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300 Pearl Street
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April 26, 2018

Ms. Amy Witryol
4726 Lower River Road
Lewiston, NY 14092

Re: Engineering Review of Model City RMU-2 Permit Application

Dear Ms. Witryol:

KHEOPS Architecture, Engineering and Survey, DPC (KHEOPS) has prepared this letter in response to your request for engineering review of certain materials submitted by CWM Chemical Services, LLC as part of its application to construct a new hazardous waste landfill facility at its existing Model City site, located in the Towns of Lewiston and Porter in Niagara County, New York. The proposed new landfill is referred to as Residuals Management Unit-2 (RMU-2).

To comply with Article 8 of the Environmental Conservation Law (ECL) and 6 NYCRR Part 617, State Environmental Quality Review Act, consideration of all relevant environmental issues must be undertaken in making a determination of environmental significance. Noise impact potential, traffic impacts and air pollution impacts are some of the potential issues for consideration in a SEQR review.

I. NOISE IMPACTS

Your first request was for KHEOPS to review the Transportation Noise Analysis Report prepared by Watts Architecture & Engineering for Arcadis of New York, Inc. and CWM Chemical Services, LLC dated September 7, 2016 for consistency with accepted engineering best practices and current regulations.

According to Guidance in the New York State Department of Environmental Conservation's (NYSDEC's) Assessing and Mitigating Noise Impacts (DEP-00-1), the *addition of any noise source*, in a non-industrial setting, should not raise the ambient noise level above a maximum of 65 dB(A). This would be considered the "upper end" limit since 65 dB(A) allows for undisturbed speech at a distance of approximately three feet.

Using the data obtained for the 2016 Noise Analysis Report, KHEOPS prepared the attached *REVISED Table 7-3.* This table shows that the noise levels expected to result from RMU-2 traffic will frequently exceed 65 dB(A). KHEOPS has highlighted in orange the sound levels at each interval that exceeded 65 dB(A) during the 2016 Existing

Traffic, 2012 Operations Baseline or Alt. 2 Scenario 2 (worst case)conditions. A copy of Figure 1 from the 2016 Noise Analysis Report is attached to this letter for reference.

NYSDEC's Assessing and Mitigating Noise Impacts (DEP-00-1) further states that in non-industrial settings, the sound pressure level (SPL) should not exceed ambient noise by more than 6 dB(A) (at the receptor) and that an increase of 6 dB(A) or more may cause complaints.

Citing the definition of ambient as "the surrounding area or environment," it is evident that the determination of the 6 dB(A) increase should not be made by comparing Future Worst Case (Alt. 2 Scenario 2) traffic to 2012 Operations Baseline traffic. The 2012 Operations Baseline sound levels include RMU-1 trucks that should not be considered as part of an ambient sound level.

In the attached *REVISED Table 7-3*, KHEOPS added a new column to Table 7-3 from the 2016 Noise Study for comparison of Future Worst Case (Alt. 2 Scenario 2) traffic to the 2016 Existing Conditions, which are believed to more closely resemble ambient conditions than the 2012 Operations Baseline traffic. This is a conservative approach for two reasons:

1. Considering Existing Conditions as those present in 2016 fails to account for the trucks that were delivering clay to the facility for soil capping RMU-1. Referring to 2016 traffic levels as "No-Action" is misleading because once the capping of RMU-1 is completed, the clay delivery trucks will stop. Many noise levels measured as 2016 Existing Conditions are identical to the 2012 Operations Baseline levels when up to 35 trucks per hour were using the route for deliveries to RMU-1.
2. The determination of Future Worst Case (Alt. 2 Scenario 2) traffic was predicted by adding 25-35 trucks per hour plus 18 construction trucks to 2012 Operations Baseline numbers. This "worst case" underestimates the true amount of truck traffic being added to the route because it does not account for return trips by the delivering trucks. Per CWM's existing Part 361 permit, trucks entering the Model City facility are to follow the reverse route when leaving the facility. The Future Worst Case (Alt. 2 Scenario 2) traffic should be determined by adding 50-70 trucks per hour plus 36 construction trucks to the 2012 Operations Baseline numbers.

Using this conservative approach, the *REVISED Table 7-3* still indicates that proposed increases in noise levels will frequently exceed 6 dB(A). KHEOPS highlighted in red the sound levels in the table exceeding a 6 dB(A) increase. The greatest increases are during the early morning hours from 5 am to 6 am. The highest increase was 14 dB(A) at location "A". Also noteworthy is that during the 5 am to 6 am timeframe, six of the eight tested receptor locations had sound levels that exceeded a 6 dB(A) increase. These exceedances are expected to increase when accurate ambient noise levels are used as a baseline and predicated "worst case" traffic levels are representative of adding 50-70 trucks per hour plus 36 construction trucks to the baseline numbers.

II. TRAFFIC STANDARDS

Your second request was for KHEOPS to comment on the previous Traffic Impact Analyses completed for the site and why current standards and accepted best practices should be used as the basis for such studies.

Per 6 CRR-NY 617.1, in adopting SEQR, it was the New York State Legislature's intention that all agencies conduct their affairs with an awareness that they are stewards of the air, water, land and living resources, and that they have an obligation to protect the environment for the use and enjoyment of this and all future generations.

The basic purpose of SEQR is to incorporate the consideration of environmental factors into the existing planning, review and decision-making processes of state, regional and local government agencies at the earliest possible time. To accomplish this goal, SEQR requires that all agencies determine whether the actions they directly undertake, fund or approve may have a significant impact on the environment, and, if it is determined that the action may have a significant adverse impact, prepare or request an environmental impact statement.

Therefore, NYSDEC, in evaluating the permit application for RMU-2, is required to ensure that the information presented in the EIS is factual and up-to-date. SEQR regulations don't specify requirements for traffic impact studies. Instead, agencies are tasked with relying upon good judgment of transportation professionals to determine what a traffic study should contain. In New York State, the predominant authority for Traffic Impact Studies is the New York State Department of Transportation (NYSDOT). As such, the guidance provided in NYSDOT's Highway Design Manual (HDM) is the standard for such reports. If the Traffic Impact Study presented in the Environmental Impact Statement prepared for CWM's permit applications for RMU-2 does not adhere to the guidance of the HDM, then it does not follow industry standards and should not be accepted by the NYSDEC as an accurate assessment of potential impacts on the environment.

In consideration of the differences between the most current Highway Capacity Manual (HCM) which is the 6th Edition: A Guide for Multimodal Mobility Analysis released in 2016, and previous editions of the HCM, the most current editions will include the latest data based on the latest research and field studies. In particular, the HCM 2016 includes techniques incorporated from Transportation Research Board's National Cooperative Freight Research Program (NCFRP) Report 31: Incorporating Truck Analysis into the Highway Capacity Manual. The techniques added include, but are not limited to, capacity and level-of-service updates and methods to evaluate the effects of trucks on other modes of transportation.

III. TRAFFIC IMPACT ANALYSES DATA REVIEW

Your third request was for KHEOPS to comment how a new traffic study completed to HCM 2016 standards may differ from the studies previously completed.

In response, KHEOPS reviewed the methodology and data used for the 2011 Traffic Impact Study completed by Wendel Companies. As mentioned in a previous review, the previous traffic studies calculate level of service (LOS) impacts for only three of the intersections along the identified truck route from the I-190 to the CWM facility. The

following table summarizes the intersections encountered from the I-190 to the CWM facility, in order and the latest set of traffic count data available for the intersection, if any.

Intersection	Traffic Impact Analysis Completed	Year of Counts	Morning Peak Hour Volume				Evening Peak Hour Volume			
			NB	SB	EB	WB	NB	SB	EB	WB
I-190 and Military Road	No	2011	170	271	211	4	425	246	405	6
Upper Mountain Rd. and Military Rd.	No	2012	358	280	68	352	762	362	142	295
Fairway Dr. and Military Rd.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Military Rd. and Lewiston Rd. (Route 104)	No	2010	157	930	NA	193	490	917	NA	543
Lewiston Rd. (Route 104) and Mountain View Dr.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Lewiston Rd. (Route 104) and Creek Rd. Extension	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. Extension and Walker Dr.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. Extension and Cayuga Dr.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. Extension and Hillview Ct. (West)	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. Extension and Hillview Ct. (East)	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Ridgeview Ave.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Creek Rd. Exits to Ridge Rd.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Legacy Drive	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Scovell Dr.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Raymond Dr.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Washington Dr.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Jeffersons Way	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Madison Ave	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Swann Rd.	Yes (1993)	1993	177	220	NA	105	155	198	NA	97

Intersection	Traffic Impact Analysis Completed	Year of Counts	Morning Peak Hour Volume				Evening Peak Hour Volume			
			NB	SB	EB	WB	NB	SB	EB	WB
Creek Rd. (Rt 18) and Thornwood Dr.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Pletcher Dr.	Yes (2011)	2011	225	227	247	46	263	243	127	33
Creek Rd. (Rt 18) and Lewiston-Porter High School (4 entrances)	No	2011	227	211	NA	101	202	130	NA	228
Creek Rd. (Rt 18) and Calkins Rd.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Creek Rd. (Rt 18) and Balmer Rd.	Yes (1993, 2011)	2011	70	225	NA	71	201	115	NA	62
Balmer Rd. and Lutts Rd.	No	NC	NC	NC	NC	NC	NC	NC	NC	NC
Balmer Rd. and CWM Facility	Yes (1993, 2011)	2011	5	NA	33	43	14	NA	38	36

Notes: Traffic count data was obtained from past Traffic Study Reports or GBNRTC Data.
NC = Counts not Collected
NA = Not Applicable

As shown in the table, very few of the potentially impacted intersections were included in a traffic analysis. At a minimum, those intersections receiving a significant amount of use should be studied for effects. Those intersections include:

- I-190 and Military Road
- Upper Mountain Rd. and Military Rd.
- Military Rd. and Lewiston Rd. (Route 104)
- Creek Rd. (Rt 18) and Creek Rd. Exits to Ridge Rd.
- Creek Rd. (Rt 18) and Pletcher Dr.
- Creek Rd. (Rt 18) and Lewiston-Porter High School (4 entrances)
- Creek Rd. (Rt 18) and Balmer Rd.
- Balmer Rd. and CWM Facility

The 2011 Traffic Impact Study included a Synchro software analysis of the traffic data collected and a Level of Service for each of the three intersections studied was determined based on the inputted data. A review of the data inputted into the program revealed the following inconsistencies that may significantly affect the results, especially when added together:

- Pletcher Road & Route 18: Link Distance for EB should be approx. 932 ft. not 1095 ft. This comment applies to all six analyses for this intersection – AM Peak -Existing, Mid-day Peak - Existing, PM Peak – Existing, AM Peak –Max Truck, Mid-day Peak - Max Truck, and PM Peak – Max Truck.
- Pletcher Road & Route 18: Link Speed for EB should be 35 mph not 45 mph. This comment applies to all six analyses for this intersection – AM Peak -Existing, Mid-day Peak - Existing, PM Peak – Existing, AM Peak –Max Truck, Mid-day Peak - Max Truck, and PM Peak – Max Truck.

- Pletcher Road & Route 18: Link Speed for WB should be 45 mph not 35 mph. This comment applies to all six analyses for this intersection – AM Peak -Existing, Mid-day Peak - Existing, PM Peak – Existing, AM Peak –Max Truck, Mid-day Peak - Max Truck, and PM Peak – Max Truck.
- Pletcher Road & Route 18: Heavy Vehicle percentages shown are low. See attachment from GBNRTC for 2011 vehicle counts taken at the intersection of Rt. 18 and Lewiston Porter School driveway. Southbound through traffic plus westbound left traffic at the school should total the southbound traffic at the Pletcher Rd. and Rt. 18 intersection. Based on this conclusion, Heavy Vehicle percent for southbound traffic would be 11% (27 trucks out of 237 vehicles traveling either SB through or westbound left at school intersection). The percentages of heavy trucks traveling southbound shown in the report are 3% (4.6 trucks) for through traffic and 2% (1.3 trucks) for right. This accounts for 7 trucks, not the 27 trucks identified in the GBNRTC counts.
- Balmer Road & Site Driveway: The storage length listed for the Eastbound through lane is listed as 615 ft., but the actual length is approximately 540 ft. This comment applies to all six analyses for this intersection – AM Peak -Existing, Mid-day Peak - Existing, PM Peak – Existing, AM Peak –Max Truck, Mid-day Peak - Max Truck, and PM Peak – Max Truck.
- Balmer Road & Site Driveway: Taper lengths of 25 ft. are incorrectly shown. The Eastbound right taper length should be 160 ft. and the taper lengths for all other approaches should be zero. This comment applies to all six analyses for this intersection – AM Peak -Existing, Mid-day Peak - Existing, PM Peak – Existing, AM Peak –Max Truck, Mid-day Peak - Max Truck, and PM Peak – Max Truck.
- Pletcher Road & Route 18: The Maximum Truck Potential runs add only 30 trucks in the northbound direction and 27 trucks in the southbound direction. This intersection is located along the truck route to be used by all trucks to and from the CWM facility, and the maximum allowed is 35 trucks per hour. A Maximum Truck Potential scenario should include the addition of 35 trucks per hour over existing volume. This comment applies to all Max Truck scenarios at all three intersections.

Please note that other parameters inputted into the software such as signal timing, were not evaluated for accuracy. Therefore, the items listed above should not be considered all-inclusive. An updated traffic analysis should be completed to determine the effects of the proposed traffic on existing conditions.

IV. AIR IMPACTS – TRUCK ROUTE

Your fourth request was for KHEOPS to review the adequacy of the air emissions analysis for the truck route.

The air emissions analyses presented in Section 3.4 of the Draft Environmental Impact Statement prepared for Residuals Management Unit 2 by Arcadis of New York and Revised November 2013 did not include an assessment of internal combustion engines as sources of pollution along the proposed truck route. ,

According to the California Air Resources Board's publication, *Overview: Diesel Exhaust and Health,* diesel engines emit a complex mixture of air pollutants, including both gaseous and solid materials. The solid material in diesel exhaust is known as diesel particulate matter (DPM). More than 90% of DPM is less than 1 µm in diameter (about 1/70th the diameter of a human hair), and thus is a subset of particulate matter less than 2.5 microns in diameter (PM2.5). Most PM2.5 derives from combustion, such as use of gasoline and diesel fuels by motor vehicles, burning of natural gas to generate

electricity, and wood burning. PM2.5 is the size of ambient particulate matter air pollution most associated with adverse health effects of the air pollutants that have ambient air quality standards. These health effects include cardiovascular and respiratory hospitalizations, and premature death.

DPM is typically composed of carbon particles ("soot", also called black carbon, or BC) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and oxides of nitrogen (NO_x). NO_x emissions from diesel engines are important because they can undergo chemical reactions in the atmosphere leading to formation of PM2.5 and ozone.

At a minimum, adding the internal combustion engine emissions of 70 waste trucks per hour (35 waste trucks to the facility plus 35 waste trucks leaving the facility) will add pollutants to the air as shown in the table below. A column was also added to show worst case scenario pollution added when 36 construction vehicles per hour will be added to the 70 waste trucks per hour (35 waste trucks and 18 construction trucks to the facility plus 35 waste trucks and 18 construction trucks leaving the facility).

Pollutant	One 60,000 lb Diesel Hauling Truck[1] (grams per mile)	Seventy 60,000 lb Diesel Hauling Trucks (grams per mile)	106 - 60,000 lb Diesel Hauling Trucks (grams per mile)
PM2.5	0.238	16.66	25.228
VOC	0.545	38.15	57.77
THC	0.552	38.64	58.512
CO	3.109	217.63	329.554
NOx	10.990	769.3	1,164.94
PM10	0.259	18.13	27.454

[1]*Source: Average In-Use Emissions from Heavy Duty Trucks, EPA420-F-08-027, October 2008*

Given the short- and long-term exposure to these pollutants, the potential health impacts to the residents living along the truck route should be evaluated.

V. VEHICLE WEIGHT LIMITS

Your fifth request was for KHEOPS to identify how many, if any, trucks entering the facility exceeded regulatory weight limits.

According to Section 385 of the New York State Vehicle and Traffic Law, the maximum gross vehicle weight for Interstate and State roads is 80,000 lbs. Assuming that the Transporter is using a vehicle legally allowed to carry this amount (ie. 7-axle Super Dump, 7-axle Super Tanker), the following table summarizes by year the number of deliveries to the facility that exceeded this weight. The weight of the empty truck was conservatively assumed to be 20,000 lbs for this calculation.

Year	Number of Deliveries with Maximum Gross Weight of the Vehicle Exceeding 80,000 lbs	Total Number of Deliveries per Manifest Records	Percent of Deliveries Exceeding Legal Weight Limit	Highest Maximum Gross Weight (lbs)
2015	676	3,100	22%	101,381
2014	1,092	4,390	25%	101,520
2013	1,036	5,018	21%	157,567
2012	3,826	9,852	39%	102,320
2011	1,490	7,754	19%	125,600
2010	1,262	5,336	24%	121,178
2009	1,816	7,750	23%	117,419
2008	3,433	10,640	32%	114,000
2007[1]	2,340	10,152	23%	132,435
2006	682	8,430	8%	131,651
2005	1,016	10,460	10%	157,651
2004	1,117	11,117	10%	220,000
2003	1,822	13,270	14%	108,479
2002	1,465	16,905	9%	130,121
2001	1,653	19,343	8%	116,694
2000	1,677	18,759	9%	130,121
1999	1,529	24,643	6%	113,900
1998[2]	1,168	19,496	6%	170,312
1997	500	20,437	2%	219,870
1996	147	22,193	<1%	189,417
1995[3]	17	18,971	<1%	227,411

[1] One record showing maximum gross vehicle weight of 738,195 lbs was disregarded due to unlikeliness that it is accurate.

[2] Nine records appear to be inaccurate, so weight was disregarded.

[3] One record appears to be inaccurate, so weight was disregarded.

As shown in the table, the percentage of overweight trucks entering the facility generally increased from 1995 to 2012. In 2012, 3,826 trucks, or 39% of trucks entering the facility, exceeded the legal weight limit of 80,000 lbs.

Should you have any questions or require further information, please do not hesitate to contact me at 716.849.8739 x2159.

Sincerely,
KHEOPS Architecture and Engineering, DPC

Michelle L. Bodewes, P.E., ENV SP
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