NJDEP Technical Guidance Document Review Form

Document: *" FSPM Chapter 7 - Field Analysis "*

Comment Period: *September 27, 2022 to November 9, 2022*
Committee Chairperson: *Crystal Pirozek*

Comment #	Page	Section	Subsection	COMMENTS	RESPONSE
1	Whole Doc			General Comments: Field analytical techniques (such as portable gas chromatographs, PIDs, and FIDs) are used to perform field analytical methods, and are themselves not methods. This should be clarified. Also, field analytical techniques and Advanced Site Characterization Tools (ASCTs) are two different things, yet they are being combined in this chapter to be the same thing, which they are not. Review the following https://asct-1.itrcweb.org/3-direct-sensing/ (the main website is referenced in this chapter), specifically section 3.1.7.3 which states that field analysis techniques (such as the portable GC/MS) are different and can be used when direct sensing tools (a type of ASCT) cannot be used. Additionally, the general term ASCTs is being used; however, technically only one category, direct sensing tools (e.g.OIP, UVOST, and DyeLif), is being discussed. There are three other categories of ASCTs. Might want to spell this out and specify that only the direct sensing tools category (which can be considered/categorized as field screening techniques/tools??) is the focus in addition to the field analysis techniques. If there is still a section for a glossary, this may be another section that can be used to clarify the differences between field screening and analytical methods.	Reworded to clarify. Definitions of field screening and analytical methods added to glossary.
2	Whole Doc	7		General Comment - The verb “shall” is used throughout the document. The FSPM is a guidance document and the verb “shall” must be replaced with “should” or other similar verb, as appropriate for the context and per NJDEP policy for other guidance documents.	changed most "shall"s to "should"s.
3	Whole Doc	7		General Comment - The definition of the first use of acronyms throughout the chapter (even if used in previous chapters) is recommended. SVOC, PCB, ppb, ppm not defined before this use. Maybe a list of abbreviations at the beginning of the document would globally address this?	definitions added for all acronyms
4	1	TOC		The title of subsection 7.6.1.2 is "Organic Vapor Analyzers (OVAs)" which is different from the title in the Table of Contents (TOC) which specifies "PID and FID". These will need to be made the same so that they match. Also define PID and FID.	TOC Updated
5	1	TOC		A "(" is missing in the title of subsection 7.6.3 for specifying the abbreviation of PCBs. Also, the abbreviation is not included in the TOC. Ensure the titles match in the TOC and in the body of the document.	heading and TOC updated
6	1	TOC	7.6.1	Insert "(VOC)" acronym	heading and TOC updated
7	1	TOC	7.6.2	Define SVOC	SVOC spelled out
8	1	TOC	7.6.3-7.6.4.1	Insert "(PCB)" and "(XRF)" acronyms.	TOC updated
9	3	7.2		Change xylene to "total xylenes"	added "s"
10	4	7.3		Recommend to break down Section 7.3 to 2 subsections. One for ASCTs-direct sensing tools and one for field analytical techniques. The title will need to be changed as not only field analytical methods are described here.	changed title and section to clarify

11	4	7.3		Some of the information from subsection 7.6 may serve better in subsection 7.3, to describe ASCTs and specifically direct sensing tools. It might be best to only focus on the direct sensing ASCTs and cut out some of the information for general ASCTs? As long as it is clear then that is what counts.	discussed and agreed to not move 7.6 to 7.3, but did change title
12	4	7.3		It should be clarified that field-portable instrumentation [add in "and test kits"] are types of field analytical techniques used to perform field analytical methods. Otherwise it is a little confusing that the first sentence in paragraph 2 starts with "Field-portable instrumentation" and then the second section switches and discusses field analytical methods.	agreed to change
13	4	7.3		In the last "paragraph" after the bullet points. Second sentence: GC/MS should be plural, as all other listed instrumentation are plural.	agreed to not change
14	4	7.3		Last sentence of the section: why is it "in addition to continuous..."? Should this be including, or can FIDs and PIDs be added to the list without the "in addition to" portion?	agreed to change
15	4	7.4		Change "before mobilization" in the second sentence to "during scoping". The factors listed need to be determined prior to preparing the Work Plan/QAPP, and not just before going into the field.	agreed to change, removed 7.4 and added information to 7.6
16	4	7.4		For field instruments, add reference to upper limits.	agreed to not change, we discuss sensitivity, removed 7.4 and added information to 7.6
17	4	7.4		The meaning of the first sentence in the section is lost, maybe consider changing to something similar to the following: "To be effective, the field data generated must: (1) be of sufficient quality, with respect to measurement precision or reproducibility, accuracy, and sensitivity; and (2) have known correlation with standard laboratory methods to support the objective of the site investigation or cleanup and the Data Quality Objectives (DQOs).	removed 7.4 and added information to 7.6
18	5	7.4		Consider adding a statement that the evaluated factors, including decisions, need to be documented in the Work Plan/QAPP.	removed 7.4 and added information to 7.6
19	5	7.4		Last bullet: It should be added that preservation must not only be performed in accordance with the methods, but also in accordance with federal regulation. Some of the preservations are not listed in the methods themselves, but in federal documents such as the Code of Federal Regulations (CFRs)	removed 7.4 and added information to 7.6
20	5	7.5 (now 7.4)		In the first paragraph, it is mentioned that the ITRC website can be used as a tool selection guide. This will only be applicable to ASCTs and not filed analytical techniques.	agreed to change
21	5	7.5 (now 7.4)		Remove crossed out word: "appropriate"	agreed to change
22	5	7.5 (now 7.4)	1	Explain SVOC here	agreed tp change
23	5	7.5 (now 7.4)		Are there any other examples that can be provided for resources to be used for selection of field analytical methods?	the committee did find other references that would be useful
24	5	7.5 (now 7.4)	1.1	Last sentence on page - Site-specific calibration can compensate for some of ***these*** effects.	agreed to change
25	5	7.5 (now 7.4)	1.1	A matrix effect that perhaps should be mentioned: some groundwater samples collected in NJ may effervesce, which can complicate use of Field GC for water samples	added mention of effervescence
26	6	7.5 (now 7.4)	1.3	Another example of interfering constituents is soil samples for field screening of petroleum hydrocarbons collected near a treated utility pole, which can result in elevated or false positive results.	Committee agrees that can be an interference, but decided not to add it to the text
27	6	7.5 (now 7.4)	1.3	The effect of moisture should also be discussed.	added to section 7.4.1.5

28	6	7.5 (now 7.4)	1.4	Suggested addition: List some field analytical methods for soil field analysis can be adversely affected by either inherent moisture content or moisture related to precipitation.	added to seciton 7.4.1.5
29	6	7.5 (now 7.4)	1.4	There is an entire section (7.5.2) on limitations. It is unclear if this paragraph is a summary (as it lists issues with no further explanation). Otherwise, it appears duplicative as the section contains additional information.	Limitations are discussed in both places, but the committee agreed to leave as is because it discusses the process
30	6	7.5 (now 7.4)	1.4	Consider rewording the third sentence of the paragraph to the following: These limitations should be listed **in the QAPP**, along with an explanation of how thy relation to the objectives **for the Project**.	agreed to change
31	7	7.5 (now 7.4)	2.1	Can the matrix effects section be more descriptive? It goes right into talking about sample collection. Is this correct? Some of the language from the previous version of the FSPM can/should be used.	removed 7.4.2.1, the information is provided in 7.4.1.1 and does not need to be repeated
32	7	7.5 (now 7.4)	2	Wouldn't it be useful to still maintain the Limitations and Physical Conditions sections from the older version of the FSPM. This way those items are noted to be listed in the QAPP?	The information from the previous FSPM was moved to 7.4.1 to make more clear
33	7	7.5 (now 7.4)	2.2	Emerging contaminants such as PFAS and 1,4 Dioxane should also be included.	decided not to add specific compounds
34	7	7.5 (now 7.4)		Throughout Section 6 the descriptions of each device/method should consistently designate whether the tool described is considered field portable for screening or field analytical as listed in Table 7.1 so that this is an established concept when introduced in Section 7.	made changes to clarify field/lab
35	7	7.6 (now 7.5)		The introductory paragraphs discuss "direct sensing" tools - which are typically those that occur in situ (such as MIP, OIP) versus ones where a sample is collected and then analyzed ex situ (such as immunoassay). Please clarify intent of section/introduction. Note that ITRC uses the term ASCTs for four general categories: direct sensing tools, borehole geophysical tools, surface geophysical tools, and remote sensing tools. Use of other field screening methods (such as H&S instrumentation or test kits) do not appear to be considered ASCTs as per the ITRC guidance (https://asct-1.itrcweb.org/1-introduction/).	changed introductory paragraph to clarify
36	7	7.6 (now 7.5)		All of the instrumentation, tools ,etc. listed under 7.6 are **not** ASCTs. This must be clarified and the section retitled, or otherwise the ASCTs differentiated from the field analytical techniques.	changed to clarify
37	7-11	7.6 (now 7.5)	1.2.2	Many terms need to be defined; including NAPLS, LEL, TCE, PCE, DPT (page 12)	confirmed they are defined in the chapter
38	8	7.6 (now 7.5)	1	Advanced field measureing instruments such as ppbRAEs measuring VOCs such as TCE in ppb, etc. should also be discussed.	added
39	8	7.6 (now 7.5)		The degree of complexity and the need for operator's training varies between the different technologies and methods. Some methods may even have a USEPA (or other agency) method number. The document should include a clear statement as to which of these methods require registration as a laboratory.	laboratory requirments are discussed in chapter 2
40	8	7.6 (now 7.5)	1	Change header to Field Volatile Organic Compounds instead of "Compound"	changed heading
41	8	7.6 (now 7.5)	1.1	Suggest adding to limitations: Equipment may require multiple cleanings following field analysis when concentrations are elevated and not diluted prior to sample analysis, which adds time to the analytical process.	added
42	8	7.6 (now 7.5)	1.1	Suggest adding to limitations: Manufacturer calibration required because rental companies may not calibrate. Change of elevation from manufacturer to New Jersey requires recalibration at New Jersey elevation.	added
43	8	7.6 (now 7.5)	1.1	Suggest adding to limitations - Low concentrations may not be detected	added
44	8	7.6 (now 7.5)	1.2	All the other subsections have advantages and limitations clearly listed. Can the same be done for the PID and FID?	limitations and advantages added

45	9	7.6 (now 7.5)	1.2	Suggest changing "volatile organics" in fifth line from bottom to VOCs	agreed to change
46	10	7.6 (now 7.5)	1.2.2	Paragraph 4 - spell out TCE	agreed to change
47	11	7.6 (now 7.5)	1.2.2	Paragraph 6 - spell out PCE	agreed to change
48	11	7.6 (now 7.5)	1.2.2	Paragraph 7 - spell out F, Cl, Br, I	agreed to change
49	11	7.6 (now 7.5)	1.2.3	Add a sectio on ECD	discussed in 7.5.1.3 with the MIP
50	Whole Doc			General comment - Photoionization and photo ionization both used in the document. Suggest using photoionization	changed all to photoionization
51	Whole Doc			General comment - Direct push drilling and direct-push drilling both used in the document. Suggest using direct-push drilling	changed all to direct-push
52	11	7.6 (now 7.5)	1.2.2	Change xylene to "total xylenes"	changed to total xylenes
53	11	7.6 (now 7.5)	1.2.2	The sixth and seventh paragraphs are slightly contradictory in their discussion of chlorinated/halogenated solvents. The sixth paragraph indicates that TCE and PCE can be detected (as they are given as examples of chlorinated/halogenated solvents in the list). The seventh paragraph notes that the FID exhibits "poor sensitivity to highly halogenated organic compounds such as PCE, TCE..." Clarify the extent of the text that FIDs "can detect" these compounds but FIDs "do not respond well" between the two paragraphs.	changed both paragraphs to make clear, added information about XSD
54	11	7.6 (now 7.5)	1.3	This section should be re-evaluated / re-worded because there are too many tools that are inappropriately lumped under “MIP”. MIP is one specific tool. The overall drilling technology is “direct push” and the section should be re-organized as such. Specifically to MIP, a better discussion of detectors types should be included (for example, there is no discussion of LL MIP). A discussion of the importance of instrument calibration and output scaling should also be included.	added calibration as limitation, added low level detection and difference in scaling as advantage
55	11	7.6 (now 7.5)	1.3	General Comment - some of the drilling technologies and testing technologies (such as XRF) may require special licensing or registration and may be further regulated. A discussion of these requirements must be incorporated in this chapter	limitations section indictate if specificic considerations are needed for devices but we do not discuss licensing or registration
56	11	7.6 (now 7.5)	1.3	Paragraph 1 - FID and PID have already been defined in Section 7	agreed to change
57	12	7.6 (now 7.5)	1.3	Advantages - 3rd bullet - change to "between non-chlorinated VOCs vs chlorinated VOCs"	agreed to change
58	12	7.6 (now 7.5)	1.3	Advantages - last bullet - hyphenate direct-push tooling to be consistent with direct-push drilling	agreed to change
59	12	7.6 (now 7.5)	1.3	Limitations 3rd bullet - DPT first use undefined. Not first use of term in document.	agreed to change
60	12	7.6 (now 7.5)	1.3	Clarify the third bullet under "Advantages" for the MIP. Should there be a descriptor for the first "VOCs" (such as hydrocarbon or aromatic)?	added "non-chlorinated"
61	12	7.6 (now 7.5)	1.3	Clarify the use of "completed" in the fourth bullet under "Advantages" for the MIP. Would use of only MIP be sufficient to determine "complete" delineation? Consider instead "determined" or "estimated" as appropriate.	agreed to change
62	12	7.6 (now 7.5)	2	The "Field SVOC" section does not include field screening for other semi-volatile compounds such as PAHs or phenolics. These compounds can be investigated via test kit assays but are not described in the section.	agreed to change

63	13	7.6 (now 7.5)	2	The first bullet point under "Advantages": isn't this supposed to be "real time" and not "read time"?	agreed to change
64	13	7.6 (now 7.5)	2	Last bullet point under "Limitations": Meter has limited "low**er** and..."?	agreed to change
65	13	7.6 (now 7.5)	2.1	Replace "read" with "real"	agreed to change
66	13	7.6 (now 7.5)	2.1	Advantages 1st bullet - should be "real-time field results"	agreed to change
67	Whole Doc			General comment - both real-time and real time are used - recommend using "real-time" for consistency	The words should be hyphenated when they are used as an adjectative and not hyphenated when they are used as a noun (i.e., The data was collected in real time. -vs- Real-time data was collected).
68	13	7.6 (now 7.5)	2.1	Limitations - recommend adding "Can give false positive results when soil is collected near naturally occurring sources of terpenes and creosotes."	agreed to change
69	13	7.6 (now 7.5)	2.1	Limitations - recommend adding "Should not be used if sampling in an area of pine, cedar, or fir trees, and samples should not contain organic matter."	agreed to change
70	13	7.6 (now 7.5)	2.1	Limitations - recommend adding "Meters can be affected by changes in temperature greater than 10 degrees Celsius and may require recalibration."	agreed to change
71	13	7.6 (now 7.5)	2.1	Limitations - recommend adding "Cannot differentiate between contaminants of concern and compounds present due to anthropogenic sources such as asphalt roadways."	agreed to change
72	13	7.6 (now 7.5)	3	Missing beginning parentheses for PCBs in title	agreed to change
73	13	7.6 (now 7.5)	3	Third sentence specifies "**an** enzyme-linked…" but later in the sentence it specifies "processes". Is this supposed to be "process"?	agreed to change
74	13	7.6 (now 7.5)	3	4th sentence: Something is missing or needs to be revised, particularly for the second portion of the sentence. Is this supposed to be "total organic chlorine by comparison to target or expected analyte concentrations"?	grammer fixed
75	13	7.6 (now 7.5)	3	5th sentence: "or" instead of "for" is used.	grammer fixed
76	14	7.6 (now 7.5)	3.1	Add "short period of time instead of sending **a sample** to an offsite laboratory."	agreed to change
77	14	7.6 (now 7.5)	3.1	In the 3rd bullet point for "Advantages", there seems to be 2 different bullet points nested in one. These should be separated out.	agreed to change
78	14	7.6 (now 7.5)	3.1	Use only PCB since already defined; also add "ppm" following parts per million.	Used PCB, decided not to add abbreviations for units.
79	14	7.6 (now 7.5)	3.1	Limitations - bullet 2 and bullet 6 can be combined	agreed to change
80	14	7.6 (now 7.5)	3.1	Limitations - bullet 4 - define "deg C" acronym for future use.	spelled out abrevations
81	14	7.6 (now 7.5)	3.1	Limitations - bullet 5 - Photo sensitive should be "photosensitive"	agreed to change

82	14	7.6 (now 7.5)	3.2	First paragraph; 4th sentence. Revise to something like the following: "The PCB analyzer system can be used to expedite remediation, allowing for field decisions to confirm the extent of contamination or to identify the location of confirmation sample collection for regulatory compliance."	agreed to change
83	14	7.6 (now 7.5)	3.2	First bullet point under "Advantages": "sample time take**s**..."	agreed to change
84	15	7.6 (now 7.5)	3.2	5th bullet point: Is this supposed to be 2 separate bullet points with "Requires minimal training" as the second bullet?	agreed to change
85	15	7.6 (now 7.5)	3.2	7th bullet point: upper and lower what? This is not specified.	agreed to change
86	15	7.6 (now 7.5)	3.2	First bullet on page - Spell out hrs as "hours"	agreed to change
87	16	7.6 (now 7.5)	4.1	Consider adding the statement that XRF cannot test for all metal analytes (as noted in the first paragraph of the section) as a bullet under "Limitations".	agreed to change
88	16	7.6 (now 7.5)	5.1	1st bullet under "Limitations": define the "L" part of "LNAPLs"	agreed to change
89	16	7.6 (now 7.5)	5.1	6th bullet point under "Limitations": define the "D" part of "DNAPLs"	agreed to change
90	16	7.6 (now 7.5)	5.1	Laser induced fluorescence should be changed to "Laser-Induced Fluorescence"	agreed to change
91	16	7.6 (now 7.5)	5.1	Advantages bullet 3 - cm/second should be defined	agreed to change
92	16	7.6 (now 7.5)	5.1	Advantages bullet 6 - change mg/kg to ppm	agreed to change
93	16	7.6 (now 7.5)	5.1	Limitations bullet 6 - DNAPL term not defined	spelled out abrevations
94	16	7.6 (now 7.5)	5.1	Last paragraph - change to "direct-sensing tool"	committee decided not to change
95	16	7.6 (now 7.5)	5.1	Define what is a "clean" chlorinated solvent DNAPL in the sixth bullet under "Limitations".	agreed to change
96	16 and 17	7.6 (now 7.5)	7.6.5.1 and 7.6.5.3	These two subsections are the only places in the chapter where reference is made to a specific company/vendor. Are they the developers and/or sole proprietors of the specific technologies? Does their inclusion constitute any type of endorsement?	agreed to remove reference to specific vendor
97	17	7.6 (now 7.5)	5.3	Fourth paragraph - change to "direct-push technologies"	agreed to change
98	17	7.6 (now 7.5)	5.3	Limitations - suggest changing first bullet to: Limited by lithologies where direct-push tooling can be used	agreed to change
99	17	7.6 (now 7.5)	5.4	Most sections discuss how the field screening tool us used/deployed; however, this one does not until you reach the limitations - suggest making the discussion consistent with other sections	agreed to change
100	18	7.6 (now 7.5)	5.4	First bullet on page - should be dissolved phase "contamination"	agreed to change
101	18	7.6 (now 7.5)	5.5	First paragraph change to "hydrocarbon-derived contamination"	agreed to change

102	18	7.6 (now 7.5)	5.5	Limitations section - suggest breaking this into two separate bullets revised as described: - Limited by lithologies where direct-push tooling can be used - Does not work well to detect high-PAH content NAPLS (e.g., tars, bunker oil)	agreed to change
103	18	7.7 (now 7.6)		Bullet 1 paragraph 2 - QA/QC not defined at first use	agreed to change
104		7.7 (now 7.6)		General: Ground water and groundwater are used interchangeably - decide and be consistent	changed all to "ground water"
105	18	7.7 (now 7.6)		First bullet - states that field screening analyses use field portable instruments. Later in the document, the Data Quality Classifications are not defined until page 22 on Table 7.1. Suggest that Table 7.1 be moved forward to the first time that this concept is discussed. Also - recommend establishing/defining 'field portable vs field analytical" in the description of tools in Section 6.	agreed to move the table but not change the text
106	18	7.7 (now 7.6)		The section is entitled "Quality Assurance Project Plan for Implementation…"; however, the section does not describe requirements for the WP/QAPP. Consider modifying the title to "Data Quality Levels for Implementation…" to align more with the section text.	agreed to change
107	19	7.7 (now 7.6)		First paragraph - "please refer to the QA and QC sections for details" - does this reference Chapter 2 of the FSPM or later sections in Chapter 7?	agreed to change
108	19	7.7 (now 7.6)		Second paragraph - there is a reference between field screening methods and field analytical methods. This should be clearly detailed/defined since it means the difference between whether they can be used to identify contamination or clean zones. Also, the Data Quality Classifications are not defined until page 22 on Table 7.1. Suggest that Table 7.1 be moved forward to the first time that this concept is discussed.	agreed to change
109	19	7.7 (now 7.6)		State of the Art Data - there is reference to "approval" of these methods. Approval by whom - LSRP or the Department? Later stated in the document that Department approves. What group within SRP approves / disapproves? Clarify expectations/requirements for this	agree to change
110	19	7.8 (now 7.7)	1	Background is misspelled in paragraph 3	agreed to change
111	19	7.8 (now 7.7)	2	Remove "the" from "for end use"	committee decided not to change
112	20	7.8 (now 7.7)	2	Confirm field duplicates are 1 per 20 samples	agreed to change
113	20	7.8 (now 7.7)	2	Bullet 8 is first use of SOP which is not defined - defined first in section 7.9	spelled out SOP
114	20	7.8 (now 7.7)	2	Bullet 10 SW846 is elsewhere called USEPA SW- 846. CLP not defined - make reference consistent in document	changed method, CLP definition in Acronyms list
115	21	7.8 (now 7.7)	3	remove capital letters for "meticulous", "definitive" and "data"	agreed to change
116	21	7.8 (now 7.7)	4	4th "section": A reference to "7.11.4.3, above" is made but there is not such section. Update reference.	reference removed
117	22	Table 7.1		Specify the actual data quality levels in the "Data Quality Level" column e.g. "Data Quality Level 1: Screening Data"	changed
118	22	Table 7.1		Use some of the ASCTs as examples in the table. Fall under which Data quality level?	some ASCTs are listed, agreed to not add additional ones. Data quality levels added to table
119	22	7.9 (now 7.8)		Ensure that the QA/QC requirements also encompass the QA/QC requirements required for ASCTs. I'm not sure if there might be other components to add for those tools.	agreed to change

120	22	Table 7.1		Table 7.1 - recommend that each methodology discussed be clearly defined as it is described in the text so that it is easy to connect text and Table 7.1	agreed to change
121	22	7.9 (now 7.8)		please refer to section on the QAPP (referring to Chapter 2?) - clarify the reference	agreed to change
122	22	7.9 (now 7.8)		Clarify the use of "can be" in the first sentence. It appears that the WP/QAPP should include discussion on the QA/QC requirements.	agreed to change
123	23	7.9 (now 7.8)	2	Reference is made to non-linear. Will the section include 2nd order regression?	agreed to change
124	23	7.9 (now 7.8)	2	Clarify the requirements outlined in the first through third bullets. The text appears to state that both a solid matrix and an aqueous matrix QC check sample would be required. If the investigation will only be sampling one matrix (e.g., aqueous groundwater), would a QC check sample of the matrix (e.g., soils) still be needed?	agreed to change
125	23	7.9 (now 7.8)	2	Consider adding "as applicable" to the sentence regarding surrogate compounds in the second full paragraph. Not all fractions that may be analyzed require surrogates during analysis.	agreed to change
126	23	7.9 (now 7.8)	2	Paragraph 2 - change start to "The instrument…."	agreed to change
127	24	7.10 (now 7.9)		Which, if any, of the field screening/analytical data, must be provided to the NJDEP as an EDD? Clarify even if none needed.	added a link to the guidance
128	24	7.10 (now 7.9)		Clarify that the protocols/data management plan should be discussed as part of the WP/QAPP and established during planning (not just "prior to mobilization".	changed
129	Whole Doc			General Comment - it may be covered elsewhere in the FSPM, but use of direct push and other ground intrusive methods requires underground utility clearance.	discussed in chapter 5