

The Maryland Department of the Environment Secretary Serena McIlwain

Senate Bill 930 Environment - Managed Aquifer Recharge Pilot Program - Establishment

Position: Support with Amendments

Committee: Education, Energy, and the Environment

Date: February 25, 2025

From: Alex Butler, Deputy Director of Government Relations

The Maryland Department of the Environment (MDE) **SUPPORTS** SB 930 **WITH AMENDMENTS**.

Bill Summary

Senate Bill 930 would establish a pilot program for managed aquifer recharge (MAR) in Maryland. MAR involves taking reclaimed water and injecting that water back into an underground aquifer (a process called groundwater augmentation). The bill authorizes MDE to review, permit, and regulate processes that test the use of reclaimed water from a demonstration facility for groundwater augmentation. The demonstration facility must address a groundwater supply or quality problem anticipated to occur within the next 25 years. Additionally, the bill requires MDE to report annually to the Governor and the General Assembly on the pilot program.

Position Rationale

MDE supports the general concept of water reuse technologies, as evidenced by its support of HB 848/SB 407 of 2023 *Drinking Water - Indirect Potable Reuse Pilot Program - Establishment* and MDE's own bill of this Session, HB 25/SB 265 of 2025 *Environment - Reservoir Augmentation Permit - Establishment*. As a type of water reuse, MAR can be useful where an aquifer is facing a water shortage, being threatened with saltwater intrusion, or causing ground subsidence. MAR technology has been used in Western states, such as California and Texas, for years and its general principles are well-established.

However, without adequate safeguards, MAR can pose the risk of groundwater contamination. Reclaimed water that is being injected back into an underground aquifer should be treated in multiple ways to avoid accidental contamination. MDE has worked closely with both the Maryland Department of Natural Resources and Anne Arundel County to craft the attached amendments, which include water treatment requirements based on California's successful model and applicable safeguards that were included in HB 848/SB 407.

With these amendments, MDE believes SB 930's pilot program can be safe, beneficial, and effective. Accordingly, MDE requests a **FAVORABLE WITH AMENDMENTS** report for SB 930.

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SENATE BILL 930

M3 SB 942/24 – EEE CF 5lr2335

By: Senator Gile

Introduced and read first time: January 28, 2025 Assigned to: Education, Energy, and the Environment

A BILL ENTITLED

AN ACT concerning

Environment - Managed Aquifer Recharge Pilot Program - Establishment

FOR the purpose of establishing the Managed Aquifer Recharge Pilot Program; authorizing the Department of the Environment to review, permit, and regulate a process to test the use of treated reclaimed water from a demonstration facility as a source for groundwater augmentation under certain circumstances; and generally relating to the Managed Aquifer Recharge Pilot Program.

BY repealing and reenacting, with amendments,

Article – Environment

Section 1–601(a)

Annotated Code of Maryland

(2013 Replacement Volume and 2024 Supplement)

BY repealing and reenacting, without amendments,

Article – Environment

Section Sections 7-201(a) and (l), 9-101(a), (b), (e) and (g), and 9-301(a) and (h)

Annotated Code of Maryland

(2014 Replacement Volume and 2024 Supplement)

BY adding to

Article – Environment

Section 9-303.4

Annotated Code of Maryland

(2014 Replacement Volume and 2024 Supplement)

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That the Laws of Maryland read as follows:

Article – Environment

1-601.

- (a) Permits issued by the Department under the following sections shall be issued in accordance with this subtitle:
 - (1) Air quality control permits to construct subject to § 2–404 of this article;

- (2) Permits to install, materially alter, or materially extend landfill systems, incinerators for public use, or rubble landfills subject to § 9–209 of this article;
- (3) Permits to discharge pollutants to waters of the State issued pursuant to § 9–323 of this article;
- (4) Permits to install, materially alter, or materially extend a structure used for storage or distribution of any type of sewage sludge issued, renewed, or amended pursuant to § 9–234.1 or § 9–238 of this article;
- (5) Permits to own, operate, establish, or maintain a controlled hazardous substance facility issued pursuant to § 7–232 of this article;
- (6) Permits to own, operate, or maintain a hazardous material facility issued pursuant to § 7–103 of this article;
- (7) Permits to own, operate, establish, or maintain a low–level nuclear waste facility issued pursuant to § 7–233 of this article; [and]
 - (8) Potable reuse permits issued in accordance with § 9–303.2 of this article; AND

(9) MANAGED AQUIFER RECHARGE PILOT PERMITS ISSUED IN ACCORDANCE WITH § 9–303.4 OF THIS ARTICLE.

7-201.

- (a) <u>In this subtitle the following words have the meanings indicated.</u>
- (1) "Hazardous substance" means any substance:
 - (1) Defined as a hazardous substance under § 101(14) of the federal act; or
- (2) <u>Identified as a controlled hazardous substance by the Department in the Code of Maryland Regulations.</u>

9-101.

- (a) In this title the following words have the meanings indicated.
- (b) "Discharge" means:
- (1) The addition, introduction, leaking, spilling, or emitting of a pollutant into the waters of this State; or
 - (2) The placing of a pollutant in a location where the pollutant is likely to pollute.
- (e) "Industrial user" means:
 - (1) A person who is engaged in manufacturing, fabricating, or assembling goods; or

(2) A member of any class of significant producers of pollutants identified under rules or regulations adopted by:				
		<u>(i)</u>	The Secretary; or	
		<u>(ii)</u>	The administrator of the United States Environmental Protection Agency.	
<u>(g)</u>	"Pollut	ant" means:		
	<u>(1)</u>	Any waste or wastewater that is discharged from:		
		<u>(i)</u>	A publicly owned treatment works; or	
		<u>(ii)</u>	An industrial source; or	
State.	<u>(2)</u>	Any other liquid, gaseous, solid, or other substance that will pollute any waters of this		
9–301.				
(a)	In this	subtitle the following words have the meanings indicated.		
(f)	"Reclai	imed water" means sewage that:		
	(1)	Has bee	Has been treated to a high quality suitable for various reuses; and	
	(2)	Has a c	Has a concentration of less than:	
		(i)	3 fecal coliform colonies per 100 milliliters;	
		(ii)	10 milligrams per liter of 5-day biological oxygen demand; and	
		(iii)	10 milligrams per liter of total suspended solids.	
<u>(h)</u>	<u>(1)</u>	(1) "Sewerage system" means:		
		<u>(i)</u>	The channels used or intended to be used to collect and dispose of sewage; and	
sewage	for disc	(ii) Any structure and appurtenance used or intended to be used to collect or prepare discharge into the waters of this State.		
	(2) "Sewerage system" includes any sewer of any size.		age system" includes any sewer of any size.	
the sew	(3) erage sy	"Sewerage system" does not include the plumbing system inside any building served by the system.		

9-303.4.

(A) (1) In this section the following words have the meanings indicated.

- (2) "AQUIFER" MEANS A GEOLOGIC FORMATION, GROUP OF FORMATIONS, OR PART OF A FORMATION THAT IS CAPABLE OF YIELDING A SIGNIFICANT AMOUNT OF WATER TO A WELL OR SPRING.
- (3) "CONFINED AQUIFER" MEANS AN AQUIFER UNDER PRESSURE FROM A RELATIVELY IMPERVIOUS LAYER OF MATERIAL LYING ABOVE THE AQUIFER.
- (4) "Demonstration facility" means an advanced water treatment facility approved under a managed aquifer recharge permit to treat reclaimed water for use as a source for testing groundwater augmentation.
- (5) "GROUNDWATER AUGMENTATION" MEANS THE INJECTION OF RECLAIMED WATER INTO AN AQUIFER FOR ANY PURPOSE BESIDES DISCHARGE.
 - (6) "HAZARDOUS SUBSTANCE" HAS THE MEANING STATED IN § 7-201 OF THIS ARTICLE.
- (3)(7) "Managed aquifer recharge permit" means a permit issued by the Department to authorize and regulate the treatment and underground injection of treated reclaimed water for the purpose of testing the feasibility of and requirements for safely conducting for groundwater augmentation.
 - (4) "PFAS CHEMICALS" MEANS PER- AND POLYFLUOROALKYL SUBSTANCES.
 - (5)(8) "PILOT PROGRAM" MEANS THE MANAGED AQUIFER RECHARGE PILOT PROGRAM.
- (B) EXCEPT AS PROVIDED IN THIS SECTION, A PERSON MAY NOT PERFORM GROUNDWATER AUGMENTATION.
- (C) THERE IS A MANAGED AQUIFER RECHARGE PILOT PROGRAM IN THE DEPARTMENT.
- (c)(D) The purpose of the Pilot Program is to authorize the testing of the regulated, regulate, and evaluate the use of treated reclaimed water as a source for groundwater augmentation through the issuance of managed aquifer recharge permits.
- (b)(e) (1) The Department may review, permit, and regulate a process to test the use of treated reclaimed water from a demonstration facility as a source for groundwater augmentation through a managed aquifer recharge permit if the Department determines that:
- (t)(1) The demonstration facility groundwater augmentation will address a groundwater supply or quality problem that is occurring or reasonably anticipated to occur in the next 25 years, including land subsidence or saltwater intrusion;
- (II)(2) THE PROPOSED LOCATION OF THE DEMONSTRATION FACILITY IS SUITABLE TO INFORM THE EVENTUAL LOCATION OF A FULL—SCALE OR FOR LONG—TERM IMPLEMENTATION SITE OF GROUNDWATER AUGMENTATION;
- (HH)(3) The reclaimed water will be treated at $\frac{1}{2}$ demonstration facility to meet or surpass the following requirements:
- 4.(1) Primary and secondary maximum containment contaminant levels established by:

- A. THE U.S. Environmental Protection Agency under 40 C.F.R. §§ 141 and 143; and

 B. THE DEPARTMENT UNDER COMAR 26.04.01 THE U.S

 Environmental Protection Agency or the Department;
 - 2.(II) AT LEAST THREE SEPARATE TREATMENT PROCESSES THAT INCLUDE:
 - 1. OXIDATION TREATMENT;
- **2.** Treatment for removal of pathogens at the wastewater treatment stage and advanced water treatment stage. That, in total, meets or exceeds:
 - A. 12 LOG FOR ENTERIC VIRUS REDUCTION;
 - B. 10 log for giardia cyst reduction; and
 - C. 10 LOG CRYPTOSPORIDIUM OOCYST REDUCTION; AND
 - <u>3.</u> For groundwater augmentation in a confined aquifer,

REVERSE OSMOSIS;

- 3:(III) Maximum concentrations of PFAS chemicals established by the Department and specified in any primary drinking water regulations established by the U.S. Environmental Protection agency in a final rulemaking under the federal Safe Drinking Water Act; Treatment for removal of any hazardous substance in the reclaimed water that does not have a maximum contaminant level or effluent limit established by the U.S. Environmental Protection Agency or the Department to a level that is protective of public health with a reasonable margin of safety; and
- (IV) TREATMENT TO ENSURE THAT TOTAL ORGANIC CARBON (TOC) DOES NOT EXCEED 0.5 MG/L based on a 20-week running average of all TOC results and the average of the four most recent TOC test results;
- (iv)(4) The treated reclaimed water will undergo testing and reporting to verify that the requirements of item (iii) of this paragraphsubsection are met;
- (v)(5) The applicant has conducted an analysis to evaluate alternatives to aquifer recharge groundwater augmentation;
- (vi)(6) The applicant has in place a detailed testing and monitoring plan to demonstrate facility performance and groundwater compatibility during underground injection groundwater augmentation, including establishing parameters for authorizing underground injections and requiring alternative methods of use or disposal discharge when the injection parameters are not met;
- (VII)(7) THE APPLICANT HAS IDENTIFIED ALL WELLS THAT WITHDRAW WATER FROM THE AQUIFER WITHIN 2 YEARS OF TRAVEL TIME FROM THE LOCATION WHERE GROUNDWATER AUGMENTATION IS PROPOSED AND EVALUATED THE POTENTIAL IMPACT TO THOSE WELLS;

- (8) THE APPLICANT HAS IDENTIFIED ALL INDUSTRIAL USERS THAT DISCHARGE TO THE SEWERAGE SYSTEM FROM WHICH THE RECLAIMED WATER IS RECEIVED AND THE POLLUTANTS IN EACH OF THOSE INDUSTRIAL USER'S DISCHARGE;
- (9) The applicant has performed a hydrogeological investigation that includes:
- (1) A DESCRIPTION OF THE GEOLOGIC AND HYDROGEOLOGICAL SETTING OF THE PORTION OF THE AQUIFER THAT MAY BE AFFECTED BY GROUNDWATER AUGMENTATION;
 - (II) A DETAILED DESCRIPTION OF THE STRATIGRAPHY BENEATH THE PROJECT:
- (III) A MAP OF THE EXISTING HYDROGEOLOGY AND THE HYDROGEOLOGY
 ANTICIPATED AS A RESULT OF THE GROUNDWATER AUGMENTATION BASED ON AT LEAST FOUR ROUNDS OF
 CONSECUTIVE QUARTERLY MONITORING;
- (IV) A MAP SHOWING QUARTERLY GROUNDWATER ELEVATION CONTOURS, VECTOR FLOW DIRECTIONS, AND CALCULATED HYDRAULIC GRADIENTS USING AT LEAST FOUR ROUNDS OF CONSECUTIVE QUARTERLY MONITORING;
- (V) A MAP SHOWING THE LOCATION AND BOUNDARIES OF THE PROJECT AND THE ZONE OF POTENTIAL DRINKING WATER WELL CONSTRUCTION; AND
- (VI) A SUMMARY OF THE RESULTS FROM AT LEAST FOUR GROUNDWATER SAMPLES WITH AT LEAST ONE SAMPLE COLLECTED DURING EACH QUARTER FROM EACH POTENTIALLY AFFECTED AQUIFER THAT INCLUDES TOTAL NITROGEN, TOTAL ORGANIC CARBON, AND AN ANALYSIS OF ANY OTHER CONSTITUENT REQUESTED BY THE DEPARTMENT;
- (10) THE APPLICANT HAS SUBMITTED A MITIGATION PLAN TO ADDRESS ENVIRONMENTAL AND SAFE DRINKING WATER RISKS THAT INCLUDES A PLAN TO PROVIDE AN ALTERNATIVE DRINKING WATER SOURCE TO WELL USERS WHO MAY BE AFFECTED BY THE GROUNDWATER AUGMENTATION ON A TEMPORARY OR PERMANENT BASIS;
- (11) THE APPLICANT HAS SUBMITTED A TRACER STUDY TO VERIFY THE RECLAIMED WATER'S RETENTION TIME IN THE AQUIFER UNDER HYDRAULIC CONDITIONS THAT ARE REPRESENTATIVE OF NORMAL OPERATIONS AT THE DEMONSTRATION FACILITY;
- (12) The applicant identifies the locations where at least two monitoring wells will be installed that are no fewer than 14 days and no more than 180 days of travel time downgradient from the injection well and at least 30 days upgradient from the nearing drinking water well;
- (13) THE APPLICANT SUBMITS A DETAILED OPERATION AND MAINTENANCE PLAN TO THE DEPARTMENT;
- (VIII) (14) THE APPLICANT GIVES THE DEPARTMENT THE RIGHT OF ENTRY ON THE PERMIT SITE AT ANY REASONABLE TIME TO INSPECT OR INVESTIGATE FOR A VIOLATION OR ANY POTENTIAL VIOLATION OF THE MANAGED AQUIFER RECHARGE PERMIT;
 - (13) THE PROCESS INCLUDES APPROPRIATE RECORD-KEEPING REQUIREMENTS; AND

(x)(16) The process complies with all other applicable statutory and regulatory requirements.

- (2) THE DEPARTMENT MAY APPROVE THE USE BY A DEMONSTRATION FACILITY OF ANY DRINKING WATER TREATMENT TECHNOLOGIES THAT HAVE THE CAPABILITY TO MEET THE REQUIREMENTS OF PARAGRAPH (1)(III) OF THIS SUBSECTION, INCLUDING NONMEMBRANE TREATMENT SYSTEMS.
- (E)(F) (1) THE DEPARTMENT MAY INCLUDE IN A MANAGED AQUIFER RECHARGE PERMIT ANY TERM, CONDITION, OR REQUIREMENT THAT THE DEPARTMENT CONSIDERS APPROPRIATE TO PROTECT PUBLIC HEALTH OR THE ENVIRONMENT.
- (2) THE REQUIREMENTS OF A MANAGED AQUIFER RECHARGE PERMIT ARE SUPPLEMENTAL TO AND DO NOT OVERRIDE ANY OTHER LAW, REGULATION, PERMIT, ORDER, OR DECREE.
- (3) THE PROVISIONS OF TITLE 1, SUBTITLE 6 OF THIS ARTICLE SHALL GOVERN THE ISSUANCE OF MANAGED AQUIFER RECHARGE PERMITS.
- (4) In addition to the notice required in Title 1, Subtitle 6 of this article, the applicant shall send written notice of the application for a managed aquifer recharge permit to each owner of each property where a well is identified in item (7) of subsection (e) of this section.
- (G) THE DEPARTMENT SHALL ACCEPT APPLICATIONS FOR MANAGED AQUIFER RECHARGE PERMITS FROM JANUARY 2, 2026 TO JANUARY 3, 2027.
- (F)(H) A SUCCESSFUL APPLICATION FOR A MANAGED AQUIFER RECHARGE PERMIT SHALL:
 - (1) DEMONSTRATE TO THE SATISFACTION OF THE DEPARTMENT:
 - (I) THE ABILITY TO COMPLY WITH THE REQUIREMENTS OF THIS SECTION;
- (II) THE APPLICANT'S AVAILABLE FUNDING FOR THE CONSTRUCTION AND OPERATION OF THE DEMONSTRATION FACILITY AND IMPLEMENTATION OF ANY CONTINGENCY OR EMERGENCY PLAN;
- (III) THE TECHNICAL AND ADMINISTRATIVE CAPACITY TO PERFORM THE PROCESS COVERED UNDERCOMPLY WITH THE PERMIT; AND
 - (IV) THAT ALL NECESSARY PLANNING AND ENGINEERING DESIGN IS COMPLETE; AND
 - (2) INCLUDE ANY ADDITIONAL INFORMATION REQUESTED BY THE DEPARTMENT.
- (G)(I) THE DEPARTMENT MAY REFUSE TO ISSUE A MANAGED AQUIFER RECHARGE PERMIT IF:
 - (1) THE APPLICANT FAILS TO PROVIDE ANY INFORMATION REQUESTED BY THE DEPARTMENT;
 - (2) The applicant fails or refuses to allow the Department to inspect the permit site;
- (3) THE DEPARTMENT FINDS THAT ISSUANCE OF THE PERMIT WOULD VIOLATE ANY STATE OR FEDERAL LAW OR ANY REGULATION ADOPTED UNDER ANY STATE OR FEDERAL LAW;

- (4) The source of the reclaimed water fails to comply with any State or federal law, any regulation adopted under any State or federal law, or any permit; or
- (5) The applicant fails to demonstrate compliance with this section to the Department's satisfaction; or
- (6) THE DEPARTMENT FINDS THAT THE PROPOSED GROUNDWATER AUGMENTATION MAY CREATE AN UNREASONABLE RISK TO PUBLIC HEALTH, SAFETY, OR THE ENVIRONMENT.
- (H)(J) (1) A managed aquifer recharge permit issued under the Pilot Program shall be effective for 105 years from the date of issuance.
- (2) THE DEPARTMENT MAY RENEW A MANAGED AQUIFER RECHARGE PERMIT FOR AN ADDITIONAL PERIOD OR PERIODS OF 5 YEARS FOLLOWING ADMINISTRATIVE REVIEW BY THE DEPARTMENT AND SUBJECT TO THE PROVISIONS OF TITLE 1, Subtitle 6 of this article.
- (1)(K) THE DEPARTMENT MAY REVOKE A MANAGED AQUIFER RECHARGE PERMIT ISSUED UNDER THIS SECTION IF THE DEPARTMENT FINDS THAT:
 - (1) THE APPLICATION INCLUDED FALSE OR INACCURATE INFORMATION;
 - (2) CONDITIONS OR REQUIREMENTS OF THE PERMIT HAVE BEEN OR ARE ABOUT TO BE VIOLATED;
- (3) Substantial deviation from plans, specifications, or requirements has occurred or is about to occur;
- (4) THE DEPARTMENT IS REFUSED ENTRY TO ANY PREMISES FOR THE PURPOSE OF **INSPECTING THE PROCESSINSPECTION** TO ENSURE COMPLIANCE WITH THE PERMIT;
- (5) A CHANGE IN CONDITIONS EXISTS THAT REQUIRES THE PERMANENT REDUCTION OR ELIMINATION OF THE USE OF TREATED RECLAIMED WATER FOR GROUNDWATER AUGMENTATION;
- (6) There is any noncompliance with a discharge permit, <u>pretreatment standard</u>, or a pretreatment requirement that may affect the reclaimed water in any manner;
- (7) Any State or federal water quality standard or effluent limitation has been or is threatened to be violated;
- (8) Any State or federal requirement established under the federal Safe Drinking Water Act, <u>This subtitle</u>, Subtitle 4 of this title, or Title 12 of this article has been or is threatened to be violated; or
- (9) THE TREATED RECLAIMED WATER MAY THREATEN PUBLIC HEALTH, SAFETY, COMFORT, OR THE ENVIRONMENT.
- (1) On or before September 1 each year, each holder of a managed aquifer recharge permit shall report to the Department on:
- (I) THE APPLIED SCIENTIFIC RESULTS OF ANY DEMONSTRATION FACILITY OR GROUNDWATER AUGMENTATION ACTIVITIES UNDERTAKEN UNDER THE PILOT PROGRAM; AND

- (II) ANY RECOMMENDATIONS FOR THE PILOT PROGRAM BASED ON THE HOLDER'S EXPERIENCE IN THE PILOT PROGRAM.
- (2) On or before December 31-Each year, 2028, the Department shall report to the Governor and, in accordance with § 2–1257 of the State Government Article, the General Assembly on:
 - (I) THE STATUS OF THE PILOT PROGRAM;
- (II) ANY SCIENTIFIC RESULTS AND RECOMMENDATIONS REPORTED UNDER PARAGRAPH (1) OF THIS SUBSECTION;
- (III) WHETHER THE PILOT PROGRAM SHOULD BE MODIFIED, EXTENDED, OR MADE PERMANENT; AND
- (IV) ANY STATUTORY OR REGULATORY CHANGES THAT THE **D**EPARTMENT RECOMMENDS TO PERMANENTLY AUTHORIZE THE REGULATED USE OF TREATED RECLAIMED WATER AS A SOURCE FOR GROUNDWATER AUGMENTATION, IF APPROPRIATE.
- (K)(M) THE DEPARTMENT MAY ADOPT REGULATIONS TO CARRY OUT THIS SECTION.

SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect October 1, 2025. It shall remain effective for a period of 11 years, and, at the end of September 30, 2036, this Act, with no further action required by the General Assembly, shall be abrogated and of no further force and effect.