



# Florida Department of Environmental Protection

Bob Martinez Center  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Michael W. Sole  
Secretary

August 24, 2010

Don Parris  
Environmental Remediation Consultants, Inc.  
5734 39th Street Circle East  
Bradenton, Florida 34203

Re: **BIO-INTEGRATION**

Dear Mr. Parris:

The Florida Department of Environmental Protection (Department) hereby reaffirms and updates its acceptance of BIO-INTEGRATION, a process for in situ and ex situ bioremediation of soil and groundwater contaminants, including but not limited to aromatic hydrocarbons, methyl tertiary butyl ether, chlorinated solvents, polychlorinated biphenyls and pesticides. This reaffirmation supersedes the original acceptance issued September 7, 1999, and subsequent updates issued August 30, 2000 and August 3, 2006. This update reflects the current mailing address for Environmental Remediation Consultants Incorporated, and a renumbering of Rule 62-522.300(2)(c), Florida Administrative Code (F.A.C.) to 62-520.310(8)(c), F.A.C., that became effective July 12, 2009.

As you have indicated, BIO-INTEGRATION uses proprietary abiotic co-treatment amendments and a natural-occurring, non-pathogenic bacterial inoculum. A voucher is issued as Enclosure 1 in exchange for your confidential disclosure of the proprietary information.

Enclosure 2 is a citation and discussion of regulations that apply. Amongst those cited are Chapter 62-777, F.A.C., for cleanup criteria, and Chapter 62-528, F.A.C., for Underground Injection Control. The requirements of Chapter 62-528, F.A.C., apply directly to the injection of BIO-INTEGRATION for the purpose of in situ aquifer remediation. These requirements are also appropriate for the injection of BIO-INTEGRATION for the purpose of in situ soil remediation when the depth of the injection terminates at or close to the water table, or site conditions are such that BIO-INTEGRATION ingredients could percolate or leach into the underlying groundwater regardless of the vadose depth at which they are injected. Since in situ remediation via injection is likely to be the most common application of BIO-INTEGRATION, the bulk of the regulatory requirements discussed herein are directed to that topic.

The Department recognizes BIO-INTEGRATION as a viable process for the remediation of contaminated sites in Florida. There are no objections to its use provided: (a) the considerations of this

letter are taken into account; (b) a site-specific Remedial Action Plan is approved by the Department; and (c) either the terms of a zone of discharge variance granted by the Department on July 12, 2000 are observed, or a site-specific Remedial Action Plan adequately addresses the requirements of Rule 62-520.310(8)(c), F.A.C., with respect to BIO-INTEGRATION'S surfactants, nitrate, pH, sodium, and total dissolved solids, and chloride in the case of chlorinated contaminant cleanups.

While the Department of Environmental Protection does not provide endorsement of specific or brand name remediation products or processes, it does recognize the need to determine their acceptability from an environmental standpoint with respect to applicable rules and regulations, and the interests of public health and safety. Vendors must then market the products and processes on their own merits regarding performance, cost, and safety in comparison to competing alternatives in the marketplace. In no way shall this regulatory acceptance be construed as Department certification of performance. Additionally, the Department emphasizes a distinction between its regulatory acceptance and an approval. Products and processes are accepted but they are not approved.

Also, it is not a requirement that a remediation product or process have an official acceptance letter in order to be proposed in a site-specific Remedial Action Plan. The plan, however, must contain sufficient information about the product or process to show that it meets all applicable and appropriate rules and regulations.

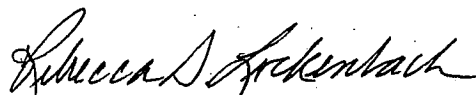
Those who prepare Remedial Action Plans are advised to include a copy of this letter in the appendix of plans they submit. In this way, technical reviewers throughout the state will be informed that you have contacted the Department of Environmental Protection in regard to BIO-INTEGRATION. Enclosure 3 contains supplemental information to aid reviewers and prospective users of this process.

The Department reserves the right to revoke its acceptance of any product or process that has been falsely represented. Additionally, Department acceptance of a product or process does not imply it has been deemed applicable for all cleanup situations, or that it is preferred over other treatment or cleanup techniques in any particular case. A site-specific evaluation of applicability and cost-effectiveness must be considered for any product or process, whether conventional or innovative, and adequate site-specific design details must be provided in a site-specific Remedial Action Plan. You may contact me at (850) 877-1133, extension 3722 if there are any questions.

Sincerely,



Rick Ruscito, P.E.  
Ecology and Environment, Inc.  
Bureau of Petroleum Storage Systems  
Petroleum Cleanup Section 6



Rebecca S. Lockenbach  
FDEP Section Leader  
Bureau of Petroleum Storage Systems  
Petroleum Cleanup Section 6

Enclosures: (1) Proprietary Formulation Voucher  
(2) Regulatory Information  
(3) Supplemental Information  
(4) Underground Injection Control Notification

c: Tom Conrardy - FDEP/Tallahassee

History:

INN\_034.doc/ppl #058 (9/7/1999)  
INN\_034a.doc/ppl #081 (8/29/2000)  
INN\_034b.doc/ppl #302 (8/3/2006)  
INN\_034c.doc/ppl #411 (8/24/2010)

PROPRIETARY FORMULATION VOUCHER



# Florida Department of Environmental Protection

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2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

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August 24, 2010

Don Parris  
Environmental Remediation Consultants, Inc.  
5734 39th Street Circle East  
Bradenton, Florida 34203

## Re: Proprietary Formulation Voucher for BIO-INTEGRATION

Dear Mr. Parris:

The Florida Department of Environmental Protection hereby acknowledges receipt of a confidential disclosure dated April 28, 2000 from Environmental Remediation Consultants Incorporated (ERC) regarding the proprietary formulation of bacterial inoculum and co-treatment amendments used in BIO-INTEGRATION, a process for the bioremediation of petroleum hydrocarbons and other suitable contaminants.

We hereby vouch for ERC's disclosure, which identifies the bacteria species and the chemical analysis of the proprietary formula. ERC has indicated that the formula contains only natural-occurring, nonpathogenic microorganisms, and that it is tested to verify the absence of *Salmonella*, *Shigella*, *Xanthomonas*, and *Escherichia coli*.

The formulation, however, exceeds the primary drinking water standards for nitrate and sodium, and the secondary drinking water standards for foaming agents (i.e. surfactants), pH, and total dissolved solids. Additionally, when used for the remediation of chlorinated compounds, the secondary drinking water standard for chloride could be exceeded. ERC petitioned for -- and was granted on July 12, 2000 -- a variance from Rule 62-522.300(2)(a), Florida Administrative Code (F.A.C.), in order to establish a temporary injection zone of discharge for the foregoing parameters for the injection of BIO-INTEGRATION fluids at overall concentrations of 4.5 percent or less by weight.

However, with the advent of Rule 62-522.300(2)(c), F.A.C., on August 27, 2001 [renumbered as 62-520.310(8)(c) or July 12, 2009] it became possible, in most cases, to obtain permission for a

temporary injection zone of discharge by rule rather than variance. The rule is applicable to BIO-INTEGRATION, so users of the process now have a choice as to how permission can be obtained for a temporary injection zone of discharge. They can use either the July 12, 2000 variance, which is still valid, or meet the requirements of Rule 62-520.310(8)(c), F.A.C.

Additionally, the Department is reasonably assured that BIO-INTEGRATION will not violate the minimum criteria for groundwater set forth in Section 62-520.400, F.A.C., which requires that the groundwater of the state be free from substances that are harmful to plants, animals, and organisms, and free from substances that are carcinogenic, mutagenic, teratogenic or toxic to human beings. However, the obligation to comply with the minimum groundwater criteria, and all other applicable rules and regulations, ultimately rests with ERC and users of the process, not the Florida Department of Environmental Protection. No ingredients, chemical species, or byproducts formed as a result of using BIO-INTEGRATION shall result in a violation of any applicable or appropriate rules and regulations by the time of cleanup project completion or expiration of the variance time period, whichever is sooner.

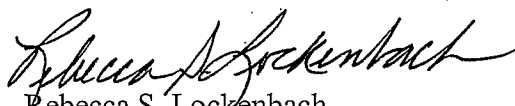
For underground injection control compliance purposes, a remediation plan proposing BIO-INTEGRATION must indicate the volume and composition of fluid to be injected into an aquifer. Since BIO-INTEGRATION is a proprietary formulation, it will suffice to identify just its overall concentration in the fluid to be injected, and to describe its composition in general as "natural-occurring, non-pathogenic bacterial inoculum and aqueous abiotic co-treatment amendments", and then provide a footnote indicating that a one-time confidential disclosure regarding the details of the proprietary formulation has been submitted to the Department and accepted. Reference should be made to the original April 28, 2000 disclosure, and a copy of this voucher may be included as an appendix in the plan.

If there are any questions, please contact the undersigned at (850) 877-1133, extension 3722.

Sincerely,



Rick Ruscito, P.E.  
Ecology and Environment, Inc.  
Bureau of Petroleum Storage Systems  
Petroleum Cleanup Section 6



Rebecca S. Lockenbach  
FDEP Section Leader  
Bureau of Petroleum Storage Systems  
Petroleum Cleanup Section 6

## ENCLOSURE 2

### REGULATORY INFORMATION

- a. Groundwater cleanup standards: The onus shall be on users of BIO-INTEGRATION to ensure that all applicable groundwater contaminant standards will be met at the time of project completion, for the contaminants of concern, any residuals associated with the ingredients of BIO-INTEGRATION, and any byproducts produced as a result of chemical or biochemical reactions involving those ingredients. Chapters of the Florida Administrative Code that apply include but are not necessarily limited to Chapter 62-550, F.A.C., for primary and secondary water quality standards; Chapter 62-520, F.A.C. for groundwater classes and standards; Chapter 62-522, F.A.C., for groundwater permitting and monitoring requirements; Chapter 62-528, F.A.C., for underground injection control, particularly Part V, for Class V, Group 4 aquifer remediation projects; Chapters 62-770, 62-780, 62-782, and 62-785 F.A.C., for cleanup criteria; and Chapter 62-777, F.A.C., for cleanup target levels
- b. Injection well permit: The issuance of a site-specific Remedial Action Plan Approval Order by the Florida Department of Environmental Protection, for remediation via injection of BIO-INTEGRATION into an aquifer, constitutes the granting of a Class V injection well permit.
- c. Groundwater injection standards: For in situ aquifer remediation, the composition of an injected fluid must meet both the minimum groundwater criteria of Chapter 62-520, F.A.C., and the drinking water standards of Chapter 62-550, F.A.C., pursuant to underground injection control Rule 62-528.600(2)(d), F.A.C. If the injected fluid does not meet this requirement, then permission for a temporary injection zone of discharge must be obtained by way of Rule 62-520.310(8)(c), F.A.C., or by way of a variance if its composition is such that the rule cannot be applied. Exception: BIO-INTEGRATION has a variance, even though the rule applies to it, the reason being that a variance was the only way to obtain permission for a zone of discharge in July 2000. The rule did not become effective until August 27, 2001. Since the variance is still valid, BIO-INTEGRATION can be permitted an injection zone of discharge either by way of the pre-existing variance or by way of Rule 62-520.310(8)(c), F.A.C.
- d. Zone of discharge by variance: The July 12, 2000 variance granted by the Department is for an exemption from Rule 62-522.300(2)(a), F.A.C., in order to create a temporary 50-foot zone of discharge in the aquifer around each injection point, as aqueous BIO-INTEGRATION amendment solution of overall concentration up to 4.5 percent by weight is injected. Within this zone of discharge, a temporary exceedance of the standards for six (6) drinking water parameters will be tolerated for a period of time not to exceed one (1) year. The drinking water standards set forth by Chapter 62-550, F.A.C., for the six parameters are: foaming agents, 0.5 milligrams per liter (mg/l) maximum; nitrate, 10 mg/l maximum; pH, range 6.5-8.5; sodium, 160 mg/l maximum; and total dissolved solids (TDS), 500 mg/l maximum; and in the case of chlorinated contaminant cleanups chloride, 250 mg/l maximum. By the end of the 1-year period, the groundwater must meet these values, or their natural-occurring background values at the remediation site, whichever is less stringent.

The terms of the July 12, 2000 variance, with respect to underground injection control, indicate that monitoring should be site-specific and addressed in a Department-approved remediation plan. At a minimum, such monitoring should include groundwater sampling before and after injection. A suggestion on how to comply with underground injection control monitoring requirements is given in paragraph g.3 below. The current Internet web page where the complete order granting a variance for a BIO-INTEGRATION zone of discharge can be viewed is [www.dep.state.fl.us/waste/categories/pcp/pages/list.htm](http://www.dep.state.fl.us/waste/categories/pcp/pages/list.htm).

- e. Zone of discharge by rule: Department approval of a BIO-INTEGRATION Remedial Action Plan constitutes permission for an injection zone of discharge if the plan: (a) identifies foaming agents, nitrate, pH, sodium, and total dissolved solids, and chloride in the case of chlorinated contaminant cleanups, as parameters that may temporarily exceed their groundwater standards; (b) specifies the size of the discharge zone that is needed (usually expressed as a radius of influence for each injection point); (c) specifies the amount of time that a temporary discharge zone is needed; and (d) addresses groundwater monitoring of the six BIO-INTEGRATION parameters of interest.

Department approval of a site-specific Remedial Action Plan that meets the requirements of Rule 62-520.310(8)(c), F.A.C., constitutes the granting of permission for a temporary injection zone of discharge at the specific site. This means that a temporary exceedance of groundwater quality will be tolerated for the six parameters associated with BIO-INTEGRATION while the contaminants of concern at a site are being remediated.

- f. Utilization of wells: If a remediation site happens to have an abundance of monitoring wells, then the Department has no objection to the use of some wells for the application of BIO-INTEGRATION fluids. However, no "designated" monitoring well, dedicated to the tracking of remediation progress (by sampling) shall be used to apply BIO-INTEGRATION fluids. This will avoid premature conclusions that the entire site meets cleanup goals. By making sure that designated tracking wells are not also used for treatment, there will be more assurance that the treatment process has permeated the entire site and that it did not remain localized to the area immediately surrounding each injection well.

- g. Groundwater monitoring:

1. Active remediation monitoring: During the period of active remediation, groundwater shall be monitored for the contaminants of concern in accordance with the requirements set forth in Section 62-770.700, F.A.C., for petroleum cleanup, or in accordance with the provisions of an approved Remedial Action Plan for non-petroleum cleanup.
2. Post active remediation monitoring: At least one (1) year of quarterly post active remediation groundwater monitoring shall be conducted for the contaminants of concern pursuant to Section 62-770.750, F.A.C., for petroleum cleanup, or in accordance with the provisions of an approved Remedial Action Plan for non-petroleum cleanup.

3. Underground injection control monitoring: Regardless of whether the temporary injection zone of discharge for the use of BIO-INTEGRATION was permitted by Rule 62-520.310(8)(c), F.A.C., or the July 12, 2000 variance, the monitoring of groundwater for the six BIO-INTEGRATION parameters of interest should fundamentally be the same. As indicated previously, the six parameters of interest are foaming agents, nitrate, pH, sodium, and total dissolved solids, and chloride in the case of chlorinated contaminant cleanups. These parameters must be measured both before and after the application of BIO-INTEGRATION. Pre-application samples can be taken from locations both inside and outside the groundwater contamination plume, in order to establish baseline values. The post application samples can be taken on a quarterly basis (or other suitable frequency) from representative locations within the area that was treated. As each parameter returns to its respective groundwater standard, or its natural-occurring background level at the site, its sampling can be discontinued or decreased in frequency.
- h. Underground injection control inventory: Remedial Action Plans proposing in situ, injection-type aquifer remediation shall include information required pursuant to Rule 62-528.630(2)(c)1 through 6, F.A.C., for the inventory purposes of underground injection control. Per Rule 62-528.630(2)(c), F.A.C., aquifer remediation projects involving injection wells may be authorized under the provisions of a Remedial Action Plan, provided the construction, operation, and monitoring requirements of Chapter 62-528, F.A.C., are met. A memorandum outlining the inventory information about injection-type aquifer remediation plans to be transmitted by Department reviewers to the Underground Injection Control Section is provided as Enclosure 4. Only the Department and its district offices may approve in situ, injection-type remediation plans in which the approval constitutes a Class V injection permit. See Enclosure 3.
- i. Operation:
  1. Avoidance of migration: For in situ, injection-type aquifer remediation projects, injection of BIO-INTEGRATION fluids shall be performed in such a way, and at such a rate and volume, that no undesirable migration of either the fluid's ingredients or the contaminants of concern in the aquifer results, pursuant to Rule 62-528.630(3), F.A.C.
  2. Underground injection control operating permit: Although an operating permit is not required for aquifer remediation wells pursuant to Rule 62-528.640(1)(b), and 62-528.640(1)(c), F.A.C., since no movement of the petroleum contamination plume is expected to accompany the BIO-INTEGRATION treatment process, the Department requests that the information items listed in Rule 62-528.640(1)(b), F.A.C., be considered and included in Remedial Action Plan proposals as a matter of good and thorough design practice. Briefly summarized, they are: quality of water in the aquifer; quality of the injected fluid; existing and potential uses of the affected aquifer; and well construction details. Additionally, each Remedial Action Plan should clearly indicate the total volume and overall concentration of BIO-INTEGRATION fluid that will be injected.
  3. Operating parameter measurements: Rule 62-770.700(9)(h), F.A.C., sets forth frequency requirements for the measurement of bioremediation operating parameters such as dissolved

oxygen levels, rates of nutrient addition, temperature, etc. It also includes an option for a reduction in the frequency or a discontinuation of some measurements when appropriate.

- j. Abandonment of wells: Upon issuance of a petroleum Site Rehabilitation Completion Order, or a declaration of "No Further Action", injection wells shall be abandoned pursuant to Section 62-528.645, F.A.C. The Underground Injection Control Section of the Department shall be notified so that the injection wells can be removed from the inventory-tracking list.
- k. Surface water considerations: The surface water requirements of Chapters 62-302 and 62-777, F.A.C., should be observed with respect to the ingredients and remediation by-products of BIO-INTEGRATION if there is a potential for interaction between the groundwater being treated at a site and an adjacent or nearby surface water body.

ENCLOSURE 3

SUPPLEMENTAL INFORMATION

- a. Department of Environmental Protection reviewers of in situ, injection-type aquifer remediation plans, regardless of whether in Tallahassee or district offices, must fill in the blanks on the Enclosure 4 Underground Injection Control notification memorandum, and submit it to Underground Injection Control Section in Tallahassee.

Only the Department and its district offices may approve in situ, injection-type aquifer remediation plans in which the approval constitutes a Class V injection permit. Local programs are not authorized to grant such approvals. They can, however, upon completion of their review of any type of injection-type aquifer remediation proposal (such as a Pilot Test Plan, Remedial Action Plan, or Remedial Action Modification Plan) draft an enforceable approval order on official Department letterhead and forward it to Tallahassee for signature. This is the same procedure that local programs already follow for processing the approval of any other type of Remedial Action Plan or a Site Rehabilitation Completion Order.

- b. Pilot study: For bioremediation, per rule 62-770.700(2), F.A.C., a pilot study proposal shall be submitted for review, and a pilot test shall be performed prior to designing a full-scale treatment system. If conditions at a site do not warrant a pilot study, then a proposal explaining the rationale for the decision not to perform a pilot study shall be submitted. There may also be situations in which a pilot study is by-passed because the size of the area in need of remediation is relatively small, and a pilot study would approach the scale of a full-scale treatment.
- c. Bacteria: It is generally reported (on a total weight basis) that bacteria are approximately 70 to 80 percent water. On a dry weight basis, approximately 95 percent of the composition is represented by 5 elements: carbon, oxygen, nitrogen, hydrogen, and phosphorus. At hydrocarbon remediation sites, it is intended that the source of carbon for the growth of bacteria will come from the hydrocarbons themselves, although natural-occurring organic carbon can also serve as a source. Depending on a site's specific conditions, the remaining four elements must either be available naturally, or added as macronutrients in order to stimulate bioremediation. Micronutrients must also be present. Users of bioremediation must understand the importance of making sure that the conditions of a cleanup site are conducive to bioremediation, and that they remain conducive throughout the cleanup.
- d. Degradation products: Carbon dioxide and water are the ultimate products of aerobic and most anaerobic biodegradations of hydrocarbons. In the case of methanogenesis, an anaerobic process, carbon dioxide and methane are produced.
- e. Degradation routes: For halogenated hydrocarbons being remediated under aerobiosis using constitutive dehalogenase enzymes, with redox potentials between 421 and 816 millivolts, Environmental Remediation Consultants Incorporated indicates that no intermediates are formed.

This is in contrast to anaerobic reductive dehalogenation, with redox potential of  $-220$  millivolts, a process that involves the formation of intermediates.

- f. Dosage: As indicated in the July 12, 2000 order granting a variance to Environmental Remediation Consultants Incorporated, the maximum overall concentration the injected BIO-INTEGRATION fluid is 4.5 percent by weight.

**Florida Department of**  
**Memorandum      Environmental Protection**

TO: Cathy McCarty, P.G.  
Florida Department of Environmental Protection  
Bureau of Water Facilities Regulation  
Underground Injection Control Section - MS 3530  
2600 Blair Stone Road, Tallahassee, FL 32399-2400

FROM: \_\_\_\_\_ (Note 1.)  
\_\_\_\_\_  
\_\_\_\_\_

DATE: \_\_\_\_\_

SUBJ: **Proposed Injection Well(s) for In Situ Aquifer  
Remediation at a Remedial Action Site**

Pursuant to paragraph 62-528.630(2)(c), F.A.C., inventory information is hereby provided regarding the proposed construction of temporary injection well(s) for the purpose of in situ aquifer remediation at a contaminated site.

Facility name: \_\_\_\_\_  
Facility address: \_\_\_\_\_  
City/County: \_\_\_\_\_  
Latitude/Longitude: \_\_\_\_\_  
FDEP Facility Number: \_\_\_\_\_

Facility owner's name: \_\_\_\_\_  
Facility owner's address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Well contractor's name: \_\_\_\_\_ (Note 2.)  
Well contractor's address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## AFFECTED AQUIFER

Name of aquifer: \_\_\_\_\_  
Depth to groundwater (feet): \_\_\_\_\_  
Aquifer thickness (feet): \_\_\_\_\_  
Areal extent of contamination (square feet): \_\_\_\_\_

## INJECTION WELLS

A site map showing the location and spacing of injection wells, the areal extent of the groundwater contamination plume, and associated monitoring wells is attached. The injection well(s) features are summarized below, and/or a schematic of the injection well(s) is attached.

Direct-push or HSA/Mud rotary (*circle the appropriate well type*)  
Diameter of well(s) (i.e., riser pipe & screen) (inches): \_\_\_\_\_  
Total depth of well(s) (feet): \_\_\_\_\_  
Screened interval: \_\_\_\_\_ to \_\_\_\_\_ feet below land surface  
Grouted interval: \_\_\_\_\_ to \_\_\_\_\_ feet below land surface  
Casing diameter, if applicable (inches): \_\_\_\_\_  
Cased depth, if applicable: \_\_\_\_\_ to \_\_\_\_\_ feet below land surface  
Casing material, if applicable: \_\_\_\_\_

## PROJECT DESCRIPTION

The in situ, injection-type aquifer remediation product/process remediates contaminants by:  
(check those that apply)

- ☐ bioremediation,  
☐ chemical oxidation, or  
☐ other (describe) \_\_\_\_\_

Brief description of the project:

\_\_\_\_\_  
\_\_\_\_\_

Summary of major design considerations and features of the project:

Number of injection wells: \_\_\_\_\_  
Injection volume per well (gallons): \_\_\_\_\_  
Single or multiple injection events: \_\_\_\_\_  
Injection volume total (all wells, all events): \_\_\_\_\_

## FLUID TO BE INJECTED

Composition of injected fluid:

(ingredient, wt. %) (Note 3.): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## TEMPORARY INJECTION ZONE OF DISCHARGE (ZOD)

(check those that apply)

- ☐ No ZOD needed. The fluid to be injected meets the primary and secondary groundwater standards of Chapter 62-550, F.A.C., and the minimum groundwater criteria of Chapters 62-520 and 62-777, F.A.C.
- ☐ ZOD permission by rule 62-520.310(8)(c), F.A.C., for reagent chemical species and/or parameter(s) in the fluid to be injected (or re-injected) that exceed secondary groundwater standards. ZOD permission by this rule also applies to chemical species in the fluid to be injected that exceed primary groundwater standards or minimum groundwater criteria, provided those species are prime constituents of the reagents used to remediate site contaminants. The list of chemical species and parameters for which the approved Remedial Action Plan identifies zone size, duration and groundwater monitoring are as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- ☐ ZOD permission by rule 62-520.310(8)(c), F.A.C., for the following contaminants of concern that exceed their groundwater standards in the fluid to be re-injected as part of a closed-loop re-injection system for which the approved Remedial Action Plan identifies zone size, duration and groundwater monitoring:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- ☐ ZOD permission by variance because fluid to be injected contains the following impurities that are not prime constituents of the reagents used to remediate the site's contaminants, and the concentration of those impurities in the fluid to be injected are in excess of their primary groundwater standards:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

☐ A variance needs to be granted before the remediation can be conducted.

☐ A variance has already been granted for the impurities listed above:

Date variance granted: \_\_\_\_\_ Zone size (feet): \_\_\_\_\_ Duration (time): \_\_\_\_\_

----- ◆◆◆ -----

- ☐ If ZOD permission by rule 62-520.310(8)(c), F.A.C., or by variance is checked above, then a figure that delineates the ZOD is attached, or ☐ the ZOD is described as follows:

\_\_\_\_\_  
\_\_\_\_\_

## CLEANUP CRITERIA AND ENFORCEABLE APPROVAL ORDER

In situ injection-type aquifer remediation of the contaminants of concern at this site is intended to meet the groundwater cleanup target levels established for them in accordance with applicable and appropriate chapters of the Florida Administrative Code and cited in the approved Remedial Action Plan. Additionally, all other groundwater standards will be met at the time of project completion for any residuals associated with the ingredients of the injected remediation products, and any by-products or intermediates produced as a result of the chemical or biochemical transformation of those ingredients or the contaminants of concern during their use. Applicable primary and secondary drinking water standards are set forth in Chapter 62-550, F.A.C., and additional groundwater quality criteria are set forth in Chapters 62-520 and 62-777, F.A.C.

The remediation plan estimates that site remediation will take \_\_\_\_\_ months. We will notify you if there are any modifications to the remediation strategy which will affect the injection well design or the chemical composition and volume of the injected remediation product(s).

The proposed remediation plan was approved on \_\_\_\_\_ by an enforceable approval order. A copy is attached. The remediation system installation is expected to commence within 60 days. Please call me at \_\_\_\_\_ if you require additional information.

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- Note 1. This notification memorandum is primarily for use by state technical reviewers, but remediation contractors may fill in all blanks except those labeled "FROM" and "DATE" on page 1, and the "approval date", and "telephone number" blanks in the last paragraph on page 4. Those blanks are filled only by the regulator. In the case that the memorandum form is partially completed by the remediation contractor, the FDEP technical reviewer must verify that the information provided by the contractor is accurate and complete. Local programs are not authorized to approve underground injections into aquifers. Reason: Per agreement with EPA, the FDEP cannot delegate this authority. Local programs, after reviewing a Remedial Action Plan or an injection proposal document, should follow the instructions in the March 16, 2000, memorandum to arrange for Department headquarters' execution of an approval order, and then complete this memorandum.
- Note 2. If an injection well installation contractor has not yet been selected, then indicate the name and address of the project's general remediation contractor/consultant.
- Note 3. Complete chemical analysis of the fluid to be injected is required by Chapter 62-528, F.A.C. Some remediation products and processes may have already submitted this information at the time of application for acceptance by the Innovative Technology Acceptance Program. For those situations, when completing the Fluid To Be Injected section of this memorandum, it will suffice to indicate: (1) an Innovative Technology Acceptance letter has been issued; (2) the date of the acceptance letter; (3) the acceptance letter contains the chemical analysis, or a voucher for the confidential disclosure of the injected fluid's chemical composition if it is a proprietary formulation; and (4) the fluid will be injected at concentrations that are less than or equal to those cited in the acceptance letter. For products and processes that do not hold an Innovative Technology Acceptance letter, but for which the site-specific Remedial Action Plan provides a complete description of the chemical composition of the fluid to be injected, it will be necessary to enter this information into the Fluid To Be Injected section of this memorandum.