

NJDEP Technical Guidance Document Review

Document: *"Technical Guidance for Attainment of Remediation Standards and Site-Specific Criteria"*

Comment Period Begins: Wednesday, April 04, 2012

Comment Period Ends: Wednesday, May 16, 2012

Reviewer Name / Affiliation :

Linda Cullen, NJDEP, Bureau of Environmental Evaluation and Risk Assessment
 Tracy Grabiak, NJDEP, Bureau of Ground Water Pollution Abatement
 Diane Groth, NJDEP, Bureau of Environmental Evaluation and Risk Assessment
 Tom Leach, Chemistry Council of New Jersey
 George Nicholas, NJDEP, Bureau of Ground Water Pollution Abatement
 Stephen Posten, Licensed Site Remediation Professional Association (LSRPA)
 Ron Poustchi, NJDEP, Bureau of Environmental Evaluation and Risk Assessment
 Marc Romanell, NJDEP, Bureau of Ground Water Pollution Abatement
 Paul Sanders, NJDEP, Bureau of Environmental Evaluation and Risk Assessment
 Teruo Sugihara, NJDEP, Bureau of Environmental Evaluation and Risk Assessment

Reviewer Email Address (in case Committee needs to contact you to clarify a comment)

linda.cullen@dep.state.nj.us
tracy.grabiak@dep.state.nj.us
diane.groth@dep.state.nj.us
tleach@chemistrycouncilnj.org
george.nicholas@dep.state.nj.us
stephen.posten@amec.com
ron.poustchi@dep.state.nj.us
marc.romanell@dep.state.nj.us
paul.sanders@dep.state.nj.us
teruo.sugihara@dep.state.nj.us

SEND ALL COMMENTS TO:

Committee Co-Chair - David Haymes at David.Haymes@dep.state.nj.us [609-292-1250]

Please note that Section 5 ("Definitions") from the Draft document has been moved to Appendix B ("Glossary") in the Final document. All subsequent sections in the Final document have been renumbered accordingly (Draft Section 6 is Final Section 5, etc.). The sections noted below are based on the Draft document. When comparing a Comment/Response to the Final document, the section numbers will be off by one (for example, a change in the Final document based on a Comment on section 6 will be found in section 5 of the Final document). Similarly, a new section 1.0 ("Compliance Averaging Using the Arithmetic Mean") was added to Appendix A; all comments referring to section A1 of Appendix A of the Draft document ("Compliance Averaging at the 95 percent Upper Confidence Limit of the Mean") will relate to section A2 of Appendix A of the Final document, etc.

Page	Section	Subsection	COMMENTS	RESPONSE
1	General		Should averaging be allowed for contaminants with standards based on background (Arsenic) or PQL (Benzene IGW)	Yes, averaging will be allowed for standards based on background or PQL. The averaging process is based on exposure, and is applicable to all standards, regardless of the basis of the derivation of the standard.
2	General		It would be beneficial to provide online links to all citations throughout the document for ease of access.	Agreed. Web links have been added to the document.
3	Table of Contents	ii	The title for Appendix 1 should be provided in the Table of Contents.	Agreed. The title of the Appendix has been included in the table of contents, and has been changed from Appendix 1 to Appendix A.
4	1	1	End of 6th line - Change "that" to "who."	Agreed. The word change has been made.
5	2	2	The end of section 2, the reader is referred to other Technical Guidance documents. Although links to individual DEP Technical Guidance documents are provided later on in the document, please add a note stating that the DEP Technical Guidance documents are available for viewing and downloading on the NJDEP/SRP website at http://www.nj.gov/dep/srp/guidance/index.html .	Agreed. The web link has been added to the document.
6	2	2	1st line - Recommend hyphen after "media" and "pathway".	Agreed. Hyphens have been added.
7	4	4 para 2 and 3	These two paragraphs should be in bullet format under the first paragraph for better clarity.	Agreed. Bullet format has been implemented.
8	4	4 para 4	4th paragraph - It is stated that ground water exposure pathways are drinking water and vapor intrusion. Does "vapor intrusion" include inhalation from use of contaminated ground water for irrigation, showering, car washing, etc.?	The document has been amended to state that the definition of vapor intrusion is the same as in Vapor Intrusion Technical Guidance.
9	4-5	4 para 4	The 4th paragraph on page 4 refers to soil "gas" while the matrix on page 5 refers to soil "vapor". The document should be consistent in terms of referring to soil gas/vapor.	Agreed. The document has been amended to use the phrase "soil gas" for consistency.
10	4	4 para 6, 7 and 8	These three paragraphs should be in bullet format under the preceding line for better clarity.	Agreed. Bullet format has been implemented.

11	4	4		1st sentence on top of page 4. For the purposes of consistency, please add the word "technical" to the words guidance document. We have been drawing a distinction between DEP Technical Guidance documents and DEP general or administrative guidance.	Agreed. The word "technical" has been added.
12	5	4		There is a matrix in the document. This matrix should be in the form of a Table with a Title. The title of this table should be provided in the Table of Contents for easier access.	Agreed. The document has been amended as suggested..
13	6	5		Definitions: In July 2011, a Master List of Definitions was circulated to Committee Chairs to ensure definitions written into individual Technical Guidance documents were consistent. It is a problem if definitions in Technical Guidance documents contradict each other. The definition for Contaminant of Concern differs from the one provided in the July 2011 Master List. Please check the Master list and revise definitions to be consistent (attached for your convenience). If the definition in the Master List presents a problem in terms of content or description, let me know and we will work it out.	The definition of "contaminant of concern" has been amended for consistency with the master list of technical guidance definitions. In addition, this section has been moved to the Appendices as the Glossary.
14	6	5		1st paragraph in section - The link is to the old TRSR. The link to the current TRSR is www.nj.gov/dep/rules/rules/njac7_26e.pdf	Agreed. The appropriate web link to the Technical Requirements for Site Remediation has been added to the document. In addition, this section has been moved to the Appendices as the Glossary.
15	6	5		3rd paragraph in section - Recommend adding ",depending on medium" to end of paragraph.	Whether averaging is allowed for a given medium is detailed in the document; it is not necessary to expand the definition. In addition, this section has been moved to the Appendices as the Glossary.
16	6	5		"Acute" should be defined within the document since it is referred to in several places with no references, sources, or additional information, and can have different meanings (particularly timeframes) within medical and environmental fields.	As a result of the Science Advisory Board document concerning acute exposure scenarios, several issues concerning this exposure pathway need to be evaluated in more detail before the Department can take a position on the use of acute exposure scenarios. As such, references to acute exposure have been deleted from this guidance document. Therefore, there is no longer a need to define the word "acute". (NJDEP Science Advisory Board, "Response to Charge Question on Development of Health-Based Acute Criteria", February 2012). This issue will be revisited once acute exposure criteria/standards are developed/promulgated.
17	8	6	2	end of 1st paragraph - It is not believed that averaging for ground water is prudent. See comments for Section 8.	There are three sources of temporal variability in ground water monitoring data sets: (1) time-independent variability, resulting from a range of factors, including sample collection and analytical variability as well as well construction and aquifer characteristics; (2) seasonal variability, resulting primarily from variations in ground water level-elevation within wells screened across the water table (and generally associated with source areas), and (3) long-term variability, which is a reflection of trends in ground water chemistry. Variability associated with items (2) and (3) are addressed in the requirements for site closure (7:26C-7.9(f)) and the Monitored Natural Attenuation (MNA) Technical Guidance document. Variability associated with item (1) are not related to trends in ground water chemistry, but are associated with random errors or periodic biases associated with sampling and analytical methods, as well as other unknown factors. For this reason, use of an arithmetic mean of three ground water samples collected within a limited timeframe represents an appropriate method to define a sample value that is more representative of the true population mean, which ideally is the metric that should form the basis for decision-making. A comprehensive discussion of these topics is contained in "Factors Influencing Variability in Groundwater Monitoring Data Sets" T.E. McHugh, L.M. Beckley, C.Y. Liu and C.J. Newell (<i>Ground Water Monitoring & Remediation</i> , 31, No.2, Spring 2011, pgs. 92-101).
18	8	6	3	2nd paragraph in subsection - It is not believed that averaging for ground water is prudent. See comments for Section 8.	Refer to response to Comment 17.
19	8	7	0	Replace all equal signs with dashes (-).	Agreed. The document has been amended as suggested.
20	8, 18	7, 7.7.5.1	1.1	It appears there is no mention of Remedial Action Permits for Soil in the document except for fees on Page 18 under Section 7.7.5.1.	Agreed. The document has been amended at newly numbered section 6.7.5.1 to include the need for a soil remedial action permit if institutional and/or engineering controls are used as part of the remedy at a site.
21	8-9	7	1	The last paragraph on Page 8 and the first paragraph on Page 9 should be in bullet format under the preceding line for better clarity.	Agreed. Bullet format has been implemented.
22	8	7	1	Last paragraph, 1st line - Add "of" or "in" after "Appendix 1".	Agreed. The document has been amended as suggested.
23	9	7	1.1	1st paragraph, 2nd line - Add comma after "addition" and "pathways".	Agreed. The document has been amended as suggested.
24	9	7	1.2.1 & 1.2.2	Add: The investigator is required to complete and submit the form "Alternative soil remediation standard application form" available at NJ.gov/dep/srp/srra/forms/ . This language is under the Impact to Ground Water exposure pathway, but does not appear under the Direct Contact Exposure Pathways for Ingestion-Dermal or Inhalation exposure pathway	Agreed. The document has been amended, however, the language has been moved to newly numbered Section 6.1.2 as it applies to all alternative remediation standards.
25	10	7	2	last line in the subsection - The link is incorrect (the "rs" and "guidance" should be transposed).	Agreed. The correct web link has been added to the document.
26	10	7	2 - para 3	The online link provided in the last line for guidance and frequently asked questions could not be opened. Please check.	Agreed. The correct web link has been added to the document.
27	10	7	2.1	Long sentences: The first paragraph under this section is actually one sentence. Consider breaking it into two or shortening it. This comment would also apply to other sentences in the document where word count is between 40-60 or longer. A few short sentences might prove more effective in getting a point across rather than one long sentence. For example, there is an 85 word sentence in section 7.7.4.1; a 60 word sentence in Section 7.7.5.1.2; an 85 word sentence in Section 7.7.5.1. and a 108 word sentence (followed by a 59 word sentence) in section 7.7.5.2.	Agreed. The document has been amended as suggested.
28	10	7	2.1	4th line - The sentence can either end after "pre-approval" or the "pre-" can be deleted.	Agreed - The prefix "pre" has been deleted from the document.
29	10, 11	7	2.1	The three guidance documents referenced should be in bullet format under the preceding paragraph for better clarity.	Agreed. Bullet format has been implemented.
30	11	7	2.1	2nd paragraph - Link is incorrect. Replace "partition_equation" with "daf".	Agreed. The correct web link has been added to the document.

31	11	7	2.2	The two guidance documents and the form referenced should be in bullet format under the preceding paragraph for better clarity.	Agreed. Bullet format has been implemented. However, the language concerning the use of a form has been moved to newly numbered Section 6.1.2 as it applies to all soil exposure pathways.
32	11	7	2.2	The last paragraph should also include the need to submit documentation justifying the basis of the site-specific SRS along with the required form	Submitting documentation to justify the basis of the site-specific SRS is included in the instructions for this form. In addition, this paragraph has been moved to newly numbered Section 6.1.2, as it is applicable to all soil exposure pathways.
33	11	7	2.2	1st paragraph in subsection, last line - Sentence can either end after "pre-approval" or "pre-" can be deleted.	Agreed - The prefix "pre" has been deleted from the document.
34	11	7	2.2	2nd paragraph of subsection - Replace "nj.gov" with "state.nj.us" in the link.	The link is functional as presented.
35	11	7	2.2 - para 2	The online link provided in this paragraph for the sesoil model could not be opened. Please check.	Agreed. The correct web link has been added to the document.
36	11	7	2.2	The statement about an ARS form being required when department preapproval required is also true for the previous section, 7.2.1, even when department preapproval is not required. But this not mentioned in 7.2.1.	Agreed. The document has been amended. In addition, the language has been moved to newly numbered Section 6.1.2 as it applies to all alternative remediation standards.
37	11	7	6	You may want to refer to applicable sections of the NJDEP Vapor Intrusion Technical Guidance (ie, sections 2.1 and 3.1.2.4) that discuss the absence of soil screening levels for VI and how to address the pathway.	Agreed. The document has been amended to direct the user to the NJDEP Vapor Intrusion Technical Guidance document.
38	11	7	6	An explanation should be given why there are no soil-based VI standards and then refer to Section 8.2 for further information on the Vapor Intrusion Pathway.	Agreed. The document has been amended to direct the user to the NJDEP Vapor Intrusion Technical Guidance document.
39	12	7	7.1	Please verify that cadmium should not be added to the list of 5 non-residential inhalation parameters.	The nonresidential inhalation exposure pathway criterion for cadmium is equal to the residential ingestion-dermal exposure pathway criterion, and therefore it is not necessary to add cadmium to this list.
40	12	7	7.1	The second paragraph references 5 contaminants where the non-residential inhalation SRS are lower than the most conservative direct contact SRS. Due to possible future changes in the SRS, you may want to make the first few sentences more general (ie, "In some instances the inhalation SRS may be lower than the direct contact SRS...") should the values/contaminants change in the future.	The Department believes that it is better to include a list of actual contaminants. This technical guidance will be updated if the list of contaminants changes.
41	12	7	7.1	Since it may seem counterintuitive to many, an explanation should be included describing why the non-residential exposure scenario drives the remediation for these 5 contaminants.	Agreed. The document has been amended to refer the user to the Inhalation Exposure Pathway Soil Remediation Standards Basis and Background June 2008 for further information.
42	12	7	7.2 - para 3	The citation provided does not appear to provide the authority to proceed directly to remedial action.	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Technical Requirements for Site Remediation.
43	12	7	7.2	3rd paragraph in subsection - N.J.A.C. 7:26E-6 does not exist in current version of TRSR.	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Technical Requirements for Site Remediation.
44	13	7	7.3.1	The sheen policy is outdated and not consistent with the provisions of this guidance. The numerical definition of the sheen has little practical value, as the thickness cannot be measured. Using the continuity of the reflecting thin-layer as a cleanup action trigger does not account for the underlying conditions that account for the generation and propagation of the film. We propose that the requirement for a discontinuous film be removed completely.	Changes to the sheen guidance are beyond the scope of this technical guidance.
45	13	7	7.3.1	There does not appear to be any technical basis for delineation of direct contact SRS below the water table. While it is appropriate to sample soils in the "smear zone" to support remedial design and validate the results of remedial action, attainment of compliance for contamination below the water table should logically be considered within the context of GWQS, not SRS. As examples: South Carolina DHEC specifies repeatedly in its Tier I Guidance Document (UST Program) that soil samples should not be obtained below the water table; Delaware requires samples from the water table interface, but not below; Minnesota requires collection of soil samples below the water table (where contamination is present) for characterization purposes, not for compliance.	Delineation of direct contact exceedances below the ground water table is required by the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-4.2(a).
46	13	7	7.3.1	The two links to the TRSR are incorrect (they are for old version). Use www.nj.gov/dep/rules/rules/njac7_26e.pdf for the current version of the TRSR.	Agreed. The correct web link has been added to the document.
47	13	7	7.3.1	In current TRSR, 7:26E-4.4 deals with surface water. Sections related to product delineation are 4.2(a)4 (soil) and 4.3(a)3 (ground water). Perhaps can just reference 7:26E-4.	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Technical Requirements for Site Remediation.
48	13	7	7.3.1	N.J.A.C. 7:26E-1.12 is now 7:26E-1.10. N.J.A.C. 7:26E-6.1(d) is now 7:26E-5.1(e).	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Technical Requirements for Site Remediation.
49	13	7	7.3.1	The link for the LNAPL guidance is incorrect. The "draft_" should be deleted.	Agreed. The correct web link has been added to the document
50	13	7	7.3.1 - para 3	The online link provided for LNAPL guidance could not be opened. Please check.	Agreed. The correct web link has been added to the document
51	13	7	7.3.1.1	Is delineation for IGW really optional for an unrestricted use scenario?	Wording referring soil impact to ground water has been removed from the newly numbered section 6.7.3.1.1. Newly numbered section 6.7.3.1.1 has been revised to clearly state that under all remediation scenarios the investigator must demonstrate delineation compliance with the soil impact to ground water exposure pathway.
52	13	7	7.3.1.2	Subsequently limited use is parenthetically explained. Why not do it here when it is first mentioned?	The definition of "limited restricted use" has been deleted from newly numbered section 6.7.5.1.2, as it is already included in the Definitions section (which has been moved to the appendices as the Glossary).
53	14	7	7.3.1.2	1st line - N.J.A.C. 7:26E-4.1(b) is the old citation. Does not appear to be corresponding citation in current TRSR.	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Technical Requirements for Site Remediation.
54	14	7	7.3.1.3	4th paragraph in subsection - N.J.A.C. 7:26E-4.1(b) is the old citation. Does not appear to be corresponding citation in current TRSR.	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Technical Requirements for Site Remediation.

55	14	7	7.3.1.3 - para 2 and 3	The two paragraphs should be in bullet format under the preceding paragraph for better clarity.	Agreed. Bullet format has been implemented.
56	15	7	7.4.1	When averaging off-site results indicate compliance with current SRS, how will the off-site exceedence of future acute values or those outside of an order of magnitude difference be identified?	The same procedure as currently employed for sites where averaging was not used would be used. Specifically, the site is required to undergo an order of magnitude evaluation when the site triggers ARRCs or as part of the protectiveness evaluation in conjunction with a remedial action permit.
57	15	7	7.4.1	4th paragraph after bullets, end of 5th line - Delete "the".	Agreed. The document has been amended as suggested.
58	15	7	7.4.1	5th paragraph after bullets - N.J.A.C. 7:26E-6 does not exist in current version of TRSR.	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Technical Requirements for Site Remediation.
59	15	7	7.4.1	Throughout the document it is noted that "any data points that exceed an acute level need to be remediated." While this is a scientifically sound suggestion, no guidance or source(s) for obtaining this information are discussed. In fact, there is no list of acute criteria available to the scientific community that includes acute toxicity information coupled with appropriate exposure scenarios necessary to derive residential and non-residential acute criteria. What is currently available to the scientific community is a few sources of toxicity information. This information is disparate and available for only a few chemicals. Allowing or suggesting that an LSRP (or their toxicologist) could develop an acute criterion based on their professional judgement would not only be unnecessarily time consuming, but would result in an inconsistent approach to the development of acute criteria. Within DEP, we have been attempting to develop acute criteria using appropriate exposure scenarios and available toxicity information. The SAB has reviewed our methodology resulting in numerous recommendations that limit the use of the resulting acute criteria (many are lower than chronic values). Of the 136 chronic soil standards, only 69 acute criteria are currently available for use. While the DEP criteria are limited in number, they are the best available source of information that are consistently developed (and SAB sanctioned) and should be used to support this document when the DEP's acute criteria effort is completed. If it is decided to allow the LSRP the opportunity to develop an alternate acute level, documentation should be pre-approved by the DEP prior to its use. Other considerations that should be addressed in this guidance: What do you do when there is no acute criterion available due to lack of available toxicity information? Do you still allow compliance averaging on a site? Identify a DEP contact to help guide LSRPs through this process--we have more knowledge than anyone on the outside concerning the development and problems concerning application of acute criteria.	Refer to response to Comment 16.
60	15	7	7.4.1	If an investigator uses compliance methods outside of those offered within this document, pre-approval should be required. The obvious reason for pre-approval is that the LSRP may unknowingly be using an inappropriate methodology. Equally important, if there is an acceptable alternative compliance method, the Department should know about it so that they can add to the available options in updates to the guidance. This recommendation is predicated on the obvious need for a statistician within DEP who is familiar with these methods as applied to soil remediation.	There is no regulatory requirement for Department pre-approval of an alternative compliance method or approach. As such, this guidance document can only provide recommendations. LSRPs are allowed to use professional judgement when conducting remediation. Pursuant to N.J.A.C. 7:26E-1.5(b), the LSRP is to provide a written rationale and justification for any deviation from this technical guidance.
61	15	7	7.4.1	Clarify if a deed notice is required to preclude change in use when averaging is used. I would think this is particularly pertinent for nonres to res changes and change in lot size situations.	A deed notice will already exist under any situation that is not an unrestricted use remedial action. It is not necessary to specify in the deed notice that averaging was used to determine compliance. If a change in use will occur, a protectiveness certification is required. This certification will determine whether the remedy remains protective for the new intended use, irrespective of whether compliance averaging has been used.
62	16	7	7.4.2	Additional dialogue needs to occur with Stakeholders regarding specific limitations that have been imposed by the Department on application of technical approaches to the derivation of site-specific IGW-SRS. For example, relative to the evaluation of the relationship between total (soil) and SPLP leachate concentration data, there does not appear to be a sound technical argument for constraining extrapolation of site-specific data to the limit imposed by GWQS at a DAF of 13. Similar limitations have been imposed on model layering and time to achieve compliance at specified compliance points associated with the SESOIL and AT123D models. Further, under SRRA, the new Remedial Action Permit for Soil requires the maintenance of engineering controls (and insures such maintenance through Financial Assurance); where such controls consist of an impermeable cap, the infiltration pathway is eliminated, and IGW-SRS should not apply.	Changes to the impact to ground water guidances are beyond the scope of this technical guidance, and will be addressed as part of readoption of Remediation Standards.
63	16	7	7.4.2	Relative to the "Site Soil and Ground Water Analytical Data Evaluation" Guidance (Volatile Organic Contamination including methyl tertiary butyl ether (MTBE) and tertiary butyl alcohol (TBA) derived from discharges of Petroleum Mixtures): The guidance is based on the assumption that these are recalcitrant compounds that will not degrade and reads very much like stalled degradation. It may be more appropriate to reference the MNA Technical Guidance Document.	The intent of the "Site Soil and Ground Water Analytical Data Evaluation" Guidance (Volatile Organic Contamination including methyl tertiary butyl ether (MTBE) and tertiary butyl alcohol (TBA) derived from discharges of Petroleum Mixtures) is beyond the scope of this Compliance/Attainment guidance. In addition, the MNA guidance is not an appropriate reference for this section.
64	16	7	7.4.2	2nd line - Add comma after "pathway". Sentence can end after "used" because the remainder of the sentence is redundant (i.e., identical to start of sentence).	Agreed. The document has been amended as suggested.
65	16	7	7.4.2	Same as above (See comment 59)(7.7.4.1)	Refer to response to Comment 16.
66	16	7	7.4.2	The last four paragraphs should be in bullet format under the preceding paragraph for better clarity.	Agreed. Bullet format has been implemented.

67	17	7	7.5.1	For new compliance strategies, consultation is only recommended. Is there a notification requirement envisioned as part of a form? Does modeling require preapproval?	The forms already include a check box for compliance averaging. There is no regulatory requirement for Department pre-approval of an alternative compliance method or approach. As such, this guidance document can only provide recommendations. LSRPs are allowed to use professional judgement when conducting remediation. Pursuant to N.J.A.C. 7:26E-1.5(b), the LSRP is to provide a written rationale and justification for any deviation from this technical guidance.
68	17	7	7.5.1	Addressing acute end points is mentioned. Will you provide a source of acute values? This is particularly important for the inhalation pathway.	Refer to response to Comment 16.
69	17	7	7.5.1	Same as above (See comment 59)(7.7.4.1)	Refer to response to Comment 16.
70	18	7	7.5.1	2nd paragraph - N.J.A.C. 7:26E-8 and -8.5 do not exist in the current TRSR.	Agreed. The information formerly contained in subchapter 8 of the Technical Requirements for Site Remediation has been moved to th Administrative Requirements for the Remediation of Contaminated Sites. The citations has been updated to reflect the May 7, 2012 version of the Administrative Requirements for the Remediation of Contaminated Sites.
71	18	7	7.5.1 - para 1 and 2	The first two paragraphs on page 18 should be in bullet format under the preceding paragraph on Page 17 for better clarity.	Agreed. Bullet format has been implemented.
72	19	7	7.5.1.3	Where does the inhalation pathway as part of the direct contact pathway fit in here? As a general comment and to make it clearer, you may want to include a table in the guidance that indicates what options are available for each pathway, media and during each phase (like the table on page 5).	Agreed. The document has been amended to state "direct contact," rather than just "ingestion-dermal."
73	19	7	7.5.1.3	3rd & 4th paragraphs - N.J.A.C. 7:26E-8 does not exist in the current TRSR.	Agreed. The information formerly contained in subchapter 8 of the Technical Requirements for Site Remediation has been moved to th Administrative Requirements for the Remediation of Contaminated Sites. The citations has been updated to reflect the May 7, 2012 version of the Administrative Requirements for the Remediation of Contaminated Sites.
74	20	7	7.5.2	Relative to this sentence: "Every effort must be made to remediate soils to the applicable impact to ground water soil remediation standards, except where technically impracticable."; suggest rewording as follows: "Impacted soils must be remediated to the applicable impact to ground water soil remediation standards, except where technically impracticable. Engineering controls, such as capping, may be used if a proper monitoring program is implemented, to demonstrate the effectiveness of the engineering controls. If the engineering controls fail to achieve the remediation goals, then active remediation will be required."	The suggested wording deals more with remedy selection than compliance with remediation standards. Such suggestions are more in line with changes to impact to ground water guidance documents. Changes to the impact to ground water guidances are beyond the scope of this technical guidance, and will be addressed as part of readoption of Remediation Standards.
75	20	8	1	Could add before last sentence of 1st para. -"Numeric criteria for Class II A ground waters are listed as indicated at NJAC 7:9C-1.7(c); narrative standards are used to determine numeric criteria for Class I and III ground waters per NJAC 7:9C-1.7(a),(b), (e) or (f), as applicable.	Agreed. The document has been amended as suggested.
76	20	8	1	NJAC 7:9C-1.7(c)2 thru. 6 applies only to Class II-A ground waters. Last paragraph should clarify that. Could start the sentence "In Class II-A ground waters, for contaminants that..."	Agreed. The document has been amended as suggested.
77	20	8	1	None noticeable is a narrative standard for EPH relative to ground water. Are you defining this analytically or visually? If analytically, is using a conservative estimate of the mean or a percentile approach appropriate? Any value would exceed an analytical none noticeable.	Pursuant to the Ground Water Quality Standards, N.J.A.C. 7:9C, the criterion for oil and grease and petroleum hydrocarbons is visual.
78	21	8	3.1	It is unclear what we mean by saying "In general," use single-point compliance when we then allow averaging of three samples for SI, RI and RA and provide no guidelines for when it is appropriate to average and when it may not be. For each section (SI,RI, RA) we should add some general guidance to limit when averaging is used.	Wording in newly numbered section 7.3.1. has been modified to clearly indicate when single point compliance and compliance averaging should be used. Each remedial phase section (newly numbered 7.3.2 SI, 7.3.3 RI, and 7.3.4 RA) indicate when compliance averaging can be used.
79	21	8	3.1	Is a single point compliance for ground water consistent with the compliance approach for IGW?	It is not imperative that the compliance approach for these two exposure pathways be the same. Spatial averaging is allowed for the soil impact to ground water pathway, in part, because the derivation of the dilution attenuation factor is based on a 100 foot length parallel to ground water flow. Temporal averaging is allowed for ground water as described in the response to Comment 17.
80	21	8	3.2	Section 8.3.2 includes several 'must statements' . These should be revised or appropriate regulatory citations added.	Agreed. The document has been amended as suggested.
81	21	8	3.2	2nd paragraph in subsection - Do not recommend averaging ground water samples. If contaminant concentrations exceed GWQS in the initial sample, then two additional samples may be taken over (not within) a 45 day period. Contaminant concentrations should be at/below GWQS for two consecutive events to demonstrate compliance. Recommend not stating "within 45 days" as three samples could be collected in as many days. The recommended version (i.e., "over a 45 day period") would attempt to account for any temporal variations.	Refer to response to Comment 17. Due to potential timing issues for sampling mobilization and laboratory turn around times for analysis, the averaging period has been extended from 45 to 60 days. Additionally, sections 8.3.2/3/4 (7.3.2/3/4/ in final document) have been amended to clarify that the two confirmation samples should be collected evenly spaced and using similar purging and sampling techniques within 60 days of the initial sample collection.
82	21	8	3.2	8.3.2. get rid of "shalls"	Agreed. The document has been amended as suggested.
83	21	8	3.2	last paragraph in subsection, 2nd line - Add comma after "standard".	Agreed. The document has been amended as suggested.
84	21	8	3.2	I'm pretty sure the VIGT doesn't clarify whether averaging can be used, so is this supposed to mean the average result can be compared to GWSL or not?	Based on discussions with the vapor intrusion technical guidance committee, this document has been amended to allow temporally averaged ground water results to be compared to the vapor intrusion ground water screening levels.

85	21	8	3.2	Many factors, some understood, others not well understood, can cause big differences between ground water sample results taken from the same location at different times. For example sample methodology can cause big differences, especially in wells constructed to sample water from a relatively large saturated vertical interval (ten feet or longer). If the combination of well construction and sampling method is already causing significant volume averaging for one sample, it is probably not appropriate to also average that sample over time since other factors can cause significant temporal changes at that same location. In general I would recommended averaging of samples during the SI only for metals, relatively immobile contaminants and constituents that are likely to be naturally occurring.	Refer to response to Comment 17.
86	21	8	3.3	Last sentence replace "aquifers" with ground water since not all ground water is in an aquifer.	Agreed. The document has been amended as suggested.
87	22	8	3.3	Same comment as for SI above w/ regard to averaging, however, if the CSM is well understood, seasonal variation has been thoroughly evaluated, and other factors that are likely to cause significant concentration variations between sample events (e.g., significant vertical contaminant concentration gradients) are well understood and accounted for, there may be situations where averaging of more mobile contaminants would be appropriate.	Refer to response to Comment 17.
88	22	8	3.3	In the last paragraph, NJAC 7:26E-8 must be changed to be consistent with new Tech. Rules and ARRCs. NJAC 7:26E-4.9(a)7 now requires proposal of a CEA pursuant to 7:26C-7.3. Also must say ground water not "aquifers" since not all ground water is in aquifers.	Agreed. The document has been amended as suggested.
89	22	8	3.3	The collection of multiple samples and use of an average concentration to determine when delineation is complete is not recommended. If there is concern regarding fluctuating water levels, seasonal variations, etc., then additional samples can be collected to account for such possibilities. The time between sampling events should account for seasonal fluctuations in the ground water table and the number, location and depth of ground water samples should be representative of the horizontal and vertical extent of contamination. The concentrations detected during each event should, however, stand alone and not be averaged. Delineation can be deemed complete when contaminant levels are at/below GWQS for two consecutive seasonal high water table monitoring events. This is consistent with N.J.A.C. 7:26C-7.9(f).	Refer to response to Comment 17.
90	22	8	3.3	last paragraph in subsection - N.J.A.C. 7:26E-8 does not exist in current version of TRSR.	Agreed. The citation has been updated to reflect the May 7, 2012 versions of the Technical Requirements for Site Remediation and Administrative Requirements for the Remediation of Contaminated Sites.
91	22	8	3.4	Section 8.3.4 should be revised to allow for establishing the point of compliance for ground water at the site property boundary under specified conditions. Conditions should include demonstrating that the plume will not leave the site; demonstrating that there are not threatened or impacted receptors including potable wells and or indoor air from soil vapors. Establishment of a Classification Exception Area (CEA) should also be required along with obtaining a ground water remedial action permit for an demonstrated on-site plume. Property boundary POC is supported under many state regulatory programs, for example, Pennsylvania (Chapter 250, Section 407), and Colorado (Regulation No. 41; Section 41.6C).	This issue is under consideration by the Department.
92	22	8	3.4	Last sentence of 1st para. should start something like - "In most situations, this requires: ..." because there are limited situations where a RA for ground water is implemented and it results in rapid ground water remediation such that a CEA is not established (e.g., No. 2 fuel oil remediation) or a CEA is established but a RA permit isn't issued (e.g., historic fill). Also, there may be the rare situation where an in-situ treatment technology (with no engineering controls) results in a complete ground water clean-up, or at least initially appears to do so, without the need for a follow-up MNA remedy. The regs. don't seem to very clear on whether or when a RA permit application is required for this situation. Since 7:26C-7.9 is not applicable unless a RA permit is issued, the attainment guidance could address this situation more specifically because it is also not addressed in detail in the Ground Water Technical Guidance for SI/RI/RA. The latter seems to assume a RA permit is always issued.	Agreed - the document has been amended.
93	22	8	3.4	As indicated above, in 3rd para., NJAC 7:26E-8 must be changed to be consistent with new Tech. Rules and ARRCs. The confirmation sampling is now at 7:26C-7.9(f) but does not apply till after a RA permit is issued.	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Administrative Requirements for the Remediation of Contaminated Sites.

94	22	8	3.4	Same concerns about averaging as for RI. Where MNA has been the only RA used, long-term monitoring has been done, the CSM is well understood, seasonal variation has been thoroughly evaluated/taken into account, and other factors that are likely to cause significant concentration variations between sample events are well understood and accounted for, there are likely to be more situations where averaging of more mobile contaminants would be appropriate. Where active RAs have been implemented and long-term post RA monitoring has not yet occurred, contaminant rebound is more likely and averaging should only be considered after a significant post-RA monitoring period has been implemented. If a RAR is prepared/submitted where the active RA did not include an engineering control, it may be unclear whether/when a RA permit application must be submitted (in-situ treatment tech.) if they have/submit ground water data indicating standards have now been met for two consecutive rounds, etc.. The risk of rebound is high in that situation, thus averaging ground water data prior to a long-term monitoring period is not appropriate.	Refer to response to Comment 17.
95	22	8	3.4	next to last paragraph - Compliance with GWQS should be deemed attained when concentrations are at/below GWQS for two consecutive sampling events, where the time between events shall account for seasonal ground water table fluctuations and the number of samples is representative of the entire horizontal and vertical extent of the CEA. This is consistent with N.J.A.C. 7:26C-7.9(f).	Refer to response to Comment 17.
96	22	8	3.4	next to last paragraph - N.J.A.C. 7:26E-8 does not exist in the current version of TRSR. See N.J.A.C. 7:26C-7.9(f).	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Administrative Requirements for the Remediation of Contaminated Sites.
97	22	8	3.4	last paragraph - The collection of multiple samples and use of an average concentration to determine when remediation is complete should not be permitted. After contaminant concentrations are at/below GWQS for two consecutive seasonal high water table events, a post-remediation monitoring plan should be implemented to evaluate the possibility of contaminant concentration rebound that is typical upon cessation of various remedial activities (e.g., pump & treat, in situ, etc). Given that such rebound may not be evident for 6 months to a year after remediation ends, a longer period of post-remediation monitoring is prudent. This is consistent with former N.J.A.C. 7:26E-6.4(f) and is technically justifiable.	Refer to response to Comment 17.
98	23	9	3	Diffuse Ground Water Recharge to Surface Water - LSRPA requests that NJDEP evaluate scientific and technical approaches for alternative ways to demonstrate compliance for ground water impacts to surface water. This should include identifying and evaluating modeling approaches to more realistically account for the interaction in the transition zone between ground water and surface water bodies.	Ground water impact to surface water is the subject of a technical guidance currently under development.
99	23	9	3.1	last paragraph - The new citation is N.J.A.C. 7:26E-4.4	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Technical Requirements for Site Remediation.
100	25	11		The document directly addresses compliance with soil, groundwater and surface water contamination but not sediment. There is only a small paragraph in Section 11 on the last page of the document referring the reader to ecological evaluation guidance document. Since contamination also travels from groundwater to sediment and then to surface water, more detailed attainment guidance for sediment should also be provided in this document.	This issue is addressed in the Department's "Ecological Evaluation Technical Guidance" (www.nj.gov/dep/srp/guidance/srra/ecological_evaluation.pdf)
101	21, 25	8, 12		There is also only one small paragraph regarding vapor intrusion (referring the reader to the Vapor Intrusion Guidance) under Section 8 (Groundwater) and the last Section 12. Please note that vapor intrusion could also occur from soil contamination and landfills. More emphasis and attainment information should be provided for IEC and VC situations in this document.	This issue is addressed in the Department's "Vapor Intrusion Technical Guidance" (www.nj.gov/dep/srp/guidance/vaporintrusion/vig.htm) and the "Immediate Environmental Concern Technical Guidance" (http://www.nj.gov/dep/srp/guidance/srra/draft_iec_guidance.pdf).
102	A	1		While it may be impractical for pre-approval for sites using routine compliance averaging options, there will be LSRPs that are familiar with these options and others that are not. Those that are not comfortable with the nuances of these options will be asking for help from the DEP, as they do on information in other guidances. Since the DEP has not allowed compliance averaging in the past, few (if any) DEP staff members have reviewed compliance averaging options nor are they familiar with the most common mistakes made on these determinations or the misuse of the statistical applications. Prerequisite to allowing for these options, some DEP staff should be trained in all aspects of these statistical options so that knowledgeable technical support is available to LSRPs and that the current guidance may be improved upon. Example: The current ProUCL program calculates the 95th Upper Confidence Limit of the Mean Concentration using non-detects and without the use of non-detects. Is that a professional judgement call, or can that determination be made in this document?	The most current version of ProUCL (4.00.02) includes additional warning messages to dissuade the user from inappropriately requesting solutions when sample sizes are too small or too many data are censored. If the investigator opts to use these results despite the warnings, justification is required. The Department also agrees that compliance training pursuant to this guidance document for both LSRPs and DEP staff is important. Training sessions will be offered.
103	A-27	A1	0	The appendix and throughout the document references acute levels. The document should include a reference to the applicable values and how the investigator addresses those contaminants that do not currently have values.	Refer to response to Comment 16.

104	A-28	A1.1.1	Ingestion-dermal pathway	Is it valid to differentiate between the front and back yards? Averaging implies a probability approach and you are stratifying an equal probability based on an unexplained logic. Please provide further justification.	The average residential lot in NJ is approximately one-half acre. Specific to the ingestion exposure pathway, a quarter acre functional area was determined to be appropriate to address the probability of human receptors spending part of their time in the front yard and part of their time in the backyard. This then accounts for the greater likelihood of ingesting soil from either the back yard or front yard. This is opposed to the one-half acre residential site functional area for the inhalation exposure pathway, because a person is more likely to breathe air from over the entire one-half acre functional area.
105	A-29	A1.1.1	IGW pathway	Third star (Multiple functional areas of 100 feet...): This option is only available if a site-specific DAF is not determined.	Agreed - the document has been amended.
106	A-30	A1.1.3	Ingestion-dermal pathway	The greater than 12 feet bgs zone differs from the traditional inhalation pathway approach. Is that approach effectively amended by this guidance? Please provide the rationale for adding the third zone. Also there is an issue in that you may be reducing the ability to average by decreasing the available sample numbers for evaluation below the minimums.	Agreed. The document has been amended to indicate that all direct contact pathways will utilize two vertical zones.
107	A-32	A1.1.4	Evaluation of Functional Areas	In regard to the 4th paragraph, why would the lower value only be used in the evaluation? Would there ever be a need to evaluate larger differences in the values?	Both results are statistically valid; consequently, the Department (as part of the original Inhalation exposure pathway compliance averaging guidance) concluded that use of the lower value is appropriate.
108	A-32	A1.1.5	Ingestion-dermal pathway	N.J.A.C. 7:26E-4.1(b) is the old citation. The new citation appears to be 4.2(a).	Agreed. The citation has been updated to reflect the May 7, 2012 version of the Technical Requirements for Site Remediation.
109	A-32	A1.1.5	Ingestion-dermal pathway	N.J.A.C. 7:26E-6.4(e) does not exist in the current version of the TRSR.	The requirement to obtain permission of the offsite property owner before establishing a deed notice on an offsite property is no longer in the regulations. This document has been amended to delete this citation. Permission is still statutorily required.
110	A-33	A2.0	Compliance Averaging using a Spatially Weighted Average	The Thiessen approach at best is challenging. By dividing up the areas horizontally and vertically it becomes extremely difficult to execute a remediation. Did you consider that the impact of multiple layers on the available data will fragment into differing square locations from a vertical location and size perspective? I would guess that this option is likely to be very limited in use if at all.	The investigator is not required to use the Thiessen approach; this is one of many different methods of compliance averaging. If this method is inappropriate, the investigator has the option to use another method.
111	A33-34	A2.0	Compliance Averaging using a Spatially Weighted Average	The use of spatially weighted averaging, as described, should take into consideration differences in potential exposure within a site or AOC, such as a walking trail or playground versus an area of the site/AOC that is less accessible. From an exposure standpoint, it would be more appropriate to average the results within an AOC /site that contain a play area separate from a more remote area of the site/AOC.	The determination of the location and size of the functional areas addresses these concerns (targeting the areas of greatest contamination as the first functional area to be evaluated, limiting size of functional area for residential areas, etc.).
112	A-34	A2.0	Compliance Averaging using a Spatially Weighted Average	Are you replacing with area background or potentially zero for clean fill?	The document has been amended to state that a fill or background concentration should be used. For non-detect values, the reporting limit should be used.
113	A-37	A3.0	Compliance Averaging using the 75 percent/10x Procedure	The 75 percentile/10X approach needs to be explained better. At the very least, an explanation why you think it is appropriate.	Agreed - the document has been amended to better explain the 75 percentile/10X compliance averaging methodology.
114	A-37	A3.0	Compliance Averaging using the 75 percent/10x Procedure	Justify why you selected 3 as a trigger for additional characterization and what would be a satisfactory response.	This requirement has been deleted from the final document.