GEORGIA INDUSTRY ENVIRONMENTAL COALITION

GIEC COMMENTS REGARDING

EPD'S "PROPOSED CORRECTIVE ACTION RULE"*

RELATIVE TO THE IMPLEMENTATION OF

THE HAZARDOUS SITE RESPONSE ACT (HSRA)

* The proposed rule was issued for public comment on April 1, 1994

I. GENERAL COMMENTS

SECTION 391-3-19-.02(2)(n) USE OF THE TERM "RELEASE"

Throughout the proposed corrective action rule, inconsistency exists in reference to the terms " a release" versus "the release". Release, as defined at Rule 391-3-19-.02(2)(m), refers in a generic sense to any release independent of whether it exceeds or does not exceed a reportable quantity, as defined at Rule 391-3-19-.02(2)(n). GIEC recommends defining the term "reportable release " to simplify the confusion throughout the rule. As a result, GIEC proposes that the term "release" be revised to refer to "reportable release", where appropriate.

SECTION 391-3-19-.05(4)(a) EXPANSION OF HSI DELISTING CRITERIA

As proposed in Section 391-3-19-.05(4)(a), a site may be removed from the HSI if the Director determines that the site had not had a release exceeding a reportable quantity at the time of listing the site on the HSI. This basically means that if a site was inadvertently placed on the HSI (that is the EPD made a mistake) then the Director can remove the site from the HSI. GIEC strongly recommends EPD allow for additional criteria for removal of a site from the HSI. In particular, a Class II site which has prepared a Compliance Status Report may be able to demonstrate through analytical data or additional site-specific information that the site does not exceed notification concentrations or the criteria for determining a reportable quantity. Unless otherwise determined by the Director that the site may pose a danger to human health or the environment, the site should be removed from the HSI. GIEC has recommended additional language be provided under Sections 391-3-19-.05(4)(c) and 391-3-19-.06(6)(b)

SECTION 391-3-19-.06 PROVIDE OPTION FOR COMPLIANCE STATUS REPORT APPROVAL BY THE DIRECTOR

Provisions under the Compliance Status Report for Class II sites [proposed Section 391-3-19-.06] are not provided for the approval or concurrence by the Director on the risk reduction standard approach selected for a site. Before extensive monetary resources are expended in the implementation of a compliance status investigation, businesses, particularly small businesses, may opt to receive approval or concurrence from the Director. GIEC therefore, recommends that the "option" be provided at the request of the responsible party to allow the Director the authority to approve the risk reduction.

SECTION 391-3-19-.06(1) APPLICABILITY OF CORRECTIVE ACTION UNDER HSRA TO SOLID WASTE MANAGEMENT UNITS

From the outset of HSRA rulemaking process, the EPD Director stated that it was his intention to apply HSRA corrective action technical requirements to solid waste management unit corrective action under RCRA. GIEC now requests that this be so stated within the proposed rule to the extent that it is not prohibited by Federal law and regulation. GIEC has provided proposed additional language under the specific comments which address the applicability of these rules to historical and current remedial actions conducted under Federal or other state programs

SECTION 391-3-19-.06(3)(b) SEQUENCE OF CORRECTIVE ACTION REQUIREMENTS

Referring to sequence of events in the proposed corrective action process at the time the Director calls for the compliance status report, there should be no presumption that corrective action will be required. Therefore, the only information to be required in a compliance status report should be that deemed necessary for the responsible party to certify compliance with any (or none) of the risk reduction standards. EPD has obviously proposed that compliance status reports shall contain much more than will be typically necessary to certify compliance or noncompliance with the risk reduction standards. In fact, EPD proposes that the compliance status report itself, must actually include a corrective action plan before the Director has determined that the site requires corrective action. This corrective action determination by the Director is directly required under the Act itself [O.C.G.A. §12-8-94(a)(2)]. Clearly, the Director must first determine and notify responsible parties of such corrective action requirements before any activities related to corrective action are imposed. On this basis, the proposed required content of the compliance status reports, 391-3-19-.06(3)(b), should be modified to clearly state that the content of the report must minimally include such information as necessary to determine compliance, or noncompliance, with any risk reduction standard. Any requirements associated with possible corrective action should only be imposed after the Director determines corrective action is required and so notifies all responsible parties. This sequence of events is clearly required under the Act itself [O.C.G.A. §12-8-96(a)] and the rules must therefore follow that same sequence.

SECTION 391-3-19-.06(3)(b)(8) PROVIDE OPTION TO SUBMIT CORRECTIVE ACTION PLAN WITH COMPLIANCE STATUS REPORT

As proposed under Section 391-3-19-.06(3)(b)(8), if a responsible party is not able to certify compliance with any of the risk reduction standards, then a corrective action plan must be submitted with the compliance status report before the Director has even determined that the site requires corrective action. GIEC believes that this requirement explicitly overreaches the Act itself. However, GIEC does find merit in allowing a responsible party the "option" to submit a corrective action plan with the compliance status report in an attempt to possibly expedite the corrective action process at the discretion of the responsible party. GIEC believes that the requirement to prepare a corrective action plan after the Director determines that corrective action is required would be within the intent of the Act itself.

SECTION 391-3-19-.06(4)(c) CERTIFICATION STATEMENT FOR COMPLIANCE WITH RISK REDUCTION STANDARDS AT CLASS II SITES

Again, GIEC believes that the minimum requirement to submit a corrective action plan with the compliance status report (if any of the risk reduction standards can not be met) goes beyond the intent of the Act. As such, the last sentence in the second paragraph beginning with "and that the corrective actions described in the plan(s) submitted pursuant to Items 8-10..." of the compliance status certification statement, as proposed in Section 391-3-19-.06(4)(c), should be deleted and similar language incorporated under Section 391-3-19-.06(7) of the proposed rules.

SECTION 391-3-19-.06(4)(c) CERTIFICATION STATEMENT FOR COMPLIANCE WITH RISK REDUCTION STANDARDS AT CLASS II SITES IS CONSIDERED A BLANKET CERTIFICATION FOR ALL REGULATED SUBSTANCES

The proposed certification statement provided in Section 391-3-19-.06(4)(c) is all encompassing for each risk reduction standard. That is, the certification statement, as written, implies compliance with the risk reduction standard for all soil and groundwater releases exceeding a reportable quantity, independent of the reportable release applicable to the site. GIEC feels the certification statement is too broad in scope and as such, is concerned that the certification statement will be foreseen as a blanket certification statement for all regulated substances.

SECTION 391-3-19-.06(5) TIME CONSTRAINTS UNDER PUBLIC PARTICIPATION

Under proposed Section 391-3-19-.06(5), references to "5 days" and "15 days", as worded, may impose an unacceptable time constraint on the responsible party during public participation. In many instances where "Day 1" does not begin on a Monday, the responsible party may in fact have as little as three days to comply with these requirements. GIEC therefore, recommends that EPD universally reference "5 business days" and "15 business days"; or "7 calendar days" and "21 calendar days" under this proposed section.

SECTION 391-3-19-.06(6)(c) DIRECTOR DISCRETION TO RECLASSIFY A SITE FROM CLASS II TO CLASS I

Under proposed Section 391-3-19-.06(6)(c), the Director may reclassify a site and designate it as needing corrective action when the Director has made a determination that a release "poses a danger to health and the environment," within the meaning of O.C.G.A. § 12-8-96(a). The Act only gives the Director the power to require corrective action for those releases that pose a present or future danger. Therefore, provisions (c) 1 and 2 of this Section should be deleted. Those provisions could be dealt with by adding a section that deals with the compliance status report deficiencies, and provide a 30-day (or whatever may be appropriate) time period within which the responsible party can correct the deficiencies, and if the deadline is not met, to include language to impose civil or criminal penalties.

Alternatively, Section (c) could be revised to allow the responsible party to submit notice in writing that he will not submit the compliance status report within the time period specified in Rule 391-3-19-.06(3)(a) which would allow the Director to reclassify a site. It may be desirable to allow a responsible party to elect not to submit the compliance status report when he disputes whether his site should be placed on the HSI. If the responsible party's site is classified as Class I by failure to submit a Compliance Status Report, the Director will be forced to make a determination that corrective action is, or is not, required. Only at that time will a responsible party be entitled to appeal the Director's decision. Again, the Act is very clear that corrective action is only to be required for those releases that pose a present or future danger. The Act imposes the duty of such determination on the Director and the rules should now attempt to circumvent that clear duty.

SECTION 391-3-19-.06(9) ALL DETERMINATIONS MADE BY THE DIRECTOR SHOULD BE IN WRITING

Throughout the proposed rule and the Act, the Director is empowered to make various far-reaching determinations regarding sites which pose a danger to human health or the environment, and designating those sites as requiring corrective action. The Director also has the responsibility to concur with the compliance status report certification. GIEC believes that the Director has an obligation to make such determinations in writing to all responsible parties.

SECTION 391-3-19-.07 CONSIDERATIONS IN DETERMINING WHAT CONSTITUTES A DANGER

Under the Act, the Director has and may exercise the power and duty "To ensure that corrective action is taken for releases of hazardous wastes, hazardous constituents, or hazardous substances into the environment that pose a present or future danger to human health or the environment...". Now EPD is proposing corrective action rules that attempt to define what constitutes a danger to human health or the environment in the form of "Risk Reduction Standards." Therefore, it is fundamental, and required by the Act itself, that each required element of a Risk Reduction Standard (Type 1,2,3,4 and 5) must be no-more or no-less stringent that what is necessary to adequately address the present or future danger to human health or the environment. The critical litmus test of each requirement being proposed is whether or not there is a clear and scientifically-based connection between the proposed requirement and "danger to human health or the environment." If a proposed requirement is necessary to address such danger, it should be upheld. But if there is no such scientific connection between a proposed requirement and the actual danger it addresses, the requirement must be deleted from the rule. Time after time, the proposed rules fail to meet this key test and seem to presume that danger exists whenever a substance exists, rather than allowing full consideration of real site-specific circumstances on a case-by-case basis.

The mere presence of a substance in groundwater or soil does not in-and-of itself pose a danger. For a substance to actually pose a danger, there must first be a plausible combination of a receptor (human or environmental) that could logically be exposed to a regulated substance at a concentration, frequency and duration that has the potential to result in a significant adverse effect on that receptor. If there is no realistic potential for such dangerous exposure at a given site, there is no realistic potential for the substance to pose a danger to human health or the environment, and no unnecessary corrective action should be required under HSRA. A responsible party must always be given the realistic opportunity to address a dangerous site in the most cost-efficient and effective manner possible. To now go beyond this point, as EPD proposes to do in the proposed corrective action rule, will require the substantial expenditure of scarce public and private resources beyond that which is necessary to be protective, and beyond that which is required under the Act. Quite simply, EPD's proposal overreaches the law.

SECTION 391-3-19-.07(6)(c) TYPE I SOIL CRITERIA MUST NOT BE MORE STRINGENT THAN NOTIFICATION CONCENTRATIONS

The Type 1 soil criteria, as proposed by EPD, are excessive and inconsistent with the fundamental logic underlying the Act itself, and the requirements of the HSRA notification and reporting rules [O.C.G.A. §12-8-93(b)(1)]. The Act contemplates a basic service of sequential steps beginning with release discovery through notification and reporting, and ending with corrective action such that a release no longer poses a danger to human health or the environment. Each step in the process is to sequentially reduce the number of releases requiring further action, as represented below.

Discovery of a Release

Exceed Notification Concentrations

Reportable Quantities Screening Method or a
Determination by the Director that a Site
Poses a Danger to Human Health
or the Environment

Placement on the HSI

Class I Site or
Risk Reduction Standards
Can Not be Met

Corrective Action Required

As the corrective action rules are now proposed, releases deemed to require corrective action will be held to a soil cleanup standard that is often significantly more stringent than that required by the rules for notification, and more stringent than that required by the rules for reporting and listing on the HSI in the first place. Table 1 attached herein, presents a comparison of the soil notification concentrations to the proposed corrective action Type 1 criteria for selected constituents commonly detected in Georgia, Table 1 denotes in bold the least of the Type 1 criteria as proposed in rule. A direct comparison of the soil notification concentrations to the least of the Type 1 criteria values indicates that, with the exception of selected volatile organic compounds and bis(2-ethylhexyl) phthalate (not listed in Table 1 of Appendix III), the Type 1 corrective action criterion are more stringent than the notification concentrations. GIEC believes that the most stringent soil cleanup criteria for any regulated substance must always be greater than the notification concentration for the same regulated substance.

SECTION 391-3-19-.07(7)(b) and (c) TYPE 2 CRITERIA FOR GROUNDWATER AND SOIL ARE OVERLY STRINGENT

A. Type 2 Groundwater Criteria

The groundwater criteria in Table 1, Appendix III are presumed by GIEC to represent EPD's choice of maximum concentration limits protective of direct drinking water sources from wells or springs. GIEC acknowledges that it is necessary to establish drinking water criteria and so long as the concentration limits for each substance are based upon the best available science, it is a matter of regulatory public policy as to what risk level EPD chooses to establish.

At the same time, GIEC takes strong exception to the EPD's extreme and unnecessary position that all groundwater is a potential direct drinking water source. Pursuant to Chapter 30 of the Texas Administrative Code 335.563(h)(1) and other state corrective action programs, groundwater cleanup criteria are based on the following presumption:

> "Groundwater that has a background Total Dissolved Solids (TDS) content less than or equal to 10,000 milligrams per liter (mg/L) and that occurs within a geologic zone that is sufficiently permeable to transmit water to a pumping well in usable quantities shall be considered a current or potential source of drinking water for the purpose of determining cleanup levels.";

And in Pennsylvania:

> "Groundwater that has a background total dissolved solids content greater than 2,500 milligrams per liter or is not capable of transmitting water to a pumping well in usable and sustainable quantities shall not be considered a current or potential source of drinking water."

There are three cases in which GIEC believes it is unreasonable to presume the potential for groundwater as a direct source of drinking water: 1) If groundwater in a particular subsurface zone does not have the natural potential to yield either a sufficient quantity or natural quality of water to continuously supply at least one residence, that location and that groundwater is simply not a potential source of drinking water and drinking water criteria should not be used at that location to establish risk reduction criteria; 2) if the physical accessibility to a location, for purposes of installing a water supply well, is permanently precluded due to natural features, permanent institutional controls or permanent and significant man-made barriers to well-installation access, such locations and groundwater are not potential direct sources of drinking water; and 3) if a location is already served by a regulated public water supply distribution system and it is well recognized that the public system will continue to be permanently available and it is further acknowledged that water supply wells will not be a plausible direct source of drinking water at such location, that location and groundwater are not sources of drinking water and application of Table 1 drinking water criteria would be excessive and wasteful.

In addition, the requirement that NAPLs must always be removed significantly overreaches the Act. Corrective action is only required for NAPLs, or any other reportable release situation, to the extent that the reportable release actually poses a danger to human health or the environment. The presence of a NAPL regulated substance does not in-and-of-itself constitute a situation that poses a danger to human health or the environment. For any site-specific-risk-based approach, the decision to remove NAPLs must in fact be a site-specific-risk-based decision and not an up-front presumption or generic requirement. [Rules 391-3-19-.07(6)(b), 391-3-19-.07(8)(c), and 391-3-19-.07(10)(d)]

B. Type 2 Soil Criteria

Soil criteria for human health protection are typically established for two completely different exposure scenarios. The first scenario, and most direct, are soil criteria designed to be protective against direct ingestion and inhalation of soil at locations where humans may actually be exposed to the contaminated soil itself. The second, and much more indirect, soil criteria are those established to protect nearby groundwater from potential drinking water wells or water supply springs, from cross-media contamination by the leaching of soil contaminants to underlying groundwater at the site and from subsequent transport to the nearest potential drinking water well or spring.

While EPD has fundamentally taken this two-scenario approach to establishing soil criteria, there are several serious oversimplifications in the EPD approach that will cause the needless waste of resources to investigate, remediate and/or otherwise over-regulate site situations that quite simply do not represent any realistic threat or danger to human health. We surmise that EPD may have taken this simplified approach in the interests of easy implementation on their part. And GIEC acknowledges that the option of choosing the easy way is reasonable so long as the responsible party is still allowed, within any risk reduction standard, the option of using a more applicable and less conservative option.

SECTION 391-3-19-.07(7)(b) and (c); 391-3-19-.07(9)(c) and (d) RISK REDUCTION STANDARDS - GROUNDWATER AND SOIL CRITERIA FOR TYPE 2 AND 4 STANDARDS

We are strongly opposed to setting the point of compliance for Type 2 and 4 groundwater standards at "all points within the property boundary" and soil standards at "all points affected by the release." This approach gives no consideration to current or potential future receptors or exposure pathways, and is not consistent with current risk assessment practice. Points of compliance must be established to be protective of human health and the environment, taking into consideration site conditions and receptors. The proposed criteria for the risk reduction standards would also eliminate the opportunity to effectively institute source control at a site or take into account naturally-occurring conditions that eliminate a potential exposure pathway or potential future receptor.

SECTION 391-3-19-.07(7)(d) SETTING TARGET RISK AND HAZARD INDEX LEVELS

We commend EPD in their support of the U.S. EPA "Guidelines for Exposure Assessment" in conducting risk assessments under the proposed rule. However, as written under this section of the proposed rule, the Director reserves the right to determine which cancer level shall apply within the risk range of 10^{-04} to 10^{-05}. The net effect will be to set a "bright line" risk level for individual sites and will serve to defeat the purpose of presenting estimated risk ranges versus simply a point estimate. The above referenced U.S. EPA Guidelines recommend presenting risk ranges. The primary importance of presenting ranges is that it allows the risk manager to not lose sight of the inherent uncertainties built into generating the risk estimates.

Under U.S. EPA policy, risks within the 10^{-04} to 10^{-05} range are generally acceptable and the risk manager must justify why remedial action is necessary in those case where the estimated cancer risks exceed 10^{-04}. We recommend that EPD adopt this approach.

SECTION 391-3-19-.07(9) EXPANSION OF TYPE 4 RISK REDUCTION STANDARDS

Certain corrective action measures listed under the criteria for Type 5 standards, e.g., stabilization/solidification/fixation, are remedial treatment technologies rather than engineering controls, such as fencing or capping. These in-situ treatment technologies generally are preferred by remedial efforts such as CERCLA to excavation and off-site disposal of waste and these remedial approaches have been shown to be effective in reducing site risks to acceptable levels. Accordingly, the rules should be revised to authorize these approaches under the criteria for Type 4 standards and sites which meet the Type 4 risk reduction standards using these approaches should be removed from the HSI.

SECTION 391-3-19-.07(10) TYPE 5 RISK REDUCTION STANDARDS

The Act itself clearly specifies that corrective action shall be required only if a release poses a danger to human health or the environment [O.C.G.A. § 12-8-94(a)(2)]. In contrast to this danger-based threshold criterion of the Act, the proposed rule compels responsible parties to undertake corrective action to meet specified risk reduction standards and generic requirements even if the responsible party is able to convincingly demonstrate that the subject release poses no plausible danger to human health or the environment.

By imposing such blanket requirements, not tied to a danger-based criterion, the rule overreaches the intent of the Act and will waste limited resources on actions that are not necessary for the protection of human health or the environment. This is particularly the case for Type 5 risk reduction standards. Type 5 risk reduction standards should be determined and applied more on a case-by-case, site-specific, risk-based approach (than that proposed) without the prespecified requirements or measures that may not even be necessary to adequately protect human health or the environment. Under Type 5, removal or decontamination should not be a preconceived requirement nor should treatment requirements be presumed unless such requirements are necessary at a site that would otherwise pose a danger to human health or the environment. To prespecify the need for such measures without first determining the risk-based need, is over-reaching the Act's requirements and a waste of resources on unwarranted corrective action.

GLOBAL DIRECTIVES IMPOSED ON RESPONSIBLE PARTIES

The Act itself is very clear that corrective actions are only to be required for those specific releases (listed on the HSI) that the Director specifically determines pose a danger to human health or the environment. In the proposed rule, EPD has gone beyond the authority of the Act by imposing generic activities on responsible parties in apparent anticipation or presumption of corrective action be undertaken before the Director has made such a determination and notified all responsible parties.

In keeping with the clear intent of the Act, a responsible party should be entitled to rebut the implied generic presumption that corrective action is required (to meet a risk reduction standard) by making a convincing scientific demonstration that the site does not pose a danger to human health or the environment. And if such a site poses no danger, it should be removed from the HSI.

II. SPECIFIC COMMENTS:

A. DEFINITIONS

391-3-19-.02(2)(a')

Revise to read -

> (a') *Non-residential property* means any real property or portion of a property not currently being used for human habitation or for other purposes with a similar potential for human exposure, at which activities have been or are being conducted ***or planned to be conducted*** that can be categorized in one of the 1987 Standard Industrial Classification (SIC) major groups 01-97 inclusive (except the four-digit codes 4941, 8051, 8059, 8062-3, 8069, 8211, 8221-2, 8351, 8661, and 9223). Non-residential property includes all of the contiguous block(s) and lot(s) controlled by the same owner or operator that are vacant land, or that are used in conjunction with such business. For leased properties, non-residential property includes the leasehold and any external tank, surface impoundment, septic system, or any other structure, vessel, contrivance, or unit that provides, or is utilized for the management of regulated substances to or from the leasehold.

Rationale - A situation may exist where a property owner has sub-divided his land into parcels zoned for industrial or commercial activities. GIEC is concerned that selected subdivided parcels of land within an area owned by one property owner may never have had any prior applicable SIC code activity as defined under this definition. In this case, the definition of non-residential property is overreaching to exclude properties for which planned SIC code activities have not occurred. As such, these properties potentially deemed as residential would not have an opportunity to demonstrate compliance with the Type 3 or Type 4 risk reduction standards.

391-3-19-.02(2)(b')

Correct to read -

(b') *Residential property* means any property that does not exclusively meet the definition of non-residential property. In addition to recognized residential use, it also includes property used for establishments classified by those SIC codes that are ~~excepted~~ ***exempted*** from the definition herein of "non-residential". Also, a portion of non-residential property that is used in part for residential activities, such as a day care center, is defined as residential.

Comment - GIEC believes that the EPD intended the term "excepted" to be "exempted".

391-3-19-.02(2)(d')

Add to Read

(d') Reportable release means a release of a regulated substance as defined at Rule 391-3-19-.02(2)(1), exceeding a reportable quantity, as defined at Rule 391-3-19-.02(2)(n).

Rationale - In the proposed rule, the term "release" is reference in various contexts including "a release", "the release", and "a release exceeding a reportable quantity". The term "release" itself, as defined in O.C.G.A. § 12-8-92(11) and Rule 391-3-19-.02(2)(e'), is generic to include all releases, as defined; not only releases exceeding a reportable quantity. Therefore to simplify the ambiguity throughout the rule, GIEC recommends that the definition of "reportable release" be added and the term "release" be universally revised to refer to "reportable release," where appropriate.

B. REMOVAL OF SITES FROM THE HAZARDOUS SITE INVENTORY

391-3-19-.05(4)(a)

Revise to read -

(a) The Director determines that the site ~~had~~ ***does*** not ~~had~~ ***have*** a ***reportable*** release exceeding ~~a~~ reportable quantity ~~at the time of listing the site on the Hazardous Site Inventory~~ ***criteria.***

Rationale - As proposed in Section 391-3-19-.05(4)(a), a site may be removed from the HSI if the Director determines that the site had not had a release exceeding a reportable quantity at the time of the listing the site on the HSI. This basically means that if a site was inadvertently placed on the HSI, that is the EPD made a mistake, then the Director can remove the site from the HSI. GIEC contends that additional criteria for removal of a site from the HSI should be provided in the Rules. In particular, a Class II site which has prepared a Compliance Status Report may be able to demonstrate through analytical data or additional site-specific information that the site does not exceed a notification concentration or the criterion for determining a reportable quantity. Unless otherwise determined by the Director that the site may pose a danger to human health or the environment, the site therefore, should be removed from the HSI.

GIEC recommends the following language be included under Sections 391-3-19-.05(4)(c) and 391-3-19-.06(6)(b) to allow for additional criteria under which a site may be delisted from the HSI.

Add to read -

> ***"If the responsible party demonstrates and certifies that releases at the site do not exceed the notification concentrations of Rule 391-3-19-.04(3) or does not exceed the criteria for determining a reportable quantity of Rule 391-3-19-.05, and the Director concurs with that certification, the Director shall remove the site from the Hazardous Site Inventory".***

C. CORRECTIVE ACTION

391-3-19-.06(1)

Revise to read -

> (1) **Applicability.** The requirements of Rule 391-3-19-.06 apply to any person who is a responsible party at a site listed on the Hazardous Site Inventory. These requirements do not ***necessarily*** apply ***in their entirety*** to owners and operators of facilities required to perform corrective action pursuant to Rule 391-3-11-.10 of the Rules for Hazardous Waste Management; ***however, the risk reduction standards and cleanup criteria of this section may be applied to such owners/operators provided that it is not prohibited by federal laws or regulations.***

Rationale - From the onset of HSRA rulemaking process, the EPD Director stated that it was his intention to apply HSRA corrective action technical requirements to solid waste management unit (SWMU) corrective action under RCRA. GIEC now requests that this be so stated within the proposed rule to the extent such is not prohibited by Federal law and regulation. Also see GIEC proposed language under Section 391-3-19-.07(2), attached herein.

391-3-19-.06(2)(a)5.

Revise to read -

> 5. The site does not meet any other criteria of Rule 391-3-19-.06(2)(a) but the Director has ***evaluated relevant risk factors and*** determined that the site nevertheless poses a present or future danger to human health or the environment.

Rationale - The Director has been empowered under the Act to determine whether a site poses a present or future danger to human health or the environment. Nevertheless, the Director needs criteria available to make that determination. GIEC believes that the Director must consider relevant risk factors to support his determination and eliminate any arbitrary decision-making process that is not supported by a danger-based approach.

D. COMPLIANCE STATUS REPORT FOR CLASS II SITES.

391-3-19-.06(3)(a)

Revise to read -

> (a) Any person who is a responsible party for ~~a~~ ***the*** site designated on the Hazardous Site Inventory as a Class II site shall submit to the Director a compliance status report that documents the current status of the site with regard to the risk reduction standards of Rule 391-3-19-.07. The Director shall in writing request the submittal of said report and specify a ***reasonable*** time frame for submittal, based on a priority for submittal to be determined by the Director.

Rationale - The cost for conducting the necessary investigation for a compliance status report can be quite large. Most businesses, particularly smaller businesses, will need sufficient advance notice and time to plan and budget resources for conducting such investigations. The time frame for certification submittal needs to take into account this planning time, not just the time needed to conduct the actual investigation and prepare the certification report.

391-3-19-.06(3)(b)2.

Revise to read -

2. If the ***reportable*** release involves soil contamination ***and as necessary to evaluate risk reduction compliance status***, a complete definition of the horizontal and vertical extent of such soil contamination. Satisfactory evidence of a complete definition of the horizontal and vertical extent of soil contamination shall ***also*** consist of an appropriate number of data points at sufficient locations with concentrations at background ~~concentrations~~ ***or less than the concentrations pursuant to 391-3-19-.07(6)(c)(1)(i), whichever is greater.*** An acceptable determination of background concentrations shall be made from data points located in such a manner so as to yield samples that are representative of soil conditions not affected by releases at the site. In support of the definition of the extent of soil contamination ***and to the extent necessary to determine compliance with the risk reduction standards***, the compliance report shall describe the following:

Rationale - A reportable release should be completely defined to evaluate the risk reduction compliance status of a site. However, GIEC contends that the vertical and horizontal extent of contamination should only be defined to the extent necessary to meet the risk reduction standard.

391-3-19-.06(3)(b)2.(vii)

Revise to read -

(vii) Narrative and tabular summary of ~~all~~ field data and of the results of ~~all~~ laboratory analyses ~~including~~ ***supported by*** sufficient quality assurance/quality control data to validate the results.

Rationale - GIEC believes that field data and laboratory analyses which can not be supported or defensible by standard quality assurance/quality control practices should not be required to be submitted to the EPD. The language as originally proposed, would suggest that any data, whether it was attributable to sampling artifacts or laboratory error/contamination, would be required to be submitted with the Compliance Status Report.

391-3-19-.06(3)(b)3.

Revise to read -

> 3. If the ***reportable*** release involves groundwater contamination, a complete definition of the horizontal and vertical extent of groundwater contamination. Satisfactory definition of the horizontal and vertical extent of groundwater contamination shall consist of an appropriate number of data points at sufficient locations with concentrations at background ~~concentrations~~ ***or less than the concentrations listed in Table 1 of Appendix III.*** An acceptable determination of background concentrations shall ***also*** be made from data points located in such a manner so as to yield samples that are representative of groundwater conditions not affected by releases at the site. The compliance status report shall, at a minimum, describe the following:

Rationale - A responsible party should not be required to go beyond the extent of a compliance status investigation beyond the lowest risk reduction standards. The proposed requirement to define the horizontal and vertical extent of groundwater concentrations to background (which are detection limits for most organic compounds) would be beyond the intent of the Act and would constitute a waste of monetary resources. GIEC acknowledges that the Director has the authority to require additional compliance status investigation activities, if necessary.

391-3-19-.06(3)(b)3.(x)

Revise to read -

> (x) Maps and vertical cross-sections of appropriate scale depicting concentrations ~~and isopleths~~ for all contaminants superimposed upon site stratigraphic features and monitoring wells; and

Rationale - A compliance status report is required under the proposed rules for all (Class II) sites on the HSI. As proposed in Section 391-3-19-.06(3)(b)3.(x), maps and vertical cross-sections are to be provided (at a minimum) in the compliance status report depicting concentrations and isopleths for all contaminants. GIEC believes that these minimum requirements go beyond what is necessary for the Director to make a determination whether a site meets the particular risk reduction standards or may require corrective action.

391-3-19-.06(3)(b)3.(xi)

Revise to read -

(xi) Narrative and tabular summary of ~~all~~ field data and of the results of ~~all~~ laboratory analyses, ~~including~~ ***supported by*** sufficient quality assurance/quality control data to validate the results.

Rationale - GIEC believes that field data and laboratory analyses which can not be supported or defensible by standard quality assurance/quality control practices should not be required to be submitted to the EPD. The language as originally proposed would suggest that any data, whether it was attributable to sampling artifacts or laboratory error/contamination would be required to be submitted with the Compliance Status Report.

391-3-19-.06(3)(b)

Revise to read -

~~8(c).~~ If the responsible party certifies pursuant to Rule 391-3-19-.06(4)(c) ***and the Director concurs in writing*** that the site is not in compliance with any of the risk reduction standards of Rule 391-3-19-.07, a ***proposed*** corrective action plan ***may be submitted to the Director*** that describes the corrective action that the responsible party has determined is necessary to achieve compliance with the applicable risk reduction standards of Rule 391-3-19-.07. [Proposed Section 391-3-19-.06(3)(c)]

~~9~~8. If the responsible party certifies pursuant to Rule 391-3-19-.06(4)(c) that the site is in compliance with the Type 5 risk reduction standards of Rule 391-3-19-.07, a monitoring and maintenance plan that describes the continuing actions that the responsible party has determined are necessary to maintain compliance with Type 5 risk reduction standards.

~~10~~9. If the responsible party certifies pursuant to Rule 391-3-19-.06(4)(c) ***and the Director concurs in writing*** that the site is in compliance with either of the Type 3 or Type 4 risk reduction standards of Rule 391-3-19-.07, a monitoring plan that describes the continuing actions that the responsible party has determined are necessary to maintain compliance with the Type 3 or Type 4 risk reduction standards.

~~11~~*10.* Attached to the front of the compliance status report, a concise statement of the findings of the report presented in plain language, immediately followed by the certification required pursuant to Rule 391-3-19-.06(4)(a).

Add to read -

11. ***Owners may receive a variance from the Director if the owner can demonstrate to the satisfaction of the Director that certain requirements are not applicable or relevant to a determination of whether corrective action is needed at the particular site.***

Rationale - The proposed rule, specifically Section 391-3-19-.06(3)(b)8. implies that a responsible party is required, as part of the Compliance Status Report, to submit a corrective action plan. GIEC contends that this "minimum" requirement overreaches that Act in that the Director at this time in the corrective action process has not yet made a determination whether the site poses a danger to human health or the environment, or requires corrective action. However, GIEC requests that a provision be added that explicitly provides the Director with discretion to lessen the compliance status report requirements, such as the language provided above in proposed Section 391-3-19-.06(b)11. GIEC believes that in some instances, a responsible party may opt to submit a corrective action plan as part of the Compliance Status Report.

E. CERTIFICATION OF COMPLIANCE WITH RISK REDUCTION STANDARDS AT CLASS II SITES.

391-3-19-.06(4)(c)

Revise to read -

(c) Any person signing the certification of compliance required under Rule 391-3-19-.06(4) shall make the following certification:

*I certify ~~under penalty of law~~ that this report and all attachments were prepared ~~under my direction or supervision~~ in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. ~~Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information,~~ **and** the information submitted is, to the best of my knowledge and belief, ~~true~~, accurate, and complete. ~~I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.~~*

Based on my review of the findings of this report with respect to the risk reduction standards of the Rules for Hazardous Site Response, Rule 391-3-19-.07, I have determined that [(choose either of the following statements): 1. This site is in compliance with Type 1, Type 2, Type 3, Type 4, or Type 5 risk reduction standards (specify lowest numbered Type that applies) or *2. This site is not in compliance with any Type risk reduction standards. ~~and that the corrective actions described in the plan(s) submitted pursuant to Items 8-10 of Rule 391-3-19-.06(3)(b) will, when implemented, bring this site into compliance with Type 1, Type 2, Type 3, Type 4, or Type 5 risk reduction standards (specify lowest numbered Type that applies)].~~*

Rationale - GIEC is concerned that the person signing the certification would be attesting to information that he would not be necessarily involved in compiling (i.e., this statement is overly burdensome for the type of scientific investigation involved). GIEC recommends the above language be considered.

GIEC also proposes that the second, and the last sentence of the second paragraph above, be modified as indicated. GIEC believes it is not appropriate to include the original language since no determination has been made with respect to the need for corrective action at this point in the HSRA corrective action process.

F. PUBLIC PARTICIPATION

391-3-19.06(5)(a)2.

Revise to read -

> "2. The following statement: *"The Georgia Environmental Protection Division, Department of Natural Resources, State of Georgia (EPD) has placed this site on the Hazardous Site Inventory pursuant to its authority under the Hazardous Site Response Act and Rules promulgated thereunder. As required by the Rules for Hazardous Site Response, the responsible party for this site was required to investigate the site and submit a compliance status report to EPD summarizing the results of that investigation. EPD is currently reviewing the compliance status report to determine if corrective action is needed ~~for regulated substances that have been released at this site~~* ***for a release of a reportable quantity of a regulated substance (or for a reportable release).*** *Before EPD decides whether corrective action is needed, the public has the opportunity to review the compliance status report and provide comments to EPD about the report.";*

Rationale - In keeping with the intent of the proposed corrective action rules, GIEC requests that EPD provide language that is explicitly clear that the compliance status report is applicable to the release of a reportable quantity of a regulated substance. If the EPD adopts GIEC's proposed definition of "reportable release", then the phrase provided above in parenthesis may be substituted.

391-3-19-.06(5)(d)

Revise to read -

> (d) Upon making a determination pursuant to Rule 391-3-19-.06(6) or upon ***the Director*** determining that a proposed corrective action plan should be approved, the Director shall publish notice of such determination in a major local newspaper of general circulation.

Rationale - In keeping with the duties empowered to the Director, under O.C.G.A. § 12-8-94 and § 12-8-96, GIEC requests that the Director be identified as the person who is obligated to make a determination that corrective action is required at a site.

G. DETERMINATION OF THE NEED FOR CORRECTIVE ACTION

391-3-19-.06(6)

Revise to read -

(a) Any site that is classified on the Hazardous Site Inventory as a Class I site pursuant to Rule 391-3-19-.06(2) ~~shall also be designated by the Director as having a known release needing corrective action.~~ ***the Director shall make a determination that the site poses a danger to human health or the environment and designate the site as needing corrective action.***

Rationale - Throughout Section 391-3-19-.06(6), wherever it is stated that the Director shall designate or make a determination that corrective action is needed, the phrase should be revised to include language, such as that provided above.

391-3-19-.06(6)(b)1. and 2.

Revise to read -

(b) For sites classified on the Hazardous Site Inventory as Class II sites pursuant to Rule 391-3-19-.06(2), the Director shall review the compliance status certification required by Rule 391-3-19-.06(4) and do the following:

1. If the responsible party certifies pursuant to Rule 391-3-19-.06(4)(c) and the Director concurs in writing that the site is not in compliance with any of the risk reduction standards of Rule 391-3-19-.07, a proposed corrective action plan may be submitted to the Director that describes the corrective action that the responsible party has determined is necessary to achieve compliance with the applicable risk reduction standards of Rule 391-3-19-.07.

Rationale - GIEC recommends that the above language be included under Section 391-3-19-.06(6)(b)(1) to allow for additional criteria under which a site may be delisted from the HSI. If this language is adopted, all subsequent rule items in this subsection will need to be renumbered accordingly.

391-3-19-.06(6)(c)

(c) The Director may reclassify a site on the Hazardous Site Inventory from Class II to Class I, ~~and designate the site as having a known release needing corrective action, if:~~

Revise to read -

1. The responsible party ~~fails to~~ ***submit notice in writing that it will not*** submit the compliance status report within the time ***period*** specified in Rule 391-3-19-.06(3)(a);

~~2. The compliance status report is deficient with respect to the requirements of Rule 391-3-19-.06(3)(b); or~~ ***The responsible party fails to submit the compliance status report within the time period specified in Rule 391-3-19-.06(3)(b) and does not correct this failure by submitting the report within thirty days thereafter.***

~~3. The responsible party certifies pursuant to Rule 391-3-19-.06(4) that the site is not in compliance with any of the applicable risk reduction standards of Rule 391-3-19-.07.~~ ***The compliance status report is deficient with respect to the requirements of Rule 391-3-19-.06(3)(b) and the responsible party fails to correct such deficiencies within thirty days thereafter.***

Rationale - GIEC believes that reclassification of a site on the Hazardous Site Inventory from Class II to Class I should not be based on Items 1 and 2 provided above. The only way in which the Director may reclassify a site and designate it as need corrective action is when the Director has made a determination that a release "poses a danger to human health and the environment," within the meaning of O.C.G.A. § 12-8-96 (a). Therefore, provisions (c) 1 and 2 should be deleted. GIEC believes that these provisions could be dealt with by adding a section that deals with deficiencies, and provide a 30-day (or whatever may appropriate) time period within the which the owner can correct the error(s), subject to a penalty of some sort if the deadline is not met.

Also, not that provision (c) 3 is redundant; it is already included at (b) 4.

(ii) Alternatively, section (c) could be revised as presented above.

In addition, GIEC believes it may be desirable to allow a responsible party to elect not to submit the compliance status report when he disputes whether his site should be placed on the HSI at all. If the responsible party's site, by failure to submit a compliance status report, is then classified as a Class I site, the Director (provided the agency accepts GIEC's proposed changes to Section 391-3-19-.06(a)) will be forced to make a determination that corrective action is, or is not, required and a responsible party will then be entitled to administrative review

391-3-19-.06(6)(d)

Revise to read -

> (d) Upon making a determination pursuant ***that the site is Class I and*** to Rule 391-3-19-.06(6)(a)-(c) that the site has a known ***reportable*** release needing corrective action, the Director shall provide the responsible party with written notice of such determination, including a statement concerning the requirements of Rule 391-3-19-.08.

Rationale - In accordance with O.C.G.A. § 12-8-96(a), the Director shall make a reasonable effort to identify each person who has contributed or who is contributing to such a release. The Act goes on to state that the Director shall then notify each such person in writing of the opportunity to perform voluntary corrective action, or may direct corrective action under an order. GIEC requests that a time period be specified under Section 391-3-19-.06(6)(d), in which the Director, is required to notify all responsible parties. GIEC supports immediate notification by the Director, or as soon as practical, within a specified time period to allow responsible parties ample time to negotiate or form alliances with other responsible parties involved in the same reportable release site. GIEC proposes that the following language be considered by the EPD in the Director's notification to all responsible parties.

> ***" The Georgia Environmental Protection Division (EPD) has received information suggesting that the parties to whom this letter is addressed may, among others, be potentially responsible parties at the subject site that has been listed on the Hazardous Site Inventory pursuant to Rule 391-3-19-.05(1).***
>
> ***EPD has not yet determined the responsibility of these parties or any other yet unnamed parties for any actions and associated costs and penalties that may be incurred in addressing this site. Nonetheless, we want to let you know now that if you are found to be a responsible party you will be responsible for all or a part of such actions, costs and/or penalties. You may wish to contact the other identified parties to further discuss your mutual interests regarding this site.***
>
> ***On (date), EPD Director intends to require that the current owner of the property undertake the preparation and certification of the Compliance Certification Report and submit the report and certification to the EPD Director by (date) ".***

H. RESPONSE TO A DETERMINATION THAT A SITE IS CLASS I

391-3-19-.06(7)

Revise to read -

> If the responsible party certifies pursuant to Rule 391-3-19-.06(4)(c) ***and the Director concurs in writing*** that the site is not in compliance with any of the risk reduction standards of Rule 391-3-19-.07, a ***proposed*** corrective action plan ***may be submitted to the Director*** that describes the corrective action that the responsible party has determined is necessary to achieve compliance with the applicable risk reduction standards of Rule 391-3-19-.07. [Proposed Section 391-3-19-.06(3)(c)]
>
> ~~2.~~**3.** Implement a corrective action plan, upon the Director's approval, which describes a program sufficient to achieve compliance with Type 1, 2, 3, 4, or 5 risk reduction standards of Rule 391-3-19-.07.

Rationale - GIEC believes that a corrective action plan should be developed by a responsible party designated by the Director as needing corrective action, before a plan is implemented, as provided in Section 391-3-19-.06(7)(c).

As such the corrective action plan should be accompanied with a certification statement similar to that provided below.

> (7) Response to a determination that a site is Class I ***and the Director has made the determination that corrective action is required.***
>
> I certify under the penalty of law that the corrective actions described in the plan(s) submitted pursuant to ~~Items 8-10 of~~ Rule 391-3-19-.06(3)(b)(c) or Rule 391-3-19-.06(7)(c)(2) will, when implemented, bring this site into compliance with Type 1, Type 2, Type 3, Type 4, or Type 5 risk reduction standards (specify lowest numbered Type that applies)]. Any person submitting a corrective action plan required under Rule 391-3-19-.06(7)(c)(2) shall make the following notification:
>
> *Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information,* ***and*** *the information submitted is, to the best of my knowledge and belief,* ~~*true*~~*, accurate, and complete.* ~~*I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*~~

I. RISK REDUCTION STANDARDS

391-3-19-.07(2)

Add to Read -

> "~~(2). [reserved]~~ ***Where the owner certifies that property has been or is being remediated under regulatory cleanup standards, or has been or is being remediated under consent orders issued by EPD or U.S. EPA, or has been or is being remediated under a removal or remediation action by U.S. EPA under CERCLA, or has been or is being remediated under other forms of regulatory approval by U.S. EPA or EPD, then the Director shall not require additional response activity unless the Director specifically determines that the prior or ongoing remediation for that property fails to protect human health or the environment and that additional or different remediation is necessary. Absent such a finding, it shall be presumed that the cleanup levels of the prior or ongoing remediation comply with the General Considerations for Type 5 Standards of Rule 391-3-19-.07. If appropriate, in particular if the prior or ongoing remedy relies upon on-site containment to prohibit exposures which could result in an unacceptable risk to human health or the environment, long-term monitoring, maintenance, and the property record notices of 391-3-19-.08 are required. Upon completion of the remedy, the property shall continue to be listed on the HSI as Class III unless the owner certifies that the property meets other Risk Reduction Standards".***

Rationale - GIEC proposes that the above language be considered to address the applicability of these proposed rules to historical and current remedial actions conducted under Federal or other state programs, in particularly remedial actions under CERCLA at RCRA (solid waste management units) programs [See General Comment No.4].

J. COMPLETION OF CORRECTIVE ACTION

391-3-19-.07(3)

Revise to read -

> A required corrective action shall be considered complete when it is demonstrated that the site meets any or a combination of the applicable risk reduction standards described in Rule 391-3-19-.07 ***or that the reportable release no longer exists***. All risk reduction standards will, when adequately carried out, assure adequate protection of human health and the environment from potential exposure to land-based ***reportable*** releases of regulated substances.

Rationale - GIEC contends that if a responsible party is able to demonstrate that the site no longer exceeds the notification concentrations, or the criteria for determining a reportable quantity, then (unless otherwise determined by the Director) the site should be removed from the HSI.

K. ESSENTIAL FEATURES OF ACCEPTABLE CORRECTIVE ACTIONS

391-3-19-.07(4)(a)

Revise to read -

> (a) The corrective action shall, at a minimum, provide for the removal or decontamination of nonaqueous phase liquids from groundwater zones ***that have likely potential to contaminate a water supply well or spring*** to the extent practicable.

Rationale - The presence of a NAPL regulated substance does not in-and-of-itself constitute a situation that poses a danger to human health or the environment. For any site-specific-risk-based approach, the decision to remove NAPLs must in fact be a site-specific-risk-based decision and not an up-front presumption or generic requirement. [Also see Specific Comments to Rules 391-3-19-.07(6)(b), 391-3-19-.07(8)(c), and 391-3-19-.07(10)(e)].

L. CRITERIA FOR TYPE 1 STANDARDS.

391-3-19-.07(6)(b)

Revise to read -

> (b) Criteria for groundwater. At all points within any groundwater that has been affected by the release, ***separate-phase*** non-aqueous phase ***regulated substance*** liquids shall not exist, and groundwater sample concentrations shall not exceed ***dissolved*** concentrations given in Table 1 of Appendix III or, for those substances not listed, the background or detection limit concentration. ~~If more than one regulated organic compound are present in groundwater, their sum in a single sample shall not exceed 10 mg/L if the Table 1 value for each compound is less than 5 mg/L, or, where at least one compound has a Table 1 value greater than or equal to 5 mg/L, the sum of the concentrations shall not exceed the maximum Table 1 value for a detected compound plus 10 mg/L.~~

Rationale - To make the presumption that NAPLs must always be removed significantly overreaches the Act in that corrective action is only required, for NAPLs or any other reportable release situation to the extent that a reportable release actually poses a danger to human health or the environment. The presence of a NAPL regulated substance does not in-and-of-itself constitute a situation that poses a danger to human health or the environment. For any site-specific-risk-based approach, the decision to remove NAPLs must in fact be a site-specific-risk-based decision and not an up-front presumption or generic requirement.

It is also important that the evaluation and regulation of metals in a groundwater sample distinguish those metals that are dissolved from those metals that are present (sorbed) on particulate matter that may be contained in a groundwater sample. It is common to find that monitoring wells will contain suspended matter from the soil formation that is a relic of the well installation, and not indicative of actual groundwater quality in the aquifer. This is particularly the case for low yield monitoring wells installed in fine-grained soil formations.

In reference to the last sentence of this Section, there is no scientific basis for this requirement and no connection to the requisite danger-based trigger in the Act.

391-3-19-.07(6)(c)

Revise to read -

(c) Criteria for soil. Concentrations at all points above the ***highest*** water table in the soil that have been affected by the release shall not exceed the concentrations given in Table 2 of Appendix III or, for those substances not listed, ***or*** the least of the concentrations from Items 1 through 3 below:

1. ***For all soils***, concentrations which will not cause contamination of groundwater at levels which exceed Type 1 groundwater criteria, as determined using the following options:

(i) Multiplication of the Type 1 groundwater concentration criteria by a factor of 100; or

(ii) Demonstration through use of the Toxicity Characteristic Leaching Procedure, SW-846 Method 1311, or other method approved by the Director that a concentration in soil will not generate leachate concentrations that exceed Type 1 groundwater concentration criteria; or

(iii) Calculation using the U.S. EPA soil screening level partioning equation (Sept 1993) and applying the appropriate soil reference value obtained from Table 3 of the Derivation of Reportable Soil Concentrations (Sept 1993), or other acceptable scientifically-based value.

Rationale - GIEC offers a scientific-based calculation to include as an option to the generic Type 1 soil criteria. Soil screening levels are the levels at which the U.S. EPA would typically not require any further investigation, much less corrective action. GIEC recommends that EPD consider using a soil screening level partioning equation (Ref U.S. EPA, September 1993) as an additional generic Type 1 soil criteria.

The U.S. EPA soil screening calculations are presented in Table 2, attached herein. The soil screening level calculation takes into account both Table 1 of Appendix III ground-water concentrations (C_w) and the organic partitioning coefficient (k_d) of the compound. The K_d values were obtained from EPD's Derivation of Reportable Screening Concentrations, dated September 1993.

For comparison purposes, Table 2 presents the HSRA notification concentrations; Type 1 and Type 2 soil and ground-water criteria concentrations; ground-water concentrations times 100; organic partitioning coefficient calculated soil screening level concentrations. Comparison of the values indicate that in most instances, the soil screening level concentrations calculated for selected semivolatile organic and organochlorine pesticide compounds indicate that concentrations are higher for these calculated values than for both the notification concentrations and the Table 1 of Appendix III groundwater concentrations times 100. However, in relation to volatile organic compounds, the calculated screening levels are similar to these notification concentrations previously adopted and the proposed corrective action standards established by the EPD under HSRA. These soil screening levels are considered reasonable since the organic partitioning coefficient takes in account the potential mobility for each compound. Semivolatile organic and organochlorine pesticides are typically known to be less mobile in soil than volatile compounds. GIEC believes that this additional generic approach to the Type 1 standards should be considered by EPD to provide another option by which a responsible party can demonstrate compliance with Type 1 standards.

Revise to read -

> 2. ***For all surficial soils and other subsurface soils where direct human exposure is not effectively precluded,*** concentrations which are unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 7 of RAGS, Part B, and standard residential exposure assumptions in Table 3 of Appendix III ***or published, scientifically-based, peer-reviewed methods and applicable exposure assumptions acceptable to the Director.***
>
> 3. ***For all surficial soils and other subsurface soils where direct human exposure is not effectively precluded,*** concentrations which are unlikely concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 10^{-5} (10^{-4} for Class C carcinogens) via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 of RAGS, Part B, and standard residential exposure assumptions in Table 3 of Appendix III ***or published, scientifically-based, peer-reviewed methods and applicable exposure assumptions acceptable to the Director.***

Rationale - The RAGS equations are used to establish concentrations at which a potential receptor may be exposed to a certain risk. For all practical purposes, direct human health exposure is based on surficial soils. GIEC suggests that EPD consider the limited application of a site-specific risk assessment proposed under each risk reduction standard. Although RAGS is currently considered the U.S. EPA accepted approach to risk assessment applications, GIEC believes that EPD should expand the proposed language to include other acceptable methologies, including site-specific exposure factors in evaluating whether a site can meet an appropriate risk reduction standard.

M. CRITERIA FOR TYPE 2 STANDARDS

391-3-19-.07(7)(b)

Revise to read -

> (b) Criteria for groundwater. The Type 2 criteria for groundwater shall be identical to the Type 1 criteria for groundwater ***or site-specific risk assessment.***

Comment - GIEC recommends that the option be added to Type 2 groundwater criteria (and Types 3,4 and 5) proposed Section 391-3-19-.07(7)(b) that allows the responsible party to rebut the EPD generic presumption that all groundwater is a present or future direct source of drinking water supply. In such option, the responsible party would be allowed the option to demonstrate the nearest (flow path) present, or potential location for a drinking water well or spring. The viability of such a potential well location would be based upon (1) physical access; (2) hydrogeologic feasibility (as to yield and natural quality suitability); and (3) the presence of a regulated public water supply distribution system that would otherwise be the obvious and acknowledged permanent source of direct drinking water supply.

Once the distance from the site to the nearest potential drinking water well location is demonstrated to the satisfaction of the Director, the Type 2 groundwater criteria for the site would be keyed to the flow path distance from the site to the nearest plausible drinking water supply well (or spring) as follows:

TABLE 2

TYPE 2 GROUNDWATER CRITERIA

Distance to Potential Well	Multiple of Table 1 Appendix III
< 1/2 mile	1X
1/2 - 1 mile	10X
1 - 2 miles	100X
> 2 miles	1,000X

391-3-19-.07(7)(c)

Revise to read -

(c) Criteria for soil. Concentrations at all points above the ***highest*** water table in the soil that have been affected by the release shall not exceed the ***applicable*** of the following concentrations:

1. ***For all soils,*** concentrations which will not cause contamination of groundwater at;

   (i) levels which exceed Type 1 groundwater criteria, as determined by any laboratory test and/or fate-and transport model ***recognized by*** ~~approved by~~ USEPA and ***approved by*** the Director, at a point of exposure defined as any point at which a drinking water well could be installed.

Add to read -

(ii) For all soils, concentrations shall not exceed soil concentration using the U.S. EPA's soil screening level partitioning equation, (provided below in Equation 1), the appropriate Type 1 groundwater criteria (Table 1 of Appendix III) times the distance multiples to/for the nearest plausible drinking water well or spring.

2. ***For all surficial soils and other subsurface soils where direct human exposure is not effectively precluded,*** concentrations which are unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 7 from RAGS, Part B, and site-specific exposure factors for the residential use scenario ***or published, scientifically-based, peer-reviewed methods and applicable exposure assumptions acceptable by the Director.***

3. ***For all surficial soils and other subsurface soils where direct human exposure is not effectively precluded,*** concentrations for which the upper bound on the estimated excess cancer risk is less than or within the range 10^{-5} to 10^{-4} via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 from RAGS, Part B, and site-specific exposure factors for the residential use scenario ***or published, scientifically-based, peer-reviewed methods and applicable exposure assumptions acceptable by the Director.***

Rationale - GIEC proposes that in no event should any soil risk reduction concentration for a regulated substance be more stringent than the soil screening level calculated using current U.S. EPA methodologies for computing soil screening levels (Ref U.S. EPA, September 1993). Soil screening levels are the levels at which U.S. EPA would typically not require any further investigation, much less require corrective action. GIEC recommends that EPD consider using a soil screening level partitioning equation, as shown below, to provide an alternative generic demonstration. To this point, GIEC recommends for Type 2 Soil Criteria 391-3-19-.07(7)(c) the addition of the above option.

EQUATION 1	
Soil Screening Level Partitioning Equation for Migration to Groundwater	
Screening Level in Soil (mg/kg) $= C_w [(Kd) + (0 \times S/BD)]$	
Parameter/Definition (units)	Default
C_w/acceptable groundwater limit (mg/l)	Type 2 Groundwater Criteria
Kd/soil reference values (mg/kg) (Sept. 1993)	Table 3 Derivation of Reportable Soil Concentrations
O/soil porosity (L_{pore}/L_{soil})	0.5
S/fraction water content (L_{water}/L_{pore})	0.3
BD/soil bulk density (kg/L_{soil})	1.5

This U.S. EPA soil screening level calculation is still quite conservative and protective because it presumes an infinite and continuous saturated soil source term at full equilibrium and does not consider degradation, volitization or any other losses.

As for soil criteria designed to be protective of direct ingestion and inhalation, the only soils that should be subject to such requirements are those where such direct exposure potential is a plausible presumption. EPD's blanket presumption, that all soil (at any depth or under any structure) may one day be surficial soil to which humans are continuously and directly exposed, is excessive. If a responsible party makes a reasonable demonstration that soils are not subject to direct contact, now or in the future, such inaccessible soils should not be subject to the requirements applied to surficial soils in residential yards. In the same fashion, if infiltration is permanently excluded from a soil, the leaching scenario is simply not applicable and the criteria are excessive.

The RAGS equations are used to establish concentrations at which a potential receptor may be exposed to a certain risk. For all practical purposes, direct human exposure is based on surficial soils. GIEC suggests that EPD consider the limited application of a site-specific risk assessment proposed under each risk reduction standard.

N. CRITERIA FOR TYPE 3 STANDARDS.

391-3-19-.07(7)(d)

Revise to read -

> (d) The exposure assessments under Items 2 and 3 of Rule 391-3-19-.07(7)(c) above shall be conducted in a manner consistent with U.S. EPA's "Guidelines for Exposure Assessment" (57 FR 104:22888-22938; May 29, 1992). The Director shall determine which cancer risk level shall apply within the range provided in Item 3 of Rule 391-3-19-.07(7)(c) above.

Rationale - We commend EPD in their support of the U.S. EPA "Guidelines for Exposure Assessment" in conducting risk assessments under the proposed rule. However, as written under this section of the proposed rule, the Director reserves the right to determine which cancer level shall apply within the risk range of 10^{-04} to 10^{-05}. The net effect will be to set a "bright line" risk level for individual sites and will serve to defeat the purpose of presenting estimated risk ranges versus simply a point estimate. The above referenced U.S. EPA Guidelines recommend presenting risk ranges. The primary importance of presenting ranges is that it allows the risk manager to not lose sight of the inherent uncertainties built into generating the risk estimates.

Under U.S. EPA policy, risks within the 10^{-04} to 10^{-05} range are generally acceptable and the risk manager must justify why remedial action is necessary in those case where the estimated cancer risks exceed 10^{-04}. We recommend that EPD adopt this approach.

391-3-19-.07(8)(b)

Revise to read -

> (b) Type 3 standards are not applicable to residential ~~exposure scenarios~~ ***property***. Type 3 standards are applicable where the responsible party documents that the activities being conducted ***or likely to be conducted*** on the property satisfy the definition for non-residential property at Rule 391-3-19-.02(2) and documents a monitoring program that will assure continued compliance with the Type 3 standards.

Rationale - Proposed Section 391-3-19-.02(2)(b') defines the term "residential property"; however, no where in the proposed rule was reference to the term found. GIEC believes that the term "residential property" is appropriately used in reference to the applicability of Type 3 and nonapplicability to Type 4 standards.

391-3-19-.07(8)(c)

Revise to read -

> (c) Criteria for groundwater. The groundwater criteria for Type 3 are distinguished from the groundwater criteria for ~~Type 1~~ ***Type 2*** only by the status of nonaqueous phase liquids within the property boundary. For Type 3, residual nonaqueous phase ***regulated substance*** liquids may be present but must have been removed or decontaminated to the extent practicable. Type 3 criteria for ***dissolved*** concentrations in groundwater samples, and for nonaqueous phase liquids beyond the property boundary, are the same as for Type 1.

Rationale - The presence of a NAPL regulated substance does not in-and-of-itself constitute a situation that poses a danger to human health or the environment. For any site-specific-risk-based approach, the decision to remove NAPLs must in fact be a site-specific-risk-based decision and not an up-front presumption or generic requirement.

It is important that the evaluation and regulation of metals in a groundwater sample distinguish those metals that are dissolved from those metals that are present (sorbed) on particulate matter that may be contained in a groundwater sample. It is common to find that monitoring wells will contain suspended matter from the soil formation that is a relic of the well installation, and not indicative of actual groundwater quality in the aquifer. This is particularly the case for low yield monitoring wells installed in fine-grained soil formations. Further, the drinking water criteria for metals in Table 1 are taken from criteria applicable for a drinking water distribution system which contains a significant amount of particulate matter. Also, the toxic effects of metals in drinking water are associated with the bioavailability of the metal. Bioavailability requires that the metal be in a dissolved (soluble) form. Therefore, the Table 1 groundwater criteria should be specified as dissolved (soluble) concentrations.

If EPD adopts the Type 2 criteria for soils as proposed herein, GIEC believes that the Type 3,4 and 5 criteria should default to the Type 2 criteria, which takes into consideration the distance to the nearest plausible drinking water supply well or spring.

391-3-19-.07(8)(d)

Revise to read -

(d) Criteria for soils.

1. ***For all reportable releases,*** no soil remaining in place shall exhibit the hazardous waste characteristics of ignitability, corrosivity, ***or*** reactivity, ~~or toxicity~~ as defined in 40 CFR 261 Subpart C. ~~The sum of concentrations of the volatile organic compounds in soil air shall not exceed 1000 parts per million by weight or volume, as measured by USEPA Test Method 8015 or calculated by using soil concentrations and Henry's Law constants.~~

Rationale - The EPD apparently copied this general requirement from the Texas rule for "ignitability", "corrosivity" and "reactivity", and then EPD arbitrarily added the characteristic of "toxicity" to the requirement. Adding the "toxicity" criteria is an unnecessary and redundant requirement in that soil concentrations are already adequately controlled by Items (d)(2) and (3) of this same section. Furthermore, the characteristic of toxicity, as measured by the TCLP test, is designed to simulate the potential for soil leaching under the extreme leaching conditions of a municipal sanitary landfill, not typical of soil. GIEC recommends that the "toxicity" characteristic be deleted as unnecessary in this requirement because it is redundant, excessive and typically costly to demonstrate technical compliance without any significant benefit or additional protection being provided. Furthermore, even the Texas rule, from which this requirement was apparently copied in the first place, does not include the "toxicity" criterion. In this same context, EPD should make clear that these requirements only relate to ignitability, corrosivity, and reactivity caused by HSRA-regulated substances. In particular, the ignitability requirement would not apply to petroleum substances that are exempt from HSRA.

Under proposed Section 391-3-19-.07(8)(d)1, the proposed criterion "soil air shall not exceed the 1000 parts per million" has no rationale (nor in the Texas rule from which it was apparently copied) that connects the requirement to any HSRA danger-based criteria and therefore overreaches the Act itself. The proposed regulations amply address inhalation exposure for soil volatiles under (d)(3) of this section and the proposed vapor sum limit is redundant and a costly criterion to evaluate without yielding a significant additional benefit. Soil air concentrations represent the concentrations of contaminants in the pore space of soil and in no way represent ambient air concentrations. Additionally, soil air concentrations are not potential exposure concentrations. As this standard is not relevant with respect to actual or potential human health exposures, it should be removed from the proposed rule.

391-3-19-.07(8)(d)2.

Revise to read -

> 2. Concentrations at ~~all~~ points above the water table ***and*** in the ***unsaturated*** soil that has been affected by the release shall not exceed concentrations described in Item 1 of Rule 391-3-19-.07(6)(c).

Rationale - The use of the word "all" implies that a site investigation would be required to be all encompassing up and beyond what is today considered acceptable by good science practices. GIEC believes that the soil criteria should only apply to unsaturated soil, or to the vadose zone. It is extremely difficult to differentiate between constituents associated with the soil and the groundwater in the saturated zone. GIEC therefore, recommends that the proposed language reference the "unsaturated" soil under Type 3 criteria.

391-3-19-.07(8)(d)3

Revise to read -

> 3. Concentrations in surface soil (soil within 2 feet of the land surface) shall not exceed the lower of the concentrations defined below. ~~In no event shall~~ ***With the Director's approval,*** compliance with the surface soil criteria be achieved by applying two feet of clean soil onto the original land surface.

Rationale - As provided in the Texas rules, GIEC strongly recommends that EPD reconsider the application of two feet of clean soil as an option in meeting the Type 3 risk reduction standard criteria. In some instances depending on the intended land use of the site, applying two feet of clean soil may sufficiently minimize or eliminate direct human exposure.

Revise to read -

> (i) Concentrations which are unlikely to result in any noncancer toxic effects on human health due to ingestion of soil and inhalation of particulates and volatiles, determined using Equation 7 of RAGS, Part B, and standard nonresidential exposure assumptions in Table 3 of Appendix III, ***or acceptable published methods and site-specific exposure factors for calculating acceptable concentrations.***

(ii) Concentrations for which the upper bound on the estimated excess cancer risk is less than or equal to 10^{-5} (10^{-4} for Class C carcinogens) for human ingestion of soil and inhalation of particulates and volatiles, determined using Equation 6, RAGS, Part B, and standard nonresidential exposure assumptions in Table 3 of Appendix III, ***or acceptable published methods and site-specific exposure factors for calculating acceptable concentrations.***

Rationale - Again, although RAGS is currently considered the U.S. EPA accepted approach to risk assessment applications, GIEC believes that EPD should expand the proposed language to include other acceptable methologies, including site-specific exposure factors in evaluating whether a site can meet an appropriate risk reduction standard.

O. CRITERIA FOR TYPE 4 STANDARDS.

391-3-19-.07(9)(b)

Revise to read -

(b) Type 4 standards are not applicable to residential ~~exposure scenarios~~ ***property.*** Type 4 standards are applicable where the responsible party documents that the activities being conducted ***or likely to be conducted*** on the property satisfy the definition for non-residential property at Rule 391-3-19-.02(2) and documents that a monitoring program will assure continued compliance with the Type 4 standards.

Rationale - Proposed Section 391-3-19-.02(2)(b') defines the term "residential property"; however, no where in the proposed rule was reference to the term found. GIEC believes that the term "residential property" is appropriately used in reference to the applicability of Type 3 and nonapplicability to Type 4 standards.

391-3-19-.07(9)(c)

Revise to read -

> (c) Criteria for groundwater. The responsible party must be able to demonstrate that the quality of any groundwater that has been affected by the release meets ~~Type 1~~ ***Type 2*** criteria at and beyond the property boundary. Within the property boundary, non-aqueous phase liquids must have been removed or decontaminated to the extent practicable. Concentrations of ***dissolved or non-aqueous undissolved liquid phase*** regulated substances in groundwater samples must not exceed, at all points within the property boundaries, the lesser of the values from Items 1 and 2 below or, for those substances for which neither calculation can be made, the detection limit ***and/or the background concentration.***

Rationale - Again, if the EPD adopts the Type 2 criteria for soils as proposed herein, GIEC believes that the Types 3,4 and 5 criteria should default to the Type 2 criteria, which as proposed takes into consideration the distance to the nearest plausible drinking water supply well or spring.

The presence of a NAPL regulated substance does not in-and-of-itself constitute a situation that poses a danger to human health or the environment. For any site-specific-risk-based approach, the decision to remove NAPLs must in fact be a site-specific-risk-based decision and not an up-front presumption or generic requirement.

It is important that the evaluation and regulation of metals in a groundwater sample distinguish those metals that are dissolved from those metals that are present (sorbed) on particulate matter that may be contained in a groundwater sample. It is common to find that monitoring wells will contain suspended matter from the soil formation that is a relic of the well installation, and not indicative of actual groundwater quality in the aquifer. This is particularly the case for low yield monitoring wells installed in fine-grained soil formations. Further, the drinking water criteria for metals in Table 1 are taken from criteria applicable for a drinking water distribution system which contains a significant amount of particulate matter. Also, the toxic effects of metals in drinking water are associated with the bioavailability of the metal. Bioavailability requires that the metal be in a dissolved (soluble) form. Therefore, the Table 1 groundwater criteria should be specified as dissolved (soluble) concentrations.

In addition, GIEC recommends that the language presented in the last sentence of this section should be included for consistently with the language provided in proposed Section 391-3-19-.07(4)(d).

391-3-19-.07(9)(d)

Revise to read -

(d) Criteria for soil. Concentrations at all points above the water table in soil that has been affected by the release shall not exceed the least of the following concentrations:

1. ***For all soils,*** concentrations which will not cause contamination of groundwater at levels which exceed Type 4 groundwater concentration criteria, as determined by any laboratory test and/or fate-and-transport model approved by USEPA and the Director, at a point of exposure defined as any point at which a drinking water well could be installed.

2. ***For all surficial soils and other soils where direct human exposure is not effectively precluded,*** concentrations which are unlikely to result in any noncancer toxic effects on human health via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 7 from RAGS, Part B, and site-specific exposure factors for the non-residential use scenario ***or published, scientifically-based, peer-reviewed methods and applicable exposure assumptions acceptable by the Director.***

3. ***For all surficial soils and other soils where direct human exposure is not effectively precluded*** concentrations for which the upper bound on the estimated excess cancer risk is less than or within the range 10^{-5} to 10^{-4} via soil ingestion along with inhalation of volatiles and particulates, determined using Equation 6 from RAGS, Part B, and site-specific exposure factors for the non-residential use scenario ***or published, scientifically-based, peer-reviewed methods and applicable exposure assumptions acceptable by the Director.***

Rationale - Again, GIEC suggests that the Director distinguish between the application of the Type 4 generic soil criteria to all soil versus surficial soil.

391-3-19-.07(9)(e)

Revise to read -

(e) The exposure assessments under Rule 391-3-10-.07(9)(c) and (d) above shall be conducted in a manner consistent with U.S. EPA's "Guidelines for Exposure Assessment" (57 FR 104:22888-22938; May 29, 1992). The Director shall determine which cancer risk level shall apply within the range provided in Item 2 of Rule 391-3-19-.07(9)(c) and Item 3 of Rule 391-3-19-.07(9)(d) above.

Rationale - We commend EPD in their support of the U.S. EPA "Guidelines for Exposure Assessment" in conducting risk assessments under the proposed rule. However, as written under this section of the proposed rule, the Director reserves the right to determine which cancer level shall apply within the risk range of 10^{-04} to 10^{-05}. The net effect will be to set a "bright line" risk level for individual sites and will serve to defeat the purpose of presenting estimated risk ranges versus simply a point estimate. The above referenced U.S. EPA Guidelines recommend presenting risk ranges. The primary importance of presenting ranges is that it allows the risk manager to not lose sight of the inherent uncertainties built into generating the risk estimates.

Under U.S. EPA policy, risks within the 10^{-04} to 10^{-05} range are generally acceptable and the risk manager must justify why remedial action is necessary in those case where the estimated cancer risks exceed 10^{-04}. We recommend that EPD adopt this approach.

P. CRITERIA FOR TYPE 5 STANDARDS

391-3-19-.07(10)(a)

Revise to read -

(a) Type 5 standards allow, ~~in those instances where immediate remediation to Type 1-4 standards is not appropriate,~~ the use of measures to control the regulated substances ~~or~~ ***on*** the property where the regulated substances are located. Such measures may consist of engineering controls, ~~such as construction of a fence, placement of a cap, installation of a slurry wall, or stabilization/ solidification/fixation of the waste or waste residues~~ ***natural controls, or institutional controls.*** Under Type 5 standards, ***treatment***, removal or decontamination are used where appropriate, to ~~remove~~ ***abate*** the principal threats at a site. ~~Where removal or decontamination is not appropriate, treatment.~~ ***Otherwise, other*** methods are used to significantly reduce ***and/or control*** the mobility, toxicity, and/or volume of the waste and waste residues to address the principal threats at a site. ***For example,*** treatment may be used in combination with on-site ~~containment~~ measures to reduce ***and/or control*** present and future threats from the site. The responsible party has the burden of being able to demonstrate ***to the satisfaction of the Director*** that the particular ~~mix of removal, decontamination, and/or control~~ measures ~~is the optimal blend~~ ***are appropriate*** to eliminate or abate present and future threats to human health ~~and~~ ***or*** the environment. Institutional controls should not ***be*** substitute***d*** for ~~active remedial~~ ***other*** measures, unless such ~~active~~ ***other*** measures are determined ~~to~~ not ***to*** be practicable.

Revise to read -

Sentence 1 ***"Type 5 standards allow the use of measures to control the regulated substances on the property where the regulated substances are located".***

Comment - Type 5 standards should be provided on equal footing with Type 1 through 4 risk reduction standards, not only in instances where immediate remediation to Type 1 through 4 is not appropriate. In an effort to meet all risk reduction standards, the initial step is to remediate immediate threats.

Sentence 2 ***"Such measures may consist of engineering controls, natural controls, or institutional controls".***

Rationale - GIEC believes that all measures are available and should be considered in addressing the release of a regulated substance.

Sentence 3 ***"Under Type 5 standards, treatment, removal or decontamination are used, where appropriate, to abate the principal threats at a site".***

Rationale - The basic principles of this sentence have not changed with regard to addressing the immediate threats at a site. GIEC believes that the proposed statement addresses EPD concerns.

Sentence 4 ***"Otherwise, other methods are used to significantly reduce and/or control the mobility, toxicity and/or volume of the waste and waste residues to address the principal threats at a site".***

Rationale - EPD should be supportive of a site-specific remedy solution that is cost effective.

Sentence 5 ***"For example, treatment may be used in combination with on-site measures to reduce and/or control present and future threats from the site".***

Rationale - Type 5 standards are highly site-specific and may therefore, consider any reasonable site-specific combination of measures or controls, including the use of treatment, stabilization, biodegradation, removal, engineering controls, natural controls or institutional controls that are practicable and that in combination effectively address the danger that the site poses.

Sentence 6 ***"The responsible party has the burden of being able to demonstrate to the satisfaction of the Director that the particular measures are appropriate to eliminate or abate present and future threats to human health or the environment".***

Rationale - The EPD-proposed language is based on "highest and best use" practices which in the real world are difficult to define. GIEC recommends "appropriate and reasonable" practices be considered.

Sentence 7 ***"Institutional controls should not be substituted for other measures, unless such other measures are determined not to be practicable."***

Rationale - Institutional controls may only be used in combination with other measures or controls and shall not be the sole means of addressing Type 5 sites.

391-3-19-.07(10)(d)2.

Revise to read -

> 2. Systemic toxicants. For systemic toxicants, the measures shall be expected to permanently prevent exposures which exceed the dose to which the human population (including sensitive subgroups) could be exposed on a daily basis without appreciable risk of deleterious effect during a lifetime. Exposures shall not exceed a hazard quotient ***of one*** or a ***cumulative*** hazard index ~~of one~~ ***ranging from 1 to 10.*** The hazard quotient is the ratio of a single systemic toxicant exposure level for a specified time period to a reference dose for that systemic toxicant derived from the same time period. The hazard index is the sum of the hazard quotients for a single or multiple systemic toxicants which affect the same target organ, or which act by the same method of toxicity through single or multiple media exposure pathways.

Rationale - The proposed rules specifies "that exposure shall not exceed a ... hazard index of one". This criteria is accepted by the U.S. EPA for residential exposure scenarios. The U.S. EPA accepts a cumulative hazard index value ranging from 1 for residential exposure scenarios, to a hazard index value of 10 for industrial exposure scenarios. GIEC believes that a residential scenario hazard index of one is overly conservative for application to Type 5 criteria standards. GIEC recommends that at the discretion of the Director a cumulative hazard index ranging from one to ten be used.

391-3-19-.07(10)(d)

Revise to read -

4. Groundwater. The measures shall be expected to permanently assure that groundwater concentrations shall not exceed Type 1-4 criteria, as applicable. The applicable groundwater criterion shall be achieved throughout the entire plume of contaminated groundwater, except where the remedial measure provides for soil being left in place with concentrations in excess of applicable soil criteria under Types 1-4, in which case the Director may exclude from this requirement that portion of the plume that lies directly under the contaminated soil, ~~as long as continuing releases to groundwater from the soil and continued vertical migration of the release~~ within groundwater ***is effectively controlled or precluded*** ~~are eliminated~~ by approved control measures. At a minimum, for all Type 5 cases, non-aqueous phase liquids in groundwater shall be removed or decontaminated to the extent practicable.

Rationale - The presence of a NAPL regulated substance does not in-and-of-itself constitute a situation that poses a danger to human health or the environment. For any site-specific-risk-based approach, the decision to remove NAPLs must in fact be a site-specific-risk-based decision and not an up-front presumption or generic requirement.

391-3-19-.07(10)(d)5.

Revise to read -

5. Soil. The measures shall not leave, beyond the effective control of ~~engineering control~~ ***such*** measures, concentrations of regulated substances in soil that exceed the soil criteria for Type 1-4 standards, as applicable.

Rationale - GIEC believes that the Type 5 performance criteria should not be limited solely to the engineering control measures. Other measures can provide the same or similar effectiveness in meeting the appropriate criteria. GIEC therefore, suggests that in addition to engineering controls, natural controls and institutional controls be considered.

Q. PROPERTY NOTICES

391-3-19-.08(1)

Revise to read -

> (1) **Notices to private property instruments.** This ~~Rule~~ ***paragraph*** applies to ~~the owner of any property that is listed on the Hazardous Site Inventory and has been designated~~ ***a site for which the Director has made a determination that the site poses a danger to human health or the environment and thus,*** as ~~needing~~ ***requiring*** corrective action pursuant to Rule 391-3-19-.06(6).

Rationale - The listing of a site on the Hazardous Site Inventory does not have any direct bearing on whether a notice is deemed necessary for a property. However, GIEC does acknowledge the necessity to place notices on private property instruments for sites which the Director has determined pose a danger to human health or the environment, and requiring corrective action. GIEC offers the proposed language noted above.

391-3-19-.08(7)

Revise to read -

> (7) **Restrictive covenants.** The owner of any property where the Type 5 risk reduction standards of Rule 391-3-19-.07(10) are being used shall, upon the request of the Director, execute a restrictive covenant for such property. The covenant shall be recorded with the clerk of superior court for the county in which the property is located, and a copy shall be provided to any zoning or land use planning authority that has jurisdiction over the property. Such restrictions shall run with the land and be binding on the owner's successors and assigns. ***If the Director reclassifies the property as Type 1,2,3,or 4, the Director shall cancel any restrictive covenant which has been executed under this Section.*** The restrictive covenant shall be prepared by the Director and may include, but not necessarily be limited to, provisions to accomplish the following:

Rationale - Nowhere in the proposed rule, are there provisions for the Director to resend a decision regarding his concurrence with a particular risk reduction standard for a site. GIEC therefore, suggests language to allow the Director to cancel a restrictive covenant under specific conditions.

391-3-19-.08(7)(a) and (b)

Revise to read -

> (a) Prohibit ***specific*** activities on the property that may ***significantly*** interfere with a remedial action, operation and maintenance, long term monitoring, or other measures necessary to ensure the integrity of the remedial action.
>
> (b) Prohibit ***specific*** activities that may result in human exposures above those specified for residential scenarios in Rule 391-3-19-.07(6) and (7) or for non-residential scenarios at Rule 391-3-19-.07(8) and (9), whichever scenario is applicable, and activities that would result in the release of a regulated substance which has been remedied in accordance with Rule 391-3-19-.07(10).

Rationale - A restrictive covenant shall be placed on a property instrument, but should address only those activities directly related to the site, not the property. Therefore, GIEC recommends language be incorporated to not overly-restrict a site or property that is unrelated to HSRA.

R. TABLE 1. GROUNDWATER CRITERIA IN APPENDIX III

- **Cross-reference to Appropriate and Applicable References**

  GIEC recommends replacing Table 1. Groundwater Criteria in Appendix III in its entirety with the Attachment A provided herein. GIEC has provided footnotes on Table 1 for each regulated substance/analyte with the appropriate reference source, where available. GIEC also requests that the EPD address criteria to selecting risk reduction standards in soil where groundwater criteria for a notifiable release has not yet been developed in Table 1 of Appendix III by the EPD.

- **Applicability To Dissolved Metals**

  The drinking water criteria for metals presented in Table 1 of Appendix III are taken from criteria applicable for a drinking water distribution system which is full of particulate matter. Also, the toxic effects of metals in drinking water are associated with the bioavailability of the metal. Bioavailability requires that the metal be in a dissolved (soluble) form. Therefore, the Table 1 groundwater criteria should be specified as dissolved (soluble) concentrations.

- **No Health-Based References Provided for Selected Regulated Substances/Analytes**

In providing the applicable reference values presented in footnotes (c),(d), and (e) in Table 1 of Appendix III, no reference values could be found for the following regulated substances/analytes:

Dichloroisopropyl ether;
1,4-Diethylene dioxide;
Diquat dibromide;
Nitroglycerin; and
Phosphorous, elemental.

GIEC requests that EPD verify the appropriate reference to the health-based values for the constituents listed above.

- **Discrepancies with Footnotes Provided in Table 1**

Page 25 of the proposed rule provides footnotes regarding EPD's rationalization in establishing health-based drinking water criterion. EPD indicated that in instances where MCLs or MCL Goals were not available, EPD calculated a cancer risk of 1 in 100,000 by dividing the referenced HA 10^{-4} values by a factor of 10. GIEC requests the following apparent discrepancies be addressed:

  - Epichlorohydrin is listed at a value of 0.04 mg/l. This value appears to be based on the cancer health advisory based on 10^{-4} risk.

  - Methylene chloride is listed at a value of 0.05 mg/l. This value appears to be based on the health advisory divided by 10; however methylene chloride has a MCL at 0.005 mg/l.

  - Trichlorofluoromethane is listed at a value of 2 mg/l. This value appears to be based on a health-based level times a factor of 2.

  - Trichlorophenoxyacetic acid, 2,4,5, is listed at a value of 0.07 mg/l. The health-based level appears to be 0.4 mg/l.

  - To convert a cancer risk of 10^{-5} to a reference cancer health advisory of 10^{-4}, the values should be multiplied by a factor of ten, not divided by a factor of ten. The values provided for the substances/analytes in Table 1 of Appendix III in which the health advisories were apparently divided by a factor of ten, include the following:

- Acrylamide;
- Acrylonitrile;
- Aldrin;
- Dichloropropene-1,3;
- Dieldrin;
- 1,1,1,2-Tetrachloroethane;
- 2,4,6-Trichlorophenol; and
- Vanadium.

TABLE 1
COMPARISON OF SOIL NOTIFICATION CONCENTRATIONS
TO TYPE 1 SOIL CRITERIA FOR SELECTED CONSTITUENTS
PROPOSED CORRECTIVE ACTION RULES
GEORGIA ENVIRONMENTAL PROTECTION DIVISION

CHEMICAL (mg/kg)	NOTIFICATION CONCENTRATIONS (NC) [a]	CORRECTIVE ACTION TYPE 1 SOIL CRITERIA (CASC)				NC GREATER THAN LEAST CASC VALUE
		TYPE 1-SOIL STANDARD [b]	GROUNDWATER CRITERIA [c] X 100	EQUATION 6 CONCENTRATION [d]	EQUATION 7 CONCENTRATION [e]	
METALS						
Arsenic	41	**10**	5.0 [f]	8.54 [f]	192.00 [f]	*
Beryllium	3	**2**	0.1 [f]	3.47 [f]	3,201.43 [f]	*
Cadmium	39	**2**	0.5 [f]	83,500.00 [f]	320.14 [f]	*
Chromium	1,200	**2**	10 [f]	12,500.00 [f]	3,201.43 [f]	*
Lead	300	**75**	1.5 [f]	ID	ID	*
Mercury	17	**0.5**	0.2 [f]	NA	192.00 [f]	*
Nickel	420	**50**	10 [f]	NA	12,814.29 [f]	*
VOLATILES						
Acetone	2.74	NA	**400**	NA	63,857.14	
Benzene	0.02	NA	**0.5**	8.78	1.59	
2-Butanone	0.79	NA	**200**	NA	6,042.86	
1,1-Dichloroethane	0.03	NA	**400**	NA	1,041.43	
1,1-Dichloroethylene	0.36	NA	**0.7**	2.14	5,742.86	
Methylene Chloride	0.08	NA	**5.0**	80.40	4,371.43	
Tetrachloroethylene	0.18	NA	**0.5**	73.30	6,385.71	
1,1,1-Trichloroethane	5.44	NA	**20**	NA	2,348.57	
1,1,2-Trichloroethane	0.5	NA	**0.3**	113.00	5,980.00	*
Trichloroethene	0.13	NA	**0.5**	30.00	3,840.00	
Vinyl Chloride	0.04	NA	0.2	**0.000424**	NA	*
Xylene	20	NA	**1,000**	NA	2,905.71	
SEMI-VOLATILES						
Bis(2-ethylhexyl)phthalate	50	NA	NL	**1,070.00**	12,814.29	*
Benzo(a)pyrene	1.64	NA	**0.02**	2.03	NA	*
Chrysene	5	NA	**0.02**	2,050.00	NA	*
Naphthalene	100	NA	**2.0**	NA	25,628.57	*
N-Nitrosodimethylamine	0.66	NA	**.0001**	0.000451	NA	*
Pyrene	500	NA	**100**	NA	19,200.00	*
2,3,7,8-TCDD	8x10-5	NA	**3x10-6**	0.0000996	NA	*
PESTICIDES/PCBs						
Chlordane	9.2	NA	**0.2**	10.80	38.40	*
DDT	0.66	NA	**0.01**	39.90	747.00	*
Dieldrin	0.66	NA	**0.002**	0.762	32.01	*
Alpha-BHC	0.66	NA	**0.02**	NA	192.00	*
PCB-1260	1.55	NA	**0.05**	ID	ID	*

NOTES: The least/applicable CASC is noted in bold, where applicable.
mg/kg - milligram per kilogram
NA - Not Applicable
NL - Not Listed
ID - Insufficient Data

SOURCES: (a) Rules of Georgia Department of Natural Resources, Chapter 391-3-19, Hazardous Site Response,
(b) Rules of Georgia Department of Natural Resources, Chapter 391-3-19, Hazardous Site Response, Appendix III, Table 2
(c) Rules of Georgia Department of Natural Resources, Chapter 391-3-19, Hazardous Site Response, Appendix III, Table 1
(d) RAGS, Part B 391-3-19-.07 (6)(c)3. - - "Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals), " USEPA document EPA/540/R-92/003, December 1991
(e) RAGS, Part B 391-3-19-.07 (6)(c)2. - - "Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals), " USEPA document EPA/540/R-92/003, December 1991
(f) Numerical values were calculated for comparative purposes only.

TABLE 2
Proposed Criteria for Type 2 Soil Standards
Proposed Corrective Action Rules
Georgia Environmental Protection Division

Chemical	Notification Concentrations (NC)	Type I and Type 2 Soil Standard (mg/kg)	Soil CASC [GW x 100] (mg/kg)	G.W. Criteria (mg/l)	Kd (mg/kg)	U.S. EPA Soil Screening (1x) (mg/kg)	U.S. EPA Soil Screening (10x) (mg/kg)	U.S. EPA Soil Screening (100x) (mg/kg)	U.S. EPA Soil Screening (1000x) (mg/kg)
METALS									
Arsenic	41	10	-----	0.05	200	10.005	100.05	1000.5	10005
Beryllium	3	2	-----	0.001	650	0.6501	6.501	65.01	650.1
Cadmium	39	2	-----	0.005	6.5	0.033	0.33	3.3	33
Chromium	1200	2	-----	0.1	850	85.01	850.1	8501	85010
Lead	300	75	-----	0.015	900	13.5015	135.015	1350.15	13501.5
Mercury	17	0.5	-----	0.002	10	0.0202	0.202	2.02	20.2
Nickel	420	50	-----	0.1	150	15.01	150.1	1501	15010
VOLATILES									
Acetone	2.74	-----	400	4	2.74	11.36	113.6	1136	11360
Benzene	0.02	-----	0.5	0.005	4.71	0.02405	0.2405	2.405	24.05
2-Butanone	0.79	-----	200	2	0.79	1.78	17.8	178	1780
1,1-Dichloroethane	0.03	-----	400	4	6.08	24.72	247.2	2472	24720
1,1-Dichloroethylene	0.36	-----	0.7	0.007	52.1	0.3654	3.654	36.54	365.4
Methylene Chloride	0.08	-----	5	0.05	1.7	0.09	0.9	9	90
Tetrachloroethylene	0.18	-----	0.5	0.005	36.2	0.1815	1.815	18.15	181.5
1,1,1-Trichloroethane	5.44	-----	20	0.2	27.2	5.46	54.6	546	5460
1,1,2-Trichloroethane	0.5	-----	0.3	0.003	12	0.0363	0.363	3.63	36.3
Trichloroethene	0.13	-----	0.5	0.005	25.19	0.12645	1.2645	12.645	126.45
Vinyl Chloride	0.04	-----	0.000424	0.002	20.5	0.0412	0.412	4.12	41.2
Xylenes (Total)	20	-----	1000	10	28.1	282	2820	28200	282000
SEMI-VOLATILES									
Bis(2-ethylhexyl)phthalate	50	-----	1070	-----	13300	N/A	N/A	N/A	N/A
Benzo(a)pyrene	1.64	-----	0.02	0.0002	771000	154.20002	1542.0002	15420.002	154200.02
Chrysene	5	-----	0.02	11	20200	222201.1	2222011	22220110	222201100
Napthalene	100	-----	2	0.02	372.55	7.453	74.53	745.3	7453
N-Nitrosodimethylamine	0.66	-----	0.0001	7.0E-7	0.03	0.000000091	0.00000091	0.0000091	0.000091
Pyrene	500	-----	100	1	9640	9640.1	96401	964010	9640100
2,3,7,8-TCDD	0.00008	-----	0.000003	3.0E-8	3650000	0.109500003	1.09500003	10.9500003	109.500003
PESTICIDES									
Chlordane	9.2	-----	0.2	0.002	5780	11.5602	115.602	1156.02	11560.2
DDT	0.66	-----	0.01	0.0001	23100	2.31001	23.1001	231.001	2310.01
Dieldrin	0.66	-----	0.002	0.00002	1270	0.0257402	0.257402	2.57402	25.7402
Alpha-BHC	0.66	-----	0.02	6.0E-6	303	0.0018186	0.018186	0.18186	1.8186
PCBs	1.55	-----	0.05	0.0005	80600	40.30005	403.0005	4030.005	40300.05

NOTES:

mg/kg = milligrams per kilogram
GW = Table 1. Groundwater Criteria in Appenidx III
mg/l = milligrams per liter
CASC = Corrective action standard criteria

U.S. Soil Screening Equation (mg/kg) =

$$Cw[(Kd) + (O * S/BD)]$$

where:	Values
Cw: acceptable groundwater limit (mg/L)	Type 2 GW criteria
Kd: Soil reference values (mg/kg) for groundwater protection	Table 3 - Derivation of Reportable Soil Concentrations, dated September, 1993
O: soil porosity (Lpore/Lsoil)	0.5
S: fraction water content (Lwater/Lpore)	0.3
BD: soil bulk density (kg/Lsoil)	1.5

ATTACHMENT A

GIEC-AMENDED
TABLE 1. GROUNDWATER CRITERIA OF
APPENDIX III

[GIEC recommends that Table 1 of Appendix III be modified to incorporate the appropriate references as provided by GIEC in Attachment 1 to the Specific Comments]

APPENDIX III
MEDIA TARGET CONCENTRATIONS AND STANDARD EXPOSURE ASSUMPTIONS

Table 1. Groundwater Criteria

CAS Number	Regulated Substance/Analyte	Concentration (mg/L)	
83329	Acenaphthene	2	(e)
67641	Acetone	4	(e)
75058	Acetonitrile	0.2	(e)
98862	Acetophenone	4	(e)
107028	Acrolein	0.7	(e)
79061	Acrylamide	0.0001 (a)	(d)
107131	Acrylonitrile	0.0006 (a)	(d)
116063	Aldicarb	0.007	(c)
309002	Aldrin	0.00002 (a)	(d)
7664417	Ammonia	30	(d)
7773060	Ammonium sulfamate	2	(d)
62533	Aniline	0.006 (a)	(e)
7440360	Antimony	0.006 (a)	(c)(f)
140578	Aramite	0.001 (a)	(e)
7440382	Arsenic	0.05	(c)(f)
1332214	Asbestos [fibers longer than 10 μm]	7 million/liter	(c)
7440393	Barium	2	(c)(f)
56553	Benz(a)anthracene	0.0001	(c)
71432	Benzene	0.005	(c)
92875	Benzidine	0.0000002 (a)	(e)
50328	Benzo(a)pyrene	0.0002	(c)
205992	Benzo(b)fluoranthene	0.0002	(c)
100447	Benzyl chloride	0.0002 (a)	(e)
7440417	Beryllium	0.001	(d)(f)
111444	Bis(2-Chloroethyl) ether	0.00003 (a)	(e)
75252	Bromoform	see Trihalomethanes	
85687	Butyl benzyl phthalate	0.1	(c)
7440439	Cadmium	0.005	(c)(f)
63252	Carbaryl	0.7	(d)
1563662	Carbofuran	0.04	(c)
75150	Carbon disulfide	4	(e)
56235	Carbon tetrachloride	0.005	(c)
57749	Chlordane	0.002	(c)
126998	Chloro-1,3-butadiene, 2-	0.7	(e)
106478	Chloroaniline, p-	0.1	(e)
108907	Chlorobenzene	0.1	(e)
510156	Chlorobenzilate	0.7	(e)
124481	Chlorodibromomethane	see Trihalomethanes	
67663	Chloroform	see Trihalomethanes	
95578	Chlorophenol, 2-	0.04	(d)
107051	Chloropropene, 3-	0.002	(e)

APPENDIX III
MEDIA TARGET CONCENTRATIONS AND STANDARD EXPOSURE ASSUMPTIONS

Table 1. Groundwater Criteria

CAS Number	Regulated Substance/Analyte	Concentration (mg/L)	
2921882	Chlorpyrifos	0.02	(d)
7440473	Chromium	0.1	(c)(f)
218019	Chrysene	0.0002 (a)	(c)
7440508	Copper	1.3	(f)
57125	Cyanide	0.2	(c)
72548	DDD	0.0001	(e)
72559	DDE	0.0001	(e)
50293	DDT	0.0001	(e)
75990	Dalapon	0.2	(c)
117840	Di-n-octyl phthalate	0.7	(e)
2303164	Diallate	0.0006 (a)	(e)
95807	Diaminotoluene, 2,4-	0.00001	(e)
333415	Diazinon	0.0006	(d)
53703	Dibenz(a,h)anthracene	0.0003	(c)
96128	Dibromochloropropane	0.0002	(c)
84742	Dibutyl phthalate	4	(e)
1918009	Dicamba	0.2	(d)
541731	Dichlorobenzene, m-	0.6	(c)
95501	Dichlorobenzene, o-	0.6	(c)
106467	Dichlorobenzene, p-	0.075	(c)
91941	Dichlorobenzidine, 3,3'-	0.00008 (a)	(e)
75274	Dichlorobromomethane	see Trihalomethanes	
75718	Dichlorodifluoromethane	1	(d)
75343	Dichloroethane, 1,1-	4	(e)
107062	Dichloroethane, 1,2-	0.005	(c)
75354	Dichloroethylene, 1,1-	0.007	(c)
156605	Dichloroethylene, trans-1,2-	0.1	(c)
108601	Dichloroisopropyl ether	0.3	
120832	Dichlorophenol, 2,4-	0.02	(d)
94757	Dichlorophenoxyacetic acid, 2,4-	0.07	(c)
78875	Dichloropropane, 1,2-	0.005	(c)
542756	Dichloropropene, 1,3-	0.002	(d)
60571	Dieldrin	0.00002 (a)	(d)
84662	Diethyl phthalate	5	(d)
123911	Diethylene dioxide, 1,4-	0.07	(a)
117817	Diethylhexyl phthalate	0.006	(c)
56531	Diethylstilbestrol	7	(e)
60515	Dimethoate	0.007	(e)
119904	Dimethoxybenzidine, 3,3'-	0.003 (a)	(e)
131113	Dimethyl phthalate	400	(e)
57976	Dimethylbenz(a)anthracene, 7,12-	0.000001 (a)	(e)
119937	Dimethylbenzidine, 3,3'-	0.000004 (a)	(e)
105679	Dimethylphenol, 2,4-	0.7	(e)
99650	Dinitrobenzene, m-	0.001 (a)	(d)

APPENDIX III
MEDIA TARGET CONCENTRATIONS AND STANDARD EXPOSURE ASSUMPTIONS

Table 1. Groundwater Criteria

CAS Number	Regulated Substance/Analyte	Concentration (mg/L)	
51285	Dinitrophenol, 2,4-	0.07	(e)
121142	Dinitrotoluene, 2,4-	0.00005 (a)	(e)
88857	Dinoseb	0.007	(c)
122394	Diphenylamine	0.2	(d)
122667	Diphenylhydrazine, 1,2-	0.00004 (a)	(e)
2764729	Diquat	0.02	(c)
85007	Diquat dibromide	0.02	
298044	Disulfoton	0.0003	(d)
330541	Diuron	0.01	(d)
115297	Endosulfan (mixed isomers)	0.002	(e)
145733	Endothall	0.1	(c)
72208	Endrin	0.002	(c)
106898	Epichlorohydrin	0.04	(d)
110805	Ethoxyethanol, 2-	10	(e)
60297	Ethyl ether	7	(e)
97632	Ethyl methacrylate	3	(e)
62500	Ethyl methanesulfonate	0.000001 (a)	(e)
100414	Ethylbenzene	0.7	(c)
106934	Ethylene dibromide	0.00005	(c)
52857	Famphur	0.001	(e)
22224926	Fenamiphos	0.002	(d)
206440	Fluoranthene	1	(e)
86737	Fluorene	1	(e)
16984488	Fluoride	4	(c)
944229	Fonofos	0.01	(d)
50000	Formaldehyde	1	(d)
64186	Formic acid	70	(e)
76448	Heptachlor	0.0004	(c)
1024573	Heptachlor epoxide	0.0002	(c)
118741	Hexachlorobenzene	0.001	(c)
87683	Hexachlorobutadiene	0.001 (a)	(d)
319846	Hexachlorocyclohexane (alpha)	0.000006 (a)	(e)
319857	Hexachlorocyclohexane (beta)	0.00002 (a)	(e)
77474	Hexachlorocyclopentadiene	0.05	(c)
67721	Hexachloroethane	0.001 (a)	(d)
70304	Hexachlorophene	0.01	(e)
193395	Indeno(1,2,3-cd)pyrene	0.0004	(c)
78831	Isobutyl alcohol	10	(e)
78591	Isophorone	0.1	(d)
143500	Kepone	0.000002 (a)	(e)
7439921	Lead	0.015	(f)
58899	Lindane	0.0002	(c)
121755	Malathion	0.2	(d)
123331	Maleic hydrazide	4	(d)

APPENDIX III
MEDIA TARGET CONCENTRATIONS AND STANDARD EXPOSURE ASSUMPTIONS

Table 1. Groundwater Criteria

CAS Number	Regulated Substance/Analyte	Concentration (mg/L)	
7439976	Mercury (inorganic)	0.002	(c)(f)
126987	Methacrylonitrile	0.004 (a)	(e)
67561	Methanol	20 (a)	(e)
16752775	Methomyl	0.2	(d)
72435	Methoxychlor	0.04	(c)
74839	Methyl bromide	0.01	(d)
74873	Methyl chloride	0.003	(e)
78933	Methyl ethyl ketone	2	(e)
80626	Methyl methacrylate	3	(e)
298000	Methyl parathion	0.002	(d)
74953	Methylene bromide	0.4	(e)
75092	Methylene chloride	0.05	(d)
108101	Methylisobutylketone	2	(e)
924163	N-Nitrosodi-n-butylamine	0.000006 (a)	(e)
621647	N-Nitrosodi-n-propylamine	0.000005 (a)	(e)
55185	N-Nitrosodiethylamine	0.0000002 (a)	(e)
62759	N-Nitrosodimethylamine	0.0000007 (a)	(e)
10595956	N-Nitrosomethylethylamine	0.000002 (a)	(e)
100754	N-Nitrosopiperidine	0.000008 (a)	(e)
930552	N-Nitrosopyrrolidine	0.00002 (a)	(e)
91203	Naphthalene	0.02	(d)
91598	Naphthylamine, 2-	0.00004 (a)	(e)
7440020	Nickel	0.1	(c)(f)
98953	Nitrobenzene	0.02	(c)
55630	Nitroglycerine	0.005	
100027	Nitrophenol, p-	0.06	(d)
79469	Nitropropane, 2-	0.000004 (a)	(e)
152169	Octamethylpyrophosphoramide	0.07	(e)
1336363	PCBs	0.0005	(c)
1910425	Paraquat	0.03	(d)
56382	Parathion	0.2	(e)
608935	Pentachlorobenzene	0.03	(e)
82688	Pentachloronitrobenzene	0.0001	(e)
87865	Pentachlorophenol	0.001	(c)
108952	Phenol	4	(d)
298022	Phorate	0.007	(e)
7723140	Phosphorus, elemental	0.0001	
23950585	Pronamide	0.05	(d)
129000	Pyrene	1	(e)
110861	Pyridine	0.04	(e)
94597	Safrole	0.0001 (a)	(e)
7782492	Selenium	0.05	(c)(f)
7440224	Silver	0.1	(d)(f)
93721	Silvex	0.05	(c)

APPENDIX III
MEDIA TARGET CONCENTRATIONS AND STANDARD EXPOSURE ASSUMPTIONS

Table 1. Groundwater Criteria

CAS Number	Regulated Substance/Analyte	Concentration (mg/L)	
57249	Strychnine and salts	0.01	(e)
100425	Styrene	0.1	(c)
1746016	TCDD, 2,3,7,8- [Dioxin]	3x10-8 (a) (b)	(c)
13071799	Terbufos	0.0009	(d)
95943	Tetrachlorobenzene, 1,2,4,5-	0.01	(e)
630206	Tetrachloroethane, 1,1,1,2-	0.01	(d)
79345	Tetrachloroethane, 1,1,2,2-	0.0002 (a)	(e)
127184	Tetrachloroethylene	0.005	(c)
58902	Tetrachlorophenol, 2,3,4,6-	1	(e)
3689245	Tetraethyldithiopyrophosphate	0.02	(e)
7440280	Thallium	0.002 (a)	(c)(f)
108883	Toluene	1	(c)
823405	Toluenediamine, 2,6-	7	(e)
95534	Toluidine, o-	0.0001 (a)	(e)
106490	Toluidine, p-	0.0002 (a)	(e)
8001352	Toxaphene	0.003	(c)
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2	1000	(e)
120821	Trichlorobenzene, 1,2,4-	0.07	(c)
71556	Trichloroethane, 1,1,1-	0.2	(c)
79005	Trichloroethane, 1,1,2-	0.003	(d)
79016	Trichloroethylene	0.005	(c)
75694	Trichlorofluoromethane	2	(e)
95954	Trichlorophenol, 2,4,5-	4	(e)
88062	Trichlorophenol, 2,4,6-	0.03	(d)
93765	Trichlorophenoxyacetic acid, 2,4,5-	0.07	
96184	Trichloropropane, 1,2,3-	0.04	(d)
	Trihalomethanes (total)	0.1	(c)
99354	Trinitrobenzene, 1,3,5-	0.002 (a)	(e)
126727	Tris(2,3-dibromopropyl)phosphate	0.00003 (a)	(e)
7440622	Vanadium	0.02	(e)(f)
75014	Vinyl chloride	0.002	(c)
1330207	Xylenes (total)	10	(c)
7440666	Zinc	2	(d)(f)

(a) The ~~health-based~~ drinking water criterion ***listed, based on footnotes c,d, and e below,*** for this substance/analyte is lower than the lowest currently achievable and available detection limit. According to Rule391-3-19-.07(4)(d), the detection limit or background will be the Type I groundwater concentration criterion for this substance/analyte.

(b) For the purposes of Rule 391-3-19-.07, all polychlorinated dibenzodioxins and dibenzofurans, are collectively considered as one substance, expressed as an equivalent concentration of 2,3,7,8-tetrachlorodibenzo-p-dioxin, based either upon the Toxicity Equivalency Factor approach described in "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans," U.S. Environmental Protection Agency, March 1989, or by consulting the Director to determine an appropriate method for determining 2,3,7,8-TCDD equivalents.

(c) Maximum Contaminant Levels (MCLs), Georgia Rules For Safe Drinking Water, Rule 391-3-5.

(d) Lifetime Health Advisories for 70 kg adult (USEPA, 1993), Drinking Water Regulations and Health Advisories, December 1993.

(e) RCRA Health-based Levels (USEPA, 1992), Docket Report on Health-based Levels and Solubilities Used in the Evaluation of Delisting Petitions, submitted under 40 CFR 260.20 and 260.22, July 1992.

(f) For purposes of these Rules, all concentration limits for metals in groundwater are for the dissolved metal state.