

INTEROFFICE MEMO

To: Joseph Martella, Sr. Sanitary Engineer **Date:** 22 April 2011
Office of Waste Management

From: Barbara Morin, Supervising Environmental Scientist
Office of Air Resources

Subject: Tidewater Gas Regulator Upgrade Project

I reviewed the documents submitted by GZA GeoEnvironmental, Inc. (GZA) on April 19, 2011 on behalf of National Grid which include an evaluation of the applicability of Air Pollution Control Regulation No. 9 to the proposed natural gas regulator station upgrade project and an air quality monitoring plan for that project and other proposed short duration projects at the former Tidewater facility. The following are my comments on those submittals.

Cover letter to Joseph Martella from GZA

- GZA states that “(t)his evaluation was useful to show that not only this work but other work in the future in similar conditions will not require a minor source permit.” The Office of Air Resources (OAR) agrees that the evaluation shows minimal emissions associated with this project; however, future projects must be evaluated on a case-by-case basis to determine Regulation No. 9 applicability.
- OAR understands that a zNose detector cannot detect naphthalene at the Acceptable Ambient Level (AAL) concentration for that pollutant ($3 \mu\text{g}/\text{m}^3$) and that that instrument is designed as a screening tool. However, OAR disagrees with GZA’s representation that the use of a zNose would not supply useful supplemental real-time information. This issue will be discussed further below.

Permit Applicability Evaluation (letter to Barbara Morin from GZA, with attachments)

- As a worst case, I calculated maximum potential emissions from the project using the equation for Total Excavation Emissions Potential in Attachment 1, the maximum concentration measured for each applicable pollutant in any of the ten soil samples, and a soil removal volume of 100 cubic yards (the amount referenced on page 2 of the analysis). Note that the analysis presented in Attachment 1 used a soil volume of 1.2 cubic yards, average soil concentrations, and a more refined equation which considers such factors as vapor pressure and soil-gas exchange constants. Even with the worst case analysis, potential emissions of all of the identified substances were below the Minimum Quantity thresholds in Regulation No. 9 that would trigger the need to apply for a

preconstruction permit. Therefore, I concur with the conclusion that a preconstruction permit is not necessary for the regulator station upgrade project.

Air Quality Monitoring Plan (AQMP)

- GZA states that the AQMP is designed to fulfill three objectives: estimating potential emissions, minimizing on-site and off-site exposures, and providing an early warning system. The first objective is fulfilled by modeling, rather than monitoring, and is done prior to initiation of the project.
- GZA then presents a two tiered strategy for monitoring. The first tier uses real-time equipment to measure pollutant levels upwind and downwind of the work zone and at property lines, while the second tier involves the collection of time-integrated samples that are then analyzed in a laboratory. While I do not object to the collection of time-integrated samples, those samples clearly do not fulfill any of the above-stated monitoring objectives, particularly for short-term projects like those addressed by this plan, because the results of those samples will not be available until several days after any exposure occurs.
- Measurement of Total Volatile Organic Compounds (TVOC) is useful for detecting spikes in VOC emissions. However, since TVOC is made up of mixtures of VOCs with a wide range of toxicities, it is impossible to derive an Action Level for that parameter that is based on health effects. GZA proposed Action Levels for TVOC of 1.0 ppm at the work zone perimeter and 0.5 ppm at the property line. Table 3 of the Wisconsin guideline¹, which was attached to the GZA submittal, recommends TVOC Action Levels at the site perimeter in the range of 0.1 – 1.0 ppm. Due to the proximity of sensitive receptors to this site, OAR recommends using the lower end of this range, 0.1 ppm, rather than the mid-range value, 0.5 ppm, proposed in the AQMP. Also, since TVOC is only an indicator substance, these measurements should also be considered in a qualitative vein – corrective action should be initiated when TVOC levels in the area increase substantially, even if the Action Level is not triggered.
- OAR concurs with GZA's decision to conduct real-time monitoring for benzene, but questions the selection of 0.35 ppm as a property line Action Level for that substance. Note that the Wisconsin document recommends that site activities be halted if perimeter levels reach 0.1 to 0.5 ppm and the Agency for Toxic Substances and Disease Registry's (ATSDR's) acute Minimal Risk Level (MRL) for benzene in 0.009 ppm. The benzene property line Action Level for this site certainly should not be higher than the lower range of the levels recommended by Wisconsin, 0.1 ppm. In addition, it is important that corrective action be initiated immediately if levels at the downwind property line begin to increase to levels

¹ Wisconsin Bureau of Environmental and Occupational Health, Dept. of Health and Family Services, "Health-based Guidelines for Air Management, Public Participation, and Risk Communication During the Excavation of former Manufactured Gas Plants," August 24, 2004.

substantially above baseline levels; it is not appropriate to wait until levels reach the Action Level before acting to reduce exposures of this carcinogen.

- OAR does not agree with GZA's proposal to measure naphthalene only in time-integrated samples. As discussed above, the results of time-integrated samples are not immediately available and thus cannot inform decisions made during short-duration procedures. While it is true that the zNose technology has limitations, the use of a monitor of this type would provide real-time information that would be useful for signaling the need for corrective actions. Note also that naphthalene has been an issue at this site in the past.
- OAR does not disagree with the Action Levels for time-integrated samples listed in Table 2 of the AQMP. However, as discussed above, it is likely that, in many cases, activities that generate pollutants in levels above those levels will be completed before the results of the time-integrated samples are available.
- The AQMP states that "(r)real-time methods for monitoring particle bound PAHs do not exist, thus particle levels will be used as a surrogate for PAHs." This is not the case – OAR presently owns and operates particle bound PAH monitors produced by EcoChem Analytics. Similar equipment is operated by the Rhode Island Airport Corporation at four monitoring sites around TF Green Airport in Warwick. This equipment does not provide speciated PAH data and, therefore, since PAH species vary widely in toxicity, these measurements cannot be used to draw direct conclusions about health effects. However, if National Grid is truly interested in a surrogate measurement for PAH, EcoChem analyzer measurements would serve that purpose much better than measurements of particulate matter. Apart from the PAH surrogacy issue, it is certainly useful and necessary to measure respirable particulate matter, as proposed in the AQMP, because of the health effects associated with that pollutant.

If you have any questions about these comments, please let me know.