CCGA
Canadian Common Ground Alliance

DIRT Report 2023

Released
October 2024

Chair's Message

On behalf of the Canadian Common Ground Alliance (CCGA) Board of Directors, I am pleased to provide the seventh annual CCGA National DIRT (Damage Information Reporting Tool) Report for 2023.

The DIRT report provides us with valuable information on the state of Damage Prevention in Canada. Like previous years, this report presents characteristics, themes and contributing factors leading to buried infrastructure damages in Canada as reported through the DIRT reporting system.

Underground infrastructure provides crucial and essential services to homes, businesses, public institutions, and communities. Whether it is delivery of natural gas for heating, electric power for lighting, high speed fiber for communications, or water supply; these are all critical for both business and day-to-day living. The risk of disruption to the delivery of these services through this vital infrastructure exists every day, and at every excavation job site.

To provide the best defense against underground strikes, the understanding and analysis of infrastructure damages or events and drilling down into their root cause will help determine which aspects of the excavation process should be targeted for awareness, training, and oversight to reduce the frequency and consequences of these events.

In reviewing the 2023 report and comparing with previous years, underground infrastructure damages have continued to drop annually for the past 5 years, dropping approximately 6.18% from 2022 (658 damages), corresponding with a decrease in the number of locate requests of 1.9% (43,675 requests). This resulted in a slight decrease in the overall damages per 1,000 requests in 2023 of 4.35 versus 4.55 in 2022 (-4.39%).

As in previous years, the most prevalent Root Cause Category continues to be Excavation Issues (34%), with the highest individual root cause being No Notification to the One-Call Centre (25.9%). While reporting damages in DIRT continues to be voluntary, the data is critical for the CCGA to determine root causes and develop mitigating measures to reduce and eliminate them.

Continuous improvement to the CCGA DIRT Report has been a focus of the Reporting & Evaluation Committee over the past year, including several new tables and graphs to further drill down on the results and Root Cause Analysis as well as enhancements coming to the DIRT tool.

NEW!

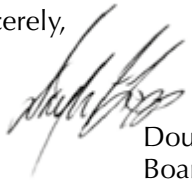
2023 CCGA DIRT

New tables, graphs & enhancements

The following enhancements can be found throughout the report:

On behalf of the CCGA Board of Directors, I would like to extend a sincere thank you to the Reporting and Evaluation Committee for their efforts in completing this 2023 National DIRT Report. The complete 2023 DIRT Report is available to download at www.canadiancga.com .

Sincerely,



Douglas Lapp, P. Eng.
Board Chair
Canadian Common Ground Alliance

Damage Reporting Evaluation Committee

The Damage Reporting Evaluation Committee is a group of diverse stakeholders representing the Canadian Common Ground Alliances across Canada who are responsible for analyzing the data submitted into the CCGA Damage Information Reporting Tool (DIRT), identifying trends and making recommendations based on the data.

Alberta
Josef Rosenberg
Utility Safety Partners

Atlantic Canada
Chris MacAulay
Eastward Energy

British Columbia
Jimmy Yip
FortisBC

Ontario
Tony Millikin
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Introduction

In the modern world, we rely on an endless grid of underground infrastructure to deliver unceasing supplies of vital utilities to our homes and businesses. Millions of petabytes of data, billions of kWh of electricity, trillions of cubic metres of natural gas and trillions of litres of water are transmitted to consumers throughout Canada every year, made possible through vast networks of buried utilities and the concerted efforts of thousands of operators.

These utilities are strategically buried at an accessible, depth just beneath the surface of the earth. The convenient and cost-effective choice to bury most utilities at this depth comes with it an increased risk of a utility strike, unintentional daylighting, or severe accident. The CCGA and its regional partners have made and continue to make an intensive effort to educate, advocate, and increase general awareness among the digging community of the risk their activities can pose to buried infrastructure. The protection of underground lines is essential to ensuring the health, safety, and livelihoods of all who live in Canada. Being able to reasonably track, understand, and ultimately prepare for utility strikes gives superior flexibility to utility owners to respond with greater speed, increased efficiency, and concise solutions.

The Damage Information Reporting Tool (DIRT) was developed by the Common Ground Alliance (CGA). It was designed to record the data found in damage reports for damages made to underground infrastructure during excavation work. It provides a summary and an analysis of damages reported throughout Canada in the DIRT system.

Important note about the DIRT Data

- The Damage Information Reporting Tool (DIRT) is a **confidential database** where various stakeholders may enter information related to damages to buried utilities.
- **Submissions to DIRT are made on a voluntary basis.** The report does not reflect the total number of damages that take place in Canadian provinces and there is no legal obligation for reporting such damages.
- The data collected is a rich source of industry intelligence on damages related to buried facilities from excavation activities. Despite this, uncertainties remain that limit the ability to draw firm conclusions on the trends over time and across jurisdictions. For one, since damages are reported to DIRT on a voluntary basis, **they do not reflect the total number of damages that take place in a given year.** For example, an increase in damages in one year, relative to another, could reflect a difference in actual damages, or it could reflect an increase in the number of damages being reported. In addition, not all regions have adopted the database to the same extent. As a result, some jurisdictions contain more comprehensive data than others do. Results may vary from one yearly report to another, due to retroactive data being entered from time to time, thus making comparison difficult from one report to the next.
- Event/Damage is defined as any impact, near miss or exposure that results in the need to repair an underground facility due to a weakening or the partial or complete destruction of the facility, including, but not limited to, the protective coating, lateral support, cathodic protection, or the housing for the line, device, or facility.

RECALL:

Note that damages are reported to DIRT on a voluntary basis and therefore do not reflect the total number of damages that take place in a year in Canadian provinces, often reflecting the major contributors to the DIRT program in each province.

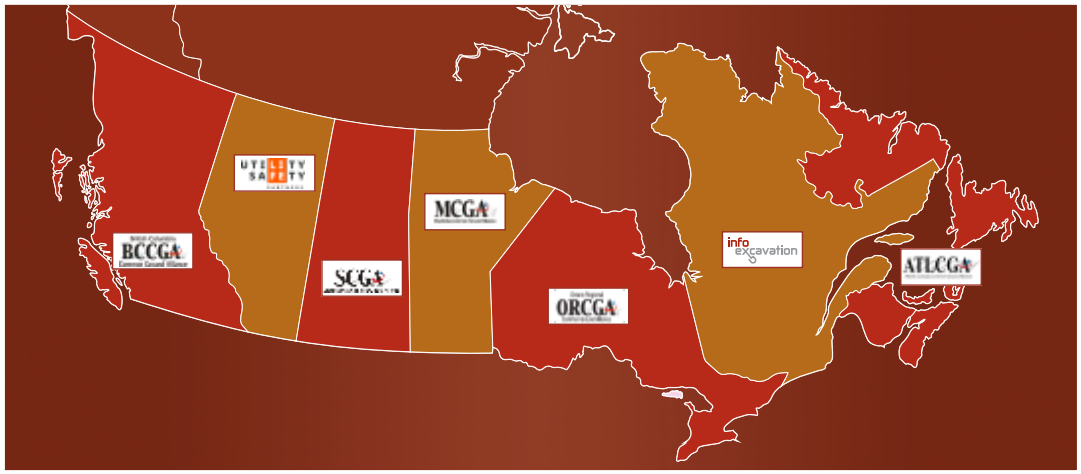
2023 Highlights

- More than 39.8 damages occurred per workday which is a 6% reduction from 2022.
- The total number of reported damages Canada-wide in 2023 totaled 9,994 which is a **decrease of 6.2%**. We have seen an overall decrease in damages of 16% from 2019 – 2023.
- Natural gas and telecommunication facilities were affected in 80% of damages, 42% and 38% respectively.
- Work performed on water and sewer systems accounted for the most damages (26%).
- Events vs Requests by month show that the most requests occurred in the month of May while the majority of events occurred in August Geographical Regions show a difference in day of the week and month when most damages occur. For more details, see page 29 Regional Partner Profiles
- The most common known root cause of damages was excavation issue (34%)
- Over 4 years No Notification Made to One-Call Centre has consistently been the top Known Root Cause.

In 2023, seven Canadian regions reported damages via the DIRT system. The regions and their respective population values are shown in **Table 1**.

Table 1 – Canadian Regions

Province/Region	2023 Population	% of Population	% of Damages per capita
British Columbia	5,581,127	14%	11%
Alberta	4,756,408	12%	32%
Saskatchewan	1,218,976	3%	6%
Manitoba	1,465,440	4%	2%
Ontario	15,801,768	39%	42%
Quebec	8,948,540	22%	7%
Atlantic	2,625,412	6%	0%
Canada (incl. Territories)	**40,528,396**	**100%**	**100%**



2023 Highlights (cont'd)

Table 2 presents a summary of key performance indicators related to reported damages by province/region.

Canada-wide, there were on average **39.8** damages per workday (using **251** workdays in **2023**).

Table 2 - Damages, Requests, Notifications by Province/Region 2023

Province/Region	Damages	Damages per Work Day	Damages per 1,000 Requests*	Damages per 1,000 Notifications**
British Columbia	1,065	4.3	4.65	1.59
Alberta	3,173	12.6	7.09	2.09
Saskatchewan	615	2.5	4.17	1.51
Manitoba	202	0.8	2.47	1.01
Ontario	4,225	16.9	3.84	0.65
Quebec	696	2.8	2.27	1.34
Atlantic	18	0.1	0.26	0.25
Canada	**9,994**	**39.8**	**4.2**	**1.01**

* Locate Request is defined as "communication between an excavator and a staff member of a One-Call Centre in which a request for locating underground facilities is processed."

** Notifications: Ticket data transmitted to underground infrastructure owners.

Location and Year of Damages

Table 3 illustrates the total number of reported damages per year **(2019-2023)** by province/region and the percent of total damages. Interesting to note that there has been a continuous decrease in damages on the National level. Since 2019 we have noticed a 16% decrease. The percentage of damages has remained stable across all the provinces.

Table 3 - Damages by Year by Province/Region, 2019 - 2023

Incident Types by Province	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
	Number of Damages					Percentage of Damages				
British Columbia	1,276,	1,228	1,280	1,101	1,065	11%	11%	11%	10%	11%
Alberta	3,597	3,789	3,713	3,030	3,173	30%	32%	32%	28%	32%
Saskatchewan	660	689	722	600	615	6%	6%	6%	6%	6%
Manitoba	196	220	197	264	202	2%	2%	2%	2%	2%
Ontario	4,998	4,782	4,553	4,799	4,225	42%	41%	40%	45%	42%
Quebec	1,101	954	924	843	696	9%	8%	8%	8%	7%
Atlantic	60	15	47	15	18	1%	0%	0,4%	0,1%	0%
National Totals	**11,888**	**11,677**	**11,436**	**10,652**	**9,994**	**100%**	**100%**	**100%**	**100%**	**100%**

In **Table 4** we have broken out the near misses that are part of the overall damage numbers.
A near miss as defined in the CCGA Best Practices 5.0 glossary is, "An event where damage did not occur, but a clear potential for damage was identified" These numbers have historically been part of the data.
Near Misses are mandated as needing to be reported under the Canada Energy Regulator Event Reporting Guidelines.

Table 4 - Total Near Misses Per Year, by Facility Type, 2019 - 2023

Incident Types by Province	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
	Number of Near Misses					Percentage of Near Misses				
Natural Gas	100	101	48	65	69	2%	2%	2%	1%	1%
Telecommunications	91	94	40	12	57	2%	2%	2%	1%	0%
Unknown/Other	68	87	28	27	56	19%	11%	10%	4%	5%
Electric	26	39	19	9	41	6%	3%	4%	2%	1%
Liquid Pipeline	26	45	5	15	21	10%	68%	74%	48%	49%
Water & Sewer	6	6	2	3	6	6%	5%	6%	1%	1%
National Totals	**317**	**372**	**142**	**131**	**250**	**3%**	**3%**	**3%**	**3%**	**1%**

Reporting Stakeholders

Stakeholders involved with telecommunications and natural gas report damages most often. There was a notable drop in Telecommunications damages, by -13%, while the Public Works damages increased by 24%.

Figure 1 shows total damages by the six most common stakeholder groups for the 2019-2023 period.

Figure 1 - Damages by Stakeholder Group, 2019 - 2023

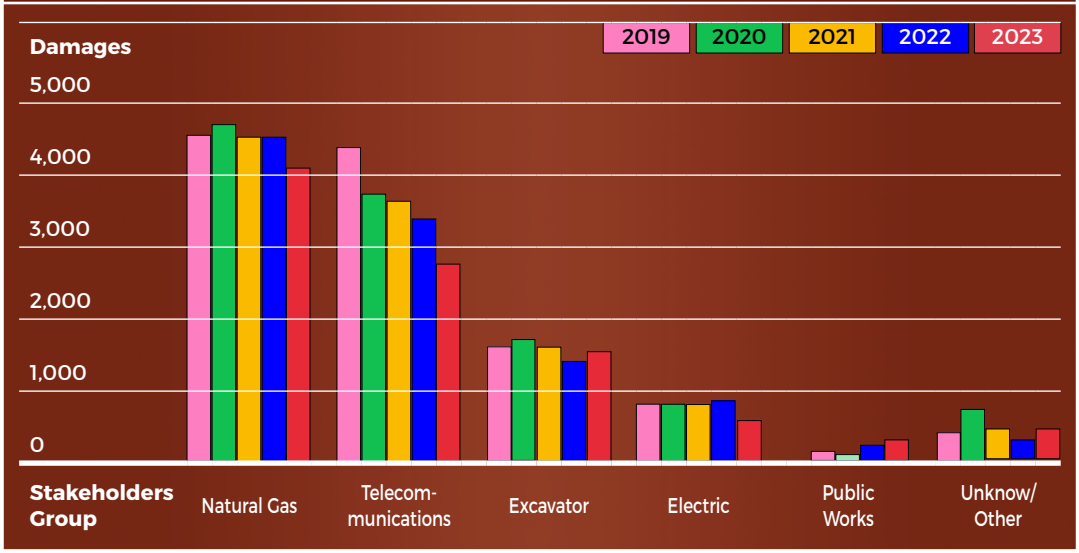
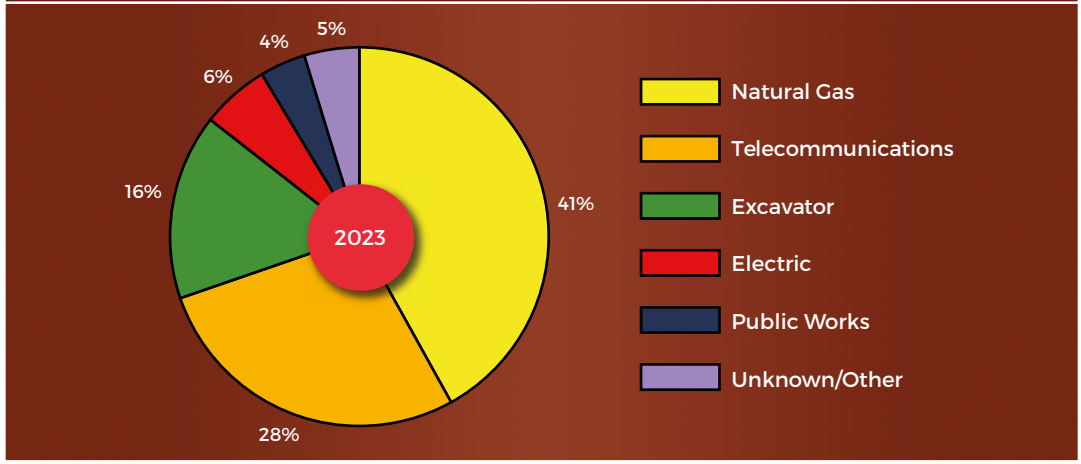


Table 5 - Damages by Stakeholder Group, 2019 - 2023

Stakeholder	2019	2020	2021	2022	2023
Natural Gas	4,523	4,654	4,536	4,492	4,059
Telecommunications	4,314	3,772	3,737	3,283	2,840
Excavator	1,696	1,747	1,688	1,498	1,589
Electric	750	700	736	733	597
Public Works	172	127	276	290	361
Unknown/Other	433	677	463	356	548
National Totals	**11,888**	**11,677**	**11,436**	**10,652**	**9,994**

As shown in **Figure 2**, 69% of total damages were reported by stakeholders in the natural gas and telecommunications sectors in 2023, which is a 4% drop of damages reported in 2022. The overall number of damages have reduced from 2022.

Figure 2 -Percentage of Damages by Stakeholder, 2023



Facilities Affected

Natural Gas has seen a decrease of 8.6% damages and Telecommunications a decline of 10% of the 9,994 reported damages that occurred in 2023.

Since 2022, Natural Gas has replaced Telecommunications as the most impacted facility.

Figure 3 -Damages by Facility Affected, 2019 - 2023

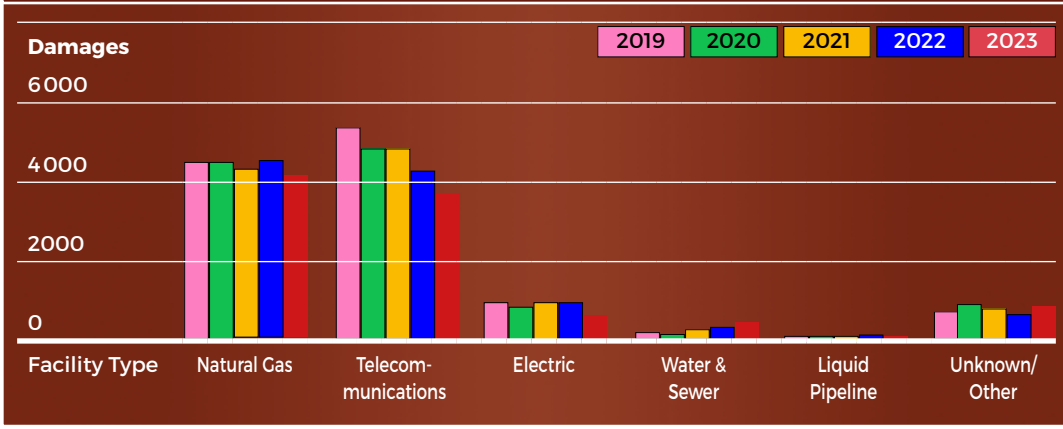
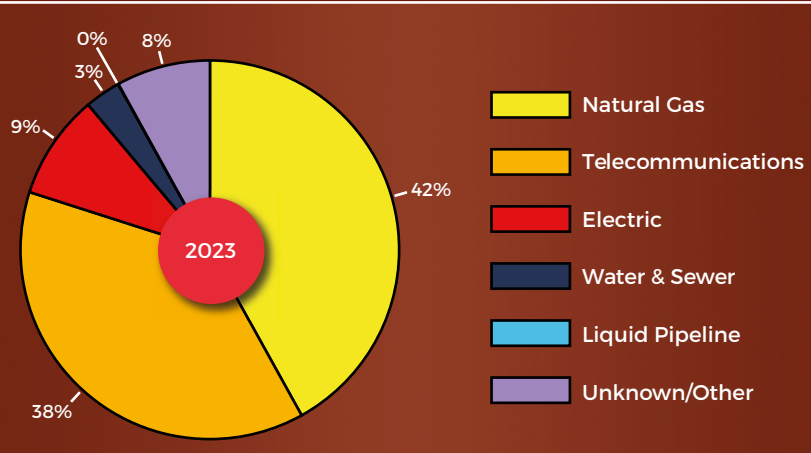


Table 6 - Damages by Facility Affected, 2019 - 2023

Stakeholder	2019	2020	2021	2022	2023
Natural Gas	4,660	4,680	4,545	4,583	4,188
Telecommunications	5,476	5,021	5,031	4,248	3,813
Electric	956	933	972	981	863
Water & Sewer	121	104	196	230	297
Liquid Pipeline	38	61	28	34	26
Unknown/Other	637	878	664	576	807
National Totals	**11,888**	**11,677**	**11,436**	**10,652**	**9,994**

Figure 4 - Damages by Facility Affected, 2023



Facilities Affected (cont'd)

Shown in **Table 7** is a provincial overview of reported damages by Facility Type. It should be noted that the highest facilities affected may not reflect those damaged the most.

- In British Columbia, for example, 85% of damages affected Natural Gas facilities
- In Quebec, 52% of damages affected Telecommunications facilities
- In Manitoba, 48% of damages affected Electric facilities.

Table 7 - Percentage of Damages by Facility Affected by Province/Region, 2023

Province/Region	Natural Gas	Telecommu-nications	Electric	Water/Sewer	Liquid Pipeline	Unknown/ Other
British Columbia	85%	7%	0%	0%	1%	6%
Alberta	19%	52%	7%	1%	0%	21%
Saskatchewan	34%	28%	36%	0%	1%	0%
Manitoba	52%	0%	48%	0%	0%	0%
Ontario	49%	38%	6%	6%	0%	0%
Quebec	38%	46%	9%	0%	0%	7%
Atlantic	61%	0%	33%	6%	0%	0%
National Totals	**42%**	**38%**	**9%**	**3%**	**0%**	**8%**

Excavator Information

This section describes the type of excavator and excavator equipment involved in damages.

Excavator Type

Figures 5 and 6 report the number and percentage of reported damages by type of excavator, respectively. Contractor damages have been consistently decreasing from 2019 to 2023 by 13%.

[CCGA Best Practice 2-27: Excavators Contact the Notification Service Before Excavating](), recommends that excavators contact the Notification Service before excavating.

By following this practice, we can significantly reduce the number of no locate damages and improve safety, efficiency, and cost-effectiveness for everyone involved.

Figure 5 - Percentage of Damages by Excavator Group, 2023

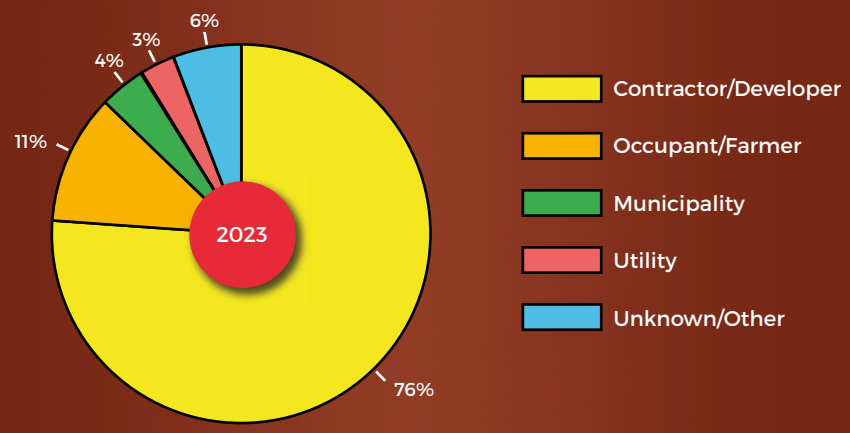


Figure 6 - Damages by Excavator Group, 2019 - 2023

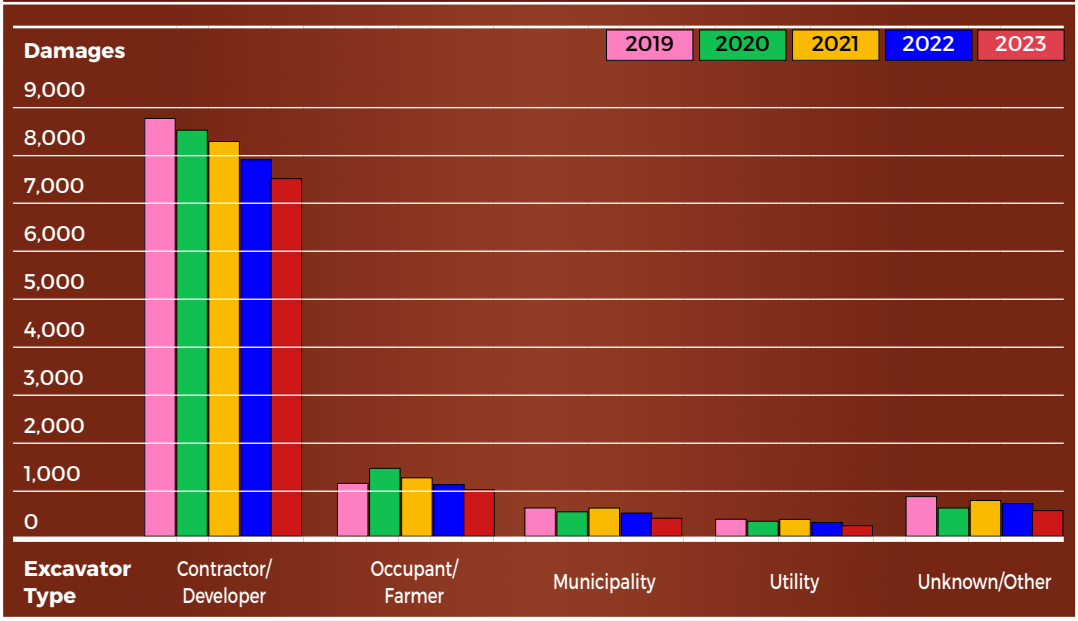


Table 8 - Damages by Excavator Group, 2019 – 2023

Excavator Type	2019	2020	2021	2022	2023
Contractor/Developer	8,755	8,581	8,351	7,937	7,628
Occupant/Farmer	1,146	1,527	1,356	1,156	1,051
Municipality	676	556	559	456	440
Utility	338	302	342	310	276
Unknown/Other	973	711	828	793	599
National Totals	**11,888**	**11,677**	**11,436**	**10,652**	**9,994**

Excavator Information (cont'd)

Excavator Equipment Group

As shown in **Figure 7**, the Hoe/Trencher category remains the most common Excavator Equipment Group cited in damage reports (57%) in 2023. However, Hoe/Trencher has dropped 20% in 2023 compared to 2019.

The table below breaks down the types of equipment in each Equipment Group.

Hoe/Trencher
Backhoe/Trackhoe
Trencher
Hand Tools
Hand Tools
Probing Device
Drilling
Auger
Boring
Directional Drilling
Drilling
Vacuum Equipment
Vacuum Equipment
Other
Bulldozer
Explosives
Farm Equipment
Grader/Scraper
Milling Equipment
Unknown/Other

Figure 7 - Percentage of Damage Reports by Excavator Equipment Group, 2023

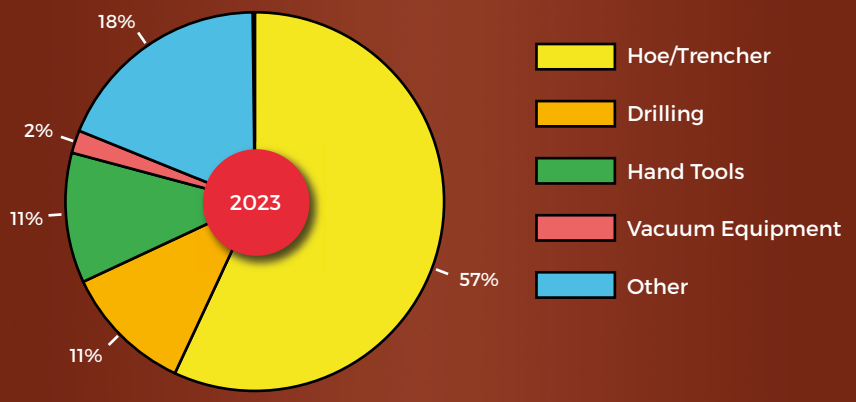


Figure 8 - Damages by Excavator Equipment Group, 2019-2023

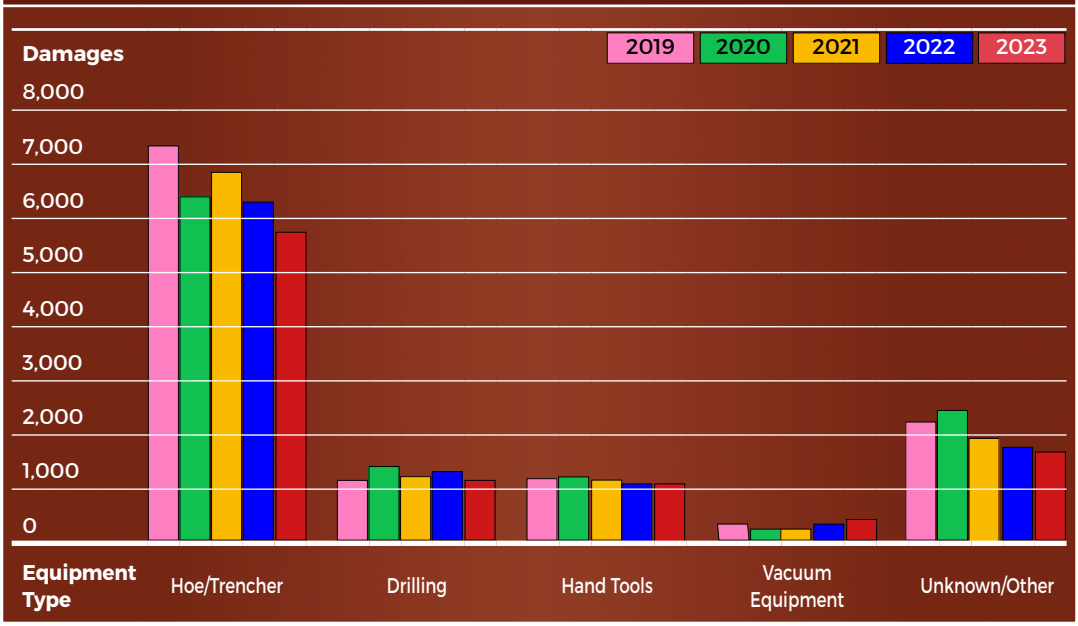


Table 9 - Damages by Excavator Equipment Group, 2019-2023

Equipment	2019	2020	2021	2022	2023
Hoe/Trencher	7,094	6,287	6,791	6,116	5,704
Drilling	1,164	1,433	1,261	1,338	1,109
Hand Tools	1,232	1,295	1,213	1,145	1,128
Vacuum Equipment	215	194	183	199	228
Unknown/Other	2,183	2,468	1,988	1,854	1,825
National Totals	**11,888**	**11,677**	**11,436**	**10,652**	**9,994**

Work Details

Work Details should always be taken into context relative to the percentage of requests placed in each Region by Contractors, rather than Members or Homeowners. Contractors often maintain the highest percentage of locate requests and in turn, are proportionally the largest contributors to utility strike incidents.

Table 10 illustrates the proportion of each Region's locate requests placed by Contractors in **2023**.

Table 10 - Proportion of Contractor Requests, 2023

Province/Region	Total Request	Contractor Requests	% of Contractor Requests
British Columbia	229,121	151,782	66%
Alberta	447,482	330,927	74%
Saskatchewan	147,555	103,869	70%
Manitoba	81,619	56,019	69%
Ontario	1,098,999	804,192	73%
Quebec	306,184	282,849	92%
Atlantic	68,450	46,413	68%

Work Details (cont'd)

Figure 9 displays the number of damages by the Type of Work performed for the years 2019 - 2023.

There was a notable decrease in Unknown/ Other in 2023 which points to a more valuable data-set.

Reducing this category allows us to have better data to analyze and have better insights.

Figure 9 - Damages by Type of Work, 2019 - 2023

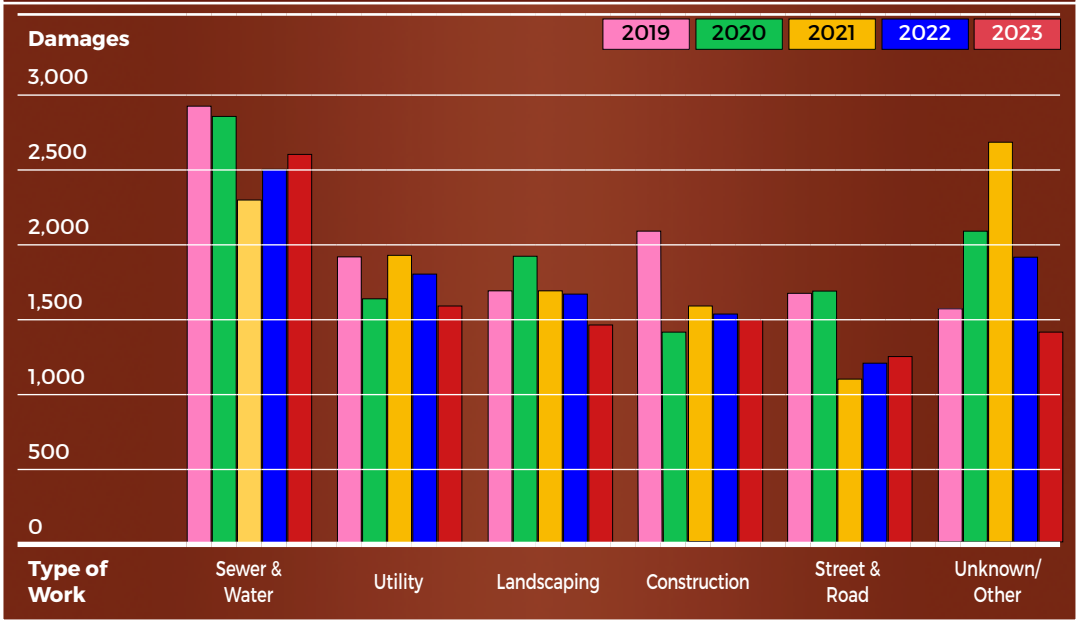
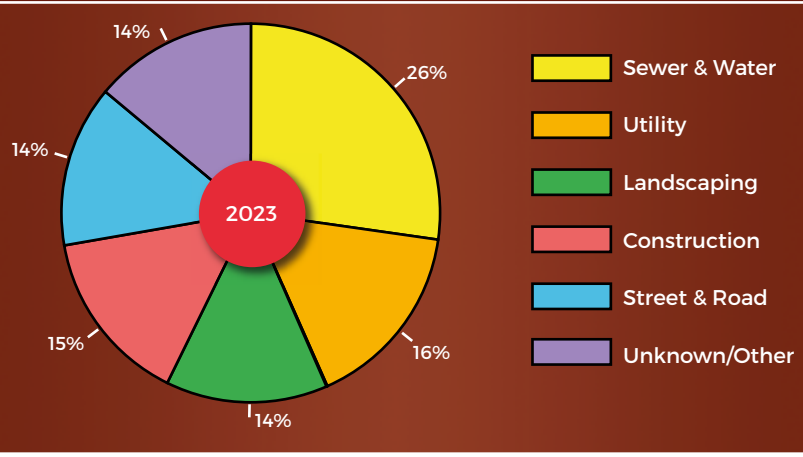


Table 11 – Percentage of Damages by Work Group, 2019 - 2023

Type of Work Group	2019	2020	2021	2022	2023
Sewer & Water	2,953	2,819	2,391	2,509	2,643
Utility	1,905	1,663	1,923	1,778	1,592
Landscaping	1,607	1,903	1,661	1,643	1,445
Construction	2,147	1,413	1,583	1,545	1,496
Street & Road	1,720	1,733	1,240	1,317	1,394
Unknown / Other	1,556	2,146	2,638	1,860	1,424
National Totals	**11,888**	**11,677**	**11,436**	**10,652**	**9,994**

As shown in Figure 10, Sewer & Water and Utility accounted for 42% of all by incidents. Please note that a breakdown of Work Group/Work Type can be found in the Appendix A page 44.

Figure 10 - Percentage of Damages by Type of Work, 2023



Work Details (cont'd)

Table 12 presents Damages by Type of Work Performed and Type of Excavator for the Year 2023.

Table 12 - Damages by Work Group and Excavator Group, 2023

Work Group	Contractor/ Developer	Occupant/ Farmer	Municipality	Utility	Unknown/ Other
Sewer & Water	2,074	185	217	93	74
Utility	1,280	88	11	145	68
Construction	1,318	119	12	3	44
Landscaping	884	464	32	4	61
Unknown / Other	911	158	48	18	289
Street & Road	1,161	37	120	13	63
National Totals	**7,628**	**1,051**	**440**	**276**	**599**

Sewer & Water Work Groups were the primary cause of damages in all provinces with the exception of Manitoba and the Atlantic Region.

Table 13 - Damages by Work Group by Province/Region, 2023

Work Group	British Columbia	Alberta	Saskatche-wan	Manitoba	Ontario	Quebec	Atlantic
Sewer & Water	270	815	146	39	1,112	257	4
Utility	121	564	127	64	668	47	1
Construction	182	427	54	8	737	84	4
Landscaping	249	344	108	34	645	62	3
Unknown / Other	177	430	122	11	577	106	1
Street & Road	66	593	58	46	486	140	5
National Totals	**1,065**	**3,173**	**615**	**202**	**4,225**	**696**	**18**

Root Cause

Root cause describes the reason for reported damages, or more specifically, what was the fundamental cause of the damage occurrence.

Figure 11 and Figure 12 provide a breakdown of Known Root Causes from 2019 to 2023.

Excavation issues saw a 14% decrease in 2023 compared to 2022. Notification Issues also saw an 8% decrease while Locating Issues noted an increase of 6%.

Figure 11 - Damages by Known Root Causes, 2019 - 2023

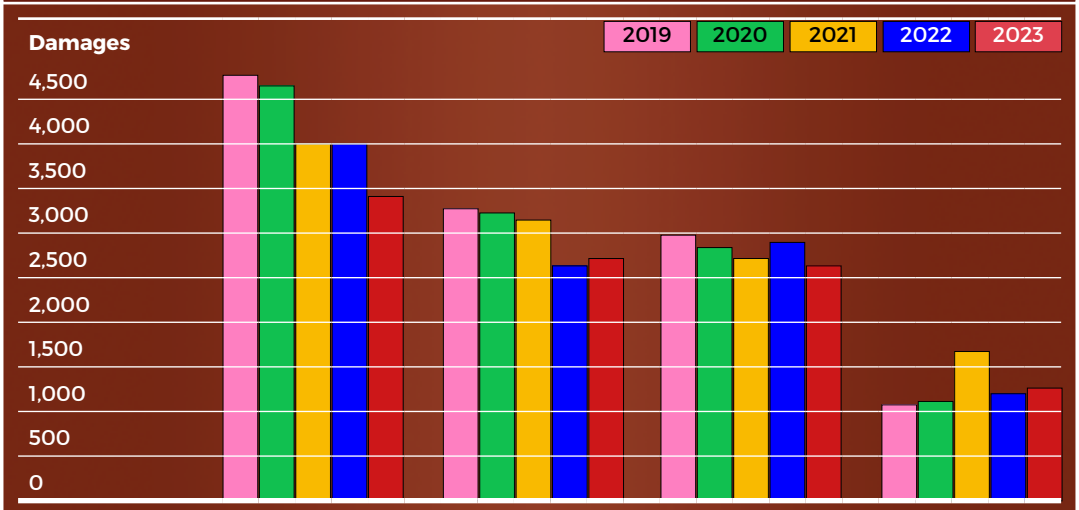
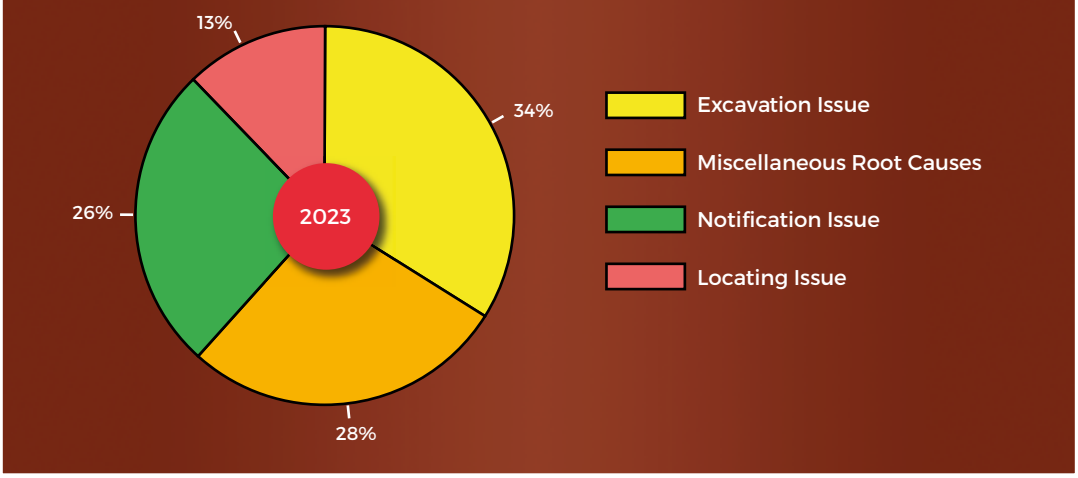


Table 14 - Known Root Causes, 2019 - 2023

Root Cause	2019	2020	2021	2022	2023
Excavation Issue	4,592	4,522	3,933	3,935	3,402
Miscellaneous Root Causes	3,279	3,251	3,163	2,635	2,670
Notification Issue	2,955	2,741	2,707	2,827	2,595
Locating Issue	1,062	1,163	1,633	1,255	1,327
National Totals	**11,888**	**11,677**	**11,436**	**10,652**	**9,994**

Figure 12 - Percentage of Damages by Known Root Causes 2023



Root Cause (cont'd)

In **Figure 13**, we see a breakout of the top 90% of root cause sub-categories. In **2022** the variance is mostly dominated by a by a two-way split of Root Cause Not Listed Above (**26%**, down **3%** over 2022), No Notification Made to One-Call Centre (**26%**, up **2%**). Excavator Failed to Maintain Clearance after Verifying Marks is at 12%, up from 5% in 2022 while Improper Excavation Practice not listed above fell from 20% in 2022 to 12% in 2023. This decrease from 20% to 12% is a positive change as those imputing are now identifying the Root Cause Sub Category.

No Notification Made to One-Call Centre remains the single largest identified Known Root Cause Sub-Category. Education initiatives, public outreach, and safety campaigns centered on promoting the ease of placing online requests can help mitigate (or possibly eliminate) this cause. Issues with Excavation Practices and Excavators Maintaining Clearance can also be concentrated upon via engagement through boots-on-the-ground Ambassadorship or educational programs that seek to walk through the processes of safe excavation with Excavators on-site.

Figure 13 - Top 90% of Root Cause Sub-Categories, 2023

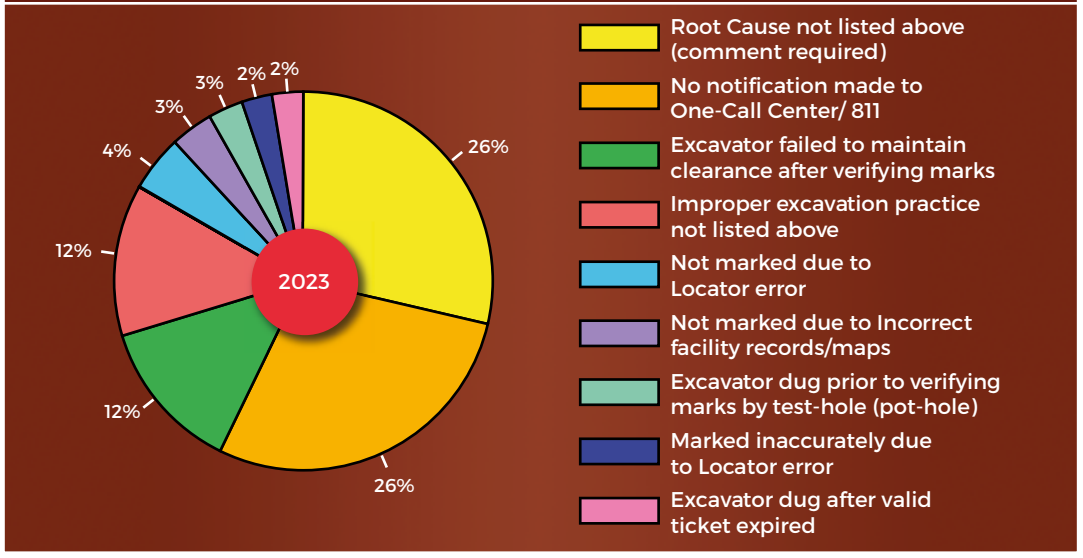


Table 15 - Top 90% of Root Cause Sub-Categories, 2019 - 2023

Root Cause Sub-categories	2019	2020	2021	2022	2023
Root Cause not listed above (comment required)	3,189	3,214	3,099	2,584	2,616
No notification made to One-Call Center	2,944	2,733	2,698	2,817	2,588
Excavator failed to maintain clearance after verifying marks	650	1,020	666	716	1,199
Improper excavation practice not listed above	2,959	2,674	2,270	2,120	1,192
Not marked due to Locator error	108	587	852	351	441
Not marked due to Incorrect facility records/maps	458	173	234	342	331
Excavator dug prior to verifying marks by test-hole (pot-hole)	506	197	325	218	271
Marked inaccurately due to Locator error	191	249	153	255	240
Excavator dug after valid ticket expired	33	55	126	220	239

Root Cause (cont'd)

Of the **26%** of damages attributed to No Notification Made to One-Call Centers, **76%** of the events involved an Electric or Natural Gas facility posing a much higher safety risk to the public, worker and community (**Table 16**). This demonstrates that notifying One-Call Centres is a critical measure in preventing workplace injury.

CCGA Best Practice 4-1: The Notification Service Facility Locate Request, states the excavator requests the location of underground facilities at each site by notifying the owner through the Notification Service. By adhering to these guidelines, we can collectively contribute to safer and more efficient excavation practices.

Click Before You Dig.com

Table 16 - No Locate Damages and Percentage of Damages with Hazardous Utilities, 2023

Province/Region	No Locate Request Damages	No Locate Request Electric	No Locate Request Natural Gas	Percent of Total No Locate Electric & Natural Gas
British Columbia	589	0	575	98%
Alberta	341	19	196	63%
Saskatchewan	140	65	33	70%
Manitoba	119	59	60	100%
Ontario	1,249	63	812	70%
Quebec	133	1	61	47%
Atlantic	17	6	10	94%
National Totals	**2,588**	**213**	**1,747**	**76%**

Root Cause (cont'd)

Of the **3,402** Known Root Causes by Excavation Issues, Improper Excavation Practice Not Listed Above is tied at 35%. Unfortunately, this points to requiring more specific descriptors of damages for this category within the DIRT system. Of the Known Root Causes, Excavator Failed to Maintain Clearance After Verifying Marks is at 35%. **Figure 14** presents known Root Causes attributed to Excavation Issues.

There was a significant decrease in Known Root Cause by Excavation Issues by 14% from 2022 to 2023. CCGA Best Practice 4-1: The Notification Service Facility Locate Request describes the methods to consider when exposing any underground facility.

Please note that in **Figure 14** the bottom 3 root causes; «Improper Backilling», "Failure to use Hand Tools where required» and «Other insufficient excavation practices" are not shown as they are zero %.

Figure 14 - Percentage of Known Root Cause by Excavation Issue, 2023

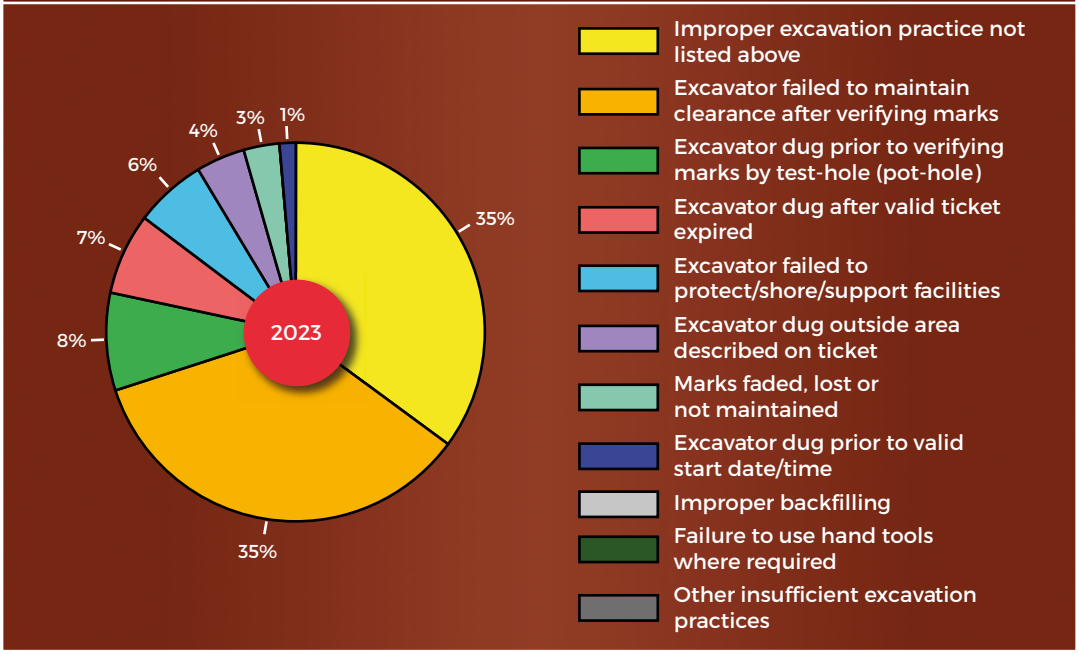
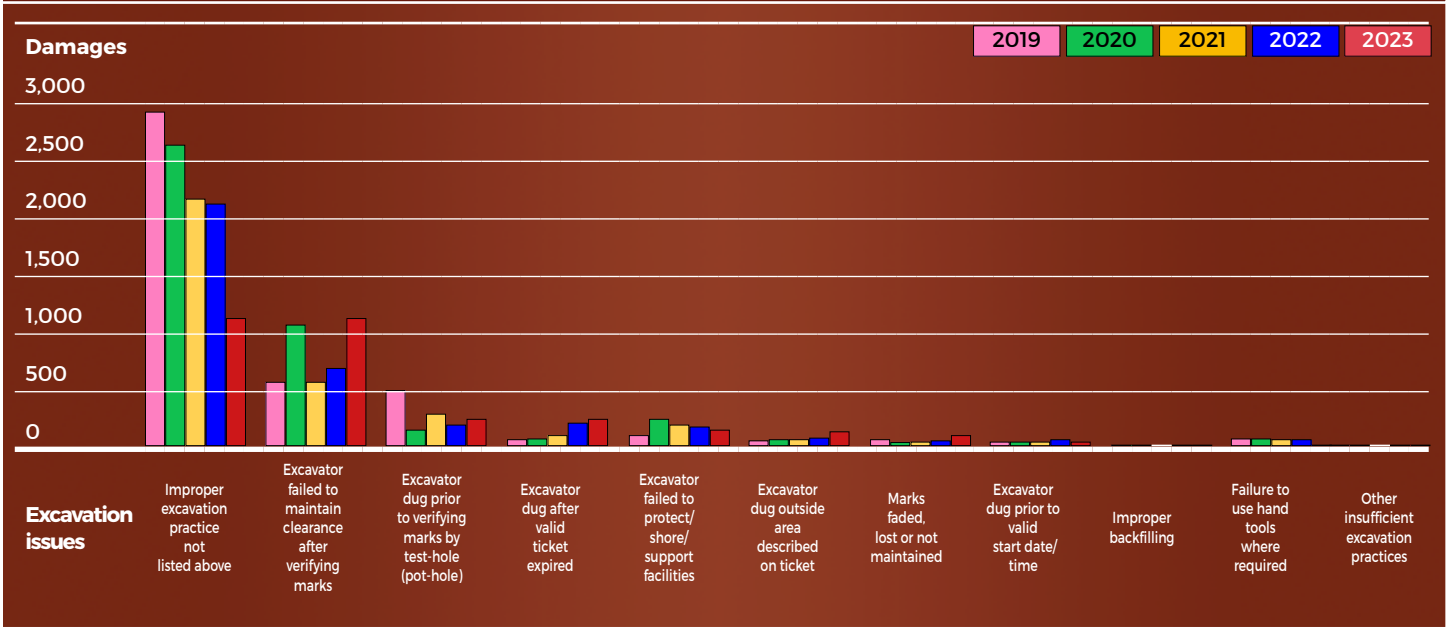


Figure 15 - Known Root Cause by Excavation Issue, 2019 - 2023



Root Cause (cont'd)

Figure 16 presents known Root Causes attributed to Locating Issues. Of the **1,327** Known Root Causes by Locating Issues, the top three make up over 75% of the damages.

They are: Not Marked Due to Locator Error (**33%**, up 5% 2022), Not Marked Due to Incorrect Facility Records/Maps (**25%**, down 3%), and Marked Inaccurately due to Locator Error (18%, down 2%). 2022 saw an overall increase in Locating Issues but remains fourth behind Excavation, Notification and Miscellaneous Root Causes. (see **Table 18**)

Please note that in **Figure 16** the bottom 3 root causes; "No response from Operator/Contract Locator», "Not Marked due to Tracer Wire issue", and «Marked inaccurately due to Tracer Wire issue.» are not shown as they are zero %.

Figure 16 - Percentage of Known Root Cause by Locating Issue, 2023

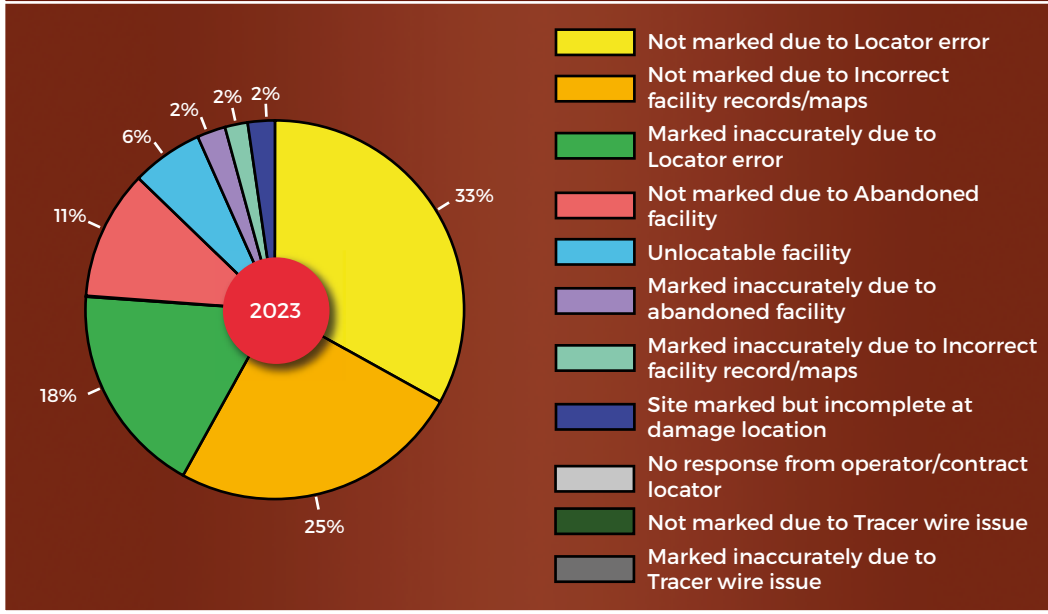


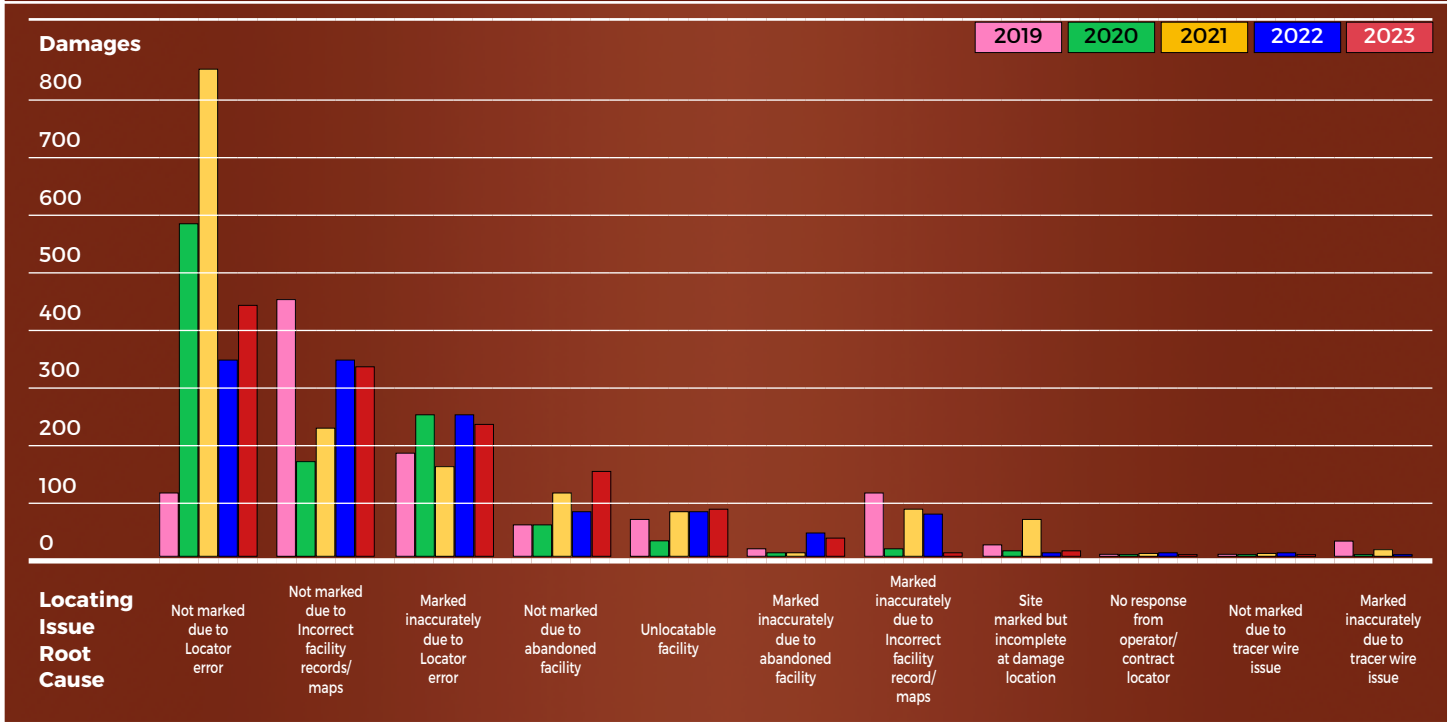
Table 18 - Known Root Causes by Locating Issue, 2019 - 2023

Locating Issues Root Cause	2019	2020	2021	2022	2023
Not marked due to Locator error	108	587	852	351	441
Not marked due to Incorrect facility records/maps	458	173	234	342	331
Marked inaccurately due to Locator error	191	249	153	255	240
Not marked due to Abandoned facility	56	56	114	87	148
Unlocatable facility	60	39	89	82	86
Marked inaccurately due to Abandoned Facility	9	5	2	40	31
Marked inaccurately due to Incorrect facility record/maps	117	35	91	82	24
Site marked but incomplete at damage location	26	12	70	7	20
No response from operator/contract locator	3	5	6	2	4
Not marked due to Tracer wire issue	0	1	5	5	2
Marked inaccurately due to Tracer wire issue	34	1	17	2	0
National Totals	1,062	1,163	1,633	1,255	1,327

Root Cause (cont'd)

CCGA Best Practice Section 3, Locating and Marking Best Practices provides a wealth of best practices specifically designed to assist in Locating and Marking. By implementing these practices, we can collectively work towards reducing these incidents and enhancing overall safety.

Figure 17 - Known Root Cause by Locating Issue, 2019 - 2023



Societal Costs

20%
Direct Costs

80%
Indirect Costs

The Cost of damage to underground infrastructures is estimated to be over **$1 billion** per year.

Each year, the CCGA releases the DIRT report to outline damage events throughout Canada, many which have both an obvious and less obvious price to be paid by both those affected and society at large. The utility strikes recorded have their costs reflected as both direct costs (e.g., cost to repair damaged underground infrastructures) and indirect costs (e.g., loss of productivity due to downtime resulting from damages) including but not limited to:

- Service disruption
- Deployment of emergency services
- Evacuation
- Loss of product
- Environmental impact and mitigation
- Economic impact
- Work delays
- Administrative and legal costs

Damage Prevention messaging should always emphasize the less direct societal costs that affect everyone, even those not involved in the event. It is a powerful and simple message to impart that utility safety affects us all, so diligence and care should be taken at all times.

Regional Partner Extended Data

Over and above the data collected in the DIRT system, One-Call Centers provide important information related to data found in locate requests made in every province. Members such as the owners of underground infrastructure, including utilities and municipalities, provide One-Call Centers with the mapping data of their buried facilities. **Table 19** shows the breakdown of locate requests placed via telephone versus the Web, as well as the number of registered members of One-Call Centres by province/region. **Table 20** is a summary of the provincial and regional information.

Table 19 - Registered Members at One-Call Centres, 2023

One-Call Centres	Registered Members	Phone Locate Reqests (%)	Web Locate Requests (%)
British Columbia	363	17%	83%
Alberta	845	12%	88%
Saskatchewan	116	27%	73%
Manitoba	69	17%	83%
Ontario	850	7%	93%
Quebec	302	4%	96%
Atlantic	41	5%	95%
National Totals	**2,586**	**13%**	**87%**

Table 20 - Summary by Province/Region, 2023

Province / Region	% of Population ‡	Damages	% of Damages	Damages per Work Day	Locate Requests	Damages per 1,000 Requests*	Locate Notifications	Damages per 1,000 Notifications**
British Columbia	14%	1,065	11%	4	229,121	4.65	668,968	1.59
Alberta	12%	3,173	32%	13	447,482	7.09	1,514,605	2.09
Saskatchewan	3%	615	6%	3	147,555	4.17	406,524	1.51
Manitoba	4%	202	2%	1	81,619	2.47	200,868	1.01
Ontario	39%	4,225	42%	17	1,098,999	3.84	6,486,733	0.65
Quebec	22%	696	7%	3	306,184	2.27	518,016	1.34
Atlantic	6%	18	0%	< 1	68,450	0.26	71,307	0.25
Canada	**100%**	**9,994**	**100%**	**40**	**2,379,410**	**4.2**	**9,867,021**	**1.01**

‡ Stats Can (Estimated Q4 2023).
* Locate request is defined as "communication between an excavator and a staff member of a One-Call Centre in which a request for locating underground facilities is processed".
** Notifications: Ticket data transmitted to underground infrastructure owners.
Ontario is the only province with legislation mandating registration with a One-Call Centre.

Regional Partner Extended Data (cont'd)

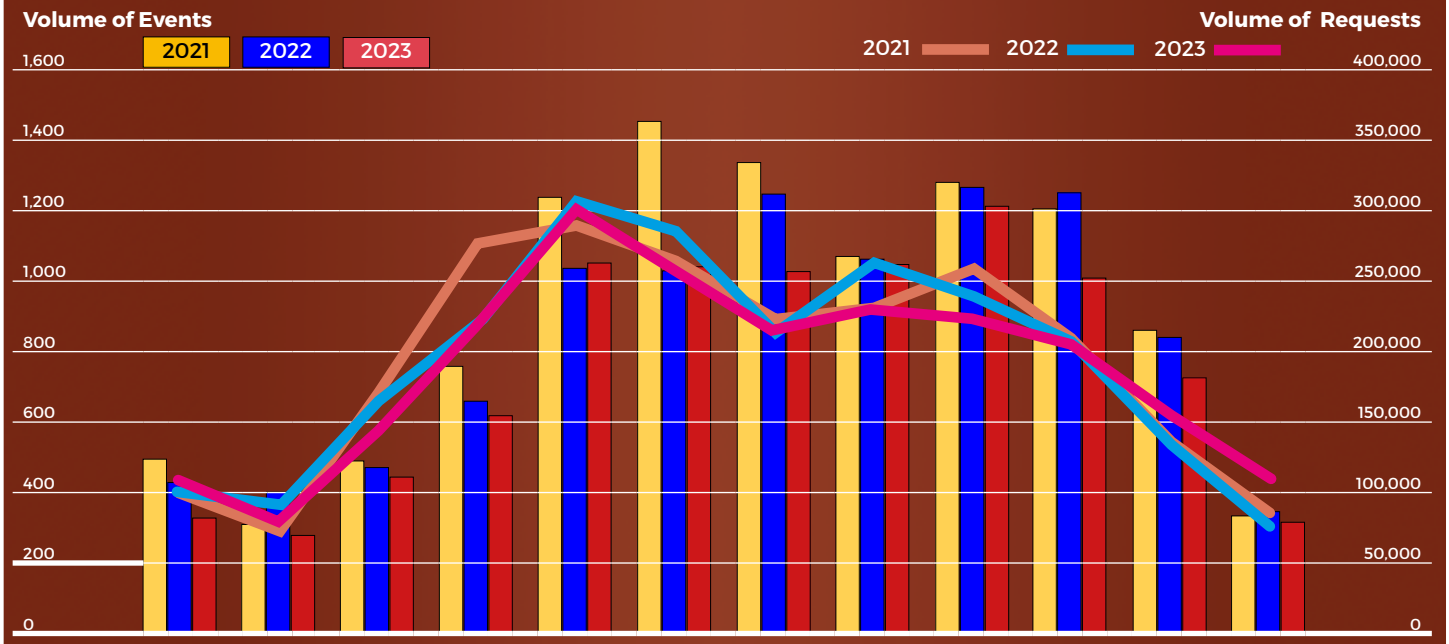
Figure 18 provides a detailed analysis of the distribution of locate requests and damage incidents over the course of the year 2023. This analysis offers valuable insights into the timing and correlation of these two key operational aspects.

The data reveals that the highest volume of locate requests was recorded in May. The peak in May suggests a surge in planned activities during this period.

However, the peak of damage incidents did not coincide with the peak of locate requests. Instead, the highest number of damage incidents was observed in August. This shift between the peaks of locate requests and damage incidents could be attributed to various factors, including the time required for planning and executing operations after locate requests, and potential delays in reporting and recording damage incidents.

In summary, this graph offers a nuanced understanding of the dynamics between locate requests and damage incidents over time. The distinct peaks in May and August highlight the importance of continuous monitoring and proactive management to mitigate damages and enhance operational efficiency.

Figure 18 - Events vs. Requests by Month, 2021 - 2023



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	500	365	514	785	1,241	1,467	1,365	1,462	1,309	1,204	879	345
2022	412	402	484	667	1,101	1,180	1,232	1,442	1,291	1,262	817	362
2023	374	338	440	604	1,127	1,230	1,189	1,313	1,212	1,087	742	338
2021	98,678	86,719	185,442	273,436	293,187	269,835	235,281	244,284	259,346	223,507	164,531	89,019
2022	100,666	97,350	165,554	237,987	307,448	268,585	227,405	260,129	245,647	207,970	143,659	79,667
2023	105,491	93,970	149,419	220,198	301,613	252,322	228,838	244,134	228,272	209,091	153,874	111,170

For additional Regional specific data with regards to Events vs Requests see you CCGA Regional Profile pages.

Regional Partner Extended Data (cont'd)

In our comprehensive analysis of damage incidents, we've observed a distinct pattern related to the days of the week. Interestingly, in **Figure 19** – Facility Events by Day of the Week by Excavator Type, Wednesday emerges as the day with the highest frequency of damages. This trend holds true across various contractor types, suggesting a broader industry phenomenon rather than isolated incidents.

Figure 19 - Facility Events by Day of the Week by Excavator Type, 2023

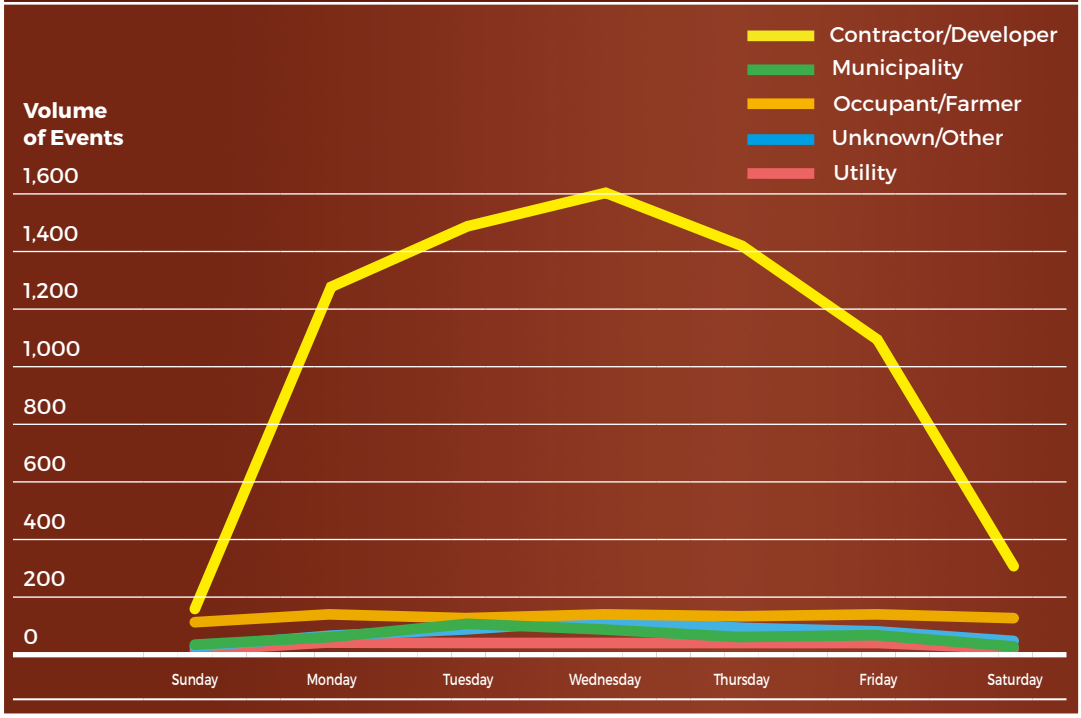


Table 21 - Facility Events by Day of Week by Excavator Type, 2023

Day of the Week	Contractor/ Developer	Municipality	Occupant/ Farmer	Unknown/ Other	Utility	Daily Totals
Sunday	178	13	109	31	14	345
Monday	1,299	71	154	88	49	1,661
Tuesday	1,578	109	143	108	42	1,980
Wednesday	1,603	93	171	136	60	2,063
Thursday	1,479	79	155	102	55	1,870
Friday	1,178	67	168	92	43	1,548
Saturday	313	8	151	42	13	527

CCGA Reporting and Evaluation Committee Recommendations & Conclusions

DIRT is an extremely powerful, but limited tool. The data represented in this report is voluntarily submitted by stakeholders within each Regional CGA, and does not fully represent all damages or utility strikes that occur within each Region. Each analysis comes with notable caveats relative to the nature of DIRT:

- not all damages are submitted
- the submissions are restricted to which stakeholders have chosen to submit (which can lead to over-representation by certain industry/facility owners)
- the methodology can vary region to region, steps are being taken to normalize this

The conclusions drawn here are meant to help drive both public policymaking and shape best practices in the interest of reducing risk and injury for excavators and overall public safety. Maintaining functional and safe underground infrastructure is a goal all stakeholders share.

No Notification to the One-Call Centre – No Notification to the One-Call Centre accounts for 26% of the identifiable Known Root Causes. Steps have be taken to increase usage of the various One-Call services. Simplifying the process, increasing accessibility via software and online services, promotion of ease of use and reliable locator turnarounds. Regional CGA's should be focusing awareness through the use of their Ambassador or Communication Programs to encourage and ensure consistent usage and notification to the One-Call Centre.
See Page 17, Table 13

Increasing Data Quality in DIRT – Each region tends to take a different approach to DIRT; some are relatively hands-off, while others work closely with submitters. Each region is focused on increasing their submitters into the DIRT tool. With this increase in submitters, we are finding a continual decrease in data quality due to the overuse of Unknown/Other. In the Root Cause Category we notice that 38% of submissions use Unknown/Other which make actionable items difficult. Regions should be following up with submitters, to identify the issue in assigning a Known Root Cause. Should Unknown/Other be chosen, Comment Required is requested. We encourage submitters to follow up with their previous entries to ensure they have the most up-to-date data possible.
See Page 17, Table 15

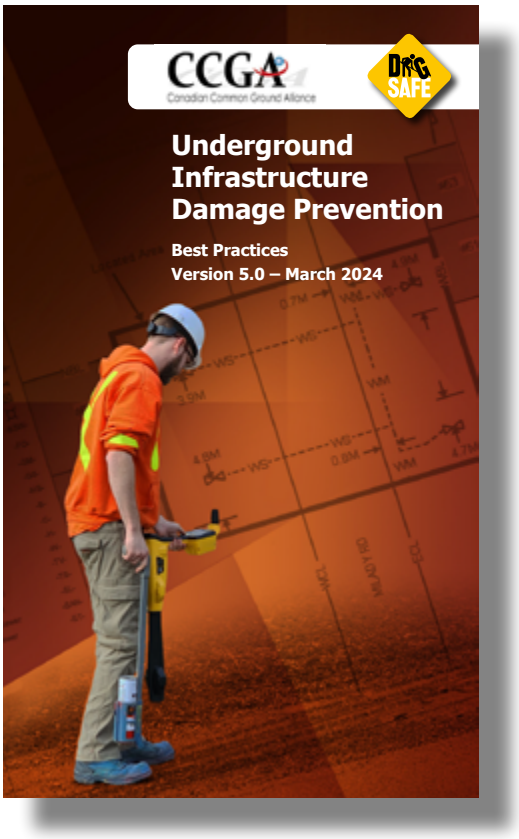
CCGA Best Practice 5.0

The CCGA Best Practices have been developed through the commitment and consensus of a significant number of stakeholders to serve as an educational guide to promote damage prevention in Canada.

The CCGA Best Practices manual is an educational guide and a general purpose tool which is not meant to replace existing standards, policies, or provincial/ federal regulations or laws.

The practice statements and descriptions outlined in each chapter of the guide represent activities that are currently followed by industry to promote damage prevention to underground infrastructure.

Not all stakeholders are in a position to adopt these best practices but it is hoped that they will become universal over time.



Register with DIRT and Be Part of the Damage Prevention Solution

British Columbia BCCGA Common Ground Alliance

UTILITY SAFETY PARTNERS

SCGA Saskatchewan Common Ground Alliance

MCGA Manitoba Common Ground Alliance

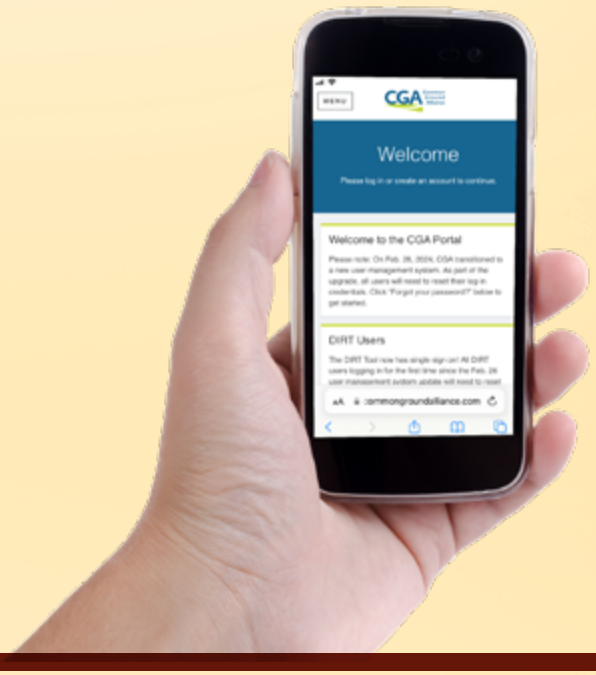
The Canadian Common Ground Alliance (CCGA) invites you to register with Regional Partner Virtual DIRT and report damages to Canada's buried infrastructure. Doing so will allow more thorough analysis and enable damage prevention and safety solutions that will benefit all Canadians.

Ontario Regional ORCGA Common Ground Alliance

info excavation

ATLCGA Atlantic Canada Common Ground Alliance

It is now easier than ever to submit single damages or near-miss events using the redesigned Damage Information Reporting Tool (DIRT)



DIRT is the only provincial repository of securely and anonymously submitted data on excavation-related damages involving underground utilities, which allows CCGA to produce a series of targeted recommendations year-over-year on the crucial work to protect these buried facilities.

Using this data and insights, Canadian Common Ground Alliance(CCGA) produces an annual DIRT Report (link to DIRT Report Canadian Common Ground Alliance - National DIRT & Statistics Committee (canadiancga.com)) that provides an extensive overview to identify national trends and solutions that can continue to improve damage prevention.

The **NEWLY improved DIRT** form includes a more streamlined user experience for submitting damages, with:

- New help icons guide users in providing requested data fields.
- Map location features to allow for the visualization of latitude and longitude coordinates and existing mailing addresses, or map to your current location.
- Mobile-friendly to allow for entry from the field.
- Step-by-step process to to input data.

NOT REPORTING?

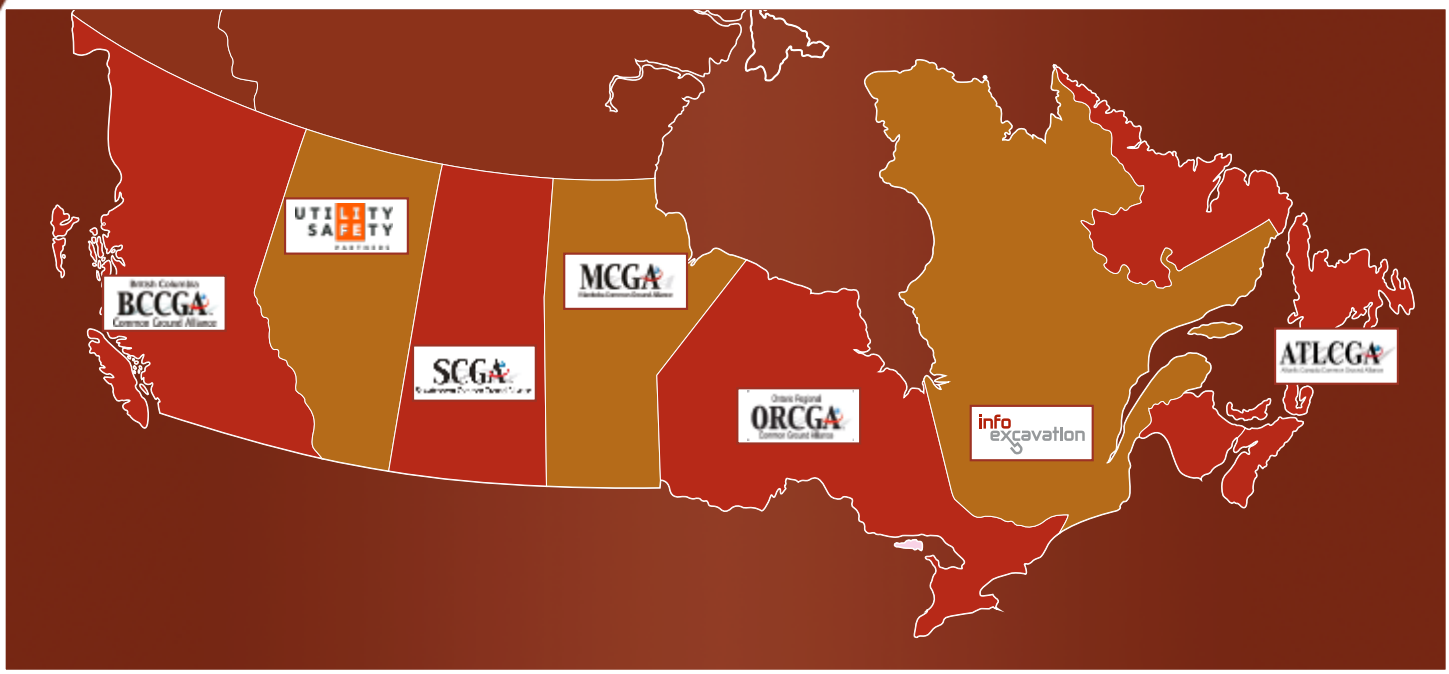
The value to your organization CAN make a difference!

- Track events per day, month, year
- Identify damage trends, excavation issues, awareness needs
- Determine root causes
- Recognize excavation work group & type of excavation

Be part of the conversation!

More information on DIRT. Contact your Provincial Common Ground Alliance

Regional Profiles



The series of tables below provide summaries of damage data, along with some contextual economic data, for each of the regions currently reporting via the DIRT system in Canada. Time series data is provided for relevant provinces. For each province/region, a summary of whether damage prevention/One-Call legislation exists is also provided.

*Note that not all housing starts will be associated with an excavation; in the case of condo developments, for example, one excavation will be associated with numerous housing starts.

In addition, at the end of each profile, you will find the web address of the Common Ground Alliance and the One-Call Centre for that region.

2021 Note: The previous StatsCan publication used to determine this metric was discontinued following 2020, and the new Construction Employment metrics are quantifiably lower than in past years.

Population Table: 17-10-0009-01 Population estimates, quarterly

Housing Starts Table: 34-10-0135-01 Canada Mortgage and Housing Corporation, housing starts, under construction and completions, all areas, quarterly

Construction Employment: Table 14-10-0092-01 Employment by industry, annual

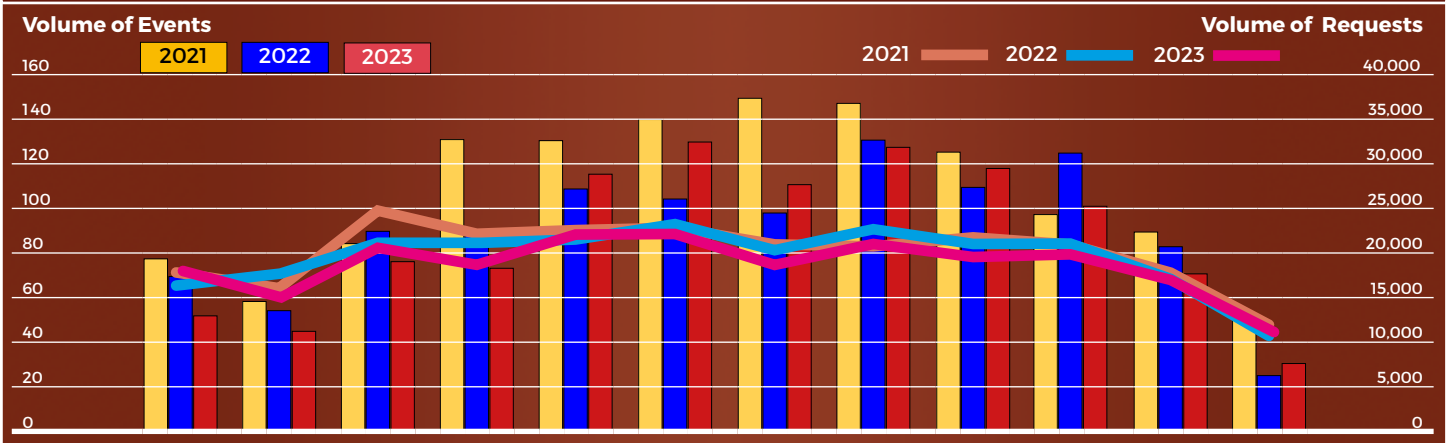
Construction GDP: Table 36-10-0402-01 Gross domestic product (GDP) at basic prices, by industry, provinces and territories (x 1,000,000)

Regional Profiles
British Columbia

	2019	2020	2021	2022	2023
PROFILE					
Population	5,071,336	5,145,785	5,249,635	5,368,266	5,581,127
Land area	922,503	922,503	922,503	922,503	922,503
Population density	5.5	5.6	5.7	5.8	6.0
Housing starts*	44,932	37,734	47,609	46,821	94,105
Employment in construction	236,600	213,200	173,121	183,201	189,427
Construction GDP ($ millions)	22,110	23,033	25,371	27,000	29,341
SUMMARY					
Locate requests	202,052	212,056	241,374	234,372	229,121
Notifications	679,203	609,367	687,075	664,384	563,968
Locate requests to notifications ratio	1:3.36	1:2.87	1:2.85	1:2.83	1:2.46
Damages	1,276	1,228	1,280	1,101	1,065
Damages per work day	5	4.9	5.1	4.4	4.3
Damage ratio per 1,000 notifications	1.88	2.02	1.86	1.66	1.59
Damage ratio per 1,000 locate requests	6.32	5.79	5.3	4.7	4.65
DAMAGES BY TYPE OF WORK					
Sewer & Water	406	358	324	267	270
Green (Landscaping)	134	175	299	246	249
Construction	428	345	228	219	182
Unknown / Other	90	127	188	180	177
Utility	105	137	166	125	121
Street & Road	113	86	75	64	66
DAMAGES BY FACILITY TYPE					
Natural Gas	1,111	1,032	1,087	958	910
Telecommunications	111	112	128	98	76
Unknown/Other	32	52	59	36	66
Liquid Pipeline	22	32	6	9	12
Water/Sewer	0	0	0	0	1
ROOT CAUSE					
Excavation Issue	428	426	499	338	319
Locating Issue	4	1	3	3	1
Miscellaneous Root Causes	133	181	180	130	156
Notification Issue	711	620	598	630	589
Damage Prevention/One-Call Legislation					
British Columbia CGA: commongroundbc.ca	Partial legislation: BC Oil and Gas Commission and the Canada Energy Regulator governed pipelines are required to register with BC 1 Call				
BC 1 Call: bc1c.ca	*Note that not all housing starts will be associated with an excavation; in the case of condo developments, for example, one excavation will be associated with numerous housing starts.				

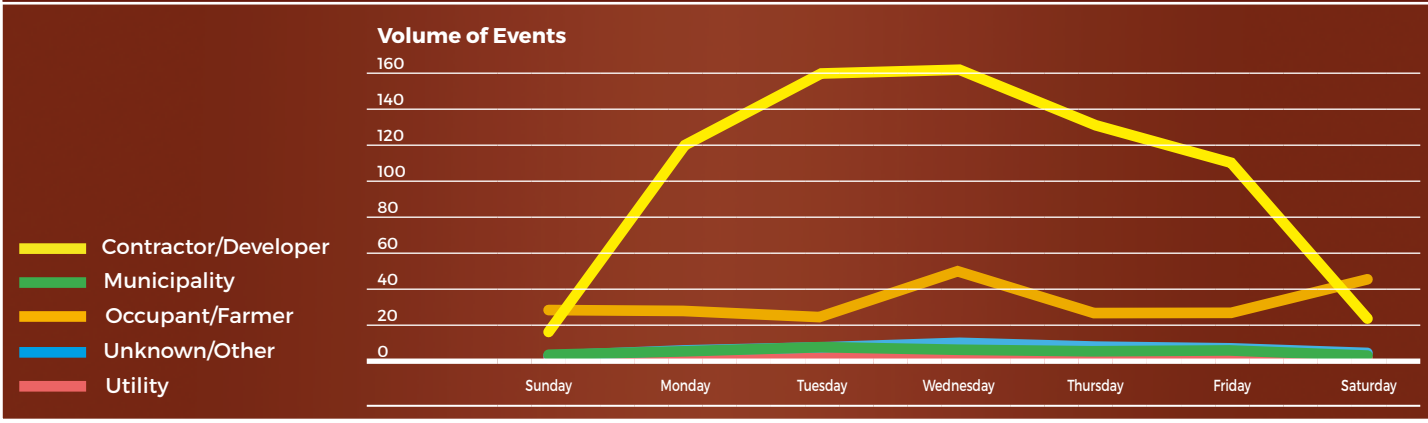
British Columbia (cont'd)

British Columbia - Events vs. Requests by Month, 2021 - 2023



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	79	59	81	133	132	140	152	147	123	97	89	48
2022	68	58	91	91	108	102	99	136	117	124	81	26
2023	53	46	76	77	117	129	115	129	119	102	71	31
2021	17,158	16,341	24,917	22,630	23,861	22,506	20,865	20,285	21,528	20,146	18,203	12,934
2022	15,850	17,392	21,740	21,164	22,799	22,627	20,522	22,698	20,763	20,166	17,451	11,200
2023	18,012	15,031	20,854	19,393	23,687	22,135	19,926	20,531	19,905	20,028	17,893	11,726

British Columbia - Facility Events by Day of the Week by Excavator Type, 2023



British Columbia - Facility Events by Day of Week by Excavator Type, 2023

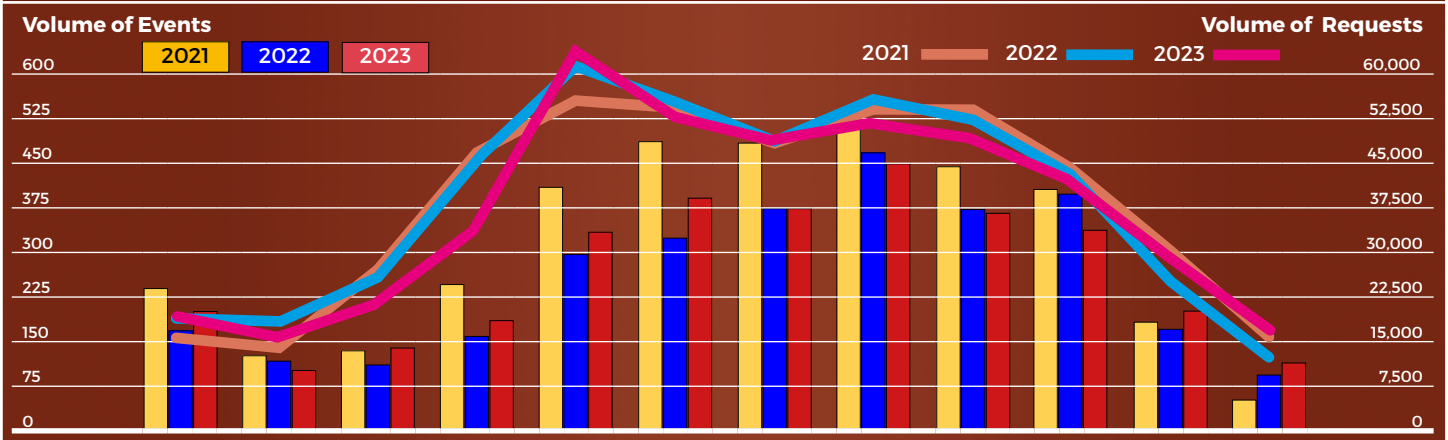
Day of the Week	Contractor/ Developer	Municipality	Occupant/ Farmer	Unknown/ Other	Utility	Daily Totals
Sunday	10	0	32	0	0	42
Monday	121	3	32	4	2	162
Tuesday	163	10	30	8	0	211
Wednesday	166	8	49	7	1	231
Thursday	131	9	33	8	0	181
Friday	116	3	36	5	1	161
Saturday	28	0	45	4	0	77

Regional Profiles
Alberta

	2019	2020	2021	2022	2023
PROFILE					
Population	4,371,316	4,428,082	4,464,170	4,601,314	4,756,408
Land area	640,330	640,330	640,330	640,330	640,330
Population density	6.8	6.9	7.0	7.2	7.4
Housing starts	27,325	24,023	31,945	36,544	59,185
Employment in construction	236,800	217,600	165,724	178,555	185,149
Construction GDP ($ millions)	24,329	21,404	23,551	24,928	26,953
SUMMARY					
Locate requests	403,434	426,324	468,907	459,610	447,482
Notifications	1,463,751	1,470,207	1,597,579	1,551,932	1,514,605
Locate requests to notifications ratio	1:3.63	1:3.45	1:3.41	1:3.38	1:3.38
Damages	3,597	3,789	3,713	3,030	3,173
Damages per workday	14.4	15.2	14.8	12.0	12.6
Damage ratio per 1,000 notifications	2.46	2.58	2.32	1.95	2.09
Damage ratio per 1,000 locate requests	8.92	8.89	7.92	6.59	7.09
DAMAGES BY TYPE OF WORK					
Sewer & Water	919	972	758	657	815
Street & Road	730	797	606	558	593
Utility	673	582	670	548	564
Unknown / Other	502	599	943	699	430
Construction	299	321	360	235	427
Green (Landscaping)	474	518	376	333	344
DAMAGES BY FACILITY TYPE					
Telecommunications	2,269	2,164	2,242	1,724	1,639
Unknown/Other	521	777	516	447	671
Natural Gas	523	554	664	600	601
Electric	205	219	221	198	215
Water/Sewer	79	72	62	47	43
Liquid Pipeline	0	3	8	14	4
ROOT CAUSE					
Miscellaneous Root Causes	1,405	1,503	1,444	1,093	1,146
Locating Issue	629	747	1,120	719	857
Excavation Issue	1,159	1,129	738	884	829
Notification Issue	404	410	411	334	341
Damage Prevention/One-Call Legislation					
Utility Safety Partners: utilitysafety.ca	Partial legislation: Alberta Energy Regulator and the National Energy Board governed pipelines are required to register with Utility Safety Partners				

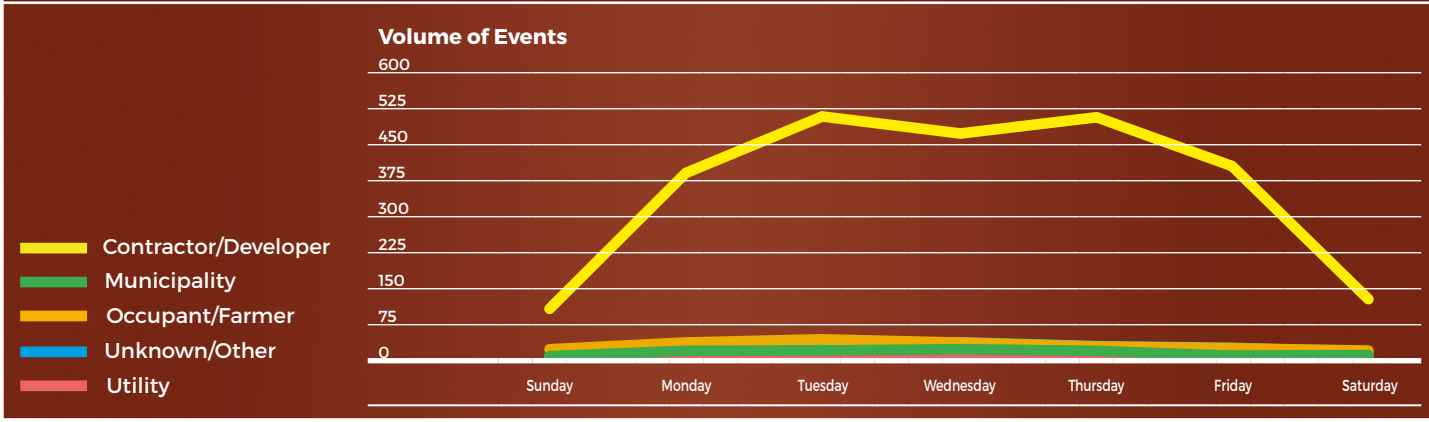
Alberta (cont'd)

Alberta - Events vs. Requests by Month, 2021 - 2023



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	229	124	136	237	405	513	472	518	444	407	170	58
2022	160	120	108	155	295	328	372	480	373	398	161	80
2023	196	96	145	169	342	380	370	442	368	357	200	108
2021	16,858	14,016	27,156	47,685	56,789	55,584	49,575	53,537	55,423	44,948	30,901	16,435
2022	19,955	18,442	26,847	43,463	60,651	56,050	48,732	54,981	51,485	42,106	24,049	12,849
2023	19,983	16,928	21,135	39,167	61,347	52,384	48,939	51,793	48,912	40,857	29,506	16,531

Alberta - Facility Events by Day of the Week by Excavator Type, 2023



Alberta - Facility Events by Day of Week by Excavator Type, 2023

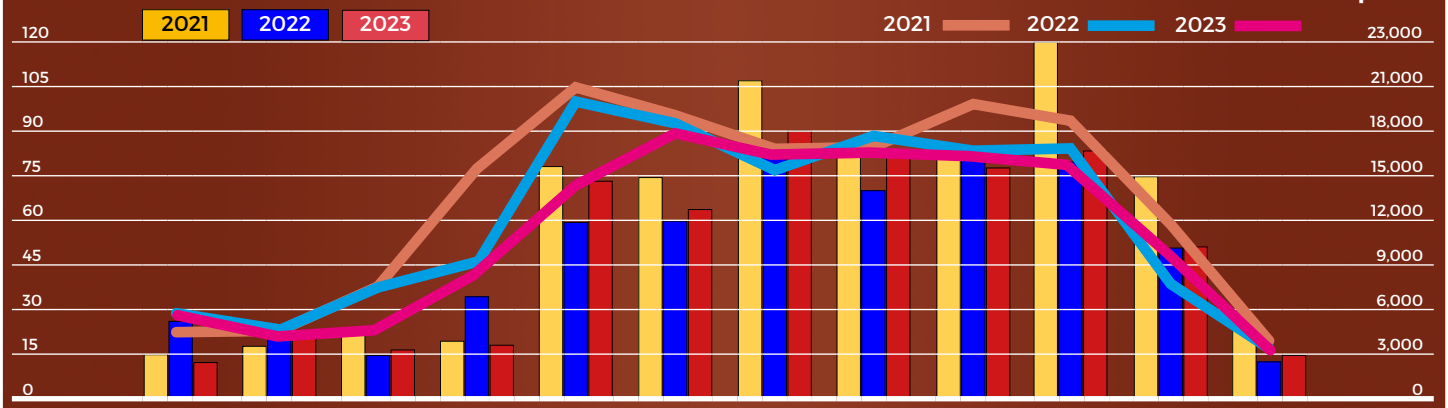
Day of the Week	Contractor/ Developer	Municipality	Occupant/ Farmer	Unknown/ Other	Utility	Daily Totals
Sunday	96	3	13	9	11	132
Monday	386	14	31	17	31	479
Tuesday	512	26	45	27	29	639
Wednesday	461	24	38	37	43	603
Thursday	499	17	34	30	41	621
Friday	404	14	44	26	26	514
Saturday	140	1	18	14	12	185

Regional Profiles
Saskatchewan

	2019	2020	2021	2022	2023
PROFILE					
Population	1,174,462	1,177,782	1,180,867	1,205,119	1,218,976
Land area	588,244	588,244	588,244	588,244	588,244
Population density	2.0	2.0	2.0	2.0	2.1
Housing starts	2,427	3,087	4,174	4,211	7,800
Employment in construction	47,100	41,000	28,556	30,336	30,970
Construction GDP ($ millions)	5,519	4,919	4,434	4,831	5,952
SUMMARY					
Locate requests	141,518	151,282	166,496	148,680	147,555
Notifications	450,209	450,209	468,320	413,202	406,524
Locate requests to notifications ratio	1:3.18	1:2.98	1:2.81	1:2.78	1:2.76
Damages	660	689	722	600	615
Damages per workday	2.7	2.8	2.9	2.4	2.5
Damage ratio per 1,000 notifications	1.47	1.53	1.54	1.45	1.51
Damage ratio per 1,000 locate requests	4.66	4.55	4.34	4.04	4.17
DAMAGES BY TYPE OF WORK					
Sewer & Water	94	90	173	128	146
Utility	194	176	181	150	127
Unknown / Other	134	199	138	94	122
Green (Landscaping)	126	149	115	109	108
Street & Road	63	32	49	68	58
Construction	49	43	66	51	54
DAMAGES BY FACILITY TYPE					
Electric	255	267	303	232	224
Natural Gas	227	226	246	201	211
Telecommunications	169	184	167	160	174
Liquid Pipeline	1	8	5	4	6
Unknown/Other	8	4	1	3	0
Water/Sewer	0	0	0	0	0
ROOT CAUSE					
Excavation Issue	310	314	369	250	279
Notification Issue	184	220	219	188	145
Locating Issue	123	116	102	140	140
Miscellaneous Root Causes	43	39	32	22	51
Damage Prevention/One-Call Legislation					
Saskatchewan CGA: scga.ca Sask 1st Call: sask1stcall.com	Partial legislation: Canada Energy Regulator governed pipelines are required to register with Sask 1st Call				

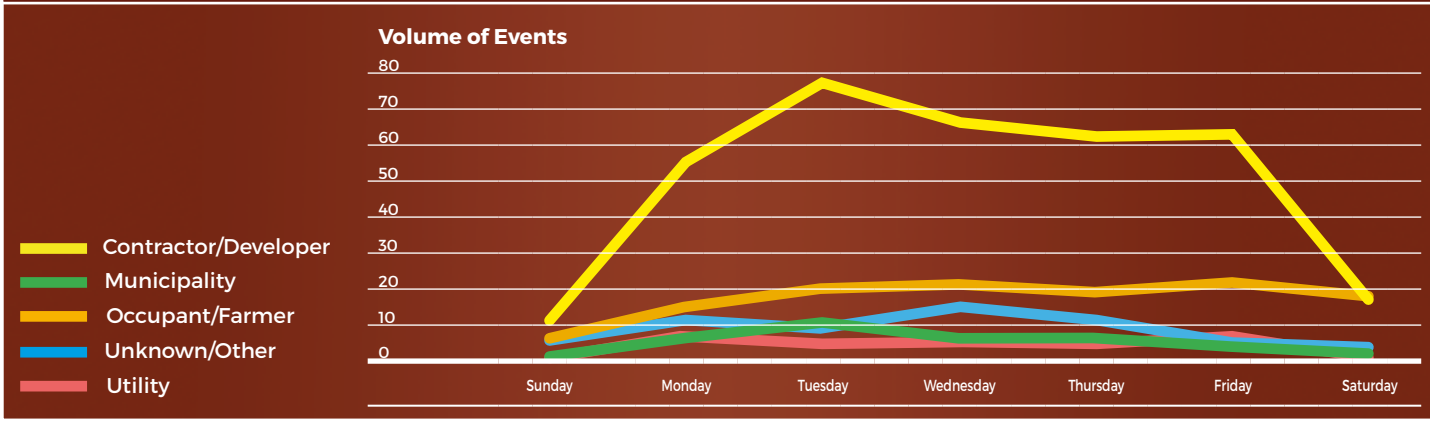
Saskatchewan (cont'd)

Saskatchewan - Events vs. Requests by Month, 2021 - 2023



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	15	17	25	19	78	74	107	81	86	120	75	25
2022	27	26	14	33	59	60	82	71	85	78	52	13
2023	13	23	18	18	74	66	90	84	77	86	52	14
2021	5,504	5,365	8,186	16,025	21,588	19,334	17,379	17,163	20,044	19,343	11,943,	4,622
2022	6,017	5,353	6,758	9,775	20,692	18,952	15,962	18,087	17,711	17,491	8,218,	3,664
2023	5,942	4,490	5,127	8,677	22,731	18,019	17,611	17,501	17,095	15,706	10,207,	4,449

Saskatchewan - Facility Events by Day of the Week by Excavator Type, 2023



Saskatchewan - Facility Events by Day of Week by Excavator Type, 2023

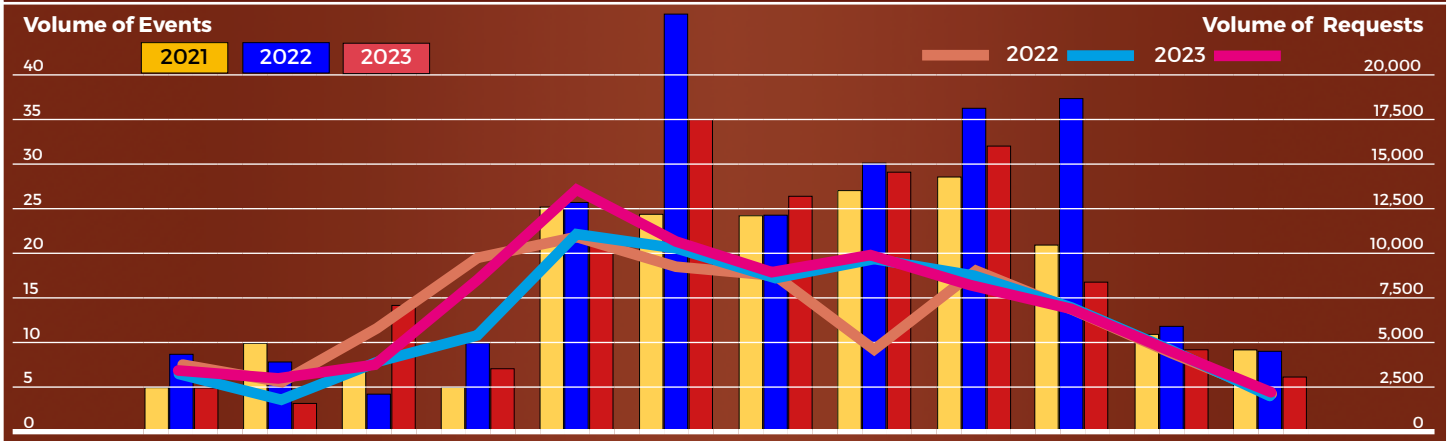
Day of the Week	Contractor/ Developer	Municipality	Occupant/ Farmer	Unknown/ Other	Utility	Daily Totals
Sunday	12	3	7	6	1	29
Monday	56	8	14	11	7	96
Tuesday	77	11	20	9	5	122
Wednesday	68	8	21	15	6	118
Thursday	61	8	19	11	5	104
Friday	63	4	21	6	8	102
Saturday	18	3	19	4	0	44

Regional Profiles
Manitoba

	2019	2020	2021	2022	2023
PROFILE					
Population	1,369,465	1,379,469	1,386,333	1,420,288	1,465,440
Land area	552,371	552,371	552,371	552,371	552,371
Population density	2.5	2.5	2.5	2.6	2.7
Housing starts	6,946	7,314	8,006	8,095	12,000
Employment in construction	50,400	46,700	34,914	36,116	37,410
Construction GDP ($ millions)	4,683	4,182	4,102	3,820	3,952
SUMMARY					
Locate requests	74,861	76,276	82,244	76,026	81,619
Notifications	191,226	183,366	206,444	192,062	200,868
Locate requests to notifications ratio	1:2.55	1:2.4	1:2.51	1:2.53	1:2.46
Damages	196	220	197	264	202
Damages per workday	0.8	0.9	0.8	1.1	0.8
Damage ratio per 1,000 notifications	1.02	1.2	0.95	1.37	1.01
Damage ratio per 1,000 locate requests	2.62	2.88	2.4	3.47	2.47
DAMAGES BY TYPE OF WORK					
Utility	19	0	0	0	64
Street & Road	24	0	0	0	46
Sewer & Water	60	1	0	0	39
Green (Landscaping)	27	2	0	0	34
Unknown / Other	53	217	196	264	11
Construction	13	0	1	0	8
DAMAGES BY FACILITY TYPE					
Natural Gas	86	102	96	120	105
Electric	110	118	100	144	97
Telecommunications	0	0	1	0	0
Liquid Pipeline	0	0	0	0	0
Unknown/Other	0	0	0	0	0
Water/Sewer	0	0	0	0	0
ROOT CAUSE					
Notification Issue	36	47	32	43	119
Excavation Issue	137	150	136	178	64
Locating Issue	22	18	21	29	12
Miscellaneous Root Causes	1	5	8	14	7
Damage Prevention/One-Call Legislation					
Manitoba CGA: manitobacga.com One-Call: clickbeforeyoudigmb.com	Partial legislation: Canada Energy Regulator governed pipelines are required to register with ClickBeforeYouDigMB				

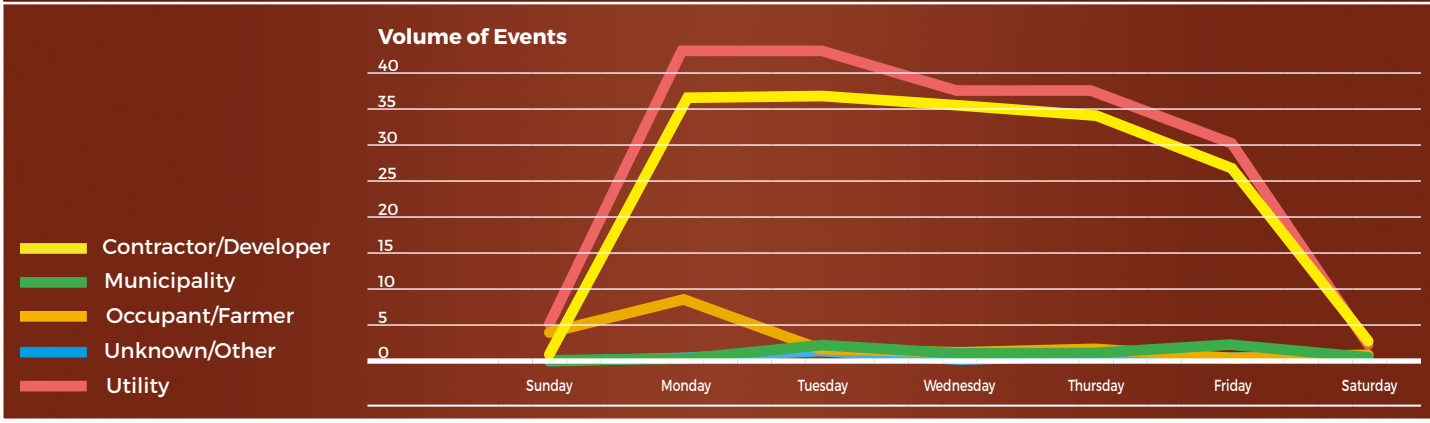
Manitoba (cont'd)

Manitoba - Events vs. Requests by Month, 2021 - 2023



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	5	10	7	5	25	24	24	27	28	21	12	9
2022	8	7	14	10	27	48	24	30	36	38	13	9
2023	5	3	8	7	22	35	27	29	33	18	9	6
2021	3,276	2,688	5,488	9,792	11,169	9,943	8,950	4,808	8,782	6,969	4,358	2,421
2022	2,708	2,200	3,610	5,380	11,374	10,179	8,571	9,513	8,482	7,168	4,604	2,237
2023	2,939	2,788	3,604	6,912	13,470	10,761	8,889	9,831	8,280	7,022	4,686	2,437

Manitoba - Facility Events by Day of the Week by Excavator Type, 2023



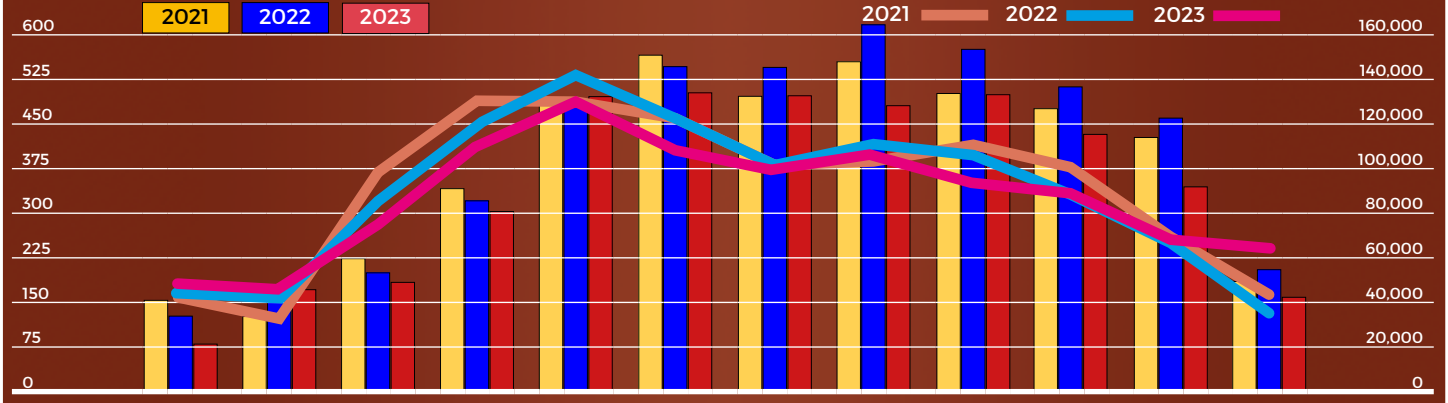
Manitoba - Facility Events by Day of Week by Excavator Type, 2023

Day of the Week	Contractor/ Developer	Municipality	Occupant/ Farmer	Unknown/ Other	Utility	Daily Totals
Sunday	1	0	4	0	5	0
Monday	37	0	7	0	44	0
Tuesday	38	3	2	1	44	0
Wednesday	36	1	1	0	38	0
Thursday	34	1	2	1	38	0
Friday	27	3	0	0	30	0
Saturday	3	0	0	0	3	0

Regional Profiles
Ontario

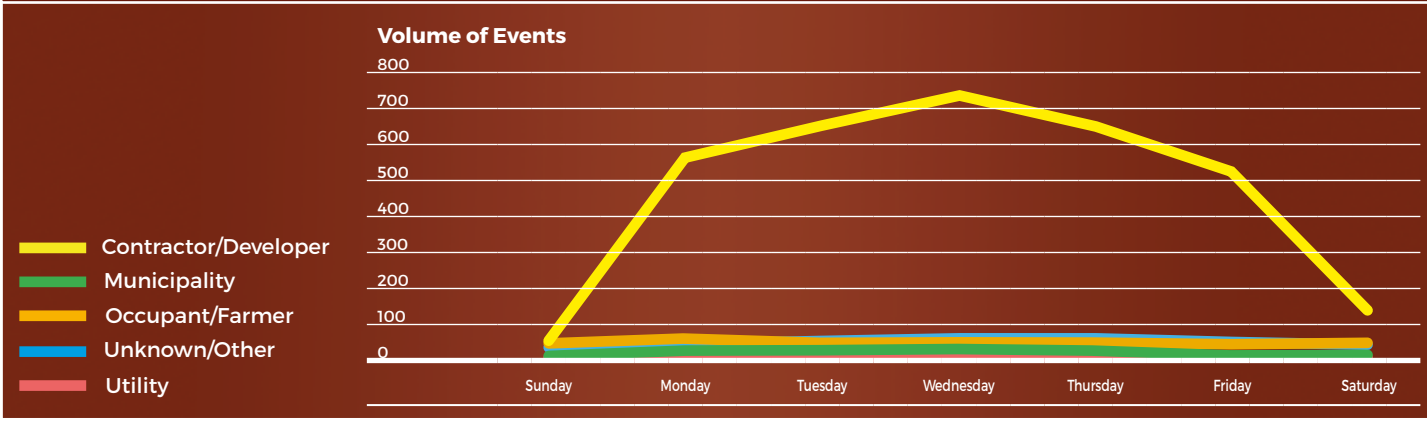
	2018	2019	2020	2021	2022
PROFILE					
Population	14,636,131	14,721,852	14,940,912	15,262,660	15,801,768
Land area	908,608	908,608	908,608	908,608	908,608
Population density	16.1	16.2	16.4	16.7	17.4
Housing starts	68,985	81,305	99,566	96,060	160,679
Employment in construction	360,984	335,942	370,686	393,824	407,121
Construction GDP ($ millions)	53,561	55,625	58,986	57,404	59,360
SUMMARY					
Locate requests	1,121,749	1,077,237	1,174,071	1,149,797	1,098,999
Notifications	6,773,133	6,320,045	6,722,709	6,699,251	6,486,733
Locate requests to notifications ratio	1:6.04	1:5.87	1:5.73	1:5.83	1:5.9
Damages	4,998	4,782	4,553	4,799	4,225
Damages per workday	19.9	18.9	18.1	19.2	16.9
Damage ratio per 1,000 notifications	0.74	0.76	0.68	0.72	0.65
Damage ratio per 1,000 locate requests	4.46	4.44	3.88	4.17	3.84
DAMAGES BY TYPE OF WORK					
Sewer & Water	1,166	1,188	887	1,241	1,112
Construction	1,181	583	812	933	737
Utility	814	703	831	876	668
Landscaping	748	922	759	857	645
Unknown / Other	566	792	927	461	577
Street & Road	523	594	337	431	486
DAMAGES BY FACILITY TYPE					
Natural Gas	2,330	2,427	2,128	2,419	2,086
Telecommunications	2,342	2,062	2,009	1,848	1,605
Electric	266	238	245	322	260
Water/Sewer	42	32	134	183	252
Unknown/Other	5	5	31	25	20
Liquid Pipeline	13	18	6	2	2
ROOT CAUSE					
Excavation Issue	2,084	2,124	1,815	1,941	1,615
Notification Issue	1,380	1,243	1,231	1,459	1,251
Miscellaneous Root Causes	1,286	1,160	1,148	1,060	1,067
Locating Issue	248	255	359	339	292
Damage Prevention/One-Call Legislation					
Ontario CGA: orcga.com One-Call: on1call.com	Provincial legislation: Canada Energy Regulator governed pipelines and all buried infrastructure within public rights of way are required to register with Ontario One-Call				

Ontario - Events vs. Requests by Month, 2021 - 2023



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	151	132	225	341	497	566	501	550	508	465	433	184
2022	134	164	207	327	487	553	554	608	580	520	456	209
2023	95	161	173	294	496	513	503	539	501	433	359	158
2021	43,186	35,497	96,619	132,219	131,741	121,474	106,384	108,645	111,143	98,261	73,621	42,235
2022	44,772	41,706	86,199	119,258	143,027	120,864	101,199	116,365	109,252	90,141	66,862	38,134
2023	47,465	43,336	78,952	109,729	129,356	109,493	99,957	107,111	95,287	91,389	68,191	65,312

Ontario - Facility Events by Day of the Week by Excavator Type, 2023



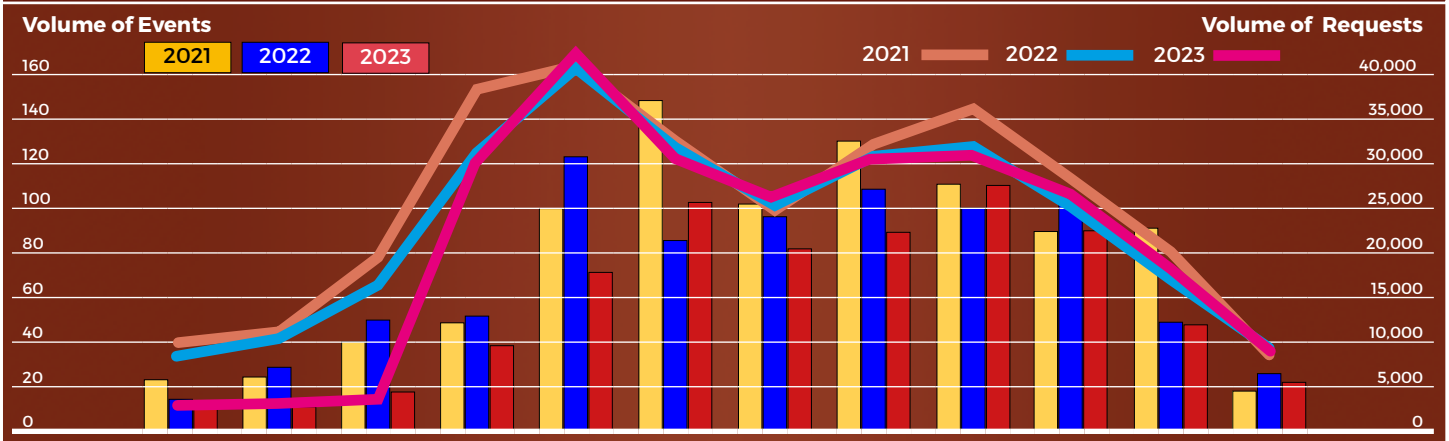
Ontario - Facility Events by Day of Week by Excavator Type, 2023

Day of the Week	Contractor/ Developer	Municipality	Occupant/ Farmer	Unknown/ Other	Utility	Daily Totals
Sunday	56	4	50	16	2	128
Monday	579	19	67	53	9	727
Tuesday	669	26	45	59	5	804
Wednesday	737	25	59	72	8	901
Thursday	650	22	67	51	8	798
Friday	512	25	66	52	8	663
Saturday	114	1	69	19	1	204

Regional Profiles
Quebec

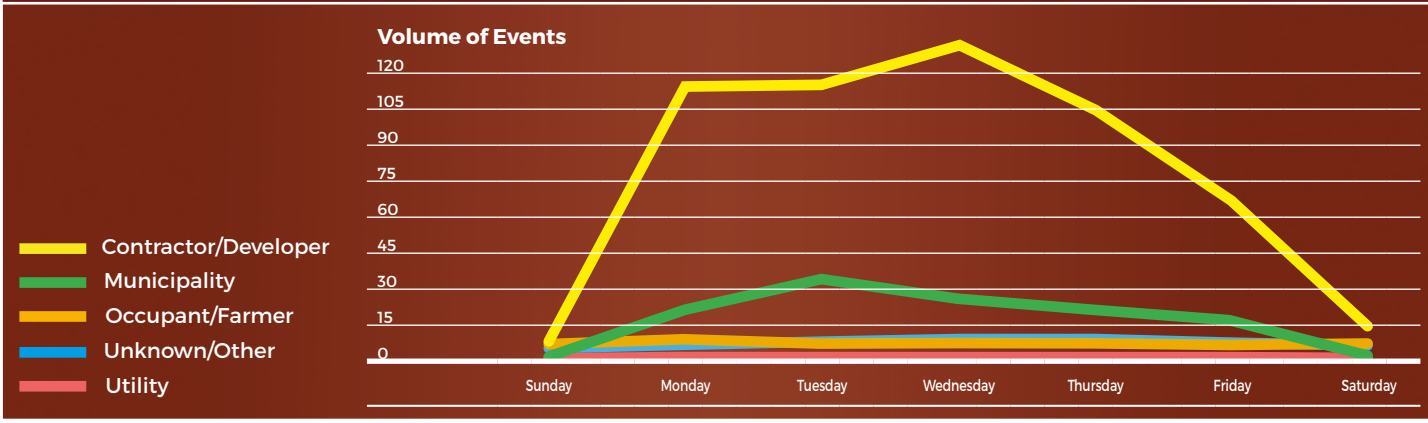
	2019	2020	2021	2022	2023
PROFILE					
Population	8,484,965	8,575,812	8,631,147	8,751,352	8,948,450
Land area	1,667,712	1,667,712	1,667,712	1,667,712	1,667,712
Population density	5.1	5.1	5.2	5.2	5.4
Housing starts	47,967	54,066	67,962	57,107	69,223
Employment in construction	264,600	257,200	221,203	237,250	241,243
Construction GDP ($ millions)	24,602	23,913	26,508	26,033	29,786
SUMMARY					
Locate requests	288,149	295,587	334,728	313,761	306,184
Notifications	625,499	597,549	614,091	554,051	518,016
Locate requests to notifications ratio	1:2.17	1:2.02	1:1.83	1:1.77	1:1.69
Damages	1,101	954	924	843	696
Damages per workday	4	3.8	3.6	3.3	2.8
Damage ratio per 1,000 notifications	1.76	1.6	1.5	1.52	1.34
Damage ratio per 1,000 locate requests	3.82	3.23	2.76	2.69	2.27
DAMAGES BY TYPE OF WORK					
Sewer & Water	297	204	234	211	257
Street & Road	252	220	162	194	140
Unknown / Other	197	212	239	159	106
Construction	168	118	109	105	84
Landscaping	93	135	109	96	62
Utility	94	65	71	78	47
DAMAGES BY FACILITY TYPE					
Telecommunications	540	499	452	418	319
Natural Gas	368	324	312	274	264
Electric	120	91	100	81	61
Unknown/Other	71	40	57	65	50
Liquid Pipeline	2	0	3	5	2
Water/Sewer	0	0	0	0	0
ROOT CAUSE					
Excavation Issue	462	367	361	334	295
Miscellaneous Root Causes	402	363	346	316	243
Notification Issue	205	198	189	168	133
Locating Issue	32	26	28	25	25
Damage Prevention/One-Call Legislation					
QCGA et One-Call: info-ex.com	Partial legislation: Pipelines governed by the Canada Energy Regulator are required to register with Info-Excavation.				

Quebec - Events vs. Requests by Month, 2021 - 2023



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	21	23	40	49	100	147	101	127	113	87	97	19
2022	15	27	50	51	122	86	97	115	100	103	52	25
2023	12	9	19	39	74	104	81	88	112	88	49	21
2021	9,909	10,842	19,628	38,751	40,565	33,453	25,415	33,695	36,372	28,587	20,406	7,802
2022	8,808	10,022	17,180	32,561	40,387	32,515	25,774	31,763	32,437	25,317	17,920	9,031
2023	8,311	8,843	16,036	30,235	42,054	31,378	26,070	30,050	31,668	27,824	18,527	8,196

Quebec - Facility Events by Day of the Week by Excavator Type, 2023



Quebec - Facility Events by Day of Week by Excavator Type, 2023

Day of the Week	Contractor/ Developer	Municipality	Occupant/ Farmer	Unknown/ Other	Utility	Daily Totals
Sunday	3	3	3	0	0	9
Monday	115	26	3	3	0	147
Tuesday	115	33	1	5	2	156
Wednesday	130	27	2	5	2	166
Thursday	104	20	0	2	0	126
Friday	56	18	1	3	0	78
Saturday	10	3	0	1	0	14

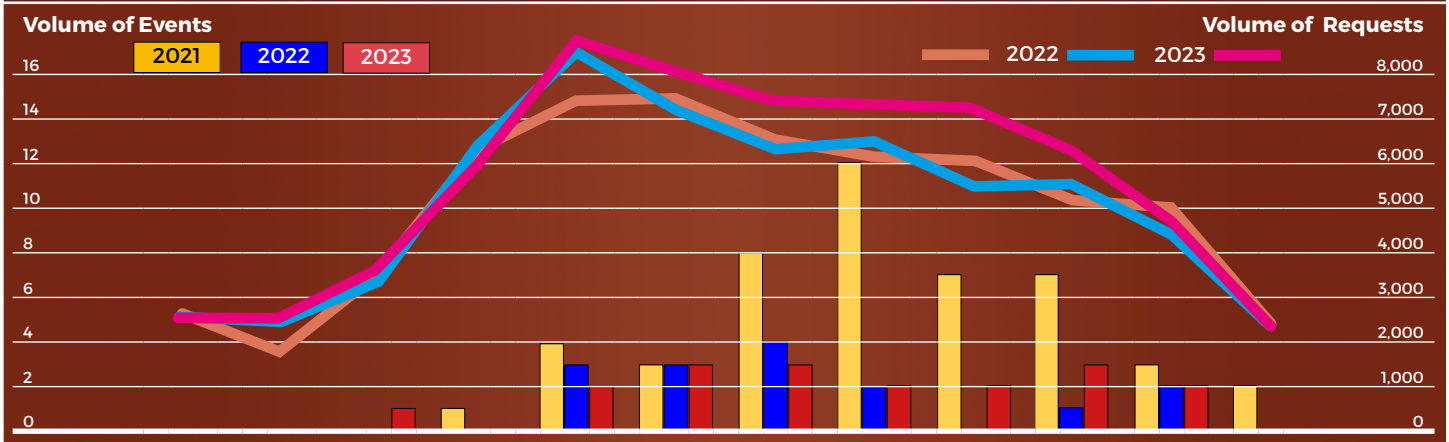
Regional Profiles

Atlantic Region

	2019	2020	2021	2022	2023
PROFILE					
Population	2,426,711	2,446,405	2,480,826	2,553,264	2,625,412
Land area	500,531	500,531	500,531	500,531	500,531
Population density	4.8	4.9	5.0	5.1	5.1
Housing starts	10,103	10,351	12,097	13,091	23,106
Employment in construction	84,700	78,600	69,529	66,409	72,424
Construction GDP ($ millions)	7,652	6,979	7,162	7,470	7,953
SUMMARY					
Locate requests	52,361	55,593	62,298	62,605	68,450
Notifications	68,686	66,373	72,205	72,635	71,307
Locate requests to notifications ratio	1:1.31	1:1.19	1:1.16	1:1.16	1:1.04
Damages	60	15	47	15	18
Damages per workday	0.2	0.06	0.19	0.1	0.1
Damage ratio per 1,000 notifications	0.87	0.23	0.65	0.21	0.25
Damage ratio per 1,000 locate requests	1.15	0.27	0.75	0.24	0.26
DAMAGES BY TYPE OF WORK					
Street & Road	15	4	11	2	5
Construction	9	3	7	2	4
Sewer & Water	11	6	15	5	4
Green (Landscaping)	5	2	3	2	3
Utility	6	0	4	1	1
Unknown / Other	14	0	7	3	1
DAMAGES BY FACILITY TYPE					
Natural Gas	15	15	12	11	11
Electric	0	0	3	4	6
Water/Sewer	0	0	0	0	1
Telecommunications	45	0	32	0	0
Liquid Pipeline	0	0	0	0	0
Unknown/Other	0	0	0	0	0
ROOT CAUSE					
Notification Issue	35	3	27	5	17
Excavation Issue	12	12	15	10	1
Miscellaneous Root Causes	9	0	5	0	0
Locating Issue	4	0	0	0	0
Damage Prevention/One-Call Legislation					
Altantic Canada CGA: atlanticdigsafe.ca One-Call: info-ex.com	Partial legislation: Pipelines governed by the Canada Energy Regulator are required to register with Info-Excavation.				

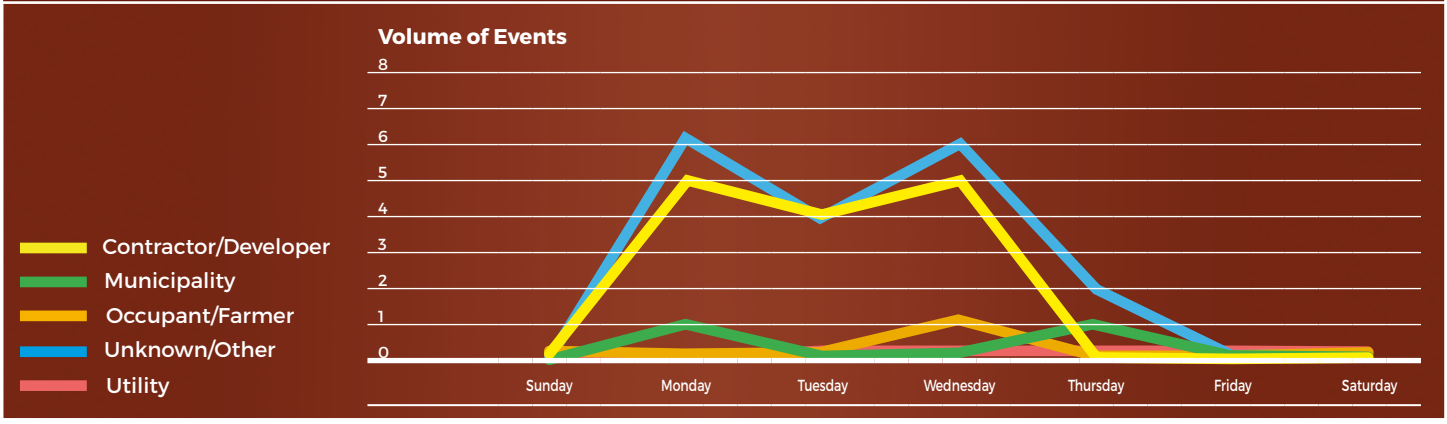
Atlantic Region (cont'd)

Atlantic - Events vs. Requests by Month, 2021 - 2023



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	0	0	0	1	4	3	8	12	7	7	3	2
2022	0	0	0	0	3	3	4	2	0	1	2	0
2023	0	0	1	0	2	3	3	2	2	3	2	0
2021	2,787	1,970	3,448	6,334	7,474	7,541	6,713	6,151	6,054	5,253	5,099,	2,570
2022	2,556	2,235	3,220	6,386	8,518	7,398	6,645	6,722	5,517	5,581	4,555,	2,552
2023	2,839	2,554	3,711	6,085	8,968	8,152	7,446	7,317	7,125	6,265	4,864,	2,519

Atlantic - Facility Events by Day of the Week by Excavator Type, 2023



Atlantic - Facility Events by Day of Week by Excavator Type, 2023

Day of the Week	Contractor/ Developer	Municipality	Occupant/ Farmer	Unknown/ Other	Utility	Daily Totals
Sunday	0	0	0	0	0	0
Monday	5	1	0	6	0	0
Tuesday	4	0	0	4	0	0
Wednesday	5	0	1	6	0	0
Thursday	0	2	0	2	0	0
Friday	0	0	0	0	0	0
Saturday	0	0	0	0	0	0

Appendix A

List of Work Included in each Work Group

Work Group / Work Type	2019	2020	2021	2022	2023
Sewer & Water	**2,953**	**2,819**	**2,391**	**2,509**	**2,64**
Sewer	916	1,314	1,234	1,259	1,337
Water	1,661	1,110	939	809	919
Drainage	376	389	218	436	387
Sewer (Sanitary/Storm)	0	6	0	5	0
Utility	**1,905**	**1,663**	**1,923**	**1,778**	**1,592**
Telecommunications	768	689	793	802	713
Electric	669	568	609	565	561
Natural Gas	411	366	467	341	277
Liquid Pipeline	57	40	54	70	41
Landscaping	**1,607**	**1,903**	**1,661**	**1,643**	**1,445**
Landscaping	790	819	837	785	729
Fencing	672	878	696	731	596
Irrigation	56	51	49	39	55
Agriculture	66	73	45	39	48
Waterway Improvement	23	82	34	49	17
Construction	**2,147**	**1,413**	**1,583**	**1,545**	**1,496**
Bldg. Construction	1,673	905	1,080	1,089	1,037
Driveway	213	231	187	199	188
Grading	98	114	97	95	122
Site Development	101	121	159	101	106
Bldg. Demolition	62	42	60	61	43
Street & Road	**1,720**	**1,733**	**1,240**	**1,317**	**1,394**
Road Work	1,026	1,016	711	652	777
Storm Drain/Culvert	222	238	156	275	235
Curb/Sidewalk	194	203	176	228	215
Pole	177	166	137	96	97
Traffic Signal	14	17	14	18	25
Street Light	40	48	31	22	20
Traffic Sign	23	30	10	15	17
Railroad	17	10	4	4	7
Milling	0	1	0	1	1
Public Transit Authority	7	4	1	6	0
Unknown / Other	**1,556**	**2,146**	**2,638**	**1,860**	**1,424**
Unknown/Other	1,547	2,140	2,635	1,850	1,413
Engineering/Surveying	9	6	3	9	11
Steam	0	0	0	1	0
National Totals	**11,888**	**11,677**	**11,436**	**10,652**	**9,994**

NEW!

2023 CCGA DIRT

New tables, graphs & enhancements

The following enhancements can be found throughout the report:

Appendix B

Glossary of Terms & Definitions

Abandoned: with reference to underground infrastructure, taken out of service permanently but left in place.

Alternate Locate Agreement (ALA): A contractual agreement between a facility owner and an excavator that allows the excavator to proceed with their excavation work without receiving a traditional field locate.

Backfill: The act of filling the void created by excavating or the material used to fill the void.

CCGA: The Canadian Common Ground Alliance's (CCGA) primary role is to manage damage prevention issues of national interest that Regional Partners consider best addressed through a single voice.

CGA: The Common Ground Alliance (CGA) is a member-driven association dedicated to ensuring public safety, environmental protection, and the integrity of services by promoting effective damage prevention practices.

Compliance: Adherence to acts and regulations.

Damage: Any impact, stress and/or exposure that results in the need to repair an underground facility due to a weakening or the partial or complete destruction of the facility, including, but not limited to, the protective coating, lateral support, cathodic protection or the housing for the line, device or facility.

Damage Reporting: The immediate reporting to appropriate authorities and the owner of any damage made or discovered in the course of excavation or demolition work.

Daylighting: The exposure of underground utility infrastructure by minimally intrusive excavation practices to ascertain precise horizontal and vertical position or other attributes. (Note: may also be referred to as potholing" or "test pitting".)

Demolition Work: The intentional, partial or complete destruction by any means of a structure served by, or adjacent, to an underground line or facility.

Depth: The vertical distance below grade.

DIRT: Damage Information Reporting Tool.

Downtime: Lost time reported by a stakeholder on the Damage Information Reporting Tool (DIRT) field form for an excavation project due to failure of one or more stakeholders to comply with applicable damage prevention regulations.

DQI: The Data Quality Index (DQI) is a measure of data quality and consists of the evaluation of each organization that submitted records, in addition to the evaluation of each record submitted to DIRT.

Event: The occurrence of an underground infrastructure damage, near miss, or downtime.

Excavate or Excavation: An operation using equipment or explosives to move earth, rock or other material below existing grade. (Note: Excavation can include augering, blasting, boring, coring, digging, ditching, dredging, drilling, driving-in, grading, plowing-in, pulling-in, ripping, scraping, trenching and vacumming).

Excavator: Any person proposing to or engaging in excavation or demolition work for themselves or for another person.

Facility: See Utility Infrastructure.

Facility Owner/Operator: Any person, utility, municipality, authority, political subdivision, or other person or entity who owns, operates, or controls the operation of an underground line/facility.

Grade (noun): The surface elevation.

Grade (verb): The act of changing the surface elevation.

Hand Digging: any movement of earth using a hand shovel*. The preference is to use an insulated or wood-handle shovel.

Joint Trench: A trench containing two or more underground infrastructures that are buried together by design or agreement.

Locate (noun): The provision of location information by a facility owner (or their agent) in the form of ground surface markings and/or facility location documentation, such as drawings, mapping, numeric descriptions or other written documentation.

* This does not include picks, bars, stakes, or other earth-piercing devices.

Appendix B

Glossary of Terms & Definitions (cont'd)

Locate (verb): The process of an underground plant owner or their agent providing information to an excavator which enables them to determine the location of a facility.

Locate Request: A communication between an excavator and the owner or their agent (usually the notification service) in which a request for locating underground facilities is processed.

Locate Ticket: A locate request document created by the notification service or an owner marked with a unique identification number.

Locator: A person whose job is to locate underground infrastructure.

LSP: Locate Service Provider - a person authorized by the owner to locate and mark its underground facilities.

Marks or Markings: Surface marking indicating the presence of underground infrastructure including, but not limited to, highly visible paint and/or labeled stakes or flags to indicate the approximate location of buried facilities within the Located area.

Near Miss: An event where damage did not occur, but a clear potential for damage was identified.

Notifications: Ticket data transmitted to underground infrastructure owners.

One-Call Centre: A system which provides a single point of contact to notify facility owners/operators of proposed excavation activities.

Person: Any individual or legal entity, public or private.

Public: The general population or community at large.

Root Cause: The primary reason an event occurred.

Test Hole(s): Exposure of a facility by safe excavation practices used to ascertain the precise horizontal and vertical position of underground lines or facilities.

Ticket: All data required from an excavator to transmit a valid notification to the owner

Ticket number: A unique identification number assigned by the One-Call Center to each locate request.

Tolerance Zone: The space in which a facility is located, and in which special care is to be taken.

Underground: Beneath the ground surface or submerged, including where exposed by temporary excavation.

Utility: a private, publicly, or cooperatively owned entity whose purpose is to deliver a commodity or service such as communications, television/internet, power, electricity, light, heat, gas, oil, water, steam, and waste collection.

Utility Infrastructure: a cable, line, pipe, conduit, or structure used to gather, store, or convey products or services. (Note: may also be referred to as "facility" or "plant".)

Vacuum Excavation: A means of soil extraction through vacuum where water or air jet devices are commonly used for breaking the ground.