What is the ORCGA?

The Ontario Regional Common Ground Alliance (ORCGA) is a non-profit organization promoting efficient and effective damage prevention for Ontario's vital underground infrastructure. Through a unified approach and stakeholder consensus, the ORCGA fulfils its motto of "Working Together for a Safer Ontario".

We are a growing organization with over 380 organizations as active members and sponsors, and represent a wide cross section of stakeholders including:

- Oil & Gas Distribution
- Transmission Pipeline
- Road Builders
- Safety Organization
- Homebuilder
- Engineering
- Land Surveying
- Equipment & Suppliers
- One-Call
- Insurance
- Regulator
- Locator
- Railways
- Landscape/Fencing
- Telecommunications
- Excavator
- Municipal & Public Works
- Electrical Distribution
- Electrical Transmission

For over a decade these stakeholder groups have been active in promoting "Call Before You Dig" and other good damage prevention practices individually, or through smaller separate organizations. In 2003, these groups amalgamated under the ORCGA name to provide a single voice representing the damage prevention community in the province. The ORCGA is a regional chapter of the Common Ground Alliance (CGA) based in Alexandria, Virginia, which was formed in 2000 to further damage prevention efforts in North America.

The ORCGA welcomes comments and new members on its various committees. In order to submit a suggestion, or to join a meeting, please visit www.orcga.com to learn about the scope of the various committees. General inquiries about the ORCGA can be made at:

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To learn more about ORCGA's Dig Safe Campaign, visit www.digsafe.ca

Introduction

The Damage Information Reporting Tool (DIRT) is the result of the efforts made by the Ontario Regional Common Ground Alliance (ORCGA) to gather meaningful data about the occurrence of facility events. An "event" is defined by the ORCGA DIRT User's Guide as "the occurrence of downtime, damages, and near misses." Gathering information about these types of events gives the ORCGA the opportunity to perform analyses of the contributing factors and recurring trends, as well as identify potential educational opportunities with the overall goals of reducing damages and increasing safety for all stakeholders.

The Annual DIRT Reports provide a summary and analysis of the events submitted during the prior year, and as additional years of data are collected, also provides the ability to monitor trends over time. The 2009 Report focuses on the data gathered throughout Ontario during the three year period between 2007 and 2009. This data can be helpful for all stakeholders in review of current issues facing the industry not only in their region, but in other regions as well.

In addition to the number of records submitted, another important factor is the completeness of those records. Complete records allow for better overall analysis and provide for a more inclusive review of the contributing factors behind the events themselves. Each submitted record contains numerous data elements that are vital to understanding and interpreting the incidents reported in DIRT. The majority of the submitted events for the 2009 Report were missing one or more data elements, either using "Unknown/Other" or "Data Not Collected" for a required field, or leaving blank a non-required field. When there are small percentages of known data for a specific field, it becomes difficult to perform a meaningful analysis. It is of vital importance that stakeholders align their data collection and reporting practices with those found on the DIRT form. As a way to gauge the overall level of completion for the records submitted, the Data Quality Index, or DQI, was implemented in 2009. The DQI provides a quantitative benchmark for stakeholders or organizations to review the quality of the facility event records that they submit on an ongoing basis. More complete event records lead to a higher overall DQI, and therefore a better, more complete analysis. Hopefully this will lead stakeholders to identify opportunities to improve their data collection and reporting practices. Please see the DQI section later in this report for further details. In the analysis of individual fields, and in the multi-field analyses, records with missing data are filtered out, leaving only the events with complete data. Events that are incomplete are illustrated to the left of the main chart as a separate chart and identified as "Unknown/Other."

The potential exists that more than one report may be submitted for the same event, such as one by the excavator and one by the facility owner. There can be a benefit to this scenario. For example, data may be included on one submission

that was omitted on the other. In addition, the way that different Stakeholders interpret the Root Cause of the same event may yield interesting insights. The DIRT system compares each field within each report submitted against the fields of all other reports in DIRT, and calculates the probability that it matches an already submitted event. It becomes more difficult to determine if the DIRT system includes multiple reports for the same event as fewer fields are completed.

Data Analysis Disclaimer: Industry stakeholders have voluntarily submitted their underground facility event data into DIRT. The data submitted is not inclusive of all facility events that occurred during the Report year. The analysis of said data may not be representative of what is actually occurring in any particular geographic area(s) or for any particular industry group(s). Please use caution when drawing conclusions based upon the data or the Report.

Questions in regards to registering and/or inputting data into DIRT may be forwarded to meorcga@cogeco.ca.

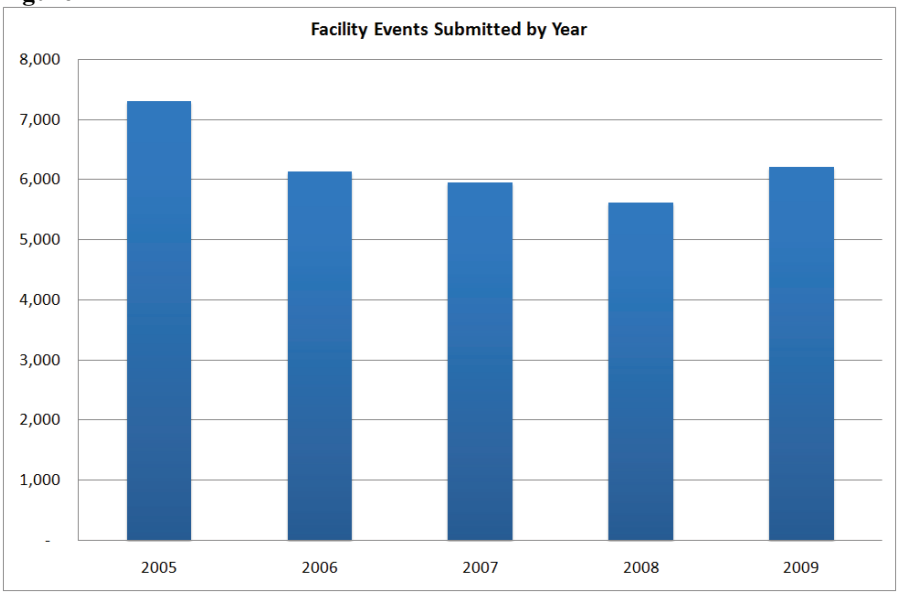
Report Index

Data Element Analysis

1. Facility events submitted by year

The number of facility events submitted to DIRT continuously decreased between 2005 and 2008 and increased by 11% in 2009. Because the number of stakeholders submitting data to DIRT between 2005 and 2008 remained fairly constant, it can be surmised that the number of events decreased from year to year. In 2009, however, there was a significant increase in damages input by locators as can be seen in Figure 3.

Figure 1



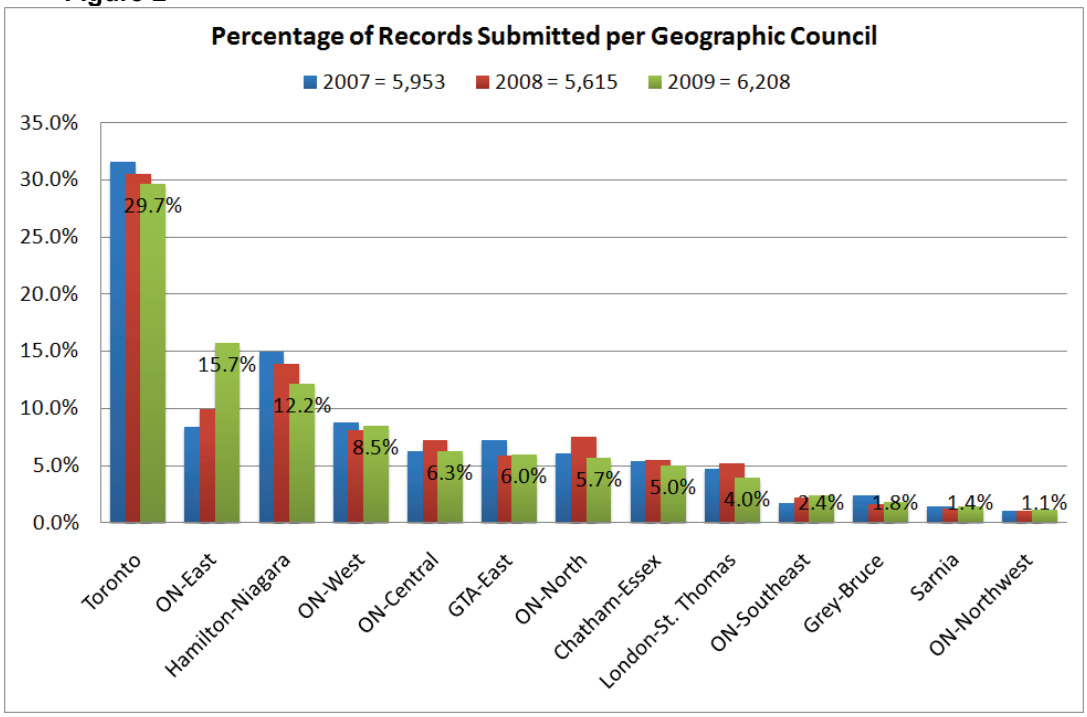
2. Facility events submitted across Ontario

Trends in record submissions remain fairly similar to previous years. Table 1 shows the number of submitted events for each geographical area.

Table 1: Submitted Events per Geographical Area

Geographic Council Area	Events	%
Toronto	1,844	29.7%
ON-East	975	15.7%
Hamilton-Niagara	758	12.2%
ON-West	530	8.5%
ON-Central	392	6.3%
GTA-East	374	6.0%
ON-North	355	5.7%
Chatham-Essex	309	5.0%
London-St. Thomas	246	4.0%
ON-Southeast	151	2.4%
Grey-Bruce	113	1.8%
Sarnia	90	1.4%
ON-Northwest	71	1.1%
Grand Total	6,208	100%

Figure 2



3. Submitted facility events by known stakeholder

As in previous years the two stakeholder groups submitting the largest number of events are Natural Gas and Telecommunications. The number of events submitted by the locator stakeholder group markedly increased in 2009

compared to previous years. This will be investigated to ensure the increase is not due to duplicate events being input to the tool. As we continue to increase the number of stakeholders submitting data and obtain better representation from each stakeholder group, the data collected through DIRT will provide a more accurate representation of Ontario's damage statistics.

As previously noted, the potential exists that more than one report may be submitted for the same event, such as one by the excavator and one by the facility owner.

Figure 3

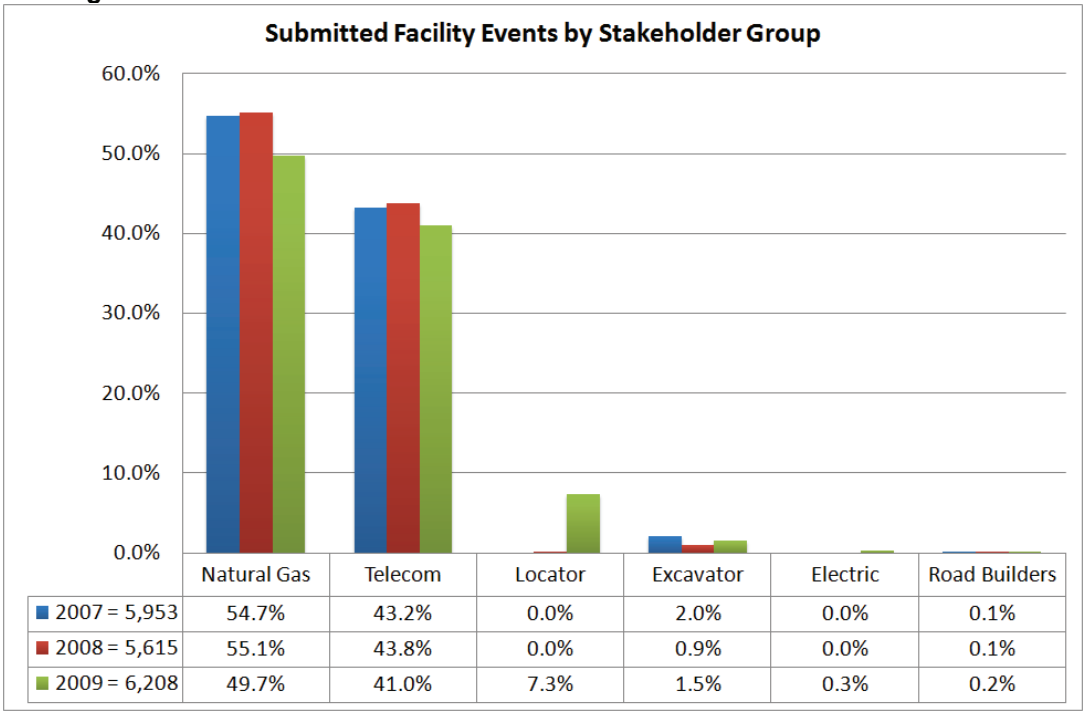


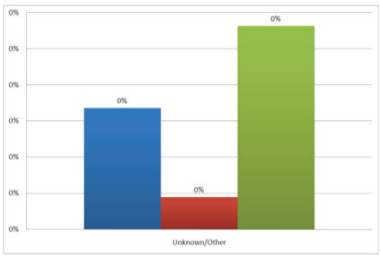
Table 2: Events Submitted by Stakeholder Group

Stakeholder Group	Events	%
Natural Gas	3,086	49.7%
Telecom	2,547	41.0%
Locator	454	7.3%
Excavator	95	1.5%
Electric	16	0.3%
Road Builders	10	0.2%
Grand Total	6,208	100%

4. Submitted facility events by known type of facility operation affected

Telecommunication and Natural Gas facilities continue to be identified as the facility operation affected in the majority of events recorded in DIRT (approximately 96% in 2009).

Figure 4



Note: 0.1% of 2009 events did not identify type of operation affected (above graph)

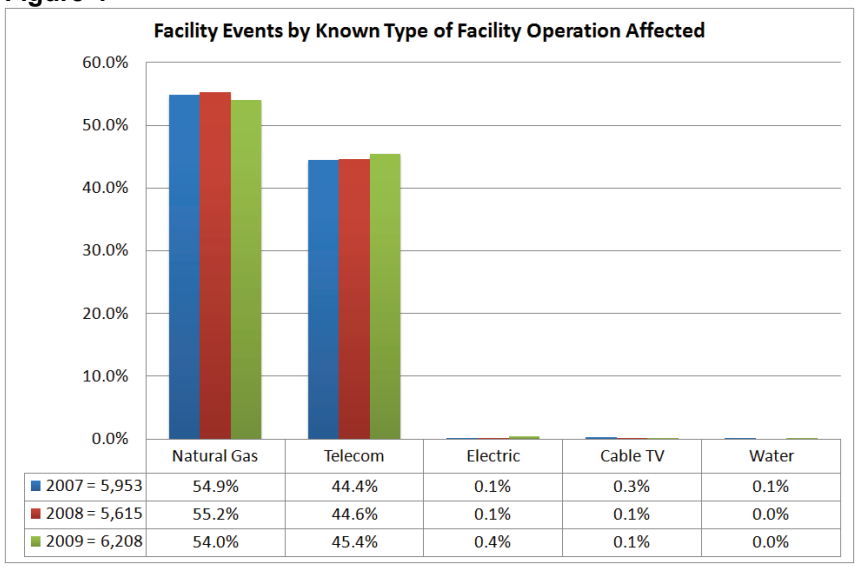


Table 3: Events by Affected Facilicty

Facility Affected	Events	%
Natural Gas	3351	54.0%
Telecom	2819	45.4%
Electric	25	0.4%
Cable TV	5	0.1%
Water	1	0.0%
Grand Total	6208	100%

5. Frequency of events by known excavation equipment group

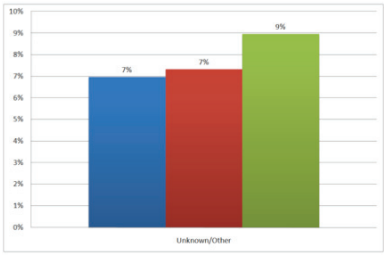
The percentage of events involving backhoes, trackhoes, trenchers and drilling equipment have continued to decrease in 2009 while the percentage of events involving hand tools have continued to increase.

Table 4 defines the types of excavation equipment that are included in each equipment group.

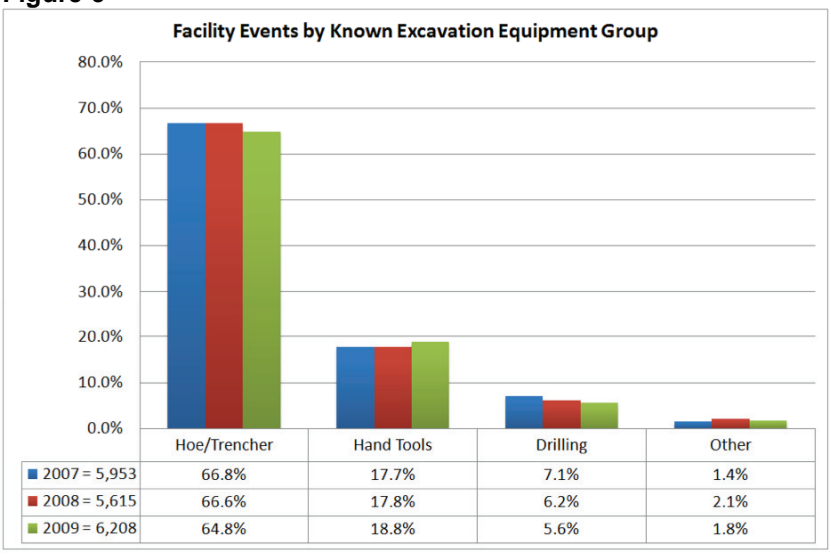
Table 4: List of Equipment Groups

Group	Excavation Equipment Type
Hoe/Trencher	Backhoe/Trackhoe
	Trencher
Hand Tools	Hand Tools
	Probing Device
Drilling	Auger
	Boring
	Directional Drilling
	Drilling
Other	Grader/Scraper
	Farm Equipment
	Milling Equipment
	Vacuum Equipment

Figure 5



Note: 9.0% of 2009 events did not identify type of excavation equipment (above graph)



6. Facility events reported by known root cause group

In 2009, Excavation practices not sufficient make up 45% of submitted event root causes. This is a 33% increase over 2008. Of all of the facility events in 2009, No Locate events account for 31% which is a 12 % decrease from 2008. It should be noted that “Notification practices not sufficient” includes events where the excavator has called for a locate, but began excavation prior to the locate being completed. Table 5 explains the detailed root causes included in each root cause category. Depending upon on which reporting stakeholder submits data for a

facility event, the root cause percentages can vary significantly, as indicated in Table 6.

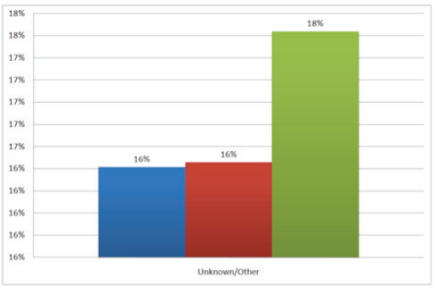
Table 5: List of Root Causes

Group	Root Cause Type
Excavation practices not sufficient	Failure to maintain clearance
	Failure to maintain the marks
	Failure to support exposed facilities
	Failure to use hand tools where required
	Failure to verify location by test-hole (pot-holing)
	Improper backfilling
	No notification made to the one-call center
	Notification to one-call center made but not sufficient
	Unknown Subcategory of Excavation Practice
Notification NOT made	No notification made to the one-call center
Locating practices not sufficient	Facility marking or location not sufficient
	Facility was not located or marked
	No notification made to the one-call center
	Unknown Subcategory of Locating Practice
Incorrect facility records/maps	Incorrect facility records/maps
Notification practices not sufficient	Wrong information provided
Miscellaneous root causes	Abandoned facility
	Deteriorated facility
	Other

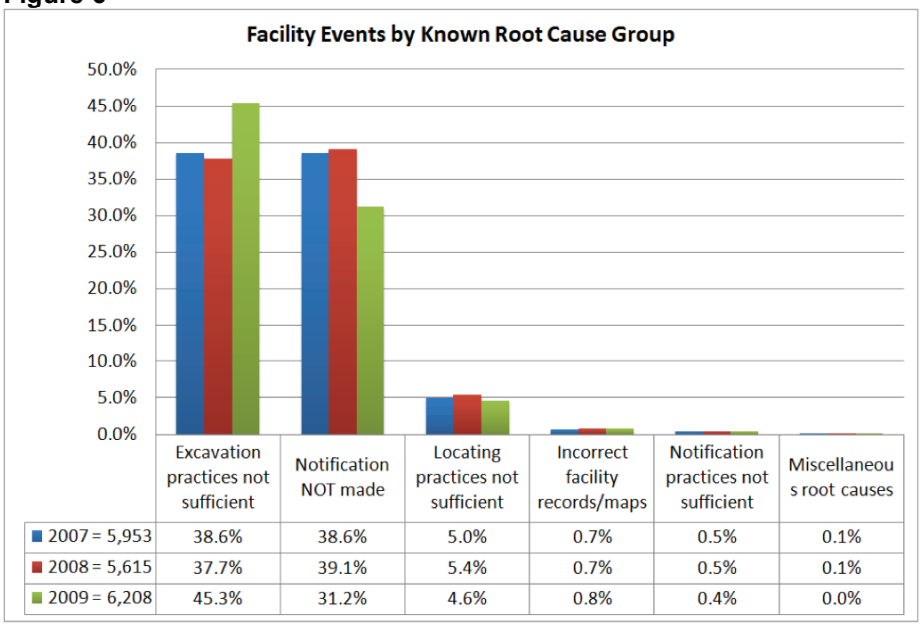
Table 6: Root Cause by Reporting Stakeholder

Root Cause Category	Natural Gas	Telecom	Locator	Excavator	Electric	Road Builders	Grand Total
Excavation practices not sufficient	56.6%	47.6%	70.1%	59.6%	18.8%	90.0%	55%
Notification NOT made	38.2%	42.6%	24.6%	18.1%	37.5%	0.0%	38%
Locating practices not sufficient	3.0%	9.8%	4.0%	22.3%	37.5%	10.0%	6%
Incorrect facility records/maps	1.4%	0.0%	1.3%	0.0%	0.0%	0.0%	1%
Notification practices not sufficient	0.8%	0.0%	0.0%	0.0%	6.3%	0.0%	0%
Miscellaneous root causes	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100%

Figure 6



Note: 17.6% of 2009 events did not identify root cause of the facility event (above graph)



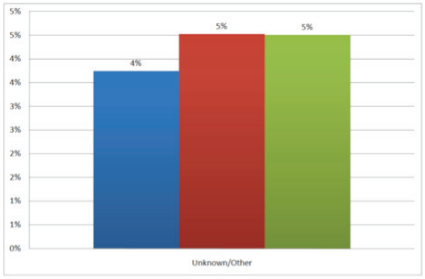
The Natural Gas and Telecommunication stakeholders submitted the largest percentage of facility events. They captured less than 10% of events in the "Locating practices not sufficient" group, with "Notification not made" and "Excavation practices not sufficient" accounting for more than 90% of their reported facility events.

Table 7: Events by Root Cause

Root Cause	Events	%
Excavation practices not sufficient	2,815	45.3%
Notification NOT made	1,938	31.2%
Locating practices not sufficient	287	4.6%
Incorrect facility records/maps	47	0.8%
Notification practices not sufficient	24	0.4%
Miscellaneous root causes	2	0.0%
Grand Total	6,208	1.0%

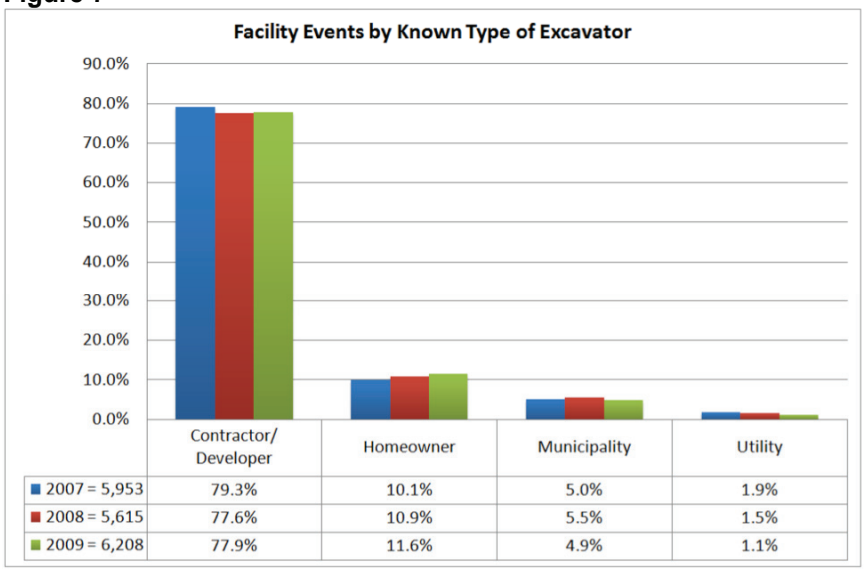
7. Frequency of events by known excavator group

Contractors and developers continue to be involved in the majority of the reported facility events. Additional analysis of these groups is provided within the multiple field analysis portion of this report.



Note: 4.5% of 2009 events did not identify type of excavator group (above graph).

Figure 7



	Contractor/ Developer	Homeowner	Municipality	Utility
2007 = 5,953	79.3%	10.1%	5.0%	1.9%
2008 = 5,615	77.6%	10.9%	5.5%	1.5%
2009 = 6,208	77.9%	11.6%	4.9%	1.1%

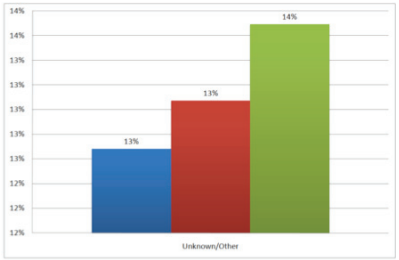
8. Facility events by known type of work performed group

The Sewer/Water and Utility work type groups continue to be involved in the majority of the facility events. Construction events, themselves, have increased by 20% and Green industry events by 24% over 2009. Table 8 explains which types of work are included in each group.

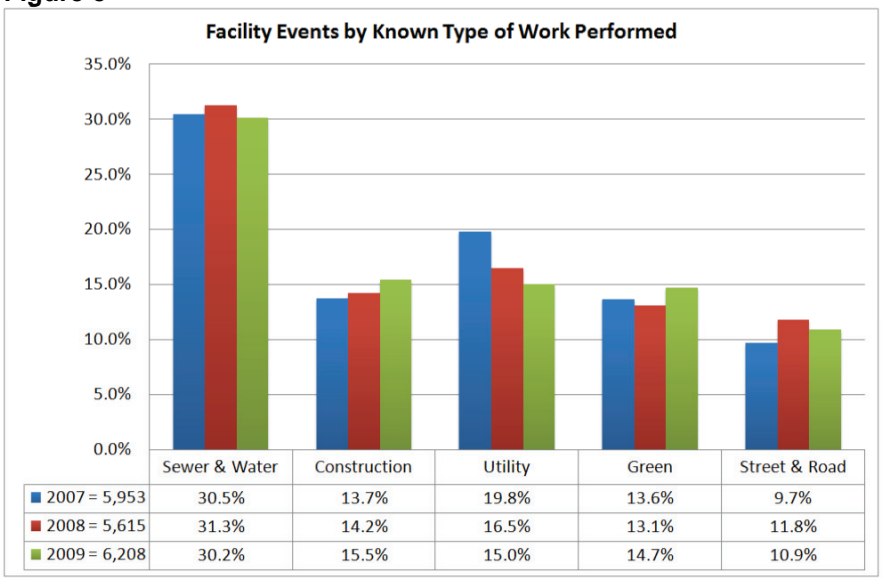
Table 8: List of work included in each work group

Group	Type of Work Performed	Group	Type of Work Performed
Sewer & Water	Drainage	Green	Agriculture
	Sewer (Sanitary/Storm)		Fencing
	Water		Irrigation
Construction	Bldg. Construction		Landscaping
	Bldg. Demolition	Street & Road	Curb/Sidewalk
	Driveway		Milling
	Grading		Pole
	Site Development		Public Transit Authority
Utility	Cable TV		Road Work
	Electric		Storm Drain/Culvert
	Natural Gas		Street Light
	Telecommunications		Traffic Sign
Unknown/Other	Data Not Collected		Traffic Signal
	Unknown/Other		

Figure 8



Note: 13.7% of 2009 events did not identify typ0e of work performed (above graph).



MULTI-FIELD ANALYSIS

1. Analysis of root cause and facilities affected type for five types of work groupings

The following charts illustrate the known root causes of events for the five work groupings of Sewer/Water, Green, Construction, Utility, and Street & Roadwork for the years 2008 and 2009. It is encouraging to observe that for all five industries, the percentage of damages due to “Notification Not Made” has decreased in 2009. The magnitude of the decrease was significant compared to previous years. This may be attributed to the more aggressive promotion of the “Call Before You Dig” message. In contrast, the percentage of damages due to “Excavating practices not sufficient” has increased in all five industries.

Figure 9

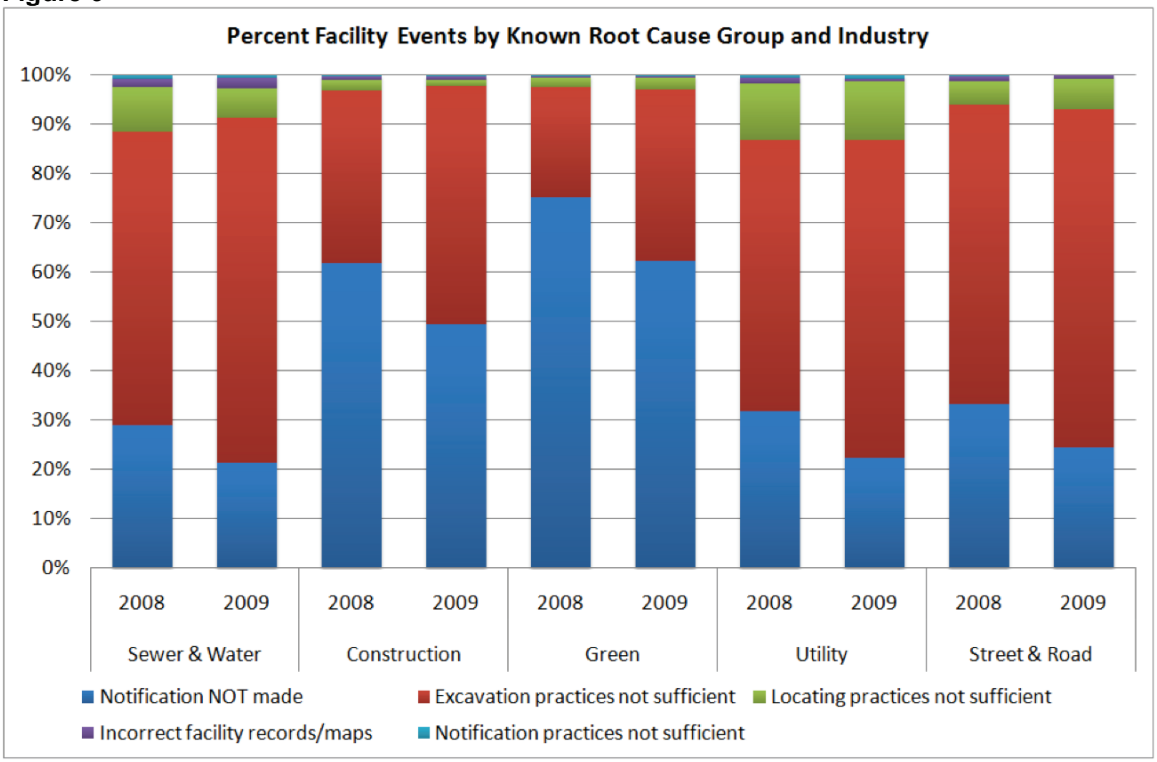
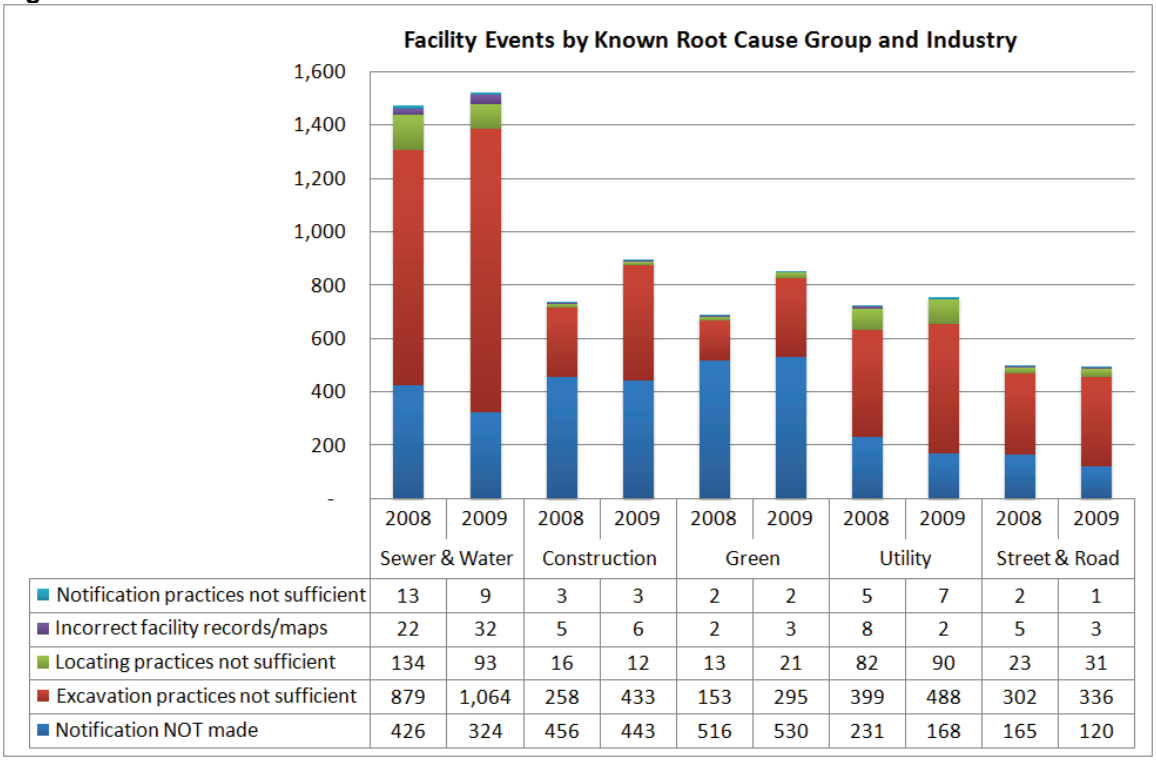


Figure 10



	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
	Sewer & Water		Construction		Green		Utility		Street & Road	
Notification practices not sufficient	13	9	3	3	2	2	5	7	2	1
Incorrect facility records/maps	22	32	5	6	2	3	8	2	5	3
Locating practices not sufficient	134	93	16	12	13	21	82	90	23	31
Excavation practices not sufficient	879	1,064	258	433	153	295	399	488	302	336
Notification NOT made	426	324	456	443	516	530	231	168	165	120

Apart from the Utilities, all excavator groups decreased their percentage of No Locate damages as can be seen in Figure 11. However, Utility Excavators remain one of the smallest contributors to the total number of damage events in 2009 as can be seen in Figure 12. Continued focus needs to be paid to promoting reduced Contractor and Homeowner damages due to No Locates.

Figure 11

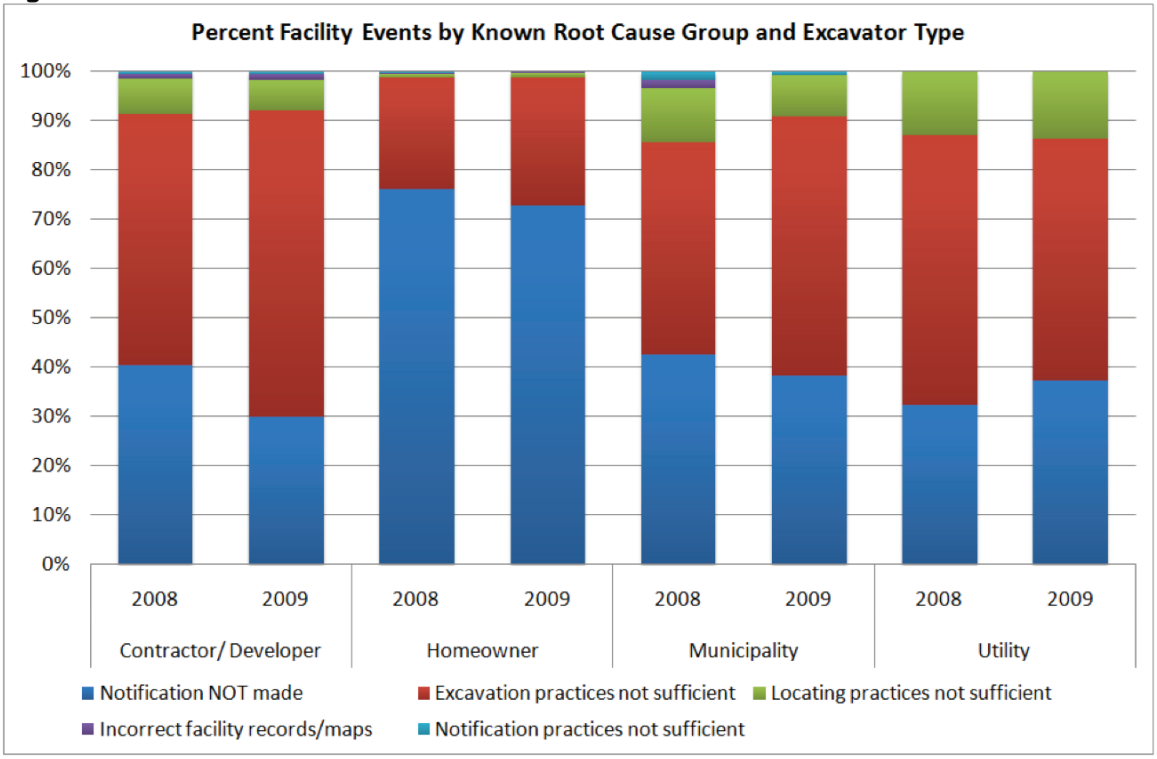
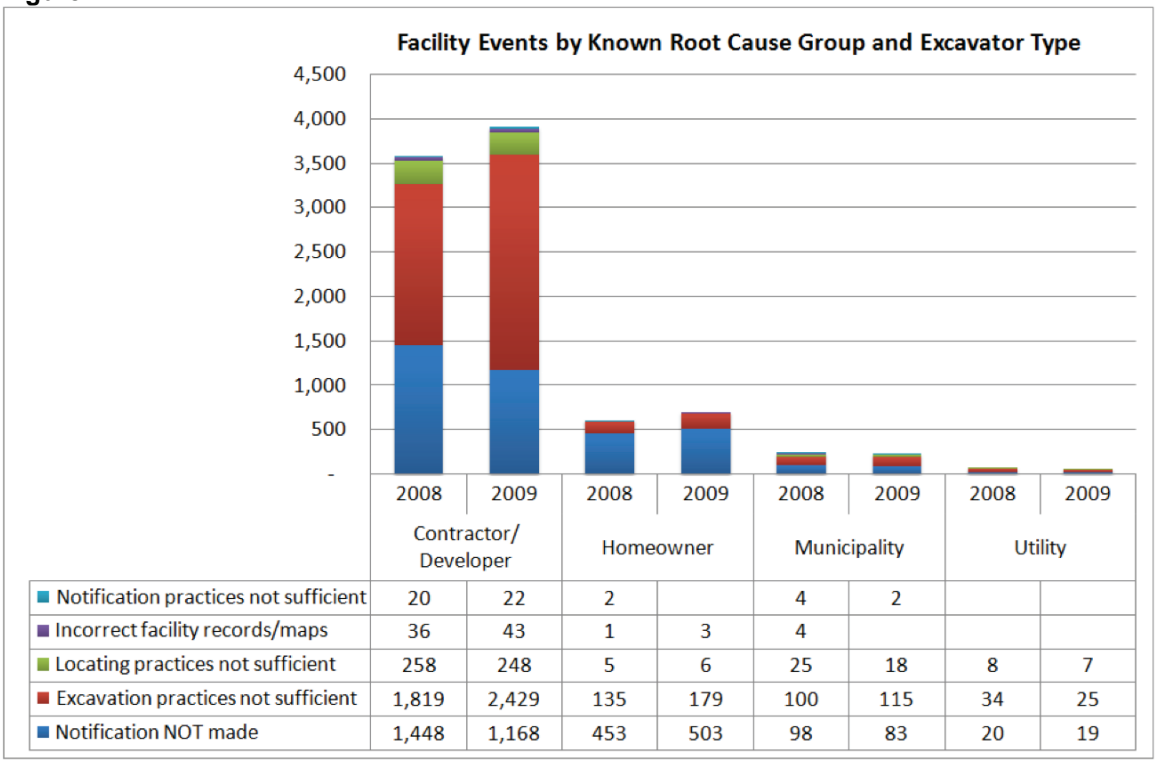


Figure 12



	2008	2009	2008	2009	2008	2009	2008	2009
	Contractor/ Developer		Homeowner		Municipality		Utility	
Notification practices not sufficient	20	22	2		4	2		
Incorrect facility records/maps	36	43	1	3	4			
Locating practices not sufficient	258	248	5	6	25	18	8	7
Excavation practices not sufficient	1,819	2,429	135	179	100	115	34	25
Notification NOT made	1,448	1,168	453	503	98	83	20	19

Report Findings Summary

1. Data Quality Index Indications

The 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. The overall average DQI is 75.2. The breakdown of DQI for each individual part of the DIRT field form is illustrated in Table 9 below. The weight assigned to the various DIRT parts varies based upon its value in analyzing the event for damage prevention purposes, with root cause receiving the largest weight. The DQI for a set of records can be obtained by averaging the individual DQI of each record. The "DQI" column in the table below represents the average of all 6208 events in the 2009 data set.

Table 9: DIRT Submission Parts and DQI

DIRT Parts	Relative Weight	DQI
A: Who is submitting this information?	5%	100.0
B: Date and Location of the event	12%	83.9
C: Affected Facility Information	12%	93.4
D: Excavation Information	14%	91.3
E & F: Notification, Locating and Marking	12%	85.8
G: Excavator Downtime	6%	1.2
H: Description of Damage	14%	38.1
I: Description of the Root Cause	25%	81.3
Total Weighted DQI	100%	75.2

Of the various parts of the damage report, parts G and H are not often included as most of the organizations inputting data into DIRT do not track this information. Based on the DQI index and the information that is reported in DIRT and used to make recommendations, there is room for improvement in part I which contains the Description of the Root Cause.

2. STATUS & RECOMMENDATIONS:

DIRT Data Integrity

In order to increase confidence and clarity in the data, the R&E Committee should discuss how each field is interpreted, provide more clear descriptions within the Tool and ensure that new users are following the committee guidelines for inputting data.

The R&E should continue to monitor the variations in root causes reported by different reporting stakeholders. As reported in table 6, 22.3% of reports submitted by excavators listed a root cause from the “Locating Practices Not Sufficient” group. For the major utility operators, it was 3.0% to 9.8%. The inconsistency may be due to different points of view regarding how the actions of the excavator and facility operator contribute to an event, which events different stakeholders may choose (or not) to report, or some combination of these and other factors.

DIRT Registration

Webinars have been successful in making stakeholders aware of the DIRT tool; however, registration to DIRT has not reflected the increased awareness. Efforts need to be made to develop a formal follow-up process for encouraging those who attend the webinar to take the step to input data to DIRT. A formal survey will be built in 2010 to determine the root cause for the lack of registration.

The R&E Committee has elected to switch to “Virtual Private DIRT” which will allow for better management of DIRT users, an easier registration process, and customized reporting for the ORCGA.

Ontario Regional ORCGA Common Ground Alliance

Damage Information Reporting Tool Field Form

Check the Appropriate Response on the Form
"*" indicates a Required Field

Damage Information Reporting Tool (DIRT) - Field Form

Part A – Who is Submitting This Information

Who is providing the information?

☐ Electric ☐ Engineer/Design ☐ Equipment Manufacturer ☐ Excavator ☐ Insurance ☐ Liquid Pipeline
☐ Locator ☐ Natural Gas ☐ One Call Center ☐ Private Water ☐ Public Works
☐ Railroad ☐ Road Builders ☐ State Regulator ☐ Telecommunications ☐ Unknown/Other

Name of the person providing the information:

Part B - Date and Location of Event

***Date of Event:** (MM/DD/YYYY)
***Country** ***State** ***County** **City**
Street address **Nearest Intersection**

***Right of Way where event occurred**

Public: ☐ City Street ☐ County Road ☐ State Highway ☐ Interstate Highway ☐ Federal Land
Private: ☐ Private Business ☐ Private Land Owner ☐ Private Easement ☐ Pipeline ☐ Railroad
☐ Power /Transmission Line ☐ Dedicated Public Utility Easement ☐ Data not collected ☐ Unknown/Other

Part C – Affected Facility Information

***What type of facility operation was affected?**

☐ Cable Television ☐ Electric ☐ Natural Gas ☐ Liquid Pipeline ☐ Sewer (Sanitary Sewer)
☐ Steam ☐ Telecommunications ☐ Water ☐ Unknown/other

***What type of facility was affected?**

☐ Distribution ☐ Gathering ☐ Service/Drop ☐ Transmission ☐ Unknown/Other

Was the facility part of a joint trench?

☐ Unknown ☐ Yes ☐ No

Was the facility owner a member of One Call?

☐ Unknown ☐ Yes ☐ No

Part D – Excavation Information

***Type of Excavator**

☐ Contractor ☐ Developer ☐ Occupant ☐ Farmer ☐ Railroad
☐ State ☐ County ☐ Municipality ☐ Utility ☐ Data not collected ☐ Unknown/ Other

***Type of Excavation Equipment**

☐ Auger ☐ Backhoe/Track hoe ☐ Boring ☐ Drilling ☐ Directional Drill
☐ Explosives ☐ Farm Equipment ☐ Grader/Scraper ☐ Hand Tools ☐ Milling Equipment
☐ Probing Device ☐ Trencher ☐ Vacuum Equipment ☐ Data Not Collected ☐ Unknown/Other

***Type of Work Performed**

☐ Agriculture ☐ Bldg. Construction ☐ Bldg. Demolition ☐ Cable Television ☐ Curb/Sidewalk
☐ Drainage ☐ Driveway ☐ Electric ☐ Engineering/Survey ☐ Fencing
☐ Grading ☐ Irrigation ☐ Landscaping ☐ Liquid Pipeline ☐ Milling
☐ Natural Gas ☐ Petroleum Pipeline ☐ Pole ☐ Public Transit Auth. ☐ Railroad Maint.
☐ Road Work ☐ Sewer (Sanitary/ Storm) ☐ Site Development ☐ Steam ☐ Street Light
☐ Storm Drain/Culvert ☐ Telecommunications ☐ Traffic Sign ☐ Traffic Signal
☐ Water ☐ Waterway Improvement ☐ Data Not Collected ☐ Unknown/Other

Part E – Notification

***Was the One-Call Center notified?**

☐ Yes ☐ No

If Yes, which One Call center?

If Yes, please provide the One Call ticket number

Visit DIRT at www.cga-dirt.com