

**Township of Woolwich  
Technical Remediation Advisory Committee (TRAC)  
Meeting Minutes  
Thursday, Sept 12, 2024  
6:02 p.m. – 8:07 p.m.  
Hybrid Meeting  
Hosted in Council Chambers and on Zoom  
24 Church Street West, Elmira**

Present from TRAC: Councillor Nathan Cadeau, TRAC Chair  
Mayor Sandy Shantz,  
Councillor Eric Schwindt  
Tiffany Svensson, Technical Expert  
Susan Bryant, TRAC Community Member  
Bryan Broomfield, TRAC Community Member  
*Linda Dickson, TRAC Community Member*  
Dr. Sebastian Siebel-Achenbach, TRAC Community Member  
Karl Belan, Region of Waterloo

Stakeholders: *Chris Foster-Pengelly, Grand River Conservation Authority*  
Hadley Stamm, LANXESS Corporation  
*Jason Rice, Ministry of the Environment, Conservation and Parks*  
Lou Almeida, GHD  
Alan Deal, GHD

Present from Staff: Stacey Bruce, Committee Support Specialist

Regrets: Eric Hodgins, TRAC Community Member  
Ryan Prosser, TRAC Community Member  
David Hofbauer, TRAC Community Member

Italics indicate a virtual participant.

**Call to Order at 6:02 P.M.**

**Land Acknowledgement**

Chair Councillor Nathan Cadeau read a Land Acknowledgement.

**Disclosures of Pecuniary Interest**

No pecuniary interests were declared.

**Approval of Previous Minutes**

A vote was held to adopt the Technical Remediation Advisory Committee (TRAC) minutes of June 13, 2024, which carried. However, since the mover was not a voting member, the motion is invalid. Approval of these minutes is deferred to the committee's next meeting, where a new vote will be conducted.

## **Delegations**

None.

## **Updates**

### **LANXESS Canada Co.**

#### Follow Up Summary from the Sept 10<sup>th</sup> Technical Experts

It was noted that ten people attended the meeting. Two new technical experts were unable to attend in person but are planning to visit the site at a later date. As an outcome of the meeting, it was highlighted that Jesse Wright, PE, PG – Environmental Engineer, Arcadis, will review the conceptual site model and identify data gaps. This will be completed in 2025. Additionally, Cullen Flanders, Environmental Remediation Engineer, GHD, proposed turning off the interior off-site wells, pending the approval of the Ministry of the Environment Conservation and Parks (MECP) approval, to allow natural conditions to return for monitoring groundwater while continuing peripheral pumping. This approach would involve sampling and analyzing groundwater concentrations, measuring water levels and constituent levels, and conducting pilot and bench-scale tests. It was emphasized that C. Flander's approach aims to enhance NDMA attenuation through the development of in-situ methods, although this may take decades. An example was provided of a similar site with NDMA remediation in California that also relies on ultraviolet destruction. Additionally, the meeting discussed ideas for direct water recirculation to address contaminants in soil. It was noted another approach could involve applying treated water to areas of source concentrations, where NDMA is bound in soil, or along the southern front of the plume to follow the pumping path and flush out their persistent environmental presence. However, it was noted that this would require the development of significant infrastructure, although it could use the currently treated water for remediation.

Mayor Sandy Shantz joined the meeting virtually at this point.

In response to a question, the next steps after the Technical Experts meeting were outlined to the committee. It was noted that this includes addressing unresolved details from past studies, such as the 2017 in-situ chemical oxidation (ISCO) and tracer study and presenting this work to the TRAC committee to enhance transparency. It was pointed out that in the ISCO study, the chemical oxidant showed its effectiveness is limited to within 13 meters of the injection point and would require millions of liters for broader application due to this limitation in spatial effectiveness. However, it was highlighted that the solution could still be useful as a tool to treat the mass of constituents of concern in areas lacking existing infrastructure. Other plans described included completing and submitting the unfinished 2018 Technical Evaluation Study alongside the currently proposed groundwater bench and pilot test proposals for future Ministry review. Long-term plans were also described, involving preparing a report evaluating remedial technical alternatives in terms of their feasibility, such as thermal remediation, which may not be suitable for Elmira's deep NDMA plume. It was noted that J. Wright will refine the conceptual site model by next summer. Additionally, it was recommended to propose new remediation

objectives and, once approved by the MECP, to develop a new draft control order. Considering the council's education on the issue, timing will be aimed at accommodating a submission before the next election. It was noted that this process will involve legal reviews, community input, and MECP review timelines. Additionally, planned updates to GHD's 3D conceptual site model, which will illustrate geology, NDMA and chlorobenzene mass, and impacts overlaid on street level geographical maps, were discussed. It was noted these updates will be shared with the TRAC committee in the future, once completed.

### Summer Fieldwork Updates

#### Replacement of Well PW5

#### Commissioning of on-site containment well PW6

#### Investigating Well Extraction Pumping Rates

Comments were provided regarding outstanding work from 2024, noting that current efforts involve addressing issues with on-site containment well PW4 by performing an active carbon replacement as an initial troubleshooting step, and that equipment will be cleaned, inspected, and replaced as needed. The installation of on-site containment well PW6 was noted to be underway and on track for completion by the end of the year. It was emphasized that work on well PW6's power supply is being finalized to LANXESS plant and code requirements.

In response to the committee's question about the expected end of life for wells PW5 and PW4, it was noted that PW5, installed in 2005, is nearing the end of its service life, while PW4, installed in the 1980s and operational since the early 1990s, is also approaching the end of its effective use. Comment was provided that the lifespan of these wells is influenced by their maintenance and installation history. GHD further mentioned that 7 wells were recently replaced in the on-site upper aquifer containment system. They highlighted that well replacement and performance are continuously assessed. Additionally, the MECP and GHD discussed the ECA requirement for continuous monitoring of select wells, which are equipped with data loggers to facilitate and ensure ongoing maintenance.

### Progress Update on LANXESS 2024 Work Plan

Several key efforts planned for 2025 were discussed, including submitting annual monitoring and audit reports for 2024. The need to complete a hazards analysis of the Containment and Treatment System (CTS) to ensure safe operation guidelines are met, along with continuing discussions with the MECP on the off-site aquifer Remedial Framework and the preparation and submission of the Canagagigue Creek Human Health Environmental Risk Assessment (HHERA), was noted. It was also mentioned that the creek HHERA was recently discussed further with the MECP at the end of August but a response to comments has not been finalized, although additional data sets have been provided by the MECP. The assessment of off-site groundwater extraction target rates was also outlined, alongside the proposed update of Joe Ricker's plume stability analysis for groundwater remediation. Of note, a similar long-term pump

and treat method remediation modeling work to be presented by J. Ricker at the upcoming October RemTech Conference this year in Alberta from LANXESS's Clover Bar site that helped the company stop the spread of contamination and monitor natural attenuation processes at the site was mentioned. Work to redevelop the on-site containment well PW5 was also noted.

The performance of wells, particularly PW4 and PW5, was discussed, highlighting their underperformance and the plan to replace PW5 with PW6 by the end of the year. Ongoing efforts to monitor and redevelop wells across the site to maintain groundwater containment were also addressed. The committee discussed concerns about pumping rates and containment stability for these critical wells. The end of the lifetime of well PW5 and its replacement with PW6 were underscored. It was noted that the evaluation of the underperforming well PW4 by a contractor revealed that while the well's performance is within expected limits, it is not meeting its targets. Based on troubleshooting efforts to date, higher pressures in PW4 suggest a buildup of fine materials from the use of regenerated carbon in the carbon treatment system rather than an equipment issue, which is not related to performance or differential pressure. It was highlighted that wells are continuously monitored in accordance with the ECA, and GHD is working to address issues, although this process takes time. PW6 is expected to be operational by the end of the year. GHD commented that they are focused on balancing pumping rates to maintain containment, with minor deviations of up to 5% unlikely to result in immediate loss of containment. The explanation was provided that flow can be adjusted to restore containment if needed, and further investigations into well maintenance by GHD are ongoing.

In response to the committee's questioning, seasonal fluctuations in groundwater levels and pumping rates were discussed, noting that shallow groundwater rates vary between 30-40 gpm in spring and 20 gpm in late summer. In contrast, it was noted deep groundwater typically shows less seasonal variation. Recent difficulties by GHD in maintaining pumping rates were attributed to a regional decline in groundwater levels, including a 1.5-meter drop last year, which has since risen by 1 meter, as observed and confirmed by the Region of Waterloo in their regional groundwater monitoring programs. This pattern, now in recovery, was attributed by the Region of Waterloo to potentially low external sources contributing to recharge from a dry year in 2022 with minimal snowpack.

In response to the Ministry's inquiry about having more than one pre-approved outside well technician or contractor available, GHD stated that they are actively seeking additional contractors and are continually exploring options for well maintenance and drilling. Currently, Lotowater in Paris, Ontario, which is also used by the Region of Waterloo, was noted as the primary contractor. Additionally, Well Initiatives Limited from the Guelph area was suggested to GHD by the Region, although it is known they have fewer staff available. It was noted, however, that at this time no other contractors in the area are known.

The committee inquired about the status of data collection for the HHERA. It was noted that all data has been collected and shared with LANXESS and Stantec consultants. The Ministry added that they are finalizing a technical report for their fall 2023 floodplain soil study on select properties along the creek and that the data and report will be shared with the TRAC committee after the information has been shared with the private landowners.

In response to the committee's questioning, it was clarified why the regenerating carbon recently implemented in the upper aquifer (UA) carbon tower is being operationally discontinued. The decision was noted to be due to this practice resulting in decreasing carbon grain size and increasing carbon fines content, which is thought to be contributing to the current buildup of pressures observed in the UA tower. It was explained that to address these backpressure issues, the regenerated carbon is now being replaced with "virgin" carbon.

In response to further committee questions, it was clarified that well monitoring involves tracking water levels in real-time using data loggers, which show seasonal fluctuations where water levels are higher in spring and lower in late summer and winter. It was noted this monitoring is ongoing, with targets adjusted based on historical data and current conditions. GHD emphasized using both data logger information and manual measurements to assess well performance, with warning levels set for specific parameters to manage potential issues. The committee expressed further concerns about reverse flow and containment loss, and it was noted the company is currently addressing this through sampling. The committee additionally discussed developing warning points based on differential pumping rates to monitor and address any drop in well performance. It was noted that while the wells needing monitoring are identified, water levels frequently falling below target rates is concerning. It was concluded that these fluctuations will be further considered, particularly in relation to water elevation levels.

At 18:39 Mayor S. Shantz entered the meeting in person.

#### GHD/Alan Deal Historic Location of Dense Non-Aqueous Phase Liquids (DNAPL) & LANXESS Off Site Isotopic Analysis Study

Alan Deal, GHD presented a 2018 study focused on Chlorobenzene Source Evaluation. It was emphasized that in its pure form, chlorobenzene exists as a dense non-aqueous phase liquid (DNAPL), as its density is greater than water, and it is highly insoluble, typically sinking to the bottom of a water table. The "one percent rule" of chlorobenzene's aqueous solubility was reviewed, suggesting that DNAPL may be present when groundwater concentrations exceed 1 percent of its effective aqueous solubility, which for chlorobenzene is 4,900 µg/L.

A key observation from the early 1990s at the LANXESS site was revisited, focusing on well P4W and monitoring well OW88. A diagram from the current conceptual site model was presented, illustrating chlorobenzene being released at the surface in the vicinity of where these wells are now located and a mass of DNAPL migrating down through the Upper Aquifer and fractures in the Upper Aquitard into the Upper Municipal Aquifer near well PW4. It was noted that while chlorobenzene has since been purged from monitoring well OW88, it still remains in the Upper Aquifer today. In contrast, it was discussed that insufficient chlorobenzene was present at the subsurface near well OW88 to penetrate the subsurface depths and migrate within the Upper Municipal Aquifer, as it adhered to the soil during migration from higher elevations.

The capture of this chlorobenzene by the Upper Aquifer Contaminant System was highlighted, along with historical chlorobenzene concentration models showing plume areas in both the

Upper Municipal Aquifer (1990) and the Lower Municipal Aquifer (1998) after the containment system became operational. These models illustrated changes in the plume size, migration, and chlorobenzene reductions over time.

The remaining areas of concern regarding the presence of DNAPLs were also addressed. Monitoring data from wells PW4 and W4 revealed gradual decreases in chlorobenzene concentrations on logarithmic scales. However, it was discussed that sustained high concentrations of chlorobenzene from well PW4 suggest the continued presence of residual DNAPL in the Upper Municipal Aquifer. At the same time, declining concentrations in W4 indicate that DNAPL is likely no longer present in that area.

In response to a question from the committee about using the proposed direct water recirculation method to pump treated water to address this contamination, it was explained that while this method might help flush out some of the concentrations toward the treatment system, it would not be very efficient because DNAPL is strongly bound to surface sediments.

An overview was provided on the completed Chlorobenzene Source Evaluation, covering four key activities: reviewing historic chlorobenzene users, installing and sampling a new monitoring well, analyzing samples for volatile organic compounds (VOCs), and conducting isotope analysis. It was noted the review of historic chlorobenzene users in the Environmental Risk Information Services (ERIS) database identified several facilities in Elmira that currently or previously used chlorinated solvents. The former Varnicolour facility at 84 Howard Avenue was discussed further in relation to historical chlorobenzene concentration models showing plume areas in both the Upper Municipal Aquifer (1990) and the Lower Municipal Aquifer (1998), where these properties were highlighted to be located directly west and southeast of the contaminant plume.

It was described that a new monitoring well nest was installed as part of this evaluation to investigate any potential chlorobenzene source north of the plume. It was noted that the investigation indicated that chlorobenzene was present in samples from wells OW187-36 and OW187-39, but at relatively low levels, significantly less than the Ontario Drinking Water Quality Standards (ODWQS). It was emphasized that these results ruled out the possibility of an unknown additional source of chlorobenzene mass in the municipal aquifer north of the existing plume.

An overview of a VOC sample analysis investigation, led by consultant Peritus on behalf of the property owner at 84 Howard Avenue and shared with GHD, was provided. This investigation was noted to have been conducted to support a Record of Site Condition (RSC) submission to the MECP. It documented contamination on and around the property that overlaps with LANXESS's well monitoring data. It was highlighted that Upper Aquifer monitoring well MW45 at 84 Howard Avenue detected VOCs including 1,1-dichloroethane, cis-1,2-dichloroethene, trichloroethene, and trans-1,2-dichloroethene, but not chlorobenzene.

It was further noted that cis-1,2-dichloroethene concentrations were above applicable standards on the 84 Howard Avenue property attributed to known past contaminant spills from

Varnicolour's solvent recycling operations. Depictions of VOC plumes of benzene, cis-1,2-dichloroethene, trichloroethene, and vinyl chloride were shown, further indicating their presence on or in the proximity to the 84 Howard Avenue site.

It was discussed that this VOC analysis concluded that trichloroethene, cis-1,2-dichloroethene, and vinyl chloride are present in the Upper Municipal Aquifer and originate from the 84 Howard Avenue property as a source. However, it was noted that these VOCs are not contaminants of concern (COCs) at the LANXESS site, although they are directly in the flow path from 84 Howard Avenue to LANXESS. In addition, it was further noted that the LANXESS site continues to be a source of chlorobenzene.

The results from a limited data set of groundwater samples collected from six wells and analyzed for chlorine and carbon isotopes by Tracer Technologies Inc. in February 2019 was described. It was noted that the analysis aimed to determine if isotopes could identify multiple sources of chlorobenzene, but no correlations could be made.

In response to concerns about offsite VOC contamination of the aquifer, it was emphasized that there is no risk to the public from this because the contaminated water is deep underground, not being pumped for use, and contained within LANXESS's off-site collection system, where it will be treated.

Regarding concerns of potential indoor air contamination issues from the VOCs at the 84 Howard Avenue property, which now includes the Elmira Pump Company, the MECP noted that the property owner has not yet submitted a Record of Site Condition. However, the owner's pursuit of this record has been previously discussed with the Ministry's Guelph District Office.

Questions were raised about whether the current collection and treatment system is designed to handle existing conditions, including dissolved VOCs and chlorobenzene. Concerns were also expressed about the potential future use of the aquifer as a drinking water source and the impact of these additional VOCs on this. It was emphasized that the current treatment system effectively manages this contamination and noted that only one of the VOCs associated with 84 Howard Avenue exceeded Ontario Drinking Water Quality Standards (ODWQS).

It was further explained that LANXESS's offsite groundwater collection and treatment system is focused on the Upper and Lower Municipal Aquifers and that they have no influence on the Upper Aquifer in the area of 84 Howard Avenue, which is not a usable drinking water source, but that the company's water collection and treatment is focused on the deeper aquifer water.

Clarification was provided that the chlorobenzene in the Upper Aquifer is not actively being treated. The non-aqueous nature of this DNAPL contamination, its limited migration through groundwater, and its minimal risk were further described. The potential for addressing this pollution with future enhancements to the collection and treatment system, such as C. Flanders' proposed observations of natural attenuation conditions, was also discussed.

It was clarified that the VOCs present at the 84 Howard Avenue site are included in GHD's comprehensive contaminant scans of groundwater influent to treatment system, and LANXESS's activated carbon treatment system effectively removes all such VOCs. It was also noted that recent models indicate that most off-site chlorobenzene concentrations in the municipal aquifers are expected to be treated by the 2028 order deadline.

In response to the committee's questions, it was confirmed that no DNAPLs are present off-site or at on-site pumping well PW4. It was explained that off-site well W8 has high chlorobenzene concentrations, but it remains unclear if these will decrease or stabilize under active pumping. The source of this contamination—whether DNAPL or dissolved phase—has not yet been identified. It was explained that if pumping was stopped, concentrations could rise under natural conditions if an unknown source of chlorobenzene remains. The low likelihood of DNAPL migrating off-site due to its non-aqueous nature and adherence to sediment was also clarified, with concerns limited to the LANXESS plant and not extending off-site.

There was no further discussion regarding this.

### **2028 Order Deadline and Remediation Framework Discussion**

Draft discussion questions around the 2028 Order deadline and LANXESS' 2018 Remediation Framework were considered. It was noted that at the recent Technical Experts meeting, the focus was on aligning priorities for the water supply, community engagement, and managing time constraints before 2026. The committee discussed refining open-ended questions, clarifying responsibilities, and proposing a phased approach to address these issues. It was noted that coordination with LANXESS, the Ministry, and the Region of Waterloo is needed to draft a new control order, with LANXESS expected to propose a timeline by Q3 of 2025. Additionally, community engagement through TRAC's efforts was discussed, including expectations for LANXESS to provide a proposal for revised remediation objectives with reasonable options for consideration. The need for community assistance with these efforts over the next 2-3 years was highlighted, and it was noted that this topic will remain a standing item on the committee's agenda for further discussion.

### **Fall Presentation to Council**

The recent well-received biannual presentation to the council was mentioned, along with plans for the next presentation tentatively scheduled for February 2025. A LANXESS 2024 work plan, offered by GHD, is expected to be included in the next TRAC update to the Township's council if timing permits. It was suggested that making these presentations accessible through TRAC's EngageWR project website could enhance community engagement. It was determined that the next presentation should focus on high-level key outcomes from the recent Technical Experts meeting, outline the committee's current work, and detail the process leading up to the 2028 control order deadline. Since Council is familiar with J. Ricker's recent plume stability presentations, it was noted that these can be referenced. It was also suggested that information from LANXESS on the current draft remediation framework questions, LANXESS's proposed



project work, and discussions on potential non-potable municipal aquifer water usage be included.

At this point in the meeting, Chris Foster Pengelly left.

### **Other Business**

It was noted that LANXESS has a new Plant Manager, Rob Arndt, who is open to meeting with the TRAC committee.

#### Ontario Drinking Water Quality Standards for NDMA

In response to a question raised at the June 13, 2024 TRAC meeting, the MECP provided background information on the Ontario Drinking Water Quality Standard (ODWQS) for NDMA, focusing on the age of these limits and their variability across jurisdictions. It was noted that Ontario established a strict NDMA standard of 0.009 ug/L in 1991 due to contamination in Elmira's municipal aquifers, which was later formalized under the *Safe Drinking Water Act*, 2003. This was based on NDMA's classification as a probable carcinogen in humans and animals. For comparison, Health Canada has higher threshold limits (0.04 ug/L) based on lifetime cancer risks of 1 in 100,000 people. While the MECP does not find Health Canada's derivation problematic, Ontario's stricter limit remains to ensure optimal water treatment and chlorination processes that prevent NDMA formation. The Ministry emphasized that it does not plan to amend the current ODWQS for NDMA based on current science.

It was noted by the committee that it is beneficial to cleanup efforts to know the current ODWQS for NDMA will remain unchanged.

### **Correspondence**

The following three documents were received since the last June 12, 2024, TRAC committee meeting:

- LANXESS May 2024 Progress Report Prepared by GHD
- LANXESS June 2024 Progress Report Prepared by GHD
- LANXESS July 2024 Progress Report Prepared by GHD
- LANXESS August 2024 Progress Report Prepared by GHD

#### Review of LANXESS May, June & July Monthly Progress Reports

This item was noted but not discussed further.

### **Next Meeting – November 14, 2024**

#### Fall Meeting Schedule

The committee canceled their October 10, 2024, meeting and will meet again on November 14, 2024, when essential items are expected for discussion.

**Adjournment (8:07 P.M.)**

Moved by Dr. Sebastian Siebel-Achenbach  
Seconded by Susan Bryant

The committee adjourns to meet again on Nov 14, 2024.

...Carried.

Recorder: Stacey Bruce, Committee Support Specialist