Groundwater Permit and Spray Field Advocacy Opportunities in Maryland

CHESAPEAKE
LEGAL ALLIANCE

Updated April 28, 2020

TABLE OF CONTENTS

I. Background

a. How Groundwater Discharges Are Regulated Differently from Surface Water Discharges

Unlike facilities that discharge to surface waters of the United States and are regulated by the National Pollution Elimination Discharge System (NPDES) program of the Clean Water Act, groundwater discharges in Maryland are regulated solely under Maryland's Water Pollution Control statute (Environment Article Title 9 Subtitle 3). This statute provides for the comprehensive regulation of water pollution discharges to waters of the State, which includes "[b]oth surface and underground waters within the boundaries of this State subject to its jurisdiction."[1] Thus, unless specifically excluded by law, groundwater dischargers are generally subject to the same state regulatory framework and standards as surface water dischargers.

Many of these state requirements are established in the Code of Maryland Regulations (COMAR). Regulation 26.08.02.09 contains the general requirement for a discharger to possess a separate ground water permit for specified discharges, including notably "wastewater effluents disposed of by means of spray or other land treatment."

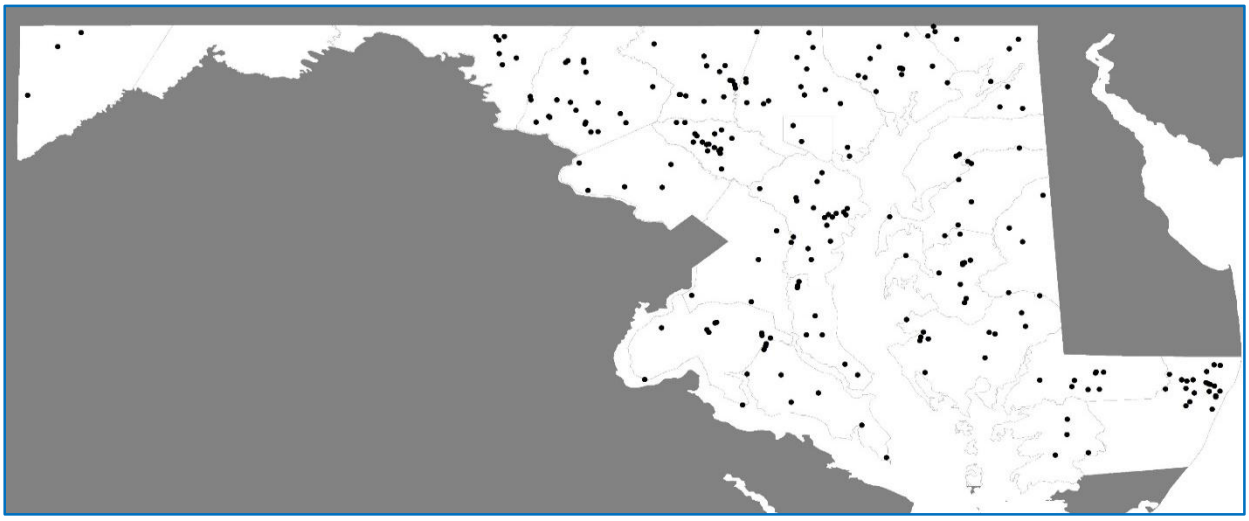
b. Number of State Groundwater Discharge Permits

According to the Maryland Department of the Environment (MDE) fiscal year 2019 Annual Enforcement and Compliance Report, there were 251 groundwater discharge permits as of June 30, 2019. As of March 2, 2020, the MDE wastewater permit portal[2] indicated that there were 248 "issued" permits, with another 30 permit applications received from sites that do not currently have an issued permit.

The wastewater permit portal indicates that there were 76 issued groundwater discharge permits on the Eastern Shore. The most common industry codes for permit holders are "sewerage systems" and "water supply systems," but the database shows a mix of industry codes. On the Western Shore, by contrast, the mixture of industry codes is more diverse, with sewerage systems consisting of a smaller percentage of total groundwater permits. **Figure 1** below depicts the location of all groundwater permit holders in Maryland.

[1] Md. Code Ann., Envir. § 9-101(l)(1).
[2] Available at: http://mes-mde.mde.state.md.us/WastewaterPermitPortal/. Last accessed 4/8/2020.

Figure 1. Groundwater Permits in Maryland



A comparison of groundwater permits in effect each year for the last 10 years, compiled from a review of the MDE annual enforcement reports, shows a significant increase in the number of permits over the last few years, although the number is only slightly greater than the level a decade ago. An examination of the most recently issued groundwater permits from the last two years does not clearly demonstrate any particular industry sector as disproportionately represented. While there are a significant number of recent applications associated with new sewerage systems, it is not clear that the number is disproportionately high compared to the overall mix of previously issued permits. Additional research could be conducted into the types of new groundwater systems in various regions of the state.

If the next several years bring a continued increase in the number of groundwater dischargers, especially from municipal wastewater systems, one potential cause for this trend could be an incentive established by the state's efforts to reduce nutrient pollution into the Chesapeake Bay and its tributaries.

Because nutrient loads from new surface water dischargers are tracked through discharge monitoring reports (DMRs) and because of the general expectation that new loads to impaired waters must be offset, new facilities proposing to discharge (and perhaps some existing dischargers) may seek the reduced transparency afforded by groundwater discharge permits as well as the ostensibly plausible claim that nutrient discharges are fully eliminated through plant uptake. This approach has been described in several documents available online, including the 2011 County Comprehensive Plan Water Resource Element for Worcester County. MDE has been promoting the use of spray irrigation for the purpose of reducing nutrient loads from municipal wastewater systems since at least 1990[3] and regulations to do so have been in place since at least 2004. [4]

[3] *See* Perdue Farms v. Hadder, 109 Md. App. 582, 585.
[4] COMAR 26.08.03.01.C(3)(b).

c. Enforcement and Compliance Data

According to inspection data from the Water and Science Administration Compliance Division at MDE, in the first half of fiscal year 2020, 23 of 41 (56%) inspections of groundwater permits resulted in a finding of "noncompliance" or "corrective action" and an additional 5 inspections required "additional investigation." Only 29% of inspections resulted in a finding of full compliance. An examination of data from the past four fiscal years reveals similar findings, with only 80 of 317 inspections (25%) in compliance. On the Eastern Shore the rate of noncompliance was similar, with 58 out of 108 (54%) inspections ending in noncompliance or corrective action. It does not appear that any particular sector of groundwater discharger is disproportionately represented among those in noncompliance, although additional research could be conducted to confirm this.

Despite the high rate of noncompliance, MDE has conducted a relatively small number of enforcement actions to correct violations. Between fiscal year 2008 and fiscal year 2018 there were 23 enforcement actions against groundwater permittees on the Eastern Shore. For unknown reasons, a significant majority of the actions were taken between 2012 and 2014 and the most recent action was in 2016. As shown in Table 1, many actions were brought against "unauthorized discharges" (likely unpermitted facilities) as opposed to effluent exceedances or other permit violations.

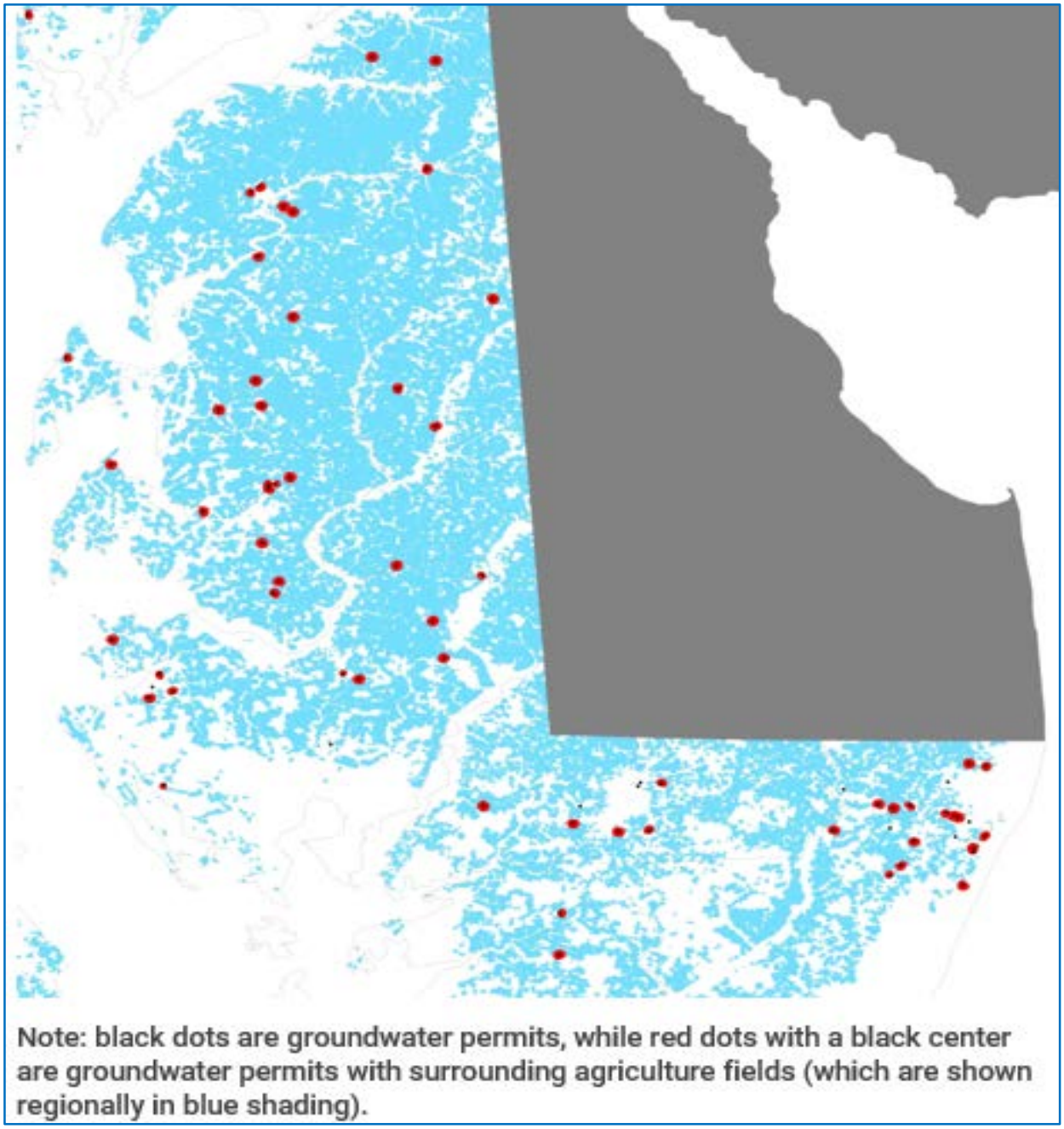
> ***Potential Action:*** Request full inspection reports for a representative sample of facilities within a sector of particular concern. By selecting facilities that appear to be spray fields from municipal treatment plants within several watersheds, the number of pertinent inspection files would be manageable and allow for a thorough review to determine the cause of noncompliance and whether monitoring data show effluent violations or whether the inspectors were able to verify monitoring data. After review of the inspection report files, a follow-up meeting or call with the Compliance Manager to ascertain the final resolution of each noted violation could be revealing. Additionally, the call or meeting could result in greater scrutiny of these violations by MDE compliance staff going forward. It should be emphasized in any call or meeting that their inspection data show that municipal groundwater permits rank toward the top each year in noncompliance rates.

While groundwater permits are not regulated under federal law, the U.S. Environmental Protection Agency (EPA) Environmental Compliance History Online (ECHO) database does report environmental enforcement information for a small percentage of groundwater discharge sites that are also surface water dischargers. It may be worth using the ECHO database to conduct further research in the event that the particular discharge of concern is one of the 34 facilities contained in that database.

It is possible that groundwater permit discharge data may be available electronically in the future. Although Maryland's implementation plan required pursuant to the recent federal eReporting

Rule[5] does not state that groundwater discharge permit would be a part of this data migration process, the most recent annual enforcement report from MDE indicates that the results of DMRs are recorded in the EPA Integrated Compliance Information System (ICIS) database.

Figure 2. Eastern Shore Groundwater Permits



Note: black dots are groundwater permits, while red dots with a black center are groundwater permits with surrounding agriculture fields (which are shown regionally in blue shading).

[5] 40 CFR 127.

Table 1. Enforcement Actions Against Eastern Shore Groundwater Permit Holders, Fiscal 2008 – 2018.

Date Issued	County	Media
7/28/2016	Wicomico	Groundwater Discharge Permit, Non-Tidal Wetlands, Sediment
8/13/2015	Talbot	Groundwater Discharge Permit
1/6/2015	Cecil	Groundwater Discharge Unauthorized
1/2/2015	Cecil	Groundwater Discharge Unauthorized
12/3/2014	Cecil	Groundwater Discharge Permit, Groundwater Discharge Unauthorized
8/21/2014	Caroline	Groundwater Discharge Unauthorized
6/16/2014	Cecil	Groundwater Discharge Permit
4/18/2014	Wicomico	Groundwater Discharge Unauthorized
3/6/2014	Worcester	Groundwater Discharge Permit, Groundwater Discharge Unauthorized
8/15/2013	Caroline	Groundwater Discharge Permit
7/24/2013	Talbot	Groundwater Discharge Permit, Groundwater Discharge Unauthorized
5/21/2013	Somerset	Groundwater Discharge Unauthorized
5/15/2013	Kent	Groundwater Discharge Permit, Surface Water Discharge Permit
4/8/2013	Somerset	Groundwater Discharge Unauthorized
1/8/2013	Worcester	Groundwater Discharge Permit, Groundwater Discharge Unauthorized
1/7/2013	Worcester	Groundwater Discharge Permit
12/12/2012	Talbot	Groundwater Discharge Permit, Groundwater Discharge Unauthorized
10/24/2012	Talbot	Groundwater Discharge Permit, Groundwater Discharge Unauthorized
10/23/2012	Cecil	Groundwater Discharge Unauthorized
9/18/2012	Caroline	Groundwater Discharge Unauthorized, Surface Water Discharge Unauthorized, Tidal Wetlands
8/13/2012	Caroline	Groundwater Discharge Unauthorized
8/3/2012	Worcester	Groundwater Discharge Permit, Groundwater Discharge Unauthorized
10/13/2009	Cecil	Groundwater Discharge Unauthorized

II. Legal and Regulatory Framework

a. Regulation of Groundwater Generally

In addition to a state groundwater discharge permit, facilities that discharge to groundwater may be subject to a number of additional regulatory frameworks, particularly under Maryland statutes.

This analysis focuses specifically on laws applicable to municipal groundwater discharge permits and spray fields.

As noted, COMAR 26.08.02.09 ("Ground Water Quality Standards") requires a permit for "wastewater effluents disposed of by means of spray or other land treatment" and specifically references the "Guidelines for Land Application/Reuse of Treated Municipal Wastewaters." Because the guidelines are formally incorporated by reference in the regulation, they are given the force of law[6] and, as such, this guidance document is important to carefully review for anyone seeking to ensure that a groundwater discharge is consistent with Maryland regulatory requirements. The guidance covers requirements for land application, the state and county coordinated approach to land application, and groundwater monitoring requirements, among other things.

While Chapter 26.08.02 ("Water Quality") of MDE regulations contains the basic requirement that groundwater discharges be regulated by a permit, Chapter 3 ("Discharge Limitations") provides additional controls specific to permit holders that use spray irrigation as part of their wastewater treatment. In particular, subsection .01C(3) of this chapter ("Nutrient Control") requires any discharges that "cause or contribute to eutrophication be (a) Given advanced waste treatment before discharge; (b) Disposed of by spray irrigation on land; or (c) Disposed of by other practicable procedures which will avoid direct discharge to surface waters."

> ***Potential Action:*** Submit a petition for a rulemaking[7] to strike paragraphs (b) and (c) that create an incentive to discharge nutrients to groundwater, or to insert additional protective provisions that at least require any wastewater discharged through spray irrigation to first be "given treatment to enhanced nutrient removal standards." Note that the term "advanced waste treatment" in Chapter .03 is defined in Regulation 26.08.01.01 to mean "secondary treatment" for municipal wastewater, which is not considered protective under modern standards for waters impaired for nutrients in Maryland. Thus, the petition should amend the definition of "advanced waste treatment" or specify a higher standard.
>
> In Maryland, an agency that denies a petition for rulemaking is required by law to state the reasons for the denial or initiate a rulemaking within 60 days. MDE regulations provide a non-exclusive list of potential reasons for denial, including, notably, a lack of "adequate information or resources to evaluate the petition"[8] and thus it is important that any petition include all relevant information and substantiating details. In anticipation of a potential denial on the basis of cost, the petition should be written in such a way as to minimize or avoid the expenditure of any additional resources to carry out the final regulation.

[6] Md. Code Ann., State Gov't § 7-207.
[7] Md. Code Ann., State Gov't § 10-123.
[8] Additional procedures governing rulemaking proceedings at MDE are found at COMAR 26.01.03.

If the rulemaking petition is approved and the rulemaking is initiated, it is critical to engage with MDE immediately to ensure that the permit writers and other relevant staff understand the precise issue being raised and that the new rulemaking is directly responsive to the petition. MDE is not required to engage in an open dialog with petitioners, but may be amenable to doing so.

It is important to note that if the proposed regulation is not adopted by MDE within one year of the date of publication, it is withdrawn by operation of law.[9] For assistance in ensuring the regulation is promptly and properly developed, a petitioner should consider consulting with the Joint Committee on Administrative, Executive, and Legislative Review (AELR), which has broad authority under state law.

b. Aquifer Protection

The groundwater quality standards established in MDE regulation identifies three types of aquifers in Maryland based on their transmissivity and permeability[10] and provides specific criteria for each of the three aquifer types beyond a permittee's mixing zone.[11] Type I aquifers receive the greatest protections as the "characteristics or constituents of waters may not exceed primary or secondary standards for drinking water[12] while in secondary aquifers the primary and secondary standards only need to be met after treatment by commercially available home water treatment or softening systems. Thus, it is important to understand the characteristics of the aquifer under which a groundwater permit applicant is discharging or proposing to discharge.

Potential Action: Review a groundwater permit application for details about the aquifer below the discharge site and compare it with other known information about the aquifer, including information contained in the relevant county or municipality's Source Water Protection Program assessment (more information on these assessments is below). If the description of the aquifer provided by MDE or the applicant is inconsistent with other available information, that information should be provided to MDE during the comment period and it may be worth considering whether any low or no cost expert assistance is available to interpret the technical information and utilize it in the comment.

Potential Action: Submit a petition for rulemaking (see subsection 1.A above for more information about the rulemaking petition process) or legislation to correct what appears to be a flawed standard in 26.08.02.09C(2). This subsection states that the characteristics or constituents of waters *after treatment by commercially*

[9] Md. Code Ann., State Gov't § 10-116(b).
[10] COMAR 26.08.02.09B
[11] COMAR 26.08.02.09C
[12] *See* COMAR 26.04.01.

available home water treatment or softening systems may not exceed primary or secondary standards for drinking water." (Emphasis added). The language "after treatment by commercially available home water treatment or softening systems" is vague, subject to multiple interpretations, and potentially provides for little protection. For example, without reference to cost, the only applicable standard is "commercially available" and could be interpreted to include systems that are well beyond a level of cost that is affordable by the vast majority of households in Maryland; all that a permit applicant would need to show is that such a technology exists to bring highly contaminated ground water into attainment with primary and secondary standards. It may also be worth considering whether the petition should urge more expansive public notice requirements for groundwater permit applicants proposing to discharge above certain types of aquifers or in areas where a majority of residents receive drinking water from residential wells.

c. Maryland Water and Sewer Planning Law

Title 9, Subtitle 5 of the Environment Article establishes the law applicable to county water and sewer plans. Any "sewerage system" must be in conformance with the county comprehensive plan, and a "community sewerage system" is defined as any publicly or privately owned sewerage system applying to two or more lots. MDE is required to review county comprehensive plans at least every three years and has authority to disapprove of part or all of any revision or amendment to a county plan. Given the broad powers MDE has over the siting of systems that discharge wastewater into waters of the State, it is important to maintain vigilance over comprehensive plan changes and consistency with any development proposal to the comprehensive plan.

MDE must adopt regulations to "control, limit, or prohibit the installation and use of … sewerage systems" and "require that, before installation of individual water supply systems or individual sewerage systems, consideration be given to … ground water conditions … [and] availability of water from unpolluted aquifers."[13] MDE established these regulations in Subtitle 26.04 of COMAR. Chapter .03 provides additional regulations of sewerage system installations in the subdivision of land, while Chapter .05 regulates "shared facilities" including requirements to be consistent with all state and federal laws and controls on subsurface discharges. Notably, Chapter .03 established a criminal misdemeanor penalty in addition to the statutorily created penalties.

It should also be noted that the MDE guidelines on land application of municipal wastewaters also states that "[s]tate processing of a groundwater discharge permit application for a new development project will not be started until the development project is incorporated into the approved County Water and Sewerage Plan."

> ***Potential Action:*** During the public comment period for a new groundwater permit, ensure that the proposed system is incorporated and fully consistent with the

[13] Md. Code Ann., Envir. § 9-510(b).

relevant county water and sewer plan. If not, immediately cite to the statute, regulations, and guidance.

d. Maryland Septic and Growth Tier Law

Another legal framework that could potentially impact the siting and regulation of municipal wastewater discharges to groundwater was established by Chapter 149 of 2012. This recent law, colloquially known as the "septic and growth tier" law, requires counties to divide their jurisdictions into one of four land use tiers, each of which has different restrictions on subsurface disposal of sewage via septic systems, community sewerage systems, and shared facilities in new developments. Generally, the legislators intended this law to steer residential growth to areas served by public sewers and minimize the use of septic systems and other systems that are not equipped with enhanced nutrient removal technology.

Most of the provisions of the septic and growth tier law is contained in § 9-206 of the Environment Article. Subsection (g) of this section prohibits septic systems in the Tier I (more urbanized) areas and only allows septic systems, community sewerage systems, or shared facilities in minor subdivisions (usually fewer than 8 lots in most counties) for Tier II areas (planned for future growth on sewer). Tier IV areas (dominated by agriculture or forest) receive the most restrictions, including only allowing for minor subdivisions unless the housing density is less than one unit per 20 acres and which may only be served by septic systems. Tier III areas (everything else) may use septic systems, community sewer systems, or shared facilities, but only after the county planning board holds a public hearing and conducts specified additional environmental reviews of the proposed development.

> ***Potential Action:*** Ensure any new development proposal conforms to the septic and growth tier statute and is consistent with the county's growth tier maps, which may be incorporated into the county comprehensive plan. If the development is a major new subdivision to be served by a decentralized package plant (a "shared facility" or "community sewer system") that relies on a groundwater permit, make sure it has gone through the additional environmental reviews and public hearing as required under the state law.

Section 9-1110 of the Environment Article provides additional restrictions for groundwater protection that received less attention during the passage of Chapter 149 of 2012. This section required "community sewerage systems" and "shared facilities" that discharge via land application to have a nutrient management plan "that assures that 100% of the nitrogen and phosphorus in the applied effluent will be taken up." Additionally, MDE is prohibited from approving a shared facility or community sewerage system unless the system is managed, operated, and maintained by a "controlling authority" (local government) or its third-party contractor.

> ***Potential Action:*** Ensure that any wastewater disposal system proposed for a new development that relies on groundwater discharge via spray irrigation and fits the

description of a "community sewerage system" or "shared facility" under § 9-1110 has a nutrient management plan that includes 100% nutrient uptake.

Finally, uncodified language in Chapter 149 of 2012 requires MDE to promulgate regulations to establish nutrient offset requirements for new residential major subdivisions within Tier III areas that are to be served by on-site sewage disposal or shared systems. These regulations were never proposed.

> ***Potential Action:*** Submit a petition for rulemaking to MDE. This petition would likely be granted given that MDE is in clear violation of Chapter 149 of 2012.

e. Impaired Waters and Offsets

Another potential legal mechanism to require applicants proposing to discharge to groundwater to offset their pollution is through the Clean Water Act and the state's implementation of its obligations to regulate point sources of water pollution. A point source is defined in Maryland regulations as a "discernible, confined and discrete conveyance … from which pollutants are, or may be, discharged" while "discharge" is defined to include "emitting of any pollutant to waters of this State" which consists of groundwater.[14] A "pollutant" is defined broadly to include any "liquid, gaseous, solid, or other substance that will pollute any waters of this State."

Under these definitions, it appears likely that a spray irrigation system *could* be considered a point source under Maryland law. However, it is unclear whether MDE *currently* considers spray irrigation systems to be a point source that would be subject to the Clean Water Act's requirements applicable to waste load allocations as opposed to a nonpoint source to be dealt with programmatically in the aggregate.

After a review of several groundwater permits for the discharge of municipal wastewater, it appears that MDE has not clearly and directly articulated its perspective on this question. However, a number of references in these permits to standards applicable to point sources seem to suggest that MDE would likely treat spray irrigation and rapid infiltration basins as point sources. For instance, each reviewed permit labels various points in the discharge system as "outfalls."

Additionally, the permits include terms and conditions that require compliance with Title 9, Subtitle 3 of the Environment Article ("Water Pollution Control"). Section 9-314(c) states that "[e]ffluent standards set under this section shall be at least as stringent as those specified by the National Pollutant Discharge Elimination System" which specifically govern point sources of pollution and generally require compliance with water quality standards and TMDLs. Similarly, Maryland regulations contain the same basic requirement: "[t]he Department shall issue State discharge permits or NPDES permits in accordance with provisions and conditions of COMAR 26.08.01—26.08.04 and 26.08.08, to satisfy the regulatory requirements of the National Pollutant

[14] COMAR 26.08.01.01B

Discharge Elimination System (NPDES), established under the Federal Act."[15] A "discharge permit" is specifically defined as "a permit issued by the Department for the discharge of any pollutant or combination of pollutants into the waters of this State"[16] which, as noted above, expressly include groundwater.

However, while this suggests that the groundwater permits must be consistent with federal regulations applicable to point sources, they contain no specific reference to impaired waters or wasteload allocations. Because of this, MDE might still argue groundwater permits are not "point source" permits because they are not required to be under federal law, even though the language of the permits and of state statutes seem to indicate that they are to be regulated as point sources.

To the extent that spray irrigation systems, rapid infiltration basins, and other similar systems that discharge to groundwater through discrete conveyances are considered point sources, they may be subject to provisions that require pollutant load offsets. In 2008, MDE issued a policy document entitled "Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed" that called for "all new and expanded point source nutrient loads to be fully offset." This document generally encouraged offsets to be executed through a system of nutrient pollution trades between point sources pursuant to MDE's Point Source Trading policy. That policy also required that all trades be consistent with local water and sewer plans. It should be noted that this guidance document has been removed from the MDE web page where it was previously housed.[17] Even if MDE is planning to reverse or revise this policy guidance, because it has been incorporated into the state's Phase II Watershed Implementation Plan and point source to point source trades were expressly excluded from MDE's more recent nutrient trading regulations,[18] it is arguably still applicable to new point source dischargers.

In addition to this MDE guidance document, the Clean Water Act also envisions offsets in certain circumstances. Federal regulations prohibit the issuance of a permit for a new source or discharger "if the discharge from its construction or operation will cause or contribute to the violation of water quality standards" unless the applicant can demonstrate the availability of adequate pollution load allocations or that existing dischargers are under a compliance schedule to bring the water segment into compliance with water quality standards.[19] This section of federal regulations has spawned a line of cases in state and federal courts,[20] including here in Maryland.[21] While the case law remains relatively undeveloped and the outcome of cases have been mixed for those challenging permit applications, the contours of this legal framework have taken shape and indicate that courts are comfortable with restricting growth under the Clean Water Act NPDES program under certain

[15] COMAR 26.08.04.01A
[16] COMAR 26.08.04.01B
[17] MDE. "Welcome to the Maryland Nutrient Trading Program." Available at: http://mdnutrienttrading.com/. Last accessed 4/6/2020.
[18] COMAR 26.08.11.04D.
[19] 40 CFR 122.4(i).
[20] *See e.g., Friends of Pinto Creek v United States EPA* 504 F3d 1007 (2007) and *In re City of Annandale* 731 NW2d 502 (2007).
[21] Assateague Coastkeeper v. Md. Dep't of the Env't, 200 Md. App. 665.

circumstances, including that the proposed discharger has availed itself of the option to offset pollution associated with its future discharges.

> ***Potential Action:*** In drafting a comment during the public comment period associated with a tentative determination to issue a groundwater permit involving discharge through a spray irrigation or similar system, consider including an argument that, pursuant to both state guidance and federal regulation, the permit should incorporate terms and conditions that either provide satisfactory assurance that no pollution will result beyond the mixing zone, or that any additional pollution to the relevant watershed will be fully offset.

f. Maryland Nutrient Management Plan Laws

Land application of wastewater to a spray field needs to be consistent with a nutrient management plan in at least two circumstances. The first situation in which a nutrient management plan is required is where wastewater is being applied to an "agricultural operation" under Title 8 ("Soil Conservation") of the Agricultural Article and Subtitle 15 of the Agriculture Title in COMAR. In the event that a spray field is applying wastewater to a field associated with an agricultural operation, Maryland Department of Agriculture regulations require nutrient management plans associated with the application of "animal manure, fertilizer, biosolids, or other plant nutrients."[22]

A second legal requirement for spray irrigation of wastewater to be covered by a nutrient management plan is under § 9-1110 of the Environment Article, which subjects a "community sewerage system" or "shared facility" to the requirement that 100% of nutrients in the discharge be eliminated through plant uptake by way of a nutrient management plan.

It is unclear how many fields receiving wastewater from a spray irrigation system would not be interpreted by MDE groundwater permit writers to be a field associated with an agricultural operation. It is similarly unclear how many spray irrigation sites discharge wastewater from "community sewerage systems" or "shared facilities."

> ***Potential Action:*** Review a proposed groundwater discharge permit for the presence of nutrient management plans. To the extent that a permit does not contain such a plan, include that finding in the comment letter submitted during a public comment period. Request that a NMP should be required, unless the applicant clearly demonstrates that the receiving spray field is not part of an agricultural operation and that the municipal wastewater being discharged is not from a facility that can be considered a "community sewerage system" or "shared facility" under § 9-1110. Even if a clear determination cannot be made in support of one of these two bases for requiring a plan, consider urging the permit writer to include a nutrient management plan in the permit as an additional enforceable condition that

[22] COMAR 15.20.06.02

ought to be contained in the permit as a mechanism for determining whether the facility ought to be procuring pollution offsets.

Potential Action: Legislation could be introduced to extend to land application of liquid wastewater many of the same protections required for the land application of biosolids. For example, § 9-320 of the Environment Article prohibits MDE from promulgating a regulation that "deals with the land application of sewage sludge without the approval of the Department of Agriculture." Additionally, in adopting sewage sludge utilization regulations MDE is required to consider issues such as "pathogen control," "methods for calculating load rates that will assure nondegradation of the groundwater supply," and proximity "of the land on which sewage sludge may be applied to sensitive areas, including flood plains, wetlands, and areas of critical concern." If it is determined that the number of spray irrigation sites will continue to proliferate and that the current regulatory framework is insufficient to protect public health and the environment, a more comprehensive solution may be necessary through statewide legislation. This need may be particularly acute now given growing concerns of emerging contaminants (*e.g.*, PFAS, hormones and pharmaceuticals, and herbicides) in drinking water and the potential that any lower treatment standards used for municipal groundwater dischargers will have the unintended consequence of increasing land application of toxic or other harmful compounds from municipal wastewater.

g. Waste System Operator Regulations

As noted above, a specific provision of law applies to "community sewerage systems" and "shared facilities" that prohibits MDE from approving one of these facilities unless the system is managed, operated, and maintained by a "controlling authority" (local government) or its third-party contractor. This is one narrow requirement that ensures that a qualified professional is in charge of protecting water quality from groundwater discharges. A broader requirement is found in Title 12 of the Environment Article, which established the Board of Waterworks and Waste System Operators.

Section 12-501 prohibits the operation of "a waterworks, wastewater works, or industrial wastewater works unless the facility is under the responsible charge of a certified superintendent or certified operator." A "wastewater works" is defined as "a facility used to collect, store, pump, treat, or discharge any liquid or waterborne waste" but excludes septic tanks and industrial wastewater disposal systems.[23] A system that violates this requirement to have a certified operator is subject to a misdemeanor penalty of up to $25 for each day of violation."[24] State regulations

[23] Md. Code Ann., Envir. § 12-101.
[24] Md. Code Ann., Envir. § 12-104.

provide additional details regarding the certification requirements for qualified operators and superintendents. [25]

> ***Potential Action:*** File complaint with the Compliance Division at the Water and Science Administration for any small groundwater discharger that does not have a certified operator. Separately, it may be advisable to publicize specific instances where the absence of a qualified operators is causing pollution problems in order to alert other wastewater systems that are not in compliance with the requirement to have a certified operator in charge of the facility and to incentivize new developments to budget for the cost of maintaining a certified operator.

h. Source Water Protection and the Safe Drinking Water Act

The 1996 amendments to the Safe Drinking Water Act instilled a greater focus at EPA and among states regarding the need to protect drinking water at the source through pollution control and watershed protection.[26] These amendments built upon the wellhead protection programs established in earlier amendments to the Act and established ground water treatment standards, a groundwater protection grant program administered by EPA, state source water protection program requirements, and the Drinking Water State Revolving Loan Fund, among other things.

Maryland established a source water protection program and conducted a number of source water assessments for various counties and municipalities. MDE has archived these assessments on their Source Water Protection program web page. The source water assessment documents may also contain references to the wellhead protection areas and local wellhead protection ordinances.

Along with Maryland's drinking water regulations and standards,[27] the local source water assessments provide valuable, though sometimes dated, information, while the local wellhead protection ordinances may provide additional requirements that should be consulted in the area in which a groundwater permit is proposed. Finally, it should be noted that the Safe Drinking Water Act provides citizen suit authority, though it may be difficult to locate a relevant nondiscretionary duty that would give rise to a viable claim.

> ***Potential Action:*** While unlikely, it may be worthwhile to determine if a site is located above a sole source aquifer and, if so, whether any federal funds have been used to finance any part of the proposed project (*e.g.*, revolving loan funds). By federal law, no federal funding may be committed for projects that EPA determines may contaminate a sole source aquifer.

[25] *See* COMAR 26.06.01
[26] P.L. 104-182.
[27] COMAR 26.04.01

III. Specific Questions

a. How is spray irrigation factored into the Chesapeake Bay model?

Within the Phase 6 Chesapeake Bay model documentation Rapid Infiltration Basins (RIBs) and non-agricultural spray irrigation systems are modelled separately from agricultural spray irrigation. Nutrient and sediment loads form RIBs and non-agricultural spray irrigation were not explicitly simulated as a load source in the previous (Phase 5.3) version of the model, but now in the Phase 6 version, the model uses a "simple nutrient balance simulation to estimate the loads" from RIBs and non-agricultural spray irrigation at each location. Thus, the resulting load will be "simulated as a discharge to the modeled stream similar to the discharge from septic" and will be reported as a municipal wastewater discharge to the land or "MWL" in the load tracking reports. Nutrient load removal is estimated using septic attenuation factors.

By contrast, loads from agricultural spray irrigation are considered a terrestrial input to the system and not a "direct load" like for municipal wastewater discharges from RIBs and non-agricultural spray irrigation systems. The Phase 6 model separates organic sources of nutrient inputs from several other categories, including inorganic fertilizer. The model largely treats nutrients from biosolids, spray irrigation, and septage applied to agricultural fields the same. For more information regarding plant available nutrients in biosolids generated by Maryland wastewater treatment plants, annual reports are compiled by MDE and available on request.

According to the Chesapeake Assessment Scenario Tool (CAST) source data, RIBs are described as "[a] land based wastewater disposal system where wastewater that has been chemically and physically treated by a treatment plant is discharged to an unlined excavated or constructed basin. By design, the treated wastewater infiltrates to the water table. *This load also includes spray irrigation on developed land areas*." (Emphasis added). RIBs and spray irrigation systems are counted as part of the load allocation within the septics sector in CAST reports. Similarly, in Maryland's Phase II WIP, few of the known groundwater discharge permits are included in the list of point source dischargers, indicating that Maryland also has not accounted for spray irrigation systems along with other point sources.

CAST reports the agricultural nutrient applications for the biosolids group as a whole, and not specifically or solely for spray irrigation. A Bay Program expert would need to be queried regarding the feasibility of acquiring raw data specific only to spray irrigation.

b. Are Groundwater Discharge Permits Assumed to Not Add Pollution to Waters of the State?

The MDE Guidelines for Land Application/Reuse of Treated Municipal Wastewaters specify that in some instances "the nutrient input and not the hydraulic input is the deciding factor as to whether the system will have a detrimental effect on the environment." Thus, for a "groundwater discharge that may impact an impaired surface water body, the Department will determine the nitrogen input from the percolate on a case by a case basis." In Appendix D of the document, MDE provides a

sample calculation in which nearby surface waters are impaired for nitrogen, rendering the "allowable nitrogen concentration in percolation" as zero. This guidance document, which is incorporated by reference into state regulations, envisions the establishment of a zero pollution standard in some circumstances, but does not, by itself, bind permit writers to create such a standard in all cases.

> ***Potential Action:*** Given that nearly all waters of the State are deemed as impaired for nitrogen, it would be appropriate, after filing an immediate request for an extension of the public comment period, to request from the permit writer by phone, email, or via the Public Information Act any monitoring data from any monitoring wells used to establish baseline conditions. While such data are public information upon issuance of the permit, they may not be considered as such before the permit's issuance to the extent that the wells are owned or monitored by private entities. Combined with any other groundwater quality data that may be available from the local government, these data may bolster any argument made in the public comment regarding the need to ensure a zero nutrient pollution groundwater percolation standard. This would be intended to supplement, but not supplant, the need to fully comply with any nutrient management plan and Phosphorus Management Tool requirement that may also be applicable.

c. *What strategies can be employed to keep unqualified private entities from operating waste systems discharging to groundwater?*

Homeowners associations and other similar entities would likely not be exempt or otherwise immune from enforcement under the Clean Water Act, the Maryland Water Pollution Control statute, or other applicable state statutes, such as the requirement to hire a certified operator for the wastewater system. Thus, being present in deliberations between the entity and the state or local permitting authority may be effective at ensuring the entity fully understands the potential scope of liability associated with taking ownership of a wastewater disposal system under state and federal law.

> ***Proposed Action:*** ensure the relevant local government is designated as a co-permittee. In the public comment, it may be advisable to advocate for a clarification that the local government should provide a certified operator for the facility if the local government has a Public Works Department or otherwise currently employees and supervises other certified operators. If the facility in question fits the description of a "community sewerage system" or "shared facility" under § 9-1110 of the Environment Article then note that the facility must be "managed, operated, and maintained by a "controlling authority" (local government) or "a third party under contract with the controlling authority."

> ***Proposed Action:*** For years, it has been known that there is a nationwide shortage of qualified operators for wastewater treatment plants (for more information, see

this report). If it is determined that a significant number of existing and/or new groundwater discharge permit holders are operating without a certified operator, it may be worth engaging legislative advocates to determine the feasibility of introducing legislation to ensure a certified operator is hired before a facility is built and maintained during the lifetime of the facility. A mechanism to enact this requirement could be similar to a front-foot fee passed on by developers to association unit owners, which ensures the cost is paid for by the homeowners each year. Another option could be to establish a mandatory component in the Water Resources Element of the Comprehensive Plan or the County Water and Sewer Plan approval.

Proposed Action: COMAR 26.03.01.08 requires "financial management plans" within County Water and Sewer plans, but only for "*publicly-owned* community sewerage systems." (Emphasis added). A rulemaking petition could be submitted to correct this oversight by striking "publicly-owned" and making clear that *any* community sewerage systems approved in the county need to be subject to the same requirements to have appropriate financial management plans, regardless of the type of system ownership. The petition could also reference § 9-501(b) of the Environment Article, which requires MDE to promulgate regulations that "control … the use of sewerage systems" and are not solely confined to "publicly owned" systems.

d. What is the law on winter storage and blackout dates and how can they be strengthened consistent with agricultural laws?

The Maryland Nutrient Management Manual, Supplement No. 8 (August 2016) weakened the winter manure ban to only 75 days, but this manual, incorporated by reference in COMAR 15.20.07.02, is still stronger than the 60 days in some of the recently issued and proposed groundwater discharge permits. It should be noted that, at least in some permits, the required storage capacity is for 90 days, including a 30-day reserve. If the spray field is subject to the nutrient management plan requirements in the Agriculture Article or the facility is subject to a requirement to fully offset nutrient loads or to assure that 100% of nutrients are absorbed by plants, then it may be critical to ensure the proposed project possesses sufficient storage capacity.

Potential Action: A permit that does not establish a 75-day winter prohibition on spray irrigation or a requirement to establish effluent storage capacity based on a 75-day winter ban (which should be greater than storage for only a 75-day period) could be deficient. If the permit regulates a spray field that should be subject to a nutrient management plan requirement, as discussed above, then, in accordance with § 8-803.1 of the Agriculture Article, the spray field is subject to all of "the requirements of this subtitle," which includes the 75-day winter application ban.

Even if the spray field is not subject to the Nutrient Management statute, the permit applicant may be required to ensure that all nutrient pollution discharged from the spray irrigation system is taken up by crops as a result of several laws and regulations, as described above. Plant uptake of nutrients cannot happen if plants are not growing, making a 60-day application ban or storage requirement inconsistent with real world conditions.

Ideally, the permit should also specify how the storage volume should be computed, rather than leaving open to the applicant's interpretation how to construct a storage unit to contain 75 days. For instance, the volume could be computed to the amount of precipitation equal to the greatest amount received over a 75-day period over the last decade, multiplied by an additional factor to be conservative and account for precipitation trends.

IV. Other Information and Resources

a. Publications and Literature

- NIH, *Nitrate from Drinking Water and Diet and Bladder Cancer*… (2016)
- USGS National Water Quality Assessment Program:
  - *Quality of Public Supply Well Water Major Findings 1993-2007* (2010)
  - *Anthropogenic Organic Compounds in Source Water of 9 Systems that Withdraw from Streams* (2008)
  - *Factors Affecting Public-Supply-Well Vulnerability to Contamination* (2013)
  - *Water Quality in Northern Atlantic Coastal Plain* (2009)
  - Quality of Water from Domestic Wells in Principal Aquifers of the United States, 1991–2004
    - "A separate analysis of domestic wells in areas of relatively intense agricultural land use showed that concentrations of nitrate were greater than the MCL in nearly 25 percent of about 400 wells sampled in those areas."

b. Maps

- EPA Facilities that Discharge to Drinking Waters (EPA) here
- EPA Overall DWMAPS (Drinking Water Mapping Application to Protect Source Waters) online mapping tool here
- Environmental Working Group Tap Water Database and Maps