TRENCHLESS TECHNOLOGY GUIDANCE
(DEP Document Number: 310-2100-003)

COMMENT AND RESPONSE DOCUMENT

February 24, 2024

Pennsylvania Department of Environmental Protection
Bureau of Waterways Engineering and Wetlands

INTRODUCTION

The Pennsylvania Department of Environmental Protection (DEP or the Department) published notice of the availability of a draft *Trenchless Technology Guidance Document* in the *Pennsylvania Bulletin* on March 19, 2022 (52 Pa.B. 1693). A 60-day comment period was provided on the draft technical guidance document (TGD), and interested parties were directed to submit comments to DEP's eComment system. The comment period ended on May 18, 2022. DEP received 143 unique comments and questions from 150 commenters during the comment period. The purpose of this document is to present DEP's responses to these comments and answer all questions posed.

LIST OF COMMENTERS

ID #	Submitted by	Organization
1	Carolyn Comitta	Senate of Pennsylvania - 19th District
2	Gary Kribbs	AEON Geoscience, Inc./ Lancaster Geology/PCPG
3	Loren Anderson	Marcellus Shale Coalition
4	Kathryn Urbanowicz	Clean Air Council
5	Anya Schoss	Columbia Gas of Pennsylvania
6	Kelly Grube	FirstEnergy
7	Susan Curry	
8	Russ Allen	
9	Frank Ayers	
10	Eric Larson	
11	Bob Schmetzer	
12	Mary McKenna	
13	Alyssa Stiles	
14	Peter Adams	
15	Alexa Manning	
16	Jo Weiss	
17	Michael Miller Jr	
18	Adrienne Gallagher	
19	Sheila Erlbaum	
20	Thomas Nelson	
21	K Danowski	
22	Janice Blanock	
23	Victoria English	
24	Daniel Safer	
25	Mark & Judy Harvey	
26	Jim Black	
27	Henry Berkowitz	
28	Paul Hagedorn	

ID #	Submitted by	Organization
29	Regina Brooks	
30	Tamara Bauer	
31	Joseph McCullough	
32	Ira Josephs	
33	Constantina Hanse	
34	Norma Kline	
35	Al Ferrucci	
36	Jill Turco	
37	Nancy Bergey	
38	Frank Evelhoch II	
39	David Clemens	
40	Frances DeMillion	
41	Katherine Peterson	
42	Mari McShane	
43	Richard Johnson	
44	Beth Dzwil	
45	Linda Granato	
46	Richard Eynon	
47	David Fiedler	
48	Cindy M. Dutka	
49	Gary Lewis	
50	Michael McQuown	
51	Roberta Camp	
52	Patricia Rossi	
53	Barbara Nadel	
54	Mark Levin	
55	Eugene Mariani	
56	Victoria & Edward Oles	
57	Melissa K	
58	Bonnie Eisenfeld	
59	Daniel Salmen	
60	Barbara Nigrini	
61	William Huber	
62	Al Cohen	
63	Julie Shapiro	
64	Marilynn Harper	
65	Janet Seltman	
66	Fayten El-Dehaibi	
67	Nicola Nicolai	
68	Nancy O	

ID #	Submitted by	Organization
69	Loretta Lehman	
70	Douglas Hunt	
71	Linda Deitzel	
72	Jason Rash	
73	Jane Kauer	
74	Emily Petrucci	
75	Carla Puppin	
76	JoAnn Sorrell	
77	Alison Joyce	
78	MaryAnne Steinert	
79	Nora Nelle	
80	Robert & Carole Matthews	
81	Nicole Deter	
82	Berte Rosin	
83	Robert DuPlessis	
84	Scott Trees	
85	Mary Carol Kennedy	
86	Jean Kozel	
87	Judith Henckel	
88	Kenneth Cangin	
89	Susan Babbitt	
90	Lynn Glorieux	
91	Theodore Reed	
92	Charles Hollister	
93	Sandra Brubaker	
94	Bernard Greenberg	
95	Jess Walcott	
96	Catherine Anderson	
97	Louis Kyle	
98	Elizabeth Lennon	
99	Peggy Hartzell	
100	Derek Gilliam	
101	Kenneth Bickel	
102	Beth Pirolli	
103	Meagan Cusack	
104	Margaret Reiter	
105	Rosemary Fuller	
106	Philip Pegan	
107	Carolin Schellhorn	
108	Priscilla Mattison	

ID #	Submitted by	Organization
109	Robert Gibb	
110	James Curtis	
111	Barbara Franck	
112	Frank Sabatini	
113	Richard Cole	
114	Anne Brennan	
115	Mary Rush	
116	Jon Nadle	
117	Marianne Atkinson	
118	Carol DiColli	
119	Neena Deibler	
120	Jessica Bellwoar	
121	Nancy Tate	
122	Jason Volpe	
123	Thomas Crown	
124	Eve Miari	
125	Robert W. Rhodes	
126	Steven Erisoty	
127	Kelly Riley	
128	Arlana Gottlieb	
129	Garret Wassermann	
130	Renee Grant	
131	Zelda Curtiss	
132	Timothy Duncan	
133	Susan Thompson	
134	John Csaszar	
135	Terry Wilson	
136	William Montgomery	
137	Sister Veronice Plewinski	
138	Louis Iatarola	
139	Arlene Taylor	
140	Will Willis	
141	Sandra Ludwig	
142	Jonathan Wilson	
143	Kathy Wilde	
144	Don Hawkins	
145	David Kaufman	
146	Jason Crawford	
147	Paul Palla	
148	Wilford Vaulx-Smith	

ID #	Submitted by	Organization
149	Miah Hornyak	
150	Kenneth Zenkevich	

Note that commenters seven through 150 submitted form letters to DEP via email. All of the comments, including those submitted via email, on the draft TGD are accessible on the Department's eComment website at https://www.ahs.dep.pa.gov/eComment/ViewComments.aspx?enc=DN064MT8R38NKyiRv2iU7A9hTlX6WfO0IXja9daRD0Y%3d.

COMMENTS AND RESPONSES

Each individual who submitted a comment was assigned a Commenter ID number, which was then listed at the end of the corresponding comment in the document. Please note, for ease of use, this document has been divided into sections based on subject matter. Comments that covered multiple topics were separated and placed in the appropriate sections, to be discussed along with other comments on the same topic. Regardless, DEP has considered all comments received during revision of the guidance document. This comment response document reflects that consideration.

General Comments

1. Comment: General Comment

The MSC strongly encourages the EQB to include a key, code, or other method in its development of the Comment and Response Document which allows public commentators to identify its comments in the document and how the EQB has responded. The EQB previously has prepared its Comment and Response Documents in this manner, which is extremely helpful and efficient. Such a method also underscores that the EQB has identified and fairly considered all unique comments which it received during the public comment period. (Commenter 3)

Response:

The Department prepares comment response documents based on current policy direction. By way of further response, everyone who submitted a comment on this draft TGD was assigned a Commenter ID number, which is listed at the end of the corresponding comment in this document.

2. Comment: General Comment

Economics and constructability are also included in the decision matrix considerations. In the past, DEP has conveyed guidance that cost or budget should not be considered when the project is being evaluated for permitting. What weight or justification will be used during the evaluation process? What customer values are taken into consideration during the review process? This is unclear throughout the document. (Commenter 5)

Response:
The feasibility analysis, completed by the applicant, is typically where one would evaluate economics and constructability (See 25 Pa. Code §§ 105.18a(a)(3), 105.18a(b)(3), 105.16(b)(7)). The Department recently published *Guidance for Developing a Chapter 105 Alternatives Analysis* (310-2100-002)) that is intended to help the applicant prepare a more complete application so the Department can make a quicker decision on applications.

The meaning of "customer values" in this comment is unclear to the Department.

3. Comment: General Comment
First, I thank DEP for moving forward with outlining policies, procedures, and best practices for the use of Trenchless Technology, including Horizontal Direct Drilling (HDD), as it is utilized in pipeline construction. In recent years, the use of such methods, specifically HDD, on the Mariner East pipeline project in my Chester County district and across the Commonwealth has resulted in numerous impacts to the environment, private wells, aquifers, and streams and waterways, as well as potential threats to the health and safety of residents, families, and children. I appreciate DEP making the Trenchless Technology guidance available and encourage the department to work throughout this process to ensure that it is as specific and as strong as possible in order to prevent and mitigate adverse impacts to our environment, natural resources, and local communities in the future. (Commenter 1)

Response:
The Department appreciates commenter's support in development of this technical guidance.

4. Comment: General Comment
I support DEP's new proposed technical guidance for trenchless technology. Reckless misuse of HDD and other trenchless technology during pipeline construction has led to irreparable harm for Pennsylvania residents.

For instance, due to construction of the Mariner East pipelines, Pennsylvania residents have endured many harms including drilling fluid spills, sinkholes, water contamination, property damage, and flooding. Much of these harms were a result of Sunoco's reckless misuse of horizontal directional drilling (HDD).

I strongly urge the DEP to adopt the proposed technical guidance for trenchless technology to help ensure any future pipeline construction in the state meets the highest standards for minimizing or eliminating environmental harm. This includes a better investigation and review of floodplains, geological formations, alternative routes, and existing water supplies such as aquifers and private wells, as well as proper risk evaluation.

As immediately as possible, Pennsylvania must transition from fossil fuel extraction and move to a sustainable energy economy. The guidance DEP is proposing is urgently needed to minimize environmental impacts right now.

Thank you for your consideration of these comments. (Commenter 7)

Response:
The Department appreciates commenter's support of this technical guidance.

5. Comment: General Comment
I am writing to express my support for DEP's new proposed technical guidance for trenchless technology. Reckless misuse of HDD and other trenchless technology during pipeline construction has led to irreparable harm for Pennsylvania residents. For instance, Pennsylvania residents have endured many harms due to construction of the Mariner East pipelines, including drilling fluid spills, sinkholes, water contamination, property damage, and flooding. Much of these harms were a result of Sunoco's reckless misuse of horizontal directional drilling (HDD), a technology that is supposed to minimize environmental impacts of construction that would occur with open trenching through streams, wetlands, forests, and other sensitive environments.

I strongly urge the DEP to adopt the proposed technical guidance for trenchless technology to help ensure any future pipeline construction in the state meets the highest standards for minimizing or eliminating environmental harm. This includes a better investigation and review of floodplains, geological formations, alternative routes, and existing water supplies such as aquifers and private wells, as well as proper risk evaluation.

Ultimately, Pennsylvania must make the transition from fossil fuel extraction and move towards a sustainable energy economy as quickly as possible. Even as we make this critical transition to clean, renewable energy, the fossil fuel industry continues to perpetuate harm upon our environment, our communities, and our public health. That's why the guidance DEP is proposing is urgently needed to minimize environmental impacts right now.

Thank you for your consideration of these comments. (Commenters 8-150)

Response:
The Department appreciates commenter's support of this technical guidance.

6. Comment: General Comment
In 2018 the PA DEP formed a multistakeholder workgroup comprised of industry experts and environmental groups. The workgroup met several times and was provided a single draft (July 25, 2019) to provide comments on. The MSC worked through its representative and developed extensive technical and constructive comments (25 pages in length). These comments were well thought out and provided a significant amount of

information and clarification to improve the clarity of the draft. The comments were submitted to the Department on November 11, 2019.

Since then, the PA DEP has not scheduled another multistakeholder workgroup meeting to review the comments received or a revised draft prior to publication for a formal public comment period (March 19, 2022).

The MSC workgroup representative made a request for the workgroup to meet again to discuss the comments received prior to the formal public comment period. This request was declined by the Department, and the workgroup was not provided the opportunity to review the revised version prior to this formal comment period. The MSC is disappointed that the request in 2019 to reconvene the multistakeholder workgroup and provide constructive feedback to the PA DEP was declined. Upon review of the draft TGD published for public comment, the Department did not consider many of the MSC's comments. Had the multistakeholder workgroup reconvened, the MSC believes that many of these issues could have been worked out in advance of the draft TGD being published for public comment. Significant time for constructive engagement has been lost over these past two and one-half years. (Commenter 3)

Response:
The draft TGD was developed using an iterative stakeholder-driven process. Following five stakeholder meetings, a stakeholder draft was prepared and sent out for comment by the stakeholders. All the comments collected during the stakeholder draft review period were considered thoughtfully and most were incorporated into the draft TGD. During the stakeholder meetings, DEP stated that the workgroup may be reconvened following the incorporation of stakeholder comments, but only if DEP determined it was necessary. DEP did not determine it was necessary to reconvene the workgroup. The five stakeholder meetings, in addition to the many sub-workgroup meetings, and finally the comments from all stakeholders were very constructive in developing the draft TGD. Comments that this commenter believes were not addressed during the stakeholder period are being considered again, during the public comment period, as many of the same comments were submitted.

7. Comment: General Comment
The original draft reviewed by the multistakeholder workgroup was approximately 116 pages and contained flowcharts, example templates, letters, and other information associated with the draft TGD. The MSC provided comments in November 2019 on this information as well. The draft TGD that was published on March 19, 2022, did not include any of these documents and was reduced to approximately 75 pages in length. The Department uploaded all of this information to its Trenchless Technologies Webpage as draft documents and seemingly did not include these documents as part of the draft TGD formal public comment. However, within the draft TGD there are at least 20 references to the Webpage for commenters to find additional, necessary information. It is clear that from a functionality perspective, the Department regards the information on the website as integral and therefore an extension of the TGD. As such, it would have been helpful and appropriate to have included this information as part of the formal TGD

document published for public comment. The MSC recommends that the final TGD incorporate the information from the webpage. Additionally, the MSC urges the Department to pledge not to unilaterally change this information going forward without soliciting public input. Recent examples where the Department has unilaterally changed permit criteria and specifications online, well after the final publication of the document, have raised concerns about the validity and transparency of the public input process. (Commenter 3)

Response:
The appendices that were moved to the Department's Trenchless Technologies webpage were considered part of the public comment period and, as the commenter notes, were referenced within the draft TGD that was published for public comment. The items on the Trenchless Technologies webpage are marked with a "Draft" watermark indicating that they are currently in draft form.

8. Comment: General Comment
Pennsylvania One Call (System: While Pa One Call is mentioned in Section 2 (Subsurface Conditions), TGD needs a specific and clear requirement that all excavators or contractors utilizing Trenchless Technology be required to follow the Pennsylvania Underground Utility Line Protection Act. While it is important that project proponents also "attempt to conduct detailed field reconnaissance to observe and identify any signs of existing utilities," contacting Pa One Call is a must.

In addition, as a necessary precaution and a best practice, TGD should require that a Pa One Call design ticket be requested 90 days in advance and an excavation ticket be requested 3 days before excavation.

TGD should also be consistent with the Pennsylvania Underground Utility Line Protection Act, which defines Horizontal Directional Drilling and recommends that Pennsylvania excavators follow the Common Ground Alliance HDD best practices. (Commenter 1)

Response:
The definition of "Excavation work" in the Commonwealth's Underground Utility Line Protection Law, also known as the PA One Call Act, (P.L. 852, No. 287) as amended by the act (P.L. 1567, No. 199) of November 30, 2004.) includes, but is not limited to: *"...anchoring, augering, backfilling, blasting, boring, digging, ditching, drilling, driving-in, grading, plowing-in, pulling-in, ripping, scraping, trenching and tunneling.*" Trenchless methods are covered within this definition and therefore contacting PA One Call is required prior to trenchless technology advancement. In addition, the TGD mentions PA One Call under the "*Existing Utilities*" section – Section 2.B.2.g states that contacting PA One Call is the best way to identify existing utilities and provides a link to the PA One Call website.

9. Comment: General Comment

The TGD only references the Pennsylvania Public Utility Commission (PUC) once in a cursory manner. The PUC needs to be made aware of all TGD projects associated with jurisdictional pipelines. The PUC has a Pipeline Safety Section that enforces federal pipeline safety regulations associated with jurisdictional pipelines. These federal pipeline safety regulations include Trench and Trenchless pipeline construction. Any pipeline jurisdictional operator performing trenchless technology should notify the PUC's Pipeline Safety Section 90 prior to drilling.

While PUC does not have siting authority, when DEP issues an environmental permit for Trenchless Technology drilling for jurisdictional PUC operators, the PUC Pipeline Safety Section effectively becomes the unintended enforcement arm. Meanwhile, the PUC lacks input on approving the permit and frequently is not even directly informed permit approvals. Also, keep in mind that the PUC appears to lack trained geologist or geophysical engineers on staff, and as a result has, at times, been forced to contract with a geophysical consultant for HDD projects associated with jurisdictional hazardous liquid pipeline operators.

As a best practice, TGD should call for DEP to follow up on all HDD permits to ensure there are no issues associated with permitted projects such as bore stabilization, Inadvertent Returns, subsidence, sinkholes, and others. (Commenter 1)

Response:

The Department and the PUC have a strong working relationship. To that end, the Department and the PUC have a monthly teleconference call and continually communicate on an as needed basis when issues arise. By way of further response, the PUC functions under its own set of statutes and regulations. DEP reviews applications for compliance with the laws and regulations within its regulatory framework. This TGD was developed to assist applicants in developing permit application materials within the Department's regulatory framework. When circumstances arise which fall under PUC purview, DEP strives to communicate those issues with PUC staff.

10. Comment: General Comment

The intent of a Technical Guidance Document (TGD) is not to create new regulatory requirements, but rather to provide guidance both to Department staff and the regulated community on potential pathways to achieving compliance with existing statutory and regulatory standards. While the TGD uses certain words such as "recommend" and "suggest", in reality this document presents as a regulatory document that imposes new obligations upon the regulated community. It is impossible for a regulated entity that depends upon its regulator for the permits necessary to stay in business to interpret these standards as anything other than regulatory obligations. It is clear that the TGD as written does impose binding requirement on regulated parties and is, therefore, rulemaking without following the legally require procedures.

The MSC recommends that the TGD be re-written in a manner that makes clear the provisions of the TGD are merely suggestions; are not the default or mandatory

requirements which the Department expects the regulated community to adhere to; and that additional pathways to compliance are both acceptable and will be fairly considered by the Department. (Commenter 3)

Response:
This guidance does not require any new permits, nor does it require any new obligations that are not already set forth in regulation. This guidance was drafted in concurrence with the existing regulations. The Department recommends the use of this guidance as one way to comply with the regulations. Trenchless technology use is not specifically spelled out in all Department regulations and this document provides specific recommended guidance to meet the Department regulations for this construction methodology. The policies and procedures outlined in this guidance document are intended to further the Department's development of more formalized guidance on pipeline construction within the confines of current regulations. Nothing in the policies or procedures shall affect current regulatory requirements. However, the Department may request any information it deems necessary to determine compliance with statutes or rules and regulations.

11. Comment: General Comment
This section reads as follows:

"*The policies and procedures outlined in this guidance are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.*
The policies and procedures herein are not an adjudication or a regulation. DEP does not intend to give this guidance that weight or deference. This document establishes the framework, within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy if circumstances warrant."

The MSC recognizes that this is standard language which the Department includes in nearly all of its policies or Technical Guidance Documents. Nonetheless, the language should be clarified as it is reasonable to interpret the statement *"…are intended to supplement existing requirements*" as imposing additional requirements beyond those which exist in current statute or regulation. Read in its totality, the above section appears contradictory and may reasonably imply to the reader that the Department is imposing policies and procedures which have a regulatory impact. This standard disclaimer, while often used by the Department, is inaccurate in its description and should be modified accordingly. (Commenter 3)

Response:
Please see the Department's response to Comment 10.

12. Comment: General Comment

The policies and procedures herein are not an adjudication or a regulation. DEP does not intend to give this guidance that weight or deference.

Some DEP regions have already started using the draft document on HDD reviews and have used the document as a "checklist". Applications that have not included all the items have been returned. How can we ensure this document will not be given the same weight as regulation since we have already seen it used to that level? (Commenter 3)

Response:

Please see the Department's response to Comment 10.

13. Comment: General Comment

FirstEnergy frequently installs underground conduit for electric distribution service to homes and businesses. Sometimes this involves underground trenchless crossings of streams, wetlands, or other features. This is an environmentally low risk activity that is typically done by directional boring or "jack and bore" methods that does not involve the use of drilling fluids. We are concerned that PA DEP's Trenchless Technology Guidance and associated Flowchart will impose new design and construction requirements that may not provide any significant environmental benefit. The guidance references a simplified process for more simple projects such as underground conduit installations, however this simplified process is not clearly explained in the current guidance documents. (Commenter 6)

Response:

The Department agrees that fluid under pressure and non-pressurized methods pose different levels of risk. The first bullet of the Risk Evaluation Checklist has been revised in the final TGD to state "*Will drilling fluids be used under pressure?*" Additionally, the Department recognizes there is a different level of risk associated with drilling under a resource; therefore, the Department added an additional risk factor to the final TGD that was considered earlier in the development of this guidance, which is "*Are you crossing under an aquatic resource?*"

By way of further response, the flowchart was intended to be an aid to guide users as they evaluate the suitability and feasibility of their chosen trenchless methodology. The flowchart has been removed from the final TGD to clear up any ambiguity between the Trenchless Technology Risk Evaluation (Appendix A) and the flowchart, and to avoid locking project proponents into unnecessary evaluations for their unique site. The Department believes that the removal of the flowchart allows for a clearer view of what is expected when a permit is prepared and submitted that proposes trenchless methods.

14. Comment: General Comment

It is important to note that DEP does not have a substantial role in siting of projects. DEP strongly recommends that project proponents review if other agencies (e.g., Pennsylvania Utilities Commission) regulate pipeline siting or other obligations not regulated by DEP and coordinate early with all pertinent agencies. The siting (or project

location) is often selected by the project proponent and, if federally regulated, reviewed by that federal agency (e.g., the Federal Energy Regulatory Commission). DEP is bound by the authorities listed in the "Authority" section above. Nowhere in Pennsylvania law is DEP provided the power to move a proposed project.

This acknowledgment of the differing roles agencies play with respect to siting is helpful.

Commenters are concerned, however, that the assertion that "nowhere in Pennsylvania law is DEP provided the power to move a proposed project," is inaccurately broad. It does not reflect the fact that siting is considered at different scales, some of which do fall within the Department's authority. For example, certain portions of a linear project might need to be moved to comply with the Department's alternatives analysis required by 25 Pa. Code Chapter 105.13(e). Commenters suggest including a reference to alternatives analysis in this section. The Department also recently released Draft Technical Guidance: Chapter 105 Alternatives Analysis Technical Guidance Document (310-2100-002), which was developed in parallel with the present Guidance document. The two guidance documents are complementary and in order for both to provide maximum benefit, the Alternative Analysis Technical Guidance should be cross-referenced here.

Commenters strongly support the Department's recognition that "The issuance of this guidance document is not meant to dissuade the use of trenchless technology, nor should it form the basis for dismissing consideration of trenchless technology methods, which can help to avoid, minimize, or eliminate environmental impacts." It is critical that the Guidance not be used as an excuse to avoid trenchless technology where it is the option that causes the least environmental harm. While there are risks associated with the use of trenchless technology, many of those risks are a result of poor planning and execution and can be minimized by using this Guidance. Open trenching will often be less expensive in terms of construction costs than trenchless methods. It is thus likely to be the preferred option for project proponents in many circumstances, but for the need to comply with Chapter 105 and avoid and minimize environmental impacts. Chapter 105 is only a strong backstop to the extent the Department is willing and able to enforce it. As a perpetually under-resourced agency, that is always a challenge. (Commenter 4)

Response:
The text has been modified in the final TGD to address the commenter's concern regarding what was deemed inaccurately broad language.

15. Comment: General Comment
DEP recognizes that all projects do not pose the same level of risk. This guidance document may not be necessary for small-scale projects that pose little to no risk to environmental resources.

What types of projects are considered "small-scale" (e.g., distribution pipelines versus transmission or mid-stream, pipelines with a diameter of less than 8 inches, bores less than 250 feet in length, or is it based on the resource itself – perennial versus ephemeral)?

In the evaluation section, it still requires a PG and/or PE to stamp and seal the information that the project is or meets the "little to no risk" category. We would like the option to employ knowledgeable individuals utilizing desktop review and other available information to complete this evaluation and assessment and the discretion to seek additional expertise when warranted. As a regulated distribution company, we would like to see more options for assessing, planning, and completing these activities that align closer with our commitments to make cost-effective decisions for our customers while still prioritizing the environment. (Commenter 5)

Response:
The guidance document focuses on the risk the project poses which is outlined in Appendix A. The Department notes that the use of the phrase "small-scale" is ambiguous and has made appropriate changes in the final TGD to maintain the focus on risk and to remove any unintended ambiguity.

Regarding the need for a professional stamp by a PE or PG, the Department may request any information it deems necessary to determine compliance with statutes or rules and regulations of the Department.

Definitions

16. Comment: Definitions
Prior to completing these checklists, project proponents are also encouraged to review Appendix A.

Please clearly define "project proponent" within this document. Over the course of the project lifecycle, there will be multiple project proponents responsible for different aspects of the planning, engineering, permitting, installation, and inspection of the project. Is there an assumption that the project proponent referred to throughout the entire document is a consistent individual? The guidance does not discern between the different proponents completing the checklists. (Commenter 5)

Response:
In the final TGD, a definition for "project proponent" has been added to the definitions list in Section 1.C.

17. Comment: Definitions
Cross bore - A cross bore is the intersection of an existing underground utility or underground structure by a second utility installed using trenchless technology. This results in an intersection of the utilities, compromising the integrity of either or both utility or underground structure.

The Department's proposed definition assumes that these installations always hit each other, which is not always the case. This should be clarified with the insertion of potential.

Cross bore - A cross bore is the intersection of an existing underground utility or underground structure by a second utility installed using trenchless technology. The potential exists for an intersection of the utilities, compromising the integrity of either or both utility or underground structure. (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the definition as requested in the final TGD.

18. Comment: Definitions
Dry Hole - Drilling term; a condition that occurs when the drilling tools advance beyond the drilling mud. Typically caused by trying to advance the borehole too quickly (DTD, 2009).

The MSC recommends that the second sentence of the definition be removed. It is not appropriate for examples and scenarios to be within definitions. Definitions should factually define a term, and nothing more.

The MSC recommends that the second sentence of definition should read Dry Hole - Drilling term; a condition that occurs when the drilling tools advance beyond the drilling mud. (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the definition as requested in the final TGD.

19. Comment: Definitions
Environmental Risk - Risk is defined as the chance or probability of an event that exposes something or someone to a specific level of danger and peril. For every event, there is a cost. These costs can be monetary, affect schedule, affect finished product, or affect the environment. Risks associated with trenchless technologies can involve various factors, including ground settlement, ground heaving, subsidence, opening of voids, sinkholes, movement of sensitive buildings, inadvertent returns, impacts to water supplies, impacts to the environment, changed ground conditions, broken down-hole tooling, damage to third-party property, and damage to other utilities and structures (adapted from Doherty, 2019). Please refer to Appendix A.

The MSC recommends removing "broken down-hole tooling, damage to third-party property, and damage to other utilities and structures" from the definition, as they would not seem to be appropriate to include under the definition of Environmental Risk. (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the definition as requested in the final TGD.

20. Comment: Definitions

Inadvertent Return - An unauthorized discharge of drilling fluids and associated drilled spoils to the surface of the ground or surface waters, including wetlands, associated with HDD or other trenchless construction methodologies (adapted from DEP's Standard Operating Procedures (SOPs) Regarding Inspection and Compliance of Trenchless Construction Methodologies Associated with DEP Permits)

The MSC recommends that the word unauthorized be removed from the definition and replaced with unanticipated. If the project proponent assesses the risk of an inadvertent return using the TGD, the Department approves the project and an inadvertent return still occurs, this would be an unanticipated discharged and not an unauthorized one. (Commenter 3)

Response:

The definition of inadvertent return has been revised in the final TGD to include the word "*unplanned*".

21. Comment: Definitions

Large and Complex Projects - A project that by its nature is larger or more complex from a technical standpoint than a standard project. Since this document is regarding trenchless technologies, the focus is on subsurface conditions and other related factors (adapted from DEP's Policy for Implementing the Department of Environmental Protection Permit Review Process and Permit Decision Guarantee, 021-2100-001).

This definition is extremely confusing and vague. The focus of the draft TGD is on the crossing and not the project. A project could be "large and complex" but the actual crossings relatively straightforward and fundamental to complete. This definition will confuse both the Department reviewers and the project proponents. The Department should consider updating this definition to:

Large and Complex Trenchless Technology Crossings - A trenchless technology crossing proposed that by its nature is more complex from a technical standpoint than a standard crossing. Since this document is regarding trenchless technologies, the focus is on subsurface conditions and other related factors (adapted from DEP's Policy for Implementing the Department of Environmental Protection Permit Review Process and Permit Decision Guarantee, 021-2100-001). (Commenter 3)

Response:

The guidance document focuses on the risk the project poses which is outlined in Appendix A. The Department notes that the use of the phrase "large and complex" was ambiguous and has made appropriate changes in the final TGD.

22. Comment: Definitions

Trenchless Technology - A type of subsurface construction work that requires few trenches or no trenches which includes any trenchless construction methodology, including, without limitation: horizontal directional drilling, guided auger bore, cradle

bore, conventional auger bore, jack bore, hammer bore, guided bores, and proprietary trenchless technology (adapted from Pennsylvania Environmental Hearing Board Docket No. 2017-009-L).

The MSC recommends the following edits to the proposed definition:

Trenchless Technology - A type of subsurface construction work that requires few trenches or no trenches which includes any trenchless construction methodology, including, but not limited: horizontal directional drilling, guided auger bore, cradle bore, conventional auger bore, jack bore, hammer bore, guided bores, and proprietary trenchless technology (adapted from Pennsylvania Environmental Hearing Board Docket No. 2017-009-L). (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the definition as requested in the final TGD.

23. Comment: Definitions
Existing Utilities, Cross Bores

The Department states in the second sentence of the paragraph, "*This results in an intersection of the utilities, compromising the integrity of either or both utility or underground structure.*"

The MSC commented previously on the definition of Cross Bores. The definition and the statement above presume that the trenchless technology and utility will come into contact every time. This should be edited to state potentially compromising, shown below:

"This results in an intersection of the utilities, potentially compromising the integrity of either or both utility or underground structure." (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

24. Comment: Definitions
With respect to the definition of HDD, Commenters recommend eliminating the first sentence ("*This is a process that can be used alternatively from creating a trench.*") as this is true of all trenchless technologies. The order of the next two sentences should be switched as follows:

This method is similar to "conventional" methods, except the hole is drilled from an inclined ramp instead of a vertical rig. Although it can technically be used for any length, 800 feet – 2000 feet is the optimal length (for time and cost conservation).
(Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

25. Comment: Definitions
Environmental Risk: The discussion of cost ("For every event, there is a cost. These costs can be monetary, affect schedule, affect finished product, or affect the environment.") within the definition of environmental risk seems misplaced or out of context. It should be removed from this definition and possibly expanded upon as its own definition. Commenters also recommend deleting "sensitive" from the phrase "movement of sensitive buildings." Movement of buildings should be regarded as a risk regardless of a subjective measure of sensitivity. (Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

26. Comment: Definitions
Hydraulic Fracture: Hydraulic fractures are discontinuities or soil or rock. As presently drafted, the definition refers only to soil. (Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

27. Comment: Definitions
Commenters recommend adding definitions for the terms "Loss of Circulation" and "Zone of Contribution." The following are examples of definitions for the Department's consideration which may need to be adapted to better serve this Guidance:

Loss of Circulation: the reduced or total absence of drilling fluid flow up the annulus when fluid is pumped through the drill string. Loss of circulation occurs when the drill bit encounters natural fissures, fractures or caverns, and drilling fluid flows into the newly available space. Loss of circulation may also be caused by applying more drilling fluid pressure (that is, drilling overbalanced) on the formation than it is strong enough to withstand, thereby opening up a fracture into which mud flows.

Zone of Contribution: the volume of a geologic formation or unit that directly contributes ground water to a pumping well over time, or a Well Head Protection Area as defined by the Department pursuant to the Federal Safe Drinking Water Act Amendments of 1986. (Commenter 4)

Response:
The Department agrees with the recommended revisions and has revised the final TGD as requested.

Environmental Considerations

28. Comment: Environmental Considerations

Failure Mode Contingency Planning: While TGD outlines the process for drill hole abandonment, it must be more specific in the remediation actions required or excavators/ project proponents. Should a drill bore be abandoned due to an emergency response or some other warranted issue, then the HDD excavator should pump cement grout into the bore as the drill is removed. Additionally, the bore should have a cap installed, normally a soil cap. The HDD location must then be restored to the original condition. (Commenter 1)

Response:

The Department would not prescribe how a project proponent mitigates borehole failures because site circumstances can vary. Typically, the Department relies on the project proponent to provide a method for remediation which is then reviewed by Department staff. If a borehole failure rises to the level of emergency response, the Department is more involved, along with other agencies, to alleviate the emergency.

29. Comment: Environmental Considerations

Suitability, Feasibility, and Environmental Considerations

All of the information in this section should be recommendations and are not required by current regulation or statute. However, in the second paragraph the Department states that, *"The Site Suitability Analysis outlines the need for a desktop assessment of existing environmental considerations (for all drilling proposals) ....."* The words "need" and "all" provide the interpretation that this is a requirement.

Further, the Department references the Bore & Horizontal Directional Drill (HDD) Flowchart on the Trenchless Technologies Webpage. Upon review of the flowchart there is seemingly nothing in it to remove a project proponent from the required analysis. For example, if the proposed crossing encountered an ephemeral or intermittent stream channel it would likely not need an analysis if construction could likely take place during dry or low flow conditions. Lastly the title of the Flowchart should be updated to the Trenchless Technology Flowchart to be consistent with the TGD. The MSC recommends that the Flowchart be part of the final published document, per our earlier comment regarding the Trenchless Technologies Webpage. (Commenter 3)

Response:

In the final TGD, the word "all" has been removed from the paragraph, as requested.

Please also see the Department's response to Comment 13.

30. Comment: Environmental Considerations

Water Supplies, Waters of the Commonwealth Item d. - What sampling is being referred to here? Is it sampling the condition of the stream and wetland following a spill should a spill occur? This is confusing and should be clarified. (Commenter 3)

Response:
The type of sampling the Department may require would depend on the volume, extent, and the nature of the material spilled. By way of further response, the Department may require water quality sampling for an ongoing release to surface waters, whereas a release to wetlands may require soil testing.

31. Comment: Environmental Considerations
The Department should consider adding existing utilities and septic systems to the list of "*Key Items to Consider Evaluating Risks of Trenchless Technologies*," given the problematic encounters that have occurred with both in recent years during trenchless construction. (Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

32. Comment: Environmental Considerations
Land Use Aspects: Project proponents should consult with local zoning maps and ordinances to ascertain land use aspects to better understand local land use and historic land use. Project proponents should make sure that they understand enough about prior land use to have a reasonable assessment about prior contamination which they may encounter. (Commenter 4)

Response:
The Land Use Aspects section, Section 2.B.1.e, has been modified in the final TGD to reflect the requested changes.

33. Comment: Environmental Considerations
In addition to using the FEMA's Flood Map Service Center and PASDA, project proponents should be encouraged to consult with local zoning authorities' flood zone designations, which may or may not be the same and may reveal additional areas of concern. Many municipalities have no flood zone designations or rules, but it is advisable to make use of this information when it is available. (Commenter 4)

Response:
The Floodplains section, Section 2.B.1.g, has been modified in the final TGD to reflect the requested changes.

34. Comment: Environmental Considerations
The first Checkbox states, *"Will drilling fluids containing substances other than bentonite or plant-based components be used under pressure?"*

Above average risk evaluation does not differentiate conventional bores from methods using fluid under pressure. Trenchless methods that do not employ fluids under pressure

should be split from this list. None of the items in the provided checkboxes are a factor if no fluids are utilized under pressure. (Commenter 3)

Response:
Please see the Department's response to Comment 13.

35. Comment: Environmental Considerations
The MSC recommends adding an "N/A" checkbox to all lines to be able to better differentiate between fluids under pressure and non-pressurized technologies. (Commenter 3)

Response:
The Department disagrees that a "N/A" check box is needed; however, please see the Department's response to Comment 13.

36. Comment: Environmental Considerations
Sinkhole Formation: Normally, DEP Trenchless of HDD permits include a provision that allows excavators to correct sinkholes or subsidence issues without notifying DEP. TGD is represents an important opportunity to correct this practice. Should sinkholes and or subsidence issues occur, it should be established as a requirement and best practice that HDD excavators halt drilling and immediately notify the DEP and/or the PUC prior to "filling in" the sink hole or subsidence. Additionally, all HDD excavation must cease if a pre-existing pipeline is impacted or exposed by a sinkhole/subsidence occurring due to the HDD. Again, this is a scenario that reportedly occurred during Mariner East construction on at least one occasion. (Commenter 1)

Response:
The Department agrees with the recommended revision and has revised both the final TGD and the example PPC plan to address response and reporting of a subsidence or sinkhole related to trenchless methods.

37. Comment: Environmental Considerations
The checklist does not differentiate pressurized vs non-pressurized technologies. The MSC recommends that this checklist be split into trenchless - fluid under pressure and non-pressurized. Conventional bores should not be subject to the same considerations as methods using pressurized fluid. (Commenter 3)

Response:
Please see the Department's response to Comment 13.

38. Comment: Environmental Considerations
The "Environmental Conditions and Analysis" list presently includes only Exceptional Value wetlands, not other wetlands. While other wetlands do not have the same degree of regulatory protection as EV wetlands, they are protected and must be accounted for in project planning and execution. Commenters therefore recommend adding "other wetlands" to this list. (Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

39. Comment: Environmental Considerations
Finally, Commenters recommend adding a subjections (j) and (k) to this list of considerations as follows:

(j) Where high risk groundwater contamination zones are identified, recommendations for preconstruction, construction, and post construction and testing programs should be considered.

(k) Private water disposal methods and impacts on private onsite sewage systems and leach fields. (Commenter 4)

Response:
The subjects of both proposed bullets are already addressed in the *Site Suitability Analysis* section, Section 2.B. Therefore, no change to the text was made.

40. Comment: Environmental Considerations
Waters of the Commonwealth
In addition to identifying and delineating wetlands in accordance with DEP's Wetland Identification and Delineation Policy under 25 Pa. Code § 105.451, as the Guidance currently provides, project proponents should be asked to characterize wetlands. Proper characterization of a wetland, for example, as forested or emergent, is necessary for effective preservation and restoration of the resource. The Department should consider including references to the Corps of Engineers Wetlands Delineation Manual (1987) and Regional Supplements thereto as well the Cowardin manual to provide project proponents more comprehensive resources for identifying, delineating, and characterizing wetlands. A LiDAR-aided hydrogeologic modeling and object-based wetland mapping approach for Pennsylvania could also be a helpful resource. (Commenter 4)

Response:
DEP's Wetland Identification and Delineation Policy under 25 Pa. Code § 105.451 adopts and incorporates by reference the 1987 Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1) along with the guidance provided by the United States Army Corps of Engineers, Major General Arthur E. Williams' memorandum dated 6 March 1992, Clarification and Interpretation of the 1987 Manual and any subsequent changes as the methodology to be used for identifying and delineating wetlands in this Commonwealth. A wetland delineation, conducted in accordance with 25 Pa. Code § 105.451, includes identifying wetland type and classification.

Permitting

41. Comment: Permitting

Preferred Alternative - Commenters recommend including a cross-reference to the Department's Draft Technical Guidance: Chapter 105 Alternatives Analysis Technical Guidance Document (310-2100-002) in this section. (Commenter 4)

Response:

The Department agrees, the following text has been added to the final TGD: *"For more information on alternatives analysis guidance, see DEP's Guidance for Developing a Chapter 105 Alternatives Analysis (310-2100-002)."*

42. Comment: Permitting

In this section the Department proposes, *"Another important aspect of the design phase is for the project proponent to field delineate waters of the Commonwealth, especially at all resource crossings. The following is a list of items DEP recommends.*
a) Streams and wetlands which should be field delineated and confirmed during the 25 Pa. Code Chapter 105 permitting process.
b) Quantitative or qualitative risk analysis.
c) Pre-project and post-project function and value assessment for wetlands as required for 25 Pa. Code Chapter 105 permitting.
d) Sampling parameters for streams and wetlands with significant spills. This should be done during and following trenchless construction. There should be a description of sampling methodology and analysis."

The Department should state that these suggestions are completed as part of the Chapter 105 permits/authorizations and that the Department will review them as part of those application requirements. (Commenter 3)

Response:

The Chapter 105 permitting process is noted in two of the referenced bullets indicating that these items are completed as part of the Chapter 105 permits/authorizations. In the final TGD, the list has been revised for clarity, removing the risk analysis language.

43. Comment: Permitting

In the first paragraph the Department states, *"Once the Feasibility Analysis has been completed, a project proponent is ready to prepare and submit the appropriate permit applications. Appendix B contains a checklist for project proponents to complete as part of their due diligence. Many of the items on the checklist, and in this guidance document, are equally examined during the preparation of a permit application submittal. The checklist should be submitted with the permit application, while all other items should be available upon request."*

The MSC has several concerns with this paragraph. First, we assume the stated "permit" is a stream and/or wetland crossing permit required under Chapter 105 for a crossing,

where a trenchless technology is being proposed. Nowhere in the TGD is the appropriate permitting vehicle specifically stated.

Second, the PA DEP states that the TGD checklist is required to be submitted with the permit application and other items should be made available upon request. If this document is intended to be guidance and hold recommendations only then it is not reasonable to create new permit requirements as part of the application without a formal rulemaking proposal or updating the Chapter 105 regulations and permit application. The MSC recommends that use of this document when proposing a trenchless technology is not a requirement for a permit application. (Commenter 3)

Response:
Please see the Department's response to Comment 10. This guidance does not require any new permits; the permits referenced in this TGD are any currently applicable Chapter 105 or Chapter 102 permits.

The checklist was designed as a helpful tool to demonstrate completion of proper due diligence and to guide the conversation between the applicant and the reviewer. Submission of the checklist is not required; the language in the final TGD has been revised to clarify this is a recommendation.

44. Comment: Permitting
In the fourth paragraph the Department states, *"Prior to the start of construction, project proponents should integrate site-specific conditions and identified issues in permits, or from licenses, into all site plans. DEP expects project proponents to do their due diligence and incorporate, at a minimum, the following items:*

- *Geology or geophysics*
- *Local land use*
- *Water supply or disposal issues*
- *Critical resources*
- *Soil conditions or constraints"*

The required permits (Chapter 102 or 105) already specify what documentation is required to be on site. There is no need to duplicate or recreate items. The MSC recommends removal of this section. (Commenter 3)

Response:
Department agrees that the documentation required to be onsite is already included in the required permits; however, the Department does not consider including that documentation within this guidance document duplicative. A guidance document on trenchless technology that did not include a listing of due diligence required to generate effective site plans would be incomplete.

45. Comment: Permitting

The applicability statement is vague, and it is unclear throughout the document where and when this guidance applies. The Department should clearly state where and when this TGD applies.

Because the Trenchless Technology TGD and Alternatives Analysis TGD are interrelated, the MSC recommends using an adaptation of the applicability statement found in the draft Alternatives Analysis TGD, which states: "*This guidance applies to all proposed projects involving a water obstruction or an encroachment located in, along, across, or projecting into an aquatic resource that are not eligible for a general permit, emergency permit, or do not qualify for a waiver of permit requirements. (25 Pa. Code § 105.13(e)(1)(viii))*."

The MSC recommends the following applicability statement for the Trenchless Technology TGD:

"This guidance applies to all proposed crossings of an aquatic resource that utilize a trenchless technology and that are not eligible for a general permit, emergency permit, or do not qualify for a waiver of permit requirements. (25 Pa. Code § 105.13(e)(1)(viii))." (Commenter 3)

Response:

As noted in DEP's response to Comment 10, TGDs are guidance, not regulations. The Department recommends following this guidance in any application of trenchless technology.

46. Comment: Permitting

Water Supplies, Waters of the Commonwealth – Item c. - Water Obstruction and Encroachment Permit applications do require a description of functions and values of wetlands, but a post-construction assessment is not required by Chapter 105. The post-project function and value assessment for wetlands should be removed. (Commenter 3)

Response:

Please see the Department's response to Comment 10. This guidance does not require any new permits; however, the Department may require post-evaluation of the aquatic resource.

47. Comment: Permitting

Locate Public Water Supplies, Public Information Act for Locations (Page 16)

The Department states, "*The location of public water supplies may be considered sensitive and protected; therefore, information not obtainable through eMapPA may require direct coordination with local water supply companies or DEP's Bureau of Safe Drinking Water. The Bureau of Safe Drinking Water is charged with managing the federally delegated drinking water program and implements both the federal and state*

Safe Drinking Water Act and associated regulations. The Bureau of Safe Drinking Water can be contacted at RA-epwater@pa.gov. "

The MSC has concerns over this recommendation in the draft TGD to locate public water supplies. We believe that this remains a US Homeland Security issue and the location of these facilities may not be available even with direct coordination. Further, has the PA DEP Bureau of Safe Drinking Water been notified that project proponents proposing trenchless technologies will begin contacting their office for information on the location of drinking water supplies? Is the Bureau readily prepared and open to provide the information requested? (Commenter 3)

Response:
The Department's Bureau of Safe Drinking Water was consulted in the drafting of this guidance. In addition, the guidance was presented to, and received comments from, DEP's Public Water System Technical Assistance Center Board in February 2020. Regarding homeland security concerns, any information submitted to the Department can be marked as confidential supervisory information for the Department's consideration.

48. Comment: Permitting
For each crossing utilizing trenchless technology (e.g., HDD), a drilling fluids management plan should be prepared which includes the source of drilling water, anticipated water use, volume, and any required sampling and laboratory analysis of the water source. Any drilling fluid additives besides bentonite and water should be pre-approved, non- hazardous, and non-petrochemical based.

When is this information expected? Does this need to be included in the permit package? When is sampling of the source water required? Is DEP requesting to pre-approve additives as part of the permitting process? This may not be known until a driller has been assigned, which happens through a competitive bid and does not align with the timing of the permitting process. Clarity is needed around when this information is being requested. (Commenter 5)

Response:
A drilling fluids management plan should be prepared as part of the site-specific PPC Plans, an example of which is provided on the Department's Trenchless Technologies Resource Page, located at https://www.dep.pa.gov/About/Regional/RPCO/Pages/Trenchless.aspx.

49. Comment: Permitting
Inadvertent Returns (IRs) - In the last sentence of the paragraph the Department states, *"At a minimum, the PPC Plan should include a risk assessment for IRs and measures to prevent, control, or mitigate loss of circulation."*

The MSC asks the Department to provide clarification on the recommendation to include a risk assessment for IRs. This is not defined or required as part of the Chapter 78a.68a

regulations. This should only be a recommendation if the Department provides a definition for the term in this instance. (Commenter 3)

Response:
The Department agrees, and the text in the final TGD has been revised to state *"At a minimum, the PPC Plan should consider including a risk assessment for IRs and measures to prevent, control, or mitigate loss of circulation."* However, the Department may request any information it deems necessary to determine compliance with statutes or rules and regulations.

50. Comment: Permitting
A. Alternatives Evaluation Process
This is another section in which it would be helpful to provide a cross-reference to the Department's Draft Technical Guidance: Chapter 105 Alternatives Analysis Technical Guidance Document (310-2100-002), as suggested above. (Commenter 4)

Response:
A reference to DEP's *Guidance for Developing a Chapter 105 Alternatives Analysis (310-2100-002)* is included within this section.

51. Comment: Permitting
Commenters recommend clarifying the following sentence in subsection (d): "*Prior to any modification, project proponents should notify and coordinate with DEP.*" As written, this sentence makes it sound like consultation with DEP prior to modification of construction plans is optional. It is unclear whether this refers to modification of plans prior to permit issuance or after permit issuance. After permit issuance, modifications to construction plans are likely to require not just consultation with, but approval from DEP, as set forth in 25 Pa. Code § 105.44. §105.44 provides in relevant part:

(a) Work undertaken under a permit or other Department approval issued under this chapter must be conducted in accordance with the maps, plans, profiles and specifications as approved by the Department.
(b) Changes in the maps, plans, profiles and specifications for work covered by a permit or other Department approval which would affect the waterway area or structural stability of the project may not be made except with the written approval of the Department. Upon written approval by the Department, the changes shall become part of the permit.

With respect to the specific subject matter of this Guidance, the abandonment or significant extension or reduction of the use of HDD at a site is regarded by the Department as a major modification which also triggers public notice and comment. (Commenter 4)

Response:
Prior to any modification pursuant to 25 Pa. Code § 105.44, the permittee may be required to notify, or receive written approval from, the Department depending on the

nature of the change. The commenter is incorrect in assuming that all changes require Departmental approval. See 25 Pa. Code §§ 105.44(b) and 105.44(c). Under § 105.44(b), the Department requires written approval prior to implementing a change which would affect the waterway area or structural stability of the project and, under § 105.44(c), the Department may exercise discretion as specified.

In addition, the commenter makes a statement about abandonment or significant extension requiring a major modification. This statement is accurate, and the Department acknowledges the comment.

52. Comment: Permitting

On page 67, under the Failure Mode Contingency Planning checklist, the last bullet presently reads as follows "Finally, if a drill or borehole is unsuccessful and it has been determined to abandon the drill hole, the PPC Plan includes all necessary steps." For clarity, Commenters recommend rephrasing slightly as follows: "The PPC plan includes all necessary steps to take if a drill or borehole is unsuccessful and it has been determined the borehole should be abandoned." The PPC plan including necessary steps is not contingent upon whether a drill or borehole is successful; the purpose of this checkbox is to ensure the PPC plan is in place for that occurrence. Rearranging the order of this sentence makes that clearer. (Commenter 4)

Response:

The Department agrees with the recommended revision and has revised the final TGD as requested.

53. Comment: Permitting

In the fifth paragraph the Department states, *"Any considered alternatives to minimize potential adverse environmental impacts should be identified in the Site Suitability Analysis and Feasibility Analysis. For more information on alternatives analysis guidance, see DEP's Chapter 105 Alternatives Analysis Technical Guidance Document (310-2100-002)."*

The MSC points out that Chapter 105 General Permits are not required to prepare an alternatives analysis. The MSC recommends that the Department make mention of crossings that qualify for a Chapter 105 General Permit. (Commenter 3)

Response:

The Department generally agrees with the sentiment that alternatives analyses are not required to be submitted with general permit registrations or waived activities not requiring an Environmental Assessment when those registrations are the only authorization required for the project. The regulations and application instructions identify when an alternatives analysis is required to be submitted.

The Department notes that even when not specifically required in the registration instructions, the concepts of an alternatives analysis apply broadly to any application or registration, including general permits, in order to determine compliance with

Chapter 105. In accordance with 25 Pa. Code §§ 105.442(a)(3) (relating to authorization for general permits) and 105.449 (relating to compliance with permit conditions, regulations, and laws), the general permits are required to be in compliance with 25 Pa. Code §§ 105.14-105.17 and 105.21 and that activities conducted under the general permit must be in compliance with Chapter 105. It is important to note that the general permits have conditions that require avoidance and minimization (such as, General Permit 7, Condition 13.X). 25 Pa. Code § 105.14(b) states, "*In reviewing a permit application under this chapter, the Department will use the following factors to make a determination of impact: ... (7) The extent to which a project is water dependent and thereby requires access or proximity to or siting within water to fulfill the basic purposes of the project. The dependency must be based on the demonstrated unavailability of any alternative location, route or design and the use of location, route or design to avoid or minimize the adverse impact of the dam, water obstruction or encroachment upon the environment and protect the public natural resources of this Commonwealth.*" The Department also notes that, in accordance with 25 Pa. Code § 105.12(c), structures and activities which qualify for a waiver must meet the requirements of Chapter 105.

54. Comment: Permitting

In the final paragraph the Department states, *"For large and complex projects, DEP recommends that a summary of the results from the Site Suitability Analysis and Feasibility Analysis are incorporated into the public participation process, so stakeholders can have an opportunity to become familiar with the project. For more information, see DEP's Policy on Public Participation Policy in the Permit Review Process (012-0900-003)."*

Per the MSC's comment on the definition, this should be for Large and Complex Trenchless Technology Crossings not Projects. In addition, public participation in the permit review process is not a requirement of crossings that quality for coverage under Chapter 105 General Permits. The MSC recommends that the Department make mention of crossings that qualify for a Chapter 105 General Permit. (Commenter 3)

Response:

Please see the Department's response to Comment 21.

55. Comment: Permitting

Recommends the addition of a new subsection H. for IR Occurrence Measures:

H. IR Occurrence Response Measures
   1. Notifications
      A. Upon first indication of an inadvertent release, notification shall be made to the HDD Operator and Environmental Inspector and the HDD will be immediately stopped.
      B. Upon confirmation of an IR or loss of drilling fluid circulation, the onsite Environmental inspector will notify the Environmental lead, who will then notify and coordinate with the appropriate federal and state/local regulatory agencies and the affected landowner(s) if the IR is outside the acquired easement for the project.

C. Upon observation of groundwater returning to the surface, PADEP will be notified followed promptly thereafter by any public water supplies and/or landowners with a source within 450 feet of the HDD alignment to convey that their water supply may be impacted. The PG should be consulted.

D. • A report/plan based upon observations from the incident shall be compiled. This report/plan's intent is to ensure further IR's will be better prevented and this report will be sealed by a PA Licensed PG and include items found in Section 4.2, below.

2. Documentation

Documentation of the IR should include at a minimum:

- Location of IR (Latitude and Longitude)
- Distance to, or resource impacted
- Initial Indication of an IR
- Amount of Loss
- Actions Taken
- Containment Methods Employed
- Area Impacted
- Annulus and Drilling Fluid Pump Pressures & Rate
- Percentage of Drilling Fluid Return Flow
- Photos (pre and post cleanup)
- Stage of HDD
- Horizontal and Vertical Location of Drill Head/Reamer
- Timeline of all Observations, Actions, and Correspondences

3. Response Actions

Terrestrial (Uplands) Releases

Drill progress will stop, UGI Environmental will be notified, and the HDD Supervisor will utilize as necessary, the appropriate combination of straw bales, silt fence, compost filter sock, pumps, hoses, plastic sheeting, shovels, and other containment measures that will most effectively contain and remove drilling fluids from upland areas. The HDD Supervisor and the Environmental Inspector shall make the determination of the equipment and materials to be used.

The contractor shall instruct the recovery crew to pump or vac the contained and recovered fluids to appropriate vessels or the mud recirculation pit for reuse, if the contractor's mud engineer determines the fluids are reusable. Otherwise, the fluids will be transported offsite for disposal at an approved facility.

The contractor will obtain landowner permission prior to accessing any upland sites for fluids containment and removal operations, except in an emergency where inaction would pose an imminent threat to human health, sensitive environments, or property.

Any disturbance to the surface will be stabilized in accordance with the approved site specific Erosion and Sediment Control Plan details.

If the inadvertently released drilling fluids originated from or migrated to an area outside of the "Containment Area/s" PADEP must be notified & the drill is not to restart until clearance is obtained from PADEP.

Surface Water Releases

HDD Operations will cease and UGI Environmental will be notified of the IR who will then notify PADEP. Containment and removal of drilling fluids released to surface waters is generally impractical because of dilution in the water column and dispersion due to tides and currents. If, however, the onsite Environmental Inspector considers the resulting plume excessive, or the plume may directly and negatively impact aquatic resources or adjacent wetlands, the following containment measures may be considered, in consultation with PADEP:

• Floating silt booms - anchored in place, these may be placed around the location of the release. The purpose of the containment is to confine the suspended solids until some observable degree of settlement can occur. Removal of the diluted drilling fluids is not anticipated, unless dictated by unusual circumstances, and subject to UGI approval. The containment shall remain in place until the release stops, and settlement renders the turbidity inside the containment similar to the adjacent waters based on visual inspection, or the threat to the sensitive resource has passed.

• Weighted conductor pipe – driven down into the surface stratum, this is placed at the location of the release and is further supported by sandbags. The conductor pipe must be wide enough to capture and contain any released drilling fluids and can aid in the removal of the fluids by vac-truck.

• Cofferdams – placed on the stream bed, these are constructed around the location of the release.

Any containment structure placed in open water shall be clearly marked as an obstruction in accordance with federal and state agency regulations, with special consideration given to the type of marine traffic observed in the area.

HDD Operations are not to restart until clearance is obtained from PADEP.

Wetlands Releases

HDD Operations will cease and Environmental Inspector will be notified of the IR who will then notify PADEP. Containment and removal of released drilling fluids to wetlands shall be performed after consultation with the appropriate regulatory agency, and generally when there is a net benefit in the reduction of impacts, as determined by the following actions:

• Upon confirmation of an inadvertent release in wetlands, HDD operations will cease and the HDD contractor shall assist the onsite Environmental inspector with the following steps:

• Measure the area directly affected by the released drilling fluids. The area affected may be estimated from a distance, if access to the affected area for measurement would result in additional unacceptable negative impacts.

• The HDD contractor and the onsite Environmental Inspector shall jointly estimate the additional area, if any, likely to be affected if the drilling were to proceed and the drilling fluids were not contained and removed.

• In consultation with the HDD contractor, the onsite Environmental Inspector will estimate and characterize the additional impacts to wetlands likely to occur as a result of accessing the affected area for containment and removal of the drilling fluids.

• The onsite Environmental Inspector will estimate any reduction in impacts that might be achieved if the released fluids were removed.

• The HDD will not continue with re-drilling until approval is given by the PADEP. • The onsite Environmental Inspector and/or a qualified wetlands biologist will characterize the type of impact (e.g., temporary, permanent, vegetation only, change in surface hydrology) caused by the released fluids. The onsite Environmental Inspector will seek concurrence from the regulatory agency representative, as required.
• If it is determined that the released drilling fluid is to be contained and recovered, the contractor, in consultation with the onsite UGI Inspector, shall direct the placement of the personnel or equipment at the applicable points of fluids release and transfer the contained fluids to a hopper barge or frac tank for subsequent reuse or disposal.
• If the decision is made to forgo containment and proceed with the drill, the onsite Environmental Inspector will continue to observe the location of the release. If impacts continue to increase, the HDD will be stopped and evaluated.
• All access to the wetlands will be done in such a manner as to cause the least impacts to the vegetation and surface hydrology, and only with prior agency approval. Because of site specific variables such as distance from open water, surface hydrologic conditions, and vegetation cover, the selection of the most appropriate access method will be made on a case-by-case basis, subject to approval by the onsite Environmental Inspector. The least number of personnel and equipment necessary to accomplish the task safely and in a timely manner shall be deployed.
• Following containment and removal, the contractor will continue to monitor the crossing location for additional releases as the drilling work progresses. • All impacts to wetlands from inadvertent releases will be measured, assessed, and recorded by the onsite Environmental Inspector with assistance from the contractor, to support any mitigation or restoration measures that may be necessary.
Upon completion of the boring, the contractor will remove all containment and recovery equipment, tools, supplies, materials, wastes, and debris from the wetlands and adjacent buffer zones.
• HDD Operations are not to restart until clearance is obtained from PADEP. (Commenter 2)

Response:
The Department appreciates the comment. The recommended additions are information that should be included within the site-specific PPC Plans, an example of which is provided on the Department's Trenchless Technologies Resource Page, located at https://www.dep.pa.gov/About/Regional/RPCO/Pages/Trenchless.aspx.

56. Comment: Permitting

The defined roles and responsibilities for key personnel, including on-site crews and support staff should be available in the PPC Plan, maintained and available on-site, and updated as needed. This list should include the contact information (e.g., cell phone numbers) for all individuals, including a backup contact, when possible, in the event the primary contact is not available. The following personnel are examples of those individuals that may need to be included:

Are we able to assign the roles and responsibilities in a blank table with no specific personnel included during the permit process? Personnel is assigned after the project is permitted, not before. Will a SAMPLE of roles and responsibilities be sufficient for review? (Commenter 5)

Response:

The Department understands that individual roles may not be assigned until after the permits are approved. These roles may be blank within the PPC Plan during the permitting process. As stated, the defined roles and responsibilities for key personnel, including on-site crews and support staff, should be available in the PPC Plan, maintained and available on-site, and updated as needed.

57. Comment: Permitting

Design and Permitting - In the first paragraph the Department states, *"The results of the Site Suitability Analysis, Feasibility Analysis, and Environmental Analysis, including the field investigations (e.g., geotechnical, geological, geophysical), should be included in the design and permitting documents. If a trenchless technology method (e.g., HDD) is sought and determined to be suitable and feasible, supplemental field investigations should be conducted to determine the requirements of the proposed trenchless technology construction, including appropriate drill entry and exit locations."*

The MSC presumes that the permitting document referenced in this paragraph refers to a stream and/or wetland crossing permit where the trenchless technology is being proposed. It is not clear in this instance or elsewhere in the document what permits apply.

In addition, the MSC points out the use of the word "should" that indicates the completion of the Site Suitability Analysis, Feasibility Analysis, Environmental Analysis, and supplemental field investigations are all requirements of the permit being applied for by the project proponent.

These should simply be recommendations, as there is nothing in current statute or regulation that requires these items. (Commenter 3)

Response:

Please see the Department's response to Comment 10. This guidance does not require any new permits; the phrase "*permitting documents*" in the TGD refers to any required permits for the trenchless technology activity (such as Chapter 102 and Chapter 105 permits).

58. Comment: Permitting

In the first paragraph the Department states, *"To avoid costly delays in the permitting and completion of any proposed action, it is strongly recommended that all sections of the Trenchless Technology Guidance are read thoroughly prior to completing the following checklists. The following checklists are considered a companion of the guidance document and should not be completed without proper reference and examination of the guidance document. The checklists should help project proponents confirm their due diligence as recommended in this guidance document."*

The MSC interprets this paragraph to mean that unless the checklists are utilized and completed that PA DEP reviewers will hold up necessary permits for stream and/or wetland crossings.

While the Department states that the guidance and checklists are recommended only, we believe that PA DEP permit reviewers will interpret the guidance to be required in order to obtain permit approval. If the Department desires for this to be a requirement they must follow the formal regulatory rulemaking process. (Commenter 3)

Response:

Please see the Department's response to Comment 10 and Comment 43.

59. Comment: Permitting

In the second paragraph the draft TGD states that it is the project proponent's responsibility to perform the due diligence if a trenchless technology is selected. However, the Department may request the project proponent to provide all of the information in the draft TGD, regardless of scope. This certainly sounds like the entirety of the document is required to be followed and Department reviewers will utilize this paragraph to request all information from applicants regardless of the document's intended use as guidance and the project size and scope. The MSC requests that this be removed from the draft TGD. (Commenter 3)

Response:

Please see the Department's response to Comment 10.

60. Comment: Permitting

At the bottom of Page One, the draft TGD states that Plan contents and attachments required for permitting are also identified. The use of the term "required" is utilized here. This would mean that the plan contents and attachments seemingly recommended within the TGD are now a requirement of the project proponent. As discussed previously, this is not appropriate for a TGD, and the word "required" should be removed from the document. It bears repeating – not only for the benefit of the regulated community, but for the certainty of DEP field staff: TGDs cannot impose requirements upon the regulated community. Despite verbal, and at times written, assurances from Department central staff to this effect, the experience of permittees is rife with examples where Department

permitting and compliance staff refuse to issue a permit or sign off on a project unless the TGD standards are adhered to. (Commenter 3)

Response:
Plan contents and attachments are required, and a key element, when applying for a permit. The sentence has been modified in the final TGD to clarify intent. Please also see the Department's response to Comment 10.

61. Comment: Permitting
In the last two sentences of the first paragraph the Department states, *"Project proponents should be prepared to support their evaluations with documentation and explain why any of the following items were not evaluated. An incomplete investigation and analysis of information necessary for the adequate review of the project may impede the permit review process."*

The MSC is concerned that these statements provide the opportunity for reviewer subjectivity on what is "required" to be included and not included as part of the analysis. The statements above will lead reviewers to ask for all items to be evaluated thus requiring everything listed in the TGD. It does not provide an opportunity for the project proponent to provide the appropriate amount of due diligence commensurate to the complexity of the trenchless technology crossing. The MSC requests that this be reworded to reflect that and eliminate reviewer subjectivity. (Commenter 3)

Response:
The intent of the referenced language is to indicate that users may justify why an individual assessment was not completed for their unique project, giving the user the option to opt out of what they, and their licensed professionals, determined unnecessary due to lower risk. Please also see the Department's response to Comment 10.

62. Comment: Permitting
Pre-construction Activities

In the third paragraph the Department states, "*DEP expects the project proponent, prior to construction, to identify, as part of its due diligence, all potential impacts as defined in the Site Suitability Analysis and Feasibility Analysis. The project proponent should develop all required plans and incorporate those plans into the scope of the project."*

The MSC interprets this to mean that all documents in the draft TGD are required prior to the start of construction. Unless specifically backed up by statute or regulation items in the guidance document are recommendations only. Second, with this being a recommendation only, then the statement above should remove the word "all" when describing potential impacts identified and be replaced with "reasonably foreseeable". The term "expects" is not appropriate for a TGD and should be replaced with "recommends". (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

63. Comment: Permitting
Personnel, Responsibilities, and Trainings

In the second paragraph the Department states, "*Resumes of key personnel containing their experience, planned duties, roles, and responsibilities should be included for each key employee along with training documentation in their site-specific safety training plan. Trenchless technology should include an appropriate inspection and monitoring program, and documentation should be made available upon request. During construction, there should be regular management oversight from both the project proponent and the lead contractor. For proper compliance by all personnel (e.g., drillers and engineers), certain co-lead contractors, sub-contractors, and other contractors may need to be added as co-permittees once the Chapter 102 permits are issued. The project proponent is responsible for verifying the need of adding any co-permittees with all appropriate agencies."*

There is nothing in statute or regulation that requires a project proponent to provide "*Resumes of key personnel containing their experience, planned duties, roles, and responsibilities should be included for each key employee along with training documentation in their site-specific safety training plan.*" Moreover, providing such information is unnecessary, a burdensome administrative task imposed upon the project proponent, and serve no viable purpose. The MSC recommends this requirement be removed from the TGD.

There is nothing in statute or regulation that requires a trenchless technology inspection and monitoring program. It is unclear what documentation the Department expects to be available upon request. The MSC recommends this requirement be removed from the TGD. (Commenter 3)

Response:
The Department has revised the final TGD to clarify that providing key personnel resumes is a recommendation. The Department disagrees that nothing in the statute or regulations requires a trenchless technology inspection and monitoring program; a PPC plan(s) should be available upon request consistent with Chapter 102 (see 25 Pa. Code §§ 102.5(l) and 78a.68a(b)).

Additionally, modifications have been made to the final TGD to clarify that personnel with operational control or oversight over earth disturbance activities are operators, as defined at 25 Pa. Code § 102.1, and operators who are not the permittee are co-permittees of a Chapter 102 permit (see § 102.5(h)). Operators assume joint liability for compliance with Chapter 102 permits.

64. Comment: Permitting

The Department introduces a new analysis that "should" be completed, and it includes, *"The project proponents should prepare an Environmental Analysis that addresses all features covered under 25 Pa. Code § 105, including:*

- *Type (e.g., forested wetland) and Size of Wetland*
- *Threatened and Endangered Species*
- *Wild and Stocked Trout Streams*
- *Exceptional Value (EV) wetlands*
- *EV and High Quality (HQ) streams*
- *Regimen and ecology of the watercourse or body of water*
- *Water quality*
- *Stream flow*
- *Fish and wildlife*
- *Aquatic habitat*
- *Instream and downstream uses*
- *Other significant environmental factors"*

The MSC questions the new requirement and would like to understand what an "Environmental Analysis" is? Is the Department referring to the Resource Identification, which is required for a Water Obstruction and Encroachment Permit?

This section is unnecessary since these items would be addressed as part of the Water Obstruction and Encroachment Permit. To eliminate duplicative requirements, the MSC recommends simply stating that the appropriate Chapter 105 permits/authorizations are necessary for wetland and stream crossings which includes structures placed in, along, under, across or over the regulated waters of this Commonwealth and that a review of the Pennsylvania Natural Diversity Inventory (PNDI) is necessary to determine if the project has potential impacts to Threatened or Endangered species. (Commenter 3)

Response:

This section has been revised in the final TGD to clarify that the environmental considerations are not a new requirement, but part of the assessment completed during preparation of the Chapter 105 Water Obstruction and Encroachment permit.

65. Comment: Permitting

The last sentence of the first paragraph states, *"If, after completing the below checklist, a project proponent does not think their project is above average risk, they should contact the appropriate DEP Regional Waterways and Wetlands Program(s), or DEP's Regional Permit Coordination Office, to discuss and provide justification."*

This provision appears to be pre-mature as a project proponent would not have submitted a required permit application for the crossing at the time of utilizing the recommended checklist. Typically, PA DEP regional offices do not entertain pre-application meetings until the overall project and permit applications have been developed. (Commenter 3)

Response:
The Department encourages early coordination with its staff to expedite the permitting process. Early coordination calls and pre-application meetings with Department staff are a normal and encouraged part of the permitting process. During these early coordination meetings, or during a pre-application meeting, justification for a decision on whether a project is considered high-risk or low-risk should be discussed. Regardless of whether the project is high-risk or low-risk, the Department may request any information it deems necessary to determine compliance with statutes or rules and regulations of the Department.

66. Comment: Permitting
If, after completing the below checklist, a project proponent does not think their project is above average risk, they should contact the appropriate DEP Regional Waterways and Wetlands Program(s), or DEP's Regional Permit Coordination Office, to discuss and provide justification.

Is this activity recommended prior to permit submittal? Will there be a formal submittal process for this? What supporting documentation will be required in addition to the checklist to provide justification? Whom are we submitting this to at DEP, and how long do they have to respond or comment? If DEP disagrees with the risk assessment provided, how does DEP determine the project risk? (Commenter 5)

Response:
Appendix A is meant to be used as a way for both the Department and the project proponent to determine whether the project poses an above-average risk to the environment, public health, and safety. The checklists were designed to be helpful tools to demonstrate that proper due diligence was completed and to guide the conversation between the applicant and the reviewer. Conversations regarding the level of risk would occur prior to submittal of any permit. The amount of information to be submitted depends on the size and scope of the project based on the level of risk as determined by the project proponent through their due diligence. This guidance does not introduce new regulatory requirements, nor does it change the current permitting timelines. As with all permit submittals, they will be reviewed by Department staff and their supporting professional peers.

67. Comment: Permitting
Safety Data Sheets (SDS) - (formerly known as MSDS) include information such as: the properties of each chemical; the associated physical, health, and environmental health hazards; protective measures; and safety precautions for handling, storing, and transporting the chemical. SDS should be included for each chemical used.

This may not be known until a driller has been assigned, which happens through a competitive bid and does not align with the timing of the permitting process. Clarity is needed around when this information is being requested. (Commenter 5)

Response:
The text has been modified in the final TGD for clarity. A sentence has been added to the end of this section that states, "*If SDSs are unavailable at the time of permit submission, they can be submitted once available*." Please also see the Department's response to Comment 10.

68. Comment: Permitting
As stated previously there is confusion on when these checklists are to be used, especially since they are recommendations within a guidance document. The MSC presumes that a project proponent could utilize these checklists when proposing a trenchless technology as part of a Chapter 105 stream and/or wetland crossing permit. The Department should be clearer on when and how the recommended checklists may be used and for what permitting vehicle. (Commenter 3)

Response:
Please see the Department's responses to Comment 10, Comment 43, and Comment 58.

69. Comment: Permitting
The MSC recommends that the Department update the checklist to reflect items that may not be available or known at the time of Chapter 105 permit submittal, such as meeting with EIs and construction staff. To make the checklist usable many of the items should be reflected as "I will" and not "I have". (Commenter 3)

Response:
Please see the Department's response to Comment 43.

70. Comment: Permitting
Feasibility Analysis
In the second paragraph the Department states, "*To accurately determine the least environmentally impacting alternative, the site-specific Feasibility Analysis should not rely upon desktop resources for identifying wetlands, streams, and other aquatic resources. Rather, a field investigation of all regulated waters of the Commonwealth, including wetlands, must be conducted as the basis for the site-specific Feasibility Analysis. A Preliminary Jurisdictional Determination from the United States Army Corps of Engineers is recommended."*

The United States Army Corps of Engineers (USACE) rarely processes Section 404 permits for pipeline projects in Pennsylvania with a Preliminary Jurisdictional Determination. These applications are typically processed via a "No JD". The MSC recommends that this sentence be removed because it is not in line with how the USACE typically processes 404 permit applications in Pennsylvania. (Commenter 3)

Response:
Thank you for the comment. In the final TGD, DEP has removed reference to federal jurisdictional determinations as they are not a regular practice. By way of further response, due to the disparity between State and Federal jurisdiction of aquatic resources,

DEP has removed this language from the final TGD to eliminate any potential ambiguity on the matter.

Project Specific Assessments

71. Comment: Project Specific Assessments

Geophysical Testing: While TGD does outline the importance of Geophysical Testing, it should be explicit in stating that all Trenchless Technology should be required to perform Geophysical Testing before and after drilling. The geophysical testing prior to drilling is essential in creating a baseline to compare with the post-geophysical testing results. Required Geophysical Testing prior and post-drilling should be established as a best practice. As TGD correctly notes "*this approach can be effective . . . when trying to identify the top of bedrock in challenging geologic conditions, including karst.*" This appeared to be precisely the case in multiple instances of the Mariner East pipeline impacting communities in Chester County – cases where prior Geophysical Testing would have potentially averted significant issues. In addition, required Geophysical Testing before and after drilling would have likely proved invaluable in supporting the rights of residents whose water supplies were impacted.

Similarly, Many HDD projects within Karst areas should not occur due to the bedrock containing carbonate rock. TGD should establish as a best practice that the primary excavation method in Karst areas should be Trench Technology. (Commenter 1)

Response:

Please see the Department's response to Comment 10. Since pre- and post-geophysical testing is not an existing regulatory requirement, the Department cannot require such testing through guidance.

The Geophysical Investigation section, Section 2.B.3.b., has been updated in the final TGD to further emphasize the importance of subsurface investigations in areas with highly developed karst.

72. Comment: Project Specific Assessments

450 feet in non-karst terrain and a minimum of 1,000 feet in karst terrain or areas that include limestone and dolomite bedrock

These distances are arbitrary and should be site specific based upon geologic conditions (i.e. structure, fracture traces, etc.). (Commenter 2)

Response:

The offsets in the guidance document were discussed and determined during the workgroup process. These offsets are based on previous experiences the Department has working with industry on trenchless projects. The Department expects project proponents to do their due diligence and the use of best professional judgement to determine whether these distances should be adjusted. If distances are adjusted,

documentation should be used to support any reasoning for not needing, or needing, to extend beyond the recommended minimum horizontal offset distance.

73. Comment: Project Specific Assessments
Table 3.1 Private water supply within a minimum of 450 feet, and in karst, a minimum of 1000-feet, of trenchless centerline alignment

Arbitrary distances, should be site specific. (Commenter 2)

Response:
Please see the Department's response to Comment 72.

74. Comment: Project Specific Assessments
Locate Private Water Supplies
Commenters urge the Department to apply a horizontal offset distance greater than 450 feet (non-karst) and 1,000 foot (karst) that aligns with DEP and DRBC and SRBC radii used for establishing well monitoring networks for aquifer testing and supply well yield testing. HDD loss of circulation and loss of return events are prevalent in Pennsylvania HDD reevaluations statewide (and also elsewhere where reevaluations were not completed but having similar geology or nearby alignments with LOCs and LORs). During an LOC / LOR event, drilling fluids are pumped into the formation without their return to the surface and at rates consistent with aquifer testing and well yield testing pumping rates. LOC and LOR events inject fluids without their return to the surface and aquifer test / well yield tests extract fluids without their return to the geologic formation. The zone of influence from both injection and extraction events are driven by the same hydrogeologic characteristics. Thus horizontal off-set distances used in establishing off-site well monitoring networks for aquifer tests / well yield tests should also apply to HDD projects and, where more conservative, supersede the applied 450-foot and 1,000 foot radius. The attached table (Attachment 1) summarizes the radii recommended by DEP, SRBC and DRBC for establishing well monitoring networks for aquifer testing / well yield testing. Again, we urge DEP to use a more conservative horizontal offset distance for the purpose of establishing the HDD horizontal off-site distance. This recommendation applies to all instances in the Guidance referencing the 450 feet (non karst) and 1000 feet (karst) horizontal offset distance. (Commenter 4)

Response:
Please see the Department's response to Comment 72.

75. Comment: Project Specific Assessments
After careful consideration of multiple factors, DEP recommends identifying private wells within a minimum horizontal offset distance of 450 feet in non-karst terrain and a minimum of 1,000 feet in karst terrain or areas that include limestone and dolomite bedrock.

DEP recommends researching current tax parcel information and assuming each parcel has a well location until documented facts prove otherwise.

This seems excessive for projects that do not meet the level of risk with a small HDD. Projects that install small diameter pipe (2" – 8") do not have the quantity of boring fluids or pressures seen on larger (24" and larger) bores. It does not seem feasible that drilling fluid could have an impact on facilities that far away. Also, assuming there is a well on every property unless proving otherwise may not be practical. In order to visually or manually obtain the information requested below, we need a right of entry for properties that will not be impacted on a low-risk project. Please consider a revised approach for smaller projects that demonstrate a lower risk. (Commenter 5)

Response:
Please see the Department's response to Comment 72.

76. Comment: Project Specific Assessments
Add
9. Montmorillonite (x-ray diffraction) to Inorganic list (Commenter 2)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

77. Comment: Project Specific Assessments
The design of the drill path and selection of pipe should also consider the radius of the curves in the drill path, and the exit and entry angle. For adequate allowance to install the pipe, a recommended "rule of thumb" from industry is to ream the bore hole to approximately 1.5 times the outside pipe diameter (including coating and insulation of the pipe to be installed). Industry "rule of thumb" for reamed hole diameter tends to be 12" greater than the pipe diameter for pipelines 24" and larger. **Consideration for the slope and elevation change of the entrance and exit points to minimize or eliminate gravity drain systems.** (Commenter 2)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

78. Comment: Project Specific Assessments
Geophysical Investigation The Guidance presently provides: "DEP recommends a minimum of one geophysical method to aid in the identification and characterization of relevant risk factors, including karst or potentially open voids, high moisture areas, soft zones, fractures, faults, and geologic contacts, if they are identified to be a risk, based on the geologic review." As the Department is likely well aware, geophysical analysis is usually most effective when more than one geophysical method is employed, allowing for comparison and corroboration of results. Commenters recommend adding a sentence that reflects the value and typical practice of using more than one method so the Guidance is not interpreted to suggest that the use of one geophysical method is likely to be the best approach. (Commenter 4)

Response:
The Department agrees with the commenter regarding the synergistic effect of utilizing multiple geophysical techniques. In complex geologic regions, like highly developed karst, contrasting geophysical methods are needed to fully understand, or verify, conditions. However, the rigor of a subsurface investigation, to inform the trenchless design process, is site-specific and dependent on the risk associated with selected trenchless method.

79. Comment: Project Specific Assessments
In that same paragraph the Department states, *"DEP recommends that test borings are generally drilled no more than 100 feet from the proposed drill path and at intervals not greater than 300 feet. In some situations, shorter intervals may be necessary to adequately define subsurface conditions. The geotechnical investigation, and subsequent borehole investigation, should be conducted by a licensed professional geologist (PG), or a licensed PE, with knowledge of the local geology."*

Industry experts have stated that it may be difficult to meet the 300-foot borehole spacing "recommendation". The use of "recommend" and "generally" appear to be recommendations however "not greater than" is a requirement that does not provide an opportunity for a licensed professional to prepare a design. Spacing intervals "not greater than 300 feet" is not consistent with industry best management practices, and increased impacts can result when accessing boreholes in areas due to terrain, waterbody/features, etc. Some locations may require boreholes in shorter intervals but that should be based on sound engineering judgment. PA DEP reviewers will take these values as requirements rather than recommendations. (Commenter 3)

Response:
Please see the Department's response to Comment 10.

80. Comment: Project Specific Assessments
a) Geologic and Hydrogeologic Conditions, including geologic mapping, formation identification, known fractures or faults in the area, known strike or dip mapping, Light Detection and Ranging (LIDAR), Digital Elevation Models (DEMs), aerial photos, and other data that may capture and help characterize geological conditions, including hydrogeological issues (e.g., artesian conditions). Project proponents are encouraged to perform a fracture-trace analysis ***for all proposed drill path alignments. Greater detail should be used*** *if the proposed drill path is through highly deformed bedrock and is near water wells, exceptional value wetlands, or surface waters with designated or existing special protection uses under 25 Pa. Code Chapter 93. Project proponents are encouraged to utilize the best available data, including the Pennsylvania Department of Conservation and Natural Resources (DCNR) Geology of Pennsylvania webpage and the USGS National Geologic Map Database.* (Commenter 2)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

81. Comment: Project Specific Assessments

a) Geotechnical Investigation should be conducted, as necessary, based on the evaluation of risk (see Appendix A) of the trenchless technology used, but is especially important for HDD. A complete geotechnical investigation report should be prepared and sealed by a Pennsylvania-licensed professional engineer (PE) **or Pennsylvania- licensed professional geologist (PG).** (Commenter 2)

Response:

The Department agrees with the recommended revision and has revised the final TGD as requested.

82. Comment: Project Specific Assessments

b) Geophysical Investigation should also be conducted, if applicable, based on the evaluation of risk (see Appendix A) **and reviewed by a Pennsylvania- licensed professional geologist (PG) experienced in geophysical techniques and analysis**. *Non-intrusive exploratory geophysical methods may be employed to augment exploratory borings and assist in characterizing the subsurface conditions, ideally and to the maximum extent possible, to a depth that matches or exceeds the depth of the trenchless technology being employed (i.e., depth to profile). This approach can be effective when large gaps between completed borings exist, when environmental or land restrictions prevent the ability to gather geotechnical borings, or when trying to identify the top of bedrock in challenging geologic conditions, including karst, especially in limestone and dolomite bedrocks or other fractured bedrock. However, because of the need for physical samples for testing and correlation of geophysical methods, DEP does not expect borings to be entirely replaced with geophysical methods. Where possible, any geophysical investigation should be physically correlated with a geotechnical investigation* **and reviewed by a Pennsylvania- licensed professional geologist (PG)**. *DEP recommends that any engineering effort should consult with a subject matter expert to determine the appropriate geophysical method(s), including an explanation of why a particular method or set of methods was chosen. DEP recommends a minimum of one geophysical method to aid in the identification and characterization of relevant risk factors, including karst or potentially open voids, high moisture areas, soft zones, fractures, faults, and geologic contacts, if they are identified to be a risk, based on the geologic review.* (Commenter 2)

Response:

The Department agrees with the recommended revision and has revised the final TGD as requested.

83. Comment: Project Specific Assessments

d) Licensed Professionals. DEP recommends that all geotechnical and geophysical investigations, when necessary, be conducted by a licensed professional as described below:

i. Geologic interpretations should be reviewed, sealed, and signed by a Pennsylvania-licensed PG who is knowledgeable in local geology. **Geophysical interpretation should be reviewed, sealed, and signed by a Pennsylvania-licensed PG.** (Commenter 2)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

84. Comment: Project Specific Assessments
All individual drilling segments of a project need to be individually signed and sealed by the ***~~professional~~ PG*** *that made the interpretation of the data for that segment. An overarching signature for an entire large and complex project is not acceptable. For any investigative work conducted in this step of the process, all technical references should be documented. The project proponent should make every attempt to find and reference the most current industry standards.* (Commenter 2)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

85. Comment 85: Project Specific Assessments
Fluid Circulation:
Add: (2) If circulation is lost then the PG should be consulted. (Commenter 2)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

86. Comment: Project Specific Assessments
The ***~~surfacing~~ encountering*** *of groundwater* ***within ~~over~~*** *the trenchless technology profile as a result of trenchless technology activities, other than returning water to the entry or exit pit, could be indicative of an ongoing or impending IR. When groundwater surfacing is identified, it should be photographed and characterized (i.e., location, size, limits, flow rate, clarity, etc.),* ***the PG should be consulted.*** (Commenter 2)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

87. Comment: Project Specific Assessments
In the third paragraph the Department states, *"The Feasibility Analysis should provide conclusions and recommended construction methods for the various types of crossing (e.g., road, stream, wetland, groundwater, or reservoir). The recommended Feasibility Analysis should include a decision matrix for use of trenchless technology construction as the least environmentally impacting alternative."*

The word "practicable" should be inserted into the last sentence. For example, if open cutting a state road is not allowed, then it is not a practicable option. Please see below the updated paragraph:

"The Feasibility Analysis should provide conclusions and recommended construction methods for the various types of crossing (e.g., road, stream, wetland, groundwater, or reservoir). The recommended Feasibility Analysis should include a decision matrix for use of trenchless technology construction as the least environmentally impacting practicable alternative." (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

88. Comment: Project Specific Assessments
The Department states, *"Geotechnical test borings should be used to confirm any desktop research data concerning soil-bedrock interface depth."*

According to the Draft Bore & HDD Flowchart, Geotechnical test borings are recommended only if the analysis progresses to Phase 4. The MSC recommends that the Department reference this and change the word "should" to "may". (Commenter 3)

Response:
Please see the Department's responses to Comment 10 and Comment 13. Geotechnical information may be requested based on the evaluation of risk.

89. Comment: Project Specific Assessments
Further in the same paragraph the Department states, *"The geotechnical investigation, and subsequent borehole investigation, should be conducted by a licensed professional geologist (PG), or a licensed PE, with knowledge of the local geology. Any information gathered should be logged with oversight by a licensed PG."*

These professionals are often not available for fieldwork nor is it cost effective for them to be utilized for this manner. A "designee" should be allowed to conduct the investigation under the licensed professional's direction just like other engineering/geologic work that is performed. (Commenter 3)

Response:
The Department agrees with the recommended revision and has replaced "*conducted by*" with "*under the direction of*" in the final TGD when referring to the licensed professional.

90. Comment: Project Specific Assessments
The "Subsurface Conditions" list currently includes "Geologic Conditions" and "Geologic and Hydrogeologic Hazards and Subsurface Voids." Rock types, fractures, and other preferential pathways should be explicitly included in one of these categories. This list should also include private infrastructure such as septic systems and fuel tanks. (Commenter 4)

Response:
Rock types and fractures fall under Geologic Conditions. In the final TGD, human-made subsurface features (such as utilities and septic systems) have been added to Appendix A: *Key Items to Consider Evaluating Risks of Trenchless Technologies*.

91. Comment: Project Specific Assessments
The last sentence of the second paragraph of this section presently reads *"Each project that proposes trenchless technology (e.g., HDD) should be prepared in consideration of project-specific issues, impacts, and public and agency comments."* Instead of highlighting just "project-specific issues," Commenters recommend the language be modified to say "project-specific and site-specific issues." This better reflects the granularity of both the analysis needed, and the nature of the Guidance. (Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

92. Comment: Project Specific Assessments
B. Site Suitability Analysis
Throughout this entire section, it is important that project proponents not just identify conditions and associated risks, but that those findings be documented. The Department should make this explicit. This is especially important given how many different contractors are sometimes involved on a project. In order for these findings to be meaningfully considered and accounted for, they need to be readily accessible and clearly documented for all parties for whom they might be relevant.

Commenters recommend modifying the first sentence of the second paragraph of this section as follows:

The Site Suitability Analysis outlines the need for a desktop assessment of existing environmental considerations (for all drilling proposals) and a two-tiered assessment, which, based on the size and complexity of the project, may include site geotechnical, geologic, **geospatial, and/or** *geophysical investigations to further investigate potential for adverse environmental impacts.* (Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

93. Comment: Project Specific Assessments
Geologic Hazards and Subsurface Voids
The first sentence, which includes a list within a list, should be clarified and punctuated as follows: "**Geologic Hazards and Subsurface Voids** *should be identified, including but not limited to karst; caves; subsidence features, such as sinkholes and any closed depressions located in carbonate bedrock; fractured metamorphic and igneous bedrock areas; faults; and geologic contacts."* (Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

94. Comment: Project Specific Assessments
Hydrogeologic Investigation
Commenters suggest the Department add to this section a recommendation that project proponents develop a groundwater flow map utilizing published well data and information collected during investigations. A groundwater flow map will aid in the determination of zones of influence and zones of contribution. (Commenter 4)

Response:
The section has been revised in the final TGD to mention the importance of depth to groundwater and groundwater flow direction to the trenchless design process.

95. Comment: Project Specific Assessments
LIDAR
Commenters also recommend adding a new letter subsection that suggests the use of LIDAR – Light detection and ranging (LIDAR) technology, which is useful in creating high resolution digital surfaces, terrain and elevation models. Unmanned aerial vehicles (drones) can be made to carry a LIDAR and collect data for this purpose. Historic LIDAR datasets also are available covering Pennsylvania from PA Map from 2007 (5 foot resolution) and USGS from 2018 (1.5 foot resolution). Analyses including digital elevation models (DEMs), hill-shade, and topography difference plots are recommended to establish baseline conditions. (Commenter 4)

Response:
The guidance document recommends the use of LIDAR and digital elevation models (DEMs) within Section B - *Site Suitability Analysis*.

96. Comment: Project Specific Assessments
Licensed Professionals - In the last paragraph the PA DEP states, *"All individual drilling segments of a project need to be individually signed and sealed by the professional that made the interpretation of the data for that segment. An overarching signature for an entire large and complex project is not acceptable."*

The MSC questions the authority of the Department to require each drilling segment to be individually signed and sealed by a licensed professional. Licensed professionals sign and seal packages for all other industry permits and not individual segments. This is not necessary and seemingly overkill, as the licensed professional takes responsibility for the project when they sign and seal it. Further, the term "large and complex project" should be revised per the MSC's prior comment in the definitions section. (Commenter 3)

Response:
Individual segments of large projects can vary significantly, especially in regions with complex, or varied, subsurface conditions. Individually signed and sealed segments assure these variations have been considered. Please also see the Department's response to Comment 21.

97. Comment: Project Specific Assessments
M*inimum Requirements for Evaluating Risks of Trenchless Technology Crossings*
The minimum requirements for evaluating risk of trenchless technology methods should include a Pennsylvania-licensed Professional Engineer (PE) with a geotechnical engineering specialty and experience in the Pennsylvania geology and/or a Pennsylvania- licensed Professional Geologist (PG) with experience in Pennsylvania geology. A statement of qualifications, signed and sealed, with supporting documentation should be part of the assessment report, including a statement specifying that the investigator meets the definition as defined above (i.e., either a PE or PG).

This section further reinforces that a PE or PG is required for EVERY project, even if deemed low to no risk. The checklist of items is based on desktop analysis - if all boxes are 'no', why would be a PE/PG be required? We feel a PE or PG should not be necessary on low to no risk projects.

In reference to the statement of qualifications: What qualifies as a geotechnical engineering specialty? Will our 'expert' be questioned based on their 'statement of qualifications'? (Commenter 5)

Response:
Please see the Department's response to Comment 10.

By way of further response, when a complete geotechnical investigation report is recommended the geotechnical investigation should be conducted under the direction of a Pennsylvania-licensed professional engineer (PE) or professional geologist (PG), with knowledge of the local geology. To ease concerns of increased cost, internal staff that are trained and experienced in HDD design may be used if they are overseen by a licensed PE or PG. This guidance document recommends that all geotechnical investigation reports are reviewed and sealed by a Pennsylvania-licensed PE or PG.

98. Comment: Project Specific Assessments
The issuance of this guidance document is not meant to dissuade the use of trenchless technology, nor should it form the basis for dismissing consideration of trenchless technology methods, which can help to avoid, minimize, or eliminate environmental impacts.

On average, the additional cost to a project from an external PE or PG to provide the level of analysis and design recommended in this document is $25,000 to $40,000 per bore, plus the execution costs utilizing a contractor with the appropriate technology and equipment. We have internal staff trained and experienced in HDD design that are not

PE/PG certified but can provide the same level of detail and analysis on a bore design. The increased cost of these additional review and implementation measures influences the volume of projects we can successfully complete. Because many of our projects are betterment activities that have compliance commitments we must meet as a regulated public utility, the significant added cost dissuades us from using trenchless technology methods and pursuing open cut options. Again, we would like to see more options for analysis and design that take distribution-type activities into consideration, providing a tiered approach to project planning and risk evaluation that will allow us to serve our customers and communities in a safe and timely manner. (Commenter 5)

Response:
Please see the Department's responses to Comment 10 and Comment 97.

99. Comment: Project Specific Assessments
Unconsolidated Material
In the final paragraph of this section the Department states, "*Following the initial desktop review, DEP expects project proponents to characterize field conditions through the gathering of site-specific information. Depending on the size and complexity of the project, this can include borings and other subsurface field investigations as identified in Section 2.B.3 of this guidance document*."

The MSC highlights the word "expects" and defines it as a requirement. The intent of this document is guidance and there is no accompanying statute or regulation cited. The MSC recommends that the word "expects" be replaced with "recommends". (Commenter 3)

Response:
Please see the Department's response to Comment 10.

100. Comment: Project Specific Assessments
Horizontal Offset: Within the paragraph the Department states, *"…the distance from alignment measured from the centerline of the pipeline or utility line, giving the project proponent the area that DEP expects to be investigated for the existence of private water supply wells. After careful consideration of multiple factors, DEP recommends identifying private wells within a minimum horizontal offset distance of 450 feet in non-karst terrain and a minimum of 1,000 feet in karst terrain or areas that include limestone and dolomite bedrock. DEP expects any project proponent to use their best professional judgement when choosing to exclude parcels and water supplies that are crossed by intersecting geologic structures (e.g., faults, fractures), but outside of the recommended minimum horizontal offset distance. DEP recommends that any project proponent evaluate when this horizontal offset distance should be expanded due to local geological conditions."*

The MSC highlights the word "expects" as a requirement of the project proponent within the draft TGD. The MSC recommends that the word "expects" be replaced with "recommends" being more consistent with a guidance document. (Commenter 3)

Response:
Please see the Department's response to Comment 72.

101. Comment: Project Specific Assessments
The Department states, *"Geotechnical Investigation should be conducted, as necessary, based on the evaluation of risk (see Appendix A) of the trenchless technology used, but is especially important for HDD. A complete geotechnical investigation report should be prepared and sealed by a Pennsylvania-licensed professional engineer (PE). The geotechnical investigation and associated report should include a borehole investigation. The borehole should match, or exceed, the depth of the trenchless technology being employed (i.e., depth of profile) to correlate to the drilling profile. The number of borings should be determined by what is needed to adequately characterize the subsurface formation."*

The Department does not have the authority to require a complete geotechnical investigation report, signed and sealed by a licensed geotechnical engineer for an HDD without updating the regulations. It is inappropriate to included this in guidance and the MSC recommends that this requirement should be removed from the document. A geologic investigation should be at the discretion of the project proponent. (Commenter 3)

Response:
Please see the Department's response to Comment 10.

102. Comment: Project Specific Assessments
c) Mapping of municipal sewer systems and private sewage disposal systems.
What value does mapping of private sewage disposal systems provide? Do we need to do this within 450 feet or 1,000 feet of our project? This seems unnecessary and a cost that does not provide value to HDD evaluation. Why is this included? (Commenter 5)

Response:
Sewer systems have been negatively impacted as part of trenchless activity. As such, the Department wants project proponents to be aware of sewer system locations in proximity of any drilling. In the referenced section titled "Water Supplies", the guidance document states: "*The following is a list of information DEP recommends project proponents gather when identifying water supplies...*" The intent was for project proponents to review sewer system mapping, if available, not to have project proponents map sewer systems for proposed projects. To remove any ambiguity or confusion, the text has been revised in the final TGD.

103. Comment: Project Specific Assessments
The Site Suitability Analysis outlines the need for a desktop assessment of existing environmental considerations (for all drilling proposals) and a two-tiered assessment, which, based on the size and complexity of the project, may include site geotechnical, geologic, or geophysical investigations to further investigate potential for adverse environmental impacts.

The assessment indicates that a geotechnical investigation is required for both Tier 1 and 2. However, only Tier 2 indicates that PE/PG seal is required. Is the presence of a seal the only difference between these two tiers? (Commenter 5)

Response:
Please see the Department's response to Comment 13. As noted within the Trenchless Technology Risk Evaluation: *"The minimum elements for evaluating risk of trenchless technology methods should include a Pennsylvania-licensed Professional Engineer (PE) with a geotechnical engineering specialty and experience in the Pennsylvania geology and/or a Pennsylvania-licensed Professional Geologist (PG) with experience in Pennsylvania geology."*

104. Comment: Project Specific Assessments
Geotechnical test borings should be used to confirm any desktop research data concerning soil-bedrock interface depth.

The Southcentral Regional Office of the DEP has stated that they will NOT look at a permit application unless geotechnical borings took place. Please clarify if geotechnical test borings are a requirement for all projects, regardless of Tier 1 or Tier 2. Is this necessary for Tier 1 applications where little to no risk is present? How can we ensure these recommendations will not be given the same weight as requirements since we have already seen it used to that level? (Commenter 5)

Response:
Please see the Department's responses to Comment 10, Comment 13, and Comment 88.

105. Comment: Project Specific Assessments
A complete geotechnical investigation report should be prepared and sealed by a Pennsylvania-licensed professional engineer (PE).

This section does not match the Bore & Horizontal Directional Drill (HDD) Flowchart. Geotechnical is requested in Tier 1 investigation and does not mention PE or PG stamp. Tier 2 requests Geophysical analysis and requires PE and PG stamps. A low-risk or no risk project should not need to be evaluated by a Professional Engineer/Geologist when a desktop review by qualified individuals can be obtained. (Commenter 5)

Response:
Please see the Department's responses to Comment 10, Comment 13, and Comment 88.

<u>Trenchless Construction</u>

106. Comment: Trenchless Construction
Horizontal Directional Drilling (HDD) - A trenchless construction methodology for installing pipelines, conduits, or cable utilizing drilling fluid, often pressurized, and consisting of: a directionally controlled (e.g., steerable) pilot hole drilled along a predetermined path extending from grade at one end of a drilled segment to grade at the

opposite end; enlarging the pilot hole to a size which will accommodate a pipeline; and pulling a pipeline or conduit into the enlarged hole. The method is accomplished using a horizontal drilling rig (adapted from Hair, 2015).

Columbia Gas tried to permit a "dry bore" utilizing a HDD rig but using nothing but air to install a 2" diameter plastic pipe. The project was denied because it was considered HDD. Under this guidance, would HDD be permitted utilizing air only? We deemed the project low risk, did not need the use of drilling fluids, and the permit was denied until all the evaluation information was provided. We chose to open cut a wetland to avoid the delays. (Commenter 5)

Response:
It is unclear what specific project is being referenced in this comment. Air is considered a drilling fluid (see the definition for Drilling Fluids on page 3 of the TGD), and an HDD can be permitted utilizing air only.

107. Comment: Trenchless Construction
Key Items to Consider Evaluating Risks of Trenchless Technologies
13. Are drilling fluids (including air) being used?

This does not match the definition of HDD above. Why is AIR included and classified as a drilling fluid? It is inconsistent and unclear. (Commenter 5)

Response:
The Department disagrees with the assertion that including air as a drilling fluid, in this instance, is inconsistent with the rest of the document. The definition of Drilling Fluid included within the document includes air:

Drilling Fluid - A mixture of water, a viscosifier (typically bentonite), polymers, air, or other fluid that is pumped to the drill bit or reamer to facilitate cutting, transport drilled spoil, stabilize the borehole, cool and clean cutters, and reduce friction between the product pipe and the wall of the hole (Skonberg and Muindi 2014).

108. Comment: Trenchless Construction
Drilling Fluid Management
In the first paragraph the Department is urged to provide a Website Link to the approved PA DEP drilling fluid additives. (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

109. Comment: Trenchless Construction
In the sixth paragraph the Department states, "A list of certified drilling fluid additives with NSF/ANSI Standard 60 (Drinking Water Treatment Chemicals - Health Effects) with a product function of drilling fluid is maintained by NSF on its website at:

https://info.nsf.org/Certified/PwsChemicals/Listings.asp?ProductFunction=Drilling+Fluid."
The link provided in the draft TGD sends the user to a blank page. This paragraph either should be removed or be populated with the corrected link. (Commenter 3)

Response:
The Department rechecked the link in the draft TGD and verified that it is active and does not direct to a blank page.

110. Comment: Trenchless Construction
In the second sentence of the paragraph on Topography the Department states, *"This is an environmental risk metric that looks at the difference in elevation between the entry and exit points of a trenchless technology."*

The MSC contends that this is a "feasibility" risk and not an "environmental" risk. We recommend the Department replace the word environmental with feasibility.

Further in the paragraph, the Department states, *"DEP recommends project proponents pay special attention to crossings with elevation differential between entry and exit points. For example, a 100-foot elevation differential between entry and exit points may be a reasonable benchmark of elevation difference. However, a 100-foot elevation differential can be overcome, and the industry has successfully completed projects with even larger elevation differentials."*

The MSC recommends that the example be deleted. While 100-foot elevation differential has been overcome in certain instances, it is inappropriate for the Department to state that the industry has completed it and suggest, therefore, that it may be routine within the industry. This elevation difference may not be overcome in some strata areas. We recommend that the paragraph be rewritten as follows:

"DEP recommends project proponents pay special attention to crossings with elevation differential between entry and exit points." Please also refer to PASDA as a possible source of topographic data. (Commenter 3)

Response:
The elevation difference between the entry and exits points represents a feasibility risk as well as a potential environmental risk. When the elevation difference between entry and exit points is significant, a buildup of pressure can lead to an increased risk of and inadvertent return.

The example included within the paragraph has been removed from the final TGD, as recommended.

111. Comment: Trenchless Construction
In this paragraph the Department states, *"The biggest risk to pipeline integrity is excavation damage. This guidance document considers all uses of trenchless*

technologies, but gas and liquid pipelines crisscross the Commonwealth and any subsurface activity with the potential to damage existing pipelines presents significant risks to those pipelines and to the subsurface activity. Any damage to a gas or hazardous liquid pipeline facility has the potential to both migrate and ignite. The safety and environmental implications from ignitions or explosions can be catastrophic. Hazardous liquid pipelines can contain a variety of liquid products with varying properties. Some of these products can cause environmental devastation. Product migration should be modeled to understand these potentials. Pipelines are installed by both HDD and conventional trenching and are crossed or paralleled by HDD and trenchless technology applications throughout the Commonwealth. The installation of any infrastructure via trenchless technology could potentially lead to pipeline failures."

The MSC recommends removing all but the first two sentences of this paragraph. It is irrelevant to the purpose of the draft TGD and does not provide any substantive recommendations or guidance. It is obvious that project proponents that propose trenchless technologies will complete the necessary due diligence and receive the appropriate approvals prior to proceeding. The MSC proposes the following changes to the paragraph:

"The biggest risk to pipeline integrity is excavation damage. This guidance document considers all uses of trenchless technologies, but gas and liquid pipelines crisscross the Commonwealth and any subsurface activity with the potential to damage existing pipelines presents significant risks to those pipelines and to the subsurface activity. (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

112. Comment: Trenchless Construction
Feasibility Analysis
Commenters recommend modifying the following sentence by adding the bolding language as indicated here:

*For all trenchless technologies with risk potential but still deemed feasible, the project proponent should specify all actions taken to reduce or control the release**, loss of circulation**, or inadvertent returns of drilling fluids or groundwater to the surface of the ground, aquatic resources, or to water supplies at each site during operations.*
(Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

113. Comment: Trenchless Construction

The Department states, *"Another area a project proponent should be concerned with, and should consider, is hole flush considerations. Specifically, DEP recommends that the volume of fluid that could be potentially held in the dry hole section should be estimated and the project proponent should ensure adequate containment measures are in place. This is critical on any trenchless technology with significant elevation differential between the entry and exit points. Hole flush considerations should ensure that all fluids can be contained within the workspace."*

The MSC is confused by the requirements / recommendations in this paragraph. The recommendation of providing adequate containment for the entire dry hold section is not feasible, especially for large drills. The project proponent could provide containment for only where the bore has the potential to drain. Realistically, depending on the size of the drill, it is not feasible to have containment for an entire annulus full of mud or water. The Department should consider revising this paragraph. (Commenter 3)

Response:

The language regarding hole flush was added to the guidance by the drilling experts in workgroup. However, the commenter is correct, large bores can hold huge volumes within the annulus. The language has been revised in the final TGD to reflect the recommended changes.

114. Comment: Trenchless Construction

Inadvertent Return (IR) Minimization Methodologies – Instrumentation

Recommending monitoring of annular pressure without recommending the comparison of this to anticipated annular pressure may not provide much value. The MSC recommends monitoring of annular pressure should be compared to anticipated annular pressure developed by the engineer. (Commenter 3)

Response:

The Department agrees with the recommended revision and has revised the final TGD as requested.

115. Comment: Trenchless Construction

Monitoring Protocols

There are three operational conditions listed under monitoring protocols: full circulation, loss of circulation, and inadvertent returns including prior inadvertent returns. Commenters recommend adding "excess produced water" to this list, perhaps with loss of circulation. Excess produced water is an indication that a groundwater source has been intercepted by the drill or equipment and has been a substantial problem during the construction of the Mariner East Pipeline Project. (Commenter 4)

Response:

The Department agrees with the recommended revision and has revised the final TGD as requested.

Water Supply

116. Comment: Water Supply

Sections (a) and (b) under "water supplies" should be amended to include both zone of influence and zone of contribution, as these terms have distinct meanings and can represent different footprints in need of protection. Hydrogeologically, the contributing area to a well is the zone of contribution and it should not be confused with the zone of influence which is the aerial view of the cone of depression. (Commenter 4)

Response:

The Department recognizes that commenter is correct; these are two district hydrogeologic terms. The zone of contribution includes the entire recharge area to a well, a potentially very large area that is not easily mapped. The zone of influence, or drawdown area, was deemed sufficient in this instance.

117. Comment: Water Supply

In the final paragraph the Department states, *"DEP recommends researching current tax parcel information and assuming each parcel has a well location until documented facts prove otherwise."*

The MSC has concerns with the Department stating that a project proponent should assume that a well exists on every property. It would be extremely challenging in that a considerable amount of time and resources would be spent trying to find things that may not exist. The MSC recommends removing this portion to not make this overly burdensome. If it is a residence or inhabited structure outside a PWSA, this may be reasonable, but not for ALL Parcels. (Commenter 3)

Response:

Please see the Department's response to Comment 10.

118. Comment: Water Supply

Within the paragraph the Department states, *"Many parcels outside of the service area of a public water system and some parcels inside of the service area of a public water system may have a private well, so it is imperative to include all tax parcels on the mailing list and assume each parcel in or outside of the service area of a public water system has a well until facts prove otherwise."*

The MSC disagrees on including ALL tax parcels on the mailing list with the assumption that each has a private well. Areas within the public water supply should not be required to be included on the mailing list. (Commenter 3)

Response:

All parties with the potential to be impacted should be contacted. A property connected to public water is not excluded from also having a private well that may be used as a potable source.

119. Comment: Water Supply

Tax Parcel Mailing List. The project proponent should compile mailing, or contact, lists for all properties within the recommended minimum horizontal offset distance (i.e., 450 feet in non-karst terrain, 1,000 feet in karst terrain). Many parcels outside of the service area of a public water system and some parcels inside of the service area of a public water system may have a private well, so it is imperative to include all tax parcels on the mailing list and assume each parcel in or outside of the service area of a public water system has a well until facts prove otherwise. Local conditions may require further due diligence and the use of best professional judgement; documentation should be used to support any reasoning for not needing, or needing, to extend beyond the recommended minimum horizontal offset distance.

Is this section requesting or requiring that we contact every parcel within the offset distance to ask if they have a well? Must this be done through certified mail to ensure the survey went out? What happens if we do not receive a response? (Commenter 5)

Response:

Please see the Department's response to Comment 118. If the property owner does not respond, documentation should be made (that is, proof of the mailing) to show the request was made. This documentation should be available to show the request was made and any responses received. This provides some protection to the well owner (if they wish to engage) and to the project proponent by showing they have made an effort to be proactive.

120. Comment: Water Supply

Identify Any Other Sources of Water. To examine all resources, DEP recommends that the project proponent identify water supplies within the recommended minimum horizontal offset distance (i.e., 450 feet in non-karst terrain, 1,000 feet in karst terrain). At a minimum, DEP recommends identifying all groundwater sources, such as seeps or springs, and all surface water sources, such as ponds and creeks.

Can this be done through desktop analysis or is the guidance recommending a field identification of these features? What is the appropriate way to provide this information if a property owner refuses to allow access to a property? How can we follow this recommendation and show evidence of due diligence? (Commenter 5)

Response:

Please see the Department's responses to Comment 118 and Comment 119.

121. Comment: Water Supply

In item i. the Department states, *"Project proponents should develop a plan for situations where water sources have existing contamination or high background levels of certain constituents. To assist in conveying water quality results and notification of USEPA maximum contaminant level (MCL) exceedances, if observed, an example letter can be found on DEP's Trenchless Technologies webpage."*

It is not the project proponent's responsibility to assess each landowner's private water supply (which is not regulated in the state of Pennsylvania) against drinking water standards and to notify them. MSC recommends deleting this item. This is also not a requirement in current statute or regulation. (Commenter 3)

Response:
Please see the Department's response to Comment 10. By way of further response, pre-drill sampling is advantageous to the project proponent and communicating those results to the landowner is beneficial in avoiding lengthy project delays and expensive legal situations. Pre-drill surveys support a future claim that the advancing of trenchless methods did or did not create pollution of a water supply and the pollution may have existed prior to advancement. Pre-drill surveys provide a baseline data set for comparison. The Department agrees that there is not a requirement for pre-drill sampling or sharing of the results in current statute or regulation.

122. Comment: Water Supply
Water Supplies
In item h. the Department states, "*Project proponents should develop and provide a water supply well sampling protocol that includes: what constituents will be sampled, the distance from the proposed centerline of the project corridor to be sampled, reasons for sampling constituents and distances based on geologic findings, a mode of sharing test data, and an explanation of the results*."

There is nothing in statute or regulation that requires a project proponent to develop and provide a water supply well sampling protocol for a trenchless technology activity. In addition, the MSC is confused on who a project proponent would provide this to and for what purpose. We recommend deleting this item. (Commenter 3)

Response:
Please see the Department's response to Comment 10. By way of further response, the introduction paragraph to Section 6 states, "*The following is a list of information DEP recommends a project proponent gather when identifying water supplies*:" Therefore, Item H in Section 6 is clearly a recommendation. With that said, and as noted in DEP's response to Comment 10, the Department may request any information it deems necessary to determine compliance with statutes or rules and regulations of the Department.

123. Comment: Water Supply
With respect to communications about water testing results, the Guidance currently provides in section (h):

If the project proponent decides to share this information with the property owner(s), DEP recommends that any results shared include an explanation of what the data (e.g., numbers and exceedances) means using terms a layperson would understand.

Commenters agree with the recommendation to provide a layperson explanation of the results and believe this will be valuable to residents. Commenters strongly recommend that the guidance also include a sentence explicitly encouraging project proponents to share water testing results with property owners. Sharing the results of tests that have already been performed creates only a negligible burden on project proponents and has multiple benefits, including for project proponents. For example, sharing baseline data collected prior to the start of construction can help prevent misunderstandings about sources of contamination. Sharing testing results is also an important step toward transparency, which is foundational to building trust. (Commenter 4)

Response:
Please see the Department's response to Comment 121.

124. Comment: Water Supply
h) Project proponents should develop and provide a water supply well sampling protocol that includes: what constituents will be sampled, the distance from the proposed centerline of the project corridor to be sampled, reasons for sampling constituents and distances based on geologic findings, a mode of sharing test data, and an explanation of the results. If the project proponent decides to share this information with the property owner(s), DEP recommends that any results shared include an explanation of what the data (e.g., numbers and exceedances) means using terms a layperson would understand.
i) Project proponents should develop a plan for situations where water sources have existing contamination or high background levels of certain constituents. To assist in conveying water quality results and notification of USEPA maximum contaminant level (MCL) exceedances, if observed, an example letter can be found on DEP's Trenchless Technologies webpage.

Is water sampling going to be required on every single project? Is DEP stating that we need to notify USEPA when we find certain contaminations within private drinking water wells that we have no control or impact to, PRIOR to our construction beginning? (Commenter 5)

Response:
The Department is not recommending notification to USEPA, only notification to the landowner if they have concentrations of analytes within their well in excess of USEPA MCLs. Pre-drill water sampling is recommended.

125. Comment: Water Supply
Table 3.1 and Table 3.2 provide, respectively, the sampling protocol and parameters recommended by DEP. Table 3.1 provides a list of recommended actions a project proponent should accomplish and prepare as part of the sampling parameters.

These requests are excessive and generally not applicable for the work we perform. Overall, the document gives little thought to the impact or relevance of the recommended information to a project's cost or timing and does little to clarify which situations gain value from this overwhelming detail. (Commenter 5)

Response:
Please see the Department's response to Comment 10.

126. Comment: Water Supply
Section (f) provides a helpful ways to reach landowners. Commenters suggest adding door hangers to this list. (Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

127. Comment: Water Supply
Project proponents should provide notification, including detailed design plans, to all users and managers of water supplies.
Public and private water supply owner consultations and notifications. DEP recommends using a combination of some, or all, of the following methods to determine the location and construction details of public and private water supplies.
• Media broadcast (local television or radio)
• Local newspaper
• Announcement on municipality website
• Social media posts (to local community groups)
• Letter sent by certified mail to any potentially affected resident, business (e.g., farm), school district, or municipality (see Table 3.1 for recommended minimum distances)
• Phone calls (document efforts)
• Site reconnaissance (document efforts)

This seems excessive, lengthy, costly, and ambiguous to implement. Are we to purchase advertisement space on local television and radio to announce our projects and ask people to respond to Columbia Gas because we need their information? How much time do we allow for feedback? How do you implement this outreach in a logical and practical way? (Commenter 5)

Response:
Public outreach can be an effective form of communication that can avoid confusion, legal issues, and delays of project work. The forms of public communication listed in this section are recommended options that have been used in the past to communicate pending project work and to obtain information regarding water supplies. The guidance document states in this section that "*DEP recommends using a combination of some, or all, of the following methods...*" The Department expects project proponents to use their best professional judgement to obtain details of water supplies (private and public) to minimize risk.

128. Comment: Water Supply
Design – Water Supplies

In the first paragraph the Department states, "*During the design phase, project proponents should consider all water supplies, including surface and groundwater. Project proponents should provide notification, including detailed design plans, to all users and managers of water supplies. It is recommended that notifications and requests for permission to sample and test water supplies take place before starting site preparation work, including vegetation clearing*."

The term "should", while appearing to be optional, is in reality interpreted by the regulated community as an obligation or mandate. The MSC suggests that the term "should" be replaced with the term "recommends". (Commenter 3)

Response:
Please see the Department's response to Comment 10.

129. Comment: Water Supply
Water Supplies
In item g. the Department states, "*Project proponents should update their designs and sampling methods for private and public water supplies based on the well construction details collected in Table 2.1 and industry standard sampling methods (referenced in the Data Resource List available on DEP's Trenchless Technologies webpage*."

The term "should", while appearing to be optional, is in reality interpreted by the regulated community as an obligation or mandate. The MSC suggests that the term "should" be replaced with the term "recommends". (Commenter 3)

Response:
Please see the Department's response to Comment 10.

130. Comment: Water Supply
The Department provides a table of information that they recommend for project proponents to collect with several "critical" items. It states, "*Table 2.1 below lists the information that DEP recommends gathering. Information denoted with an asterisk (*) are considered the most critical. This information may be available from municipal records, the independent well driller (i.e., the contractor) that installed the well(s), or interviews with the well owner or operator (see Section 3.B.6).*"

The MSC points out that this is a significant amount of information for a project proponent to be required to collect from a private landowner. The MSC interprets the word "critical" to mean required. PA DEP should acknowledge that access to private landowner property and private water wells is not typically provided. Contacting an "independent well driller" regarding well construction details is not an option for several reasons. (Commenter 3)

Response:
Please see the Department's response to Comment 10.

131. Comment: Water Supply

Are portions of the trenchless technology project located within a Zone II wellhead protection area of a Public Water System groundwater source or within a 1,000-foot radius of a potable groundwater source?

Is an individual home well considered a potable groundwater source? If so, please address the discrepancy between this guidance and the guidance from prior sections of the document. During the process of completing this checklist, if there is an individual home well within a 1,000-foot radius, is the project instantly categorized as high risk, thus instituting the excessive amount of evaluation on an otherwise minimal project? (Commenter 5)

Response:

The guidance document focuses on the risk the project poses which is outlined in Appendix A. Private groundwater wells are considered a potable groundwater source. If portions of the trenchless technology project are located within a Zone II wellhead protection area of a Public Water System groundwater source or within a 1,000-foot radius of a potable groundwater source, the Department recommends a higher level of scrutiny and evaluation to protect these resources. The level of due diligence should be commensurate with the size and scope of the project. By way of further response, please also see the Department's response to Comment 10.

132. Comment: Water Supply

Notification: TGD currently recommends notifying "*all users and managers of water supplies*" and "*public and private water supply owners*" during the design phase. However, all Trenchless Technology or HDD projects should be required to notify each municipality that it is occurring within. Such notification should come at least 90 days prior to the use of Trenchless Technology and should include a detailed map showing the pipeline location within the right of way. Municipalities must be utilized, informed, engaged, and empowered in this process as primary providers of public information for residents and communities. It is a best practice to notify them well ahead of time so that they are informed and prepared should any adverse impacts occur. (Commenter 1)

Response:

The Department clarified the final TGD by adding "(e.g., municipalities)", under Water Supplies; it now appears as *"...to all users and managers (e.g., municipalities) of water supplies.*"

133. Comment: Water Supply

Water Supplies, Waters of the Commonwealth - Item b - What quantitative or qualitative risk analysis is being referred to here? A risk analysis of what? The Department should define "risk analysis" and provide the corresponding statutory references. (Commenter 3)

Response:

Item b was struck from the list in the final TGD. The Department agrees that this bullet was unclear and was presented in the incorrect section of the draft TGD. The

recommended “risk analysis” is in reference to a hydrofracture analysis, which is more appropriately discussed within the Site Suitability Analysis section under Geotechnical Investigation, Section 2.B.3.a.

134. Comment: Water Supply

Table 2.1 below lists the information that DEP recommends gathering. Information denoted with an asterisk (*) are considered the most critical. This information may be available from municipal records, the independent well driller (i.e., the contractor) that installed the well(s), or interviews with the well owner or operator (see Section 3.B.6).

The guidance indicates that we are to ask each homeowner with a private well this list of information. If they are unable to provide it, what are the next steps? What level of "due diligence” is required to satisfy the requirement of research? (Commenter 5)

Response:

Using professional judgement, if the well owner cannot provide information, at a minimum, documentation should be made showing all efforts to confirm information was requested. Please also see the Department’s response to Comment 119.

<u>Grammatical/ Word Choice</u>

135. Comment: Grammatical/ Word Choice

USEPA Region 3 Laboratory Services and Applied Science Division Potable Water Supply Sampling Guidance

Why EPA region 4 when PA is in region 3? (Commenter 2)

Response:

The referenced document was prepared by USEPA Region 4; the note in the table is correct.

136. Comment: Grammatical/ Word Choice

The following personnel are examples of those individuals that **~~may need~~ are** to be included: (Commenter 2)

Response:

The recommended revision was not incorporated as personnel needs may vary depending on site-specific needs.

137. Comment: Grammatical/ Word Choice

Feasibility Analysis

In the first paragraph the Department states, “*Once a project proponent has proposed their preferred alternative and have completed a Site Suitability Analysis, DEP expects the project proponent to complete a Feasibility Analysis*.”

MSC highlights the word “expects” thus indicating a requirement of the project proponent not founded in statute or regulation. This should be replaced with “recommends.” (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

138. Comment: Grammatical/ Word Choice
The third checklist item should be changed to “Every practical alternate crossing measure has been documented and considered” (Commenter 3)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

139. Comment: Grammatical/ Word Choice
In the last paragraph the Department states, *“Project proponents should not solely rely on Pennsylvania One Call and local municipality knowledge but should also attempt to conduct detailed field reconnaissance to observe and identify any signs of existing utilities”*

The term “should”, while appearing to be optional, is in reality interpreted by the regulated community as an obligation or mandate. The MSC suggests that the term “should” be replaced with the term “recommends”.

In addition, the investigation of existing public or private utilities without consent from these companies is not appropriate or permitted, “…attempt to conduct detailed field reconnaissance to observe and identify any signs of existing utilities.” (Commenter 3)

Response:
The Department has revised this sentence in the final TGD to begin "*It is recommended that…*"

140. Comment: Grammatical/ Word Choice
Groundwater
The Department should consider adding as another potential source of information on groundwater, development maps and water supply distribution network maps. There is a small error at the top of page 11. It says “the following two resources relating to groundwater”, then lists three. (Commenter 4)

Response:
The Department agrees with the recommended revision and has revised the final TGD as requested.

141. Comment: Grammatical/ Word Choice

Surface and Deep Mines

The indentation for this subsection should be tabbed outward to align with the other subsections of the same level. (Commenter 4)

Response:

The Department agrees with the recommended revision and has revised the final TGD as requested.

142. Comment: Grammatical/ Word Choice

Geotechnical investigations generally utilize more than one boring. In the following sentence, Commenters recommend changing "borehole" to "boreholes," to make clear that recommendation applies to all boreholes in the investigation: "The borehole should match, or exceed, the depth of the trenchless technology being employed (i.e., depth of profile) to correlate to the drilling profile." (Commenter 4)

Response:

The Department agrees with the recommended revision and has revised the final TGD as requested.

143. Comment: Grammatical/ Word Choice

Under the Applicability Section, Page 2 the Department states, "*This guidance document may not be necessary for small-scale projects that pose little to no risk to environmental resources*." What is a "small-scale project"? This should be added to the list of definitions if it is a new term and utilized in the TGD. The MSC recommends that it should be titled "Simple and/or Less Complex Crossing" to be in line with the "Large and Complex" definition provided in the draft TGD. (Commenter 3).

Response:

Please see the Department's responses to Comment 15 and Comment 21.