Date: May 29, 2025

Ref: BAR-25001891-A0

Bernard Finney

D-4 Closed Industrial Disposal Site Impact Assessment
734 Crystal Lake Road
Trent Lakes, Ontario

Dear Mr. Finney:

Further to your direction, we have completed our Ministry of Environment Guideline D-4 Impact Assessment for potential impact on the above noted property regarding the inactive Crystal Lake landfill, located at 1018 Crystal Lake Road, Trent Lakes, Ontario.

Background

Ministry of Environment Guideline D-4, "Land Use on or Near Landfill and Dumps", sets the following relevant Provincial Policy for new development on or near operating and non operating landfills regardless of ownership.

Proposed land use changes within the Ministry's recommended 500 metres from the perimeter of the landfill area must be assessed in terms of the potential impact the landfill may have on the proposed development.

The proposed development at 734 Crystal Lake Road consists of the construction of a shop & storage building on a 25.31-acre property with an existing cabin and several outbuildings. The existing building are currently serviced by an outhouse and draws water from an on site well.

As seen on the attached survey, Lot 12, Concession 10, Municipality of Trent Lakes is approximately 400 metres east of the inactive Crystal Lake landfill, located at 1018 Crystal Lake Road, (See Figure 2 attached). Therefore, in accordance with Guideline D-4, an impact assessment must be undertaken to the satisfaction of the municipality before changes in land use may occur on this lot. The factors which must be considered when land use is proposed near an operating or closed landfill site include: "landfill generated gases, ground and surface water contamination by leachate, odour, litter, contaminant discharges from vehicular traffic, visual impact, dust, noise, other air emissions, fires, surface runoff, and vectors and vermin." These

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factors are to be assessed for their potential effects regarding hazards or health/safety risks, nuisance to man, and/or degradation of the natural environment.

The report entitled "2020 Annual Report, Crystal Lake Transfer Station" prepared by Cambium for The Corporation of the Municipality of Trent Lakes was referenced as "The Report" throughout this Assessment.

Landfill Site

The Crystal Lake landfill site is located at 1018 Crystal Lake Road. This closed landfill site currently operates as a waste transfer station and has not accepted waste since 2002. The attached figure 4 illustrates the location of the landfill site and the approximate 1.2-hectare landfill operations area within the total 12.73-hectare site limits. The landfill site operated as a natural attenuation landfill. The following highlights the history of the landfill:

- Accepted domestic, commercial and non-hazardous solid industrial waste from 1980 to 2002.
- Converted to waste transfer station.
- On-going ground and surface water monitoring program is in place to maintain compliance with the site ECA and Ministry guidelines and regulations.

The landfill's Provisional Certificate of Approval (C of A) is No. A341202.

Landfill Gas

Landfill gas is a by-product of decomposing organic matter. Methane gas forms a major component in landfill gas. It is odourless and colourless and combustible at greater than 5% concentration in air. Methane moves readily through porous soils such as sand and gravel. Boundaries to methane gas movement include saturated zones (i.e. water table or wet ground surface), and impervious layers such as clay, bedrock and frozen ground.

According to the Report, landfill gas is not actively managed due to the open site are and isolated location, this allows the gas to naturally dissipate into the atmosphere.

Local Topography/Drainage

The landfill site is located south of a bedrock outcropping, which is upland. Located to the northwest is an unnamed tributary of Union Creek. There are wetlands surrounding the landfill site on the north, west and east sides. Drainage is predominantly northwesterly from the landfill site mound although some drainage does occur to the southwest noted in the Report. The groundwater is controlled by bedrock into wetlands that drain into a tributary of Union Creek that flow northwest. Given that the subject site is southeast of the landfill, this direction of discharge is not further evaluated in this assessment as it does not represent a potential impact to the subject site. The southwest flow drains towards a culvert passing beneath Crystal Lake Road. Drainage to this area is not expected to extend past the south property boundary.

The proposed building is located approximately 30m south of Crystal Lake Road as shown in Figure A01 (attached). The proposed building is located approximately 850m east northeast of the discharge point of the surface water drainage system that collects runoff from the south side of the landfill site as shown in Figure 2 from the Report (attached). A topographic high (Ele. 305m) is located between the waste disposal site (Ele. 295m) and the building (Ele. 300m). The building is located on approximately 5 metres higher in elevation than the waste disposal site.

Local Groundwater Supply/Flow direction

From a review of the Report, the direction of groundwater flow at the waste disposal site is northwesterly, as per Figure 5 of the Report (attached). The groundwater that flows from the waste disposal site discharges to the surface water drainage system which is described above.

Leachate Production/Migration

Leachate is produced by surface water infiltration, or groundwater flow, which passes through decomposing landfill matter. The decomposition of matter having high organic content such as food waste (half life of ½ to 1½ years) occurs relatively quickly, while paper and wood and other solids take decades to decompose (half life of 5 to 25 years). Other domestic wastes can have a half life of greater than 25 years.

The closed landfill has implemented a monitoring program to assess the impact of leachate that resulted from the landfill operations in the past and reports the findings on a periodic basis. Based on the assessment of the groundwater model developed for the waste disposal site, leachate impacted groundwater discharges to the surface water systems downgradient of the site (both northwest and southwest) as per Section 4.2.5 of the Report. Based on the results of the testing completed for the Report, it concluded that leachate impacts were unlikely to result in an adverse effect to the quality of surface water beyond the southern property boundary.

Surface Runoff

Local surface water drainage at the waste disposal site is to the northwest and southwest with flow into wetlands and creek/river systems as indicated by topographic contours. Therefore, the development at the building, which is located to the east of the landfill, is on the other side of a topographic high, located between the waste disposal site and the building and will not be affected by any surface drainage.

Visual Impact

The proposed building is located approximately 350 metres east from the property boundary of the waste disposal site and approximately 5 metres higher in elevation. The land between the site and the waste disposal site is forested. The distance from the waste disposal site, the intervening forested lands and topographic high ensure that there will be minimal, if any, visual impact at the proposed building.

Dust/Odour/Litter/Vehicles/Noise/Vermin

Due to the approximately 400-metre physical separation, intervening wooded area and topographical high between the proposed building and the waste disposal site, it is very unlikely that any litter, dust or odour from waste transfer activities would adversely affect the proposed building. Control measures for dust etc. should already be in place as part of the landfill's operation requirements.

Section 5.5 of the Report indicates that there were no public complaints reported regarding litter, dust or odour from the waste disposal site. It can therefore be assumed that nuisance impacts such as odour, noise and litter as well as traffic are not an issue for the proposed building.

Conclusion

In conclusion, the closed Crystal Lake landfill site and the on-going waste transfer operations will not have any off-site impact on the proposed development Lot 12 Concession 10 for the following reasons:

- The approximately 400 metre physical separation from the waste disposal Site, the intervening wooded areas and topographical high will mitigate impacts from litter, dust, noise and visual impacts.
- The separation distance and intervening wooded areas with also provide sufficient means to block any landfill generated gas from migrating to the proposed building.
- The proposed building is not down gradient of the interpreted direction of surface water and groundwater flow from the closed waste disposal site. Therefore, any leachate produced by the landfill would not flow towards the proposed building. Based on groundwater flow direction and the absence of reported off-site leachate impacts, the existing water supply for the proposed building is unlikely to be impacted by the waste disposal site.

All the above conclusions are supported by the findings of the 2020 Annual Report for the Crystal Lake Transfer Station in the Municipality of Trent Lakes.

If you have any questions, please give us a call.

Yours truly,

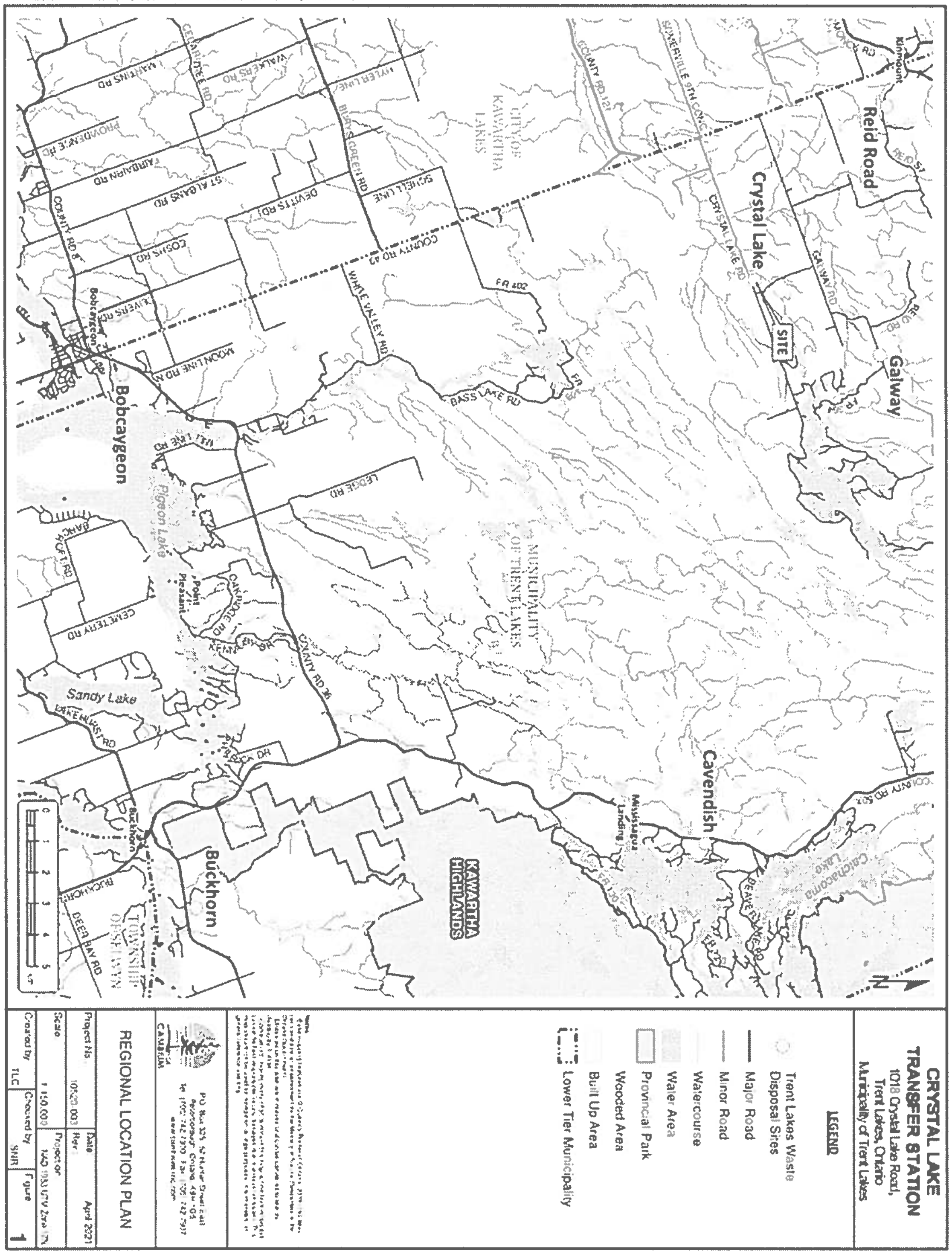
Leigh Knegt, P.Eng.
Manager, Earth and Environmental Services
Barrie Office

Matthew Werenich, C.E.T.
Field and Laboratory Supervisor
Geotechnical Division

Appendix A
Figures 1 to 5 from 2020 Annual Report

Crystal Lake Transfer Station

Client: Bernard Finney
Project Name: 734 Crystal Lake Road, Trent Lakes
Project Number: BAR-25001891-XX
Date: May 29, 2025



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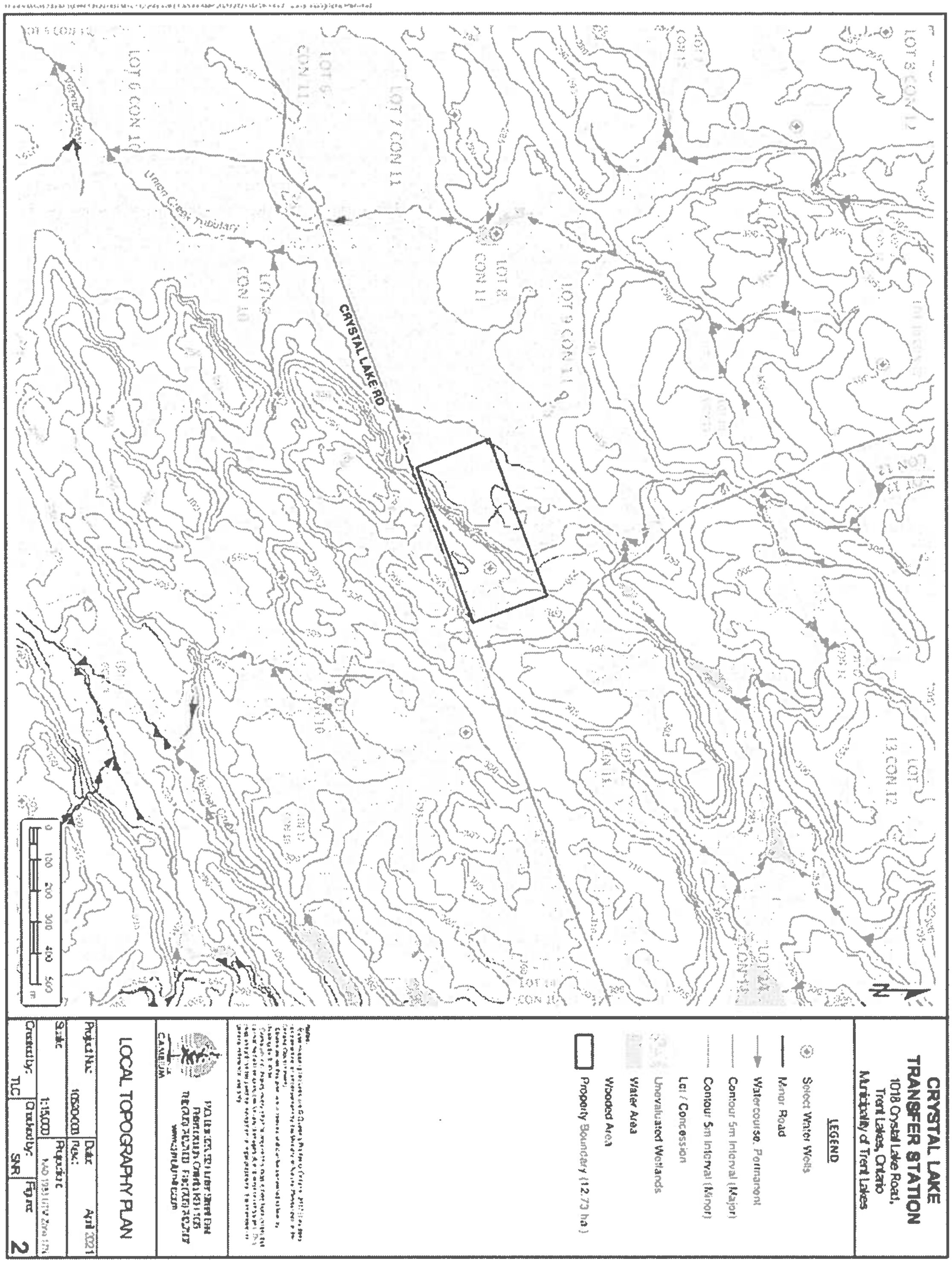

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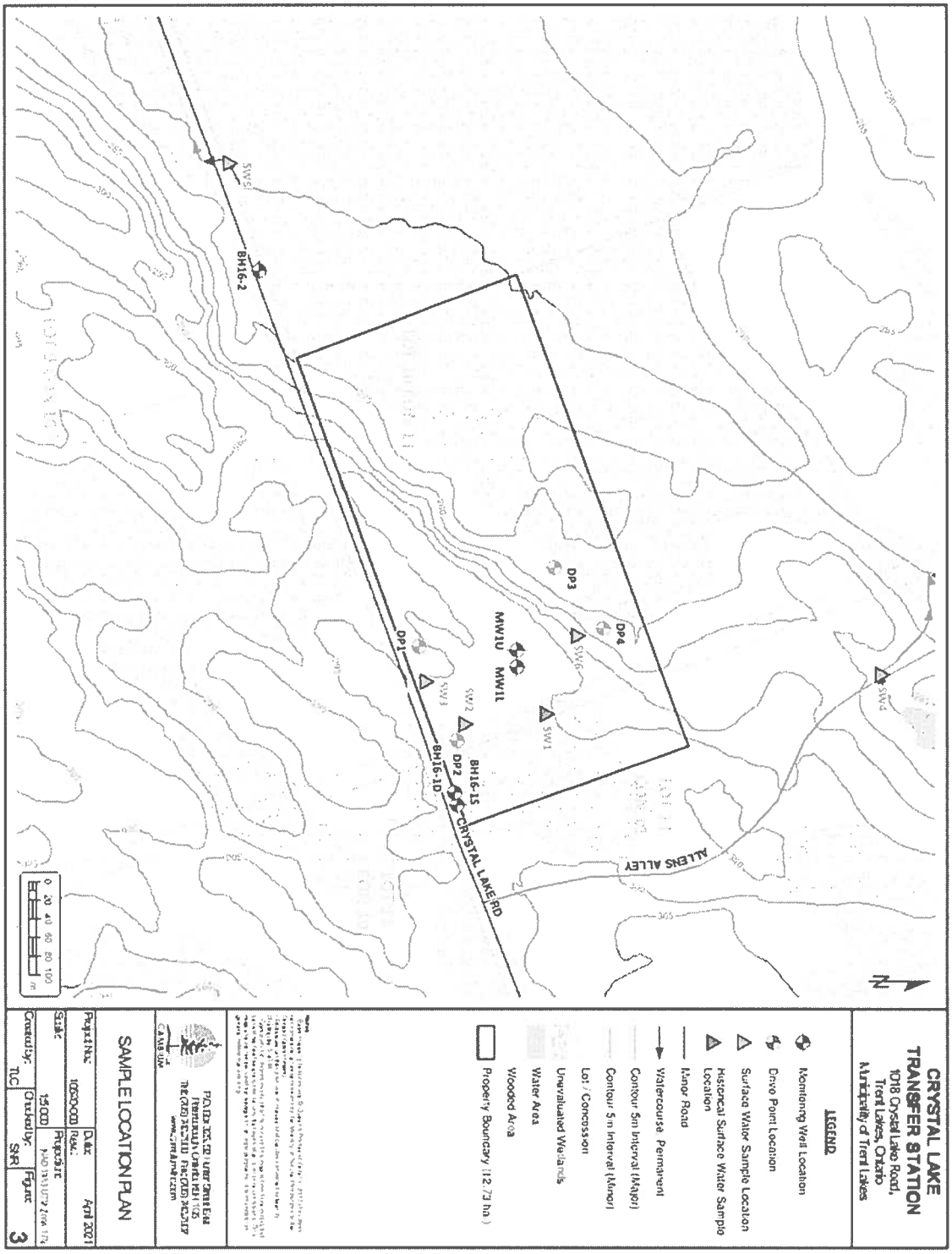

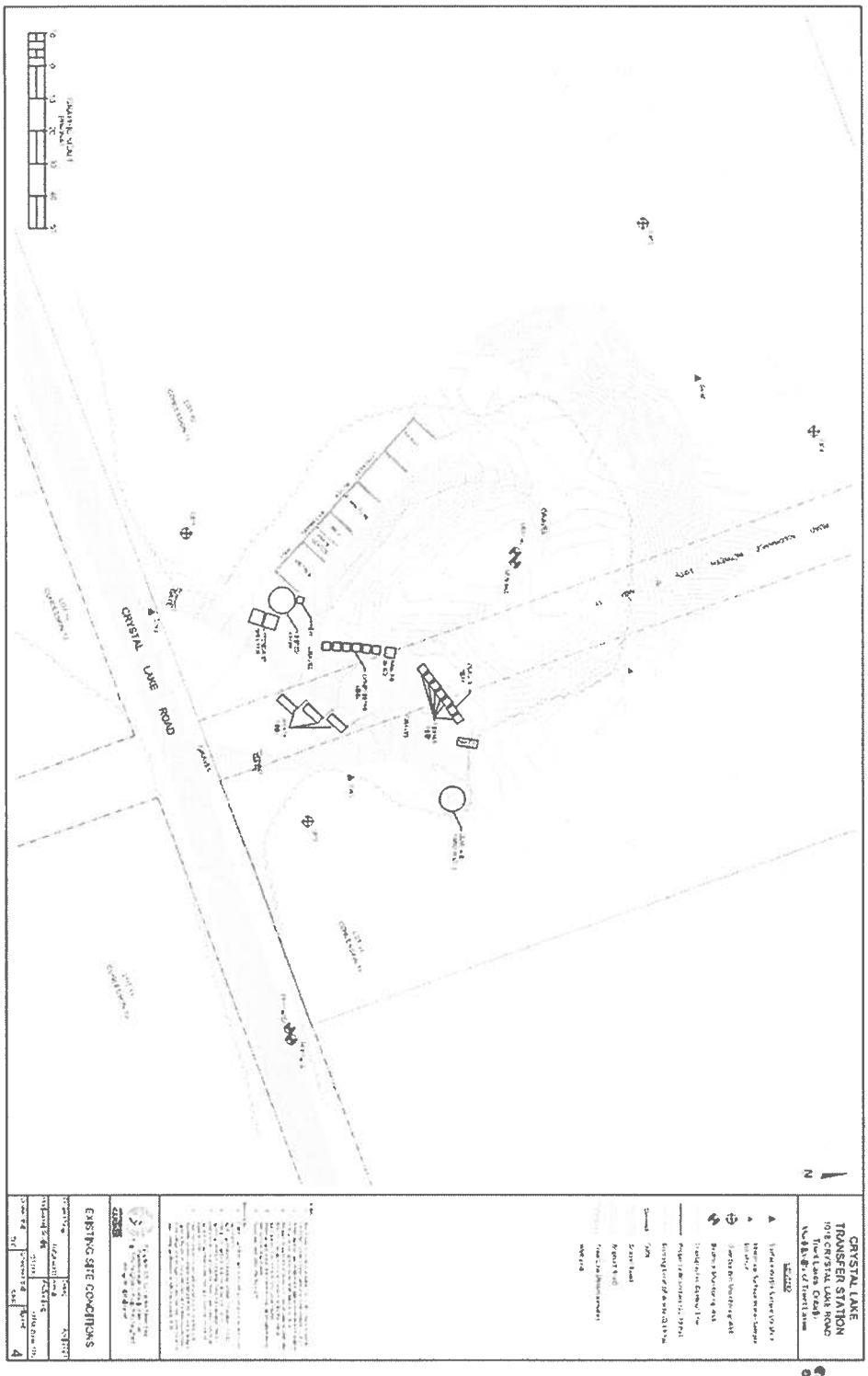
CRYSTAL LAKE ROAD
CRYSTAL LAKE
TRANSFER STATION
EXISTING SITE CONDITIONS

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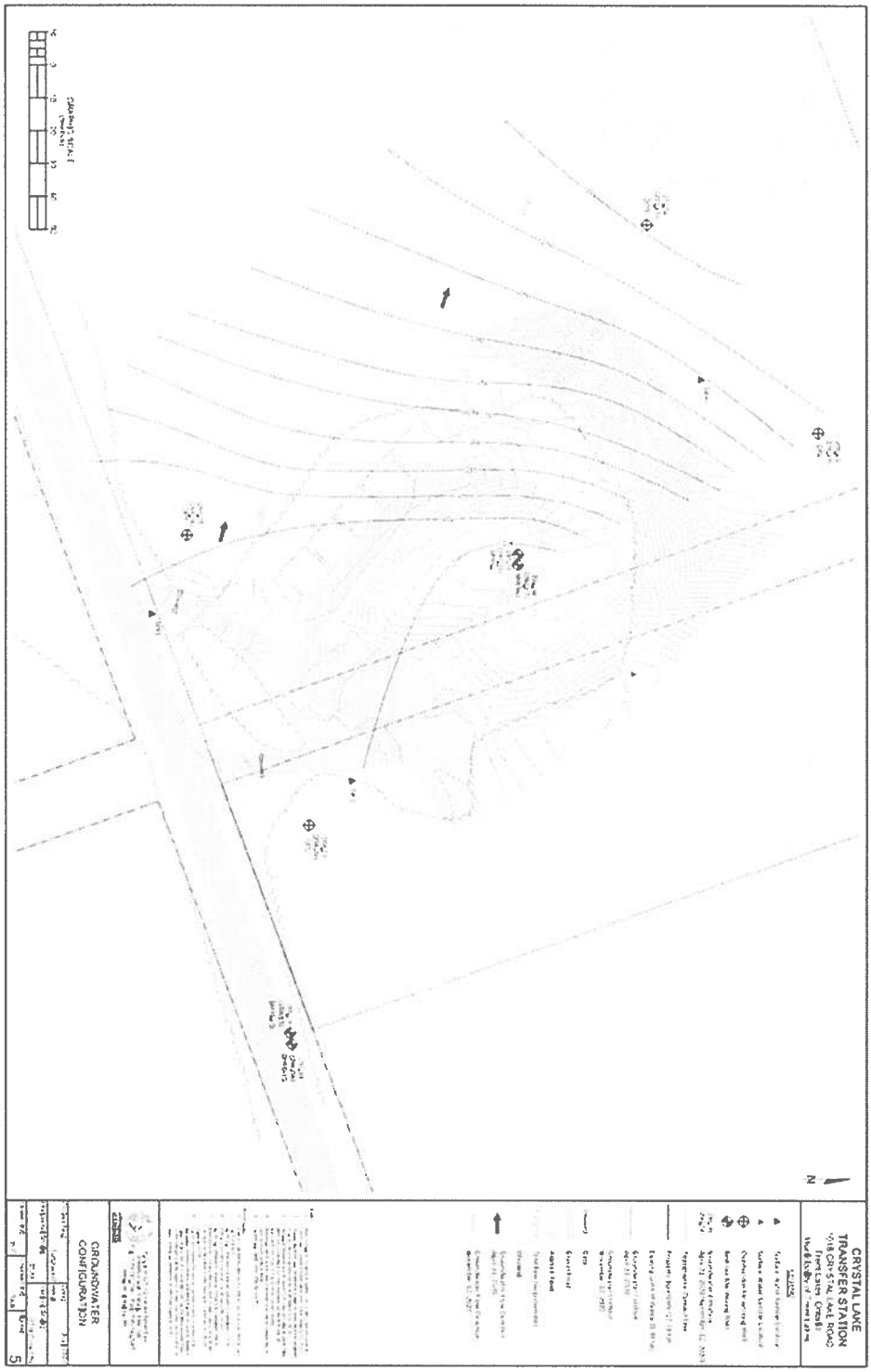

Appendix B
Proposed Storage & Shop Building Survey

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