

# DEEP Remediation Division - Background Guidance Survey



## What is your profession?

		Response Percent	Response Count
Environmental Professional		90.6%	125
Laboratory Professional		1.4%	2
Legal Professional		6.5%	9
Business Professional		1.4%	2
	Other (please specify)		6
		<b>answered question</b>	<b>138</b>
		<b>skipped question</b>	<b>5</b>

**Page 1, Q1. What is your profession?**

1	government	May 30, 2012 10:35 AM
2	regulatory	Apr 30, 2012 4:15 PM
3	regulator	Apr 27, 2012 11:25 AM
4	LEP/LSP	Apr 27, 2012 10:14 AM
5	Municipal Grants Administration	Apr 27, 2012 8:45 AM
6	Paramedic	Apr 26, 2012 5:28 PM

# DEEP Remediation Division - Background Guidance Survey



Do you think that the discussion of "background" in the RSRs is sufficient?

		Response Percent	Response Count
Yes		23.9%	17
No		76.1%	54
		answered question	71
		skipped question	72

# DEEP Remediation Division - Background Guidance Survey



**If your answer to question 2 was no, what are your suggestions for improvement?**

	<b>Response Count</b>
	46
<b>answered question</b>	<b>46</b>
<b>skipped question</b>	<b>97</b>

**Page 2, Q1. If your answer to question 2 was no, what are your suggestions for improvement?**

1	urban fill issues	May 14, 2012 4:28 PM
2	recognize published information on site-wide occurring metals	May 10, 2012 2:46 PM
3	Need to address issues due to heterogeneity of soil and/or locations especially when dealing with metals (ie. arsenic) which may be naturally occurring and display elevated concentrations in localized areas and thereby just because one or a few upgradient locations are not elevated, doesn't mean its not naturally occurring. This then translates to localized groundwater concentrations in the vicinity of those localized soil areas. The topic of background may be a good location in the proposed transformed regs to address compounds which are not considered chemicals of concern but have detections and even if they are chemicals of concern (ie a waste oil tank was on-site) they aren't elevated to the point that it appears they are actually associated with a release.	May 9, 2012 9:25 AM
4	Providing concentration ranges for common COCs. Provide mapping of know urban fill areas.	May 9, 2012 8:39 AM
5	anthropogenic/incidental sources not related to site releases to be included	May 8, 2012 12:39 PM
6	Need better definition of natural conditions	May 8, 2012 10:52 AM
7	Provide guidance on statistical determination of background for soil and ground water as well as wetland sediments.	May 3, 2012 7:50 PM
8	More clarity regarding how to actually achieve	May 3, 2012 3:54 PM
9	Clear, concise and easily understood definitions. Ones that transcend all programs.	May 3, 2012 1:24 PM
10	The definition of "general geographic vicinity" for soil, in particular, could be clarified. In addition, some presumptive background levels would be useful. Otherwise, we have to prove the negative, by sampling outside of release areas.	May 2, 2012 2:13 PM
11	Clarify guidance and simplify sampling requirements.	May 1, 2012 10:08 AM
12	Utilizing previous studies. Urban conditions should also be utilized. i.e. previously placed fill.	May 1, 2012 9:07 AM
13	there should be some published ranges of substances that are universally accepted as background levels that require no further evaluation	Apr 30, 2012 12:45 PM
14	more clearly define "background" when it is appropriate to use and how to gather the information so that there can be a comparisson	Apr 30, 2012 12:06 PM
15	Need to adjust background to include Urban fill, especially if placed on site legally.	Apr 30, 2012 10:55 AM
16	I feel it should be in more depth.	Apr 30, 2012 10:20 AM
17	Publish a list of background concentrations from the existing data available (which should consist of a lot of data)	Apr 30, 2012 8:15 AM
18	provide state background numbers and detailed guidance on methodology for	Apr 29, 2012 8:41 AM

**Page 2, Q1. If your answer to question 2 was no, what are your suggestions for improvement?**

	developing site-specific numbers for various types of sites/contaminants etc. Consider reduced requirements for smaller low risk sites	
19	Background discussion should include soil, fill, and ground water scenarios with attention to typical constituents found in each (i.e. metals in soil or fill material).	Apr 27, 2012 5:40 PM
20	Laboratory method detection limits need to be specified for background conditions. I often see high method detection limits that are used to indicate background, although at lower detection levels, there are detectable concentrations. Also I think the issue of Background should address a minimum distance from a release area.	Apr 27, 2012 2:36 PM
21	Metals is obvious but definitions and methods for handling detections derived ubiquitous anthropogenic materials such as asphalt and the occurrence of PAHs and ETPH need to be addressed	Apr 27, 2012 1:06 PM
22	As long as DEEP issues guidance as to what level of sampling and analysis is sufficient to determine what constitutes background conditions, including urban and historically industrialized areas, the language in the regulations is sufficient.	Apr 27, 2012 11:47 AM
23	GW background needs to specify similar hydrogeochemical environment either regulation or guidance needs to address issue of releases into fill, or sites with fill where no unaffected natural soil is available/comprtable	Apr 27, 2012 11:37 AM
24	Recognize EPA background values for metals. Recognize published background concentrations for certain PAHs.	Apr 27, 2012 10:21 AM
25	Better assessment of the effects of asphalt on the concntrations of petroleum constituents in soil	Apr 27, 2012 10:06 AM
26	There is no discussion or guidance on how to calculate background. Nor is there discussion on the issues one should take into consideration when evaluating background conditions.	Apr 27, 2012 10:05 AM
27	A very brief DEEP document could define what "background" is for the purpose of evaluations under the RSR and the solid waste regulations (clean fill). This guidance should take into account the urban nature of many areas of Connecticut and antropogenic sources such as land use (pavement, roads, etc.) that can cause soil to contain severaal substances at levels above natural background levels. I think published (USGS) data is adequate for determining background levels for metals. A value such as the 95th percentile level from the published data could be used to determine what is background. MassDEP has developed background levels for PAHs.	Apr 27, 2012 9:44 AM
28	Better define concentrations for naturally coccurring metals in soil and groundwater. Better define background concentrations of PAHs in soil in urban areas.	Apr 27, 2012 9:38 AM
29	A well defined guidance will be helpful.	Apr 27, 2012 9:18 AM
30	further discuss how we determine background. Establish actual background concentrations for metals for various regions of the state.	Apr 27, 2012 9:09 AM

**Page 2, Q1. If your answer to question 2 was no, what are your suggestions for improvement?**

31	The definition is too general and should not require sampling outside release areas. There is enough information at USGS and DEP to develop acceptable background ranges for metals and PNAs.	Apr 27, 2012 9:01 AM
32	Soil contains naturally occurring concentrations of heavy metals and groundwater, the fact needs to be more fully realized in the RSRs.	Apr 27, 2012 8:20 AM
33	More guidance on determining background is required. In addition, methods need to be allowed when "background" soil cannot be identified. In an urban or highly developed area it is very unlikely to find an undisturbed location with similar soil that would allow for determination of background concentrations.	Apr 27, 2012 8:11 AM
34	Allowance for use of "typical" background values for Connecticut, as opposed to collecting site specific release areas "not within any other release area". Some sites have release areas across the site, so this can't technically be done. Massachusetts publishes and allows the use of typical values for metals and PAHs.	Apr 27, 2012 8:09 AM
35	I think the definition in the RSRs is sufficient, but I think some guidance is needed on how to determine background for both soil and groundwater.	Apr 27, 2012 8:09 AM
36	Additional discussion on naturally occurring compounds like metals or elevated concentrations of compounds due to site-specific situations like elevated arsenic in groundwater due to naturally reducing conditions	Apr 27, 2012 7:55 AM
37	Define background concentrations by COC (e.g., see MA)	Apr 27, 2012 7:52 AM
38	Cleared discussion	Apr 26, 2012 7:04 PM
39	There should be state-wide background levels for PAHs.	Apr 26, 2012 6:38 PM
40	1) Need to accommodate background conditions in groundwater other than what comes across the upgradient property line, e.g., on-site Acid Rock Drainage (ARD) due to natural processes leading to on-site generation of dissolved metals (e.g., arsenic) at concentrations exceeding criteria. Similarly, other natural processes that cause on-site generation of substances of concern, e.g., cyanide production due to activity of cyanobacteria in wet soils. 2) It is too simplistic to require samples from the same soil horizon from outside of any AOC for establishing background conditions. You don't know that you need to establish "background" until you've done Phase II level work (which naturally targets AOCs only), and it is unnecessarily burdensome to be required to go back to do non-AOC sampling and evaluation just because naturally-occurring substances are detected in the Phase II samples. For a particular Substance of Concern, it could be legitimate to allow inspection of the Phase II data alone, to recognize narrow-range clusters of concentrations as indicative of natural occurrence as contrasted with evident high-value outliers possibly indicative of contamination occurrence (keeping in mind that similar concentrations of a substance in soils from different AOCs would likely reflect a natural occurrence and much less likely a fluke of contamination levels being similar in different AOCs). There are statistical tests for outliers, e.g., ASTM E178 dealing with "Z scores", but since often we are just burdened with "proving the negative" in cases where there is no affirmative evidence that concentrations are due to contamination rather than natural occurrence I think simple inspection and	Apr 26, 2012 6:36 PM

**Page 2, Q1. If your answer to question 2 was no, what are your suggestions for improvement?**

professional judgment can suffice in many, if not most, instances....provided there is sufficient guidance to inform the professional judgment.

41	The definitions of soil and groundwater background are good and generally sufficient. Perhaps a guidance on the methods to determine background concentrations would be appropriate. Several other states have such guidance or methods written into their regulations.	Apr 26, 2012 6:14 PM
42	I believe that further clarification is necessary. In particular the result of the urban fill workgroup will be important. Part of this may be handled better by guidance, like MADEP ORS' Technical Update on background values for metals and PAH in "natural" and "soil containing coal ash or wood ash" (backtu.pdf )	Apr 26, 2012 6:10 PM
43	an addendum containing a collection of background soil concentrations. This may entail publishing a document or database on CT background soil concentrations. Many investigations submitted to DEEP for review include samples of background soil concentrations.	Apr 26, 2012 5:36 PM
44	Too complex. Should be simplified and streamlined. I would also consider always using the term "background" consistently and not interchanging it with "naturally occurring"	Apr 26, 2012 5:27 PM
45	One of the problems is that interpretation of CTDEEP has changed over time. Unfortunately, I think CTDEEP is not clear on what background is (as a whole); as I just recently heard conflicting interpretations at a meeting presented by CTDEEP. This is a frustration of the regulated community.	Apr 26, 2012 5:27 PM
46	I think that a guidance document outlining the process that you want to see would be most helpful.	Apr 26, 2012 5:20 PM

# DEEP Remediation Division - Background Guidance Survey



In what areas would guidance on determining background conditions be useful (check all that apply)?

		Response Percent	Response Count
Soil characterization		66.2%	47
<b>Naturally occurring soil conditions</b>		<b>88.7%</b>	<b>63</b>
Groundwater characterization		43.7%	31
Naturally occurring groundwater conditions		73.2%	52
Upgradient groundwater conditions		47.9%	34
Metals		83.1%	59
		<b>answered question</b>	<b>71</b>
		<b>skipped question</b>	<b>72</b>

# DEEP Remediation Division - Background Guidance Survey



Would you find a checklist for evaluating background conditions useful?

		Response Percent	Response Count
Yes		62.0%	44
No		38.0%	27
		answered question	71
		skipped question	72

# DEEP Remediation Division - Background Guidance Survey



If you answered yes to question 5, what items would you include in a checklist?

	Response Count
	27
answered question	27
skipped question	116

**Page 2, Q1. If you answered yes to question 5, what items would you include in a checklist?**

1	DEEP minimum expectations, considerations, appropriate env settings to consider (e.g. urban), etc.	May 8, 2012 12:39 PM
2	natural vs background; statistical confidence	May 8, 2012 10:52 AM
3	Steps for determining background for each media in 4 above.	May 3, 2012 7:50 PM
4	The specific steps required for determination.	May 1, 2012 10:08 AM
5	distance from "source" urban setting	May 1, 2012 9:07 AM
6	checklist sounds too prescriptive, i.e., this evaluation should be based on professional judgement and should not rely on being able to check off a certain number of boxes on a form	Apr 30, 2012 12:45 PM
7	Stratigraphy (different units), COCs, sampling density	Apr 30, 2012 11:19 AM
8	Minimum number of samples for each condition.	Apr 30, 2012 10:55 AM
9	Acceptable scenarios for complying with background condition issues.	Apr 30, 2012 8:37 AM
10	technical information required to support determination of site specific values, soil types, soil and groundwater conditions, upgradient source(s) information	Apr 29, 2012 8:41 AM
11	Presence/absence of fill materials or asphalt fragments in soil. Minimum of 3 soil samples, collected from separate locations on site. Has the overburden stratigraphy been adequately investigated to determine fill and natural soil horizons? Has ground water flow been confirmed at the site? Is the monitoring well network sufficient to determine upgradient, off-site conditions? Are the wells screened at the correct depth intervals to evaluate potential impacts entering the site? Has a Phase I ESA or other investigation, identified an upgradient threat to site ground water quality?	Apr 27, 2012 5:40 PM
12	method detection limits per analyte suite adjacent property GW classification ranges for naturally occurring metals concentrations in CT	Apr 27, 2012 2:36 PM
13	Everything the CTDEEP requires	Apr 27, 2012 1:06 PM
14	Checklists are great, but a guidance document needs to go with it to explain DEEPs position and fill in the details you can't get from a checklist.	Apr 27, 2012 11:47 AM
15	how to determine soil is of similar character number of samples/statistical approach DEEP finds acceptable estimate of range of contaminants found to be background, to avoid unproductive background efforts.	Apr 27, 2012 11:37 AM
16	Criteria, not necessarily numerical, needed to define background limits.	Apr 27, 2012 10:08 AM
17	Historical use of the area Relevant geologic conditions	Apr 27, 2012 10:06 AM
18	Concentrations that are typical of natural background and urban background for soil. For groundwater constituents and concentrations that are naturally occurring, typical concentrations and geologic formations such materials are found in. Arsenic, manganese, etc.	Apr 27, 2012 9:44 AM

**Page 2, Q1. If you answered yes to question 5, what items would you include in a checklist?**

19	See Item 3	Apr 27, 2012 9:38 AM
20	Lead paint in demolished buildings vurses background in soil	Apr 27, 2012 9:18 AM
21	steps for evaluating, regional concentrations	Apr 27, 2012 9:09 AM
22	A listing of alternative methods for determining soil background and those items that would need to be evaluated for these methods.	Apr 27, 2012 8:11 AM
23	geology of background area vs. release area, quantity of samples needed, detection limits, confidence that background samples are truly outside release area based on conceptual site model, how well is groundwater flow characterized	Apr 27, 2012 8:09 AM
24	Items/topics that will affect my argument for background conditions, i.e., what the regulator is evaluating/looking for	Apr 27, 2012 7:55 AM
25	see prior checkboxes	Apr 27, 2012 7:52 AM
26	Soil characterstics release area, soil characteristics background areas, no of release area soil samples, no of background soil samples, available literature sources for area, groundwater sources on site, groundwater sources UG	Apr 27, 2012 6:45 AM
27	I would prefer that CTDEEP not provide "guidance"; as when it comes out CTDEEP is forced to provide ultra conservative interpretations which leaves little flexibility when identifying background.	Apr 26, 2012 5:27 PM

# DEEP Remediation Division - Background Guidance Survey



Specifically, what issues do you have when determining background and how do you resolve these issues?

	Response Count
	43
answered question	43
skipped question	100

**Page 2, Q1. Specifically, what issues do you have when determining background and how do you resolve these issues?**

1	Submittals for most sampling data for environmental media is submitted to the CTDEEP on a regular basis. Statewide mapping of metals data (and maybe even ETPH which seems to show up everywhere even when there are no AOCs) would be a valuable tool to everyone as far as determining background conditions.	May 9, 2012 9:25 AM
2	Currently, this is scientifically cumbersome to establish background for a site, only to show that no releases other releases are present.	May 9, 2012 8:39 AM
3	obtaining representative soil from unimpacted areas in urban setting, total vs. dissolved metals via split filtered/unfiltered sampling	May 8, 2012 12:39 PM
4	enough data to demonstrate ubiquitous nature	May 8, 2012 10:52 AM
5	Just about any time a soil sample is analyzed for metals the lab will detect metals. It seems that the detections will automatically result in the DEEP requiring that a background sample be collected, regardless of how low the concentrations are or how obvious it is that the metals are attributable to background conditions.	May 7, 2012 9:31 AM
6	Urbanized sites where no natural/undisturbed soil areas can be defined. In these cases, either off-site locations were used or the body of data has been evaluated to discern background.	May 3, 2012 1:37 PM
7	\$. Funds for proving "background" or upgradient conditions. With clarity this \$ could be better spent.	May 3, 2012 1:24 PM
8	I find that LEP's and DEEP staff often disagree about background conditions, for example, whether arsenic in soils is naturally occurring and, if so, at what levels.	May 2, 2012 2:13 PM
9	Sites that we developed many years ago and contain fill that was impacted with metals or other chemicals never used on the property should be allowed be determined background and not require remediation. It is not reasonable to dig up an entire site with these issues.	May 1, 2012 10:08 AM
10	Certain substances, most notably metals, are present in natural soils and rock. Having to empirically prove that they are not derived from a release seems unnecessary. Similarly, low levels of PAHs and even ETPH can be found almost anywhere either due to interference from things like organic matter and asphalt. There should be some recognition that the environment is not always pristine and that low levels of certain substances can occur in many settings that are not associated with specific releases. There should be some recognition and acceptance of this on the part of regulators and there does not have to be such effort and cost associated with proving this in every case.	Apr 30, 2012 12:45 PM
11	1. High background arsenic values in soil - document background concentrations as much as possible, supplement that w/ local geology (e.g., identify/document the presence of arsenopyrite in local host rocks). 2. Freshwater vs. brackish water vs. saltwater "naturally-occurring" metals concentrations (report and compare site COC concentrations to typical brackish and saltwater COC concentrations).	Apr 30, 2012 11:19 AM

**Page 2, Q1. Specifically, what issues do you have when determining background and how do you resolve these issues?**

12	Impacts of PAHs and metals from street runoff coming onto property, urban fill on property with elevated metals and PAHs, elevated natural soil PMC lead exceedances when total lead is low. These are all hard to resolve without removing the offending materials. If natural lead concentrations show no release, I suggest ignoring the PMC exceedance as "background".	Apr 30, 2012 10:55 AM
13	Main issue is what is background versus elevated conditions on a site, usually metals in soil. I typically resolve this issue with the collection of further soil samples, which can be expensive for a small business.	Apr 30, 2012 8:15 AM
14	number of samples by soil horizon to be representative and valid for different parameter types. Consider a Downgradient Property Status approach like MA for groundwater	Apr 29, 2012 8:41 AM
15	Metals/PAH concentrations in soil = Additional sampling or polluted fill evaluations Upgradient evaluations for ground water, well installations and sampling	Apr 27, 2012 5:40 PM
16	May be difficult to obtain all necessary data and cost prohibitive also	Apr 27, 2012 2:36 PM
17	definitions and methods for handling detections derived ubiquitous anthropogenic materials such as asphalt and the occurrence of PAHs and ETPH need to be addressed; also pesticides	Apr 27, 2012 1:06 PM
18	See 13 below.	Apr 27, 2012 11:47 AM
19	in groundwater, how do you evaluate temporal variation in between-well samples	Apr 27, 2012 11:37 AM
20	Very low concentration of VOC's that are not routinely detected.	Apr 27, 2012 11:08 AM
21	See the response to Question 3	Apr 27, 2012 10:21 AM
22	We collect soil samples from areas of native fill; those areas noted to be upgradient and not impacted by Site activities.	Apr 27, 2012 10:08 AM
23	Background conditions can be the result of numerous events both manmade and natural. Background conditions should be coordinated with risk assessment to evaluate the potential for harm to health and safety	Apr 27, 2012 10:06 AM
24	Evaluating data for compliance with criteria in the RSRs is threshold based - samples are either above or below criteria; samples exceed or do not exceed. Evaluation of background conditions involves data that falls over a range or distribution. Evaluating a sample set's distribution and determining if one is looking at background sources of impact requires more than "plugging & chugging" data into an equation.	Apr 27, 2012 10:05 AM
25	There are many ways to do this and I do what I think is technically correct. There is no guidance for work under the RSRs. I have requested a background determination from DEP to determine if surplus soil from a construction project is clean fill or not. The response was that such a determination is the generator's responsibility. Background is needed not only for RSR evaluation, but also for determining what is clean fill versus a solid waste. I think using published information is adequate and there is no need (in most cases) to determine site-	Apr 27, 2012 9:44 AM

**Page 2, Q1. Specifically, what issues do you have when determining background and how do you resolve these issues?**

	specific background levels. Saying lead below 50 ppm (published) vs 15 pmm (site specific) is adequate for defining impacted areas that require delineation.	
26	See Item 3. Typically I take the most conservative approach - that they are not BG.	Apr 27, 2012 9:38 AM
27	There is no upgradient area to collect samples, Evaluate the on-ste data in areas that are not impacted as well as COCs, upgradient PRPs, distribution of exceedances, and bedrock chemistry.	Apr 27, 2012 9:36 AM
28	Fill materials with high concentration of metals covering a wide area would it be treated as background?	Apr 27, 2012 9:18 AM
29	It cost money and makes no sence because of the existng data with USGS and DEEP.	Apr 27, 2012 9:01 AM
30	In order to determine if a release of naturally occuring consistuents has occurred you need to conduct background sampling and conduct a statistical evaluation to determine what the upper range of background concentrations is. There are several ways to conduct this evaluation.	Apr 27, 2012 8:20 AM
31	Primary issue is finding naturally occuring soils in a highly-developed area. It is very difficult to find undisturbed soil. And to be totally honest, a property owner would be foolish to allow someone onto their property to collect soil samples for characterization. This applies to groundwater as well.	Apr 27, 2012 8:11 AM
32	It's important to be confident that background soil samples are truly outside a release area and background monitoring wells are truly upgradient.	Apr 27, 2012 8:09 AM
33	Arguing naturally occurring PAHs and metals are background conditions despite RSR exceedances that cannot be "remediated".	Apr 27, 2012 7:55 AM
34	Arsenic, TPH, other metals	Apr 27, 2012 7:52 AM
35	How to justify what areas "aren't in another release area" how many samples for bkground are sufficient	Apr 27, 2012 6:45 AM
36	None. The determination of background for soils is straight forward but of limited value as it is rarely necessary. Determination of background conditions for groundwater is more often necessary but is equally straight forward.	Apr 26, 2012 7:38 PM
37	Are my background results really background?	Apr 26, 2012 7:04 PM
38	See answer to #3, above	Apr 26, 2012 6:36 PM
39	Identifying the appropriate methods and process to determine a background concentration, especially for metals.	Apr 26, 2012 6:14 PM
40	The most pressing issue is the problem of obtaining access to adjacent, unrelated property, in order to collect soil samples to determine "background" for my site. Because the RSR definition of "background" contains the words "but not within any other release area", property owners are reluctant to allow you to sample their soil, because it is a "Catch-22" situation ("you are damned if you do	Apr 26, 2012 6:10 PM

**Page 2, Q1. Specifically, what issues do you have when determining background and how do you resolve these issues?**

and damned if you don't"): if you don't find contamination (unlikely in developed areas, next to impossible in urban areas) it would be OK, but since you are going to detect something (metals at a minimum) the conclusion DEEP comes to is that the contamination shows that the "background" location is a release area (which means the data is no help to me, and means that the property owner now has confirmed identification of contamination on their property. No reputable attorney will allow their client to grant access for "background" soil or groundwater sampling.

41	arsenic - natural vs. elevated	Apr 26, 2012 5:42 PM
42	Either sample offsite (very difficult due to access issues), or rely on very limited, regional scale background publications (i.e., USGS publications).	Apr 26, 2012 5:36 PM
43	none	Apr 26, 2012 5:27 PM

# DEEP Remediation Division - Background Guidance Survey



Would guidance on distinguishing naturally occurring vs. upgradient conditions for soil be useful?

		Response Percent	Response Count
Yes		74.6%	53
No		25.4%	18
answered question			71
skipped question			72

# DEEP Remediation Division - Background Guidance Survey



**Would guidance on distinguishing naturally occurring vs. upgradient conditions for groundwater be useful?**

		Response Percent	Response Count
Yes		78.9%	56
No		21.1%	15
answered question			71
skipped question			72

# DEEP Remediation Division - Background Guidance Survey



## At what percentage of sites do you use the upgradient policy?

		Response Percent	Response Count
0-10%		53.5%	38
11-25%		29.6%	21
26-50%		8.5%	6
51-75%		2.8%	2
76-100%		5.6%	4
<b>answered question</b>			<b>71</b>
<b>skipped question</b>			<b>72</b>

# DEEP Remediation Division - Background Guidance Survey



## At what percentage of sites do you gather soil samples outside of release areas?

		Response Percent	Response Count
0-10%		21.1%	15
11-25%		15.5%	11
26-50%		12.7%	9
51-75%		14.1%	10
<b>76-100%</b>		<b>36.6%</b>	<b>26</b>
<b>answered question</b>			<b>71</b>
<b>skipped question</b>			<b>72</b>

# DEEP Remediation Division - Background Guidance Survey



**Has difficulty in determining background conditions caused delays in remediation and/or verification at sites you were involved with?**

		Response Percent	Response Count
Yes		62.0%	44
No		38.0%	27
answered question			71
skipped question			72

# DEEP Remediation Division - Background Guidance Survey



If you answered yes to question 12, what was the cause of the delay?

	Response Count
	34
answered question	34
skipped question	109

**Page 2, Q1. If you answered yes to question 12, what was the cause of the delay?**

1	proving the negative, as always. Naturally occurring metals occur at different concentrations, some over the standards. Widespread occurrences of metals at concentrations above criteria, yet clearly not tied to site operations, present challenges.	May 10, 2012 2:46 PM
2	even though the upgradient points were "Clean", the on-site concentrations are believed to be due to background conditions.	May 9, 2012 9:25 AM
3	Elaborate studies of metals in background soil/groundwater have resulted in follow-up soil sampling and long-term groundwater monitoring.	May 9, 2012 8:39 AM
4	see comments above	May 8, 2012 12:39 PM
5	insufficient data	May 8, 2012 10:52 AM
6	Having to go back to collect more background data even though the metal concentrations were typical of natural soil in CT and even though it was obvious that they were attributable to background conditions.	May 7, 2012 9:31 AM
7	No method to determine background for wetland sediments and urban fill material.	May 3, 2012 7:50 PM
8	Regulators, clients reluctant to "prove" background conditions, limited \$ sources	May 3, 2012 1:24 PM
9	The very high burden of proof applied by DEEP staff to the question of whether a level is background.	May 2, 2012 2:13 PM
10	Impact was not found off site, yet chemicals of concern were never used on the property.	May 1, 2012 10:08 AM
11	DEEP's unwillingness to accept the fact that low levels of metals can occur naturally in soils and having to go out and collect random samples for metals analysis, the results of which can be problematic if you happen to find lower levels,	Apr 30, 2012 12:45 PM
12	Unable to collect background samples or prove that the use of background is appropriate	Apr 30, 2012 12:06 PM
13	1. Convincing regulators that background conditions were adequately known or had been sufficiently established. 2. Off-site access. 3. Inability to identify suitable background sampling locations.	Apr 30, 2012 11:19 AM
14	Uncertainty of extent and whether impacts are due to release or natural or urban fill.	Apr 30, 2012 10:55 AM
15	Yes, delay that extended the investigation and delayed the remediation, again typically metals in soil.	Apr 30, 2012 8:15 AM
16	concerns about how much sampling was appropriate, extent of upgradient source characterization	Apr 29, 2012 8:41 AM
17	Caused the client to stall the project, no clear path. Also offsite property owners usually do not want their property tested for fear of devaluation of their land.	Apr 27, 2012 2:36 PM

**Page 2, Q1. If you answered yes to question 12, what was the cause of the delay?**

18	parking lot AOCs, historic pesticide application AOCs	Apr 27, 2012 1:06 PM
19	In historically/heavily urbanized/industrialized areas, obtaining a "background" soil sample on site can be impossible. In the past we've used statistical methods to determine what constitutes a release at these sites, but it's always a challenge to get timely review and approval from DEEP due to lack of trained staff. The last approval took almost two years due to staff changes and a reluctance on DEEP's part to devote the time and effort (the material was outside most DEEP staff's area of expertise) required to review our submission.	Apr 27, 2012 11:47 AM
20	Time required to document the background condition	Apr 27, 2012 11:08 AM
21	It just adds another step in the written argument and w/out any clear guidance or recognition of naturally occurring background concentrations it is subject to interpretation.	Apr 27, 2012 10:21 AM
22	Additional delay and expense required to collect additional data to "prove" results are background instead of relying on a good CSM and a smaller background data set.	Apr 27, 2012 10:05 AM
23	an audit	Apr 27, 2012 9:44 AM
24	Lack of data.	Apr 27, 2012 9:36 AM
25	Determining whether to treat as background or contamination	Apr 27, 2012 9:18 AM
26	Having to gain access agreements to an off site location to sample soils to determine background.	Apr 27, 2012 9:01 AM
27	Having to spend time and money collecting soil samples for chromium when the concentrations were low and obviously not from a release. DEEP forced the collection of more samples because samples for chromium were not obtained outside of the possible, and extremely minor, chromium release area. Common sense and a little knowledge of typical chromium concentrations in CT would have been enough to show that the detections were clearly background (which is what the \$3,000 in more testing showed anyway).	Apr 27, 2012 8:09 AM
28	Coming to agreement with regulators on what background and/or up gradient conditions are	Apr 27, 2012 7:55 AM
29	Primarily metals in GW	Apr 27, 2012 7:52 AM
30	The need to assert validity of alternatives to the simplistic and unduly restrictive prescription of the current RSR treatment of background.	Apr 26, 2012 6:36 PM
31	A typical example would be soil at the up- or cross-gradient property boundary of a service station site, removed from any release area, and possibly contaminated with metals or PAH, but with no known or identifiable source (likely urban fill soil). Since the upgradient policy cannot be used with soil, and applicable RSR soil criteria are exceeded, some remedial effort (physical or administrative) is required, when, in objective reality, it should not be because the soil conditions are likely over a wider area and are the "prevailing conditions" and should be considered background at the site. Untold billions of dollars are	Apr 26, 2012 6:10 PM

**Page 2, Q1. If you answered yes to question 12, what was the cause of the delay?**

being spent annually making soil at gas stations and dry cleaners safe for children to eat while other environmental issues go unfunded. It is not an efficient or effective allocation of resources.

32	uncertainty re naturally occurring vs. human-influenced	Apr 26, 2012 5:42 PM
33	Note that for question 4; I checked an answer just because I could not submit this survey. As I mentioned before, I do not recommend that CTDEEP provide guidance.	Apr 26, 2012 5:27 PM
34	DEEP	Apr 26, 2012 5:15 PM

# DEEP Remediation Division - Background Guidance Survey



**What have been the most challenging aspects of determining and cleaning up to background conditions?**

	<b>Response Count</b>
	46
<b>answered question</b>	<b>46</b>
<b>skipped question</b>	<b>97</b>

**Page 2, Q1. What have been the most challenging aspects of determining and cleaning up to background conditions?**

1	Collecting information on natural substances versus anthropogenic. I had trouble finding information on natural sources of phosphorous/phosphate for a site where phosphate was used to clean laboratory glassware.	May 29, 2012 5:04 PM
2	arsenic	May 9, 2012 9:25 AM
3	1-determining samples are outside of a release area, but still containing COCs 2-large number of samples required 3-stakeholder buy-in of the necessity for a scietific study to prove a negative.	May 9, 2012 8:39 AM
4	no longer necessarily an LEP-only decision...DEEP review and approval delays process	May 8, 2012 12:39 PM
5	what really is background.	May 8, 2012 10:52 AM
6	1) The RSR criteria for some compounds (i.e., arsenic) are lower than some naturally occurring levels, which has actually resulted in some very large costly cleanups. 2) Everyone seems afraid to test for PAHs because they are nearly everywhere in developed areas of the state and yet the RSR criteria for them are extremely low and can be difficult to address without active remediation (which encourages more development of green fields).	May 7, 2012 9:31 AM
7	Need for statistical methodology DEEP would accept as well as13 above.	May 3, 2012 7:50 PM
8	Having all project stakeholders agree to what this is early on in the process.	May 3, 2012 1:24 PM
9	reaching agreement with DEEP staff regarding whether a condition is, in fact, background.	May 2, 2012 2:13 PM
10	meeting background levels	May 1, 2012 2:55 PM
11	Widespread metals impacts to soil.	May 1, 2012 10:08 AM
12	The concentrations of metals inherent in soils depends on the native rock and sediments from which the soil was derived. It will also vary with soil type, origin of soil (i.e., clean fill), depth of soil, and many other factors. Establishing one "background" concentration that becomes the yardstick by which to determine if other detections are background or not is difficult. There may, in fact, but multiple concentrations on any site that could concievably come up as your "background" concentration.	Apr 30, 2012 12:45 PM
13	Determining background conditions is not all that challenging. Cleaning up to background conditions is nearly impossible (by definition).	Apr 30, 2012 11:19 AM
14	LNAPL coming onto site, cannot be addressed on-site without making the situation worse by pulling more material toward you. Not having data from the upgradient side to confirm the conclusion that it is an offsite source.	Apr 30, 2012 10:55 AM
15	Whether DEEP would approve my analysis for background conditions	Apr 30, 2012 8:37 AM
16	Determining background would be elevated metals that are well below the established RSRs, yet a soil sample or two have sightly elevated concentrations of metals.	Apr 30, 2012 8:15 AM

**Page 2, Q1. What have been the most challenging aspects of determining and cleaning up to background conditions?**

17	commingled plumes, proving naturally occurring conditions, using alternative groundwater approaches for PMC exceedances	Apr 29, 2012 8:41 AM
18	Financial	Apr 27, 2012 2:36 PM
19	off-site data	Apr 27, 2012 1:06 PM
20	Lack of guidance on how the agency would prefer that one calculate background, and the inability to identify areas on site which are both unimpacted by any on-site releases, as well as unimpacted by regional factors.	Apr 27, 2012 11:47 AM
21	discrimination of background for a release in an area of fill soil	Apr 27, 2012 11:37 AM
22	Convincing DEEP	Apr 27, 2012 11:08 AM
23	Metals and PAHs	Apr 27, 2012 10:21 AM
24	Proving to the CTDEEP your logic in defining background	Apr 27, 2012 10:08 AM
25	The background concentrations are too low or affected by non-release factors and there is no ability to conduct risk assessment	Apr 27, 2012 10:06 AM
26	Lack of acceptable and generally accepted procedures for assessing background. Use of 20 as a threshold for sample size when smaller sample sizes can still be statistically robust. Lack of understanding that the 95% UCL is a tool to help describe a sample set's distribution.	Apr 27, 2012 10:05 AM
27	VOCs in groundwater in a GA.	Apr 27, 2012 9:44 AM
28	Clarity, certainty	Apr 27, 2012 9:38 AM
29	I think the guidance documents, if brief, would be useful in providing the DEEP and consultant a basis for working with each other, so that each party new the other's expectations.	Apr 27, 2012 9:36 AM
30	When background exceeds the criteria	Apr 27, 2012 9:18 AM
31	Metals are naturally occurring and therefore it seems a waste of resources to collect a large number of samples to document naturally occurring compounds when detected at low concentrations.	Apr 27, 2012 9:09 AM
32	Determining background for metals in soil.	Apr 27, 2012 9:01 AM
33	cost and technical impracticability	Apr 27, 2012 8:09 AM
34	ensuring that samples used to establish background truly are representative of background	Apr 27, 2012 8:09 AM
35	Consistency among CTDEEP regulators. I wish the policies were spelled out so I would know where I stand without laborious negotiations or educating regulator about fate and transport of individual compounds, ie, mobility or lack thereof.	Apr 27, 2012 7:55 AM
36	80% of the cost to get the last 20% of impacts, even if there is no risk.	Apr 27, 2012 7:52 AM

**Page 2, Q1. What have been the most challenging aspects of determining and cleaning up to background conditions?**

37	evaluating data ranges for bkg samples vs. release area where there is significant data spread.	Apr 27, 2012 6:45 AM
38	N/A	Apr 26, 2012 7:38 PM
39	Are my results really background? Why do background results vary so much? My clients don't understand what background is.	Apr 26, 2012 7:04 PM
40	Overcoming the simplistic and unduly restrictive prescription of the current RSR treatment of background	Apr 26, 2012 6:36 PM
41	Identifying the methods and process acceptable to DEEP to develop background concentrations	Apr 26, 2012 6:14 PM
42	1. Getting access to adjacent properties to collect soil and groundwater samples; 2. getting data that DEEP will agree is "background" and not "any other release area".	Apr 26, 2012 6:10 PM
43	Establishment of stakeholder agreement on background concentrations (or ranges of concentrations)	Apr 26, 2012 5:42 PM
44	metals, also naturally occurring ETPH in soil	Apr 26, 2012 5:42 PM
45	Proving that variations in naturally occurring metals are natural variations, rather than due to a release.	Apr 26, 2012 5:36 PM
46	It is often unrealistic to reach in GA areas when you are dealing with lingering VOCs	Apr 26, 2012 5:27 PM

# DEEP Remediation Division - Background Guidance Survey



What existing literature / guidance documents (not including DEEP's) on background do you find useful?

	Response Count
	36
answered question	36
skipped question	107

**Page 2, Q1. What existing literature / guidance documents (not including DEEP's) on background do you find useful?**

1	EPA when I can find them.	May 29, 2012 5:04 PM
2	USGS mapping info.	May 9, 2012 9:25 AM
3	CA	May 9, 2012 8:39 AM
4	LSPA	May 8, 2012 10:52 AM
5	The Connecticut DEEP does not typically allow reliance on the literature without site-specific sampling.	May 7, 2012 9:31 AM
6	none	May 3, 2012 7:50 PM
7	What does it matter if DEEP doesn't endorse it? It's a so what.	May 3, 2012 1:24 PM
8	The MA DEP has published reports on background concentrations of metals and PAHs in urban settings and they have established certain background ranges for many substances.	Apr 30, 2012 12:45 PM
9	??	Apr 30, 2012 11:19 AM
10	unknown, DEEP does not accept general regional ranges for parameters, therefore have not pursued.	Apr 30, 2012 10:55 AM
11	Have used various risk based documents as reference to establish background to use for discussion in reports.	Apr 30, 2012 8:15 AM
12	USGS, MA, USEPA	Apr 29, 2012 8:41 AM
13	USEPA, other state agencies	Apr 27, 2012 5:40 PM
14	I usually only follow DEEP's as that is what applies in most of my sites.	Apr 27, 2012 2:36 PM
15	Not much as CTDEEP does not accept most literature references; collecting adjacent site data from CTDEEP file room is useful.	Apr 27, 2012 1:06 PM
16	DoD (Navy) has an extensive guidance on background determination	Apr 27, 2012 11:37 AM
17	EPA - Trace Chemical Content of Natural Soils MADEP - [Technical Update] Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil (1992).	Apr 27, 2012 10:21 AM
18	USGS Professional Paper 1270, Elemental Concentrations in Soil.....1984 NYSDEC background soil values	Apr 27, 2012 10:08 AM
19	IRIS MA MCP	Apr 27, 2012 10:06 AM
20	EPA's ProUCL software package and guidance. "Statistical Methods for Environmental Pollution Monitoring" by Richard O. Gilbert	Apr 27, 2012 10:05 AM
21	USGS, Sackette and Boerngen (1984)	Apr 27, 2012 9:44 AM
22	NYDEC, MADEP	Apr 27, 2012 9:38 AM

**Page 2, Q1. What existing literature / guidance documents (not including DEEP's) on background do you find useful?**

23	Lindsay, Willard. 1979. Chemical Equilibria in Soils. Wiley, pp.7-8	Apr 27, 2012 9:36 AM
24	Web Searches	Apr 27, 2012 9:18 AM
25	USGS	Apr 27, 2012 9:01 AM
26	Massachusetts guidance	Apr 27, 2012 8:09 AM
27	EPA risk documents	Apr 27, 2012 7:55 AM
28	MADEP	Apr 27, 2012 7:52 AM
29	MADEP background values, USGS literature	Apr 27, 2012 6:45 AM
30	Frink	Apr 26, 2012 7:38 PM
31	<a href="http://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1037&amp;context=soilsproceedings">http://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1037&amp;context=soilsproceedings</a> <a href="http://www.mass.gov/dep/cleanup/laws/backtu.pdf">http://www.mass.gov/dep/cleanup/laws/backtu.pdf</a>	Apr 26, 2012 6:38 PM
32	The academic literature on recognizing outliers, and geochemistry/biogeochemistry literature on natural processes that can operate locally to generate substances of concern	Apr 26, 2012 6:36 PM
33	other state guidance	Apr 26, 2012 6:14 PM
34	WSC 95-141 Guidance on Disposal Site Risk Characterization, section 2.3.1 Background WSC 04-160 Conducting Feasibility Evaluations Under the MCP section 9.3.3 Similar sorts of guidance from DEEP would be helpful.	Apr 26, 2012 6:10 PM
35	1) "Arsenic in Ground Water of the United States: Occurrence and Geochemistry" (Vol. 38, No.4-GROUND WATER-Julv-August 2000 (pages 589-604)) 2) "Geochemical Landscapes of the Conterminous United States— New Map Presentations for 22 Elements", U.S. Department of the Interior U.S. Geological Survey U.S. Geological Survey Professional Paper 1648 3) "Redox Processes and Water Quality of Selected Principal Aquifer Systems" by P.B. McMahon <sup>1</sup> and F.H. Chapelle <sup>2</sup> , Vol. 46, No. 2—GROUND WATER—March–April 2008 (pages 259–271)	Apr 26, 2012 5:36 PM
36	USGS	Apr 26, 2012 5:27 PM