BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
STANDARDS FOR THE PLACEMENT	)	R 25-21
OF LIMESTONE RESIDUAL MATERIALS:	)	(Rulemaking – Land)
PROPOSED NEW 35 Ill. ADM. CODE 706	)	

PRE-FILED TESTIMONY OF ALEX ALEXANDROU
ON BEHALF OF THE CITY OF AURORA

The City of Aurora ("City"), by and through the undersigned attorney, and pursuant to 35 Ill. Adm. Code 102.306 and the Notice of Hearing and Hearing Officer Order dated March 21, 2025, hereby submits the following Pre-Filed Testimony of Alex Alexandrou for presentation at the April 17, 2025 hearing scheduled in this matter.

TESTIMONY OF ALEX ALEXANDROU

I. Background

My name is Alex Alexandrou and I am the Chief Management Officer and Chief of Staff of the City of Aurora. I have served the City for over 24 years in various leadership capacities, demonstrating extensive expertise in municipal management, safety and risk management and environmental policy. I have served as Chief Management Officer and Chief of Staff since May 2017. Prior to that role, I served as the City's Chief Administrative Services Officer since September 2009 and, prior to that, served as the City's Human Resources Director and Risk Manager since October 2000. I received a Bachelor of Arts in Political Science and Government from DePauw University in 1985 and a Master of Business Administration in Human Resources Management/Leadership in 2011 from Aurora University.

I will be providing testimony regarding the City's efforts to manage lime residual material over the last decade, the need for the City to find appropriate management tools for this material, and how this approach creates greater financial flexibility for the City.

EXHIBIT
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II. Introduction

The City of Aurora operates a Community Water Supply system that serves approximately 178,000 residents. Drinking water for Aurora is treated using a lime softening process at the City's Water Treatment Plant, located at 1111 Aurora Avenue, Aurora, Illinois. As part of this treatment, suspended solids are removed through a process in which powdered lime is mixed with raw source water, causing the suspended solids to settle within five claricone tanks. This results in the formation of lime residual material ("LRM"), which must be regularly removed through a process known as "blowdown."

Under normal operating conditions, blowdowns occur every three hours for a duration of approximately three minutes, generating roughly 800 gallons of LRM per minute. The LRM is currently pumped to five dewatering lagoons where it is dried and subsequently transported for disposal either at a licensed municipal waste landfill or for land application as an agricultural soil amendment. Annually, the City disposes of approximately 35,000 tons of LRM at an average cost exceeding $1,000,000.

III. The City's Approach to Alternative Disposal Methods

Due to the high costs associated with surface land disposal of LRM, the City spent years in pursuit of and finally obtained a Class V Non-Hazardous Underground Injection Control ("UIC") Area Permit from the Illinois Environmental Protection Agency ("Illinois EPA") to construct and operate four injection wells. These wells were planned for a 50-acre parcel of land and were intended to allow direct injection of LRM into a subterranean limestone and dolomite mine cavity located between 240 and 365 feet below ground surface. The designated subsurface mine property, owned by the City, is situated at the southeast corner of Illinois Route 25 and Mettel Road in Aurora. The estimated cost savings for mine placement versus traditional

disposal methods was projected at approximately $45 million over a 30-year period, with available mine space expected to last between 60 and 143 years.

The long-term financial implications of this alternative approach are undeniably significant. The projected cost savings resulting from the revised lime residual material placement method—as compared to continued reliance on traditional land application—present a transformative opportunity for the City. By substantially reducing ongoing surface land disposal costs, this strategy has the potential to make available substantial and valuable financial resources that could, in turn, help support other critical infrastructure needs at the Water Treatment Plant. These savings may enable the City to pursue necessary upgrades, strengthen operational resilience, and respond more effectively to evolving regulatory requirements or capacity demands. In this way, the revised disposal method not only advances important environmental goals but also enhances the City's ability to invest in the long-term sustainability and reliability of its water system.

IV. Challenges with UIC Injection and the Need for a New Solution

Following the issuance of the UIC Area Permit, the City reassessed the feasibility of the injection plan. Several challenges emerged, including:

- Potential impacts on underground limestone reserves
- High construction and maintenance costs associated with pipeline installation
- Limitations in operational flexibility and adaptability over time
- The opportunity to explore an approach that would enhance long-term material stability while ensuring safety and compatibility with existing underground operations

Ultimately, the City determined that direct injection via a pipeline was not the optimal solution. As an alternative, the City collaborated with Holcim (US) Inc. and Holcim-ACM

Management, Inc. ("Holcim") to explore other means of placing LRM in the mine. The City attempted to amend the UIC Permit to allow the disposal of the LRM by conveying it into the mine via an eight-foot shaft. Illinois EPA conferred with U.S. EPA and U.S. EPA confirmed its position that this approach fell outside the scope of the UIC program. Furthermore, U.S. EPA clarified that passing state legislation to allow approval of the City's proposal under a UIC permit would not be appropriate. Simply put, existing regulatory structures did not accommodate this approach. Given these regulatory limitations, it left the City and Holcim with only one remaining option, to pursue legislative action, which resulted in the creation of Section 22.63 of the Illinois Environmental Protection Act. This statutory provision now allows for the permanent placement of LRM in underground mines using methods other than injection wells, providing a safe, viable and regulatory-compliant solution.

Under the revised approach, LRM will be dewatered, transported to the mine site by truck, and moved to its final placement location within the mine using appropriate machinery. This method maintains the same final resting location as the initial injection plan but improves upon it by ensuring the material is placed in a dewatered state. Notably, this process enhances environmental protections by reducing the moisture content of the LRM, thereby improving stability and handling efficiency.

V. Environmental and Economic Benefits

The revised LRM placement process offers significant benefits:

- Environmental Sustainability: By dewatering the LRM prior to placement, the risk of unintended material migration is reduced, enhancing long-term containment and stability.
- Regulatory Compliance: The new approach aligns with the intent of Section 22.63 and supports the state's broader waste management and sustainability goals.

- Cost Savings: The revised process allows the City to achieve substantial savings while ensuring safe and permanent disposal of LRM.
- Reduction in Landfill Use: By placing LRM in an underground limestone mine rather than at municipal landfills, the proposal helps conserve landfill space and supports sustainable municipal operations.

VI. Conclusion

In light of its environmental compatibility, cost-effectiveness, and established safety, I respectfully urge the Illinois Pollution Control Board to adopt the proposed rulemaking to allow the placement of LRM in underground mines. This initiative is fully consistent with the legislative intent of Section 22.63 of the Illinois Environmental Protection Act and represents a responsible and forward-thinking solution for municipal waste management.

Approving the proposed regulations will advance Illinois's sustainability goals by reducing landfill waste, conserving natural resources, and promoting environmentally responsible practices in municipal operations. The City of Aurora is committed to implementing this innovative solution in a manner that prioritizes both environmental stewardship and fiscal responsibility for our residents.

Thank you for your time and consideration. I welcome any questions you may have regarding this testimony.

Respectfully Submitted,
CITY OF AURORA

Dated: April 3, 2025

By: /s/ Dennis G. Walsh
One of its Attorneys

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PRE-FILED TESTIMONY OF ROBERT LEIBLE
ON BEHALF OF THE CITY OF AURORA

The City of Aurora ("City"), by and through the undersigned attorney, and pursuant to 35 Ill. Adm. Code 102.306 and the Notice of Hearing and Hearing Officer Order dated March 21, 2025, hereby submits the following Pre-Filed Testimony of Robert Leible for presentation at the April 17, 2025 hearing scheduled in this matter.

TESTIMONY OF ROBERT LEIBLE

I. Background

My name is Robert Leible and I am the Superintendent of Water Production for the City of Aurora. I have served the City in the Water Production Division for over 19 years. Prior to becoming the Superintendent of Water Production, I served as the Assistant Superintendent for over 15 years. As Superintendent, I manage the overall operations of the Water Production Division ("WPD") including overseeing all budgetary provisions, operations and maintenance, laboratory operations, personnel management, and many other various responsibilities including the management of Lime Residual Material ("LRM"). I have a Bachelor of Science in Chemistry and a Masters of Business Administration. I have been employed for approximately 32 years in the treatment/production of drinking water with an emphasis in water quality, process control, and regulatory compliance. I have extensive experience in environmental analytical testing methods.

EXHIBIT
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II. Introduction

I will be providing testimony on how LRM is generated, how LRM is chemically and physically composed, and the analyses the City has prepared to determine its best options for LRM management. This testimony demonstrates the environmental compatibility and operational feasibility of placing LRM in underground mines pursuant to the proposed amendments implementing Section 22.63 of the Illinois Environmental Protection Act. This approach not only provides a safe and sustainable solution for LRM management but also aligns with environmental stewardship and cost-effectiveness for municipalities like the City of Aurora.

III. Description and Composition of Lime Residual Material

The precursor material to LRM is a calcium-based, inorganic material, naturally occurring as calcium carbonate (limestone), a type of sedimentary rock. It is then converted to calcium oxide ("CaO") for industry use by the following reaction:

$$CaCO_3 + Heat >>>> CaO + CO_2$$

The WPD purchases calcium oxide from the Mississippi Lime Company who operates a limestone quarry/mine operation in Ste. Genevieve, Missouri. The calcium oxide is slaked within the City of Aurora Water Treatment Plant ("WTP") by the following reaction for dosing into the treatment process in the form of calcium hydroxide ($Ca(OH)_2$) slurry:

$$CaO + H_2O >>>> Ca(OH)_2 + Heat$$

The calcium hydroxide chemically reacts with soluble calcium bicarbonate present in drinking water sources. Through high pH precipitation reactions, a predominant calcium carbonate solid by-product is produced:

$$Ca(OH)_2 + Ca(HCO_3)_2 >>>> 2CaCO_3 + 2H_2O$$

The calcium carbonate precipitate is the LRM. LRM solids are continuously produced within the Claricone treatment vessels at the WTP. The LRM solids are removed via gravity flow to one of five LRM dewatering lagoons. After sufficient drying time over 5 – 9 weeks, the dewatered LRM material has a typical percent solids of 35-40%. Ultimate disposal is available by either land application or landfilling. At this point in the process the LRM is predominantly in its original form as calcium carbonate, with a Calcium Carbonate Equivalent of 97.6%. The secondary constituent is magnesium precipitate as magnesium hydroxide. In summary, the LRM was originally calcium carbonate in its natural state and returns to calcium carbonate as a drinking water treatment solid by-product.

IV. Current Management Practices

A. Land Application of LRM

The City's WPD produces approximately 35,000 wet tons of LRM annually. Under a Land Application Permit (#2020-SC-65501) issued by the Illinois Environmental Protection Agency ("Illinois EPA"), approximately 80 – 85% of the LRM is land applied. The WPD has been permitted to land apply LRM since 2012.

LRM has similar agronomic value as compared to agricultural lime, both used as soil amendments for pH and calcium. Semi-annual reports are submitted to Illinois EPA showing the quantities of LRM either land applied or landfilled. In addition, loading rates of specific chemical constituents must be calculated based on the concentration and tons applied per acre of farm field. Regular reports are submitted to Illinois EPA and the Illinois Emergency Management Agency showing all data for each individual land application site.

Currently, land application of LRM is the lowest cost option available to the WPD. Some conditions may prevent the ability to land apply LRM. In those circumstances, any LRM that is

ready for removal after dewatering must go to a landfill at significantly higher cost than land application.

B. LRM Quality Testing

Due to the extensive history of LRM as a by-product of drinking water treatment, the material has been tested at least annually for many years as a requirement for the application of LRM on farm fields as an agronomic soil amendment. Given the high pH and stable chemical composition of LRM, it does not leach contaminants under any tested conditions. This property ensures compliance with applicable groundwater standards and supports its safe placement in limestone mine environments without risk to surrounding ecosystems or water quality.

Extensive testing, including Toxicity Characteristic Leaching Procedure ("TCLP") and Class I Groundwater Standard evaluations, consistently confirms that LRM meets or exceeds all applicable safety thresholds. For example, TCLP results show analyte levels well below compliance thresholds, affirming that the material is non-hazardous and environmentally inert. The TCLP is designed to assess the mobility of both organic and inorganic analytes present in liquid, solid, and multiphasic wastes. It is one of the most significant tests to determine if a substance may be hazardous if analytes can be leached from a sample and are found at levels greater than TCLP compliance levels. The LRM material has never exceeded any TCLP compliance level and is considered non-hazardous and is a non-special waste when landfilled. The LRM has also been subjected to other testing to determine if it would cause any Class I Groundwater Standard to be exceeded. All results are significantly below the applicable standards, which indicates the stability, quality, and inertness of the LRM.

V. Environmental and Economic Benefits of Mine Placement

The placement of LRM in underground mines represents a cost-effective alternative to landfilling and land application, reducing the financial burden on municipal operations while maintaining compliance with environmental regulations. This approach would provide the City with an additional, lower-cost disposal method that aligns with our long-term operational sustainability goals.

The chemical composition of LRM, predominantly calcium carbonate, mirrors the natural limestone environment of underground mines. This inherent compatibility ensures environmental stability, mitigates any potential risk of contamination, and promotes the sustainable reuse of underground spaces for non-hazardous materials.

In summary, LRM is an inert, non-hazardous material generated in the treatment of drinking water. Due to the high pH of the LRM, contaminants cannot be leached from it. The quality of the LRM is well established and meets criteria for either land application or landfilling. The chemical similarity of LRM with a limestone mine makes for an ideal environment and location for the placement of the LRM.

VI. Conclusion

In light of the environmental compatibility, cost-effectiveness, and established safety of LRM, I respectfully urge the Illinois Pollution Control Board to adopt the proposed rulemaking to allow the placement of LRM in underground mines. This initiative not only aligns with the legislative intent of Section 22.63 of the Act but also supports municipalities in their commitment to sustainable and responsible waste management. Approving the proposed LRM regulations aligns with Illinois' broader sustainability goals, including reducing waste sent to

landfills, conserving natural resources, and supporting environmentally responsible practices in municipal operations.

Thank you for your time and consideration. I welcome any questions you may have regarding this testimony.

Respectfully Submitted,
CITY OF AURORA

Dated: April 3, 2025

By: /s/ Dennis G. Walsh
One of its Attorneys

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PRE-FILED TESTIMONY OF RANDI WILLE
ON BEHALF OF HOLCIM

Holcim (US) Inc., Holcim – ACM Management, Inc., and their respective subsidiaries ("Holcim"), by and through the undersigned attorneys, and pursuant to 35 Ill. Adm. Code 102.306 and the Notice of Hearing and Hearing Officer Order dated March 21, 2025, hereby submits the following Pre-Filed Testimony of Randi Wille for presentation at the April 17, 2025 hearing scheduled in this matter.

TESTIMONY OF RANDI WILLE

I. Background

My name is Randi Wille and I am the Regional Manager for Environmental & Land Services at Holcim. I have been employed by Holcim and its subsidiary companies for over 40 years in various leadership roles relating to land management environmental permitting and compliance, safety/risk management, and employee benefits. I have served in the role of Regional Manager, Environmental & Land Services, for Holcim and its predecessors, Lafarge-Holcim, and Aggregate Industries, since 2008. Prior to that role, I was Safety/Environmental Manager and then Risk Manager for Meyer Material Company. I received a Bachelor of Science in Industrial Technology, with a Minor in Business Administration, from Illinois State University in 1982. I received a Masters of Business Administration from Bradley University in 1984.

EXHIBIT 3

II. Introduction

I will be providing testimony on how Holcim intends to prepare each cell prior to LRM placement, the safety protections Holcim has put in place in the repository area, how Holcim will transport and place LRM at its mine, and how Holcim intends to monitor for potential water migration within the mine.

Holcim operates the Conco Underground site, an active underground limestone mine. The City of Aurora Water Treatment Plant ("WTP"), owned by the City of Aurora, generates LRM at its site located in the City of Aurora. This testimony supports the adoption of the proposed regulations that would create a regulatory mechanism whereby Holcim can be authorized to permanently place LRM in the portion of the underground mine that is owned by and located in the City of Aurora. My testimony demonstrates the environmental compatibility and technical feasibility of placing LRM in underground mines pursuant to the proposed amendments implementing Section 22.63 of the Illinois Environmental Protection Act.

III. Preparation for LRM Placement

Holcim operates the Conco underground limestone mine located at 105 Conco Street, North Aurora, Illinois, 60542. The site is an active underground limestone mine that historically included a mine stabilization operation for completed portions of the mine, using bottom ash and limestone screening fines. After mining was completed in segments of the site, bottom ash, a Coal Combustion By-Product ("CCB"), was delivered to the site in dump trucks, mixed with limestone screening fines from on-site crushing operations, and then hauled underground by mining trucks to designated mined-out locations. This mix was first used as a structural fill embankment to facilitate mining activities, but then at full depth added structural support to

mitigate the potential for long-term mine subsidence or collapse. To conduct this operation, the facility was classified and regulated by the Agency.

The portion of the Conco underground mine that is owned by and located in the City of Aurora will be the location of the permanent placement for the LRM. In order to prepare for the placement of the LRM, each fully mined-out room (50' x 50') will be inspected for oversized cracking in the floor which will be filled with grout to seal off the possibility of accelerated water migration. The walls and ceiling of each room will be scaled for loose rock fragments. Each ceiling will be supported by steel plates and roof bolts to ensure the room is supported properly. Oversized cracking will be assessed based on visual inspection criteria and historical performance benchmarks for stability in mined-out cavities.

IV. Safety Protections for Repository Area

The repository process on the surface of the mine will include a designated haul route and a cover over the drop shaft to keep precipitation from entering the subsurface storage system. Stormwater controls will be employed as needed to direct surface runoff away from the drop shaft and work areas. Semi-dump trucks equipped with a sludge/mud lock on their trailer will dump material down the shaft portal which is curbed. At the base of the drop shaft below ground, cautionary signage will be included near the repository entrance where the material will be reloaded or conveyed for final placement. There will be a designated haul route to both levels, barrier wall dividers to direct only select traffic to the repository and additional signage at the entrance to the repository itself. All below-ground storage activities will be managed by trained Holcim employees only.

V. Transportation and Placement of LRM

The LRM that is generated from the WTP would be transported to the mine via hired cartage using trailers with sludge/mud locks, which is similar to how it is currently transported. The locations of the WTP and the mine are close in proximity (approximately 2 miles apart). All loads will be sealed during transport to prevent spillage and delivery routes will minimize residential traffic exposure.

Upon authorization granted by Illinois EPA, Holcim would complete the construction of one 6-foot diameter, steel lined drop shaft in their mine. The drop shaft would be used to place the LRM from the WTP into a subterranean limestone and dolomite mine cavity located 240 to 365 feet below ground surface. The LRM will provide strength and stability to the mine and will mitigate the possibility of a future mine subsidence event. Finally, the LRM is pliable and compactable, allowing it to be stacked in mined-out cavities, sealing off openings or paths that allow liquids to seep or transmigrate to limestone reserve areas.

VI. Monitoring for Potential Migration

Holcim plans to fill multiple rooms at the same time, likely in five-foot lifts, which will help the material to dry out quicker by leaving more of it exposed to the atmosphere. We believe each lift will dry out over a few years and we will be able to drive on top of it to place the next lift. We also plan to start filling on Level 1 so we can understand if water were to migrate and the direction it would travel. We would be able to see it along the surface of a Level 1 placement or beneath it on Level 2. The below ground mine is well vented and has continuous airflow for miner safety. We believe evaporation will limit issues related to water migration, however, the original wet design recognized that some water would migrate over time.

VII. Conclusion

The proposed regulations were developed based on provisions of the Board's underground injection control ("UIC") regulations. Holcim and the City reviewed and pulled language from the UIC permit program provisions in both 35 Ill. Adm. Code Parts 702 and 704, as well as the conditions in the UIC Class V permit that was issued to the City. The proposed rules are intended to implement Section 22.63 of the Illinois Environmental Protection Act, which requires that the rules "be consistent with the Board's Underground Injection Control regulations for Class V wells, provided that the rules shall allow for the limestone residual materials to be delivered to and placed in the mine by means other than an injection well." The proposal is consistent with the directive of Section 22.63 of the Act.

Given the technical feasibility, environmental compatibility, and established safety of placing LRM in underground mines, I respectfully urge the Illinois Pollution Control Board to adopt the proposed rulemaking. Holcim remains committed to transparency, safety, and long-term stewardship of the mine site in coordination with Illinois EPA.

Thank you for your time and the opportunity to present this testimony. I welcome any questions you may have regarding my testimony.

Respectfully submitted,

HOLCIM US, NORTH CENTRAL REGION

Dated: April 3, 2025

By: /s/ Alec Messina
One of Holcim's Attorneys

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Respectfully Submitted,
CITY OF AURORA

Dated: April 3, 2025

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