Revised Addendum to the Regional Council Agenda

Regional Council Chambers
Regional Headquarters Building
605 Rossland Road East, Whitby

Wednesday, June 23, 2021 **9:30 AM**

Note: Additional agenda items are shown in bold

1. Traditional Territory Acknowledgement

2. Roll Call

3. Declarations of Interest

4. Adoption of Minutes

   4.1 Regional Council meeting – May 26, 2021

   4.2 Closed Regional Council meeting – May 26, 2021

   4.3 Committee of the Whole meeting – June 9, 2021

   4.4 Closed Committee of the Whole meeting – June 9, 2021

5. Presentations

   5.1 Chief Todd Rollauer, Durham Regional Police Services, re: Quarterly Update to Regional Council

6. Delegations

   6.1 Councillor Deborah Kiezebrink, re: Bus Stops on Dead End Roads (Previously delegated at the June 2 Works Committee meeting and was requested to delegate at Council)

   6.2 Wendy Bracken, Durham Resident, re: Report #2021-WR-10: Durham York Energy Centre Operations – Long-Term Sampling System Reporting

6.3 Linda Gasser, Durham Resident, re: Report #2021-WR-10: Durham York Energy Centre Operations – Long-Term Sampling System Reporting

6.4 Amy Archer, Executive Director, Sloane's House re: Sloane's House Project (To be considered with Item #1 of the Health & Social Services Report to Council)

6.5 Katie Bigauskas, Durham Resident, re: Report #2021-W-26: Shared Service Connection Replacement Policy including Disconnection of Existing Common Water and Sanitary Sewer Service Connections on James Street and Centre Street South in the Town of Whitby

Requires 2/3rds vote to be heard

6.6 Pat Driver, Durham Resident, re: Report #2021-W-26: Shared Service Connection Replacement Policy including Disconnection of Existing Common Water and Sanitary Sewer Service Connections on James Street and Centre Street South in the Town of Whitby

Requires 2/3rds vote to be heard

New 6.7 **Rob Roughley, Whitby Resident, re: Report #2021-W-26: Shared Service Connection Replacement Policy including Disconnection of Existing Common Water and Sanitary Sewer Service Connections on James Street and Centre Street South in the Town of Whitby**

Requires 2/3rds vote to be heard

New 6.8 **Ian Leonard, Whitby Resident, re: Report #2021-W-26: Shared Service Connection Replacement Policy including Disconnection of Existing Common Water and Sanitary Sewer Service Connections on James Street and Centre Street South in the Town of Whitby**

Requires 2/3rds vote to be heard

New 6.9 **Wendy Bracken, Durham Resident, re: Report #2021-COW-14: Organics Management Solution Update – Request for Prequalification and Initiation of Request for Proposal Process and CC18: Memorandum from Susan Siopis, Commissioner of Works, Nancy Taylor, Commissioner of Finance, and Jason Hunt, Regional Solicitor and Director of Legal Services, re: Anaerobic Digester Procurement Update**

Requires 2/3rds vote to be heard

New 6.10 **Linda Gasser, Durham Resident, re: Report #2021-COW-14: Organics Management Solution Update – Request for Prequalification and Initiation of Request for Proposal Process and CC18: Memorandum from Susan Siopis, Commissioner of Works, Nancy Taylor, Commissioner of Finance, and Jason Hunt, Regional Solicitor and Director of Legal Services, re: Anaerobic Digester Procurement Update**

Requires 2/3rds vote to be heard

7. Reports related to Delegations/Presentations

7.1 Durham York Energy Centre Operations – Long-Term Sampling System Reporting (2021-WR-10)

7.2 Shared Service Connection Replacement Policy including Disconnection of existing Common Water and Sanitary Sewer Service Connections on James Street and Centre Street South in the Town of Whitby (2021-W-26)

8. Communications

CC 14 Correspondence from Lynda Sanz, Pickering resident, re: Carruthers Creek Watershed

CC 15 Correspondence from Greg Milosh, Oshawa resident, re: Report #2021-WR-10: Durham York Energy Centre Operations – Long-Term Sampling System Reporting

New **CC 16 Correspondence from Linda Gasser, Whitby resident, Wendy Bracken, Newcastle resident, and Kerry Meydam, Courtice resident, re: Durham-York Incinerator AMESA Long Term Sampling of Dioxins/Furans – Reporting Deficiencies Require MECP's Immediate Attention** **Pages 6 - 61**

Recommendation: Refer to the consideration of Item #3 of Report #6 of the Works Committee

New **CC 17 Correspondence from Kerry Meydam, Courtice Resident, re: Report #2021-WR-10: Durham York Incinerator – Long-Term Sampling System Reporting for Dioxins and Furans** **Pages 62 - 63**

Recommendation: Refer to the consideration of Item #3 of Report #6 of the Works Committee

New **CC 18 Memorandum from Susan Siopis, Commissioner of Works, Nancy Taylor, Commissioner of Finance, and Jason Hunt,**

Regional Solicitor and Director of Legal Services, re: Anaerobic Digester Procurement Update **Pages 64 - 74**

Recommendation: Refer to the consideration of Item 10.2 under Notice of Motions

9. Committee Reports and any Related Notice of Motions

   9.1 Finance and Administration Committee

   9.2 Health and Social Services Committee

   9.3 Planning and Economic Development Committee

   9.4 Works Committee

   9.5 Committee of the Whole

   (Item #7 of the Committee of the Whole Report to Council to be considered with Item 10.2 under Notice of Motions)

10. Notice of Motions

   10.1 Amending the Signage of Landmark Facilities

   10.2 Anaerobic Digestion – Reconsideration and Solicitation of Bids

   (To be considered with Item #7 of the Committee of the Whole Report to Council)

11. Unfinished Business

   There is no unfinished business

12. Other Business

   12.1 2021 Durham Regional Local Housing Corporation Annual Shareholder Meeting

13. Announcements

14. By-laws

   20-2021 Being a by-law to to establish a tariff of fees for the processing of applications made in respect of planning matters.

This by-law implements the recommendations contained in Item #2 of the 5th Report of the Planning & Economic Development Committee presented to Regional Council on June 23, 2021

21-2021 Being a by-law to amend Residential and Non-residential Development Charges By-law No. 28-2018.

This by-law implements the recommendations contained in Item #5 of the 6th Report of the Finance & Administration Committee presented to Regional Council on June 23, 2021

22-2021 Being a by-law to amend Regional Transit Development Charges By-law No. 81-2017.

This by-law implements the recommendations contained in Item #6 of the 6th Report of the Finance & Administration Committee presented to Regional Council on June 23, 2021

23-2021 Being a by-law to amend GO Transit Development Charges By-law No. 86-2001.

This by-law implements the recommendations contained in Item #7 of the 6th Report of the Finance & Administration Committee presented to Regional Council on June 23, 2021

15. Confirming By-law

24-2021 Being a by-law to confirm the proceedings of Regional Council at their meeting held on June 23, 2021

16. Adjournment

Notice regarding collection, use and disclosure of personal information:

Written information (either paper or electronic) that you send to Durham Regional Council or Committees, including home address, phone numbers and email addresses, will become part of the public record. This also includes oral submissions at meetings. If you have any questions about the collection of information, please contact the Regional Clerk/Director of Legislative Services.

June 11, 2021.

Via Email to: Lisa.Trevisan@ontario.ca

Lisa Trevisan,
Director, Central Region
Ministry of the Environment, Conservation and Parks
230 Westney Road South, 5th Floor
Ajax, Ontario L1S 7J5

Re: Durham-York Incinerator AMESA Long Term Sampling of Dioxins/Furans – Reporting Deficiencies Require MECP's Immediate Attention

Dear Ms. Trevisan:

I submit this letter on behalf of Wendy Bracken, Kerry Meydam and myself. We are directing our concerns and questions around the AMESA Long Term Sampling System for Dioxins reporting to you and ask you to respond at the earliest opportunity.

Overview

MECP is the regulator ultimately responsible for oversight of the Durham York incinerator and for ensuring that the owners, Durham and York Regions, in turn ensure that Covanta Energy, their contracted operator, operates the incinerator in a manner that is consistent with the conditions of the Environmental Assessment (EA) Approval and the Environmental Compliance Approval (ECA) conditions.
The Owners have obligations under both the EA and ECA around public records and reporting of air emissions monitoring.

The DYEC ECA describes AMESA in Condition 7.3 a) and b). You can also find the ECA condition text included in Durham staff report June 2, 2021 WR -10, in Section 2.10 or see ECA at: https://www.durhamyorkwaste.ca/en/facility-approvals/resources/Documents/EnvironmentalComplianceApproval.pdf

AMESA was intended to provide dioxins/furans emissions data over longer periods over a variety of operating conditions between the pre-advised limited hour semi-annual stack tests, only one of which MECP required to demonstrate compliance.

For the public to have a reasonable understanding of the incinerator's dioxins/furans emissions, AMESA ongoing monthly sampling data is required to supplement the limited data from the semi-annual Source Test (ST) information and the Ambient Air (AA) monitoring data collected every 24 days for 24 hours (about 4% of the year), which is reported out quarterly.

No AMESA data at all was reported for the years 2015-2019. For 2020, monthly summaries only were provided in the 2020 ECA Annual Report, however, NO supporting documentation was provided to allow readers to know how the calculations were arrived at.

Information regarding how, and by whom the AMESA data has been reviewed, validated/invalidated has not been provided to public. We have seen no evidence of an official MECP- approved plan for the AMESA monitoring and reporting required by the EA and ECA.

Multiple Requests around AMESA Plans and Data Reporting

We have raised concerns on multiple occasions over the years around Durham's failure to review and report AMESA data including to Durham Region Committees and Council. Please see our letter of March 17, 2021 on pages 62-74 of the March 24, 2021 Durham Council Agenda at: https://calendar.durham.ca/meetings/Detail/2021-03-24-0930-Regional-Council-Meeting/389fe365-d7e7-4a65-984e-acf400b72c0e

Under the Air Emissions Monitoring Tab on the DYEC website, there are no webpages dedicated to AMESA sampling that would direct readers to either the AMESA Monitoring Plan, monthly results, related documentation or Ministry correspondence responding to the AMESA Works Plans. The average reader would also have difficulty finding the recently supplied 2020 monthly summaries that Durham included this past March in their 2020 ECA Annual Report

ALL other DYEC monitoring plans and reports have been developed with the assistance of independent qualified consultant(s) and submitted to MECP for review and response.

From correspondence included with other monitoring reports, it's clear the monitoring data is collected, summarized and reported by external qualified consultants who sign off on these monitoring reports and their conclusions and then they are submitted to the MECP. Ministry Correspondence is also posted.

In contrast, everything around AMESA has been like falling into a black hole and six years after start up and more than five years after entering into "commercial" operations, the public still has no verifiable AMESA data reported.

MECP 2019 Suggestion re AMESA data -Onus Put on Public to submit FOI Request

The Durham-York District office would be well aware of the multiple concerns we raised over several years directly to MECP, as well as to Clarington and Durham Region committees and councils, including after the first ST failure in 2015, again after the second dioxins (massive) ST exceedance in May 2016 and after the AA exceedance for dioxins in 2018, and ever since.

We brought up our concerns about Durham's refusal to report AMESA monthly sampling results when we met with MECP staff at the D-Y District office in April of 2019. At that time, MECP staff suggested that we file a Freedom of Information Request to request for AMESA related information from Durham, which Ms. Bracken did on May 3, 2019.

While some document records were provided later in 2019, Durham has denied much of the information related to Ms. Bracken's two FOI requests, including for AMESA sampling data (from start up to April 30, 2019). This is still under appeal, dragging on for over two years

It's long past time for MECP to require Durham to post ALL AMESA monthly sampling results since start up on the DYEC website, together with ALL related Ministry correspondence around the AMESA Work Plans and implementation thereof.

Why would a regulator require a monitoring program, as part of the EA and ECA, paid for by Durham taxpayers, yet allow the Owner to withhold results from the public? Or, finds it acceptable for Owners to provide monthly sampling summaries for one select year only , but without any supporting documentation that would allow readers to understand how the summaries were arrived at, which is about as much use as if those numbers were pulled out of a hat.

What has been allowed to occur with AMESA reporting is completely inconsistent with what MECP has required around other types of monitoring nor is it verifiable, traceable or transparent for the public.

AMESA Long Term Sampling Saga

Citizens cautioned Durham repeatedly that dioxins and furans are a major concern with incinerators everywhere and these concerns were raised multiple times during the EA process. AMESA and other long term sampling systems are used in hundreds of facilities in Europe. AMESA has been around for about two decades.

Though draft Air Emissions Monitoring Plans were to be brought to the Energy from Waste Advisory Committee (EFW AC) (required by EA Condition 8), to review and comment, the 2016, 2017 and 2018 AMESA Work Plans that Durham provided in response to a Freedom of Information Request submitted by Ms. Bracken in May 2019, were not brought to the EFW AC for discussion or review. Both Kerry Meydam and Linda Gasser are members of the EFW AC. Wendy Bracken is an alternate for Ms. Meydam.

2015, 2016, 2017 and 2018 AMESA Work Plans

Covanta's Interim AMESA Evaluation Report COVANTA REPORT Date: November 2015, is found at: https://www.durhamyorkwaste.ca/en/environmental-

monitoring/resources/Documents/AirEmissions/November_2015_Dioxin_and_Furan_AMESA_Evaluation_Report.pdf

MOECC in their December 15, 2015 response included the following comment starting on page 9-10 of their letter found at: https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/MOECC_Evaluation_SourceTestReport.pdf

Initial phase of the assessment of the AMESA long term dioxins monitoring system was undertaken during this source testing program. Information is considered inconclusive. More information is required to be gathered when the next source testing program takes place. Covanta and the MOECC TSS are required to harmonize the strategy that will be used to assess 9 (Doc.Mgmt # 5Y120146) the reliability of this monitoring system. This strategy should be in place by the time the 2016 source testing campaign takes place.

We had asked Durham staff multiple times for updates around AMESA sampling, including at the EFW AC meetings, with minutes documenting those requests. We were not provided with the subsequent AMESA Work Plans (2016-2018) until, in response to Ms. Bracken's FOI requests (2), Durham provided some AMESA related correspondence and these AMESA Work Plans, in 2019.

Also provided was an email dated May 2, 2017, which was MECP's Sandra Thomas' response to the April 2017 AMESA Work Plan (attached). No copies of MECP responses to the April 2016 and November 2018 Work Plans were provided, therefore we don't know what direction, if any, MECP provided to the Regions and Covanta around Work Plan implementation and/or reporting.

Durham residents were concerned about potential for adverse health impacts after the DYEC's two stack test failures in 2015 and 2016. After the massive May 2016 dioxins exceedance, Durham's former Works Commissioner wrote on June 15, 2016 in Report WR-8, after the big May 2016 exceedance:

"The objective for the installation and testing of the AMESA system is to generate additional Dioxins and Furans data to monitor the performance of the plant and its APC system. In addition, the Owners expect that after further investigation the AMESA system ***will be used to monitor Dioxins and Furans between the scheduled stack tests. This will provide for an additional mechanism to better protect the public".*** *(emphasis added)*

From the limited information that was provided in 2019 to Ms. Bracken's FOI requests, there was correspondence indicating that John Chandler, who had some expertise around AMESA, was retained by Durham in fall of 2015 and appeared to be involved around August 2017. Because Durham chose to funnel some AMESA related correspondence through their external legal counsel, we have not been provided with evidence that an external qualified consultant was involved in advising the Owners/Covanta around AMESA matters after 2017.

There was an Ambient Air exceedance for dioxins and furans in May 2018. From MECP's September 2019 response to Ms. Bracken (attached), AMESA data was not reviewed as part of this investigation. We wondered why not as looking at sampling results over several sampling periods leading up to the recorded exceedance could have provided additional information. We also wonder whether an Abatement Plan should have been required.

On at least two occasions in Fall 2019, in response to direct questions from us, Durham's current waste director stated that he was not looking at AMESA sampling data, opining at various times the results were not meaningful or meaningless.

One instance is found on the September 24, 2019 EFW Waste Management Advisory Committee meeting webcast found at: https://www.eventstream.ca/events/durham-region from: 2:05:40 to 2:11:55.

The current Waste Director stated again on October 23, 2019 at a Public Information Meeting for the proposed incinerator throughput expansion to 160,000 tonnes per year, with others present, including we three, who heard him say that he wasn't reviewing AMESA data, perhaps without fully appreciating how such comments undermine public confidence in the Owners' ensuring there is sufficient oversight over their staff and the operator.

At that same meeting, York Region (minority owner) staff responded to questions indicating that they *had* looked some AMESA data.

Reading the 2018 Work Plan, it's evident that Covanta was reviewing the AMESA data. Though it's not possible to know since the versions of the Work Plans provided are not signed to indicate the author(s), it appears Covanta might be the primary author of the 2016, 2017 and 2018 Work Plans.

Durham's June 2, 2021 Staff Report-WR-10 – Durham's position re AMESA Reporting

Please see Durham staff report on AMESA reporting, June 2, 2021 WR-10 found at: https://icreate7.esolutionsgroup.ca/11111068_DurhamRegion/en/regional-government/resources/Documents/Council/Reports/2021-Committee-Reports/Works/2021-WR-10.pdf

From Section 2.11:

The performance of the AMESA was initially evaluated during the annual Source Testing programs commencing in 2015. However, the correlation of the AMESA results to the Source Test results was not achieved until 2020 following the ***implementation of several workplans that were developed with input from the MECP, Owners, manufacture, consultants and Covanta.*** *(emphasis added).*

While we have noted that Air Zone monitors the AMESA sampling runs that occur concurrent with Source Testing, we have found no evidence nor has Durham indicated that Air Zone would be involved in monitoring monthly AMESA sampling procedures and or lab results etc.

The September 24, 2019 WMAC meeting was when we first learned that the AMESA lab analyses were not going to Durham, rather these were going directly to Covanta, which was alarming. Who puts the fox in charge of the hen house?

Covanta, whose operations the AMESA is intended to monitor, should not be the sole recipient of lab analyses of AMESA cartridge data.

While AMESA sampling data is not required for compliance, as per previous EA and ECA conditions cited above, the public must have complete confidence that sampling procedures and lab analyses are conducted appropriately as well as overseen and reported by qualified independent professionals.

From what is written in Report WR-10, Section 4, it appears that some time after the Fall 2019, the Region (and Covanta) reviewed the lab results on a monthly basis.

On March 30, 2021, in their 2020 ECA Annual Report, Durham finally provided the monthly summaries only, for the year 2020 only, but no underlying data.

See graph on page 31 of 2020 ECA Annual Report at:
https://www.durhamyorkwaste.ca/en/operations-documents/resources/2020/20210330_RPT_2020_DYEC_ECA_Annual_ACC.pdf

While Durham staff now write in Report WR-10 that they will report AMESA data quarterly, they made no commitment to provide the underlying data and related information that would be required to verify results as being an accurate representation of dioxins emissions.

From WR-10, you will see that Durham has no intention of providing AMESA results for 2015-2019.

In Section 2.11 Durham wrote:

However, the correlation of the AMESA results to the Source Test results was not achieved until 2020 *following the implementation of several workplans that were developed with input from the MECP, Owners, manufacture, consultants and Covanta. All the AMESA data prior to correlation was not reliable and could not be used for the evaluation of performance or trend analysis****. As a result of poor correlation testing there is no confidence in the AMESA data prior to 2020, therefore, release of this information will not be useful and may lead to inaccurate conclusions.***

First: Durham staff claim that “correlation” to the Source Tests wasn’t achieved until 2020. However, what is written in the November 2018 Work Plan on page 7 raises questions around Durham’s statement.

4.3 Long Term Data Evaluation

As the AMESA appeared to report consistent results during the 2017 validation test program, subsequent long term sample results were included as part of the current AMESA performance evaluation. Since the successful completion of the 2017 validation test program, fourteen (14) monthly samples have been collected for each unit.

Second: The decision to withhold the AMESA data is inconsistent with several EA and ECA conditions which are listed further below in this document. This requires MECP's immediate attention especially after the public has made so many attempts to get data that is required to be publicly reported. Withholding data undermines public confidence in both the Owners as well as the Regulator, both of whom are required to provide adequate oversight and to protect the public.

The 2020 summary data is not verifiable or traceable. Without knowing that all underlying data has been properly collected, analyzed, evaluated, calculated, reviewed and signed by a qualified independent consultant, the public cannot have confidence in the summary data or DYEC operations.

In Section 5.7 of WR-10 Durham writes that "*the rationale for the invalidation of AMESA data will be included in the ECA Annual Report".* Where is the evidence that what is described in the 2020 ECA is an appropriate approach for Data Validation?

From pages 30-31 in 2020 ECA Annual Report: "*To ensure valid data points are used in the calculation of a rolling average, a data point will be assessed if it falls outside of the established Target Range threshold of greater than 100% of the LoQ, i.e. 32 + 32 = 64 pgTEQ/Rm3 @ 11%O2. The suspected anomalous data point will be subjected to a data validation procedure before accepting or rejecting the data point."*

We have not seen anything that would confirm that a) this sole criterion is appropriate nor do they provide a copy of the Data Validation Procedure referenced and b) whether MECP has accepted Durham's above described approach. Appropriate and transparent data validation criteria are fundamental to the integrity of the AMESA monitoring results.

There is no commitment in WR-10 to supply underlying monitoring data, as is done with other monitoring reports. Durham also does not commit to posting ALL Ministry AMESA related correspondence so that the public would know that MECP is reviewing the monthly sampling data and responding where required, as occurs for ALL other monitoring.

<u>Public Must Have Confidence that Monitoring Data is Reviewed by the Regulator</u>

Because we have not been provided with complete documentation around AMESA development and reporting, our comments are based on the limited information released to Ms. Bracken in response to her FOI requests.

To repeat, we are very concerned that lab results go directly to Covanta and not to Durham directly, as staff claimed was the case. While Covanta would be required to provide

operational inputs so that someone qualified could calculate the final concentrations e.g. using the proper TEQ factors, those inputs and the lab analyses should be in the Owners' custody and then provided to an independent and qualified consultant, who would sign off on the final results, confirming that in their professional opinion these would be an accurate representation of the dioxins collection over the sampling period(s).

From what we have read in various documents, there appears to have been multiple changes to the Source Testing methods since the 2016 dioxins exceedance. Without having access to all the written comments that would have been supplied to the owners and Covanta over time around AMESA, including MECP's response to these changes, it's difficult for the public to have confidence that Stack Tests are an accurate representation of dioxins emissions, more so when AMESA monthly sampling data has been withheld by Durham and where the 2020 are not traceable or verifiable.

The incinerator went from 2015 and 2016 stack test failures for dioxins, to stack results after that, which were incredibly low.

Durham's consultant around AMESA matters from around 2015-2017, wrote the following on March 24, 2017 (attached) around Source Test Results and AMESA Correlation:

24 March 2017

TO: Leon Brasowski, Covanta

cc: Gioseph Anello, Durham

SUBJECT: AMESA Comparison Testing

Since our teleconference earlier this week I have been doing some investigation and thinking about how to approach the testing.

We all know that the results of the stack testing show that the levels in the stack are well below the limits set out in the ECA for the facility. The stack testing values obtained by ORTECH in the Fall 2016 testing are so low that the uncertainty in the value is high – I would suggest that it would be above the ±50 pg TEQ/Rm^3 uncertainty that has been documented for concentrations at the Canadian LOQ of 32 pg TEQ/Rm^3. With that level of uncertainty, the AMESA cartridge results from the Fall 2016 testing agree with the stack results.

That simple comparison ignores the problem that the comparison between M23 results and the AMESA cartridge is a bit of an "apples and oranges" one – the M23 sample includes all the materials caught in the sampling train; the AMESA cartridge analysis approach ignores the material trapped in the probe and nozzle of the system. Including the probe catch with the AMESA cartridge, the AMESA results are at least an order of magnitude higher than the M23 test results – 5 – 59 times higher depending upon the sample.

Ms. Bracken received only limited information to her FOI requests. From what has been described in the April 2017 Work Plans, what exactly is being included when calculating concentrations – is it with or without probe rinses?

We have questions re TEQ factors used. From Sandra Thomas' May 2, 2017 email (attached) which responds to the April 11, 2017 Work Plan, several comments were provided at bottom of page 2 as below:

Covanta indicates the continuation of the use of NATO/CCME 1988 as the source of toxic equivalent (TEQ) factors. In April 2012, Ontario Regulation 419/05, was amended to reflect that the NATO/CCME1988 TEQ factors were no longer reflecting the expected impact from PCDDs/PCDFs; ***and as such, the World Health Organization (WHO)TEQ factors were to be used at once to for such impact determination (this is also highlighted in the MOECC Summary of Standards and Guidelines to Support Ontario Regulation 419/05 - Air Pollution – Local Air Quality).***
The PCDDs/PCDFs in-stack TEQ concentrations are to be based on WHO TEQ factors, that includes the dioxin-like PCBs*. (emphasis added)*

However, Durham staff wrote in report WR 10, Section 3.6 as follows:
The laboratory data provides values for each of the 17 dioxin and furan congenors. The respective toxic equivalency factor (TEF) for each dioxin and furan congenor is applied to each value to obtain a total dioxin and furan total toxic equivalence (TEQ). The ECA for the DYEC specifies ***the use of the NATO classification scheme and therefore the NATO TEF factors are applied to the TEQ calculation.*** *(emphasis added)*

We cannot determine if Sandra Thomas' advice as quoted above was amended in a subsequent letter. If it was amended, we would appreciate being provided with a copy of such a letter, along with all MECP comments to the November 14, 2018 Work Plan and subsequent Work Plans, if any. The public requires certainty that Durham and Covanta have implemented and are following all MECP direction.

A reading of the November 14, 2018 Work Plan indicates that Covanta was certainly looking at the AMESA sampling data results. Covanta was characterizing certain results as "outliers". Table 4 (below) on page 8 of the 2018 Work Plan (attached) indicates that for several sample periods, no data was included.

On page 9 of the 2018 Work Plan, it stated that Covanta reviewed past operational upsets during some periods, which upsets and conditions could have resulted in higher than "expected" dioxins emissions over those sampling periods.

Some results have been characterized as "outliers". It's not clear on what basis data were excluded and who made that decision. Approved data validation criteria should have been developed by an independent and qualified professional, with this reviewed and signed off on by MECP.

See Table 4 Nov. 14 2018 Work Plan Page 8

Table 4: Summary of Monthly AMESA Data Collected Post 2017 Validation Testing

	Unit 1		Unit 2	
Date Range (Start – Stop)	Sample Volume [1]	Dioxin Concentration [2]	Sample Volume [1]	Dioxin Concentration [2]
01 Jun 2017 - 30 Jun 2017	545.5	0.081	512.5	5.7
30 Jun 2017- 28 Jul 2017	504.0	0.063	483.3	8.0
28 Jul 2017 – 07 Sep 2017	383.3	0.080	371.7	521
07 Sep 2017 - 05 Oct 2017	514.9	0.049	500.9	35.5
05 Oct 2017- 02 Nov 2017	516.5	0.019	501.6	16.1
02 Nov 2017 – 01 Dec 2017	481.9	0.021	467.5	8.8
01 Dec 2017 – 29 Dec 2017	515.5	0.025	505.8	6.9
29 Dec 2017 – 26 Jan 2018	477.6	0.039	462.9	7.0
27 Jan 2018 – 01 Mar 2018[3]	531.5	0.037		
27 Jan 2018 – 21 Mar 2018[3]			454.5	14.1
02 Mar 2018 – 24 Apr 2018[3]	500.4	0.023		
21 Mar 2018 – 24 Apr 2018[3]			554.5	162.6
24 Apr 2018 – 22 May 2018	510.6	3.2	516.7	49.1
22 May 2018 – 22 Jun 2018[3]			517.6	8.7
22 May 2018 – 3 Jul 2018[3]	558.1	29.9		
3 Jul 2018 – 31 Jul 2018	473.4	22.9	476.2	9.3
31 Jul 2018 – 28 Aug 2018	474.0	12.8	478.2	4.7
Long Term Average	499.1	4.9	489.8[4]	14.5[4]

Notes:

(1) Sample volume presented as cubic meters corrected to 25°C and 1 atmosphere.
(2) All results presented as pg TEQ/Rm³ corrected to 25°C and 1 atmosphere, adjusted to 11% O_2, using NATO/CCMS (1989) toxicity equivalency factors with full detection limit.
(3) Sampling times extended/shortened due to boiler outages.
(4) Average excludes samples collected between 28 July and 7 September 2017 and 21 March and 24 April 2018 which appears to have been compromised and represent outliers.

8

<u>EA and ECA Conditions relevant to AMESA Monitoring and Reporting</u>

We fail to understand how Durham could have been allowed to withhold the AMESA data for as long as they have, given all the requirements to report Air Emissions monitoring data publicly.

Applicable EA and ECA Conditions include:

EA Condition 3 – Public Record

3. Public Record

3.1 Where a document, plan or report is required to be submitted to the ministry, the proponent shall provide two copies of the final document, plan or report to the Director: a copy for filing in the specific public record file maintained for the undertaking and a copy for staff use.

3.2 The proponent shall provide additional copies of the documents required for the public record file to the following for access by the public:

a) Regional Director;

b) District Manager;

c) Clerks of the Regional Municipality of Durham, the Regional Municipality of York, and the Municipality of Clarington; and,

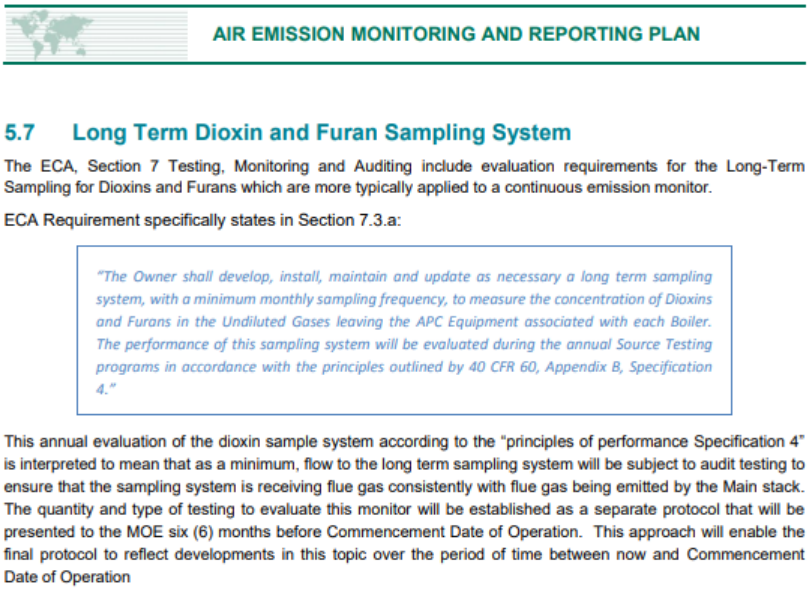
d) Advisory Committee (as required in Condition 8 of this Notice of Approval).

3.3 The EAAB file number EA-08-02 shall be quoted on all documents submitted by the proponent pursuant to this Condition.

EA Condition 8.8 (g) -example of data to be provided:

g) Air Emissions Monitoring Plan required by Condition 12;

AMESA sampling is part of the DYEC Air Emissions Monitoring Plan, extract below page 13, Sec. 5.7 at: https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/Air_Emissions_Monitoring_Plan_AEMP.pdf



AIR EMISSION MONITORING AND REPORTING PLAN

5.7 Long Term Dioxin and Furan Sampling System

The ECA, Section 7 Testing, Monitoring and Auditing include evaluation requirements for the Long-Term Sampling for Dioxins and Furans which are more typically applied to a continuous emission monitor.

ECA Requirement specifically states in Section 7.3.a:

> *"The Owner shall develop, install, maintain and update as necessary a long term sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler. The performance of this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4."*

This annual evaluation of the dioxin sample system according to the "principles of performance Specification 4" is interpreted to mean that as a minimum, flow to the long term sampling system will be subject to audit testing to ensure that the sampling system is receiving flue gas consistently with flue gas being emitted by the Main stack. The quantity and type of testing to evaluate this monitor will be established as a separate protocol that will be presented to the MOE six (6) months before Commencement Date of Operation. This approach will enable the final protocol to reflect developments in this topic over the period of time between now and Commencement Date of Operation

EA Condition 12.7:

12.7 The proponent shall post the reports of the air emissions monitoring systems on the proponent's web site for the undertaking.

ECA Condition 14.4 Monitoring and Testing Records

(g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;

ECA Condition 15 – Reporting:

1.

(f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;

(j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;

Conclusion and Requests to Regulator

MECP should not approve incinerators and then leave it to Owners like Durham Region or Operators like Covanta to make these enormously important decisions that directly affect public health, without also ensuring that monitoring plans have been developed, and data is reported, according to the conditions the Minister and Ministry set in the EA and ECA.

MECP cannot allow Owners like Durham Region to withhold monitoring data that is required by the EA and ECA.

MECP is responsible for ensuring that EA and ECA Conditions have been complied with. Where Owners/Operators have not, MECP should take remedial action.

Furthermore, as has been done with other monitoring plans, MECP must ensure that the Owners post all Ministry correspondence around AMESA on the DYEC website so that the public has evidence of AMESA monitoring "plan" approval and data review.

We ask that you give our concerns your closest attention and respond at the earliest opportunity.

Yours truly,

Linda Gasser, Whitby
Email: gasserlinda@gmail.com

Wendy Bracken, Newcastle
Email: wendy-ron@sympatico.ca

Kerry Meydam, Courtice
Email: ksam2@rogers.com

Cc: Jeff Yurek, Minister of the Environment, Conservation and Parks

Celeste Dugas, MECP Manager Durham-York District Office

Durham Region Council C/O Clerk

York Region Council C/O Clerk

Clarington Council C/O Clerks

Durham MPPs (L. Park, J. French, L. Coe, R. Phillips, P.Bethlenfalvy)

Attachments:

Durham Staff Report 2021 WR 10 June 2 re AMESA LTSS found at: https://icreate7.esolutionsgroup.ca/11111068_DurhamRegion/en/regional-government/resources/Documents/Council/Reports/2021-Committee-Reports/Works/2021-WR-10.pdf

March 17. 2021 Letter to Durham Region Council -L. Gasser, W. Bracken, K. Meydam -see Pages 62-74 of March 24, 2021 Durham Council agenda at:

https://calendar.durham.ca/meetings/Detail/2021-03-24-0930-Regional-Council-Meeting/389fe365-d7e7-4a65-984e-acf400b72c0e

April 19, 2016 AMESA LTSS Work Plan

April 11, 2017 AMESA LTSS Work Plan

November 14, 2018 AMESA LTSS Work Plan

Sandra Thomas' May 2, 2017 email comments re April 11 2017 AMESA Work Plan

September 17, 2019 MECP letter to W. Bracken

March 24, 2017 John Chandler Memo to L. Brasowski, Covanta and G. Anello, Durham Region

COVANTA
Powering Today. Protecting Tomorrow.

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April 19th, 2016

Ministry of the Environment and Climate Change
135 St. Clair Ave. W.
1st Floor
Toronto ON M4V 1P5

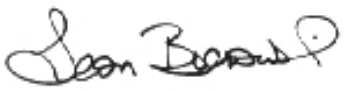
Attn: Lubna Hussain, Manager
Standards Development Branch

RE: AMESA Work Plan
Durham York Energy Centre (DYEC)
Environmental Compliance Approval Number 7306-8FDKNX (ECA)

Following our conference call of April 8th, please find attached an AMESA Work Plan in fulfillment of Technology Standards Section (TSS) comments made on the 2015 compliance source test report. The intent of the plan is to harmonize the strategy that will be used to assess the reliability of the AMESA system with ongoing testing.

As always, please call if you have any questions regarding this plan.

Sincerely,



Leon Brasowski

CC:
Mr. Guillermo Azocar, MOECC
Mr. Phil Dunn, MOECC
Ms. Sandra Thomas, MOECC
Mr. Gioseph Anello, Regional Municipality of Durham
Mr. Greg Borchuk, Regional Municipality of Durham
Mr. Seth Dittman, Regional Municipality of York
Mr. Matt Neild, Covanta
Ms. Amanda Huxter, Covanta

AMESA Long Term Sampling System Work Plan

April 19, 2016

1.0 Introduction

The AMESA Long Term Sampling System (LTSS), installed on each of the two units of the Durham York Energy Centre (DYEC), is a dioxin and furan continuous sampling system designed to meet the requirements of ECA condition 7. (3). It is designed to extract a sample of flue gas from the outlet of the air pollution control system on a continuous and isokinetic basis for the duration of the sampling period. Dioxins and furans are adsorbed on a replaceable trap filled with adsorbent resin (XAD-2) which is spiked with an internal standard by the laboratory that will complete the analyses following the designated sampling period. The short term objective of this Work Plan is to set forth an outline of the strategy to complete the performance evaluation of the LTSS. Following this evaluation, Dioxins and furans emission trends and/or fluctuations may be able to be observed as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

The LTSS was started up and maintained in accordance with guidance from the AMESA manufacturer, Environnement S.A. Deutschland (ESAD, the European manufacturer of the AMESA system), and the North America vendor Altech and the AMESA Technical Manual (June 2010). A DYEC- CEMS AMESA Trap Replacement Standard Operating Procedure (SOP) (C ENV 001) was developed and implemented based upon Altech guidance which was subsequently updated to include new Altech procedures. The new procedures were implemented following the initial evaluation of the LTSS which occurred during the initial DYEC source test in October 2015.

Initial AMESA sampling operation was done with blank cartridges to ensure the system was able to withdraw a sample isokinetically. Subsequently, the AMESA probe was removed from the duct during refractory cure of the boiler when oil was combusted. The AMESA LTSS probe was put back into service just prior to the conduct of RATA testing.

The AMESA probe was managed in accordance with Altech procedures that stated;

1. LTSS probes are to be cleaned utilizing instrument air only, back flowing instrument air through the nozzle and into the duct,
2. LTSS is “purged” of any contamination buildup followed by sampling with a blank cartridge for a period up to 48 hours.
3. No chemical or physical cleaning of LTSS probes was recommended.

Using the above procedures and in conformance with the Source Test Plan submitted to the MOECC, the initial evaluation of the AMESA LTSS on October 27th and 28th consisted of three (3) paired tests utilizing a minimum sampling period of four hours. Each paired set included a single point AMESA sampling result with multi-point source testing in accordance with reference USEPA Method 23. The term “multi-point” means that an EPA Method 23 nozzle was used to extract flue gas and moved to various points across the duct diameter during the test program. The multi-point sample plan for Method 23 is consistent with procedures conducted during conventional stack tests. The AMESA system uses a single fixed point in the center of the duct to sample the flue gas.

2.0 Initial Evaluation Conclusions

The evaluation of the LTSS was conducted in two steps: first the evaluation of the sampling rate of the DYEC system was conducted to determine if the flue gas sample system met isokinetic standards; subsequently, an initial evaluation of the capability to monitor dioxins and furans was initiated. The specified range for the sampling system evaluation is 95 – 115% isokinetic flow pursuant to the AMESA vendor. A minimum of nine flow measurements were taken on each unit. This evaluation concluded that the AMESA system is capable of sampling at an isokinetic rate from a single point at 108% and 106% for unit #1 and unit #2 respectively. The ability to maintain this isokinetic flow successfully is understood to be a key parameter for any long term dioxin sampling system to generate representative data of long term DYEC operation. This includes the ability of the system to automatically adjust to changes in flow due to changes in the steam generation rate and resultant flue gas flow rate. The continuation of demonstrating isokinetic flow will be made from subsequent AMESA LTSS validation tests matched against reference method test flows to verify the operation of the AMESA system.

3.0 Proposed AMESA Work Plan

Subsequent to the conduct of the initial evaluation of the AMESA LTSS, Covanta requested that Environnement S.A Deutschland and Altech together verify the installation of the AMESA system prior to any additional validation tests. As such, both companies will be present at the DYEC during the week prior to the next scheduled source test, to be conducted during the week of May 2, 2016. Additional procedures for managing the sample probe were provided by AMESA LTSS and Altech will be implemented in accordance with the attached ESAD procedure beginning with the source test in May 2016. The new ESAD procedures include a rinsing process of the nozzle and inner tube with distilled water, acetone and toluene. ESAD has also recommended that the sampling period for each validation comparison test be increased for two reasons; 1) to acquire additional sample which would possibly avoid non-detects of specific isomers, and 2) acquire additional sample volume consistent with the total sample volume collected with reference Method 23. This requires each paired test to be a nominal six (6) hours in duration.

As recommended by ESAD, subsequent validation testing of the AMESA system will continue to utilize a RATA approach, as utilized in the initial validation program which is also consistent with the procedures ESAD has utilized in European installations. As the RATA approach was proposed in the initial Source Test Plan, it is envisioned that the AMESA validation program would continue in such a manner until at least nine (9) valid AMESA samples are collected concurrently with reference Method 23 samples for each DYEC unit. Covanta may revisit and modify this work plan or the related SOP's at any time to make modifications as additional data is collected. Modifications deemed necessary will only be made following consultation with the ESAD, the AMESA vendor, the Regions and their consultants and the MOECC. While we are aware of a recently proposed publication by BSI, (April 2015) addressing technical specifications for long term sampling systems for PCDD/PCDF such as the AMESA, the proposed procedures have to date, not been independently verified for use. Following, validation, the BSI procedures maybe considered as warranted to further evaluate the performance of the AMESA system.

ESAD noted that long-term sampling AMESA operation (28 +/- day sample periods) do not require the additional solvent cleaning procedure prior to new sample traps being put into operation. ESAD, does, however, at this time, recommend the use of the solvent cleaning procedure every six (6) months. Such semi-annually cleaning may not be required in the future as dictated by the analyses of the rinse. Ongoing performance of the AMESA system will also include evaluation of long term data collected (28 +/- day sample periods) between the next the scheduled semi-annual validation test periods.

Environnement S.A
Deutschland

Cleaning of AMESA sampling probe with changeable inner tube

1. Stop the cooling water flow.
2. Disconnect the flexible tubes from the Pitot tube
3. Disconnect the thermocouple (electrical plug on cartridge box).
4. To remove of the titanium bend between the probe and the cartridge box unfasten the clamp on the cartridge box.
5. To unfasten the union nut, which fixes the titanium bend with the probe you need two combination wrenches, one 22 and one 27. The combination wrench 22 you need to secure the probe during the unfastening of the union nut.
6. Loose the screws of the probe holder (it is fixed on the flange or flue gas channel)
7. Turn the probe in such a position, that the water connections show upwards
8. Disconnect the water tubes (**be careful, the water could be hot!!!!!**) and remove the water as much as necessary into a vessel
9. Turn the probe so that the water connections shows downwards and let flow the water into a vessel
10. Loose the clamp screw which holds the inner tube so that you're a able to move the inner tube
11. Remove the inner tube by pulling it out of the probe
12. Clean the inner tube according the cleaning procedure described below.
13. Move the cleaned (or a new) inner tube into the probe. Take care that you push it until the end. You have to feel a resistance before you reach the end.
14. Fasten the clamp screw which fixes the inner tube
15. Turn back the probe on the measurement position
16. Fasten the screws of the probe holder
17. Connect the water tubes (take care for inlet and outlet)
18. Connect the titanium bend again to the probe and the cartridge box.
19. Connect the flexible tubes onto the Pitot tube (take care for ´+´ and ´-´)
20. Connect the thermocouple
21. Start the cooling water

Cleaning of the probe (acc. TUV report)

The inner titanium tube of the sampling probe must be rinsed normally in 6-month intervals (i.e. during the half-yearly maintenance measures) using the following liquids in the sequence outlined below:

1. highly pure water (for residue analysis)
2. highly pure acetone (for residue analysis)
3. highly pure toluene (for residue analysis)

This rinsing process must start at the nozzle; using the same solvent, the rinsing direction is then reversed. The probe tube must be turned several times during the rinsing process to ensure wetting of the surface on all sides. Each rinse requires 50 to 100 ml of liquid. All rinsing liquids must be collected in a glass vessel that can be firmly closed by means of a screw-on lid, and stored until the analysis results from the sampling process following rinsing have been submitted.

The mentioned rinsing solutions are also mentioned in EN 1948-1 Attachment B chapter 7.9.

In case of sticky contaminations inside the tube we recommend to use our special plastic brushes to clean the inner tube mechanically.

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AMESA Long Term Sampling System Work Plan

Revised April 11, 2017

1.0 Introduction

The AMESA (Adsorption MEthod for SAmpling Dioxins and Furans) Long Term Sampling System (LTSS or AMESA), installed on each of the two units at the Durham York Energy Centre (DYEC), is a dioxin and furan continuous sampling system designed to meet the requirements of Environmental Compliance Approval (ECA) Condition 7. (3). It is designed to extract a sample of flue gas from the outlet of the air pollution control system on a continuous and isokinetic basis for the duration of the sampling period. Dioxins and furans are adsorbed on a replaceable trap filled with adsorbent resin (XAD-2) which is spiked with an internal standard by the laboratory that will complete the analyses following the designated sampling period. The objective of this Work Plan is to set forth an outline of a revised strategy to improve the consistency of data and complete the performance evaluation of the LTSS. This proposed revised evaluation strategy is based on the data collected to date. The complete set of data will be evaluated to determine if the AMESA provides an accurate estimate of the emissions of dioxins and furans from the DYEC.

2.0 Historical Operation and Proposed Test Methodology Summary

The LTSS was started up and maintained in accordance with guidance from the AMESA manufacturer, Environnement S.A. Deutschland (ESAD, the European manufacturer of the AMESA system), the North America vendor Altech and the AMESA Technical Manual (June 2010). An - AMESA Trap Replacement Standard Operating Procedure (SOP) (DYEC ENV 001) was initially developed and implemented based upon Altech guidance. This SOP was subsequently updated, once to include revised Altech Guidance which was implemented following the initial DYEC source test in October 2015, and subsequently to include ESAD cleaning procedures by rinsing with water, acetone and toluene and later changed to water, acetone and hexane in conformance with EPS 1 RM/2.

Initial AMESA sampling operation was done with blank traps to ensure the system was able to withdraw a sample iso-kinetically. Subsequently, the AMESA probe was removed from the duct during refractory cure of the boiler when oil was combusted. The AMESA LTSS probe was put back into service just prior to the conduct of initial Relative Accuracy (RA) testing of the Continuous Emission Monitoring System (CEMS).

The AMESA probe was initially managed in accordance with the original Altech procedures that stated:

1. LTSS probes are to be cleaned utilizing instrument air only by back flowing instrument air through the nozzle and into the duct,
2. LTSS is “purged” of any contamination buildup followed by sampling with a blank trap for a period up to 48 hours.
3. No chemical or physical cleaning of LTSS probes was recommended.

Using the above procedures and in conformance with the Source Test Plan submitted to the MOECC, the initial evaluation of the AMESA LTSS on October 27th and 28th consisted of three (3) paired tests utilizing a minimum sampling period of four hours. Each paired set included a single point AMESA sampling result with multi-point source testing in accordance with EPS 1 RM/2. The term “multi-point” means that an EPS 1 RM/2 nozzle was used to extract flue gas and moved to various points across the duct diameter

during the test program, as is done for conventional stack tests. The AMESA system uses a single fixed point in the center of the duct to sample the flue gas.

As recommended by ESAD, subsequent validation testing of the AMESA system in 2016 continued to utilize a RA approach, as utilized in the initial validation program which is also consistent with the procedures ESAD has utilized in European installations. These subsequent paired sets, completed in May 2016 and November 2016, however, also extended the sampling period to six (6) hours in accordance with discussions with ESAD, the Regions and the MOECC. The extended sampling period provided additional AMESA sample volume consistent with the total sample volume collected with EPS 1/ RM2. At this time, nine (9) valid AMESA samples have been collected concurrently with EPS 1/ RM2 samples for each DYEC unit, in accordance with the initial Source Test Plan. In addition to the extended sampling time, new ESAD system cleaning procedures were implemented which included a rinsing process of the nozzle and inner tube with distilled water, acetone and toluene. During the conduct of the compliance testing program in 2016, representatives of ESAD were present to train Covanta personnel on this procedure and to thoroughly review and make any adjustments to ensure the proper operation of the AMESA system. Probe/inner tube rinse samples were collected and analyzed separately from the XAD resin trap from the AMESA system.

The following table compares the methodology used in past test events to the current proposed methodology. In previous AMESA tests, Covanta obtained paired sets of data where a manual method test is conducted at the same time, for the same duration and at the same proximate location as the AMESA system. The results of the manual method tests were compared to the corresponding AMESA tests to assess AMESA's accuracy.

Test Date	**October 2015**	**May 2016**	**November 2016**	**Proposed May 2017**
Reference Method	**EPS 1/RM 2**	**EPS 1/ RM 2**	**EPS 1/RM 2**	**EPS 1/RM 2 (Modified)(1)**
Number of Reference test runs	3	3	3	5
Manual method sample period (hours)	4	6	6	8
Single point or traverse	Traverse	Traverse	Traverse	Single Point
AMESA Parameters				
Single point or traverse	Single	Single	Single	Single
Number of AMESA Runs	3	3	3	1
AMESA Sampling Period (hours)	4	6	6	40
Source Testing Contractor	Ortech	Ortech	Ortech	Ortech
XAD trap preparation	ALS	Maxxam	Maxxam	ALS
Probe cleaning before installation	No	Water, Acetone, Toluene Rinse	Water, Acetone, Toluene Rinse	Laboratory procedure used for EPS 1/RM 2
Probe rinse after sampling event	No	No	Yes	Yes

Notes: (1) Fixed sampling point

In the proposed methodology, five manual method tests of eight hours duration each are conducted sequentially and compared to a single AMESA test spanning the entire 40 hour period covered by the manual tests. Unlike the standard reference testing method, the proposed validation tests will use a fixed sampling point in the centre of the duct to mirror the behavior of the AMESA system.

3.0 Isokinetic Flow Evaluation Conclusions

The evaluation of the LTSS was conducted in two steps: first, the evaluation of the sampling rate of the DYEC system was conducted to determine if the flue gas sample system met isokinetic standards; subsequently; an initial evaluation of the capability to monitor dioxins and furans was initiated. The specified range for the sampling system evaluation is 95 – 115% isokinetic flow pursuant to the AMESA vendor. A minimum of nine flow measurements were taken on each unit. This evaluation concluded that the AMESA system is capable of sampling at an isokinetic rate from a single point at 108% and 106% for unit #1 and unit #2 respectively. The ability to maintain this isokinetic flow successfully is understood to be a key parameter for any long term dioxin sampling system to generate representative data of long term DYEC operation. This includes the ability of the system to automatically adjust to changes in flow due to changes in the steam generation rate and resultant flue gas flow rate. The continuation of demonstrating isokinetic flow will be made from subsequent AMESA LTSS operational records matched against reference method test flows to verify the operation of the AMESA system.

4.0 Summary of AMESA RA Validation Data

Validation data available for evaluation is limited to nine (9) paired sets of samples taken on October 28th – 29th, 2015, May 9th – 11th, and October 27th – 31st, 2016. Data files for these test runs are available and presented in the associated Ortech Source Test Report No. 21546-1 dated November 25, 2015, Ortech Source Test Report No. 21656 dated June 13, 2016, and Ortech Source Stack Test Report 21698 dated December 22, 2016. Tables 1 and 2 summarize the testing results and RA results.

The relative accuracy of the AMESA data as compared to the reference method, is significantly greater than the RA criteria (10%) suggested to be utilized by the ECA, i.e. Performance Specification 4. Relative accuracy also does not seem dependent on whether probe rinse contributions are included in the evaluation. TEQ results appear to decline as the initial run of each 3 run test program is typically the highest result. ESAD has commented that such data trends are typical of results in which the sampling system is plagued with insufficient cleaning. As a result, Covanta began to rinse the AMESA sampling system between monthly sampling events. As single rinses appeared to be insufficient from validation testing results, the sampling system was subsequently double and triple rinsed. These data suggest improvement in reducing the contribution of the rinse, however, as much as 8% was still being contributed from the third rinse. Validation test results also appear to suggest that process variability has declined over time for all data.

The evolution of AMESA procedures from October 2015 through and including May 2017 was based on information provided by ESAD and Altech. A comparison of the paired sets of reference method and AMESA results from the May 2015 program do not indicate a correlation. Covanta in consultation with the Regions implemented discussion with ESAD in an effort to understand the reason for the poor correlation and to improve that correlation during subsequent efforts.

Table 1: Summary of Unit 1 AMESA RA Validation Data [(1)]

RUN #	DATE	AMESA Probe Rinse as a % of Total	AMESA with Probe Rinse	AMESA without Probe Rinse	Reference Method
1	28-Oct-15	N/A	N/A	843	25.9
2	29-Oct-15	N/A	N/A	273	29.6
3	29-Oct-15	N/A	N/A	121	25.5
4	9-May-16	51%	869	430	1169
5	10-May-16	77%	265	61.3	678
6	11-May-16	61%	62	24.3	606
7	27-Oct-16	91%	279	26.2	7.6
8	28-Oct-16	90%	159	15.7	5.9
9	31-Oct-16	79%	60	12.9	14.8
		Relative Accuracy (%)	116	162	

Notes: (1) All results presented as pg TEQ/RM^3 corrected to 25°C and 1 atmosphere, adjusted to 11% O_2, using NATO/CCMS (1989) toxicity equivalency factors with full detection limit.

Table 2: Summary of Unit 2 AMESA RA Validation Data [(1)]

	DATE	AMESA Probe Rinse as a % of Total	AMESA With Probe Rinse	AMESA Without Probe Rinse	Reference Method
1	28-Oct-15	N/A	N/A	559	19.5
2	29-Oct-15	N/A	N/A	258	23.8
3	29-Oct-15	N/A	N/A	182	23.2
4	6-May-16	92%	150	12.4	14
5	9-May-16	83%	45	7.5	9
6	10-May-16	91%	99	8.9	12
7	1-Nov-16	91%	397	34.1	6.8
8	2-Nov-16	90%	324	31.3	6.5
9	3-Nov-16	90%	193	20	6.0
		Relative Accuracy (%)	3718	1862	

Notes: (1) All results presented as pg TEQ/RM^3 corrected to 25°C and 1 atmosphere, adjusted to 11% O_2, using NATO/CCMS (1989) toxicity equivalency factors with full detection limit.

5.0 Proposed AMESA Work Plan

Throughout the evaluation program of the AMESA LTSS, Covanta has utilized the recommendations of ESAD. Both ESAD and Altech have been onsite to verify the installation of the AMESA system. As such, both companies were present either before and/or during the validation test programs conducted in 2016.

Covanta, following consultation with the Regions and ESAD, proposes to modify the AMESA Work Plan to: (1) incorporate AMESA sampling system cleaning procedures that more fully replicate reference method procedures, specifically EPS 1/RM 2; (2) substitute the paired RA approach with the validation protocol included within the proposed Technical Specifications for long term sampling systems for PCDD/PCDF as published by the British Standards Institution (BSI) in April 2015; and (3) modify the reference method to replicate the AMESA sampling approach.

In conformance with ALS procedures developed specifically for sampling SVOCs, the AMESA sampling system will be removed and sent to ALS prior to the conduct of the validation testing program. The AMESA sampling sections, probe, elbow and inner tube assembly will go through a multistep cleaning process, much like all of Ortech's reference method testing glassware following ALS documentation ID: *BU-WI-3000, Organic Glassware/Equipment Cleaning, Proofing and Maintenance*. Covanta maintains duplicate sampling components such that monthly AMESA sampling can continue in operation while the spare sampling components are laboratory cleaned and proofed to be subsequently reinstalled prior to the conduct of the Validation Test program. ALS will utilize hexane in substitution for toluene in conformance with reference method procedures.

Although BSI specifications remain to be independently verified, the variability of RA results collected to date warrants a new approach to evaluate the LTSS. Notably, in recognition of the variability of emission results for the range of TEQ expected, BSI specifications referenced as CEN/TS 1948-5, incorporate a sliding scale for the maximum deviation in relation to the TEQ concentration as enumerated in Table I.1 in Annex I of the BSI specifications and is provided below. We propose to apply this standard to DYEC results.

Concentration ng I-TEQ/m^3 (at standard conditions, dry)	Maxim. deviation %
0,02	100
0,03	60
0,04	45
0,06	40
0,08	37
0,1	35

AMESA sampling is proposed to be conducted in parallel with EPS 1/ RM2 for a minimum continuous period of 40 hours. Each reference method test period will be conducted for eight hours upon which the sampling train will be replaced until a total test period of 40 hours over two days is achieved. This results in one sample for the AMESA system and a mean value of five samples for the standard reference method. This validation testing will be conducted following the completion of the Voluntary Source Testing Program. Both Unit 1 and Unit 2 will be tested simultaneously as described above. In

this manner, sampling interruptions should be minimized to avoid any contamination during the program.

Lastly, it is proposed that the reference method sampling probe will not traverse the flue gas duct during the entire validation sampling period but rather remain stationary in the duct close to the AMESA sampling port. While it is recognized that due to limited vertical space between the baghouse outlet and the induced draft fan, sampling ports are located in a "non-ideal" location as defined by the Ontario Source Testing Code. An "ideal" location is defined as being at least eight stack diameters downstream and at least two stack diameters upstream of flow disturbances. The sampling ports which are utilized are 4.4 duct diameters downstream and 0.7 duct diameters upstream from the nearest flow disturbances. In an effort to reduce any potential issue which could increase variability, especially at the minimal levels of TEQ measured to date, validation testing will occur with both the AMESA probe and the reference method probe being held in a stationary position.

The proposed modifications to the AMESA Work Plan are considered to be a continuation of a best efforts approach to evaluate the performance of the AMESA long term sampling system. ESAD has noted that while the BSI approach remains to be validated they concur on utilizing this approach at this time for the DYEC following consideration of the RA test data collected to date.

ESAD previously noted that long-term sampling AMESA operation (28 +/- day sample periods) do not require the additional solvent cleaning procedure prior to new sample traps being put into operation. ESAD does recommend the use of the solvent cleaning procedure at least every six (6) months. Covanta is planning to continue to utilize solvent cleaning each time a new monthly trap is introduced into the AMESA system for the remaining months of 2017 in accordance to the revised SOP DYEC ENV 001. Ongoing performance of the AMESA system will also include evaluation of long term data collected (28 +/- day sample periods).

2018 AMESA Long Term Sampling System Work Plan

Issue Date: October 17, 2018

Executive Summary

This AMESA (Adsorption Method for Sampling Dioxins and Furans) Work Plan, as well as the previous plans, outlines the evaluation procedures utilized to evaluate the Long Term Sampling System (LTSS) in conformance with Environmental Compliance Approval 7306-8FDKNX (ECA) Condition 7. (3) (a). Pursuant to the execution of the 2017 AMESA Work Plan, short term validation data collected in 2017 indicated that the AMESA may at times provide an accurate estimate, but monthly evaluation data remained as an inconsistent estimate of dioxins and furans emissions from the DYEC. Prior to the implementation of the 2018 strategy, inconsistent monthly AMESA data has prevented determining dioxins and furans trends. The objective of this 2018 AMESA Work Plan is to set forth an outline of a revised strategy to improve the consistency of monthly data while continuing the performance evaluation of the LTSS. Results following the initial implementation of the 2018 strategy show promise to improve data quality and also consistency between Unit 1 and Unit 2 results.

The 2018 AMESA Work Plan is as follows:

Task	Implementation Date(s)	Evaluation Period
1. Improved annual maintenance of the AMESA system using a checklist provided by Environnement S.A. Deutschland (ESAD).	**March 2018 March 2019**	**March 2018 – December 2019**
2. Swap AMESA Sampling Probes between units.	**April 2018**	**April 2018 – December 2019**
3. Isokinetic Flow demonstration for AMESA sample collection	**May 2018 Sept 2018 Sept 2019**	**May 2018 – December 2019**
4. Install new gas meters	**May 2018**	**May 2018 - December 2019**
5. Conduct 12 (twelve) hour AMESA validation test concurrently with the three (3) EPS 1/ RM2 compliance samples for each unit.	**Sept 2018 Sept 2019**	**September 2018 – December 2019**
6. Adjust long term sampling procedures to allow for additional cleaning and proofing of the AMESA sampling assembly in conformance with outlier data generation	**October 2018**	**October 2018 – December 2019**
7. If significant deviations in AMESA results between the two units remain following completion of the sampling probe swap, new gas meter installation and two annual maintenance periods, swap the entire AMESA sampling system between units.	**September 2019**	**September 2019 – September 2020**

2018 AMESA Long Term Sampling System Work Plan

Issue Date: October 17, 2018

1.0 Introduction

The AMESA (Adsorption Method for Sampling Dioxins and Furans) Long Term Sampling System (LTSS or AMESA), installed on each of the two units at the Durham York Energy Centre (DYEC), is a dioxin and furan continuous sampling system designed to meet the requirements of ECA Condition 7. (3). It is designed to extract a sample of flue gas from the outlet of the air pollution control system on a continuous and isokinetic basis for the duration of the sampling period. Dioxins and furans are adsorbed on a replaceable trap filled with adsorbent resin (XAD-2) which is spiked with an internal standard by the laboratory that will complete the analyses following the designated sampling period. This AMESA Work Plan, as well as the previous plans, outlines the evaluation procedures utilized to evaluate the LTSS in conformance with ECA Condition 7. (3) (a). Pursuant to the execution of the 2017 AMESA Work Plan, validation data collected in 2017 indicated that the AMESA may at times provide an accurate estimate, but subsequent monthly evaluation data provide an inconsistent estimate of the emissions of dioxins and furans from the DYEC. Prior to the implementation of the 2018 strategy, the inconsistent data quality appears to prevent its use as a predictive tool of dioxin emissions. The objective of this 2018 AMESA Work Plan is to set forth an outline of a revised strategy to improve the consistency of data while continuing the performance evaluation of the LTSS. Results following the initial implementation of the 2018 strategy show promise to not only improve data quality but also consistency between Unit 1 and Unit 2 results.

2.0 Historical Operation and Test Methodology Summary

Operation of the LTSS was initiated in 2015 and was maintained in accordance with initial guidance from the AMESA manufacturer, Environnement S.A. Deutschland (ESAD, the European manufacturer of the AMESA system), the North America vendor Altech and the AMESA Technical Manual (June 2010). An - AMESA Trap Replacement Standard Operating Procedure (SOP) (DYEC ENV 001) was initially developed and implemented based upon Altech guidance. This SOP was subsequently updated, once to include revised Altech Guidance which was implemented following the initial DYEC source test in October 2015, and subsequently to include ESAD cleaning procedures by rinsing with water, acetone and toluene and later changed to water, acetone and hexane in conformance with EPS 1 RM/2.

Initial AMESA sampling operation was done with blank traps to ensure the system was able to withdraw a sample iso-kinetically. Subsequently, the AMESA probe was removed from the duct during refractory cure of the boiler when natural gas was combusted. The AMESA LTSS probe was put back into service just prior to the conduct of initial Relative Accuracy testing of the Continuous Emission Monitoring System (CEMS).

The AMESA probe was initially managed in accordance with the original Altech procedures that stated:

1. LTSS probes are to be cleaned utilizing instrument air only by back flowing instrument air through the nozzle and into the duct,
2. LTSS is “purged” of any contamination buildup followed by sampling with a blank trap for a period up to 48 hours.
3. No chemical or physical cleaning of LTSS probes or the sampling system was recommended.

Using the above procedures and in conformance with the Source Test Plan submitted to the Ministry of the Environment, Conservation and Parks (MECP), the initial evaluation of the AMESA LTSS on October 27th and 28th 2015 consisted of three (3) paired tests utilizing a minimum sampling period of four hours. Each paired set included a single point AMESA sampling result with multi-point source testing in accordance with EPS 1 RM/2. The term "multi-point" means that an EPS 1 RM/2 nozzle was used to extract flue gas and moved to various points across the duct diameter during the test program, as is done for conventional stack tests. The AMESA system uses a single fixed point in the center of the duct to sample the flue gas.

As recommended by ESAD, subsequent validation testing of the AMESA system in 2016 continued to utilize a Relative Accuracy approach, as utilized in the initial validation program which is also consistent with the procedures ESAD has utilized in European installations. These subsequent paired sets, completed in May 2016 and November 2016, however, also extended the sampling period to six (6) hours in accordance with discussions with ESAD, the Regions and the MECP. The extended sampling period provided additional AMESA sample volume consistent with the total sample volume collected with EPS 1/ RM2. Using that procedure, nine (9) valid AMESA samples were collected concurrently with EPS 1/ RM2 samples for each DYEC unit, in accordance with the initial Source Test Plan. In addition to the extended sampling time, new ESAD system cleaning procedures were implemented which included a rinsing process of the nozzle and inner tube with distilled water, acetone and toluene. During the conduct of the compliance testing program in 2016, representatives of ESAD were present to train Covanta personnel on this procedure and to thoroughly review and make any adjustments to ensure the proper operation of the AMESA system. Although, not part of the relative accuracy procedure, probe/inner tube rinse cleaning samples were also collected and analyzed separately from the XAD resin trap from the AMESA system.

Validation testing in 2017, following consultation with the Regions and ESAD, modified the AMESA validation testing program which: (1) incorporated AMESA sampling system cleaning procedures that more fully replicate reference method procedures, specifically EPS 1/RM 2; (2) substituted the paired relative accuracy approach with the validation protocol included within the proposed Technical Specifications for long term sampling systems for PCDD/PCDF as published by the British Standards Institution (BSI) in April 2015; and (3) modified the reference method to replicate the AMESA sampling approach.

As a result, validation testing in 2017 consisted of five manual method tests of eight hours duration conducted sequentially and was compared to a single AMESA test spanning the entire 40-hour period covered by the manual tests. Unlike previous standard reference tests, the 2017 tests utilized a fixed sampling point in the centre of the duct to mirror the behavior of the AMESA system.

Additional relative accuracy validation data for both units was also collected during the Fall 2018 compliance test. As required by the ECA, triplicate compliance source test methods were conducted during that program. The AMESA was operated such that the AMESA sampling periods are coincident with the three (3) reference method start and stop times for each unit resulting in a total AMESA sampling period of approximately 12 hours per unit.

The following Table 1 compares the validation methodology used in all tests conducted to date. Covanta obtained paired sets of data where a manual method test is conducted at the same time, for the same duration and at the same proximate location as the AMESA system. The results of the manual method tests were compared to the corresponding AMESA tests to assess AMESA's accuracy.

Table 1: Summary of AMESA Validation Test Procedures

Test Date	October 2015	May 2016	November 2016	May 2017	September 2018
Reference Method	EPS 1/RM 2	EPS 1/ RM 2	EPS 1/RM 2	EPS 1/RM 2 (Modified)(1)	EPS 1/RM 2
Number of Reference test runs	3	3	3	5	3
Manual method sample period (hours)	4	6	6	8	4
Single point or traverse	Traverse	Traverse	Traverse	Single Point	Traverse
AMESA Parameters					
Single point or traverse	Single	Single	Single	Single	Single
Number of AMESA Runs	3	3	3	1	1
AMESA Sampling Period (hours)	4	6	6	40	12
Source Testing Contractor	Ortech	Ortech	Ortech	Ortech	Ortech
XAD trap preparation	ALS	Maxxam	Maxxam	ALS	ALS
Probe cleaning before installation	No	Water, Acetone, Toluene Rinse	Water, Acetone, Toluene Rinse	Laboratory procedure used for EPS 1/RM 2	No(2)
Probe rinse after sampling event	No	No	Yes	Yes	No

Notes:
(1) Fixed sampling point
(2) Although it was intended that probe cleaning occur prior to the 2018 test, probe cleaning did not occur. Probe cleaning will occur prior to all future validation tests.

3.0 Isokinetic Flow Evaluations

An initial evaluation of the LTSS was conducted to determine if the flue gas sample system met isokinetic standards. The specified range for the sampling system evaluation is 95 – 115% isokinetic flow pursuant to the AMESA vendor. A minimum of nine flow measurements were taken on each unit. This evaluation concluded that the AMESA system is capable of sampling at an isokinetic rate from a single point at 108% and 106% for Unit 1 and Unit 2 respectively. The ability to maintain this isokinetic flow successfully is understood to be a key parameter for any dioxin sampling system to generate representative data of long term DYEC operation. This includes the ability of the system to automatically adjust to changes in flow due to changes in the steam generation rate and resultant flue gas flow rate.

As part of the 2018 AMESA Work Plan, the evaluation to determine if the flue gas sample system continued to meet isokinetic standards was repeated during the voluntary spring source test program which followed the installation of new gas meters on both AMESA sampling systems. Ortech Report No. 21840-2 compared the average velocity measured by the AMESA for several coincident particulate, metals and SVOC test periods. This testing demonstrated successful isokinetic sampling at 102.7% and 101.5% on average for Unit 1 and Unit 2 respectively.

4.0 Summary of AMESA Validation Data

4.1 Initial RA Validation Data

Initial validation data utilized for evaluation was limited to nine (9) paired sets of samples taken on October 28th – 29th, 2015, May 9th – 11th, and October 27th – 31st, 2016. Data files for these test runs were presented in the associated Ortech Source Test Report No. 21546-1 dated November 25, 2015, Ortech Source Test Report No. 21656 dated June 13, 2016, and Ortech Source Test Report No. 21698 dated December 22, 2016. Table 2 summarizes the AMESA relative accuracy testing results and reference method results.

The relative accuracy of the AMESA data as compared to the reference method is significantly greater than the evaluation criteria (+/-10%) suggested to be utilized by the ECA, i.e. Performance Specification 4. Following a peak measured value by the AMESA, TEQ results appear to decline steadily in the following test periods. ESAD has commented that such data trends are typical of results in which the sampling system is plagued with insufficient cleaning which is expected to occur naturally by cooling the sample by the AMESA. As a result, Covanta began to rinse the AMESA sampling system in house between monthly sampling events for additional cleaning. As single rinses appeared to be insufficient from validation testing results, the sampling system was subsequently double and triple rinsed. Implementation of these procedures suggest a possible improvement in data quality by reducing the contribution of contaminants on the sampling system, however, these procedures also have the potential to increase potential contamination leading to new high spikes in AMESA monthly results and were, therefore, discontinued. Validation test results appear to suggest that process variability has declined over time for all data.

Table 2: Summary of Unit 1 and Unit 2 AMESA Relative Accuracy Validation Data [1]

RUN #	DATE	Unit 1 AMESA Dioxin Concentration	Unit 1 Reference Method	Unit 2 AMESA Dioxin Concentration	Unit 2 Reference Method
1	28 Oct 2015	843	25.9	559	19.5
2	29 Oct 2015	273	29.6	258	23.8
3	29 Oct 2015	121	25.5	182	23.2
4	9 May 2016	430	1169	12.4	14
5	10 May 2016	61.3	678	7.5	9.0
6	11 May 2016	24.3	606	8.9	12
7	27 Oct 2016	26.2	7.6	34.1	6.8
8	28 Oct 2016	15.7	5.9	31.3	6.5
9	31 Oct 2016	12.7	14.8	19.9	6.0
	Relative Accuracy (%)	162	N/A	1862	N/A

Notes:
(1) All results presented as pg TEQ/Rm^3 corrected to 25°C and 1 atmosphere, adjusted to 11% O_2, using NATO/CCMS (1989) toxicity equivalency factors with full detection limit.

4.2 40 Hour Validation Test Data

During 2017, the AMESA sampler was operated to collect data for both a short term sampling period of 40 hours during the spring source testing program as well as collecting long term sampling periods (28-day periods as DYEC operations allows) to continue the performance evaluation of the LTSS.

ORTECH Consulting Inc. (ORTECH) completed a 40-hour dioxin and furan emission testing program in conformance with the AMESA Work Plan dated April 11, 2017 as submitted to the MECP to determine the deviation of the DYEC AMESA dioxin and furan sampling monitor results from reference method test results. This test program procedure was implemented as a best efforts approach to evaluate the performance of the AMESA Long Term Sampling System in accordance with ECA Condition 7. (3). A summary of this AMESA evaluation data for Unit 1 and Unit 2 is provided below on Table 3.

During the 40 hour validation test, measured dioxin concentrations for both Unit 1 and Unit 2 were consistent between the two units regardless of the measurement methodology utilized. The reference method mean resulted in an average of 6.14 pg TEQ/Rm^3 and 7.59 pg TEQ/Rm^3 for Unit 1 and Unit 2, respectively while the AMESA monitor reported 5.7 pg TEQ/Rm^3 and 12.5 pg TEQ/Rm^3 for Unit 1 and Unit 2, respectively.

During the conduct of the 40-hour test program, the deviation between the mean of the five eight hour reference method tests and the single AMESA monitor sample at each location was within the maximum deviation criterion listed in BSI Standards Publication PD CEN/TS 1948-5:2015 (Table I.1) of ± 100%. Also, the dioxin and furan dry adjusted TEQ concentration for each of the five RM tests and for the AMESA test at the BH Outlet of each Boiler was well below the maximum in-stack emission limit stated in ECA 7306-8FDKNX of 60 pg TEQ/Rm^3, adjusted to 11% oxygen.

Table 3: Forty Hour AMESA Results in Comparison to Reference Method

Sampling Location and Method		pg TEQ/Rm^3 @11% O_2 (1)	DEVIATION PERCENTAGE (2)
Unit 1	Reference Method Mean	6.14	7.2
	AMESA Monitor	5.70	
Unit 2	Reference Method Mean	7.59	64.7
	AMESA Monitor	12.5	

Notes:
(1) NATO/CCMS (1989) toxicity equivalency factors with full detection limit.
(2) Calculated using the Dry Adjusted TEQ Concentration data (Deviation = [(RM-AMESA)/RM]*100)

4.3 Long Term Data Evaluation

As the AMESA appeared to report consistent results during the 2017 validation test program, subsequent long term sample results were included as part of the current AMESA performance evaluation. Since the successful completion of the 2017 validation test program, fourteen (14) monthly samples have been collected for each unit. Sample volumes and dioxin concentrations are summarized on Table 4. Sample volumes collected for both units appear to be consistent with actual boiler operating hours and averaged 499.1 m^3 and 486.0 m^3 for Unit 1 and Unit 2, respectively. Unlike the validation test results, the AMESA monitor reported a significant variation, approximately 3 orders in magnitude in dioxin concentrations between Units 1 and 2, even when excluding two apparent outliers until April 2018. During the initial 10 monthly periods following the 2017 validation tests, however, dioxin concentrations from Unit 1 were extremely consistent, ranging between 0.019 and 0.081 pg TEQ/Rm^3. During that same period, dioxin concentrations from Unit 2, excluding outliers from July-September 2017 of 521 pg TEQ/Rm^3 and from March to April 2018 of 162.6 pg TEQ/Rm^3 are also consistent, but consistently higher than Unit 1, ranging between 5.7 and 35.5 pg TEQ/Rm^3.

Table 4: Summary of Monthly AMESA Data Collected Post 2017 Validation Testing

	Unit 1		Unit 2	
Date Range (Start – Stop)	Sample Volume [1]	Dioxin Concentration [2]	Sample Volume [1]	Dioxin Concentration [2]
01 Jun 2017 - 30 Jun 2017	545.5	0.081	512.5	5.7
30 Jun 2017- 28 Jul 2017	504.0	0.063	483.3	8.0
28 Jul 2017 – 07 Sep 2017	383.3	0.080	371.7	521
07 Sep 2017 - 05 Oct 2017	514.9	0.049	500.9	35.5
05 Oct 2017- 02 Nov 2017	516.5	0.019	501.6	16.1
02 Nov 2017 – 01 Dec 2017	481.9	0.021	467.5	8.8
01 Dec 2017 – 29 Dec 2017	515.5	0.025	505.8	6.9
29 Dec 2017 – 26 Jan 2018	477.6	0.039	462.9	7.0
27 Jan 2018 – 01 Mar 2018[3]	531.5	0.037		
27 Jan 2018 – 21 Mar 2018[3]			454.5	14.1
02 Mar 2018 – 24 Apr 2018[3]	500.4	0.023		
21 Mar 2018 – 24 Apr 2018[3]			554.5	162.6
24 Apr 2018 – 22 May 2018	510.6	3.2	516.7	49.1
22 May 2018 – 22 Jun 2018[3]			517.6	8.7
22 May 2018 – 3 Jul 2018[3]	558.1	29.9		
3 Jul 2018 – 31 Jul 2018	473.4	22.9	476.2	9.3
31 Jul 2018 – 28 Aug 2018	474.0	12.8	478.2	4.7
Long Term Average	499.1	4.9	489.8[4]	14.5[4]

Notes:

(1) **Sample volume presented as cubic meters corrected to 25°C and 1 atmosphere.**

(2) **All results presented as pg TEQ/Rm^3 corrected to 25°C and 1 atmosphere, adjusted to 11% O_2, using NATO/CCMS (1989) toxicity equivalency factors with full detection limit.**

(3) **Sampling times extended/shortened due to boiler outages.**

(4) **Average excludes samples collected between 28 July and 7 September 2017 and 21 March and 24 April 2018 which appears to have been compromised and represent outliers.**

A review of boiler operations during the July-September 2017 outlier period identified that both boilers were tripped offline due to a severe thunderstorm. Also, Unit 1 was shut down due to a carbon monoxide (CO) emission issue and the ID fan tripping due to a plugged superheater. Unit 2 experienced a superheater tube leak and a feed chute water jacket leak.

A review of boiler operations during the March-April 2018 outlier period identified that both boilers went black plant due to a turbine issue. Unit 1 shut down 3 times due to turbine issues while Unit 2 shut down 6 times, also due to turbines issues.

To the extent possible, auxiliary burners were utilized for shutdown, except in the cases of power failures and black plant. Only a single CO emission excursion occurred during the two periods in question.

Even though both units experienced similar shutdown events during the outlier periods, only Unit 2 reported higher dioxin emissions, on top of significantly higher average emissions in comparison to Unit 1. Unit 1 dioxin emissions did not significantly vary during the two outlier operations periods, even though Unit 1 experienced operational issues during the outlier periods as well. As a result, it appears that the underlying sampling system bias by Unit 2 likely contributes more significantly to the generation of outliers than the impact on dioxin emissions during transitory boiler operation.

In April of 2018, the AMESA sampling systems were swapped between Unit 1 and Unit 2 to ascertain the inconsistency of results. Then, in May of 2018, new gas sampling meters were installed. Both of these actions appear, at this time, to have led to more consistent results between Unit 1 and Unit 2.

5.0 AMESA Work Plan Recommendations for 2018

The objective of this work plan is to improve the consistency of data collected while continuing the performance evaluation of the LTSS. The following recommendations are suggested to ongoing data collection activities.

1. Improved maintenance of the AMESA system is being performed in conjunction with a checklist provided by ESAD. These activities have identified that the deviation of the Unit 2 gas meter was significant and justified replacement.
2. New gas flow meters have been installed on both units and began operation for the long term sampling period which was initiated on May 22, 2018.
3. Although the LTSS initially demonstrated the ability to collect a sample in conformance with isokinetic standards, this demonstration was repeated utilizing isokinetic data collected from particulate/metals and semi-volatile organic compounds tests during the spring 2018 voluntary source test program, particularly due to the operation of new gas flow meters. The continuation of demonstrating isokinetic flow was made from concurrent AMESA LTSS operational flow records matched against reference method test flows. Ortech Report No. 21840-2 presents those results.
4. Following the completion of the improved maintenance program in conformance with the ESAD checklist in March 2018, the AMESA sampling probe assembly was swapped between Unit 1 and Unit 2, starting with the sampling period of April 24, 2018. The impact on reported dioxin emissions will be observed to ascertain if variations between reported emissions from Unit 1 and Unit 2 are due to the sampling probe assembly.
5. Additional relative accuracy validation data for both units was collected during the fall 2018 compliance test. As required by the ECA, triplicate manual compliance source test methods were conducted during that program. The AMESA was operated such that the AMESA sampling periods are coincident with the reference method start and stop times resulting in a total AMESA sampling period of approximately 12 hours. The AMESA system was paused between source test method runs. This data, when it becomes available, will be reviewed with other relative accuracy data collected to date.
6. As the AMESA appears to generate data outliers on occasion, Covanta has reviewed with ALS Laboratory (ALS) a procedure to more systematically clean the sampling assembly for long term sampling (28 +/- day) on a periodic basis. At this time, Covanta is proposing to have ALS clean the sampling system monthly and store the rinses. If test results from analysis of the XAD-2 trap are greater than 100% of the emission limit value for dioxins and furans, then the archived rinse sample will be analyzed to verify that a clean sampling system was utilized to obtain the monthly sample and also to evaluate the test results including isomer profiles. This procedure will be implemented once additional sample assemblies are acquired as spare sampling assemblies would need to be cleaned by ALS concurrently to the monthly sampling period.
7. The improvement of data quality to date and the variability of monthly data suggests that a longer reporting period may be appropriate to review AMESA monthly data moving forward. As a result, Covanta proposes that a 12 month rolling average begin to be utilized to evaluate the trend of dioxin emissions. Data utilized in the rolling average should have consistent dioxin isomer profiles which will be reviewed using XAD-2 trap analyses but also rinse analyses when collected.
8. If significant deviations in AMESA results between the two units remain following the implementation of the 2018 AMESA Work Plan recommendations, i.e. probe swap, new gas

meter installation and two annual maintenance periods, the entire AMESA sampling system (not just the sample probe assembly as previously conducted) will be swapped between units.

Once the AMESA sampler generates more consistent data, long term data will be used to assess the ongoing performance of the air pollution control system. All measurements obtained from the AMESA sampler, whether short term or long-term sampling periods, are not meant to be used for verifying compliance with the regulatory limits for dioxins and furans. The proposed modifications to the 2018 AMESA Work Plan are considered to be a continuation of a best efforts approach to evaluate the performance of the AMESA Long Term Sampling System.

APPENDIX: Validation Test Program 2018 Procedures

In conformance with ALS procedures developed specifically for sampling SVOCs, the AMESA sampling system will be removed and sent to ALS prior to the conduct of any validation testing program. The AMESA sampling sections, probe, elbow and inner tube assembly will go through a multistep cleaning process, much like all ORTECH's reference method testing glassware following ALS documentation ID: *BU-WI-3000, Organic Glassware/Equipment Cleaning, Proofing and Maintenance*. Covanta will maintain duplicate sampling components such that monthly AMESA sampling can continue in operation while the spare sampling components are laboratory cleaned and proofed to be subsequently reinstalled prior to the conduct of the Validation Test program. ALS will utilize hexane in substitution for toluene in conformance with reference method procedures.

In recognition of the variability of emission results for the range of TEQ expected, BSI specifications referenced as CEN/TS 1948-5 (which to date have not been verified), incorporate a sliding scale for the maximum deviation in relation to the TEQ concentration as enumerated in Table I.1 in Annex I of the BSI specifications and is provided below. Due to the uncertainty of results collected to date, Covanta proposes that a maximum deviation of 100% is appropriate to apply to all DYEC relative accuracy validation data.

Concentration ng I-TEQ/m^3 (at standard conditions, dry)	Maxim. deviation %
0,02	100
0,03	60
0,04	45
0,06	40
0,08	37
0,1	35

Jenni Demanuele

From: Thomas, Sandra (MOECC) <sandra.thomas@ontario.ca>
Sent: Tuesday, May 02, 2017 6:00 PM
To: Huxter,Amanda; Gioseph Anello; Greg Borchuk; Brasowski,Leon; Melodee Smart; Seth Dittman (Seth.Dittman@york.ca); Tara Wilcox
Cc: Hyde, Chris (MOECC); Azocar, Guillermo (MOECC); Hussain, Lubna I. (MOECC); Dunn, Philip (MOECC); Alexan Gorgy, Tamer (MOECC)
Subject: MOECC Comments - AMESA Long Term Sampling System Work Plan

Hi All,

The ministry has reviewed the revised AMESA Work Plan (Work Plan) dated April 11, 2017 and offer the following comments:

Brief Background of AMESA

The AMESA (Adsorption MEthod for SAmpling Dioxins and Furans) Long Term Sampling System (LTSS), installed on each of the two units at the Durham York Energy Centre (DYEC), is a dioxin and furan continuous sampling system

Designed to extract a sample of flue gas from the outlet of the air pollution control system on a continuous and isokinetic basis for the duration of the sampling period.

Dioxins and furans are adsorbed on a replaceable trap filled with adsorbent resin (XAD-2) which is spiked with an internal standard by the laboratory that will complete the analyses following the designated sampling period.

AMESA Operating Procedure (Updated SOP) (DYEC ENV 001) includes Trap replacement strategy and cleaning procedures by rinsing with water, acetone and hexane (in conformance with EPS 1 RM/2).

Previous relative accuracy testing data of the AMESA system when using the reference method (Environment Canada's EPS 1 RM/2) was significantly greater than the RA criterion of 10%.

Data trends from previous testing are typical of results in which the sampling (decline as the initial run of each 3 run test program is typically the highest result) is plagued with insufficient cleaning (as commented by AMESA's manufacturer).

Proposed Work Plan

Objective of this Work Plan: outline revised strategy to improve the consistency of data and complete the performance evaluation of the AMESA LTSS.

The proposed modifications to this Work Plan is a continuation of best efforts to evaluate the performance of the AMESA LTSS.

The complete set of data will be evaluated to determine if the AMESA LTSS provides an accurate estimate of the emissions of dioxins and furans from the Durham York Energy Centre.

Using NATO/CCMS (1989) toxicity equivalency factors with full detection limit.

Highlights of the proposed AMESA Work Plan

1. Incorporate AMESA sampling system cleaning procedures that more fully replicate reference method procedures, specifically EPS 1/RM 2.
2. Substitute the paired RA approach with the validation protocol included within the proposed Technical Specifications for long term sampling systems for PCDD/PCDF as published by the British Standards Institution (BSI) in April 2015.
3. Modify the reference method to replicate the AMESA sampling approach.
4. Eliminate Relative Accuracy (RA) validation testing due to poor correlation of AMESA results, as compared to the reference method used (EPS 1/RM 2).
5. Incorporate a sliding scale for the maximum deviation in relation to the TEQ concentration (BSI specifications CEN/TS 1948-5, Table I.1 in Annex I).

Comments: *CEN/TS 1948-5:2015 is not a British Standards Institute Specification. It is a Swedish Standard Institute Technical Specification; based on copy provided by John Chandler (Environmental Consultant for this program).*

Ministry Comments

The Work Plan strategy of using the Swedish Standard Institute (SSI) Technical Specification CEN/TS 1948-5:2015 relevance deviations between the reference method result and the LTSS (in lieu of Relative accuracy testing) is reasonable due to the extreme low levels of PCDDs/PCDFs and dioxin like PCBs expected in the exhaust gas stream.

The altering of the reference method, by using a single fixed sampling point rather than the grid measurements (multiple point sampling) during this data validation trial, is reasonable; but it is to be noted that it only serves to demonstrate consistency of the data by using a source of traceable accuracy (reference method). As indicated in CEN/TS 1948-5:2015, this approach has not been intended to be used for demonstrating compliance with long term monitoring emission limit values.

A second stage of this Work Plan shall be taken into consideration, if the data validation is successful. This second stage shall be conducted by operating the AMESA system using the single fixed sampling point. Although, the reference method uses the grid measurement approach (as it is designed to include potential spatial and temporal stratification that may be occurring due to the process dynamic/fluctuations).

The present Work Plan emphasizes the single fixed sampling point and CEN/TS 1948-5:2015 relevance deviations. At the end of this email there are some highlights extracted from CEN/TS 1948-5:2015 that should form part of this Work Plan.

Covanta indicates the continuation of the use of NATO/CCME 1988 as the source of toxic equivalent (TEQ) factors. In April 2012, Ontario Regulation 419/05, was amended to reflect that the NATO/CCME 1988 TEQ factors were no longer reflecting the expected impact from PCDDs/PCDFs; and as such, the World Health Organization (WHO)TEQ factors were to be used at once to for such impact determination (this is also highlighted in the MOECC Summary of Standards and Guidelines to Support Ontario Regulation 419/05 - Air Pollution – Local Air Quality).

The PCDDs/PCDFs in-stack TEQ concentrations are to be based on WHO TEQ factors, that includes the dioxin-like PCBs.

Sampling methodology:

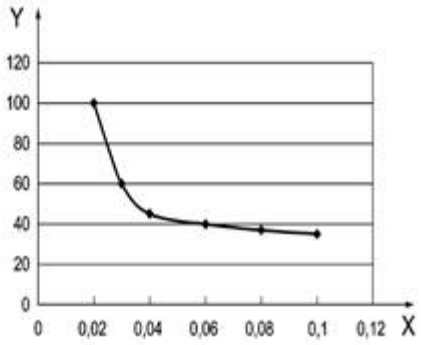
- Five manual method tests of eight hours duration each are conducted sequentially and compared to a single AMESA test spanning the entire 40 hour period covered by the manual tests.
- AMESA testing will use a fixed sampling point in the centre of the duct to mirror the behavior of the AMESA system (Reference method uses multiple sampling points, following the strategy set in the Ontario Source Testing Code, Method ON-5).
- Isokinetic sampling; with the ability to ability of the system to automatically adjust to changes in flow due to changes in the steam generation rate and resultant flue gas flow rate.
- Reference method sampling probe will not traverse the flue gas duct during the entire validation sampling period but rather remain stationary in the duct close to the AMESA sampling port.
- Sampling ports are located in a highly "non-ideal" location (4.4 equivalent duct diameters downstream and 0.7 equivalent duct diameters upstream from the nearest flow disturbances.
- Ability to maintain isokinetic flow successfully is understood to be a key parameter for any long term dioxin sampling system to generate representative data of long term DYEC operation.

Swedish Standard Institute (SSI) Technical Specification CEN/TS 1948-5:2015

- Validation trial required to be carried out to demonstrate comparability of the long-term method against the standard reference method
- Validation trial does not require grid measurements (multiple point sampling)
- The AMESA long term sampling system and the standard reference method validation conditions shall be identical according to the specifications of the long range measurement system.
- Specification does not specify its potential use for **demonstrating compliance with long term emission limit values**.
- Approach not directly applicable to finding a representative point for long term dioxin sampling but provides a pragmatic approach based on temperature, velocity and gas concentrations (O_2, NOx CO).
- Technical Specification on sampling of PCDDs, PCDFs and PCBs using filter/condenser method (two other sampling principles are discussed in the technical specifications, but do not apply to the AMESA system).
- Concentration range 0.003 ng WHO-TEQ/m^3 up to 4.0 ng WO-TEQ/m^3.
- Sampling system collects PCDD/PSCDF and PCBs in the gaseous and particulate form. The technical standard considers the whole collection system as the sampling unit which is sent to the laboratory for analysis.
- Long term sampling and standard reference sampling shall be performed in parallel for at least 40 hours.
- Long term sampling performed for 6 to 8 hours. At least 5 samples of the standards reference method are required.
- Field blank needed to ensure that no significant contamination has occurred during all steps of the measurement.
- Thermal desorption of the probe and sampling line by increasing the temperature to 200^{o}C to remove trace organic compounds which can settle in the probe after a long term sampling. The duration of the purge is typically 15 to 30 minutes.
- Long term sampling system (filter/condenser method) extracts the sample above the flue gas dew point (at approximately125^{o}C), and cool down the sampling gas to about 20^{o}C to prevent thermal degradation of the XAD_2 adsorption medium.
- Quantitation limit less than 5% of the total amount collected (expressed in WHO-TEQ).

- XAD_2 cartridge shall be mounted in a vertical direction in order to avoid channeling, and flue gas shall flow from top to bottom of the XAD_2 cartridge.
- Filter efficiency higher than 99.5% on a test aerosol with a mean particle diameter of 0.3 um at the maximum flow rate anticipated (to be certified by the filter supplier).
- Condensate to be analyzed to validate that less than 10% WHO-TEQ breakthrough occurred.
- Sampling train leak check required to be performed.
- The difference between the mean value of the multiple samples of the standard reference method and the single long-term sample shall be within 35% of the value determined by the standard reference method on the corresponding WHO-TEQ value. If the measurement results are much lower than 0.1 ng WHO-TEQ, the relevance deviations between the reference method result and the long-term sampling system will be checked according to the following table:

Concentration ng I-TEQ/m^3 (at standard conditions, dry)	Maxim. deviation %
0,02	100
0,03	60
0,04	45
0,06	40
0,08	37
0,1	35



Key
X concentration in ng I-TEQ/m^3 (at standard conditions)
Y maximum deviation in %

- O_2 concentrations measured by a certified measurement device, with the probe located near the PCDD/PCDF/PCB sampling probe.
- Technical Specification assumes that low dust concentrations (<20 mg/m^3) in the flue gas show gaseous characteristics (particles less than an aerodynamic diameter of 4.5 um) under standard conditions.
- Field blank values used for calculation of LOD (Level of Detection) representing possible sources of contamination during the complete measurement procedure.
- Extreme low levels of PCBs during the sampling period, even low levels in the field blank samples are problematic.

Please revise the Work Plan accordingly.

Regards,

Sandra

Ontario

Ministry of Environment, Conservation and Parks

Central Region

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September 17, 2019

Ms. Wendy Bracken
wendy-ron@sympatico.ca

Dear Ms. Bracken

Re: Questions for MECP Information Session- Durham York Energy Centre, June 7, 2019

Thank you for your email dated May 31, 2019 in which you provided the ministry with a document containing a number of questions for MECP in advance of our June 7, 2019 information session held at the Durham York Energy Centre.

As requested, a written response has been prepared to address each of the questions in your attached document in order of appearance:

Questions to MECP for Friday, June 7th, 2019

Ambient Air

1. Nitrogen Oxide Ontario Standards: In Ontario Regulation 419 Schedule 3, the standards for Nitrogen Oxides are stated as follows:

- One Hour Standard: 400 $\mu g/m^3$
- 24 Hour Standard: 200 $\mu g/m^3$
- Annual: None

How old are the above standards for Nitrogen Oxides? Are the standards health-based? If so, please identify what studies and the date of the underlying studies.

The air standards for nitrogen oxide (NOx) were developed in 1972 as Ambient Air Quality Criteria (AAQC). Nitrogen oxide standards were adopted into the Local Air Quality Regulation (O. Reg 419) in 2005 when the regulation was introduced to replace Regulation 346 (now revoked). Ontario Regulation 419/05 air standards and AAQCs are numerically the same but they are used differently.

Yes, the 24-hr air standard of 200 $\mu g/m^3$ and the 1-hour air standard of 400 $\mu g/m^3$ are both health based as it is reflected on the Air Contaminants Benchmarks (ACB) List.

Although the supporting information is limited, the recommended criteria for NOx at 400 µg/m^3 (or 0.2 ppm) for 1 hour and 200 µg/m^3 (or 0.10 ppm) for 24 hours were considered at the time of development to be below effects levels.

The maximum acceptable limits for NOx were based primarily on the following considerations:

- **1 hour at 400 µg/m3 is below the level of 415 µg/m3 which is where emissions are immediately detectable by the majority of young, healthy people and;**
- **400 µg/m3 is about one-tenth the value at which there is an increased resistance of air flow into and out of the lungs immediately after exposure while in the presence of an equal concentrations of sulphur dioxide.**
- **After a 24-hour exposure at 200 µg/m^3, there is no evidence of any health effects even if there is simultaneous exposure to 260 µg/m^3 of sulphur dioxide (SO_2).**

2. New CCME Air Quality Standard for Nitrogen Oxides: The Canadian Council of Ministers of the Environment recently endorsed new and much more stringent Canadian Ambient Air Quality Standards (CAAQS) for Nitrogen Oxides and Sulphur Dioxide (https://www.ccme.ca/en/current_priorities/air/caaqs.html). Will the MECP be updating its Regulation 419 standards for Nitrogen Oxides, and, if so, when is that update anticipated?

The ministry as a member of the CCME contributed to the development of the CAAQS for nitrogen oxides (NOx) and sulphur dioxide (SO2).

The ministry is not currently updating Ontario's air standard for NOx but should an update occur, the ministry would consider the scientific information obtained through the CAAQS process.

The ministry also expects to use the new CAAQS to monitor ambient air quality and evaluate long-term trends and to identify areas that may have local air quality concerns due to pollution from transportation, industry and other sources.

The new CAAQS could also be considered as part of the evaluation of the human health risk assessment (HHRA) if submitted as part of an Environmental Assessment (EA). It is important to note that a HHRA carried out as part of an EA is not used as a compliance tool.

3. Expected Exceedances for Sulphur Dioxide and Nitrogen Oxides: Durham Region Report 2018-INFO-38 Sections 4.3, 4.4 state:

4.3 SO2 is continuously measured at the upwind and downwind ambient air monitoring stations, and results remain well below the current standard of 690 µg/m3 . Assessing the current SO2 results against the future CAAQS standard of 100 µg/m3 indicates that regular exceedances will occur once the new levels are regulated. Ambient air monitoring conducted prior to the DYEC commencing operations would also result in exceedances of the lower 100 µg/m3 SO2 proposed standard.

4.4 The CAAQS for nitrogen dioxide (NO2) was recently lowered to 60 parts per billion (ppb)

starting in 2020. The current standard in Ontario for NO2 is 200 ppb. It is likely that the Ontario standard for this parameter will also be lowered in the near future resulting in future ambient air monitoring exceedances.
https://icreate7.esolutionsgroup.ca/11111068_DurhamRegion/en/regionalgovernment/resources/Documents/Council/CIP-Reports/CIP-Reports-2018/March-2018/2018-INFO-38.pdf).
Durham Report 2019-COW-3 Sections 6.16, 6.17 states:
6.16 In 2018, the MECP passed new air standards for sulphur dioxide (SO2). Along with new stack emission standards, the ambient air quality criteria were also lowered significantly. The change corresponds to the changes made to the SO2 Canadian Ambient Air Quality Standards at the federal level and are intended to apply to large geographic areas that form a single air shed. While the DYEC stack tests and continuous emissions monitoring are consistently below the regulatory limits, it is very likely that the ambient air monitoring stations operated by the Region will show exceedances for SO2 due to various activities in the surrounding area when the new standards take effect in 2020 (Federal) and 2023 (Ontario).
6.17 In addition to the new standards for SO2, lower standards have also been proposed 70 Report #2019-COW-3 Page 36 of 41 for nitrogen dioxide (NO2). These standards have not yet been finalized but again will likely result in exceedances at the ambient air monitoring stations operated by the Region near the DYEC. While not directly attributable to the DYEC, exceedances at the ambient air monitoring stations require staff and consultant time to investigate and report. This situation will continue as ambient air quality standards are lowered.
(https://calendar.durham.ca/meetings/Detail/2019-01-16-0930-Committee-of-the-Whole-Meeting/9f1052ef-e427-4684-8e18-a9dd0100c626) Both reports predict exceedances .

How does the MECP consider such information when evaluating an EA application for an expansion that will further add to the local burden?

An Environmental Assessment that include a human health risk assessment (HHRA) must consider new limits as part of the evaluation process. A HHRA carried out as part of an EA is not used as a compliance tool but would require that the current state of the science be used as part of the evaluation for the HHRA.

Air standards and Ambient Air Quality Criteria (AAQC) are numerically the same but they are used differently. AAQCs are used as non-regulatory targets to evaluate air quality resulting from all sources of a contaminant to air. Air standards are regulatory tools used to assess compliance of a facility.

The standards for nitrogen oxides (NOx) under O.Reg. 419/05 are unchanged. However, the standards for sulphur dioxide (SO2) were updated in 2018. There is a five-year phase in period, and the new standards will come into effect July 2023.

Air standards under the local air quality regulation are based on the use of air dispersion models to assess compliance. Under the facility's existing Environmental Compliance Approval, the maximum off-property concentration of sulphur dioxide from the facility is 9.33 micrograms/cubic metre for the 1-hour average. The future corresponding standard is 100 micrograms/cubic metre. Emissions from the facility are expected to be well below the future 1-hour SO2 Schedule 3 standard.

What does the expected exceedance information say about the state of the air shed at the site?

Ambient air monitoring results in South Clarington are similar to other areas of Ontario and the GTA and do not indicate any cause for concern. The ministry will continue to review ambient monitoring data around DYEC and in Durham Region

What actions does MECP take if Regulation 419 standards are exceeded?

Air standards are used to assess the contributions of a contaminant to air by a regulated facility. If facilities exceed the standard they must act to reduce contaminant levels to meet the provincial air standard or as low as reasonably achievable by operating under a site-specific or technical standard.

A facility must also notify the ministry if they have a modelled or monitored exceedance of a standard or guideline, or if an Upper Risk Threshold (URT) may be exceeded. URTs are set out in Schedule 6 of the Regulation. Potential exceedance of an URT requires more timely actions from a facility.

To achieve its compliance and enforcement objectives, the Ministry legislation authorizes a variety of tools. The response to any incident must be proportionate to the risk presented by the incident, the compliance history, and the response of the violator to the incident. Tools include education and outreach, warnings, orders and prosecutions.

Outdated standards were used to characterize risk in the Human Health Risk Assessment submitted as part of the original EA. How will more stringent and updated standards impact health risk considerations of the MECP on any future expansion?

A Human Health Risk Assessment submitted as part of an EA must to use the most up to date and scientifically defensible air standards, guidelines or criteria to characterize potential exposures and human health risks at the time in which the Human Health Risk Assessment is submitted.

4. Other Pollutants: How old are the Regulation 419 standards for other pollutants emitted by the incinerator including arsenic, lead, nickel, zinc, copper, mercury, lithium, ozone, particulate matter and carbon monoxide and are the standards health-based? What standards are anticipated to be updated in the near future?

Information with respect to the identified Regulation 419 air standards are presented below. These standards are some of the 130 air standards listed in Regulation 419/05, of which 69 are new or have been updated since 2005.

It is worth noting that even though some air standards have not been recently updated, it does not mean that they are not protective of human health and the environment.

Contaminant	CAS #	Basis	Year
Arsenic and compounds	7440-38-2	Health-based air guideline	1981
Lead and Lead Compounds	7439-92-1	Health-based air standard	2007
Nickel and Nickel Compounds	7440-02-0	Health-based air standard	2011
Zinc	7440-66-6	Particulate-based air standard	1974
Copper	7440-50-8	Health-based air standard	1974
Mercury (Hg)	7439-97-6	Health-based air standard	1974
Lithium (other than hydrides)	7439-93-2	Health-based air standard	1974
Ozone	10028-15-6	Health-based air standard	1974
Particulate matter	N/A	Visibility; air standard	2005
Carbon monoxide	630-08-0	Health-based air standard	1974

Will the MECP be introducing a regulation for PM2.5 in the near future?

The ministry has not established a regulation for $PM_{2.5}$ as key sources of the pollutant, like transportation and residential sources, are not captured under Regulation 419/05.

The ministry focuses on setting air standards under the regulation for substances that form fine particulate matter in air. Much of the $PM_{2.5}$ that is attributed to industry is formed by the reaction of other contaminants, such as SO_2 and NOx, rather than being directly emitted.

5. Benzo(a)pyrene Exceedances: There have been a number of benzo(a)pyrene ambient air exceedances as well as a soil exceedance for this pollutant. What investigation has the MECP done with regards to these exceedances?

There is no data from the ambient air monitoring program that would indicate that there is a trend of elevated benzo(a)pyrene concentrations attributed to the DYEC.

Benzo(a)pyrene often exceeds the 24-hour average Ambient Air Quality Criteria (AAQC) throughout Ontario in both rural and urban settings due to the contribution of combustion sources and diesel engines.

Please specify other locations in Ontario that have also had exceedances and the values of those exceedances.

Environment and Climate Change Canada's National Air Pollution Surveillance Program (NAPS) Gage (urban station) & Simcoe (rural station) stations measure B(a)P. Below are the 2013-2016 exceedances at these stations:

- **ECCC NAPS station exceedances of 24-hour B(a)P AAQC (0.05 ng/m^3):**
- **Gage 2013: 23 exceedances, maximum concentration 0.19 ng/m^3**
- **Simcoe 2013: 5 exceedances, maximum concentration 0.07 ng/m^3**

- **Gage 2014: 7 exceedances, maximum concentration 0.08 ng/m^3**
- **Simcoe 2014: 6 exceedances, maximum concentration 0.29 ng/m^3**
- **Simcoe 2015: 5 exceedances, maximum concentration 0.13 ng/m^3**
- **Simcoe 2016: 6 exceedances, maximum concentration 0.43 ng/m^3**

- **ECCC NAPS station exceedances of annual B(a)P AAQC (0.01 ng/m^3):**
- **Gage 2013: 0.06 ng/m^3**
- **Simcoe 2013: 0.02 ng/m^3**
- **Gage 2014: 0.04 ng/m^3**
- **Simcoe 2014: 0.03 ng/m^3**
- **Simcoe 2015: 0.03 ng/m^3**
- **Simcoe 2016: 0.03 ng/m^3**

6. Ambient Air Dioxin/Furan Exceedances: On May 26th, 2018 there was an ambient air exceedance for dioxins and furans at the Courtice WPCP station. All three stations had elevated concentrations. Subsequent second (split sample) analysis lab results showed values in exceedance at both the Courtice WPCP station and at the Crago station. Meteorological data showed that it was a very calm day.
Dioxin/furan concentrations increased with distance of the stations from the incinerator. In MECP's investigation of the exceedance, in addition to wind *direction* , what other factors did MECP consider?
Did the MECP consider wind speed and calms and, if so, what was the analysis? What other sources did the MECP consider?
Did the MECP investigate what other facilities were operating on that day, and, if so, what was found?

The ministry's assessment of measured and modelled data indicates that winds generally originated from the southwest placing the Courtice station upwind from the DYEC. This means that winds reaching the Courtice station were not coming from the direction of the DYEC. The low wind speeds measured during the sampling period add some uncertainty to the recorded wind directions and make it difficult to determine potential sources.

Furthermore, a review of the continuous emission monitoring system during May 26, 2018, indicated that the facility was operating normally. There were no process upsets or other operational issues during the ambient air monitoring period.

In addition, during the week of May 29, 2018 (May 29 to June 1) the annual voluntary source test program was completed. This source test program was scheduled and undertaken prior to knowledge of the May 26 result. The facility was operating normally throughout the source test. The results of the source testing were below the analytical detection limit of <11 picograms per cubic metre (pg/m3). The DYEC in-stack limit is 60 pg/m3. The source testing program results were obtained within 3 to 5 days of the ambient air monitoring period.

There are many potential sources of dioxins and furans in the vicinity of the monitoring stations including residential/commercial wood burning and diesel fuel combustion. All dioxin and furan sources contribute to ambient air concentrations and air quality in Clarington which is similar to other areas in Ontario and the GTA. The continuation of the ambient air monitoring program will enable the ministry to assess trends over time and may help to identify potential sources that affect local ambient air quality.

Did the MECP look at the dioxin/furan congener profiles and, if so, what did they show?

No, the ministry has not reviewed the dioxin/furan congener profiles.

Did the MECP review the AMESA cartridge results to see how the sample for that month compared and, if so, what was found?

The AMESA data collected during the month of May 2018 was not reviewed and assessed by the ministry as part of the review of the May 26 elevated concentration.
As stated in the Environmental Compliance Approval (ECA), the AMESA system is for the long-term monitoring of dioxins and furans in emissions.
While the MECP no longer attends the EFWWMAC meetings, does the MECP review the archived tapes? There was considerable discussion at the August 23rd, 2018 EFW-WMAC meeting regarding this exceedance and the MECP should be made aware of the concerns expressed by members at that meeting, including a member with significant work experience in such matters (archived tape can be found at https://www.eventstream.ca/events/durham-region with the exceedance discussion starting at about 45 minutes to about the 1hour 30 minute mark).

No, the ministry does not routinely review the recorded EFWMAC meetings.

Members of the community are encouraged to contact MECP directly should you have questions or concerns.

7. Ambient Air Test Frequency for Dioxin/Furans: Currently ambient air dioxin and furan samples are taken one day in every twenty-four days, while other pollutants are sampled more frequently. Given the toxicity of dioxins and furans, and the stack exceedances and ambient air exceedance for this pollutant experienced in the first three years of operation, will the MECP consider increasing the frequency of ambient air testing for this pollutant?

Since operation of DYEC there has been one daily concentration above the 24-Hour Dioxins and Furans AAQC. AAQC is set at a concentration at which adverse effects are not expected.

The non-continuous (every 24-day) dioxins and furans sampling follows the US EPA accredited methodology and the National Air Pollution Surveillance Program sampling schedule. The 24 day sampling period was determined to be an acceptable sampling frequency at the outset of the monitoring program as stated in the Ambient Monitoring Plan.

AMESA Long-Term Sampling System (AMESA LTSS)

1. Condition 7.3 a) of the ECA states that "The Owner shall develop, install, maintain and update as necessary a long-term sampling system , with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler." It also states that the performance of the AMESA sampling system will be evaluated during annual Source Testing "in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4". When did the focus on the AMESA device measuring dioxin/furan concentration and evaluating/comparing against stack test results change to a focus on correlating the results between AMESA and stack?

As required in the Environmental Compliance Approval the purpose of the system is to evaluate the performance of the long-term sampling system to determine Dioxins and Furans emission trends and/or fluctuations. As indicated to you during the April 26 meeting, the ongoing evaluation of the system may also allow correlation of AMESA and source test results. That does not mean that the purpose or focus of the AMESA system has changed.

2. What modifications have been done to the AMESA Long-Term Sampling System and why was each modification sought? When were each of the modifications carried out and what were the results?

There have been no changes or modifications that deviate from the original purpose of the AMESA system.

3. Did the MECP approve changes to the AMESA Long-Term Sampling System and, if so, who at the MECP approved the changes and was the Minister made aware of this potential change to the Condition?

As previously indicated, there have been no changes or modifications that deviate from the original purpose of the AMESA system. The Regions and Covanta continue to evaluate the system as part of the AMESA work plan that was reviewed by the ministry.

4. Was the MECP involved or copied on discussions between the AMESA manufacturer and/or other consultants regarding the AMESA LTSS?

Ministry staff have had discussions with Covanta on the AMESA LTSS. This information has been provided to the manufacturer by Covanta. As well, the AMESA work plan was developed with the assistance of the manufacturer and input from the ministry.

5. The AMESA devices are accredited by agencies in Europe. Does the MECP recognize/acknowledge those accreditations? Are there other facilities in Ontario using the AMESA LTSS? In Canada or North America?

The ministry usually considers other regulatory jurisdictions in the development of its own ongoing validation processes, as is the case with the validation of the AMESA system. The ministry is not aware of any facilities in Ontario, Canada or North America that use an AMESA system

Modifications to Dioxin/Furan Testing Methods

1. In the approved Air Emissions Monitoring Plan, the compliance stack testing methods that are specified for Dioxins and Furans are Environment Canada methods. Documentation posted on the Environment Canada website indicated that any changes to the Environment Canada reference test method must be approved by Environment Canada. There have been some modifications to the dioxin and furan stack testing methods which have been documented in the reports done by AirZone for the Region of Durham. Has MECP approved all deviations from and/or changes to the Environment regarding the changes that have been made?

As indicated in the AirZone report, the change to US EPA Method 23 do not affect the validity of the source test results. The change to the method has been accepted by the ministry.

If you have any questions please contact me at (905)442-3105, celeste.dugas@ontario.ca or Phil Dunn at (905)424-2808, philip.dunn@ontario.ca.

Yours truly,

Celeste Dugas
District Manager
York Durham District

c: Phil Dunn, Senior Environmental Officer, MECP
Amy Burke, Senior Planner, Municipality of Clarington
Mirka Januszkiewicz, P.Eng., Director, Regional Municipality of Durham
Gioseph Anello, Manager, Regional Municipality of Durham
Seth Dittman, M.S. P.Eng., Supervisor, Regional Municipality of York

MEMORANDUM

24 March 2017

TO: Leon Brasowski, Covanta

cc: Gioseph Anello, Durham

SUBJECT: AMESA Comparison Testing

Since our teleconference earlier this week I have been doing some investigation and thinking about how to approach the testing.

We all know that the results of the stack testing show that the levels in the stack are well below the limits set out in the ECA for the facility. The stack testing values obtained by ORTECH in the Fall 2016 testing are so low that the uncertainty in the value is high – I would suggest that it would be above the ±50 pg TEQ/Rm^3 uncertainty that has been documented for concentrations at the Canadian LOQ of 32 pg TEQ/Rm^3. With that level of uncertainty, the AMESA cartridge results from the Fall 2016 testing agree with the stack results.

That simple comparison ignores the problem that the comparison between M23 results and the AMESA cartridge is a bit of an "apples and oranges" one – the M23 sample includes all the materials caught in the sampling train; the AMESA cartridge analysis approach ignores the material trapped in the probe and nozzle of the system. Including the probe catch with the AMESA cartridge, the AMESA results are at least an order of magnitude higher than the M23 test results – 5 – 59 times higher depending upon the sample.

It is recognized in the European standard – CEN/TS 1948-5 – *Stationary source emissions – Determination of the mass concentration of PCDDs/PCDFs and dioxin-like PCBs – Part 5: Long-term sampling of PCDDs/PCDFs and PCBs* – that the lower the stack concentration the greater the expected departure from agreement between reference method and long term sampler results. The standard states ±35% at 100 pg and ±100% at 20 pg levels and applies this for comparisons to the standard reference method. The comparison uses samples taken at a fixed point as close to the long term sampling nozzle as possible without interfering with its function. The sampling and comparison strategy is described below:

7.1 i) 4) Long-term sampling and standard reference sampling according to EN 1948-1:2006, 7.2, a) and 7.2, b) shall be performed in parallel during a specified time period (at least 40 h). The long-term sampling as well as the standard reference sampling is performed for 6 h to 8 h. The sampling unit including the filter of the standard reference methods are exchanged, whereas the sampling unit including the filter of the long-term method are kept for the specified time period. This results in one sample for the long-term method and a mean value of multiple, at least five samples for the standard reference methods.

This implies that at a minimum five 8-hour M23 runs would be required. In the ideal world, the sampling train could be withdrawn from the stack at the end of the 8-hour period and a new clean train introduced within 15 minutes so sampling could continue. This would negate the need to do anything with the AMESA system during the switch over, although the TS does state that:

7.1 i) 5) During interruption of the sampling, the sampling probe of the long-term sampling system shall be secured against any contamination. This should be done in the same way as during regular interruptions in the sampling process, e.g. by thermal desorption and reverse flow purging or by closing the nozzle, if appropriate after having removed the probe.

The samples could be recovered from the completed train and it could be cleaned and reassembled for the next run. Done during a period when other sampling was going on at the site, sufficient sampling staff would be present to available to do the sample recovery and cleanup; however, the ideal round-the-clock operation would require operators to be spelled off on a regular basis.

Turning the AMESA pump off for the "15 minute" changeover period would likely not have a major impact even though particles are "falling" in the stack at the sampling location and could enter the nozzle. Alternatively, this problem could be minimized if the probe were purged by reversing the flow with compressed air through the probe liner and nozzle – the appropriate connecting piece is available for at least one of the units. I would be concerned with following the purge procedure if the downtime were to be extended to a considerably longer time – say 16 hours. However, extending the testing to 8 hours per day would also extend the duration of the sampling period to a full week adding to the labour costs.

At the end of the AMESA sampling period, the cartridge would be recovered and the probe and nozzle would be cleaned.

The straight 6 – 8 hour comparison of M23 and AMESA results mirrors the RATA approach in the Performance Standards issued by the US EPA but these call for a minimum of 9 tests to be compared. If we were to run 10 tests with the AMESA and M23 – say 5 on each stack and combine the results – assuming the AMESA performs the same way in each unit we are talking 2 test teams for 5 days. Moreover, since there are 2 AMESA samples and 1 M23 sample for the laboratory from each test and thus there would be 30 samples to be analysed.

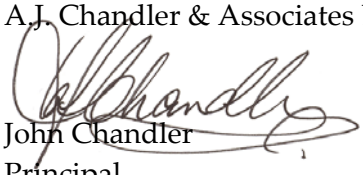
From a cost point of view, sampling in shifts over a two-day period with a team to recover the samples from the train and clean it for the next run, might be the preferred approach. Both AMESA units could be tested in this way in a week without requiring excessive equipment because they could be done back to back. Moreover, there would be 5 or 6 M23 samples to be analysed and only 2 AMESA samples, from each unit, this would half the analytical budget.

One thing I think would be worthwhile is to separate the M23 analyses into front half and back half (before and after the filter) with the filter being included with the cartridge. This is similar to the AMESA glass wool plug filter being analysed with the cartridge. This would add to the analytical cost, but might provide a better understanding of what might be in the AMESA probe albeit we are dealing with heated versus cooled probes.

I thought I would get these thoughts out quickly so the approach could be considered by Leon in consultation with ORTECH.

Comments on the Fall AMESA data will be forwarded next week.

A.J. Chandler & Associates Ltd.



John Chandler
Principal

June 21, 2021

Chair John Henry and Members of Council
Regional Municipality of Durham
605 Rossland Road East
Whitby ON L1N 6A3

re: **Report #2021-WR-10: Durham York Incinerator – Long-Term Sampling System Reporting for Dioxins and Furans**

First, writing as a long-time resident of Durham Region (Courtice), I must ask why it is so difficult to receive requested information from the Region in a timely and fulsome manner. When the Region opened their new Accountability and Transparency page on durham.ca to help the public quickly find information that supports open and transparent regional government processes, I thought that our requests for information and background documents would be more easily satisfied. That was in 2019.

I did not think it would mean more difficulties in receiving requested information or documents, or having to make an official MFIPPA application and waiting months or even years for a resolution. This has occurred when simply requesting public (not personal) information owned by the Region and by the public who pays for it with our tax dollars.

This has been the case in so many requests regarding the DYEC incinerator and other waste matters, and including AMESA information. I don't understand WHY we are denied timely and full information on monthly AMESA results. We understand the numbers may be delayed until they come from the lab, but they are done every month. Durham Region should receive these every month, and it should be made public. We need to be aware of monthly numbers and fluctuations. Waiting to read them once a quarter, or twice a year, or only in a yearly report defeats the purpose of the LTSS.

You have been given factual information as to why the AMESA monitoring is so important, especially with respect to human and environmental health. But you have received that information mainly from residents (who consult with medical specialists, scientists who specialize in the toxicity of the pollutants and how they are formed, how they are distributed, and where they end up). They don't just float away and disappear.

You may have mechanical, electrical, civic, management, geotechnical engineers on your staff. Do you also have chemical engineers and medical staff with special knowledge of toxins created and exacerbated within a mass burn incinerator as well as the risk to humans, fetuses, food, air and water? That is an area that appears to be lacking in reports you/we receive. Has anyone kept up with the changes and knowledge of the science beyond requirements written in the 1970's?

I am not trying to be disrespectful of staff. I am trying to encourage our elected officials to ask more questions and dig deeper on some of these problems.

From your August 14, 2019 announcement on your Website:
"**Why: **The Region of Durham understands that individuals are looking for increased transparency and accountability in their government; and works to ensure public confidence through the highest levels of ethical conduct and behaviour."

This is a commendable goal for our Regional Government, but I'm afraid there are areas within certain departments where attention to public input and requests for fully factual answers would improve public confidence and help to reach that goal.

You don't try to suppress information because your argument is good and your positions defensible. You suppress information because you don't want that information out there for everyone to see and scrutinize your claims.

This is where you lose trust and confidence from the public, especially when it continues to occur, year after year. I hope our Council will take notice of my complaint regarding incinerator/waste files in particular. As some of you know, I've been involved with Regional issues since about 1995 and specifically Waste issues since the first whispers of consideration of building an incinerator in Durham began and in earnest since about 2006. I am frustrated by this as I'm sure some of you are too.

I ask that you look into what you are doing and what should have been done that hasn't been in relation to the DYEC, AMESA, and including the AD project as well. Don't rush without having ALL the information, not only the *selective* information presented to you. These are large and expensive projects, with high on-going costs and unexpected problems. We (the public) are supposed to be your partners in this and we also expect your protection.

In closing, Council must ensure that neither your staff nor Covanta destroy or delete the AMESA sampling data, including all supporting documentation.

Thank you for your time.

Kerry Meydam
Courtice,
Resident of Durham

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Interoffice Memorandum

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Don Beaton
BCom, M.P.A.
Commissioner of
Corporate Services

Date: **June 21, 2021**

To: **John Henry, Regional Chair and Members of Regional Council**

From: **Susan Siopis, Commissioner of Works**
Nancy Taylor, Commissioner of Finance
Jason Hunt, Regional Solicitor and Director of Legal Services

Subject: **Anaerobic Digester Procurement Update**

Purpose

This memo provides an overview of the existing Council direction primarily from Report #2019-COW-17 and addresses some of the concerns and questions raised by Council at the Committee of the Whole meeting on June 9, 2021. This memo is intended to assist Council in their deliberations with respect to the Notice of Motion on the Regional Council Agenda.

Background

Council Direction Report #2019-COW-17

In June 2019, Regional Council considered and approved the recommendations in 2019-COW-17. That report is attached as it contains a comprehensive report providing background on Council's current directions on the technology, procurement and service delivery model for Anaerobic Digestion. The existing and relevant council directives from this report are:

> That approval be granted for the Region to proceed with Council's preferred long-term organics management technology solution, with the capital project to include a mixed waste transfer and pre-sort facility and an anaerobic digestion organics management processing facility with the specific financing to be approved at the time of Request for Proposal issuance and confirmed at the time of RFP award;

If you require this information in an accessible format, please contact Monika King at 1-800-372-1102 ext. 2166.

That the Region's service delivery approach for implementing the Region's long-term organics management solution include public ownership of the transer/pre-sort facility and AD organics management processing facility with a long term (15-25 year) single contract to be obtained from the private sector to design, build, operate and maintain (DBOM) the facilities;

That procurement follows a two-step Request for Proposal Qualifications (RFPQ) and Request for Proposal (RFP) process, in which:

a. the RFPQ shall include appropriate requirements for financial capacity (construction, bonding, operations) together with technical requirements, to be issued with the list of recommended prequalified companies (to participate in the subsequent RFP) to be presented to Regional Council for approval in fall 2019;

b. The subsequent RFP process shall be issued together with the design-build-operate-maintain contract to reduce the need for protracted negotiations prior to financial close.

Mixed Waste Transfer and Pre-Sort Facility

There are six significant advantages of this technology:

1) It is the only reliable path to significantly increase diversion rates. Current waste studies indicate that despite persistent attention to source separation of recycling and organics, recoverable materials in residential waste remain consistent at 45% predominantly from incorrectly sorted organics from single family homes and multi-residential buildings. This figure is consistent with the range of diversion across North America. The next step in reaching the Region's 70 percent diversion target is the use of a mixed waste transfer and pre-sort facility.

2) Diversion of recyclables, organics and non-combustibles will reduce the volume of waste going to the DYEC, effectively making capacity available in the DYEC to accommodate for population growth and deferring the need for an expansion until at least 2035;

3) Co-location of mixed waste transfer and pre-sort with an AD facility provides significant advantages including applying the most stringent

environmental standards such as controlling potential odours, transportation efficiencies to reduce GHG emissions, site infrastructure synergies and ensuring control of material flows between the mixed waste transfer and pre-sort and AD facilities to meet the ECA requirements for the DYEC. Co-location will ensure that sufficient redundancy is built into the system to accommodate fluctuations and variability in the waste and ensure the Region has its own waste processing capacity with future expansion capabilities. Co-location of the MWP, AD, DYEC and the Courtice WPCP will build a fully integrated system with potential opportunities for heat balance, process water management, increased generation of RNG, shared monitoring systems and public education between the facilities that is aligned with the Strategic Plan.

4) Capacity for waste is limited throughout the province. Prior to construction of the DYEC, the Region relied on landfills in Michigan and New York state for waste disposal. In 2007, Regional Council, in support of an agreement between two Michigan Senators and the Ontario Minister of the Environment, directed an end to waste shipments to Michigan beyond 2010. One objective of the DYEC project was to prioritize local waste solutions and decrease reliance on cross border waste solutions. The possibility of removing organics from the waste stream on a provincial scale is also a likely solution to the landfill capacity issue in Ontario and has already been openly discussed at the provincial level. A mixed waste transfer and pre-sort will allow the Region to further reduce its reliance on limited landfill capacity and mitigate this risk.

5) A Region-owned mixed waste transfer and pre-sort facility will help the Region meet its greenhouse gas reduction goals. Durham Region declared a climate emergency in 2020 and recently approved the Corporate Climate Action Plan. This Plan sets a goal of 100 per cent reduction in GHG emissions by 2045. The mixed waste transfer and pre-sort will provide the ability to separate organics from the waste stream and the AD Facility will generate biogas that can be cleaned and used as renewable natural gas. Renewable natural gas is a direct replacement for conventional natural gas but is considered carbon neutral and does not contribute to GHG emissions based on its renewable nature. Using renewable natural gas from a Region-owned AD in Region facilities will reduce the Region's GHG emissions by up to 7,500 tonnes of CO_2 equivalents each year.

6) As indicated in Report #2019-COW-17, mixed waste transfer and pre-sort is unlikely if not impossible unless the Region proceeds with a DBOM service delivery model. No vendors offer this technology as part of a merchant capacity service delivery. More importantly, no vendors offer AD for facility separated organics therefore they have no incentive to build mixed waste pre-sort facilities. Existing merchant capacity only processes material derived from source separated organics (Green Bins programs).

Mixed waste pre-sort systems are not common in Canada. At the time of writing Report #2019-COW-17, there were only two facilities in operation on a similar scale and are located in other provinces. As such, proceeding with a third-party merchant capacity service delivery model for anaerobic digestion would almost certainly remove the mixed waste pre-sort component or require the Region to construct its own facility (if a private AD facility that will process FSO is constructed – as noted, none exist or are proposed at this time). Not having mixed-waste pre-sort will significantly reduce the Region's capture and diversion rate potential, not allow the identified short term corporate GHG emission reduction targets to be fully realized for waste management, not meet provincial diversion targets set for organics and require the immediate commencement of the process to expand the DYEC in order to meet growing demands for capacity.

Design Build Operate Maintain Service Delivery Approach

The first evaluation of service delivery model was a detailed exploration of risk and mitigation by GHD Limited and Ernst & Young Orenda Corporate Finance Inc., which was presented to Regional Council in Report #2017-COW-180.

In Report #2018-COW-146 council directed:

> That future business analysis of a mixed waste pre-sort, and organics processing service delivery approach for a potential long-term organics management solution be limited to either (i) private sector service contract or ii) a design build operate and maintain public private partnership (P3) contract.

Following this direction, staff specifically re-evaluated the two options of a DBOM or Merchant Capacity service delivery model between June 2018 and June 2019.

Within the Service Delivery Model assessment, it was noted that there have been a number of merchant capacity plants over time in Ontario. A number of these facilities have failed due to poor performance, impaired economics, and environmental issues (particularly odour). Given the lack of control over merchant capacity facilities, municipal use of this model can potentially lead to performance issues that are sufficiently significant as to require landfilling of organic materials. At least one private facility was ordered by the Ministry to cease operations due to excessive odour issues. In contrast, publicly owned facilities operating today experience very few, if any, complaints of this nature.

The results of that evaluation exercise from staff concluded with the recommendation which was adopted by Council in Report #2019-COW-17:

> That the Region's service delivery approach for implementing the Region's long-term organics management solution include public ownership of the transer/pre-sort facility and AD organics management processing facility with a long term (15-25 year) single contract to be obtained from the private sector to design, build, operate and maintain (DBOM) the facilities;

The factors supporting this recommendation are found within Report #2019-COW-17, including:

- Retaining control to react to community and environmental needs;
- Control over haulage and transportation costs by ensuring siting within Durham Region
- Risk transfer to the DBOM vendor;
- Information obtained from the private sector respondents in the RFEI confirmed that a DBOM reflects a best practice for a large, long-term contract of this nature;
- Recent merchant capacity competitions in Peel and Toronto yielded limited responses and competition;
- Merchant capacity in the province is limited and market risk with this option was identified in the preliminary business case;
- DBOM minimizes the risk of cost escalation over a long-term contract and after a preliminary detailed risk assessment this was a recommended approach of GHD Limited and Ernst & Young Orenda Corporate Finance Inc. (Re: Phase One and Two Preliminary Business

Case Assessment and Technology Review conducted by GHD and E&Y in 2017).

Furthermore, control and ownership of the facility through DBOM service delivery will assist in ensuring that possible benefits from processing by-products are retained by the Region. As an example, potential benefits associated with biogas production (including ownership and title to the fuel and any associated environmental attributes) would be retained by the Region to ensure co-benefits with other corporate priorities, including achieving greenhouse gas (GHG) emission reduction targets through the potential production and utilization of RNG across Regional operations. Additional synergies and realization of co-benefits across Regional operations are also possible with control over ownership and siting (e.g., possible integration of operations and systems for AD facility and wastewater treatment facilities).

Procurement Considerations

In any procurement process it is best practice for the Region to provide as much detail and specification to potential vendors as is practical. The Region has invested substantial resources into exploring potential options and advising Regional Council on the best path forward.

The motion being brought forward proposes a very different service delivery model but for a significant portion of the same service (AD) thereby casting doubt about the Region's commitment to the larger project.

There are risks and uncertainties introduced by proceeding with two fundamentally different service delivery models at the same time. This risk will be treated by bidders in one of three ways – transferring the risk to the Region, pricing the risk into their bid or avoiding the risk altogether by choosing not to participate. It is likely that running a parallel bidding process on a major project like this is unprecedented. As such is it hard to advise Council on all of the risks and costs which might be encountered.

In addition to the risks, it should be identified that there are significant resource considerations both external and internal. The current DBOM procurement process is a major procurement. A tremendous amount of time and resources have been spent by the Region over the past eight months in preparing the draft DBOM agreement that would be attached to the proposed

NRFP. It would take a great deal of work by the Region's AD Project Team to co-ordinate the necessary changes to conduct a parallel procurement process, resulting in significant delays in the release of the NRFP for a DBOM solution. An additional procurement for third party merchant capacity would be a substantial undertaking. This additional process would require additional consulting support and have a substantial impact on internal resources.

A significant change in course at this point to include third party merchant capacity would involve a business case, scope development and procurement document creation and this will add a significant amount of time to the project. If a procurement to solicit proposals for third party merchant capacity is now introduced, it would require issuance of a procurement process at the same time as the DBOM NRFP or incorporation of the new requirements into the DBOM NRFP as a distinct option; both adding considerable delay in issuance of the requesting of proposals. Furthermore, if prequalification is required for the third-party merchant capacity option, a prequalification process will also be required and cause further delay.

Other concerns related to the delay and change in project scope that should be considered are:

- A delay in the procurement process will impact the Region's ability to meet legislative requirements:
    - Ontario's Food and Organic Waste Policy Statement was issued on April 30, 2018 under section 11 of the RRCEA and approved through Order in Council No. 397/2018. It provides direction to provincial ministries, municipalities, industrial, commercial and institutional establishments and the waste management sector to reduce food waste and increase resource recovery from food and organic waste.
    - The Food and Organic Waste Policy Statement requires Durham to meet a performance target of 70 per cent *waste reduction* and *resource recovery* of *food and organic waste* generated by its single-family dwellings by 2023.
    - Multi-unit residential building owners, to which section 10 of O. Reg. 103/94 under the *Environmental Protection Act* applies (i.e. owners of buildings with six or more dwelling units), must also achieve 50 per cent waste reduction and resource recovery of food and organic waste generated within their buildings by 2025. Where the Region accepts collection responsibility at

these multi-residential buildings under its Regional Waste Bylaw, the 50 per cent waste reduction and resource recovery of food and organic waste requirement will become a Regional requirement.

- Three companies are currently prequalified for the RFP. Any delay in issuance of the RFP is a concern, as best practice is to issue the subsequent bid document to the prequalified parties as close to the prequalification date as possible to ensure that the parties are a) still interested b) still have same financial viability as assessed during the prequal and c) the teams brought forward are essentially the same;
- Issuing a separate RFP where the outcome is dependent on another separate and distinct RFP is problematic. The award of each will have to be clearly defined and somehow dependent on the other, which is a challenge and adds additional risk;
- If third-party merchant capacity is added as an option in the RFP, it will be a challenge to clearly define how each is rated and how a winner will be chosen;
- Currently the AD prequalified parties, of which there are three, have a 1 in 3 chance of being successful. Including third-party merchant capacity will change this and some of the prequalified parties may no longer wish to participate;
- Some companies may wish to bid on both options, which may be a conflict.

Strictly from a fairness perspective, the Region does have the ability to stop at this point in the process and reassess next steps, but to ensure fairness the Region would have to clearly define how this new approach will be conducted, including how proposals will be evaluated and how the successful proponent will be selected. Transparency around the process is paramount and it will take significant time to ensure this is done correctly.

Further, we have already completed the pre-qualification process based on a DBOM project delivery structure and the Region must establish a level playing field for Respondents where two different projects are essentially being solicited. As previously reported, service delivery contracts and DBOM present:

- different risk profiles and securities requirements;

- technical specifications versus performance specifications;
- private sector contracts could present multiple locations (possibly outside the Region), with different sunk costs depending on site infrastructure and divergent impacts both to Regional collection and haulage costs;
- the Region risks relinquishing ownership, control and management of performance and site-specific dynamics (e.g.: transfer/haulage costs, odour management and proximity to residential areas, technology specifications and by-product/GHG management as noted above).

There would be risk in terms of market credibility for the Region and prequalified bidders may decline further participation in a new process which would require pre-qualification on a consistent set of criteria. The Region may need to make changes that were not included in the RFPQ to the NRFP and the timing for the issuance of NRFP may need to be delayed.

Honourarium

Staff are recommending payment of an honorarium to proponents who submit a proposal to the NRFP. This recommendation is based on advice received from external consultants and is consistent with market expectations and best practice based on the guidelines from Infrastructure Ontario with respect to capital procurement. Specifically, those guidelines provide as follows:

> Infrastructure Ontario **Procurement Policy, April 2021**:
> "IO may, at its discretion, offer Proposal Fees [i.e. honoraria] in its competitive procurement processes for the purposes of increasing the competitiveness of IO's procurements and incentivizing new and existing participants to participate in and actively engage with IO during the procurement process. IO also recognizes the value of bidder engagement in the development of the procurement documents, Contract and design (if applicable), as well as IO's receipt of intellectual property rights to design-related materials (if applicable) in bidding Vendors' proposals."
>
> Procurement Canada**, Standard Acquisition Clauses and Conditions Manual:**
> "An honorarium can be provided to the unsuccessful bidders who submitted a compliant bid at the RFP stage. This is subject to approvals (as part of the procurement plan)."

The Region of Peel has also adopted the practice in a formal policy and notes the ‘Design Bid Fee’ is calculated in accordance with the Canadian Design Build Institute and Procurement Policy. The fee is based on the complexity of the project and the substantial level of detail required for the submission process. According to Peel’s policy: “honorariums are defined as remuneration for work that a well-qualified team of designers and builders would undertake to satisfy the basic submittal requirements of a Design-Build, Request for Proposal. The honorarium is not expected to fully compensate all costs of an unsuccessful effort but is deemed necessary to be sufficient to generate meaningful competition among Pre-qualified Proponents on Design-Build projects… honorariums will only be paid where there is sufficient design requirement and complexity within the proposal submission; only projects having an estimated construction cost estimate exceeding $10M being considered for remuneration. The calculation for payment will be as indicated in the Canadian Design-Build Institute document 'A Guide for the Calculation of Remuneration' or as approved by Regional Council…honorariums will only be paid if:

1. The estimated construction cost estimate exceeds $10M. There must be sufficient design requirement and complexity within the proposal document.
2. The submission must attain a sufficient technical score in accordance with the proposal documents.
3. The Proponent submission is compliant and unsuccessful.
4. If any of the above is not met, approval must first be received from Regional Council.”

The City of Ottawa has also included honorariums in past procurements that required a level of effort on the part of the bidder that was substantively more significant than what is traditionally expected, or where designs/drawings were required as part of the bidding process. Examples include the LRT Stage 1 and Stage 2 procurements, and the Lansdowne Urban Park Design Competition (note that in the case of LRT, the honorarium was paid to the unsuccessful proponents by the successful proponent).

The payment of an honoraria to proponents in a major RFP process is a common practice which has been used by several other municipalities including but not limited to:

- City of Hamilton Biosolids Project
- City of Vaughan Civic Centre / City Hall
- Region of Waterloo Light Rail Project
- Winnipeg Southwest Transitway
- City of Regina Wastewater Treatment Plant Upgrade
- Halifax Organics Composting Facility

Due to confidentiality, Deloitte cannot disclose project names nor sponsors and financial amounts, however, has provided the following recent project benchmarks noting a sample of other precedent municipal, provincial, and federal P3 projects utilizing honoraria. ***Source: Deloitte, June 15, 2021***

	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6	Project 7	Project 8	Project 9
Project Type	Waste Water	Organics	Waste Water	Waste Water	Waste Water	Transportation	Transit	Healthcare	Transit
Project Sponsor / Owner	Municipal	Municipal	Municipal	Regional	Regional	Federal	Municipal	Provincial	Provincial
Project Size (Capital Cost)	$46M	$120M	$242M	$478M	$135M	$4,400M	$3,200M	$260M	$1,400M
Honorarium Per Unsuccessful Bidder	$220K	$125K	$250K	$500K	$200K	$5M	$2M	$800K	$1.7M
Bidder Profile (Canadian/International)	International	Canadian	International	International	Canadian	International	International	Canadian	International

Finally, staff has reviewed records and determined that honoraria were paid for costs related solely to the bidding process in the following RFPs:

Table 1: Durham Region P3 Examples Including an Honorarium:

Project	Regional Headquarters (2002)	Regional MRF (2005)
Size (Capital Cost)	$65.8 million	$14.8 million
Honorarium	$30 k	$20 k

End of Memo