



October 17, 2018

Chris Solloway, Group Manager  
Division of Municipal and Residual Waste, Bureau of Waste Management  
PA Department of Environmental Protection  
P.O. Box 69170  
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**Re: Comments on WMGR160NE001**

Dear Manager Solloway,

Delaware Riverkeeper Network submit these comments on the **New General Permit Application No. WMGR160. Slate Belt Heat Recovery Center, LLC**, proposed for 2100 Block of Penn Argyl Road, Pen Argyl, PA. The Slate Belt Heat Recovery Center, LLC” (SBHRC) application was submitted by EarthRes Group, Inc., representing Synagro, for a General Permit “to process biosolids and produce Class A biosolids products”. This is a sludge drying facility proposed to be constructed on the border of Pen Argyl and Plainfield Township, Northampton County, PA at the Grand Central Landfill/Green Knight property.

The Department found the general permit application to be administratively complete and has now opened it for comment regarding technical completeness. Delaware Riverkeeper Network has several questions and concerns regarding technical completeness. We request that the application be rejected and returned to the applicant as incomplete.

Waste product and trucks:

We understand there will be 40 truck trips per day to deliver 400 wet tons, 84 dry tons, of sludge. Please provide the definitions of “wet” and “dry”. We have not seen a photograph or technical specifications for these trucks and ask that this be provided to illustrate the exact size, capacity and design of the trucks. The number of truck trips assumes that the same trucks that bring in the sludge will carry out the wastewater produced by processing the sludge into dry pellets. Please provide the specifications of the trucks to show how the wastewater liquid will be stored in the trucks that will carry the wastewater from the facility. Will there be an enforceable cap on truck trips should the amount of wastewater exceed the capacity of trucks or for some other unforeseen

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reason the trucks cannot remove the wastewater when they leave the site? Please provide backup plans to address this situation.

The truck traffic will be added to current truck traffic that delivers waste to the landfill and other businesses that may use the Rt. 512 entrance. How will emissions from the additional diesel trucks be monitored and reported, if at all?

There are 2 service bays for the offloading of sludge into the sludge drying unit. Should more than 2 trucks arrive at the same time to the facility, where will they park while waiting? Will trucks that are waiting be required not to idle their engines and, if so, how will this be enforced?

It's stated the SR 512 entrance will be used for both incoming and outgoing trucks. Has PennDOT approved this new use? Has the Department reviewed the traffic study prepared by Synagro for PennDot? Has there been a traffic accident analysis done and, if not, will the Department require this or advise PennDOT to require this? Are the "directions" in the application the route that will be used by all trucks to and from the facility?

Communities along the route are vulnerable to the pollution impacts of accidents, spills and leaks from the added truck traffic, which will carry dangerous and potentially hazardous materials. For instance, traffic accidents open pollution pathways for the trucks' contents, as documented in the State of Alaska's statewide summary of oil and hazardous substance spill data between 1996 and 2002: "Spills from vehicles (includes passenger vehicles, commercial vehicles, tanker trucks, etc.) were the most common in terms of frequency with an average of 567 spills per year (for an average of 86 gallons per incident). The daily average for vehicle spills is 1.6 per day and 130 gallons per day. Accidents are the leading cause of vehicle spills."

[https://dec.alaska.gov/spar/ppr/docs/7year\\_rpt/7year\\_all.pdf](https://dec.alaska.gov/spar/ppr/docs/7year_rpt/7year_all.pdf)

How will the Department assess the potential for pollution to the environment and communities while the trucks are in transit to and from the facility along the area's roadways, many of which travel directly through residential areas, active local business areas, by schools, water bodies, parks and other sensitive locations? How will such pollution events be prevented?

#### The sludge:

Will only pre-treated sludge be delivered to the site or will raw sludge also be delivered? What classes of product will be delivered to the site for processing? How is the classification of sludge monitored and enforced? Has Synagro ever violated these classification standards at any facility? Will each load of sludge be sampled for its content and will the data be posted publicly, such as on a publicly accessible website?

Will any sludge be stored on site prior to processing? If so, where, how much, and for what length of time?

#### The "biosolid product":

The two storage silos for the finished "Class A Product" - dry pellets sold as fertilizer or used in industrial heating or as a filler - will be opened from the bottom to fill trucks and can be a source

of offensive odor. How will odors be controlled? There are supposed to be 10 truck trips per day to remove the product – will there be an enforced limit on truck traffic?

How is the product certified as a Class A biosolid and how will it be enforced?

Biosolids can contain contaminants, even the final Class A product, but this is not discussed in the application. For instance, one scientific survey found that biosolids produced through various processing methods have similar organic wastewater contaminants, regardless of the type of processing. Little research has been done on the composition and fate of these contaminants and these could be brought into or produced at this facility. (Kinney, C.A., Furlong, E.T., Zaugg, S.D., Burkhardt, M.R., Werner, S.L., Cahill, J.D., & Jorgensen, G.R. (2006), "Survey of Organic Wastewater Contaminants in Biosolids Destined for Land Application", *Environ. Sci. Technol.*, 2006, 40 (23), pp 7207–7215. Retrieved from <https://pubs.acs.org/doi/abs/10.1021/es0603406>)

#### Wastewater and potential contaminants:

A storage tank on site will hold 300,000 gallons of contaminated wastewater collected from various processes at the facility. What is the volume and quality expected from each source?

There is no identified destination for the concentrated wastewater that will be produced and trucked away. We know that 40 truck trips of sludge delivery per day is supposed to include the removal of wastewater but the projected total volume of wastewater is not disclosed. What is the total volume that would be trucked away each day?

Delaware Riverkeeper Network is very concerned that the wastewater that will be produced has no identified destination. This is toxic wastewater that is regulated under Clean Water Act and Clean Streams Law regulations due to the contaminants it contains. Precisely what facilities will receive this wastewater? Will the Department require that the applicant certify that the facilities are designed and permitted to accept the materials in the waste stream? Illegal dumping of waste and violations of permit requirements and limits is a known cause of environmental contamination. It is of utmost importance that this waste stream be strictly defined and tracked. Will manifests be required by the Department and will this information be publicly available through an electronic database? Communities along the route of these trucks are vulnerable to illegal dumping.

It's stated that the wastewater will be loaded onto trucks at an unenclosed filling area with "containment" and that the trucks may also be washed there. The application doesn't explain the containment but we understand it will be a second wall around the silo. Will there be a drain in this containment area and will any spills be routed to the tank that will collect contaminated fluids that will then be transferred to the wastewater silo again? Also, process wastewater is identified in the application as a source of odor. How will odors, fumes and pests be controlled from this open transfer area?

Exactly what are the constituents in the wastewater is not identified. It is important for the public and municipal officials to know what is in the wastewater that is being produced, stored, transferred, and trucked off site and through the community's roadways. Will wastewater be

sampled before each truckload leaves the site and if so, where will sample data be posted for the public?

Scientific papers and reports are available that identify some of the known contaminants in sludge. These contaminants could be in the sludge materials that are imported to the site, could be contained in the wastewater that is produced, and could make their way into stormwater runoff. For instance, a study published in 2011 analyzed perfluorinated chemicals (PFCs) in land-applied biosolids coming from a sewage treatment plant in Decatur, Alabama. Local farmers had applied it to agricultural fields in Lawrence, Morgan, and Limestone counties in Alabama. (Lindstrom, A.B. Strynar, M.J., Delinsky, A.D., Nakayama, S.F., McMillan, L., Lieblo, E.L., Neill, M., & Thomas, L. (2011), "Application of WWTP Biosolids and Resulting Perfluorinated Compound Contamination of Surface and Well Water in Decatur, Alabama, USA. *Environ. Sci. Technol.*, 2011", 45 (19), pp 8015–8021. Retrieved from <https://pubs.acs.org/doi/abs/10.1021/es1039425>) Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), two highly toxic PFCs, were detected in ground and surface water samples collected there, some at very high concentrations, above the EPA's health advisory levels. These chemicals, linked to cancer and other diseases, don't break down in the environment and, when ingested, build up in people's blood, increasing the risk of developing adverse health effects.

Over 300 organic chemicals from a diverse range of classes of compounds have been identified in biosolids. The most common organic contaminants found in biosolids are phthalic acid esters (PAEs), polycyclic aromatic hydrocarbons (PAHs), chlorobenzenes (CBs), polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs), chlorophenols, polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs), organotin compounds, brominated flame retardants, surfactants, pharmaceuticals and personal care products, and natural and synthetic hormones. (Haynes, R.J., Murtaza, G., & Naidu, R. (2009), Chapter 4 Inorganic and Organic Constituents and Contaminants of Biosolids: Implications for Land Application, *Advances in Agronomy*, Volume 104, Pages 165-267. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0065211309040048>).

Other organic contaminants in biosolids include polychlorinated alkanes (PCAs), polychlorinated naphthalenes (PCNs), polybrominated diphenyl ethers (PBDEs), triclosan (TCS), triclocarban (TCC), benzothiazoles, antibiotics, synthetic musks, bisphenol A, quaternary ammonium compounds (QACs), steroids, and polydimethylsiloxanes (PDMSs). (Clarke, B.O., & Smith, S.R. (2010), "Review of 'emerging' organic contaminants in biosolids and assessment of international research priorities for the agricultural use of biosolids", *Environ Int.* 2011 Jan; 37(1):226-47. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/20797791>) Contaminants are from medical, industrial and household sources. (Jenkins, S.R., Armstrong, C.W., & Monti, M.M. (2007), "Health Effects of Biosolids Applied to Land: Available Scientific Evidence", Virginia Department of Health. Retrieved from <http://www.vdh.virginia.gov/content/uploads/sites/12/2016/02/Biosolids-1.pdf>)

Heavy metals found in biosolids include arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, and zinc. (Haynes, R.J., Murtaza, G., & Naidu, R. (2009), Chapter 4 Inorganic and Organic Constituents and Contaminants of Biosolids: Implications for Land Application, *Advances in Agronomy*, Volume 104, Pages 165-267. Retrieved from

<https://www.sciencedirect.com/science/article/pii/S0065211309040048>) Synthetic fibers or “microplastics” that detach from clothing during laundering, including polyester, nylon, and rayon, are non-biodegradable, are found in sludge and persist in biosolids. (Zubris, K.A.V., & Richards, B.K. (2005) “Synthetic fibers as an indication of land application of sludge”, *Environmental Pollution*, (138) 201-211. Retrieved from

<https://www.lehigh.edu/~incheme/pdfs/papers%20and%20projects/April%20202,%202005%20Synthetic%20Fibers%20as%20an%20Indicator%20of%20Land%20Application%20Sludge%20-%20Elsevier%20-%20Zubris.pdf>)

The antibacterial pesticides triclosan and triclocarban are found in high concentrations in biosolids because 95% of their uses are in consumer products that are disposed of down residential drains. (Shinbrot, X. (2013), “Biosolids or Biohazards? *Pesticides and You*, Vol. 32(3)”. Retrieved from <https://www.beyondpesticides.org/assets/media/documents/infoservices/pesticidesandyou/documents/Biosolids.pdf>)

Four major types of human pathogens can be found in biosolids: bacteria, viruses, protozoa, and helminths. Potential transmission pathways of human pathogens from biosolids include air, soil, and water. In addition, it is possible that vectors, such as flies, could transmit pathogens from biosolids. Dangerous bacteria found in biosolids includes *E. coli*, *Listeria monocytogenes*, *Staphylococcus aureus*, *Helicobacter pylori*, and *Legionella*. Protozoan parasites found in biosolids include Cryptosporidium, Giardia, and Microsporidia. Helminth worms found in biosolids include *Ascaris lumbricoides*, *Trichuris trichiura*, *Hymenolepis nana*, *Taenia saginata*, *Taenia solium*, *Necator americanus*, *Ascaris suum*, and *Toxocara canis*. (Jenkins, S.R., Armstrong, C.W., & Monti, M.M. (2007), “Health Effects of Biosolids Applied to Land: Available Scientific Evidence”, Virginia Department of Health. Retrieved from <http://www.vdh.virginia.gov/content/uploads/sites/12/2016/02/Biosolids-1.pdf>).

How will the Department assure that these pollutants won't be in the sludge waste that would be trucked into the proposed sludge drying plant? There is no discussion of this potential danger in the application.

There are also certain properties or materials that are very dangerous in sludge that can be carried into the wastewater, as well as the final biosolids product. It is known that sewage sludge contains detectable amounts of radioactive materials. In addition, sewage flowing into a POTW can include anthropogenic materials exempt from regulatory control, such as excreta from individuals undergoing medical diagnosis or therapy, and discharges of limited quantities of radioactive materials from some licensees of the U.S. Nuclear Regulatory Commission (NRC) and NRC Agreement State licensees. Other sources of radioactive materials that may enter sewage collection systems include stormwater runoff, groundwater, surface water, residuals from drinking water treatment plants, and waste streams from certain industries (e.g., ceramics, electronics, optics, mining, petroleum, foundries, and pulp/paper mills). Some states have identified cases where radium from drinking water treatment residuals has been concentrated in sewage sludge. (U.S. Nuclear Regulatory Commission (2004), [SCORS Assessment of Radioactivity in Sewage Sludge: Modeling to Assess Radiation Doses](http://www.iscors.org/pdf/FinalDoseModeling.pdf), Sewage Sludge Subcommittee. Retrieved from <http://www.iscors.org/pdf/FinalDoseModeling.pdf>)

Will the Department investigate the presence of these chemicals, pathogens, and radioactive materials to be certain that these toxic compounds are not being spread into the local environment and community through the sludge that would be imported and the wastewater, stormwater and product that would be generated and routinely handled at the facility?

Sludge Offloading:

Trucks are supposed to back into a “covered” receiving unit which is opened at the top for delivery so the trucks can tip into the receiving bay. Sludge emits odors and possible fumes. How many total hours each day will the enclosure be open for offloading and how will odors and pests such as flies be controlled while the facility roof is open?

Heat:

Although supposed to use “primarily waste heat”, a supplemental “oil heater” will also be used that burns natural gas. Exactly how much heat will be from the landfill and how much from gas over the life of the project? There is a pipeline for natural gas on the plans. Will natural gas be made immediately available for use to heat the drying plant at the facility? What will be the source of the piped-in natural gas? When will the pipeline be built, how long is it and where will it connect to a source? Have agreements been made for the purchase of the natural gas from a specific company? Will natural gas be used as a matter of routine when methane supply fluctuates from the landfill? What type of oil will be used in the heating system?

Chemical Compounds:

Sulfuric Acid and Sodium Hydroxide will be stored and used in processing at the proposed facility. Sulfuric Acid can cause irritation to eyes, skin, nose, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatitis; dental erosion; eye, skin burns; dermatitis.

(<https://www.cdc.gov/niosh/npg/npgd0577.html>) The International Agency for Research on Cancer (IARC) has classified strong inorganic acid mists containing sulfuric acid as a known human carcinogen. (<https://bit.ly/2zqNgeN>) What will be the concentration of sulfuric acid used at the site? The specific concentration is the factor that determines the level of risk for adverse health effects upon exposure.

Sodium hydroxide causes eye and skin burns, digestive and respiratory tract burns.

(<http://www.certified-lye.com/MSDS-Lye.pdf>) How will these chemicals be controlled within and outside of the tanks and drying unit building and how much will be stored, used and disposed each day? How many truck trips per day/week will the delivery of these chemicals require?

The operation:

It’s stated that the facility will operate 24/7 hours per day and truck traffic will operate Monday-Saturday, 6am to 6pm. It’s also stated that Synagro has “successfully operated for 20 years” in “populated areas”. Where has this specific facility model been operated by Synagro in the U.S.? Did Synagro provide records from permitting agencies where they operate that provides their violation history?

We found a report from a news article about the Synagro facility in Philadelphia: Apparently, two former employees at the facility claimed that the company illegally dumped waste and that the facility has exceeded carbon monoxide and dust emissions. The complaint said the company unlawfully dumped waste and chemicals both in drains and outside of designated contamination areas, allowed prohibited and unsafe levels of carbon monoxide and dust to be emitted at the plant, and failed to provide adequate safety equipment. The complaint added that management provided inaccurate information as part of air quality tests and to safety inspectors. The article is here - <https://www.law360.com/articles/397022/philly-sewage-plant-says-whistleblower-suit-came-too-late>. We ask the Department to further look into why Synagro didn't publicly respond to these claims in an effort at transparency and accountability. How can the Department reconcile these claims with Synagro's claim to have operated successfully?

#### Odors:

In addition to the odor issues already included in this comment, the odorous compounds such as hydrogen sulfide, ammonia, odor from the belt dryer system, fans and other sources should be predicted based on an air dispersion model that considers wind direction, weather, and other site specific features such as structures. Will the Department require this analysis?

Why is hydrogen sulfide only being removed up to 1.5 ppm and ammonia only up to 2 ppm? Why aren't emissions from these chemicals being completely prevented? What will be the cumulative or mixing effect of existing odors from the landfill, combined with new odor sources at this facility? Will PADEP require such an analysis?

It has been reported in a news article that there have been odors from the biosolids pellets, presumably similar to the product that would be manufactured at the facility. This is from a news article referenced at the link following the quotes:

"In a statement released via the mayor's office, the water department offered an explanation for the smell. The department operates multiple water pollution control plants where it removed solid waste from wastewater before cleansing the wastewater and returning it to the city's rivers. The water department then transports the solid waste, known as "biosolids," to the Biosolids Recycling Center at 7800 Penrose Ferry Road near Philadelphia International Airport."

"The BRC is a city-owned facility operated by a private-sector company, Baltimore-based Synagro, under a long-term contract with the city. According to the mayor's office and the water department's website, Synagro—doing business as Philadelphia Biosolids Services—took over the facility in 2008 and began producing dried pellets from the biosolids material in 2012. The pellets are distributed as fertilizer to citrus growers in Florida and farmers in Pennsylvania, New Jersey, Virginia and Maryland. The pellets are also used as fuel in a cement kiln." Apparently the smell was emanating from the pellets. <https://northeasttimes.com/stink-city-63f33f619374>.

How will such odors be avoided at this site and has the Department considered this incident and any other odor incidents regarding the pellets in its General Permit application review? The surrounding community is already plagued by noxious odors from the landfill. The additional odors from this facility should be considered in the context of this current problem.

### Noise:

It's stated that the enclosed operations will keep noise below 85 dBA and the exhaust fans operate at 80 dBA but will be enclosed. It is also stated that there is no noise measurement for this exact facility. How can this information be relied upon if there is no exact measurement to verify the decibel levels?

It's stated that truck backup alerts operate at 97-112 dBA at the source but will be reduced to 68.5 dBA at 150', less than the 70 dBA limit for the landfill. A noise model and noise testing run simultaneously with current noise from the landfill should be conducted to measure the cumulative noise impacts to the surrounding community. Will PADEP require this?

### Dust:

The process of drying sludge produces dust. Depending on the design of the drying plant there is the potential for a dust explosion to occur in the main dryer, dust collection and handling plant, pelletizer, and final product discharge plant. The material can also self-heat leading to ignition and a slow burn that may be accelerated with additional airflow into the plant. ("Health and Safety Executive (n.d.). Information document (ID) on Risks from Sewage Sludge Drying Plants," retrieved from <http://www.hse.gov.uk/pubns/risks-from-sewage-sludge-drying-plants.pdf>).

This issue doesn't seem to be addressed in the application. How will the Department require that this health and safety issue be handled? Will the Department require that this issue be addressed in regards to possible air emissions should there be a fire or explosion?

Scientific papers and reports reveal that biosolids may contain relatively high levels of pathogenic bacteria and viruses. There is growing concern regarding exposure to microbial pathogens from biosolids via aerosols, especially in population centers surrounding biosolids application sites where people may inhale or swallow bacterial or viral pathogens. (Dowd, S.E., Gerba, C.P., Pepper, I.L., & Suresh, D.P. (2000), "Bioaerosol Transport Modeling and Risk Assessment in Relation to Biosolid Placement", *Journal of Environmental Quality* 29(1). Retrieved from [http://qmrwiki.canr.msu.edu/images/Dowd\\_et\\_al.pdf](http://qmrwiki.canr.msu.edu/images/Dowd_et_al.pdf)). Some of these pathogens survive the drying process.

How will these dangers be addressed and will the Department require sampling and reporting of these contaminants for each batch of sludge and wastewater?

It's stated that dust will be caught by the odor control system in the building and that outside dust will not be a problem as the trucks will be traveling on pavement and gravel and that water will be applied to the ground when needed. Dust from drying facilities that handle sludge can carry dangerous pollutants. Treated sludge from wastewater treatment plants contains a number of organic and inorganic contaminants. The most significant health hazards relate to the wide range of pathogenic microorganisms such as protozoa parasites. (Amoros Muñoz, I.; Moreno Trigos, MY.; Reyes-Sosa, MB.; Moreno-Mesonero, L.; Alonso Molina, JL. (2016), "Prevalence of *Cryptosporidium* oocysts and *Giardia* cysts in raw and treated sewage sludges", *Environmental Technology*. 37(22):2898-2904. Retrieved from <https://riunet.upv.es/bitstream/handle/10251/80964/Prevalence%20of%20Cryptosporidium%20oo>

[cysts%20and%20Giardia%20cysts%20in%20raw%20and%20treated%20sewage%20sludges.%208Version%20autor%29.pdf?sequence=4](#)). Adenoviruses and hepatitis A virus are the most thermally resistant (surviving the drying process) viruses found in biosolids and can survive for prolonged periods in the environment. (Gerba, C.P., Pepper, I.L., & Whitehead, L.F. III (2002), "A risk assessment of emerging pathogens of concern in the land application of biosolids", *Water Sci Technol.*, 46(10):225-30. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/12479475>)

The unloading while the top of the building is open for tipping and truck operations outside the facility building can contribute to leaks, spills, and splashes that accumulate in dust on the site. An air dispersion model should be done to measure the likelihood and trajectory of dust movement, as discussed under odors.

Will the collected dust be sampled from inside the building and where will this dust be stored and disposed? How much dust is expected to be captured daily/monthly? Regarding the water to be applied at the site for dust suppression, where will this water come from since there is no discussion of this water use at the site. Has an agreement been ratified for the use of water at the site with Pen Argyl Municipal Authority and, if so, how much water will be used and is the dust suppression water use factored into the amount needed? Is there already a water line to the facility site; will a line be required or an extension of a water line be required? What are the specifications of the water line, if one is planned? If the dust suppression water is trucked in, what will be its source, will it be tested for contaminants and how much is projected to be used monthly/annually? Will this applied water be captured as "contaminated" stormwater if it runs off the traffic area or will it run off as "uncontaminated" stormwater? It is stated that only "uncontaminated stormwater" will be routed to the stormwater basin and/or to surface water.

#### Bog Turtle:

Potential bog turtle (*Glyptemys muhlenbergii*) habitat has been identified at the site and a presence/absence survey must be performed by a U.S. Fish & Wildlife Service qualified bog turtle surveyor. The bog turtle is one of the rarest, smallest, and most secretive turtles in the United States. It is listed as Endangered by Pennsylvania and is federally listed as Threatened under the U.S. Endangered Species Act. Bog turtles have very specific habitat requirements and inhabit early emergent wetlands with soft, muddy substrates, open canopies, and perennial groundwater seepage. (<https://www.nj.gov/dep/fgw/ensp/pdf/end-thrtened/bogtrtl.pdf>). In Pennsylvania, and throughout its entire range, they are threatened by habitat loss, degradation, and fragmentation which makes these vulnerable animals sensitive to land use change such as planned at this site. DRN attempted to view the PNDI for this site but were not allowed access to the site since we are not the applicant. Will PADEP survey this site themselves or will they rely on the applicant to hire a USFWS qualified bog turtle surveyor?

Delaware Riverkeeper Network considers there to be many questions and issues that are not addressed in the application, making this application technically deficient. The application should be rejected by the Department and returned to the applicant.

Thank you for the opportunity to comment on the technical completeness of the General Permit application for this project.

Submitted by:

A handwritten signature in blue ink that reads "Maya K. van Rossum". The signature is written in a cursive style with a long horizontal line extending to the right.

Maya K. van Rossum  
the Delaware Riverkeeper  
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A handwritten signature in blue ink that reads "Tracy Carluccio". The signature is written in a cursive style.

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