

# **COMMON GROUND**

## **Study of One-Call Systems and Damage Prevention Best Practices**

**August 1999**

**Sponsored by the United States Department of Transportation; Research and Special Programs Administration; Office of Pipeline Safety, as authorized by the Transportation Equity Act for the 21<sup>st</sup> Century (TEA 21)**



## ACKNOWLEDGMENTS

The Common Ground report was prepared by over 160 individuals, representing a wide range of interests, organizations, and viewpoints on preventing damage to underground facilities. The project was initiated by the U. S. Department of Transportation's Office of Pipeline Safety (OPS). OPS is an element of the Department's Research and Special Programs Administration.

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Lisa Kokoszka provided administrative oversight for OPS' operations.

Cycla Corporation staff supported all phases of the study and provided expert assistance in the report-writing process. Cycla personnel participating were: Jim von Herrmann, Herb Wilhite, Jean Dameron, Mary Lockhart, Andy McClymont, Chris McClymont, Dorian Stansberry, Sue vonHerrmann, and Skip Brown. Jim Quilliam, formerly of Cycla, worked in the initial phase of the study.

The One-Call Study Internet-based computer system that enabled participants across the Nation to have direct and immediate access to all project information was developed and maintained by Cycla's Randy Pearson.

Arrowhead and Telecommunications, Inc., supported OPS' personnel in this work. Janice Morgan arranged facilities for the scores of meetings held across the Nation during the project. Karen Munden and Peggy Thompson skillfully shared the administrative burden throughout the year.



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## **FOREWORD**

### **AUTHORIZATION**

This report, *Common Ground: Study of One-Call Systems and Damage Prevention Best Practices*, was prepared in accordance with, and at the direction and authorization of the Transportation Equity Act for the 21<sup>st</sup> Century (TEA 21), Public Law 105-178, signed into law on June 9, 1998 (see Appendix B). The Common Ground Study was performed and this report was written through the efforts of a joint government/industry quality team. The One-Call Systems Study (OCSS) was sponsored by the United States Department of Transportation's (DOT), Research and Special Programs Administration (RSPA), Office of Pipeline Safety (OPS). Representatives of many stakeholders (industries, industry associations, and other stakeholders) interested and involved in the many aspects of underground damage prevention participated fully in the Study. All of those participating stakeholders contributed tremendously in time, funding, and effort in completing the Study and the Common Ground Report.

All participants in the Study are to be complimented on their dedication and contributions to this project. The Study Team participants truly did a great deal of sharing of their diverse and sometimes differing views on damage prevention. They accomplished this effort in a manner that involved open and honest communication, which served to greatly improve the understanding and perspectives of all participants. The Study ultimately resulted in a quality product, this Report, that can be used to help in future efforts to improve underground damage prevention. The Study Team's ability to complete this effort in a relatively short time is a testament to how much all of the stakeholder participants contributed to the effort and how they openly communicated and learned to work together. All participants truly exhibited a sense of shared responsibility and are commended for their efforts, contributions, and for the development of this report.

### **STUDY OBJECTIVE**

The purpose of the Study was to identify and validate existing best practices performed in connection with preventing damage to underground facilities.

The collected best practices are intended to be shared among stakeholders involved with and dependent upon the safe and reliable operation, maintenance, construction, and protection of underground facilities. These best practices contain validated experiences gained that can be further examined and evaluated for possible consideration and incorporation into state and private stakeholder underground facility damage prevention programs.

## **STUDY RESULTS**

The Common Ground Study effort was divided into nine areas, which fostered a concentrated focus on work practices within the natural groupings of damage prevention activities. Eight of the Task Team Chapters provide a collection of current damage prevention best practices which are believed to help prevent damage to underground facilities. Appendix A, “Emerging Technologies,” provides a view of new or developing equipment and technologies.

## **APPLICATION OF STUDY RESULTS**

The damage prevention best practices identified in this report provide states and other stakeholders with a means of enhancing the public safety and service reliability of underground facilities. Consistent with the language of TEA 21, there is no requirement that these best practices be adopted, in whole or in part, by any current or future stakeholder, individual, or governing body.

TEA 21 encourages adoption of the best practices identified in this Report as follows: “The Secretary (of Transportation) shall encourage each State and operator of one-call notification programs to adopt and implement those practices identified in the Report that the State determines are the most appropriate.”

TEA 21 also contains provisions for the application and receipt of grant funds during the years 2000 and 2001 to states that adopt or otherwise comply with these best practices as a part of their underground facilities damage prevention programs. State application for and receipt of said grant funds is outside the scope of the Study.

With consensus agreement between the U. S. Department of Transportation’s Research and Special Programs Administration and the Common Ground Study Team, the focus of the Task Teams and the overall Study was confined to best practices. This Study did not include an analysis of least successful practices.

### **Effect on State Law and Private Contractual Rights**

Nothing contained in this description of best practices is intended to supercede existing State laws, regulations, or existing underground facility damage prevention practices. Likewise, these best practices are not promoted in order to override private contractual agreements including, but not limited to, hold harmless agreements between and among property owners. The force and effect of a given State's laws or regulations is a matter for decision and enforcement by the judicial authorities of that State, as is the determination of whether any private contractual rights are modified or superceded as a matter of public policy or in the exercise of the State's police power.

## **Local, Regional, and Facility Specific Considerations**

It is recognized that, while a practice may be the best under most conditions, local and regional factors may affect its adoption or adherence. These factors can include, but are not limited to cost/benefit analysis, regulatory issues, conflict with State Laws, practicality, economic conditions, and competitive considerations.

Further, it is recognized that physical differences in terrain, land use, climate, and environmental conditions should be evaluated when the offered best practices are being reviewed for application.

Another significant factor to be considered is the specific underground facility type. Each type may have its own associated safety and service interruption characteristics, which could have an impact on the adoption and consideration of universal best practices.



# **CHAPTER 1**

## **Common Ground Study Background and Process**

### **1.1 BACKGROUND INFORMATION – DAMAGE TO UNDERGROUND FACILITIES**

Damages to underground facilities are usually preventable and most frequently occur due to a breakdown in the damage prevention process. The responsibility for preventing excavation damage is shared by all stakeholders, and includes elements such as planning, effective use of one-call systems, accurate location and marking of underground facilities, adherence to safe digging practices, proper placement of facilities, and strong public education and awareness. Damage to underground facilities can affect the vital services and products delivered through those facilities. Underground facility damage can result in injury and death, as well as severe property damage and loss of vital services and products, such as telecommunications, water and sewer, electric power, cable television, and the flow and supply of liquid petroleum and natural gas. Damage can cause vital facility outages for homes, businesses, hospitals, air traffic control operations, and emergency service providers.

At the heart of damage prevention is improved information accuracy and consistency in communication between excavators and operators of underground facilities. One-call systems provide a reliable and efficient process for excavators to notify facility owners/operators of planned excavations. The one-call process allows operators with facilities in the vicinity of a proposed excavation site to mark the location of their equipment and facilities in advance of the excavation. This gives excavators knowledge by which to excavate safely.

Damage prevention practices vary significantly among states, one-call centers, excavators, facility owners/operators, regulatory agencies, designers, and other stakeholders associated with or impacted by underground facilities. States have a variety of unique laws and regulations governing the practices, enforcement, and performance analysis data related to underground facilities' damage prevention.

### **1.2 LEGISLATIVE AUTHORITY FOR STUDY**

The Transportation Equity Act for the 21<sup>st</sup> Century (TEA 21) was signed into law on June 9, 1998, as Public Law 105-178. TEA 21, Title VII, Subtitle C – Comprehensive One-Call Notification (see Appendix B) was intended to reduce damage to underground facilities during excavation and to reduce the attendant risks to the public and the environment that are associated with excavation activities.

Section 6105 of TEA 21 authorized the United States Department of Transportation (DOT) to undertake a study of damage prevention practices associated with existing one-call notification systems. The Study

was to be developed in consultation with other appropriate federal agencies, state agencies, one-call notification center operators, underground facility owners/operators, excavators, and other interested stakeholders. TEA 21 authorized the DOT to gather information to determine which existing one-call notification systems' practices were most effective in protecting the public, excavators, and the environment and in preventing disruptions to public services and damage to underground facilities.

The law encourages states to establish or improve existing one-call notification systems. TEA 21 encourages adoption of the best practices identified in this report as follows: "The Secretary (of Transportation) shall encourage each State and operator of one-call notification programs to adopt and implement those practices identified in the Report that the State determines are the most appropriate."

TEA 21 also established a two-year program under which a state may apply for grants upon a showing that the state's one-call notification system meets minimum standards. The grants are to be used for the enhancement of the one-call system. Authorizations are provided, subject to appropriation, for grants in Fiscal Years 2000 and 2001.

With consensus agreement between the U. S. Department of Transportation, Research and Special Programs Administration and the Common Ground Study Team, the focus of the Task Teams and the overall Study was confined to best practices. This Study did not include an analysis of least successful practices.

### **1.3 RSPA PARTNERSHIP PRACTICES**

The DOT's Research and Special Programs Administration (RSPA) has established a successful history of forming and enhancing partnerships with other government agencies, transportation industries, and other stakeholders that are affected by RSPA actions. Using the "Quality Action Team" model, RSPA has successfully brought diverse stakeholders together for problem solving. This has been an effective process for gathering data, identifying issues, and determining realistic options for issue resolution. RSPA has used the quality action team approach to address damage prevention education. The Damage Prevention Quality Action Team (DAMQAT), a joint government/industry initiative, was established in October, 1996 to increase awareness of the need to protect underground facilities and to promote safe digging practices. The results achieved to date by the DAMQAT efforts have been very encouraging, and have further demonstrated the value of pursuing these initiatives through joint industry/regulatory agency partnership to maximize opportunities for improvement.

### **1.4 ONE-CALL BEST PRACTICES STUDY INITIATION**

Consistent with the provisions in TEA 21, RSPA established a Study Team to evaluate damage prevention practices associated with existing one-call notification systems. The purpose of the Study was to gather and assess information in order to determine which existing one-call notification systems' practices are most effective in protecting the public, excavators, and the environment and in preventing disruptions to public services and damage to underground facilities. The findings contained in this Study will be used to inform

stakeholders about practices, technologies and methods that can improve overall damage prevention and one-call system performance. Stakeholders include state agencies, one-call system operators, underground facility owners/operators, contractor associations, and other interested stakeholders who are impacted by and have an impact upon underground facilities.

On July 22, 1998, a Federal Register notice (63 FR 39362) was published that announced RSPA's initiative to establish the One-Call Systems Study Team. The notice described the desired representation that would be necessary to ensure inclusive and robust discussions while developing this report. Specifically, RSPA requested participants that:

- represented organizations with defined missions and objectives related to preventing damage to underground facilities, and were able to communicate regularly with these organizations;
- had ready access to or first hand existing knowledge of the factors, factual data, history and aspects affecting one-call system and underground facilities performance;
- had a demonstrated ability to work both individually and in a group environment; and,
- represented the Public and affiliated organizations that are affected by, or concerned with, damage prevention programs.

The One-Call Systems Study was initiated during the Fall of 1998, and was concluded in the Spring of 1999. The first step in the implementation of the Study began with a public meeting held in Arlington, Virginia, on August 25-26, 1998. The two-day meeting was attended by a broad representation of underground facility owners/operators, contractors, one-call system operators, regulatory agencies, private citizens, industry associations, and State agencies. Approximately 150 people were in attendance, and they participated in a presentation of 20 individual reports addressing numerous issues associated with damage prevention to underground facilities. The Common Ground title for the Study was adopted during the Arlington meeting. Interactive breakout work sessions by the meeting attendees resulted in the division of the Study into nine distinct focus areas. Subsequent to this meeting, an overall time line and milestones associated with the Study were developed. The "Common Ground - Damage Prevention Best Practices Study Time Line" is shown in Figure 1-1.

**Figure 1-1 Common Ground Study Time Line**

|                                      | Month<br>Year | 09<br>98                            | 10<br>98 | 11<br>98 | 12<br>98 | 01<br>99 | 02<br>99 | 03<br>99 | 04<br>99 | 05<br>99 | 06<br>99 | 07<br>99 |
|--------------------------------------|---------------|-------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| OCSS Public Meeting                  |               | ! (8/25/98)                         |          |          |          |          |          |          |          |          |          |          |
| Linking Team (LT) Kickoff Mtg        |               | ! (9/21/98)                         |          |          |          |          |          |          |          |          |          |          |
| Study Teams Organizational Meeting   |               | ! (10/19/98)                        |          |          |          |          |          |          |          |          |          |          |
| Task Teams (TT) Kickoff Meeting      |               | ! (11/04/98)                        |          |          |          |          |          |          |          |          |          |          |
| Finalize Study Team Membership       |               | ! (12/04/98)                        |          |          |          |          |          |          |          |          |          |          |
| TT Best Practices Discovery          |               | !!!!!!!!!!!!!!!!!!!! (2/01/99)      |          |          |          |          |          |          |          |          |          |          |
| TT Chapters Detailed Outlines        |               | !!!!!!!!!!!!!!!!!!!! To LT, 2/05/99 |          |          |          |          |          |          |          |          |          |          |
| TT Chapters Initial Drafts           |               | !!!!!!!!!!!!!!!!!!!! To LT, 2/15/99 |          |          |          |          |          |          |          |          |          |          |
| LT Feedback                          |               | !!!!!! To TT, 3/15/99               |          |          |          |          |          |          |          |          |          |          |
| Initial Drafts to Steering Team (ST) |               | ! (3/15/99)                         |          |          |          |          |          |          |          |          |          |          |
| ST Feedback                          |               | !!! (To TT, 4/01/99)                |          |          |          |          |          |          |          |          |          |          |
| Intro/Summary Sections Draft (LT)    |               | !!!!!!!!!!!!!!!!!!!! (4/01/99)      |          |          |          |          |          |          |          |          |          |          |
| TT Chapters Final Drafts to LT & ST  |               | !!!!!!!!!!!!!!!!!!!! (4/15/99)      |          |          |          |          |          |          |          |          |          |          |
| LT/ST Feedback                       |               | (To TT, 5/15/99) !!!!!!!            |          |          |          |          |          |          |          |          |          |          |
| Final Report Preparation             |               | !!!!!!!!!!!!!!!!!!!!<br>(6/15/99)   |          |          |          |          |          |          |          |          |          |          |
| Best Practices Report to RSPA        |               | !<br>(6/15/99)                      |          |          |          |          |          |          |          |          |          |          |
| Best Practices Report Publication    |               | !<br>(6/30/99)                      |          |          |          |          |          |          |          |          |          |          |

## 1.5 COMMON GROUND STUDY TEAM COMPOSITION

### 1.5.1 Study Team Overview

More than 160 stakeholders participated in the development of the Study. It was conducted through the formation, efforts, and resulting work products of several distinct Teams, utilizing a hierarchical Study Team structure. These teams included:

- Task Teams that evaluated existing practices and developed chapters for this Report;
- a Linking Team that coordinated information throughout the Task Teams and developed the overall Report; and,
- a Steering Team that provided broad guidance to all Teams and conducted a final review of the Report.

The team reporting structure, as depicted below in Figure 1-2, “Study Team Reporting Structure,” consisted of nine Task Teams, a Linking Team, and a Steering Team.

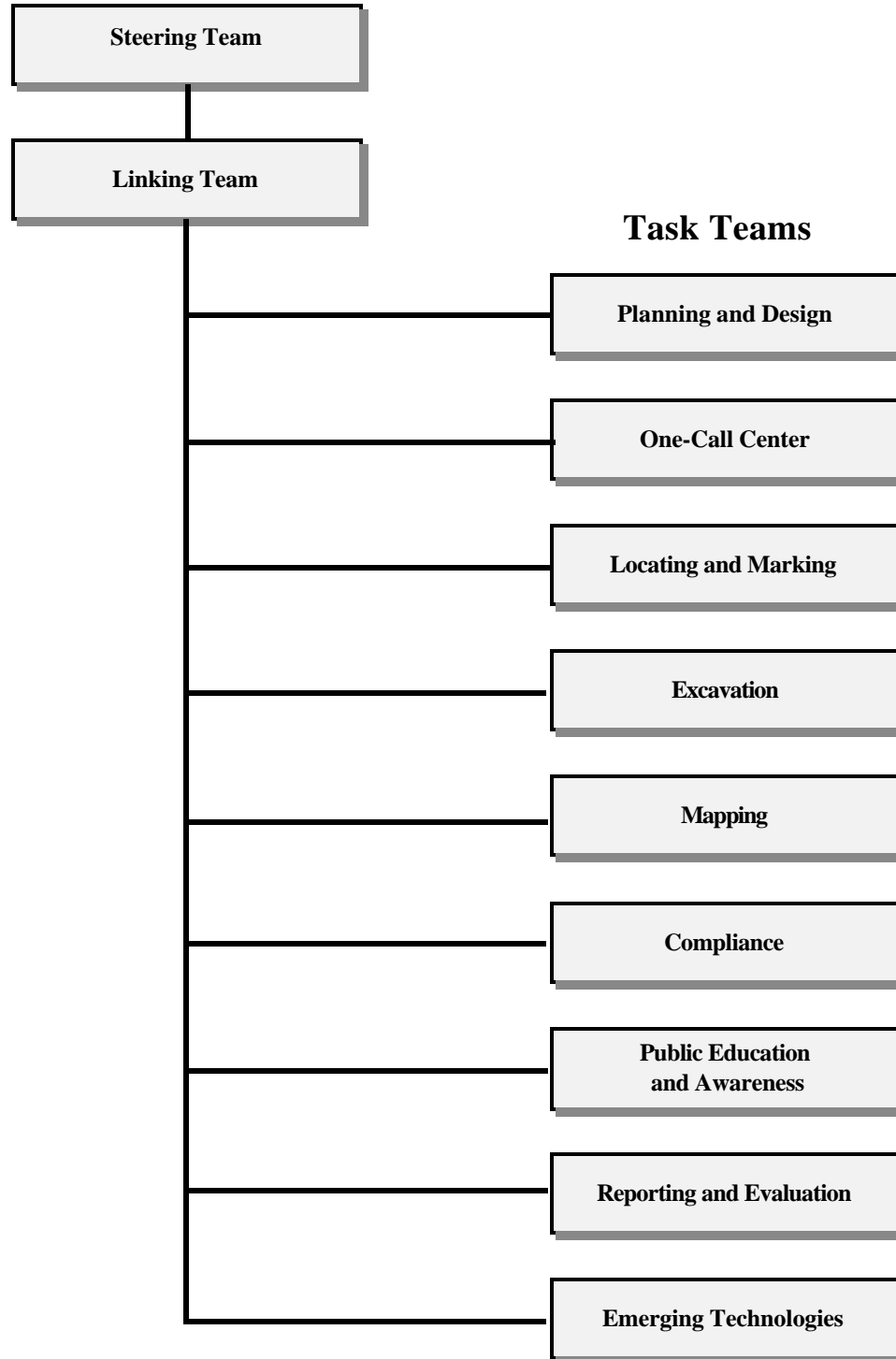
The various Teams achieved their assigned tasks through a combination of scheduled meetings and conference calls. All members of the Study Team were expected to represent the concerns and interests of their constituent organizations. Team members worked with their respective industries to facilitate broad communication with their constituency regarding specific areas of knowledge and interest. The Study Team responsibilities are further described and defined below. Biographical information for each Study Team member is provided in Appendix F to this report.

Figure 1-3, “Study Team Composition Matrix,” provides an overview of industry and regulatory affiliations that participated in each of the Common Ground Study Teams. Of particular note is the diverse representation within each Task Team. Even though the Task Teams typically dealt with a discreet portion of damage prevention programs, significant benefit was obtained by including experiences and expertise from multiple sectors of the damage prevention process. Note that the table only identifies organizations specifically recognized as trade/industry associations (e.g., EEI, AGC, OCSI, etc.).

While the primary objective of this Study was to identify damage prevention best practices, the participants also gained a greater appreciation and understanding of how other stakeholders are impacted by their fellow Team members’ activities. The Study process facilitated ideas on how underground facility damage prevention can be positively impacted through the improvement of working relationships, enhanced communication, and mutual problem identification and resolution.

A brief, professional biography of each Study Team member, that may include the identification of their sponsoring companies, agencies, and industry associations, is provided in Appendix F of this Report.

Figure 1-2 Study Team Reporting Structure



**Figure 1-3 Study Team Composition Matrix<sup>1 2</sup>**

| Organization <sup>3</sup> | Steering | Linking | Compliance | Emerging Technologies | Excavation | Locating/ Marking | Mapping | One-Call | Planning | Public Education | Reporting/ Evaluation |
|---------------------------|----------|---------|------------|-----------------------|------------|-------------------|---------|----------|----------|------------------|-----------------------|
| AAR                       | X        | X       | X          |                       | X          | X                 | X       |          | X        |                  |                       |
| AGA                       | X        | X       | X          | X                     | X          | X                 | X       | X        | X        |                  | X                     |
| AGC                       | X        | X       |            |                       | X          | X                 |         | X        |          | X                |                       |
| AOPL                      |          |         |            |                       |            |                   |         |          | X        | X                | X                     |
| APGA                      |          |         |            |                       |            |                   |         |          |          | X                |                       |
| API                       |          | X       | X          |                       |            | X                 | X       | X        | X        | X                | X                     |
| APWA                      | X        | X       | X          |                       |            |                   | X       |          |          |                  |                       |
| ARTBA                     |          |         | X          | X                     | X          | X                 |         |          |          |                  |                       |
| EEI                       |          | X       |            |                       |            |                   |         |          |          |                  |                       |
| Gov - Fed                 | X        | X       | X          |                       | X          |                   | X       | X        | X        | X                |                       |
| Gov - State               |          | X       | X          |                       | X          | X                 |         | X        | X        |                  | X                     |
| INGAA                     |          | X       | X          |                       | X          | X                 | X       | X        | X        | X                |                       |
| NAPSR                     |          |         | X          |                       |            |                   |         |          |          |                  |                       |
| NARUC                     |          | X       |            |                       |            |                   | X       |          |          |                  | X                     |
| NCTA                      |          | X       |            |                       | X          |                   |         |          |          |                  |                       |
| NRSC-FST                  | X        |         |            | X                     |            |                   |         |          |          |                  |                       |
| NRWA                      |          |         | X          |                       |            |                   |         |          |          |                  |                       |
| NTDPC                     | X        | X       | X          | X                     | X          | X                 |         | X        | X        | X                | X                     |
| NUCA                      | X        | X       | X          | X                     | X          | X                 | X       | X        | X        | X                | X                     |
| NULCA                     | X        | X       |            | X                     | X          | X                 | X       | X        | X        | X                | X                     |
| OCSI                      | X        | X       | X          | X                     | X          | X                 | X       | X        |          | X                | X                     |
| TIA/EIA                   |          |         |            |                       |            |                   | X       |          |          |                  |                       |

<sup>1</sup> Only Team members have been included.

<sup>2</sup> The Steering, Linking and Emerging Technology Task Team members are listed as members of their respective Teams only.

<sup>3</sup> See Appendix D for a detailed list of acronyms.

## **1.5.2 Task Teams**

As a result of the initial August 1998 meeting in Arlington, Virginia, the Task Teams were defined as the natural groupings of activities and critical functions that are impacted by, or that impact upon, the safety and reliability of underground facilities damage prevention. The broad focus was to study those activities that are integral to the initial design, operation and maintenance, identification, protection, governance, and performance assessment elements associated with underground facilities.

The Task Teams were responsible for identifying best practices and producing the detailed chapters in this Report. The nine Task Teams included:

- Planning and Design Practices,
- One-Call Center Practices,
- Locating and Marking Practices,
- Excavation Practices,
- Mapping Practices,
- Compliance Practices,
- Public Education and Awareness Practices,
- Reporting and Evaluation Practices, and
- Emerging Technologies.

The individuals who participated as Task Team Members are listed near the front of each respective Task Team Chapter or Appendix A, “Emerging Technologies,” of this Report. Each Task Team was assigned at least one liaison from the Linking and Emerging Technologies Teams.

## **1.5.3 Linking Team**

The Linking Team, comprised of representative stakeholders, served as an overall review board to the Task Teams and their work processes and products. Additionally, the Linking Team was responsible for ensuring that each Task Team had sufficient representation and input from various stakeholders regarding the Team’s work products and processes.

The Linking Team assigned a liaison to each Task Team. The primary role of the Linking Team liaisons was to:

- interface between the Linking Team and the assigned Task Team,
- assist with the resolution of Task Team chapter scope issues, and
- help resolve any significant issues or items of conflict that developed within the individual Task Teams.

The liaisons also helped to facilitate interface issues with other Task Teams, and were responsible for ensuring that all relevant information was shared among all levels of the Study Team. The liaisons assisted with the editing of their assigned Task Team chapters by collecting and communicating comments on the

Draft chapters from other Teams and groups back and forth between the Task Teams. In total, the liaisons monitored the overall activities, Task Team dynamics, work products, and project time lines of their assigned Task Team.

The Linking Team Members included:

| <b>Team Member</b>  | <b>Representing<sup>4</sup></b> | <b>Employer</b>                              | <b>Team Role</b>                                        |
|---------------------|---------------------------------|----------------------------------------------|---------------------------------------------------------|
| Glynn Blanton       | NARUC                           | Tennessee Regulatory Authority               | Compliance Liaison<br>Public Education Liaison          |
| Claudette Campbell  | APWA/OCSI                       | Utilities Protection Center, Inc. of Georgia | One-Call Liaison<br>Public Education Liaison            |
| Larry J. Davied     | API, INGAA                      | The Williams Companies                       | Co-Chairperson<br>LT Writing sub-team                   |
| Donna Erat          | APWA                            | APWA                                         | Reporting and Evaluation Liaison<br>LT Writing sub-team |
| Larry Galbreath     | AAR                             | CSX Transportation                           | LT Writing sub-team                                     |
| Griff Goad          | NTDPC                           | BellSouth Telecommunications, Inc.           | Co-Chairperson                                          |
| Russ Kopidlansky    | AGA                             | Wisconsin Public Service Corporation         | Mapping Liaison                                         |
| Rich Maxwell        | Independent Excavator           | A&L Underground                              | Excavation Liaison                                      |
| Michael McDonald    | EI                              | Arizona Public Service Company               | Locating and Marking Liaison                            |
| Guy (Skip) McIntosh | NULCA                           | UtiliQuest Locate Services                   | Locating and Marking Liaison                            |
| Ken Naquin          | AGC                             | Louisiana AGC                                | Emerging Technologies Liaison                           |
| Andy Scott          | NCTA                            | National Cable Television Association        | LT Writing sub-team                                     |
| Paul Scott          | FHWA                            | DOT-FHWA                                     | Planning and Design Liaison                             |

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<sup>4</sup> See Appendix D for a detailed list of acronyms.

| <b>Team Member</b> (cont.) | <b>Representing</b><br>(cont.) | <b>Employer</b> (cont.)               | <b>Team Role</b>                       |
|----------------------------|--------------------------------|---------------------------------------|----------------------------------------|
| Jim Stutler                | NUCA                           | Tierdael Construction Company         | Excavation Participant                 |
| Massoud Tahamtani          | State Governments              | Virginia State Corporation Commission | Public Education and Awareness Liaison |
| Eben Wyman                 | DOT, RSPA, OPS                 | Office of Pipeline Safety             | LT Writing sub-team                    |

### 1.5.4 Steering Team

The purpose and function of the Steering Team was to provide senior-level representation and support for the Study. The Steering Team consisted of eight individuals who represented the federal government, one-call systems, contract locators, underground facility owners/operators, railroads, and excavators.

| <b>Team Member</b>  | <b>Representing</b> <sup>5</sup> | <b>Employer</b>                 |
|---------------------|----------------------------------|---------------------------------|
| James Barron        | NUCA                             | Ronkin Construction, Inc        |
| Willard S. Carey    | AGA                              | Public Service Electric and Gas |
| Charles E. Dettmann | AAR                              | AAR                             |
| Don Evans           | APWA/OCSI                        | Dig Alert                       |
| Stacey Gerard       | DOT, RSPA, OPS                   | DOT, RSPA, OPS                  |
| Allen S. Gray, Sr.  | AGC                              | AGC                             |
| John Healy          | NTDPC, NRSC-FST                  | Telcordia Technologies          |
| John Walko          | NULCA                            | Excavac Corporation             |

## 1.6 COST OF COMMON GROUND STUDY

As the Common Ground One-Call Systems Best Practices Study sponsor, RSPA provided overall Study support and guidance. This included:

- in-house and contractor support personnel;
- sponsoring the development, deployment, and maintenance of the OCSS Information System (an Internet-based information, communication, and messaging system);
- handling the logistics in arranging for hotel accommodations for over sixty Study Team meetings;

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<sup>5</sup> See Appendix D for a detailed list of acronyms.

- arranging for and providing meeting rooms and meeting facilitation and reporting functions; and
- coordinating Study Team conference calls and providing facilitation and reporting functions for those calls.

The industry stakeholder participants, along with their respective companies, associations, and organizations, contributed in excess of an estimated 20,000 hours and \$500,000 in direct-cost expenditures in completing the Common Ground Study. The estimated industry cost contributions include travel, lodging, meals, communication, and other direct expenses incurred by the participants. This is exclusive of the salaries, benefits, and other compensation that was contributed by their sponsoring organizations.

## **1.7 CONSENSUS PROCESS**

The Task Teams utilized a consensus process as a means to consider, evaluate, and identify their specific best practices. Consensus decisions required that the attendant Team members reach 100 percent agreement with the considered practice. Consensus decisions were only made during prescheduled Team meetings to allow for broad representation and membership diversity, which ensured adequate debate of the proposed practices. Consensus agreement meant that the decisions may not have been the first choice of all members, but all members indicated they would accept and support them. This ensured that all aspects of input from the various interest groups and individual experiences were fully discussed and understood before the existing duly evaluated practice could be recognized as a best practice.

Due to the unique focus of each Task Team's subject matter, each Team was responsible for developing its own best practices evaluation criteria. There are many similarities between the Task Teams in these criteria, but there are also subtle differences. The specific evaluation criteria used for determining each Task Team's best practices are included in each Task Team Chapter.

## **1.8 BEST PRACTICES DETERMINATION PROCESS**

The Task Teams, with the exception of the Emerging Technologies Task Team, were instructed to collect data and performance results of current damage prevention practices. Recognizing that there are a wide variety of practices and processes being used today, the goal of this Study was to determine the "best" of these. The Task Teams' analysis of the results and successes of these various existing practices resulted in the identification of the best practices that are included in the Task Team Chapters.

In some cases, the best practices presented by the Task Teams may not currently exist in totality as they are described within this Report. Rather, when this situation exists, the Task Teams developed their best practices by compiling the best attributes of two or more existing practices. The Task Team consensus process and oversight provided by the Linking and the Steering Teams ensured that the consolidated or compiled best practices are within the guidelines and intentions of this Study.

The Reporting and Evaluation Practices Task Team was also afforded some discretion in recommending best practices. While several states and various industry sectors have established incident reporting processes, none of these universally provide categorical root cause analysis and an understanding of incidents and near misses. Consequently, the Reporting and Evaluation Practices Task Team extrapolated existing reporting programs to formulate their best practices.

As noted above, the Emerging Technologies Task Team was not bound to the same requirement of identifying existing best practices. For the purposes of this Study, emerging technologies implies new or developing equipment or technologies which may prove to be beneficial in reducing or eliminating damage to underground facilities. The Emerging Technologies Section, which is found in Appendix A, is significant as it is entirely possible that today's best practices may have been derived from yesterday's emerging technologies. Further, today's emerging technologies may lead to tomorrow's better practices.

## **1.9 PUBLIC PARTICIPATION**

The Study was open to public participation, and meeting schedules were posted on the OCSS Information System<sup>6</sup> for public access. Additionally, the One-Call System Study(OCSS) Information System allowed for public review of Study Team documents. It also supported public input of issues and concerns related to the Study or to damage prevention. Issues and concerns submitted by the public were directed to the Task Teams for consideration. The Study process ensured that all public input received from meeting participation, written communication, Internet E-mail, or submission through the OCSS Information System was considered and made a part of the best practices evaluation process.

## **1.10 INTERNET COMMUNICATIONS SYSTEM**

As noted above, Study Team communication was facilitated by the development and implementation of the OCSS Information System accessible to all Study Team members and the public via the Internet. This system was an invaluable tool that greatly enhanced the ability of the Study Teams and Team members to communicate. The OCSS Information System provided a variety of communications tools including:

- posting notices of and details about future, planned Team meetings;
- posting Linking Team and Task Team meeting summaries for access by all OCSS participants and the public;
- posting and sharing of related documents among Team members and the public;
- broadcast messaging capabilities to notify multiple Team members simultaneously of important information;

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<sup>6</sup>The web site is: <http://www.cyclac.com/ocss>.

- direct E-mail messaging to specific Study Team members;
- access to rosters of Team members and other participants, including contact information;
- public access to post and review issues and concerns regarding the Study or damage prevention practices for Study Team consideration; and
- specialized forums for identified issues, concerns, or topics.

Use of the OCSS Information System enhanced the ability to make information regarding the Common Ground Study Teams' efforts, meetings, and documents available to all participants, interested stakeholders, and the public.

## **1.11 PATH FORWARD CONCEPT**

Although the primary focus of each Task Team was the identification of best practices associated with the Team's specific focus area, there were also discussions of new practices, equipment, or methodologies that were promising in terms of improving damage prevention efforts. Since these relatively new or prospective practices could not be reasonably evaluated for effectiveness, they could not be considered as best practices. Where new technology was involved, information was made available to the Emerging Technologies Task Team for consideration. In other cases, where a new practice or methodology was involved, the individual Task Team may have felt it would be remiss in not making this information available for consideration to the readers of this Report. Where appropriate, individual Task Teams have included a "Path Forward" section in their chapters to highlight some of the more significant future potentials of underground facility damage prevention practices and methodologies. Chapter 10, "Conclusions," summarizes and provides overall Report conclusions for Path Forward consideration.

## **1.12 BASIS FOR DAMAGE PREVENTION**

The underlying premise for preventing damage to underground facilities, and the foundation for this Study, is that all underground facility owners/operators are members of one-call centers, and that it is always best to call before excavation.

## **1.13 EXCEPTIONS TO THE ONE-CALL PROCESS**

During preparation of the Report, a need was identified to clarify and further define activities not universally considered part of the one-call notification process. These activities sometimes are classified as routine maintenance work (reference Appendix C, "Glossary of Terms/Definitions" for *Minor or Routine Maintenance of Transportation Facilities*), and may involve the use of heavy machinery or hand digging tools. It is critical to note, however, that simply because an activity may be exempted in some states from calling prior to excavation, it does not mean there is no risk associated with disturbing the surface grade.

It is always safer to call before beginning excavation. Each State should have a process to evaluate exceptions to its one-call damage prevention laws, taking into consideration risks to public safety, the environment, excavators, and vital public services. Activities exempted by some states include:

- Routine maintenance of transportation facilities.  
Reference: Arkansas Law, Kentucky Law (other state laws); (See Appendix C, “Glossary of Terms/Definitions” - *Minor or Routine Maintenance of Transportation Facilities*).
- Routine maintenance of railroads above grade or ground level.  
Reference: General practice of all major railroads in the US; Georgia Law, Virginia Law (other state laws). (See Appendix C, “Glossary of Terms/Definitions” - *Minor or Routine Maintenance of Transportation Facilities*).
- Routine plowing/tilling of soil on private property by the property owner where no outside underground facilities exist.  
Reference: Idaho Law, Indiana Law (other state laws).
- With hand tools, on property owned or occupied by the person performing the excavation, while gardening or tilling such property.  
Reference: California Law, Kentucky Law (other state laws).
- Routine cleaning of paved drainage facilities or man-made permanent culverts.  
Reference: Washington State Law, South Dakota Law (other state laws).
- Opening of graves in existing cemeteries where no outside underground facilities exist.  
Reference: Minnesota State Law, Arkansas State Law (other state laws).