

NJDEP Technical Guidance Document Review Form

Document: Draft Alternative Remediation Standards Technical Guidance for Ingestion-Dermal and Inhalation Exposure Pathways for Soil, Version 1.0

Comment Period June 1, 2020 to July 13, 2020

NJDEP Committee Co-Chairpersons Allan Motter, Erica Snyder, and Linda Cullen

Comment #	Page	Section	Subsection	COMMENTS	RESPONSE
1	5	1		In the last sentence of the first paragraph, replace the word "that" with "who."	Noted.
2	6	2	0	"hazard quotient" should be capitalized.	Noted.
3	6	2	0	Recommend adding a reference to timeframe for a response to last paragraph.	Noted.
4	6	2	2	The NJDEP imposes Remedial Action Permit requirements upon most deviations from the proposed remediation standards without justification or evaluation of the financial burden for a permit. The NJDEP should discuss the oversight requirements and associated direct costs to monitor the oversight of an LSRP at a site with an institutional control. As an example, an employee at \$80,000 per year costs needs to only monitor 145 permits each year at a fee of \$550.00 per permit per year. The fees seem excessive and punitive.	The Site Remediation Reform Act at NJSA 58:10C-19, mandates the department to establish a permit program to regulate the operation, maintenance and inspection of engineering or institutional controls and related systems installed as part of a remedial action of a contaminated site. The remainder of the comment is outside the scope of this document.
5	6	2	2	The guidance document does not provide any guidance regarding how the regulated community will utilize the two separate remediation standards (Ingestion-Dermal and Inhalation) within the Technical Requirements for Site Remediation (7:26E). The guidance should state the Ingestion-Dermal pathway is most relevant to the Direct Contact standards and the associated investigation activities as described in 7:26E. The Inhalation remediation standard would apply for delineation and site characterization in the Remedial Investigation phase, but should not be a basis to determine attainment of site remedial goals.	This issue is outside the scope of this document.
6	6	2	2	The guidance document assumes the "Investigator" is knowledgeable of the USEPA risk assessment process, the technical jargon and the differences between the NJDEP's perspective on remedial attainment versus the USEPA risk assessment process. The initial section of the guidance should be expanded to include a description of the NJDEP's policy and practice on the use of each remediation standard pathway and the SI/RI/RA/RAO process. Specifically the Tech Regs reference specific actions that are required when an exceedance of the Direct Contact remediation standards are observed. With the NJDEP's designation of multiple remediation standards based on multiple pathways, a clear description of the applicability of each standard would provide valuable guidance to all investigators. As one example, the NJDEP should clearly define that the Ingestion-Dermal remediation standards will be used in place of the term "Direct Contact" in the Tech Regs.	<p>The investigator should be knowledgeable of the USEPA risk assessment process, the technical jargon and the differences between the Department's perspective on remedial attainment versus the USEPA risk assessment process in order to develop an ARS. See Site Remediation Reform Act: Code of Ethics</p> <p>N.J.S.A. 58:10C-16 Protection of public health, safety, environment highest priority.</p> <p>a. A licensed site remediation professional's highest priority in the performance of professional services shall be the protection of public health and safety and the environment.</p> <p>b. A licensed site remediation professional shall exercise reasonable care and diligence, and shall (Con't)</p>

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7	6	2	2	<p>The guidance document assumes the "Investigator" is knowledgeable of the USEPA risk assessment process, the technical jargon and the differences between the NJDEP's perspective on remedial attainment verses the USEPA risk assessment process. The initial section of the guidance should be expanded to include a description of the NJDEP's policy and practice on the use of each remediation standard pathway and the SI/RI/RA/RAO process compared to the USEPA's Screening Level (RSL) concentrations. CCNJ/SRIN envision a side-by-side comparison table that presents the USEPA's RSL values and the NJDEP RS values, both used for site characterization and determination of the nature and extent of contamination using point-by-point compliance. Once the site is characterized and the RI is completed, the USEPA encourages site specific evaluations of site use, exposure scenarios, chemical characteristics and physical characteristics of the site. The default NJDEP evaluation is to continue a point-by-point comparison of all sample results throughout the RA and RAO phases. A description of the NJDEP's policies and guidance on attainment alternatives that are not based solely on point-by-point compliance is necessary for the Investigators and the regulators.</p>	<p>apply the knowledge and skill ordinarily exercised by licensed site remediation professionals in good standing practicing in the State at the time the services are performed.</p> <p>c. A licensed site remediation professional shall not provide professional services outside the areas of professional competency, unless the licensed site remediation professional has relied upon the technical assistance of another professional whom the licensed site remediation professional has reasonably determined to be qualified by education, training, and experience. A licensed site remediation professional shall not perform services that constitute the practice of professional engineering unless the licensed site remediation professional is a professional engineer licensed in the State.</p> <p>The Department recognizes that the term "direct contact" as used in Technical Requirements for Site Remediation (Technical Requirements) (N.J.A.C. 7:26E) needs clarification. The Department intends to conduct rulemaking to clarify that the term "direct contact" means both the soil ingestion-dermal and soil inhalation exposure pathways. The Department believes that making this change to the Technical Requirements will eliminate any uncertainty regarding the use of the term "direct contact". Prior to rulemaking, the Department will issue a clarification memo concerning this issue.</p> <p>The remainder of the comment is outside of the scope the document.</p>
8	7	3	0	<p>Although the NJDEP's calculation tool is referenced, a search of the webpage site does not find the calculator. Stakeholders cannot effectively replicate or validate calculations or evaluate the guidance document without being able to review the calculator function (and the basis and background for its development as provided by the USEPA for its RSL calculator). We are requesting the release of the calculators for the ARS to be reviewed and commented on appropriately.</p>	<p>The calculators provide a tool to derive an alternative remediation standard (ARS); however, the calculator is not needed to evaluate the Technical Guidance document. At the time of the commenter's request, the Department had not fully developed the ARS calculators. Once the calculators are fully developed, the Department will release them with the adopted Remediation Standards (N.J.A.C. 7:26D) rule. The Department will accept comments concerning the calculators after the calculators have been released.</p>
9	8	4	0	<p>The USEPA recently updated the Regional Screening Level tables in May 2020. The citation "USEPA 2018" should be changed to "USEPA 2020." The updated RSL citation assumes none of the content cited by NJDEP changed since the 2018 edition; please confirm.</p>	<p>At the time the Department created the proposed amendments to the Remediation Standards, N.J.A.C. 7:26D, the November 2018 version of USEPA's Regional Screening Level (RSL) Tables was the most recent version available. The Department developed the standards, in part, using information contained in the 2018 RSL Tables; therefore, both the rule proposal and this ARS guidance cites the 2018 RSL Tables for consistency.</p>
10	8	4	0	<p>The inability to change default parameters used in calculating the default SRS for residential or non-residential land use, except for physical parameters for the inhalation exposure pathway, significantly limits the use of ARS. The ability to develop ARS on a site/AOC specific basis is a core component of many other state regulatory programs and the USEPA. ARS have been proven to be protective remedial measures and should be further promoted as the NJDEP attempts to address the impacts of climate change. For example, the development of ARS may reduce the need to install engineering controls (caps). Knowing that many of the properties requiring capping are located in urban centers ARS may assist in reducing the "heat island effect" , which is an initiative of the USEPA (https://www.epa.gov/heatislands).</p>	<p>The Department implemented methods to develop alternative remediation standards (ARS) in accordance with the governing legislation. As noted in the Brownfield and Contaminated Site Remediation Act at N.J.S.A. 58:10B-12.f(1), an ARS must be based on site specific conditions and not changes to input parameters that are not site specific.</p> <p>The 'climate change' impacts are not within the scope of this guidance document. However, climate impacts are addressed within the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-1.9, which states, "[t]he Department encourages the use of green and sustainable practices during the remediation of contaminated sites."</p>
11	9	4	4.1.1	<p>The assumed exposed skin surface area for an adult resident and worker should state "head" instead of "face" per USEPA 2014a.</p>	<p>Noted.</p>

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12	8-9	4	1-2	Ingestion-Dermal and Inhalation Exposure Pathway Basis and Background documents are not available for review and comment. It is critical for stakeholders to understand how the NJDEP is utilizing the input parameters to calculate the ingestion-dermal and inhalation standards for residential and non-residential in order to provide meaningful feedback. By understanding the input parameters, the LSRP and PRCR can develop ARS for their sites. Without the guidelines used by the NJDEP, such ARS are not likely to reach concurrence. We are requesting the release of these documents to be reviewed and commented on appropriately.	The Basis and Background (B&B) documents for the Ingestion-Dermal Exposure Pathway and Inhalation Exposure Pathway provide information that is already contained in the proposed amendments to the Remediation Standards, N.J.A.C. 7:26D. This includes the information necessary to derive ingestion-dermal and inhalation soil remediation standards, such as equations, default exposure assumptions, toxicity values, and skin absorption fractions. The Department's B&B documents will be released with the adoption of the Remediation Standards, N.J.A.C. 7:26D.
13	10	4	2	It is recommended that the formatting of the phrase "water-filled soil porosity (qw) (0.23 L _{water} /L _{soil})" be changed to "water-filled soil porosity (qw) (0.23 L _{water} /L _{soil})." ("water" and "soil" should be in subscript)	Noted.
14	10	4	2	The document states, "[t]he input parameters used by the Department are the same as those used by the USEPA Superfund Program, except for those used to model air dispersion and certain soil characteristics (see Appendix C Tables C-5 and C-6)". The Department should provide the rationale for using different parameters for air dispersion and certain soil characteristics.	The USEPA uses meteorological data and soil characteristics based on the entire US whereas the Department uses meteorological data and soil characteristics based on New Jersey.
15	10	4	2	Default residential exposure assumes 24/day for 26 years? What about time for school/work that is taken into account on non-residential situations?	This is a USEPA default value for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund. The residential scenario is protective of a stay at home parent or person with limited means of leaving the premises. This is representative of the reasonable maximum exposure (RME). The non-residential scenario only takes into account the time an outdoor worker would spend at work.
16	11	4	3	We request explanation on why the new calculated ARS for benzene (8.8 mg/kg inhalation compared to 3 mg/kg ingestion-dermal) in the example provided is immediately not allowed to be utilized. The Tech Regs require remedial investigations based on a point-by-point evaluation of the Direct Contact pathway, however a site specific ARS for benzene inhalation based on a specific exposure domain was calculated.	As explained in Section 4.0, human health risk-based soil remediation standards (SRS) are developed to evaluate current and potential future human exposure to contaminated soil via the incidental ingestion of and dermal contact with soil (the ingestion-dermal exposure pathway) and via the inhalation of soil-derived airborne particulates and vapors in ambient air (the inhalation exposure pathway). Risk-based values are developed for both exposure pathways, and the lower of the two can be used as the applicable remediation standard for direct contact. Should a person responsible for conducting the remediation (PRCR) decide to develop an alternative remediation standard (ARS) for only the inhalation exposure pathway, then the lower of the inhalation-based ARS and the default ingestion-dermal-based SRS would be used as the final soil direct contact remediation standard to use in support of remedial decisions. Alternatively, if a party decides to develop an ARS for only the ingestion-dermal pathway, then the lower of the default inhalation-based SRS and the ingestion-dermal-based ARS would be used. Finally, a PRCR may decide to develop ARS for both exposure pathways. If so, the lower of the two derived values would be used as the final soil remediation standard for direct contact. Overall, when determining the final remediation standards for direct contact exposure, applicable values for both exposure pathways need to be considered.
17	11	4	3	Second paragraph - recommend bulleting list of physical parameters - "This may include:....."	The comment is noted; however, the text remains unchanged in the guidance document.

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18	11	4	3	The NJDEP consistently identifies the lowest chemical concentration as the most appropriate and protective. This position aligns with the USEPA's use of RSLs for site characterization identifying the nature and extent of contaminants. The NJDEP fails to evaluate the potential exposure pathway as defined by the USEPA risk assessment guidance (USEPA 1989) including but not limited to the consideration of chemical stratification and contaminant depth. The guidance document should be amended to encourage the LSRP to review each exposure pathway and develop a reasonable ARS proposal based on the chemical characteristics of the site conditions. In the example, it is reasonable to remove all soil impacted with Benzene above the 3 mg/kg to a depth of 5 feet (ingestion standard), but allow natural attenuation of soil below 5 feet at a concentration less than 8.8 mg/kg, the inhalation ARS. There are many other alternatives to evaluate attainment of a remedial objective and the NJDEP should encourage resourceful evaluation of all site conditions. Continuing with the example, a soil gas survey could be conducted to document the calculated inhalation concentrations are overly conservative and not representative of site conditions, therefore the inhalation pathway should not be considered for a limited-restricted RAO.	<p>The purpose of this Technical Guidance Document is the development of Alternative Remediation Standards (ARS). Procedures to demonstrate compliance with ARS are outside the scope of this document. The Department has a Technical Guidance: <i>Attainment of Remediation Standards and Site-Specific Criteria</i> found at: https://www.nj.gov/dep/srp/guidance/srra/attainment_compliance.pdf.</p> <p>An acceptable engineering control may be implemented at a site, with appropriate institutional controls.</p> <p>Proposal of alternative studies have been considered by the Department in previous projects; however, this proposal is outside of the scope of this document.</p> <p>NOTE: USEPA RSLs are used to identify chemicals of potential concern (COPCs) and not for delineation or as cleanup values within the comprehensive environmental response compensation and liability act (CERCLA) process.</p>
19	11	4	4.3	Third paragraph, second sentence. After "Under certain circumstances", suggest adding "as detailed in NJAC 7:26D".	Institutional controls are detailed in N.J.A.C 7:26C. N.J.A.C. 7:26D only provides details regarding depth of contaminants in relation to the Inhalation Exposure Pathway.
20	12	4	3	The NJDEP states: "The LSRP should understand the purpose and intent of this guidance, investigators developing the ARS should be experienced in the use of techniques and methodologies of risk assessment (USEPA 1989)." However, the guidance document provides no discussion of exposure domains or evaluation of a reasonable exposure concentration. A reader is left to assume all samples must be evaluated against single-point compliance concentrations, without any evaluation of fate, transport or exposure potential to a receptor. The NJDEP should include compliance attainment guidance for these new exposure standards.	Procedures to demonstrate compliance with alternative remediation standards (ARS) is outside the scope of this document. The Department has a Technical Guidance: <i>Attainment of Remediation Standards and Site-Specific Criteria</i> found at: https://www.nj.gov/dep/srp/guidance/srra/attainment_compliance.pdf .
21	12	4	3	The various referenced ARS technical guidance documents for the Migration to Groundwater Pathway and Vapor Intrusion have not been published so the requirement to evaluate these as part of the ARS process cannot be evaluated at this time. Citation of these technical guidance documents within this document creates a circular reference.	The Alternative Remediation Standards (ARS) Technical Guidance documents for the Migration to Groundwater Pathway and Vapor Intrusion (version 5.0) are outside the scope of this guidance document. These guidance documents will be released along with the adoption of the Remediation Standards, N.J.A.C. 7:26D.
22	12	4	3	This document addresses the ingestion-dermal and inhalation exposure pathways, which need to be considered for both saturated and unsaturated soils. The migration to groundwater exposure pathway is only applicable to unsaturated soil. To avoid any confusion, the Department should revise the following sentence "[t]he ARS process must also consider the migration to groundwater exposure pathway <u>for unsaturated soils</u> for the SRS addressed in the Alternative Remediation Standards Technical Guidance for the Migration to Ground Water Pathway (NJDEP 2021c)".	The definition of the Migration to Ground Water exposure pathway given on 52 N.J.R. 583 in 7:26D-1.5 of the proposed rule states that it pertains to the vadose zone. Regardless of the type of remedial action presumed for the site, the investigator must delineate the horizontal and vertical extent of exceedences of the impact to ground water exposure pathway soil remediation standards in the unsaturated zone, as applicable. See section 6.7.3.2 of the Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria (NJDEP 2012) (https://www.nj.gov/dep/srp/guidance/srra/attainment_compliance.pdf) and the Technical Requirements for Site Remediation (N.J.A.C. 7:26E-4.2(a)3) (www.nj.gov/dep/rules/rules/njac7_26e.pdf).
23	12	4	4.3	Last paragraph, Last sentence."If the LSRP does not possess the necessary expertise, consulting with a qualified investigator may be appropriate." Suggest changing "may be" to "is appropriate".	Noted. See response to comments on lines 15 and 16 regarding working in areas of competence, it is a requirement.

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24	12	4	4.3	The ARS process requires that the Investigator consider the migration to groundwater exposure pathway; however, groundwater use must be assessed before a health-protective soil concentration based on leaching can be reasonably determined. The ARS should include options for determining if groundwater is used for potable purposes.	This issue is outside of the scope this document. The Migration to Groundwater document will be released along with the adoption of the Remediation Standards, N.J.A.C. 7:26D.
25	13	5	1	There is a reference to the NJDEP's calculation tool but a search of the webpage site does not result in any finding of the calculator. How can stakeholders effectively evaluate the guidance document without being able to review the calculator function (and the basis and background for its development as provided by the USEPA for its RSL calculator)? We are requesting the release of the calculators for the ARS to be reviewed and commented on appropriately.	The calculators provide a tool to derive an alternative remediation standard (ARS); however, the calculator is not needed to evaluate the Technical Guidance document. At the time of the commenter's request, the Department had not fully developed the ARS calculators. Once the calculators are fully developed, the Department will release them with the adopted Remediation Standards (N.J.A.C. 7:26D) rule. The Department will accept comments concerning the calculators after the calculators have been released. Due to the fact that health based standards for lead are determined through the use of blood lead models versus the standard calculations that are done for all other chemicals, lead will not be included in the calculator. Technical consultations are required for the development of a lead ARS (N.J.A.C. 7:26D, Appendix 6, III(b)).
26	13	5	5.1	When will the spreadsheets that must be used to calculate the ARS be available for review and comment? Will these spreadsheets include the ability to calculate a lead ARS?	
27	13	5	5.1	The spreadsheet calculators should be made available for review and comment.	
28	13	5	1	<p>The NJDEP references that different models used by the USEPA will be evaluated on a case-by-case basis. The NJDEP should clarify what parameters will determine a positive outcome for the use of an USEPA model and a negative outcome. In other words, what is the basis for the NJDEP's decision to accept or reject an ARS developed, evaluated and proposed by an LSRP?</p> <p>Identifying these variables would assist the regulated community in developing practical and protective ARS criteria.</p>	The Department references different lead models used by the United States Environmental Protection Agency (USEPA) in both the Remediation Standards rule and the Alternative Remediation Standards Technical Guidance for Ingestion-Dermal and Inhalation Exposure Pathways for Soil. There are currently two models, the Integrated Exposure Uptake Biokinetic (IEUBK) model and the Adult Lead Methodology (ALM) model, with a third model in development. As use of different models requires Departmental approval, it is required, in accordance with N.J.A.C. 7:26D, Appendix 6, III(b), that a Technical Consultation be scheduled with the Department to discuss models/approaches proposed by the responsible party for the development of an alternative remediation standard (ARS) for lead. It is beyond the scope of this document to identify all the parameters that will determine a positive outcome and negative outcome with the use of an USEPA model versus other models, as this would require the Department to evaluate all available (public and privately developed) models.
29	13	5	5.1	Section 5.1 notes that "the ARS will be used in the compliance process in lieu of a default SRS". Section 4.3 notes that " <i>some of the fundamental assumptions embedded in the derivation of the SRS are used in combination with methodologies presented in the Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria (NJDEP 2012) and any evaluation of soil concentrations [e.g., calculation of average concentrations over the exposure unit ("functional area")] relative to an ARS should be consistent with the underlying assumptions of their derivation of SRS and as described in the Attainment Guidance.</i> " The LSRPA agrees with these statements and recommends that the Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria be updated to appropriately reflect this concept.	This issue is outside of the scope this document. The Department will consider in future revisions to the Attainment/Compliance Technical Guidance Document.
30	14	5	5.1	The investigator should be able to modify the default parameters associated with non-residential land use to account for site-specific exposure conditions. Though the Department cannot ensure that property conditions will remain the same, this limitation applies to every risk-based clean-up standard, including those for which an ARS is explicitly allowed (see Section 5.2.1.1, paragraph 3).	The Department does allow for modification of exposure factors based on restricted access, with proper institutional and engineering controls. Institutional controls are required for a remedial action based on nonresidential standards or alternative remediation standards developed for an alternative land use exposure scenario.

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31	15	5	5.1	It would be helpful if the default values could be added to the 'Factors Which Can Be Changed Via ARS Process' portion of Table 1.	The default values are all listed in Appendix C of the Technical Guidance document.
32	15	5	5.1	A note should be added to Tables 1 and 2 that the ARS Standard Option is not available if site use = residential, school, childcare, commercial or industrial to ensure understanding.	Alternative remediation standards (ARS) can be applied to residential and nonresidential properties for the inhalation exposure pathway (f_{oc} , depth of contamination and vegetative cover) and for lead (bioavailability). Use of these ARS may require institutional or engineering controls and a soil remedial action permit.
33	14	5	1	The NJDEP states the variables of averaging time, exposure frequency, exposure duration, exposure time, soil ingestion rate and soil adherence factor "represent reasonably conservative default values (but not the worst case)" scenario. The NJDEP should include a discussion of the parameters that constitute a "worst case" and the mathematical variance of the worst case parameters vs. statistical terms that are utilized by the USEPA and other agencies; i.e. 90% Upper Confidence Level (UCL) values, mathematical mean values, spatially weighted average values, etc. The use of nondescriptive terms such as "worst case" will avoid ambiguity and support reasoned evaluations of the risk to human health and the environment. Table 1 should be amended to include the mathematical description of each parameters and assumption; e.g. Residential Exposure time represents >95% UCL (365 days of 365 days per year).	The term "worst case" has been removed from the document.
34	14	5	1	The document states, "[t]he default parameters for the residential and non-residential land use for these pathways include averaging time, exposure frequency, exposure duration, exposure time, soil ingestion rate and soil adherence factor. The Department has determined that these variables represent reasonably conservative default values (but not the worst case) and are designed to be consistent with Superfund's concept of the RME protective of the majority of the population". The NJDEP limits the default parameters and ultimately calculates two (2) SRS categories (residential and non-residential). Other states incorporate additional default exposure pathways, which clearly provide more reasonable default values. For instance, Pennsylvania and Massachusetts have three (3) default soil standard categories and New York has five (5). The NJDEP should consider additional default parameters (average time, exposure frequency, exposure duration, etc.) for the development of additional default SRS categories.	In accordance with the Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-12(c)1, only residential and nonresidential exposure scenarios are required to be addressed via the standards effort. All other scenarios are being handled via the Alternative Remediation Standard (ARS) process.
35	14	5	1	The Department should provide its rationale for applying default parameters, such as average time and exposure frequency, in calculating residential ingestion-dermal contact SRS for soils deeper in the soil column. What is the Department's justification for applying the same default parameters and exposure scenarios to establish residential ingestion-dermal contact SRS for soils zero (0) to five (5) feet and for soils deeper five (5) feet; or deeper than fifteen (15) below ground surface? The default parameters should be adjusted based on depth of the soil.	Departmental regulations require ingestion-dermal and inhalation soil remediation standards to be compared to soil data throughout the entire soil column to address the possibility that deeper soils may be brought to the surface, thereby resulting in potentially unacceptable exposure to site receptors. In accordance with the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-4.2 Remedial Investigation of Soil, "the person responsible for conducting the remediation shall delineate the vertical and horizontal extent of all soil contamination that is associated with a site-related area of concern in the saturated and unsaturated soil to the 1) residential direct contact soil remediation standard; or 2) the non-residential direct contact soil remediation standard if a remedial action will be implemented that will appropriately restrict the use of the entire property and the property owner agrees to place a deed notice and engineering controls, as appropriate, on the property."

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36	15	5	5.1	Table 1 states that the source area for the dispersion calculation cannot be changed. The calculation of an ARS for an alternative land use should include the ability to change the source area to correspond to the receptor being evaluated. Alternative land uses often are associated with areas larger than the default source areas (0.5 acres for residential and 2 acres for commercial). For example, it is assumed that the residential SRS would be modified to calculate the hiker/biker scenario since this scenario includes a child. In this case, the source area would therefore be the same as resident (0.5 acres) which is an area much smaller exposure area than would be expected for a hiker/biker.	Q/C values were developed for 0.5 acre and 2 acre sites via simulations with the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD). Using alternative site sizes would require in-house modeling assessments using AERMOD, which incorporates site size along with other exposure parameters. This is not practical for routine alternative remediation standard (ARS) determinations. The Department should be consulted for assistance if this adjustment is felt to be critical. By increasing the source area size, the flux takes place over a larger area, which increases the amount of contaminant in the air, therefore, lowering the standard; however, the Department would not require adjustment of standards to be lower than default values if the increased area resulted in a lower standard for this exposure pathway.
37	15	5	5.1	Table 1 states under inhalation of vapors: fate and transport modeling that the averaging time and exposure interval cannot be changed. The Jury model is used to calculate the average vapor flux over the total period of exposure. Therefore, the total period of exposure (averaging time or exposure interval) should be updated to match the exposure duration and should not remain the default exposure duration for resident (26 years) or workers (25 years).	The USEPA uses the base residential exposure duration to determine the value of the exposure interval, and does not adjust the exposure interval between the residential and worker scenarios. The Department also followed this practice. The EXPOSURE INTERVAL (big T, in seconds) should not be equated to the EXPOSURE DURATION (ED, in years), because they are used for different purposes and have different effects on the resulting standard. Decreasing the EXPOSURE DURATION (used in the primary equation for calculation of the standard, along with the other exposure parameters) increases the resulting standard, which would be the intent. Decreasing the EXPOSURE INTERVAL (used in the equation for the volatilization flux, which does not include the other exposure parameters) actually decreases the resulting standard. Therefore, this variable is not an appropriate parameter to modify when adjusting the exposure duration. To adjust to a less conservative scenario because of a shorter exposure duration, the EXPOSURE DURATION parameter is adjusted, but not the EXPOSURE INTERVAL parameter.
38	15	Table 1		The NJDEP has allowed use of a Soil-Water Partition Equation Calculator for modification of source area parameters, however this is prohibited in the Fate and Transport Modeling of the ARS process. Site specific source area information should be allowed in the ARS process.	The soil-water partition equation is not used in the inhalation exposure pathway; rather, a volatilization factor is calculated. Site source area size is defined as 0.5 acres for residential and 2 acres for non-residential scenarios. The quality control values were developed for each of these site sizes via simulations with the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD). Using alternative site sizes would require in-house modeling assessments using AERMOD, which incorporate site size along with other exposure parameters. This is not practical for routine alternative remediation standard determinations. The Department should be consulted for assistance if this adjustment is felt to be critical. Increasing the site size generally decreases the standard, but the Department does not require adjustment of standards to be lower than default values for this exposure pathway.
39	15	5	5.1/Table 1	The EPA is releasing chapter updates to the Exposure Factors Handbook (EFH) individually. For example, <i>Chapter 3: Ingestion of Water and Other Select Liquids</i> was updated in February 2019. If NJDEP strives to be consistent with EPA, exposure factors that cannot be changed via the ARS process (e.g., body weight, soil ingestion rate) should be made adjustable based on EFH updates.	This comment is outside the scope of this guidance document and was addressed in the Department's responses to public comments on the Remediation Standards rule (N.J.A.C. 7:26D). N.J.A.C. 7:26D states in Appendices 6 and 7 the exposure parameters that may be adjusted when developing an ARS for the ingestion-dermal and inhalation exposure pathways. Adjustments to other exposure parameters is precluded by the rule and would require a rule change.

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40	15	5		<p>Section 5.1 and Table 1 provide an overview of the parameters and assumptions used in the derivation of the Department's default soil remediation standards. Table 1 also summarizes those parameters and assumptions which can and cannot be changed via the ARS process. While the Guidance notes that changes in exposure time (ET), exposure frequency (EF), exposure duration (ED) can be considered, there are other parameters that may warrant adjustment under certain exposure scenarios. This may include soil ingestion rate, skin surface area, and adherence factor. As an example, USEPA's recommended soil ingestion rates for daily soil and outdoor settled dust for children and adults, as captured in the Exposure Factors Handbook (see Table 5-1 from this source), would be more appropriate to consider as high-end soil ingestion rates for outdoor only exposure scenarios. One example of such an exposure scenario is that of a passive recreator who would only be exposed to outdoor soil. USEPA's recommended default soil ingestion rates of 200 mg/day for children and 100 mg/kg for residential adults, which the Department uses to derive the residential soil remediation standards, are upper which are upper-bound values for the presumed ingestion of soil and dust (both indoors and outdoors). The LSRPA would encourage the Department to revise the Guidance to not specifically limit what inputs and assumptions can be used in the development of an ARS in order to ensure the flexibility required by the Brownfield Act. Instead, we would recommend that the Guidance allow flexibility for other scientifically justified methods to be proposed to the Department for consideration and approval. This would provide LSRP's (and the Department) with the ability for good site-specific decision-making where appropriate and justifiable, without sacrificing the Department's ability to oversee and control such approaches given their review authority.</p>	<p>For an alternative land use exposure scenario, the proposed amendments to the Remediation Standards rule (N.J.A.C. 7:26D) state in Appendix 6 that "an ARS for the ingestion-dermal pathway may be developed based on site-specific modification of exposure duration and exposure frequency parameters for an alternative land use exposure scenario". Adjustment of the other exposure parameters for an alternative land use exposure scenario is precluded by the rule because the Department does not consider those adjustments to be site-specific or because site-specific data is lacking to justify such a change. The New Jersey Brownfield and Contaminated Site Remediation Act (Brownfield Act) at N.J.S.A.58:10B-12.f.(1), mandates that ARS must be based on site-specific conditions and not changes to input parameters that are not site-specific.</p> <p>The commenters refer to recent soil and dust ingestion rate updates in the United States Environmental Protection Agency's (USEPA's) Exposure Factors Handbook (EFH) as an example of exposure factors that may warrant adjustment when developing an ARS. While the Department acknowledges that the USEPA updated some of the soil and dust ingestion rates recently in the EFH, the EFH is not a Superfund-specific document. Rather, it provides a summary of the latest developments in exposure science and provides recommendations for a broad range of USEPA programs. The Office of Solid Waste and Emergency Response (OSWER) Human Health Regional Risk Assessors Forum (OHHRRAF) developed consensus recommendations based on the context, needs, and existing health risk assessment policy/guidance for the Superfund Program, such as ensuring that the recommended exposure factors are protective of the reasonable maximum exposure (RME), consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan. The Brownfield Act (N.J.S.A.58:10B-12) mandates that "the Department develop soil remediation standards using exposure parameters that provide an adequate margin of safety and are consistent with the guidance and regulations for exposure assessment developed by the USEPA pursuant to CERCLA and other statutory authorities as applicable".</p> <p>The Department has made the determination that soil ingestion rates cannot be altered for the development of an ingestion-dermal ARS for soil because there is too much variability and uncertainty in the soil and dust ingestion rate studies available and site-specific soil ingestion rate data is lacking. In order to ensure adequate protection of human health and meet the statutory requirements set forth in the Brownfield Act, the Department requires the child and adult soil ingestion rates listed in USEPA's Recommended Standard Default Exposure Factors for Superfund (OSWER Directive 9200.1-120) to be utilized for all ingestion-dermal based soil standards that are developed, whether they be based on a residential, non-residential, or alternative land use exposure scenario.</p>
41					
42	16, 33			<p>There are repeated statements of "This guidance document addresses the ingestion-dermal and inhalation exposure pathways and does not take into account default SRS and ARS options... If an ingestion-dermal ARS is developed and approved by the Department for Category 1 or Category 2 Extractable Petroleum Hydrocarbons (EPH), return to the Department's Evaluation of Extractable Petroleum Hydrocarbons in Soil Technical Guidance (NJDEP, 2019b) to complete the EPH soil remediation process." Not sure if repetition is needed and purpose of it when original statement is presented on page 12 of 54, section 4.3.</p>	<p>Referenced in each applicable section for ease of reference.</p>

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43	16	5	2	The NJDEP appears to arbitrarily control the use of an ARS without justification or reason. As described in the guidance document, "All inhalation exposure pathway ARS options involving alternative land use require prior approval by the Department; however, ARS options utilizing site specific physical parameters do not require approval by the Department." The NJDEP should clearly state the parameters and rationale which will be used to evaluate ARS proposals.	The Department implemented methods to develop alternative remediation standards (ARS) in accordance with the governing legislation. As noted in the New Jersey Brownfield and Contaminated Site Remediation Act at N.J.S.A.58:10B-12.f.(1), ARS must be based on site specific conditions and not changes to input parameters that are not site specific. The Department is giving some leeway where the ARS is based on easily determined soil characteristic (f_{oc}), contaminant depth and percent vegetative cover.
44	16	5	2.1	There is a reference to the NJDEP's calculation tool but a search of the webpage site does not result in any finding of the calculator. How can stakeholders effectively evaluate the guidance document without being able to review the calculator function (and the basis and background for its development as provided by the USEPA for its RSL calculator)? We are requesting the release of the calculators for the ARS to be reviewed and commented on appropriately. Sections 5.2.1 to 5.2.2 refer to the calculator.	The calculators provide a tool to derive an alternative remediation standard (ARS); however, the calculator is not needed to evaluate the Technical Guidance document. At the time of the commenter's request, the Department had not fully developed the ARS calculators. Once the calculators are fully developed, the Department will release them with the adopted Remediation Standards (N.J.A.C. 7:26D) rule. The Department will accept comments concerning the calculators after the calculators have been released.
45	16	5	2 et al	The NJDEP does not provide the qualifications, experience and knowledge required by the Department reviewer to determine if an Alternate Remediation Standard is approved. Understanding the qualifications and experience for the decision maker is important for the LSRP and PRCR to prepare a responsive ARS request package. All LSRPs are closely monitored, tested, retrained, and audited by their peers. The NJDEP should implement a similar program to identify the staff who have presented the knowledge and experience to qualify as "technical reviewers" of a submittal from an LSRP.	Comments are outside the scope of the document; however, staff that review alternative remediation standards (ARS) have the necessary expertise to evaluate ARS requests.
46	16	5	3 et al	The NJDEP should define the Staff Positions or the Job Titles for the personnel who will review all ARS proposals. What are the key skills that are necessary for the DEP to determine the acceptance of an ARS proposal by an LSRP.	
47	18	5	2	Figure 1 graphically demonstrates the impracticality of the concept that the NJDEP will evaluate Alternative Remediation Standards as viable options to evaluate site specific details. Within the flow chart all Residential properties, School properties, Childcare properties, Commercial properties and Industrial properties are disallowed from using site specific land use information. The properties where ARS conditions are acceptable are a very, very small percentage of the land use in New Jersey. The NJDEP should provide an evaluation of the potential land area that may be affected by these alternative land use scenarios. I would estimate these land use scenarios could affect substantially less than 1% of all site remediation projects.	(See next page)

Comment #	Page	Section	Subsection	COMMENTS	RESPONSE
48	18	5	2	<p>Figure 1 graphically demonstrates the impracticality of the concept that the NJDEP will evaluate Alternative Remediation Standards as viable options to evaluate site specific details. Within the flow chart all Residential properties, School properties, Childcare properties, Commercial properties and Industrial properties are disallowed from using site specific land use information. The NJDEP should expand the definition of "Land Use" beyond residential and non-residential. It is very common to have mixed land use with retail shops on the first floor and residential use on the upper floors. Mixed use (ground floor commercial/upper floor residential), industrial lofts, and condominiums are residential land uses that should be considered under a "restricted residential scenario" that limits exposure via homeowners associations, deed restrictions, or other mechanisms that prevent disturbance to subsurface soils and limits grounds maintenance to workers. In addition, the majority of planned developments import surface soil for landscaping purposes which would further limit the potential exposure to soils under the restricted residential scenario. The automatic dismissal of alternative land use options for residential, commercial, and industrial properties limits the value of the ARS. This type of land use will become increasingly common and should be allowed and discussed within this guidance document.</p>	<p>Figure 1, as stated in the figure title, is for land use options only. Given that residential (including schools and childcare facilities) and commercial properties fall into the land use categories already defined in the Remediation Standards Rule, an alternate land use alternative remediation standard (ARS) would not be appropriate. ARS can be applied to residential and nonresidential properties for the inhalation exposure pathway (f_{oc}, depth of contamination and vegetative cover) and for lead (bioavailability). If a restricted use utility corridor exists on a nonresidential use property, an ARS could potentially be applied to the utility corridor portion of the site. Use of these ARS may require institutional or engineering controls and a soil remedial action permit.</p> <p>The remainder of this comment is outside the scope of this ARS guidance document and was addressed in the Department's responses to public comments on the amendments to the Remediation Standards rule, N.J.A.C. 7:26D.</p>
49	18	5	2.1	<p>While the alternative land use examples are informative to how the process may work, they have very little practical use for users of this document. The NJDEP needs to provide more common land uses and land use alternatives scenarios as part of this document. The current examples will either 1.) limit the extent to which investigators utilize this tool or 2.) result in alternative land use submittals that are unacceptable to the NJDEP. If the former is the intention of the examples provided, the Department should just clearly state that it intends to only accept these rare examples and the acceptance of this alternative will be limited. Without a clear indication from the Department the latter is inevitable, which will result in wasted time and resources for both the investigators and the Department.</p>	<p>The Department has chosen the most common land uses submitted for alternative remediation standard (ARS) requests in the past 20 years. A request for an ARS based on an alternate land use could be preceded by a technical consultation.</p>
50	16	5	5.2.1	<p>The Guidance should describe a process for how to determine if a representative Reasonable Maximum Exposure has been selected.</p>	<p>Reasonable Maximum Exposure is defined as the "highest exposure that is reasonably expected to occur at a site." This is a site-specific decision and will require background knowledge and evaluation of the site's current and future use. In the development of an alternative remediation standard (ARS), exposure parameters should be selected that reflect the RME and there should be supporting documentation provided to justify the use of those parameters. See the Site Remediation Reform Act Code of Ethics at N.J.S.A. 58:10C-16.c.</p>
51	18	5	5.2.1	<p>The guidance appears to make the ARS available for only alternative land use scenarios (Figure 1, page 18). It also limits the factors which can be changed in the ARS process (Table 1, starting on page 15). While many of some factors should not be changed, in general, it should be up to the LSRP to evaluate whether or not a particular parameter holds true in a given situation/factor.</p>	<p>The Department implemented methods to develop alternative remediation standards (ARS) in accordance with the governing legislation. As noted in the New Jersey Brownfield and Contaminated Site Remediation Act at N.J.S.A. 58:10B-12.f.(1) ARS must be based on site specific conditions and not changes to input parameters that are not site specific.</p>
52	18	5	2.1	<p>It is recommended that a reference to Table 2 be provided much earlier Section in 5.2.1, within that last paragraph. While reading each example, it was not clear why the Guidance document did not take it all the way to an example of the corresponding standard change - and then that is exactly what was done later on - so it may be better to reference the Table 2 earlier in Section 5.2.1.</p>	<p>Noted.</p>

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53	18	5	5.2.1	Figure 1 is misleading in that it implies that a technical consultation is only required for lead. However the guidance elsewhere advises technical consultation for all alternative land use scenarios. Suggest updating Figure 1 to state that USEPA's TRW should be consulted for lead and NJDEP consulted for other chemicals.	Figure 1 has been updated to indicate that technical consultations are available for alternate land use alternative remediation standards (ARS) and required for ARS for lead. Since ARS applications for lead are to be approved by the Department and not USEPA, the Department should first be consulted for lead. If assistance from the USEPA Region 2 and the lead TRW are necessary, the Department will consult with them as the next step.
54	20	5	2.1.1	Preschool children are considered zero to six years old but it is unlikely that there are infants engaged in the stated activities/exposure assumptions (i.e., playing at the playground for 200 days a year when temperatures are above 50 degrees F). We recommend that the NJDEP reevaluate these assumptions and/or annotate the discussion to indicate where age-adjusted, logical, mathematical conversions of these kinds of exposure factors are reasonable and warranted. The age-adjusted ingestion rate and age-adjusted dermal exposure currently specified in the proposed amendments are only utilized for the lifetime exposure assuming 6 years as a child and 20 years as an adult. These parameters are based on residential exposure to children and adults. The soil ingestion rate and dermal exposure (skin surface area) parameters are ones that the NJDEP does NOT allow to be changed. Assuming 200 mg/day soil ingestion for an infant during the sports playing field scenario is not representative of actual exposure of this age group and overestimates potential exposure. The skin surface areas assumed to be exposed are the head, hands, forearms, lower legs and feet. In Example 2 (Playground), preschool age children are assumed to be exposed five days a week for two hours per day when the temperature is >50° F. It is unrealistic to assume that preschool age children, especially infants, are playing in shorts with bare feet for two hours/day when the temperature is less than 65-70° F. Soil ingestion rate and skin surface area should be included as factors that can be adjusted to be representative of alternative scenarios.	The age-adjusted ingestion rate and dermal exposure will still apply when calculating an alternative remediation standard (ARS) for a combined child/adult exposure (can be greater or less than the default 6 years for a child and 20 years for an adult) for the carcinogenic health endpoint. The Department's calculator will include these calculations within it for user convenience. In accordance with the Department's Remediation Standards rule (N.J.A.C. 7:26D), the default soil ingestion rate and skin surface area must be used when calculating a recreational ARS to ensure adequate protection of human health. However the exposure factors for exposure time, exposure frequency, and exposure duration may be adjusted to better reflect the current and planned future use of the site. NOTE: These are examples and proposal for alternate scenarios may be presented with appropriate justification.
55	20	5	2.1.1	In the Sports Playing Field Example for Active Recreational Land Use, this example is "represented by a young child (age zero to six years) who starts out watching their older sibling play soccer (games, practice) for 65 days per year (half of the player exposure frequency). At the age of six, this individual then is assumed to become a soccer player who participates in spring and fall leagues on the same field. During this period, they participate from age six to 18 years, for 130 days per year including practice (USEPA 2014b) for 12 years." The guidance document should clearly indicate that the Alternative Remediation Standard for exposure to carcinogens and non-carcinogens would be calculated using exposure assumptions for the combined child and youth (i.e., not inclusive of adult exposure as is used in calculating the default Soil Remediation Standards). The basis for exclusion of the adult exposure (the soil remediation standard is more stringent based on child and youth exposure) should be included for clarity. In the blue summary box, all applicable child and youth exposure assumptions for the ingestion-dermal and inhalation exposure pathways to carcinogens and non-carcinogens should be provided.	(See next Page)

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56	20	5	2.1.1	In the Playground Example for Active Recreational Land Use, this example is "represented by a child using a playground in a park adjacent to or near their house. For preschool age (zero to six years), it is assumed the child visits the playground five days per week for two hours, when the average ambient high temperature is above 50oF (200 days based on nine months i.e., 40 weeks x five days/week), based on information from the Office of the New Jersey State Climatologist. Starting at school age, the frequency of visiting the playground decreases and eventually the youth only meets with friends in the park a few days per week for two hours, when the average ambient high temperature is above 50oF (200 days based on nine months i.e., 40 weeks x three days/week)." Is the NJDEP excluding the adult from this example? It is unlikely that a child receptor would participate in this activity without being accompanied by an adult. If the adult is expressly excluded, the guidance document should clearly indicate that the Alternative Remediation Standard for exposure to carcinogens and non-carcinogens would be calculated using exposure assumptions for the combined child and youth (i.e., not inclusive of adult exposure as is used in calculating the default Soil Remediation Standards). In the blue summary box, all applicable child and youth exposure assumptions for the ingestion-dermal and inhalation exposure pathways to carcinogens and non-carcinogens should be provided.	The years, days and hours that the exposure is based on is clearly listed. Any exposure that is not listed was not used in the calculation. All other parameters remain unchanged from the Remediation Standards rule, N.J.A.C. 7:26D. These are examples and are not intended to cover all exposure scenarios. For these scenarios, the Department focused on the most sensitive receptor (child and youth), rather than focusing on the adult. Text has been added to the examples provided in Section 5.2.1.1 of the guidance to clarify this point.
57	19	5	5.2.1.1/Examples	The level of detail provided in the examples can only be supported if the exposure scenario is current. The Department cannot ensure that property conditions (and exposure) will remain, as described, in the future. By extension, an ARS for non-residential land use based on current commercial or industrial exposure is warranted with the same requirements to control and/or monitor (e.g., institutional control, remedial action permit). Also, please confirm that Financial Assurance will not be required when a RAP is required in these scenarios.	As stated in the text of Section 5.2.1.1 immediately above the box, "The site-specific land use that is the basis of the ARS must be monitored in the soil remedial action permit to ensure that the area continues to be utilized for its stated purpose and the use conditions do not change. In the event that the land use changes, the ARS may no longer be valid and development and use of a new ARS or the default Soil Remediation Standard may be appropriate in order to determine if remedial action should be performed. The remedial action permit will also need to be modified as appropriate." If the remedy only requires an institutional control, then no financial assurance (FA) will be required; however, if an engineering control is needed, the FA will be required.
58	20	5	5.2.1.1/Examples	For adolescent receptors, body weight and skin surface area adjustments are necessary; however, the Guidance does not permit these adjustments. This should be allowed.	The commenter's request to adjust the body weight and skin surface area exposure factors for the adolescent receptor is a reasonable request in cases where the receptor with the greatest exposure is determined to be the adolescent trespasser. The Department has permitted these modifications in the past but only on USEPA-lead Superfund or Resource Conservation and Recovery Act (RCRA) sites in New Jersey where trespassing by an adolescent is a potential receptor. It is strongly recommended that a technical consultation be held with the Department to ensure concurrence before the modification of these exposure factors.
59	22	5	2.1.2	In the Jogger Example for Passive Recreational Land Use, this example is "represented by an individual adult who jogs on trails through a park." The guidance document should clearly indicate that the Alternative Remediation Standard for exposure to carcinogens and non-carcinogens would be calculated using exposure assumptions for the adult (i.e., not inclusive of child exposure as is used in calculating the default Soil Remediation Standards). In the blue summary box, all applicable adult exposure assumptions for the ingestion-dermal and inhalation exposure pathways to carcinogens and non-carcinogens should be provided.	The years, days and hours that the adult exposure is based on are clearly listed. Additional language was added in the first paragraph of the jogger example to clarify that exposure to a child 6 years and younger is not included (above 6 years of age would be included in the adult scenario), since a young child would not be expected to be jogging on the trails. Any exposure that is not listed was not used in the calculation. All other parameters remain unchanged from the Remediation Standards Rule, N.J.A.C. 7:26D. These are examples and are not intended to cover all exposure scenarios.

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60	25	5	Utility	On what basis is the utility work exposure assumptions based (i.e., 30 days/10 years)? Unlike the 10 years employment parameter from the labor bureau, the NJDEP is assuming that an individual is assigned to the same site/location 30 days for 10 years. The use of site specific information is appropriate for the exposure frequency and duration. Information regarding the number of underground utilities, the age of the utilities, the history of repairs (provided by the utility or based on site records), and depth to groundwater is necessary to evaluate the potential for utility worker exposure. Application of the specified default parameters is not realistic and the basis should be transparent. We request clarification and recommend that the NJDEP reevaluate these assumptions.	As stated in the beginning of Section 5.2.1, the alternative remediation standard (ARS) examples provided in the guidance are not to be considered exhaustive, nor should they be considered default scenarios or assumptions. All ARS requests are to be developed on a site-specific or AOC-specific basis, using exposure assumptions that can be justified with supporting information. All exposure factors used in the example are documented in the technical guidance. There are too many possible exposure scenarios that could occur on a site or AOC and it is not practical to provide an example for every potential scenario in this guidance.
61	27			In the first bullet point, punctuation needs to be changed - "Is hunting permitted?"	Noted.
62	24	5	2.1.3	Infrequent access area should be expanded to include designated areas on industrial/commercial properties. Areas where workers rarely enter and duration and times can be easily estimated.	As stated in the beginning of Section 5.2.1, the alternative remediation standard (ARS) examples provided in the guidance are not to be considered exhaustive, nor should they be considered default scenarios or assumptions. All ARS requests are to be developed on a site-specific or AOC-specific basis, using exposure assumptions that can be justified with supporting information. There are too many possible exposure scenarios that could occur on a site or AOC and it is not practical to provide an example for every potential scenario in this guidance.
63	26	5	2.1.4	Restricted access areas should be expanded to include designated areas on industrial/commercial properties. Areas where workers rarely enter and duration and times can be easily estimated.	
64	27	5	2.1.4	Throughout the guidance document, the NJDEP utilizes vague terms that should be defined to allow a reasonable evaluation of an ARS. In the ARS for a Birding example, the NJDEP mandates a permit and monitoring of the adjacent use of the property. There is no definition of when there is "an increased property use due to development of adjacent land." Specifically, what is adjacent land?; e.g. immediately contacting the property, within 200 feet of the property, within 500 feet of the property, etc.? Similarly, there is no definition of the frequency (or infrequency) of land use. If the adjacent land changes sufficiently, a RAP may be rescinded and additional remedial actions may be required, outside of the control of the PRCR.	If the property is in a remote area and land use was based on remote access, then development within the vicinity of that property would change the scenario such that the property is no longer remote. Professional judgement will need to be employed to make this determination. A technical consultation is available upon request.
65	27	5	2.1.4	In the Birding Example for Infrequent Access Areas, this example is "represented by an individual adult birding or otherwise observing nature in a remote ecological preservation area with no trails, no hunting permitted and with birders/naturalists expected to use the area." The guidance document should clearly indicate that the Alternative Remediation Standards for exposure to carcinogens and non-carcinogens would be calculated solely using exposure assumptions for the adult (i.e., not inclusive of child exposure as is used in calculating the default Soil Remediation Standards). In the blue summary box, all applicable adult exposure assumptions for the ingestion-dermal and inhalation exposure pathways to carcinogens and non-carcinogens should be provided.	The years, days and hours that the exposure is based on is clearly listed. Any exposure that is not listed was not used in the calculation. All other parameters remain unchanged from the Remediation Standards Rule, N.J.A.C. 7:26:D. These are examples and are not intended to cover all exposure scenarios.

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66	18-28	5	2.1.1-2.1.4	<p>The guidance document describes four alternative land uses but fails to describe these alternatives as examples and not a comprehensive listing of all alternative land uses. The guidance should bold the discussion that the 4 land uses are presented as examples and other land uses may be proposed. Also the guidance should clearly state the options that are provided, does the NJDEP believe that any ARS should/could fall into these four uses? While here they are presented as categories, the examples, replete with exposure assumptions for the land use categories, imply that this is a standard for the stated land use. If that is the case (i.e., the Department is trying to standardize these categories), then that is what should be stated and made transparent. If not, then this should be presented as the Department's professional judgement and other assumptions, and if properly justified may be considered.</p>	<p>As stated in the beginning of Section 5.2.1, the alternative remediation standard (ARS) examples provided in the guidance are not to be considered exhaustive, nor should they be considered default scenarios or assumptions. All ARS requests are to be developed on a site-specific or AOC-specific basis, using exposure assumptions that can be justified with supporting information. There are too many possible exposure scenarios that could occur on a site or AOC and it is not practical to provide an example for every potential scenario in this guidance.</p>
67	18-28	5	2.1.1-2.1.4	<p>There is no discussion/guidance regarding how to apportion the soil ingestion rate; in fact, this is one parameter that the NJDEP does NOT allow to be changed. What is the basis for this position? The USEPA default soil ingestion rates (updated) acknowledge that this is a daily total ingestion rate for a typical child or adult daily activities. Is the Department implying that the soil exposure during these activities outside of the home is in addition to the established daily rate? If so, what is the basis for that? Given that the USEPA acknowledged uncertainty, would it not be appropriate to apportion the "home" and "non-home" ingestion rates as USEPA guidance is provided for lead for intermittent non-home exposures using the time-weighted average approach? https://semspub.epa.gov/work/11/176288.pdf. The current approach identified in the ARS Technical Guidance appears to ADD the soil ingestion from the non-residential (non-home) exposure to the potential residential exposure (home). This would create an unnecessary redundancy. The soil ingestion rate should be based on mg/hr of the activity similar to that for sediment in the updated Chapter 5 of the USEPA Exposure Factor Handbook. In general, the exposure assumptions should be based on a per hour of specified activity unless it can be demonstrated that it is not applicable. As stated above, there are many sites where the "restricted residential" approach would be appropriate given the limited exposure to soils. The soil exposure pathway (ingestion/dermal) may be incomplete under these scenarios with an exposure of zero. Paved trails in recreational areas would also limit the direct contact exposure to soils. We request clarification on these points.</p>	<p>This comment is outside the scope of this guidance document and was addressed in the Department's responses to public comments received on the amendments to the Remediation Standards rule (N.J.A.C. 7:26D). The Remediation Standards rule states in Appendix 6 that "an ARS for the ingestion-dermal pathway may be developed based on site-specific modification of exposure duration and exposure frequency parameters for an alternative land use exposure scenario". Adjusting other exposure parameters is precluded by the rule. There are no exposure time (hours per day) adjustments for incidental ingestion since exposure is evaluated as an event (one event per day) rather than over a number of hours each day.</p> <p>The second part of this comment pertains to engineering and/or institutional controls. The Department has permitted and continues to allow various types of engineering and institutional controls to be implemented at a site, and when implemented appropriately, these controls are protective of human health and can be used to address soil contamination above soil remediation standards.</p>
68	28	5	2.1.5	<p>Table 2 shows the ingestion-dermal ARS values, the inhalation ARS values, and the most restrictive value for the two pathways incorporating the reporting limit (RL) and State background level where applicable. This statement implies that the NJDEP has the calculator available to present Table 2 as examples. How can stakeholders effectively evaluate the guidance document without being able to review the calculator function (and the basis and background for its development as provided by the USEPA for its RSL calculator)? We are requesting the release of the calculators for the ARS to be reviewed and commented on appropriately.</p>	<p>These calculations were actually done by hand before the calculators were developed. Once the calculators are fully developed, they will be released along with the adoption of the amendments to the Remediation Standards rule, N.J.A.C. 7:26D. The calculators provide a tool to derive an alternative remediation standard (ARS); however, the calculator is not needed to evaluate the Technical Guidance document. Comments concerning the calculators will be accepted after the calculators have been released.</p> <p>The Basis and Background (B&B) documents for the Ingestion-Dermal Exposure Pathway and Inhalation Exposure Pathway provide information that is already contained in the proposed amendments to the Remediation Standards, N.J.A.C. 7:26D. This includes the information necessary to derive ingestion-dermal and inhalation soil remediation standards, such as equations, default exposure assumptions, toxicity values, and skin absorption fractions. The Department's B&B documents will be released with the adoption of the Remediation Standards, N.J.A.C. 7:26D.</p>

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69	28	5	2.1.5	While the guidance document implies that the examples provided are not the only ones that could be considered, that is not the impression from the presentation. We recommend that the NJDEP correct this impression, and move the examples to the appendix and not have them appear in the body of the guidance document other than as a reference.	We appreciate the comment; however, the committee is in agreement with keeping them in the text of the document for easier access and review.
70	30	5	2.1.5	The presentation of the Table 2 Example Summary furthers the impression that the presented values are the only values to be considered by providing comparison to the SRS. See above comment (Pg. 28, Section 5.2.1.5). Although Table 2 includes the term Example in the title, an Investigator may not realize the site specific variables. The title for Table 2 should be expanded to include "Summary of Example Alternative Remediation Standards Based on Specific Exposure Variables".	Title revised.
71	30	5	2.1.5	Table 2 - Why is arsenic (established at "natural background") the same across all land use scenarios? Based on the exposure assumptions, was the resulting potential ARS below 19 mg/kg and that results in reverting to background? If so, that should be stated. If not, why is background concentration the ARS?	A footnote was added to Table 2 to clarify. Selection of 19 mg/kg as a state wide background number is discussed in the 2007 Remediation Standards Rule Proposal as well as the 2020 Remediation Standards Rule Proposal.
72	30	5	2.1.5	Table 2 - Does the NJDEP mean to impart the impression that soil ingestion associated with B(a)P is similar in risk for residential exposure assumptions as it is with active recreation? This is particularly important given the anthropogenic atmospheric deposition of PAHs across New Jersey. Several researchers have documented B(a)P and other PAH deposition is ubiquitous including a recent article by researchers from the USEPA, USGS and University of Helsinki (See " Primary Sources of Polycyclic Aromatic Hydrocarbons to Streambed Sediment in Great Lakes Tributaries Using Multiple Lines of Evidence ", Environmental Toxicology and Chemistry Journal, June 2020, DOI: 10.1002/etc.4727). Given this example, has the Department reconsidered establishing background PAHs (including B(a)P) concentrations? The guidance document should be expanded to encourage an Investigator to provide information on background concentrations.	The commenter is referred to the recent New Jersey specific PAH Study which showed PAH levels in more densely populated areas to be below soil remediation standards. https://www.nj.gov/dep/dsr/publications/PAHs_NJ_Soils.pdf . A responsible party can also always conduct a site specific background determination.
73	30	5	2.1.5	The footnote to Table 2 (and on Page 8) states that by policy, mutagenic mode of action is not considered when calculating carcinogenic soil remediation standards. This policy should be provided for review and expanded in the guidance document..	The mutagenic mode of action policy is discussed and will be provided in the Basis and Background (B&B) document for the ingestion-dermal pathway. In addition, the calculator the Department will provide to calculate alternative remediation standards (ARS) does not include adjustments for mutagenic mode of action. As noted in the New Jersey Brownfield and Contaminated Site Remediation Act at N.J.S.A. 58:10B-12.f.(1), ARS must be based on site specific conditions and not changes to input parameters that are not site specific. Mutagenic mode of action is not a site specific factor. Use of mutagenic mode of action would require rulemaking. The Site Remediation and Waste Management Program's mutagenic mode of action policy is outside the scope of this guidance document and was addressed in the Department's responses to public comments received on the amendments to the Remediation Standards Rule, N.J.A.C. 7:26D.
74	30	Table 2		It is recommended that the Example Alternative Remediation Standards summarized in Table 2 be updated to include the salient points raised in Comments 11 - 14, herein.	This comment is addressed in previous responses to comments.

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75	30	Table 2		Using benzene as the example, an investigator in NJ would have to seek NJDEP approval to implement an ARS to increase the default SRS from 2.2 mg/kg (residential inhalation) to 200 mg/kg at a "Restricted Access Area", which according to the document is considered a right of way or a street. Based on the land use alternatives examples, it is unclear how willing the Department will be to accept such an increase for uses beyond a right of way or street. Using default standards (look up tables), investigators in other states can select default benzene soil standards up to 1,000 mg/kg without regulatory agency approval based on the development of additional SRS categories. The Department should consider the development of additional SRS categories or allow the LSRPs to develop and implement ARS without NJDEP approval.	In accordance with the Brownfield and Contaminated Site Remediation Act (Brownfield Act), N.J.S.A. 58:10B-12(c)1, only residential and nonresidential exposure scenarios are required to be addressed via the standards effort. All other scenarios are being handled via the Alternative Remediation Standard (ARS) process. In accordance with the Brownfield Act, all ARS must be approved by the Department.
76	31	5	2.2	The guidance document recognizes site specific conditions can affect the bioavailability of lead. The USEPA also recognizes the bioavailability of other inorganic chemicals and semi-volatile organics can vary from default assumptions. The NJDEP should allow the evaluation of site specific Ingestion-Dermal standards based on site specific evaluations of chemical bioavailability.	As stated by the commenter, the Department recognizes that site-specific conditions can affect the bioavailability of lead, and therefore, bioavailability evaluations for lead in site soils are permitted where appropriate. As provided in the Alternative Remediation Standards (ARS) Technical Guidance, USEPA has established guidance on bioavailability and bioaccessibility methods (in vivo/ in vitro) for lead, which can be found at https://www.epa.gov/superfund/soil-bioavailability-superfund-sites-guidance . At this same website, guidance is also provided on soil bioavailability methods for other metals as well. In regards to assessing bioavailability for other chemicals in New Jersey, typically this request only occasionally occurs for arsenic. A bioavailability evaluation for arsenic is not recommended because New Jersey's Soil Remediation Standards for arsenic (19 mg/kg for both residential and non-residential scenarios), based on regional natural background concentrations in the state, are much greater than the calculated health based values. The cost of the bioavailability analysis and the small amount of flexibility it could potentially provide are not worthwhile given the higher natural background value for arsenic in New Jersey.
77	32	5	2.2	The NJDEP accepts that site specific conditions can affect the bioavailability/bioaccessibility for lead, and "site specific data are more representative than the default values for lead". The NJDEP should expand the evaluation of bioavailability/bioaccessibility to other chemicals when evaluating a site specific ARS.	
78	32	5	2.2	USEPA HQs is in the process of developing a national lead guidance that may be finalized before this revised guidance date of April 2021. This section may need to be revised once the EPA national guidance is finalized.	The Department appreciates the comment and is aware that USEPA may issue new lead guidance in the future. For that reason, language was included in this Alternative Remediation Standards (ARS) Technical Guidance to provide further detail on the matter. Information will also be provided in the Basis and Background document for the ingestion-dermal exposure pathway. When updated national guidance for lead is issued, the Department will review it upon its release and begin the process to amend the Remediation Standards and this guidance document if deemed necessary.
79	32	5	5.2.2	The paragraph starting with "Requests for lead ARS.." should be revised to clarify how a lead ARS can be calculated. It appears there are two situations 1) For alternative land use scenarios, an ARS can be calculated by changing the exposure frequency in the lead models following USEPA's 2003 Guidance and 2) For site-specific data, an ARS can be calculated using site-specific bioavailability /bioaccessibility data.	The two situations provided in the comment are correct and either can be used to develop an alternative remediation standard (ARS) for lead. Due to the complexity of developing a lead ARS, the Department requires a technical consultation be held before an ARS application is submitted so that Department staff can provide proper guidance on how to proceed. For more complicated ARS lead requests, the Department will also involve USEPA Region 2 and USEPA's Technical Review Workgroup for lead.
80	31	5	5.2.2	Section 5.2.2 provides a summary of the blood lead goal used in the derivation of the soil remediation standards. The LSRPA notes that, unlike acceptable cancer risk and noncancer hazard goals established in the Brownfield Act and noted in the Remediation Standards Rule, the Departments blood lead goal is not. The LSRPA appreciates the Department including a discussion of blood lead goals in this Guidance but would recommend that the Department also consider capturing its blood lead goal in the forthcoming Remediation Standards rule and include a basis for its selection.	This issue is outside the scope of this document and was addressed in the Department's responses to public comments received on the amendments to the Remediation Standards Rule, N.J.A.C. 7:26D.

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81	33	5	3	<p>Throughout the legislative discussions during the SRRA 2.0 stakeholder meetings, there was a consistent theme that New Jersey needs to address the backlog of site remediation approvals and implement decision making processes similar to the Massachusetts program in order to have sites remediated and returned to productive use. An overall review of these proposed regulations leads one to assume that the Department intends on keeping a command and control approach to the use of ARS. This has proven to not be a successful model for the site remediation process in NJ. Under NJDEP Case Management, a back log of cases resulted in the adoption of the LSRP Program. The remedial action permit approval process is one aspect of the LSRP Program that has remained under NJDEP command/control style management. A backlog of remedial action permits pending NJDEP approval began to grow immediately under the LSRP Program. A backlog of approvals remains today. The NJDEP needs to inform the regulated community how it is going to manage ARS submittals, which could be numerous given the extremely stringent proposed promulgated standards, in a timely fashion. The Department must give serious consideration to its review process and should evaluate lessons learned from its remedial action permit approval experience, which has not been managed efficiently or effectively. Will the Department be able to implement a more efficient management approach to process submittals which will be more complicated than the remedial action permit applications that have been a struggle to process? The Department has acknowledged that there was not a "plan" for the remedial action permit approval process in the early days of SRRA, stating in public forums that resources were dedicated to the receptor evaluations and RIRs. Does the Department have its plan in place for managing the ARS submittals? Does the Department have the resources/expertise to manage this important step in the process? If there is any question of the Department's resources, abilities, or expertise the LSRPs should be given more authority to develop and implement ARS without NJDEP approval or delays and backlogs will be difficult to avoid.</p>	<p>The first portion of this comment regarding the backlog of site remediation approvals is outside the scope of this guidance document. For the second portion of this comment regarding alternative remediation standard (ARS) approvals, per statute (N.J.S.A. 58:10B-12.f.(1)), the Department must approve all remediation standards. The Department is giving some leeway where the ARS is based on soil characteristic (foc), contaminant depth and percent vegetative cover, which are all empirical measurements that can be taken and easily entered into existing equations to develop an ARS. This comment was also addressed in the Department's responses to public comments received on the proposed amendments to the Remediation Standards rule, N.J.A.C. 7:26D. Note, relative to ARS approvals, the Department does not have a backlog. A backlog relative to soil remedial action permitting is outside the scope of this document.</p>
82	33	5	3	<p>The NJDEP states, "All ARS options for the ingestion-dermal exposure pathway require prior approval from the Department.", however the NJDEP fails to identify the reason and project variables that affect any decisions made by the NJDEP. The NJDEP also fails to identify why this personal oversight is necessary. The guidance document should be amended to identify the specific variables and the acceptable range of variables for review by the regulated community and the LSRP without NJDEP approval.</p>	<p>Per statute (N.J.S.A. 58:10B-12.f.(1)), the Department must approve all remediation standards. The Department is giving some leeway where the alternative remediation standard (ARS) is based on soil characteristic (f_{cc}), contaminant depth and percent vegetative cover, which are all empirical measurements that can be taken and easily entered into existing equations to develop an ARS.</p> <p>NJDEP implemented methods to develop ARS in accordance with the governing legislation. As noted in the Brownfield Act at N.J.S.A. 58:10B-12.f.(1), ARS must be based on site specific conditions and not changes to input parameters that are not site specific.</p> <p>The remainder of this comment is outside the scope of this guidance document and was addressed in the Department's responses to public comments received on the proposed amendments to the Remediation Standards rule, N.J.A.C. 7:26D.</p>
83	34	5	3.1	<p>There is a reference to the NJDEP's calculation tool but a search of the webpage site identifies the Inhalation Exposure Pathway calculations from 2008. This calculator requires integration with an EPA model titled EMSOFT (Exposure Model for Soil-Organic Fate and Transport), however the EMSOFT links are broken. How can stakeholders effectively evaluate the guidance document without being able to review the calculator function (and the basis and background for its development as provided by the USEPA for its RSL calculator)? We are requesting the release of the calculators for the ARS to be reviewed and commented on appropriately. Sections 5.3.1 to 5.3.3 refer to the appropriate calculator.</p>	<p>The calculators provide a tool to derive an alternative remediation standard (ARS); however, the calculator is not needed to evaluate the Technical Guidance document. At the time of the commenter's request, the Department had not fully developed the ARS calculators. Once the calculators are fully developed, the Department will release them with the adopted Remediation Standards (N.J.A.C. 7:26D) rule. The Department will accept comments concerning the calculators after the calculators have been released.</p>

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84	34	5	3.1	The guidance document uses the 2021 reference; please confirm that this is based on expected promulgation.	The reference to 2021 is not included in Section 5.3.1; however, where used in other parts of the document it is referring to the assumed rule adoption date and associated documents being simultaneously released.
85	34	5	3.1	As described in Section 4.3, the NJDEP expects an LSRP to have "knowledge and understanding of the techniques and methodologies of risk assessment (USEPA 1989)", however the guidance document fails to evaluate the depth of the soil when evaluating the inhalation exposure pathway. The NJDEP should provide the LSRP the flexibility to define vertical exposure domains, rather than single-point compliance of a mathematical standard concentration.	<p>The default assumption for volatile contaminants in the Inhalation Exposure Pathway is that contamination extends from the soil surface to an unlimited depth. However, the vertical extent (depth range [depth and thickness]) of contamination is allowed to be used to develop an alternative remediation standard (ARS) for the inhalation exposure pathway. This depth and thickness is defined as the space between the shallowest point below the default standard and the deepest point below the default standard.</p> <p>An analytical solution is not available to model a variable contaminant concentration within the depth range of contamination. For compliance with default or alternative standards, please consult the Attainment of Remediation Standards and Site-Specific Criteria found at: https://www.nj.gov/dep/srp/guidance/srra/attainment_compliance.pdf.</p>
86	34	5	3.1	The NJDEP proposes to require a Remedial Action Permit for an ARS based on a site specific depth range of contamination, regardless of the starting depth of the remaining contamination zone. The NJDEP should establish the maximum depth where a RAP is required to confirm protection to the environment, e.g. 5 feet below existing grade. It is reasonable to believe there will be cases where surface remedial actions have been completed and deeper Inhalation Exposure concentrations will undergo natural attenuation. It is financially and physically unreasonable to establish a permit requirement for all inhalation conditions. Additionally, the potential for soil erosion or a decrease in soil cover by excavation is very limited in New Jersey. Given the documented effects of global warming and the increasing flood elevation mapping, there is a much greater potential for sites to receive additional fill material or to become abandoned to projects such as Blue Water. Each of these scenarios should be identified and described in the guidance document including a procedure to evaluate future flooding and/or filling activities.	<p>The Site Remediation Reform Act at NJSA 58:10C-19. mandates the department to establish a permit program to regulate the operation, maintenance and inspection of engineering or institutional controls and related systems installed as part of a remedial action of a contaminated site. The clean soil above the contaminated soil is effectively acting as an engineering control, therefore a permit is required to ensure the integrity of the engineered cap over time.</p> <p>The remainder of the comment is outside the scope of this document.</p>
87	34	5	3.1	The Department should provide example (benzene?) for a scenario where institutional control and RAP are required.	If the contaminant depth used to develop the alternative remediation standard (ARS) begins at the surface depth, then no clean soil is located above the contaminated soil and no remedial action soil permit is required; however, if the contaminant depth used to develop the ARS begins at a depth deeper than the surface, then clean soil located above the contaminated soil is acting as a cap (engineering control) and requires a remedial action soil permit.
88	35	5	3.1	The Department should provide example (benzene?) for a scenario where institutional control and RAP are not required because contamination starts at surface.	
89	34	5	3.1	Why wouldn't depth range play a part in developing an ARS for ingestion-dermal as well?	The depth of contamination is a factor in the volatilization of contaminants from soil for the Inhalation Exposure Pathway. The default assumption for volatile contaminants in the Inhalation Exposure Pathway is that contamination extends from the soil surface to an unlimited depth. However, the vertical extent (depth range [depth and thickness]) of contamination is allowed to be used to develop an alternative remediation standard (ARS) for the inhalation exposure pathway. This depth and thickness is defined as the space between the shallowest point below the default standard and the deepest point below the default standard.
90	34	5	3.1	Depth range should apply to direct contact as well as inhalation, as applied by EPA and other states.	The depth of contamination is not; however, a variable in the Ingestion-Dermal Exposure Pathway equations, and therefore it cannot be used to develop an ARS. The depth of contamination may be used for compliance with the Ingestion-Dermal Exposure Pathway Soil Remediation Standards; however, with the use of protective engineering and institutional controls.

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91	35	5	3.2	The referenced ARS Technical Guidance for Migration to Groundwater Pathway has not been published so the method stated for measuring soil organic carbon cannot be evaluated at this time.	
92	35	5	3.2	The NJDEP requires the PRCR to describe "how the input parameters were selected (i.e. average or lowest foc concentration). The NJDEP should clarify the conditions where the use of the lowest foc concentration would ever be required. Utilization of the lowest foc concentration is overly conservative and not reasonably justified. Further an ambiguous description of the required parameters does not support a collaborative evaluation of the data.	The Department described the process for developing an appropriate soil fraction organic carbon (foc) value in the previous Impact to Ground Water guidance document titled "Development of Impact to Ground Water Soil Remediation Standards using the Soil-Water Partition Equation," and in the previous Inhalation guidance document titled "Development of Alternative Remediation Standards for the Inhalation Pathway," located at https://www.nj.gov/dep/srp/guidance/rs/ . The procedure remains the same in the new "Alternative Remediation Standards Technical Guidance for the Migration to Ground Water Pathway," which the Department has released. The average of three or more values would be used unless those values differ by an order of magnitude or more, in which case the minimum value would be used based on site heterogeneity in order to be protective. When large site heterogeneity is observed, the area of concern may be separated into smaller, more homogeneous areas of concern for separate evaluation.
93	35	5	3.2	The guidance document states, "The Department's calculator will develop an appropriate foc from values entered." The NJDEP should clearly state the rationale and basis for the selection of a reasonable foc concentration.	The method of analysis for organic carbon remains same as that currently used, which is the Lloyd Khan method. This is analytical method can be found on the Department's Remediation Standards website at https://www.nj.gov/dep/srp/guidance/ .
94	35	5	3.2	Requesting that the guidance includes additional information on the number of soil organic carbon (foc) samples required, laboratory method required, and whether averaging, maximum or another statistical approach is appropriate where more than one sample is collected. It is suggested that methodology be used that is consistent with NJDEP's Development of Impact to Ground Water Soil Remediation Standards Using the Soil-Water Partition Equation (Section VII.A).	
95	35	5	3.2	The guidance document states, "The Department's calculator will develop an appropriate foc from values entered." The current calculator does not function as defined in the Guidance document. The NJDEP should provide the proposed calculator for review and evaluation by the regulated community.	The calculators provide a tool to derive an alternative remediation standard (ARS); however, the calculator is not needed to evaluate the Technical Guidance document. At the time of the commenter's request, the Department had not fully developed the ARS calculators. Once the calculators are fully developed, the Department will release them with the adopted Remediation Standards (N.J.A.C. 7:26D) rule. The Department will accept comments concerning the calculators after the calculators have been released.

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96	36	5	3.3	<p>It is recommended that the NJDEP provide a complete definition for "fraction of vegetative cover." In the USEPA Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Part B, Development of Preliminary Remediation Goals) (EPA/540/R-92/003 dated December 1991), the Volatilization Factor calculation "assumes that the contaminant concentration in the soil is homogeneous and that the contaminated soil is not covered by contaminant-free soil material." The Particulate Emission Factor algorithm is "representative of a surface with 'unlimited erosion potential,' which is characterized by bare surfaces." The term "vegetative cover" is misleading. The spirit and intent of the vegetative cover component of the algorithm is to identify the proportion of the site footprint where wind-blown soil erosion will not occur. The Department has proposed a default Fraction of Vegetative Cover of 50% which "represents a reasonable compromise between no cover and a totally vegetated site," consistent with the USEPA Soil Screening Guidance: Technical Background Document (EPA/540/R-95/128 dated May 1996). In the Draft Alternative Remediation Standards Technical Guidance Table 1 (page 15), the Department has indicated that Vegetated Cover Fraction is "a factor which can be changed via the ARS process." The guidance document should provide clarification that the Vegetated Cover Fraction is the percentage of the site footprint where bare soils are not exposed to potential wind erosion, irrespective of whether those areas are vegetated. The Vegetated Cover Fraction includes building footprints, paved areas, graveled areas, grassed areas, landscaped areas, capped areas, areas previously remediated and areas with clean fill or soil overlying impacted soils. Using 50% Vegetative Cover Fraction to develop the default Soil Remediation Standards as is described in the Draft Proposed New Rules and Repeals to N.J.A.C. 7:26D dated April 2020 is overly conservative for the vast majority of impacted sites in the State. The Department should consider using a higher Vegetative Cover Fraction as the default. If the NJDEP maintains the 50% Vegetative Cover Fraction as the point of departure, the Department may very likely receive ARS applications for most of the sites regulated by the Site Remediation and Waste Management Program where the inhalation exposure pathway is the driver.</p>	<p>The commenter is equating vegetative cover with impervious surfaces such as asphalt and concrete. The vegetative cover does not apply to non vegetative cover/caps such as concrete and asphalt. Vegetative cover greater than 50% will also require a soil permit for the site to maintain the vegetative cover. The use of 50 percent vegetative coverage is consistent with the United States Environmental Protection Agency (USEPA) 2002 "Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites" at https://semspub.epa.gov/work/HQ/175878.pdf. The percent of vegetative cover is the amount of soil covered by vegetation using standard ecological techniques (for example, grid sampling). This is not to say large bare patches and large areas covered with vegetation, but rather the percentage of cover within an area of vegetation. This percentage would need to be maintained and monitored in order to be effective.</p>
97	36	5	3.3	<p>The NJDEP is requiring an institutional control and a remedial action permit for an ARS with variability in the vegetative cover. The Department has proposed a default Fraction of Vegetative Cover of 50% which "represents a reasonable compromise between no cover and a totally vegetated site," consistent with the USEPA Soil Screening Guidance: Technical Background Document (EPA/540/R-95/128 dated May 1996). In the Draft Alternative Remediation Standards Technical Guidance Table 1 (page 15), the Department has indicated that Vegetated Cover Fraction is "a factor which can be changed via the ARS process." The guidance document should provide clarification that the Vegetated Cover Fraction is the percentage of the site footprint where bare soils are not exposed to potential wind erosion, irrespective of whether those areas are vegetated. The Vegetated Cover Fraction includes building footprints, paved areas, graveled areas, grassed areas, landscaped areas, capped areas, areas previously remediated and areas with clean fill or soil overlying impacted soils. Using 50% Vegetative Cover Fraction to develop the default Soil Remediation Standards as is described in the Draft Proposed New Rules and Repeals to N.J.A.C. 7:26D dated April 2020 is overly conservative for the vast majority of impacted sites in the state.</p> <p>The NJDEP should provide additional guidance regarding the establishment of a Remedial Action Permit for a vegetative cover. The NJDEP should clearly define site specific parameters including how should the vegetative cover be defined and when is a permit modification required? It is reasonable to believe a grassed area may be changed to an area of shrubs, or a gravel path or a compacted footpath or a sidewalk, etc. Will each of these minor changes require a permit modification with a \$660.00 fee?</p>	<p>The second part of the second comment is outside the scope of this document.</p>

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98	37	6	0	There is a reference to the NJDEP's calculation tool but a search of the webpage site does not result in any finding of the calculator. How can stakeholders effectively evaluate the guidance document without being able to review the calculator function (and the basis and background for its development as provided by the USEPA for its RSL calculator)? We are requesting the release of the calculators for the ARS to be reviewed and commented on appropriately.	The calculators provide a tool to derive an alternative remediation standard (ARS); however, the calculator is not needed to evaluate the Technical Guidance document. At the time of the commenter's request, the Department had not fully developed the ARS calculators. Once the calculators are fully developed, the Department will release them with the adopted Remediation Standards (N.J.A.C. 7:26D) rule. The Department will accept comments concerning the calculators after the calculators have been released.
99	37	6	0	Will the Department allow a voluntary request for review of ARS that do not require pre-approval?	Yes, this will be conducted through the technical consultation process.
100	38	References		The NJDEP references an updated Vapor Intrusion Technical Guidance document (Version x.x) to provide additional monitoring and site specific evaluation information. It is unreasonable to reference a future guidance document within a guidance document that is requesting public comment. The referenced guidance documents should be released simultaneously.	This document will be released for review; however, the information necessary to derive Ingestion-Dermal Exposure Pathway and Inhalation Exposure Pathway Soil Remediation Standards is already contained in the Remediation Standards Rule. The updated Vapor Intrusion Technical Guidance document (version 5.0) will be released along with the adopted Remediation Standards rule, N.J.A.C. 7:26D.
101	38	References		The document references four yet to be published NJDEP guidance documents (NJDEP 2021 a to d). It is not possible to comment on unpublished guidance documents. When will these guidance documents be available for review?	The Basis and Background (B&B) documents for the Ingestion-Dermal Exposure Pathway and Inhalation Exposure Pathway provide information that is already contained in the proposed amendments to the Remediation Standards, N.J.A.C. 7:26D. This includes the information necessary to derive ingestion-dermal and inhalation soil remediation standards, such as equations, default exposure assumptions, toxicity values, and skin absorption fractions. The Department's B&B documents will be released with the adoption of the Remediation Standards, N.J.A.C. 7:26D. The Alternative Remediation Standards Technical Guidance for the Migration to Ground Water Pathway and the updated Vapor Intrusion Technical Guidance (version 5.0) documents are outside the scope of this guidance document and will be released along with the adopted Remediation Standards rule.
102	40	References		The USEPA recently updated the Regional Screening Level tables in May 2020. The reference to the USEPA Regional Screening Levels User's Guide should be changed from "November 2018" to "May 2020."	At the time the Department created the proposed amendments to the Remediation Standards, N.J.A.C. 7:26D, the November 2018 version of USEPA's Regional Screening Level (RSL) Tables was the most recent version available. The Department developed the standards, in part, using information contained in the 2018 RSL Tables; therefore, both the rule proposal and this ARS guidance cites the 2018 RSL Tables for consistency.
103	44	Appendix B		In the Appendix B List of Acronyms, we recommend that the NJDEP adds the following four acronyms cited in the guidance document but which are not currently included in the List of Acronyms: ATV All-Terrain Vehicle; CSAT Soil Saturation Concentration; PRCR Person Responsible for Conducting the Remediation; SRWMP Site Remediation and Waste Management Program.	Noted.
104	48	Table C-1		The USEPA recently updated the Regional Screening Level tables in May 2020. The Source citations for IFSadj and DFSadj should be changed from "USEPA (2018)" to "USEPA (2020)."	At the time the Department created the proposed amendments to the Remediation Standards, N.J.A.C. 7:26D, the November 2018 version of USEPA's Regional Screening Level (RSL) Tables was the most recent version available. The Department developed the standards, in part, using information contained in the 2018 RSL Tables; therefore, both the rule proposal and this ARS guidance cites the 2018 RSL Tables for consistency.

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105	48	Table C-1		The NJDEP references an Ingestion-Dermal Exposure Pathway Basis and Background document (in development) as the source of the NJDEP's default input parameters. It is unreasonable to reference a future guidance document within a guidance document that is requesting public comment. The referenced guidance documents should be released simultaneously.	The Basis and Background (B&B) documents for the Ingestion-Dermal Exposure Pathway and Inhalation Exposure Pathway provide information that is already contained in the proposed amendments to the Remediation Standards, N.J.A.C. 7:26D. This includes the information necessary to derive ingestion-dermal and inhalation soil remediation standards, such as equations, default exposure assumptions, toxicity values, and skin absorption fractions. The Department's B&B documents will be released with the adoption of the Remediation Standards, N.J.A.C. 7:26D.
106	48	Appendix C	Table C-1	The EPA's 2011 EFH recommended value for life expectancy is 78 years. The EPA's overall confidence in this value is rated as "high". The EPA's recommended value differs from the 70 years cited in the Guidance for averaging lifetime exposure to carcinogens. This issue should be corrected.	USEPA's 2014 Recommended Default Exposure Factors for Superfund (OSWER Directive 9200.1-120) recommend 70 years for life expectancy. The USEPA Superfund program uses the 70 year life expectancy value in the baseline human health risk assessment process and the Regional Screening Level Tables for carcinogens.
107	49	Table C-2		The NJDEP references an Ingestion-Dermal Exposure Pathway Basis and Background document (in development) as the source of the NJDEP's default input parameters. It is unreasonable to reference a future guidance document within a guidance document that is requesting public comment. The referenced guidance documents should be released simultaneously.	
108	50	Table C-3		The NJDEP references an Ingestion-Dermal Exposure Pathway Basis and Background document (in development) as the source of the NJDEP's default input parameters. It is unreasonable to reference a future guidance document within a guidance document that is requesting public comment. The referenced guidance documents should be released simultaneously.	The Basis and Background (B&B) documents for the Ingestion-Dermal Exposure Pathway and Inhalation Exposure Pathway provide information that is already contained in the proposed amendments to the Remediation Standards, N.J.A.C. 7:26D. This includes the information necessary to derive ingestion-dermal and inhalation soil remediation standards, such as equations, default exposure assumptions, toxicity values, and skin absorption fractions. The Department's B&B documents will be released with the adoption of the Remediation Standards, N.J.A.C. 7:26D.
109	51	Table C-4		The DEP references an Ingestion-Dermal Exposure Pathway Basis and Background document (in development) as the source of the DEP's default input parameters. It is unreasonable to reference a future guidance document within a guidance document that is requesting public comment. The referenced guidance documents should be released simultaneously.	
110	53	Appendix C	Table C-6	The mean annual wind speed should be updated to use more recent NOAA data.	The mean annual wind speed was reassessed in 2014 and determined to still be acceptable. The value is based on a 30-year average of data. The annual wind speed is consistent with the Remediation Standards Rule Proposal and is not a site-specific parameter. As noted in the New Jersey Brownfield and Contaminated Site Remediation Act at N.J.S.A. 58:10B-12.f.(1), alternative remediation standards must be based on site specific conditions and not changes to input parameters that are not site specific.
111	53	Table C-6		The NJDEP references an Inhalation Exposure Pathway Basis and Background document (in development) as the source of the NJDEP's default input parameters. It is unreasonable to reference a future guidance document within a guidance document that is requesting public comment. The referenced guidance documents should be released simultaneously.	(See next page)

Comment #	Page	Section	Subsection	COMMENTS	RESPONSE
112	54	Table C-7		The NJDEP references an Inhalation Exposure Pathway Basis and Background document (in development) as the source of the NJDEP's default input parameters. It is unreasonable to reference a future guidance document within a guidance document that is requesting public comment. The referenced guidance documents should be released simultaneously.	The Basis and Background (B&B) documents for the Ingestion-Dermal Exposure Pathway and Inhalation Exposure Pathway provide information that is already contained in the proposed amendments to the Remediation Standards, N.J.A.C. 7:26D. This includes the information necessary to derive ingestion-dermal and inhalation soil remediation standards, such as equations, default exposure assumptions, toxicity values, and skin absorption fractions. The Department's B&B documents will be released with the adoption of the Remediation Standards, N.J.A.C. 7:26D.
113	N/A	N/A	General Comment	The Guidance does not reference USEPA's 2019 Guidelines for Human Exposure Assessment. This is an excellent source of information regarding human exposure assumptions and would be a very helpful resource for LSRPs who are in need for information that could support site-specific exposure assumptions based upon various human activities. Included in this USEPA guidance is a table with example sources of exposure data and information (i.e., Table 5-6). The LSRPA would recommend that the Guidance be updated to include reference to this additional and helpful source.	Noted.
114	N/A	N/A	General Comment	The Guidance does not reflect USEPA's (2005) Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens which pertains to cancer risks associated with early-life exposures, including on potency adjustment for certain carcinogenic chemicals suspected to have a mutagenic mode of action. In accordance with this guidance, current risk assessment science/practice involves incorporating age dependent adjustment factors (ADAFs) in assessing cancer risks associated with exposure of children under the age of 16 to these mutagenic chemicals. For exposures before the age of 2, a 10-fold adjustment is incorporated. For exposures between 2 and <16 years of age, a 3-fold adjustment is incorporated. The LSRPA recommends that the Guidance be updated to reflect this USEPA guidance and the need to include consideration for mutagenic mode of action in the derivation of ARS when childhood exposures to carcinogenic chemicals are being considered.	The mutagenic mode of action policy is discussed and will be provided in the Basis and Background (B&B) document for the ingestion-dermal pathway. In addition, the calculator the Department will provide to calculate alternative remediation standards (ARS) does not include adjustments for mutagenic mode of action. As noted in the New Jersey Brownfield and Contaminated Site Remediation Act at N.J.S.A. 58:10B-12.f.(1), ARS must be based on site specific conditions and not changes to input parameters that are not site specific. Mutagenic mode of action is not a site specific factor. Use of mutagenic mode of action would require rulemaking. The Site Remediation and Waste Management Program's mutagenic mode of action policy is outside the scope of this guidance document and was addressed in the Department's responses to public comments received on the amendments to the Remediation Standards Rule, N.J.A.C. 7:26D.