controlled Hazardous Substance Generators (CHS), Ground Water Discharge Permits sites (GWDP), General Permit sites (GP), Miscellaneous Facilities (MISC) that handle hazardous materials, and a Leaking Underground Tank (LUST) site as potential point sources of contamination. Details of the LUST site and permits can be found in Appendix B at the back of this report. Table 2 lists the facilities identified and their potential types of contaminants. The contaminants are based on generalized categories and often the potential contaminant depends on the specific chemicals and processes being used or which had been used at the facility. The potential contaminants are not limited to those listed. Potential contaminants are grouped as Volatile Organic Compounds (VOC), Synthetic Organic Compounds (SOC) and Heavy Metals (HM), Metals (M), Nitrate (NN) and Microbial Pathogens (MP).

Nonpoint Sources

The Maryland Department of Planning's 2002 Land Use Map for Wicomico County was used to determine the predominant land use in each WHPA (Figure 2). A summary of the total land use within the WHPAs of the two systems is shown in Tables 3a and 3b. Commercial land is the largest land use (73%), followed by residential (21%) in the WHPA for the Main Office. For the Feed Mill WHPA the largest land use is forested (34%) followed by cropland (26%). The Feed Mill activities comprise about half of the

Zone 1 WHPA land use industrial use as major land use. Pesticides and herbicides used on agriculture land are potential non-point sources of Synthetic Organic Compounds (SOCs). The application of fertilizers on agricultural fields is a potential non-point source of nitrate. Several chicken farms are located in the WHPA for the Feed Mills and waste generated by the chickens is also a potential source of nitrate and microbial pathogens. Lawns maintenance and landscaping activities in commercial and residential areas are also potential non-point sources of nitrate and SOCs to ground water.

A review of the Maryland Office of Planning 2002Wicomico County Sewer Map indicates that there is currently no for sewer service for the WHPAs. Both facilities treat their waste at wastewater treatment plants prior to surface discharge to a nearby stream. Several commercial facilities, residences and farms used on-site septic for disposal of their waste, which are potential sources of nitrate and microbial pathogens in ground water.

Other sources that may potentially contaminate ground water supplies include unregulated heating oil underground storage tanks, and stormwater from roads and parking lots within or near WHPAs. Roads are a concern in the event of chemical or petroleum spills, and from the application of salts and other chemicals used for snow removal.

WATER QUALITY DATA

Water Quality data was reviewed from the Water Supply Program's database for Safe Drinking Water Act (SDWA) contaminants. All data reported is from the finished (treated) water unless otherwise noted. The State's SWAP defines a threshold for determining if a contaminant is a concern. If the water quality data is at least 50% of a Maximum Contaminant Level (MCL) in at least 10% of the samples the contaminant is defined as a concern, this report will describe the sources of such a contaminant to the water supply. Both water systems have treatment for their water supply. Table 4a. lists the treatment methods for each system and their plants. None of the treatment is designed to remove chemical contaminants regulated by the SDWA. Both water supplies meet the current drinking water standards. Table 4b summarizes the water quality results for each of the water systems by contaminant group.

Inorganic Compounds (IOCs)

A review of the data shows that nitrate was the only IOC detected above 50% of an MCL in the Main Office and the Feed Mill water supply. Nitrate has an MCL of 10 mg/l and the Feed Mill supply had levels exceeding the MCL on two occasions. Table 5a and 5b show the nitrate levels above 50% of the MCL in the two systems.

The Main Office system and plant 2 (Well No. 2) of the Feed Mill system, both have treatment for removal of iron. Iron has a secondary MCL of 0.3 ppm based on taste, color and odor problems in drinking water. Iron bacteria will also build-up around the well screen. According to the water operator for both systems, periodic cleanup

of the iron buildup around the well screens is conducted by a licensed well driller. This helps recover the capacity of the wells that is lost due to clogging.

Volatile Organic Compounds (VOCs)

No VOCs above 50% of an MCL have been detected in either of the Main Office or Feed Mill water supply. Methyl-tert-butyl-ether (MTBE) was detected in the Feed Mill supply (Well 3) in one sample collected on 2/23/04 at 1.4 ppb. Currently, MTBE does not have an MCL but an advisory of 20 ppb based on taste and odor. MTBE is an additive to gasoline.

Synthetic Organic Compounds (SOCs)

Di(2-ethylhexyl)phthalate was the only SOC detected above 50% of an MCL in the Feed Mill water supply. Phthalate has an MCL of 6 ppb and it was detected in one sample collected on September 12, 2000. It was also found in the laboratory blank on the same date and therefore this result is not believed to represent the water quality of the Feed Mill water supply. Phthalate was detected at lower levels three more times in the Feed Mill water supply but was also reported in concurrent laboratory blank samples. In addition an unregulated SOC, methomyl was detected at 5 ppb in a sample collected on March 5, 2003. Methomyl is an insecticide and currently does not have an MCL but a health advisory of 200 ppb.

No SOCs above 50% of the MCL were detected in the Main Office supply. Phthalate was detected two times at low level but were also reported in the laboratory blank results.

Microbiological Contaminants

Raw water samples were collected after precipitation of at least half an inch, from the Feed Mill's Well Nos. 2, 3 and 4 for bacteriological testing to assist in determining whether these sources are Ground Water Under the Influence of Surface Water. No total or fecal coliform was detected in the raw water for any of the wells. No raw water samples are available for review from the well supplying the Main Office.

All nontransient noncommunity systems are required to conduct quarterly routine bacteriological sampling for their water supply as required by the Safe Drinking Water Act. These samples are generally collected from finished (treated) water, which may not be indicative of the source water conditions. There were no total coliform bacteria detections out of the 39 bacteriological samples collected for the Main Office water supply. There was only one positive total coliform detection out of 39 bacteriological samples collected for the Feed Mill supply samples.

SUSCEPTIBILITY ANALYSIS

The wells serving the two Perdue Farms, Inc. water systems pump water from an unconfined aquifer. In general, water supplies in unconfined aquifers are susceptible to

contamination from land use activities in the wellhead protection area. Well completion reports indicate the presence of thin layers and lenses of clay between the surface and the well screen. The clayey sediments may inhibit the infiltration of some of the surface contaminants into the aquifer. Continued routine monitoring of contaminants is essential in assuring a safe drinking water supply. Some contaminants like iron are naturally occurring in the aquifer and in some instances can reach concentrations that may pose a risk to the water supply.

The susceptibility of the source water to contamination is determined for each group of contaminants based on the following criteria: 1) the presence of natural and anthropogenic contaminant sources within the WHPA, 2) water quality data, 3) well integrity, and 4) the aquifer conditions. The susceptibility analysis is summarized for each water system in table 9.

Inorganic Compounds

Nitrate has been detected above 50% of the MCL in both the Main Office and Feed Mill water supply. Elevated nitrates are generally contributed by agricultural land. and onsite waste disposal. The Feed Mill water supply has higher nitrate values than the Main Office. A greater amount of agricultural land (primarily cropland and poultry feeding operations) within its WHPA. (Figures 1 & 2) is the most likely source for the high nitrate levels. The land application of poultry litter above plant requirements can contribute to high nitrate levels.

Both systems used iron removal treatment to remove high levels of naturally occurring iron from their water supply

Based on the above discussion, the Perdue Farms, Inc. – Main Office and Feed Mill water systems **are** susceptible to nitrate and iron, but not to other IOCs.

Volatile Organic Compounds

No VOCs have been detected above 50% of the MCL in either the Main Office or Feed Mill water supply. Several potential sources of VOCs were identified in the vicinity of the WHPAs for both systems. A LUST site was identified in the WHPA for the Feed Mill. MTBE has been detected in the Feed Mill water supply.

Based on the location of the potential VOC contamination sources, and the shallow unconfined aquifer, and the presence of MTBE in the water supply, the Perdue Farms, Inc. – Main Office and Feed Mills water supplies **are** susceptible to VOC contamination.

Synthetic Organic Compounds

No SOCs above 50% of the MCL have been detected in the either the Main Office or Feed Mill water supply. Unregulated SOC methomyl was detected at a very low concentration one time in the Feed Mill water supply. The sources of SOCs to ground water include point and non-point sources such as pesticide application. No potential point sources were identified within or near the WHPAs for either of the

systems. Non-point sources include pesticides applied to agricultural fields, commercial properties and residential lawns. Cropland makes up a significant portion of the land use within Feed Mill WHPA. If guidelines for pesticide application are followed correctly, the threat to water quality is significantly reduced. Monitoring of the water supply indicated that it is unlikely that the long-term use of SOCs on agricultural or other properties is posing a risk to the Perdue Farms water quality.

Based on the above discussion, Perdue Farm, Inc- Main Office and Feed Mill water supply systems **are not** susceptible to SOCs.

Microbiological Contaminants

Based on raw water bacteriological data the wells supplying the Feed Mills were determined not to be GWUDI. Based on the geology of the Coastal Plain aquifer and its vicinity to the other wells the Main Office well is most likely not GWUDI either. In addition, routine bacteriological sampling results for both systems have not shown any presence of total coliform bacteria in the Main Office supply since 1993 and since 1996 in the s Feed Mills water supply

Based on the above discussion the Perdue Farms, Inc.- Main Office and Feed Mills water supplies **are not** susceptible to microbiological contaminants.

MANAGEMENT OF THE WHPA

Contaminant Source Inventory/Well Inspection

- Perdue Farms, Inc. should review the potential sources of contaminants within the WHPAs for both systems and update them if necessary, including a consideration of historical uses.
- The Feed Mill Well No 1 should be abandoned and sealed according to the State's well construction standards.
- Periodic inspections and a regular maintenance program for the supply wells will ensure their integrity and protect the aquifer from contamination.
- Ensure that Best Management Practices are implemented in handling and storage of hazardous substances in the Feed Mill operations.

Cooperative Efforts with Other Agencies

- Work closely with Wicomico County Health Department to identify any unused wells in the WHPA and to ensure that they are abandoned and sealed in compliance with the State's well construction standards.
- Cover crop implementation will reduce loss of nitrogen to ground water from cropland. Nutrient management plans are required for management of poultry litter. Soil Conservation Districts and Maryland Department of Agriculture provide assistance to agricultural producers in implementing nutrient control strategies.

Monitoring

- Continue to monitor for all Safe Drinking Water Act contaminants as required by MDE.
- Complete the raw bacteriological testing for the Main Office supply well
- An annual check for bacteria is a good method for ensuring each well's integrity.

Changes in Use

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

REFERENCES

Andreasen, D.C, and Fewster, B.T., 2001, Estimation of Areas Contributing Recharge To Selected Public-Supply Wells in Designated Metro Core Areas of Upper Wicomico River and Rockawalking Creek Basins, Maryland: Maryland Geological Survey Open-File Report No. 2001-2-14, 54 p.

Andreasen, D.C., and Smith, B.S., 1997, Hydrogeology and Simulation of Ground-Water Flowing the Upper Wicomico Basin and Estimation of Contributing Areas of the City of Salisbury Well Fields, Wicomico Count, Maryland: Maryland Geological Survey Report of Investigations No. 65, 87 p.

Banks, W.S.L., Klohe, C.A., and Battigelli, D.A., Occurrence and Distribution of Enteric Viruses in Shallow Ground Water and Factors Affecting Well Vulnerability to Microbiological Contamination in Worcester and Wicomico Counties, Maryland: U.S, Geological Survey Water-Resources Investigations Report 01-4147, 23 p.

Cushing, E. M., Kantrowitz, I.H., and Taylor, K. R., 1973, Water Resources of the Delmarva Peninsula: U.S. Geological Survey Professional Paper 822, 58p.

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

Rasmussen, W.C., and Slaughter, T.H., 1955, The ground-water resources in the The water resources of Somerset, Wicomico, and Worcester Counties: Maryland Geological Survey Department of Geology, Mines and Water Resources Bulletin 16, 469 p.

Weigle, J.M., 1972, Part 2: Exploration and mapping of the Salisbury Paleochannel, Wicomico County, Maryland: Maryland Geological Survey Bulletin 31, pages . 61-124.

OTHER SOURCES OF DATA

Water Appropriation and Use Permits WO1955G0001 and WO1982G016
Public Water Supply Sanitary Survey Inspection Reports
MDE Water Supply Program Oracle® Database
MDE Waste Management Sites Database
Department of Natural Resources Digital Orthophoto Quarter Quadrangles
ADC Digital Map of Wicomico County
Maryland Department of Planning 2002 Wicomico County Land Use Map
Maryland Department of Planning 2002 Worcester County Sewer Map

TABLES

PWSID [1]	SYSTEM NAME	PLANT ID [2]	SRC. ID [3]	USE CODE [4]	SOURCE NAME	WAPID [5]	AVE. AMT. (gpd)	WELL PERMIT NO.	WELL DEPTH (ft.)	CASING DEPTH (ft.)	DATE DRILLED	AQUIFER
1220020	PERDUE FARMS INC. - MAIN OFFICE	01	01	H	WELL 1	WI1982G016	16000	WI720178	78	27	1/27/1972	QUATERNARY SYSTEM
		01	02	P	WELL 2	WI1982G016	16000	WI920489	105	95	6/25/1992	QUATERNARY SYSTEM
1220021	PERDUE FARMS INC. - FEED MILL	04	01	P	WELL 4	WI1955G001	1700000	WI730024	92	26	9/26/1972	QUATERNARY SYSTEM
		02	02	P	WELL 2	WI1955G001	1700000	WI052300	93	67	7/20/1963	QUATERNARY SYSTEM
		03	04	P	WELL 3	WI1955G001	1700000	WI730740	91	25	4/18/1974	QUATERNARY SYSTEM
		00	05	H	MAINTENANCE GARAGE WELL	WI1955G001	1700000	WI731377	80	70	11/20/1974	QUATERNARY SYSTEM
		01	90	U	WELL 1	WI1955G001	1700000	WI043072	86	64	7/17/1961	QUATERNARY SYSTEM

Table 1. Well Information

[1] PWSID = Public Water System Identification

[2] PLANT ID = Plant Identification. The water point of entry to a system from each well

[3] SRC. ID = Source Identification. Each well is considered a unique water source

[4] P = Production Wells, H = Other Use Wells, U = Unused Wells

[5] WAPID = Water Appropriation Permit Identification

ID[1]	Type[2]	Facility Name	Address	[1]Reference Location	WHPA System Name(s)	[3]Potential Contaminants
1	CHS, GP	Perdue Farms - Feed Mill	6906 Zion Church Rd.	Figure 1	Perdue Feed Mill	VOC, SOC, HM, MP, NN
2	GP	Perdue Farms - Main Office	31149 Old Ocean City Rd.	Figure 1	Perdue Main Office	VOC
3	MISC	York Heating & Air Conditioning	Old Ocean City Rd.	Figure 1	Main Office & Feed Mill	VOC, HM
4	UST, LUST	Hobbs Rd. Food Mart Citgo	31373 Old Ocean City Rd.	Figure 1	Main Office & Feed Mill	VOC, M
5	UST	Winterplace Market BP Station	6731 Hobbs Rd.	Figure 1	Main Office & Feed Mill	VOC
6	MISC	Lansing Building Products	6701 Hobbs Rd.	Figure 1	Main Office & Feed Mill	VOC, HM
7	MISC	Charles Brown Glass Co.	6581 Hobbs Rd.	Figure 1	Main Office	VOC, HM
8	MISC	Arthur Perdue Baseball Stadium	U.S. Rt. 50 & Hobbs Rd.	Figure 1	Main Office	SOC, NN
9	MISC	Holt Paper & Chemical Co.	31375 John Deere Dr.	Figure 1	Main Office	VOC, HM
10	CHS	Tyndall's, Inc.	31415 John Deere Dr.	Figure 1	Main Office	VOC, SOC, HM
11	MISC	Eastern Shore Regrigeration	31414 Winterplace Pkwy.	Figure 1	Main Office & Feed Mill	VOC, HM
12	MISC	Winterplace Family Medicine	31413 Winterplace Pkwy.	Figure 1	MainOffice & Feed Mill	VOC, HM, M, SOC
13	MISC	Atlantic Retina Center	31455 Winterplace Pkwy.	Figure 1	Main Office & Feed Mill	VOC, HM, M, SOC
14	MISC	Accurate Optical Azar Eye Institute	31519 Winterplace Pkwy.	Figure 1	Main Office & Feed Mill	VOC, HM, M, SOC
15	MISC	Atlantic & Hastings Printers	31545 Winterplace Pkwy.	Figure 1	Main Office & Feed Mill	VOC, SOC, HM
16	MISC	Peninsula Internal Medicine	31575 Winterplace Pkwy.	Figure 1	Main Office & Feed Mill	VOC, HM, M, SOC
17	MISC	Winterplace Animal Hospital	31611 Winterplace Pkwy.	Figure 1	Main Office & Feed Mill	VOC, HM, M, SOC
18	MISC	Filtronic Comtek	31901 Comtek Lane	Figure 1	Main Office & Feed Mill	VOC,SOC,HM,M
19	UST	Walston Switch Exxon	31997 Beaver Run Dr.	Figure 1	Main Office	VOC
20	MISC	Terminix	32071 Beaver Run Dr.	Figure 1	Main Office	SOC
21	MISC	Chesapeake Utilities	32145 Beaver Run Dr.	Figure 1	Main Office	VOC, SOC, HM
22	MISC	Delmarva Lumber & Millwork	32188 Beaver Run Dr.	Figure 1	Main Office	VOC, HM

Table 2. Potential Contaminant Point Sources within or near Wellhead Protection Areas

ID[1]	Type[2]	Facility Name	Address	[1]Reference Location	WHPA System Name	[3]Potential Contaminants
23	GWDP, UST	Wor-Wic Community College	32000 Campus Dr.	Figure 1	Main Office	NN, MP, VOC, SOC, HM
24	UST	K & J Market	31923 Old Ocean City Rd.	Figure 1	Feed Mill	VOC
25	CHS	George Perdue's Used Cars	32208 Old Ocean City Rd.	Figure 1	Feed Mill	VOC, HM, M

Table 2 (continued). Potential Contaminant Point Sources within or near Wellhead Protection Areas

[1] See referenced figure for location

[2] UST = Underground Storage Tanks, GWDP = Ground Water Discharge Permit Sites, CHS = Controlled Hazardous Substance Generators, LUST = Leaking Underground Storage Tanks, GP = General Permit Sites, MISC = Miscellaneous Sites

[3] VOC = volatile organic compounds, SOC = synthetic organic compounds
M = Metals, HM = Heavy Metals, NN = nitrate / nitrite, MP = Microbiological Pathogens

LAND USE TYPE	TOTAL AREA (acres)	PERCENTAGE OF WHPA
Low Density Residential	10.13	20.58
Commercial	35.89	72.90
Industrial	3.21	6.52
Total Area	49.23	100.00

Table 3a. Land Use in the Perdue Farms Main Office WHPA Zones 1 & 2 (See Figure 2)

LAND USE TYPE	TOTAL AREA (acres)	PERCENTAGE OF WHPA
Low Density Residential	121.52	15.41
Medium Density Residential	59.97	7.60
Commercial	30.83	3.91
Industrial	79.15	10.04
Cropland	202.13	25.64
Pasture	13.86	1.76
Forest	265.52	33.68
Feeding Operations	15.46	1.96
Total Area	788.44	100.00

Table 3b. Land Use in the Perdue Farms Feed Mill WHPA Zones 1 & 2 (See Figure 2)

PSWID	PLANT ID	SYSTEM NAME	TREATMENT METHODS	PURPOSE
1220020	01	PERDUE FARMS, INC. - MAIN OFFICE	PH ADJUSTMENT	CORROSION CONTROL
122020	01	PERDUE FARMS, INC. - MAIN OFFICE	HYPOCHLORINATION - POST	DISINFECTION
1220020	01	PERDUE FARMS, INC. - MAIN OFFICE	ION EXCHANGE	IRON REMOVAL
1220021	01	PERDUE FARMS, INC. - FEED MILLS	INHIBITOR- SODIUM HEXAMETAPHOSPHATE	CORROSION CONTROL
1220021	02	PERDUE FARMS, INC. - FEED MILLS	INHIBITOR- SODIUM HEXAMETAPHOSPHATE	CORROSION CONTROL
1220021	02	PERDUE FARMS, INC. - FEED MILLS	ION EXCHANGE	IRON REMOVAL
1220021	03	PERDUE FARMS, INC. - FEED MILLS	INHIBITOR- SODIUM HEXAMETAPHOSPHATE	CORROSION CONTROL

Table 4a. Treatment Methods

PWSID	SYSTEM NAME	NITRATES		OTHER IOCS		VOCs		SOCs	
		No. of samples	No. of samples > 50% MCL	No. of samples	No. of samples > 50% MCL	No. of samples	No. of samples > 50% MCL	No. of samples	No. of samples > 50% MCL
1220020	PERDUE FARMS INC. - MAIN OFFICE	37	3	6	0	10	0	3	0
1220021	PERDUE FARMS INC. - FEED MILL	87	54	6	0	38	0	6	1*

Table 4b. Total Water Quality Samples

* detected in lab blank

PWSID	PLANT ID	CONTAMINANT NAME	MCL (mg/l)	SAMPLE DATE	RESULT (mg/l)
1220020	01	NITRATE	10	18-May-93	5.5
1220020	01	NITRATE	10	11-Jul-97	6.5
1220020	01	NITRATE	10	25-Nov-98	6.5

Table 5a. IOC detections 50% of the MCL in Perdue Farms, Inc. - Main Office Water Supply

PWSID	PLANT ID	CONTAMINANT NAME	MCL (mg/l)	SAMPLE DATE	RESULT (mg/l)
1220021	01	NITRATE	10	27-Sep-93	9.1
1220021	01	NITRATE	10	18-Nov-93	5.3
1220021	01	NITRATE	10	14-Nov-94	6.3
1220021	01	NITRATE	10	21-Aug-95	6.6
1220021	01	NITRATE	10	27-Aug-96	8.2
1220021	01	NITRATE	10	21-Nov-96	10.2
1220021	01	NITRATE	10	10-Dec-96	5.2
1220021	01	NITRATE	10	8-Jun-98	5.94
1220021	01	NITRATE	10	8-Jun-98	6.06
1220021	01	NITRATE	10	8-Jun-98	6.24
1220021	01	NITRATE	10	8-Jun-98	6.08
1220021	01	NITRATE	10	9-Sep-98	7.09
1220021	01	NITRATE	10	9-Sep-98	7.34
1220021	01	NITRATE	10	9-Sep-98	6.77
1220021	01	NITRATE	10	9-Sep-98	7
1220021	01	NITRATE	10	21-Jan-99	6.2
1220021	01	NITRATE	10	21-Jan-99	6.1
1220021	01	NITRATE	10	28-Oct-99	5.9
1220021	01	NITRATE	10	28-Oct-99	5.9
1220021	01	NITRATE	10	28-Oct-99	5.9
1220021	01	NITRATE	10	28-Oct-99	5.9
1220021	01	NITRATE	10	20-Jan-00	5.8
1220021	01	NITRATE	10	15-May-00	6.2
1220021	01	NITRATE	10	15-May-00	8.4
1220021	01	NITRATE	10	29-Sep-00	6.6
1220021	01	NITRATE	10	29-Sep-00	6.5
1220021	01	NITRATE	10	19-Oct-00	6
1220021	01	NITRATE	10	19-Oct-00	6
1220021	01	NITRATE	10	28-Feb-01	6
1220021	01	NITRATE	10	28-Feb-01	5.9
1220021	01	NITRATE	10	28-Feb-01	7.9
1220021	01	NITRATE	10	27-Sep-01	6.1
1220021	01	NITRATE	10	27-Sep-01	6.2
1220021	01	NITRATE	10	13-Dec-01	5.7
1220021	01	NITRATE	10	13-Dec-01	5.7
1220021	01	NITRATE	10	20-Mar-02	7.1
1220021	01	NITRATE	10	30-Dec-02	5.3
1220021	01	NITRATE	10	30-Dec-02	5.5
1220021	02	NITRATE	10	30-Dec-02	5.3
1220021	03	NITRATE	10	30-Dec-02	5.5
1220021	03	NITRATE	10	28-Jan-03	10.3
1220021	02	NITRATE	10	10-Feb-03	5.8
1220021	01	NITRATE	10	26-Jun-03	7.1
1220021	02	NITRATE	10	17-Jun-04	5.2

Table 5b. IOC detections above 50% of the MCL in Perdue Farms, Inc. - Feed Mill's Water Supply

PWSID	PLANT ID	CONTAMINANT NAME	MCL (mg/l)	SAMPLE DATE	RESULT (mg/l)
1220021	03	NITRATE	10	17-Jun-04	7.2
1220021	03	NITRATE	10	28-Oct-04	7.6
1220021	02	NITRATE	10	14-Mar-05	5.3
1220021	03	NITRATE	10	14-Mar-05	7.1
1220021	01	NITRATE	10	15-Jun-05	6.9
1220021	02	NITRATE	10	15-Jun-05	5.2
1220021	01	NITRATE	10	21-Sep-05	7.1
1220021	01	NITRATE	10	21-Sep-05	5
1220021	01	NITRATE	10	16-Dec-05	7
1220021	02	NITRATE	10	16-Dec-05	5.3

Table 5b (contd). IOC detections above 50% of the MCL in Perdue Farms, Inc. - Feed Mill's Water Supply

CONTAMINANT TYPE	Are Contaminant Sources present in the WHPA ?	Are Contaminants detected in WQ samples at Levels of Concern	Is Well Integrity a Factor?	Is the Aquifer Vulnerable?	Is the System Susceptible to the Contaminant
NITRATE	YES	YES	NO	YES	YES
OTHER INORGANIC COMPOUNDS	NO	NO	NO	YES	NO*
VOLATILE ORGANIC COMPOUNDS	YES	NO	NO	YES	YES
SYNTHETIC ORGANIC COMPOUNDS	YES	NO	NO	YES	NO
MICROBIOLOGICAL CONTAMINANTS	YES	NO	NO	YES	NO

Table 6a. Susceptibility Summary Chart for Perdue Farms, Inc. Main Office Water Supply

*except for naturally occurring iron

CONTAMINANT TYPE	Are Contaminant Sources present in the WHPA ?	Are Contaminants detected in WQ samples at Levels of Concern	Is Well Integrity a Factor?	Is the Aquifer Vulnerable?	Is the System Susceptible to the Contaminant
NITRATE	YES	YES	NO	YES	YES
OTHER INORGANIC COMPOUNDS	NO	NO	NO	YES	NO*
VOLATILE ORGANIC COMPOUNDS	YES	NO	NO	YES	YES
SYNTHETIC ORGANIC COMPOUNDS	YES	NO	NO	YES	NO
MICROBIOLOGICAL CONTAMINANTS	YES	NO	NO	YES	NO

Table 6b. Susceptibility Summary Chart for Perdue Farms, Inc. Feed Mills Water Supply

*except for naturally occurring iron

FIGURES

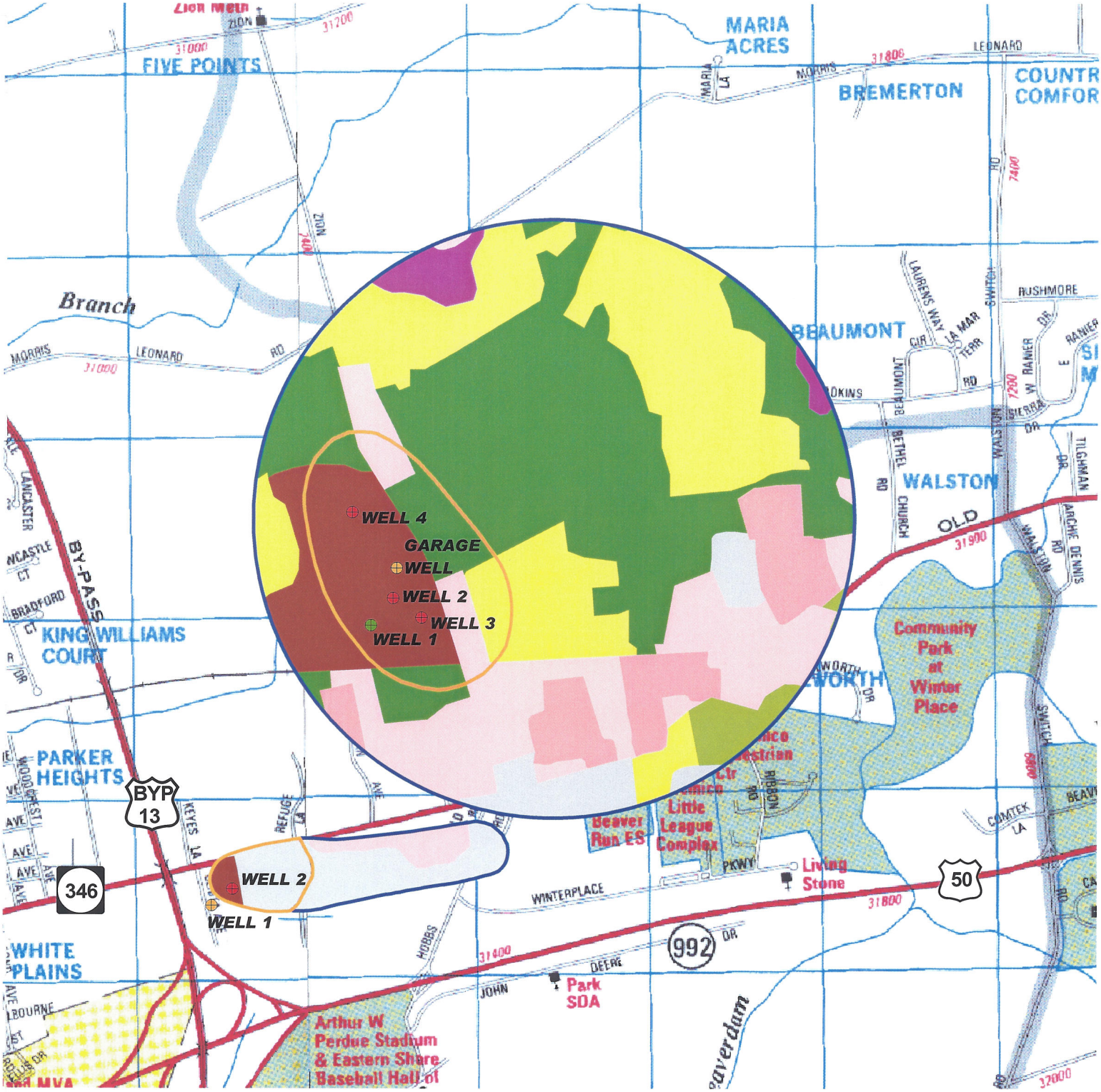


Figure 2. Land Use in the Perdue Farms Main Office & Feed Mill Wellhead Protection Areas

LEGEND

Perdue Farms Wells
- Other Use Wells
- Supply Wells
- Unused Wells

Wellhead Protection Areas
- Zone 1
- Zone 2

Wicomico County Land Use
- Low Density Residential
- Medium Density Residential
- Commercial
- Industrial
- Cropland
- Pasture
- Forest
- Feeding Operations

N

1500 0 1500 Feet

Base Maps: MD Dept. of Planning 2002 Digital Land Use Map, & ADC Digital Map for Wicomico County

APPENDICES

Appendix B

Summaries of open cases within the Perdue Farms, Inc. - Main Office & Feed Mill WHPAs from the MDE Oil Control Program

CASE NO.	NAME	LOCATION	STATUS AS OF MARCH 2006
06-0263WI	Hobbs Rd. Food Mart Citgo (formerly Saman, Inc.)	31373 Old Ocean City Rd., Salisbury	Old underground petroleum storage tanks were excavated and removed from the property. Contaminated soils were hauled from the site and placed in a landfill. The supply well on the property was tested and found not to have any VOC issues of concern. The MDE Oil Control Program is planning on closing the case after a final compliance inspection is performed.

MDE Oil Control Program Open Cases within the Perdue Farms Main Office & Feed Mill Wellhead Protection Areas

Appendix C

Database summaries of discharge permit sites located within and near Perdue Farms, Inc. Main Office & Feed Mill WHPAs

Facility : PERDUE FARMS INCORPORATED- SALISBURY 3400

Description of Permit Type code.

General Information

Permit Type : WAS51 OIL OPS PER, AST + TRANS

App. # : 2002-OPT-3400 Permit # : 2002-OPT-3400

Permit Category :

App. Description : ABOVEGROUND OIL STORAGE.

NPDES # : Project Manager :

Date Received : 09/20/2001 Admin. Procedures Act Permit Revised :

Status Information

Permit Status : IR

Date Status Changed : 12/12/2001

Acknowlegement Sent :

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 12/12/2001

Permit Expiration : 12/12/2006

Prev Permit Expiration : 09/06/2001

HB9 Refund Requested?

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Facility : PERDUE FARMS INCORPORATED- SALISBURY 0400

The description for the Application submitted.

General Information

Permit Type : WAS51 OIL OPS PER, AST + TRANS

App. # : 97-OP-0090B

Permit # : 97-OP-0090B

Permit Category :

App. Description : ABOVEGROUND OIL STORAGE.

NPDES # :

Project Manager :

Date Received : 11/24/1999

☐ Admin. Procedures Act

Permit Revised :

Status Information

Permit Status : XR

☐ HB9 Refund Requested?

Date Status Changed : 12/12/2001

Acknowlegement Sent :

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 12/11/1999

Permit Expiration : 09/06/2001

Prev Permit Expiration :

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Facility : [illegible] INCORPORATED-SALISBURY 3400

List of Valid Facilities.

General Information

Permit Type : W&SST OIL OPS PER, AST + TRANS

App. # : 97-OP-0090A

Permit # : 97-OP-0090A

Permit Category :

App. Description : ABOVEGROUND OIL STORAGE.

NPDES # :

Project Manager :

Date Received : 08/16/1999

☐ Admin. Procedures Act

Permit Revised : [illegible]

Status Information

Permit Status : X [illegible]

☐ HB9 Refund Requested?

Date Status Changed : 11/24/1999

Acknowlegement Sent :

Initial Projected Issuance : [illegible]

Revised Projected Issuance :

Last Permit Issued : 09/08/1999

Permit Expiration : 09/06/2001

Prev Permit Expiration : 09/06/2001

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Application Info | Contacts | Public Participation | Adjudication

Facility : PERDUE FARMS INCORPORATED-SALISBURY 0400

The description for the Application submitted.

General Information

Permit Type : WASST OIL OPS PER, AST + TRANS

App. # : 97-OP-0090 Permit # : 97-OP-0090

Permit Category :

App. Description : ABOVEGROUND OIL STORAGE.

NPDES # : Project Manager :

Date Received : 06/05/1996 Admin. Procedures Act Permit Revised :

Status Information

Permit Status : X

HB9 Refund Requested?

Date Status Changed : 08/17/1999

Acknowlegement Sent : 07/03/1996

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 09/06/1996

Permit Expiration : 09/06/2001

Prev Permit Expiration :

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Facility: PERDUE FARMS INCORPORATED-SALISBURY 3400

General Information

Permit Type: WAS5T OIL OPS PER, AST + TRANS

App. #: 92-OP-0090 Permit #: 92-OP-0090

Permit Category:

App. Description:

NPDES #: Project Manager:

Date Received: 07/17/1996 Admin. Procedures Act Permit Revised:

Status Information

Permit Status: X

Date Status Changed: 07/17/1996

Acknowlegement Sent:

Initial Projected Issuance:

Revised Projected Issuance:

Last Permit Issued: 07/31/1991

Permit Expiration: 07/31/1996

Prev Permit Expiration:

HB9 Refund Requested?

Complete Application:

Renewal Notice Sent:

Total Processing Delay (Initial Issuance): Rqst/Submt

Total Processing Delay (Rev Issuance): Proc Delays

First Est. Tentative Determination:

Revised Est. Tentative Determination:

Tentative Determination Complete:

Application Info | Contacts | Public Participation | Adjudication

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Facility : PERDUE FARMS INCORPORATED- SALISBURY 3400

General Information

Permit Type : WMAIM MAJOR SURFACE INDUSTRIAL DISCH

App. # : 05DP0359 Permit # : 97DP0359

Permit Category : PROCESS WASTEWATER

App. Description : .960 MGD, 4 OUTFALLS, SANITARY, PROCESS & NC COOLING WITH LAND APPLI

NPDES # : MD0000060 Project Manager : PATEL KHANDU

Date Received : 12/06/2004 ☑ Admin. Procedures Permit Revised : 12/07/2004

Status Information

Permit Status : PR PENDING-RENEWAL

☐ HB9 Refund Request

Date Status Changed : 01/26/2005

Acknowlegement Sent :

Initial Projected Issuance : 05/12/2006

Revised Projected Issuance : 06/17/2006

Last Permit Issued :

Permit Expiration :

Prev Permit Expiration : 06/30/2006

Complete Application : 02/17/2005

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : 36 Rqst/Subm

Total Processing Delay (Rev Issuance) : Proc Delay

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication | Watershi

Permit Detail

Billing/Pymnts

ancel-Return Li

Cancel

Ok

Facility : PERDUE FARMS INCORPORATED- SALISBURY 3400

General Information

Permit Type : WMA1M MAJOR SURFACE INDUSTRIAL DISCH

App. # : 97DP0359 Permit # : 97DP0359

Permit Category : PROCESS WASTEWATER

App. Description : MAJOR

NPDES # : MD0000060 Project Manager : PATEL KHANDU

Date Received : 03/06/1997 ☑ Admin. Procedures Act Permit Revised :

Status Information

Permit Status : IF

☐ HB9 Refund Requested?

Date Status Changed : 12/07/2004

Acknowlegement Sent :

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 07/01/2001

Permit Expiration : 06/30/2006

Prev Permit Expiration : 09/01/1997

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete : 10/26/2000

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Application Info | Contacts | Public Participation | Adjudication | Watersh

Facility : PERDUE FARMS INCORPORATED-SALISBURY 3400

General Information

Permit Type : WMA1M MAJOR SURFACE INDUSTRIAL DISCH

App. # : 91DP0359 Permit # : 91DP0359

Permit Category :

App. Description : MAJOR FACILITY

NPDES # : MD0000060 Project Manager :

Date Received : 03/06/1997 Admin. Procedures Act Permit Revised :

Status Information

Permit Status : KR

Date Status Changed : 06/15/2001

Acknowlegement Sent :

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 09/01/1992

Permit Expiration : 09/01/1997

Prev Permit Expiration :

HB9 Refund Requested?

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication | Watershi

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Permit Information

Facility : PERDUE FARMS, INC. - MAIN OFFICE 6041

Unique Number for this Permit.

General Information

Permit Type : WASBR GENERAL OIL CONTAM GW REM PER

App. # : 98-OGR-6041 Permit # : 98-OGR-6041

Permit Category :

App. Description : 96-2327

NPDES # : MDG916041 Project Manager :

Date Received : 07/16/1997 Admin. Procedures Act Permit Revised :

Status Information

Permit Status : XW [illegible]

HB9 Refund Requested?

Date Status Changed : 06/25/2002

Acknowlegement Sent :

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 07/16/1997

Permit Expiration : 04/22/2002

Prev Permit Expiration :

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Facility : [illegible] COMMUNITY COLLEGE 1155

General Information

Permit Type : WMAS GROUNDWATER MUNICIPAL DISCHRG

App. # : 04DP2922 Permit # : 04DP2922

Permit Category : WASTEWATER TREATMNT PLANT

App. Description : 60,000 GPD TO LAGOON AND IRRIGATION

NPDES # : Project Manager : TIEN CHINGTZONE

Date Received : 07/21/2003 ☑ Admin. Procedures Act Permit Revised :

Status Information

Permit Status : IR [illegible]

☐ HB9 Refund Requested?

Date Status Changed : 09/16/2004

Complete Application : 08/25/2003

Acknowlegement Sent :

Renewal Notice Sent :

Initial Projected Issuance : [illegible]

Total Processing Delay (Initial Issuance) : Rqst/Submt

Revised Projected Issuance : [illegible]

Total Processing Delay (Rev Issuance) : Proc Delays

Last Permit Issued : 11/01/2004

First Est. Tentative Determination :

Permit Expiration : 11/01/2009

Revised Est. Tentative Determination :

Prev Permit Expiration : 10/01/2003

Tentative Determination Complete : 07/14/2004

Application Info | Contacts | Public Participation | Adjudication | Watershi

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

MAILED 9/16/04. APPLICATION FOR RENEWAL IS DUE NO LATER THAN 11/1/08.

Facility : WORTHWIC COMMUNITY COLLEGE 1155

NPDES # (will auto-fill for Stormwater permits).

General Information

Permit Type : WMAJ GROUNDWATER MUNICIPAL DISCHRG

App. # : 98DP2922 Permit # : 98DP2922

Permit Category : WASTEWATER TREATMNT PLANT

App. Description : FOR RENEWAL OF 60,000 GPD SEWAGE TREATMENT SYSTEM

NPDES # : Project Manager : TIEN CHINGTZONE

Date Received : 11/17/1997 ☑ Admin. Procedures Act Permit Revised :

Status Information

Permit Status : XR

☐ HB9 Refund Requested?

Date Status Changed : 09/16/2004

Acknowlegement Sent : 08/27/1998

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 10/01/1998

Permit Expiration : 10/01/2003

Prev Permit Expiration :

Complete Application : 11/24/1997

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete : 06/26/1998

Application Info | Contacts | Public Participation | Adjudication | Watershi

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Facility : WORCESTER COMMUNITY COLLEGE 1155

Enter an Application Number for this permit.

General Information

Permit Type : WMAA GROUNDWATER MUNICIPAL DISCHRG

App. # : 92DP2922 Permit # : 92DP2922

Permit Category :

App. Description : GROUNDWATER/MUNICIPAL

NPDES # : Project Manager : TIEN CHINGTZONE

Date Received : 08/09/1991 ☑ Admin. Procedures Act Permit Revised :

Status Information

Permit Status : X DISTOR. NONAPPL

Date Status Changed : 11/21/1997

Acknowlegement Sent :

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 04/05/1993

Permit Expiration : 04/04/1998

Prev Permit Expiration :

☐ HB9 Refund Requested?

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication | Watershi

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Facility : MARGARET M. HIDETI FARM 11551

List of Valid Facilities

General Information

Permit Type : WAS2A APP. TO AGRICULTURAL LAND

App. # : S-02-22-4908-A Permit # : S-02-22-4908-A

Permit Category :

App. Description : FOR NEW PERMIT

NPDES # : Project Manager : HYNSON MARTHA

Date Received : 04/30/2002 ☐ Admin. Procedures Permit Revised : 04/30/2002

Status Information

Permit Status : ISSUED NONSPEC

☐ HB9 Refund Request

Date Status Changed : 07/19/2002

Acknowlegement Sent :

Initial Projected Issuance : 02/28/2003

Revised Projected Issuance :

Last Permit Issued : 07/21/2002

Permit Expiration : 07/20/2007

Prev Permit Expiration : 03/09/2002

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Subm

Total Processing Delay (Rev Issuance) : Proc Delay:

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication

Permit Detail

Billing/Pymnts

ancel-Return Li:

Cancel

Ok

Facility : EUGENE TRICKELL, FR-145 | 11553

General Information

Permit Type : WAS2A | APP. TO AGRICULTURAL LAND

App. # : S-01-10-4817-A | Permit # : S-01-10-4817-A

Permit Category :

App. Description : SYNAGRO MID-ATLANTIC, FIELDS 1A,1B,2-5.

NPDES # : | Project Manager : SIMS | HOWARD

Date Received : 08/08/2001 | ☐ Admin. Procedures Act | Permit Revised :

Status Information

Permit Status : IN | PENDING

Date Status Changed : 12/27/2001

Acknowlegement Sent :

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 12/20/2001

Permit Expiration : 12/19/2006

Prev Permit Expiration :

☐ HB9 Refund Requested?

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : | Rqst/Submt

Total Processing Delay (Rev Issuance) : | Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Facility : MARGARET M. RIDER FARM 11551

General Information

Permit Type : WAS2A APP. TO AGRICULTURAL LAND

App. # : S-97-22-4279-A Permit # : S-97-22-4279-A

Permit Category :

App. Description : AG. LAND.NMP RECEIVED ON 06/03/1999.

NPDES # : Project Manager : HYNSON MARTHA

Date Received : 11/01/1996 ☐ Admin. Procedures Act Permit Revised :

Status Information

Permit Status : X

☐ HB9 Refund Requested?

Date Status Changed : 03/18/2002

Acknowlegement Sent :

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued : 03/10/1997

Permit Expiration : 03/09/2002

Prev Permit Expiration :

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Total Processing Delay (Rev Issuance) : Proc Delays

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Application Info | Contacts | Public Participation | Adjudication

Facility : [illegible] APARTMENTS 11550

General Information

Permit Type : WMA5 GENERAL PERMITS

App. # : 01SI9813A

Permit # : 01SI9813A

Permit Category : SWIMMING POOLS

App. Description : FOR MOD TO SHOW BACKWASH TO GROUND

NPDES # : MDG766813

Project Manager :

Date Received : 04/23/2004

☐ Admin. Procedures

Permit Revised : 05/19/2004

Status Information

Permit Status : PM PENDING MODIFICATION

☐ HB9 Refund Request

Date Status Changed : 05/19/2004

Acknowlegement Sent :

Initial Projected Issuance :

Revised Projected Issuance :

Last Permit Issued :

Permit Expiration : 12/27/2006

Prev Permit Expiration : 12/27/2006

Complete Application :

Renewal Notice Sent :

Total Processing Delay (Initial Issuance) : Rqst/Subm

Total Processing Delay (Rev Issuance) : Proc Delay

First Est. Tentative Determination :

Revised Est. Tentative Determination :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication | Watersh

Permit Detail

Billing/Pymnts

ancel-Return Li

Cancel

Ok

Facility : DCH RAVEN APARTMENTS 11550

General Information

Permit Type : WMAS GENERAL PERMITS

App. # : 01SI9813 Permit # : 01SI6813

Permit Category : SWIMMING POOLS

App. Description : FOR POOL - DMR FOR POOL CLEANING ONLY

NPDES # : MDG766813 Project Manager :

Date Received : 11/24/2003 ☐ Admin. Procedures Act Permit Revised :

Status Information

Permit Status : IN ISSUED NEW

☐ HB9 Refund Requested?

Date Status Changed : 05/19/2004

Complete Application :

Acknowlegement Sent :

Renewal Notice Sent :

Initial Projected Issuance :

Total Processing Delay (Initial Issuance) : Rqst/Submt

Revised Projected Issuance :

Total Processing Delay (Rev Issuance) : Proc Delays

Last Permit Issued : 12/16/2003

First Est. Tentative Determination :

Permit Expiration : 12/27/2006

Revised Est. Tentative Determination :

Prev Permit Expiration :

Tentative Determination Complete :

Application Info | Contacts | Public Participation | Adjudication | Watershi

Permit Detail

Billing/Pymnts

Cancel-Return List

Cancel

Ok

Appendix D

EPA WHPA Code model input parameters for Perdue Farms – Feed Mill WHPA delineations

PERDUE FARMS, INC. - FEED MILL (122-0021)

1 YEAR WHPA

EPA WHPA CODE

INPUT PARAMETERS

AVE. DAILY PUMPAGE FROM WATER APPROPRIATION & USE PERMIT:
1,700,000 gallons per day (gpd)

WELL 2 --- 378,000 gpd or 50,535 ft^3/day

WELL 3 --- 755,000 gpd or 100,936 ft^3/day

WELL 4 --- 567,000 gpd or 75,802 ft^3/day

TRANSMISSIVITY --- 22,000 ft^2/day

AQUIFER THICKNESS --- 100 ft.

POROSITY --- 0.25 (25%)

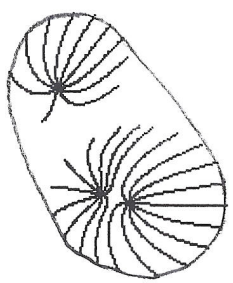
FLOW DIRECTION --- 200° (SW)

GRADIENT --- 0.000857

TIME OF TRAVEL --- 365 days

WELL DIAMETER --- 10 in. (WELLS 2, 3 & 4)

DATA SOURCES: MGS R.I. 65, 1997 and
MGS OPEN FILE REPORT NO. 2001-02-14, 2001



SCALE: 1 INCH = 2000 FEET

0 2000 4000

PERDUE FARMS, INC. - FEED MILL (122-0021)

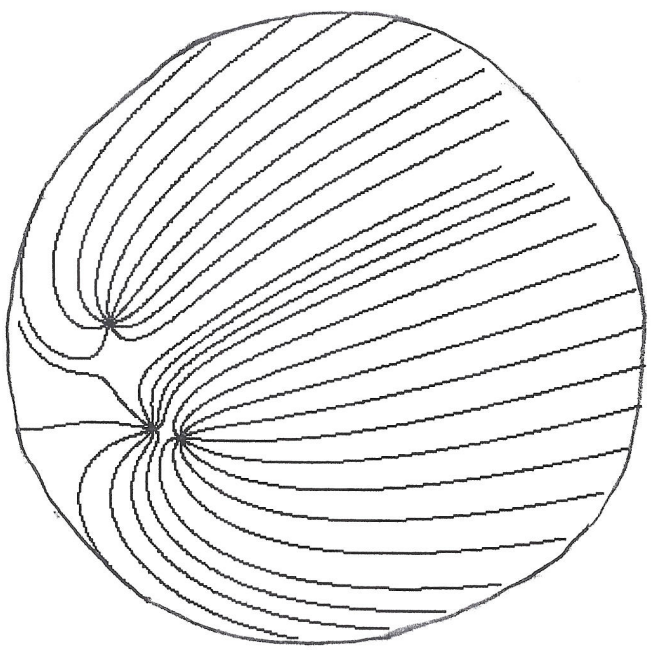
EPA WHPA CODE

10 YEAR WHPA

INPUT PARAMETERS

TIME OF TRAVEL --- 3,650 days

ALL OTHER PARAMETERS ARE THE SAME AS THE 1 YEAR WHPA



SCALE 1 INCH = 2000 FEET

0 2000 4000