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Superintendent

Date: April 11, 2023

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File: 704-SWM.SWOP04071-03.002

Subject: River Side Heavy Dry Waste Site 2022 Site Walkover

1.0 INTRODUCTION

The City of Red Deer (The City) retained Tetra Tech Canada Inc. (Tetra Tech) to conduct an annual site check in 2022 of the former Riverside Heavy Dry Waste Landfill Site (Riverside Heavy Site), located at 4240 Northland Drive within the NE and SE portions of Section 33-038-27 W4M, hereafter referred to as the Site. The objective of the site check was to verify site drainage, integrity of landfill cover, and a visual inspection of the monitoring wells and vapour probe at the Site.

In 2021, Tetra Tech conducted semi-annual groundwater and soil vapour monitoring to identify potential environmental concerns related to former operations at the Site. The results were presented and discussed in the 2021 Groundwater and Soil Vapour Monitoring Report – Riverside Heavy Dry Waste Site¹. Key findings and recommendations of the 2021 monitoring program are summarized in Section 1.1, and the objectives and scope for 2022 are presented in Section 1.2.

1.1 2021 Report – Key Findings and Recommendations

The 2021 report identified no significant impacts related to the former landfill operations at most monitoring well locations. However, the presence of residual impacts in the groundwater and buried landfill waste remaining beneath the Site require ongoing risk management. Key findings included:

- The prior monitoring programs identified indications of residual impacts related to the former landfill operations at several groundwater monitoring well locations. The 2019 groundwater monitoring program identified that some leachate indicator parameter concentrations were elevated in the groundwater at the cross-gradient and down-gradient monitoring well locations; however, based on the 2021 monitoring program, the groundwater flow direction is well defined and inferred risks to receptors are limited. Therefore, continuing the groundwater monitoring program is not warranted.
- Based on the 2019 results of the soil vapour samples, there was little indication that the soil vapour pathway will pose a hazard to receptors. The 2021 monitoring of subsurface methane concentrations along the eastern portion of the Site confirmed that vapour migration is not identified as a significant concern.

¹ Tetra Tech Canada Inc. 2022. 2021 Groundwater and Soil Vapour Monitoring Report – Riverside Heavy Dry Waste Site. Prepared for The City of Red Deer. June 14, 2022. Project Number: 704-SWM.SWOP04071-02.006.

Based on these findings, the recommendations for the Site going forward were as follows:

- Continuation of a groundwater or vapour monitoring program is not warranted; however, the vapour and groundwater monitoring wells should be maintained for potential future assessments. It is recommended to conduct an annual site check to verify the integrity of the landfill cover, drainage, and the integrity of the monitoring wells.
- Ensure that the Site is clearly identified within The City's Land Use Bylaw and appropriate administrative requirements are met for the Site in accordance with City policies.

1.2 Scope of Work

Based on the 2021 findings and recommendations², the 2022 scope of work at the Site was outlined in the proposal titled 2022 and 2023 Work Scope and Cost Estimate and was sent to The City of Red Deer on October 21, 2022³. The work conducted in 2022 included the following activities:

- Conduct an annual site check to verify site drainage and the integrity of the landfill cover, the monitoring wells and vapour probe.

2.0 SUMMARY OF SITE IN 2022

2.1 General Information

The Site is located within the NE and SE portions of Section 33-038-27 W4M, at 4240 Northland Drive in Red Deer, Alberta. A general site location plan is shown on Figure 1. The Site is zoned A2 – Environmental Preservation. The Site is located on a large hill slope within the Riverside Heavy Industrial Park. Access to the Site was formerly through the Red Deer Fire Training Centre located east of Site; however, the gate allowing access to the Site has been removed and the Site must now be accessed through the north-east side of the Site along Northland Drive. The north and east boundary of the site is bounded by a Canadian National Railway right-of-way (ROW). South of the Site consists of a natural area containing a slough and various shrubs and grasses. The Site has mountain bike trails and is vegetated with a variety of natural grasses, shrubs, and trees. A general site plan showing surrounding land use is provided on Figure 2.

2.2 Monitoring Well Network

The groundwater monitoring network at the Site consists of three monitoring wells (MW-01 to MW-03). MW-01 and MW-03 are screened within the native sand and clay and MW-02 is screened within siltstone bedrock. The vapour monitoring network consists of one soil vapour monitoring well (VW-01) located at the west side of the Site near the top of the hill. Groundwater and vapour monitoring well locations are shown on Figure 2.

The Site Walkover at the Site was conducted on November 8, 2022. The Site was walked over by field staff, all monitoring wells were assessed, the wells were locked and determined to be in good condition. The Site was unchanged in 2022 from 2021, and the Site had no noticeable damage to the cover or exposed waste. At the time of the site visit, the Site was snow covered. Pictures of the monitoring wells and the Site are included below.

2 Tetra Tech Canada Inc. 2022. 2021 Groundwater and Soil Vapour Monitoring Report – Riverside Heavy Dry Waste Site. Prepared for The City of Red Deer. June 14, 2022. Project Number: 704-SWM.SWOP04071-02.006.

3 Tetra Tech Canada Inc. 2022. 2022 and 2023 Work Scope and Cost Estimate. Prepared for The City of Red Deer. October 21, 2022. Project Number: 704-PSWM.SWOP04071-02.



Photo 1: Monitoring Well MW-01



Photo 2: Monitoring Well MW-02



Photo 3: Monitoring Well MW-03



Photo 4: Vapour Well VW-01

3.0 KEY FINDINGS

Key findings of the 2022 Site Walkover include:

- All groundwater and the vapour well were in good condition, the Site was unchanged from 2021 and there was no noticeable damage to the cover or exposed waste. However, future site walkovers should be conducted in the summer or early fall prior to snowfall to fully assess the cover.

4.0 LIMITATIONS OF REPORT

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5.0 CLOSURE

We trust this technical memo meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.



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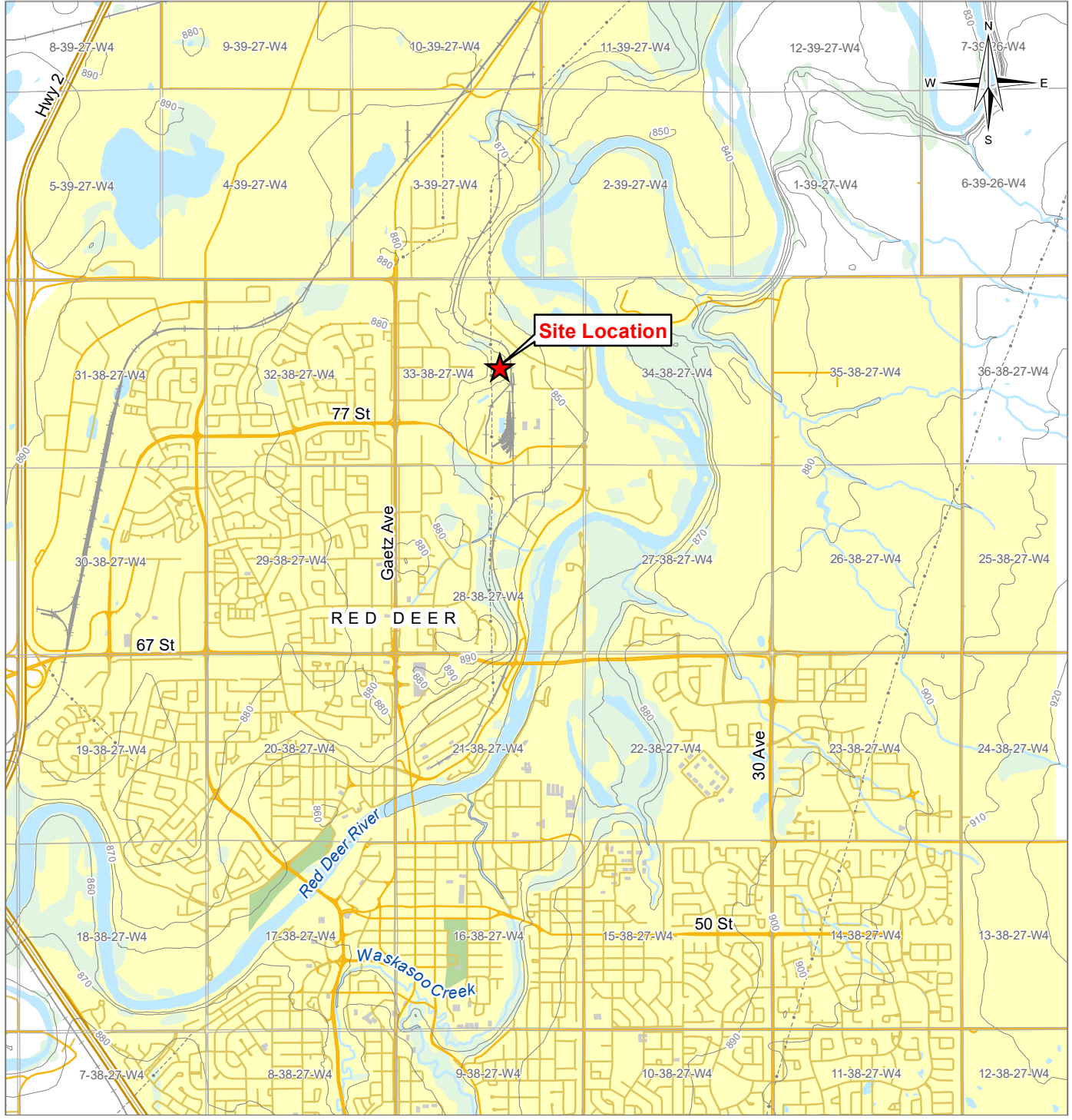
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Attachments (3):
Figure 1: Site Location Plan
Figure 2: Site Plan and Surrounding Land Use
Tetra Tech's Limitations on the Use of this Document

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LEGEND

- Site Location
- Highway
- Main Road
- Local Road
- Resource/Recreational Road
- Railway
- Power Line
- Building
- Park
- Residential Area
- Contour (10 m)
- Watercourse
- Waterbody
- Wooded Area
- Urban Area

NOTES
Base data source: CanVec 1:50,000.

STATUS
ISSUED FOR USE

**2022 SITE WALK OVER
RIVERSIDE HEAVY DRY WASTE**

Site Location Plan

PROJECTION 3TM 114	DATUM NAD83	CLIENT THE CITY OF Red Deer
Scale: 1:50,000 		
FILE NO. SWOP04071-03_FIG01_SiteLocation.mxd		
OFFICE TI-EDM	DWN SL	CKD MRV
DATE January 20, 2023	APVD RM	REV 0
PROJECT NO. SWM.SWOP04071-03.002		Figure 1



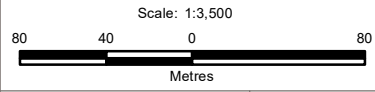


LEGEND

- Monitoring Well
- Vapour Well
- Historic Waste Disposal (Provided by Tiamat, 2014)
- Municipal Sanitary Waste Area (Provided by Tiamat, 2014)
- Site Boundary
- Lot Boundary
- Utilities**
- Electrical
- Sanitary
- Storm
- Water

NOTES
 Base data source: Imagery provided by ESRI; City of Red Deer (2020) Roads from City of Red Deer Open Data, 2018
 Utilities provided by City of Red Deer. Locations have not been field verified, and should not be used for construction or other intrusive field activities.

STATUS
 ISSUED FOR USE



PROJECTION
 3TM 114

DATUM
 NAD83

FILE NO.
 SWOP04071-03_FIG02_LandUse.mxd

CLIENT

**2022 SITE WALK OVER
 RIVERSIDE HEAVY DRY WASTE**

**Site Plan and
 Surrounding Land Use**

OFFICE TL-EDM	DWN SL	CKD MRV	APVD RM	REV 0
DATE January 20, 2023	PROJECT NO. SWM.SWOP04071-03.002			

Figure 2

LIMITATIONS ON USE OF THIS DOCUMENT

GEOENVIRONMENTAL

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This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the "Professional Document").

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Both electronic file and/or hard copy versions of TETRA TECH's Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH's Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

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1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

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While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

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The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.