



Florida Department of Environmental Protection

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

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Ryan E. Matthews
Interim Secretary

April 30, 2017

Via Electronic Mail to William L. Scogin at: bscogin@micro-blaze.com

Mr. William L. Scogin, President
Verde Environmental, Inc.
Home of Micro-Blaze®
9223 Eastex Freeway
Houston, Texas 77093

Re: **Micro-Blaze® Emergency Liquid Spill Control (Micro-Blaze® ELSC)**
Micro-Blaze® Non-Formulated

Dear Mr. Scogin:

The Florida Department of Environmental Protection's Division of Waste Management (Division) hereby accepts Micro-Blaze® Emergency Liquid Spill Control (aka Micro Blaze® ELSC) and Micro-Blaze® Non-Formulated microbial products for bioremediation petroleum and other suitable contaminants in groundwater and soil, in-situ and ex-situ.

Micro-Blaze® was originally accepted by the Division on November 5, 2001.

- The formulation of Micro-Blaze® has not changed, except surfactant of the formulation was replaced with a more environmentally friendly component. Additionally, the name has changed to **Micro-Blaze® ELSC** and recommended maximum concentrations for injections into aquifer have changed to 3% or less.
- **Micro-Blaze® Non-Formulated** is similar to Micro-Blaze®, except it does not contain surfactants or nutrients. It consists of naturally occurring, non-toxic, non-pathogenic bacteria preserved in water and it is used in groundwater applications when surfactants are not desired. The recommended concentrations for injections into aquifer are 3% or less.

The subject updated acceptance letter also addresses changed contact information for Micro-Blaze® ELSC and Micro-Blaze® Non-Formulated manufacturer/ distributor and the numbering of some of the applicable Florida Administrative Code rules as well.

This acceptance applies only to the regulatory jurisdiction and the remediation needs of the Petroleum Restoration Program (PRP), which is primarily the cleanup of subsurface petroleum contamination pursuant to Chapter 62-780, Florida Administrative Code (F.A.C.). Other state agencies and local governments may choose to recognize this acceptance if their needs and regulations are similar, but this Program is not responsible for applications beyond its jurisdiction.

For vadose remediation, where the underlying groundwater will not be affected by the leaching of Micro-Blaze® ELSC and Micro-Blaze® Non-Formulated, there are no special concerns beyond those that would

normally need to be addressed in preparing a Remedial Action Plan and conducting a cleanup in accordance with Chapters 62-780 and 62-777, F.A.C. However, for in situ groundwater remediation, via direct injection of Micro-Blaze® ELSC or Micro-Blaze® Non-Formulated into an aquifer, there are underground injection control regulations that must be observed. Since injection-type, in situ aquifer remediation is likely to be the most common application of Micro-Blaze® formulations, the bulk of the regulatory requirements discussed herein will be directed to that topic. Enclosure 1 contains Voucher for Disclosure of Proprietary Proportions of Ingredients. Enclosure 2 contains regulatory information. Enclosure 3 contains supplemental information.

While the Florida Department of Environmental Protection (FDEP) 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 safety. Vendors, upon receipt of an acceptance, must market their product or process on its merits regarding performance, cost, and safety in comparison to competing alternatives in the marketplace. This acceptance letter shall not be construed as either an approval of the product or a certification of its performance.

It is not a requirement that a remediation product or process obtain an acceptance from the Department in order to be proposed for use in a site-specific Remedial Action Plan, but the plan must contain information to show that it meets all applicable and appropriate rules and regulations. For Micro-Blaze® ELSC and Micro-Blaze® Non-Formulated, a copy of this acceptance letter containing regulatory compliance advice should be included in the appendix of each site-specific Remedial Action Plan that proposes its use.

The Department reserves the right to revoke its acceptance of a product or process if it has been falsely represented. Additionally, Department acceptance of any 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 Remedial Action Plan. If you have any questions, contact Elena Compton at (850) 245-8911, through Mail Station 4580 at the letterhead address, or by e-mail at Elena.Compton@dep.state.fl.us.

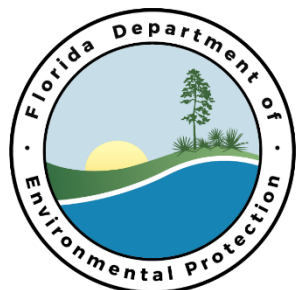
Sincerely,



Elena Compton, M.S., P.E.
Professional Engineer II
PRP Team 2, FDEP
850-245-8911

Enclosures: (1) Voucher; (2) Regulatory Information; (3) Supplemental Information

ec: Kenneth Busen, P.G. - FDEP/Tallahassee – Kenneth.Busen@dep.state.fl.us
John Wright, P.E. - FDEP/Tallahassee - John.Wright@dep.state.fl.us



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April 30, 2017

Mr. William L. Scogin
Verde Environmental, Inc.
Home of Micro-Blaze®
9223 Eastex Freeway
Houston, Texas 77093

Re: **Voucher for Disclosure of proprietary proportions of Ingredients in
Micro-Blaze® Emergency Liquid Spill Control (Micro-Blaze® ELSC)
and Micro-Blaze® Non-Formulated**

Dear Mr. Scogin:

The November 5, 2001, Petroleum Restoration Program's (PRP) acceptance letter acknowledged receipt of confidential disclosures dated January and February 2001 from Verde Environmental, Incorporated. The disclosures provided the proprietary proportions of ingredients in Micro-Blaze®. Based on the disclosure parameters / ingredients, a variance was granted to Verde Environmental on September 12, 2001, for a temporary zone of discharge when Micro-Blaze® is injected into aquifer for remediation purposes.

Additionally, the Florida Department of Environmental Protection's Division of Waste Management (Division) is in receipt of confidential disclosures received via unsecured e-mail on April 11 and April 20, 2017. The disclosures provided the proprietary proportions of some ingredients in Micro-Blaze® ELSC and Micro-Blaze® Non-Formulated and the changed one ingredient in Micro-Blaze® ELSC. The Division timely advised Verde Environmental to utilize only secure certified mail for confidential information transmittals. The April 11 and April 20, 2017, confidential information has been placed in the same secure location as the confidential disclosures dated January and February 2001.

Having reviewed the confidential disclosures received in April 2017, the Division vouches for their content, and provides advice in Enclosure 2 on how to comply with applicable regulations of the Florida Administrative Code (F.A.C.) when each of these two Micro-Blaze® products is used for the cleanup of contamination in accordance with a Department-approved, site-specific Remedial Action Plan. The Department, in offering its advice, has been careful to mention only enough general information about the chemical species and parameters that must be monitored by users in order to comply with Underground

ENCLOSURE 1

VOUCHER

Micro-Blaze® ELSC
Micro-Blaze® Non-Formulated
April 30, 2017

Injection Control regulations, but not so much information as to compromise the proprietary aspects of the products.

For Underground Injection Control purposes, injection-type aquifer remediation plans must specify both the volume and the complete chemical composition of the fluid to be injected. But since the details of the ingredients and their proportions in Micro-Blaze® ELSC and Micro-Blaze® Non-Formulated are proprietary, it will suffice to indicate just the fluid volume and concentration of each Micro-Blaze® product to be injected, and then provide a note that a confidential disclosure of the proprietary details has already been submitted to the Department and accepted. Reference should be made to this voucher, and a copy of it should be included as an appendix to the plan.

If you have any questions, contact Elena Compton at (850) 245-8911, through Mail Station 4580 at the letterhead address, or by e-mail at Elena.Compton@dep.state.fl.us.

Sincerely,



Elena Compton, M.S., P.E.
Professional Engineer II
PRP Team 2, FDEP
850-245-8911

ENCLOSURE 2

REGULATORY INFORMATION Micro-Blaze® ELSC Micro-Blaze® Non-Formulated April 30, 2017

1. Groundwater cleanup standards: The onus shall be on users of Micro-Blaze® ELCS and Micro-Blaze® Non-Formulated to ensure that all applicable groundwater standards will be met at the time of project completion for the contaminants of concern being remediated, and any by-products produced as a result of chemical or biochemical reactions induced or assisted by Micro-Blaze® ELCS or Micro-Blaze® Non-Formulated. The following chapters of the Florida Administrative Code (F.A.C.) are cited: 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 62-780, 62-782, and 62-785 F.A.C., for cleanup criteria; and Chapter 62-777, F.A.C., for cleanup target levels; and Chapter 62-780, F.A.C., for allowance of alternative cleanup target levels and conditional closure requirements.
2. Injection well permit: Per Rule 62-528.630(2)(c), F.A.C., the issuance of an enforceable, site-specific Remedial Action Plan Approval Order by the Department for injection-type aquifer remediation constitutes the granting of a Class V injection well construction/clearance permit.
3. Underground Injection Control (UIC): Remedial Action Plans proposing injection-type aquifer remediation shall include the information required by Rules 62-528.630(2)(c)1 through 6, F.A.C., for the purposes of the UIC program. Reviewers of those plans, upon issuance of a Department-enforceable Remedial Action Plan Approval Order must transmit this information to the UIC program in Tallahassee by submitting a completed copy of the "UIC Notification". The notification is in the form of a memorandum currently located on the Internet at www.dep.state.fl.us/waste/categories/pcp/pages/innovative.htm.
4. General information about temporary Zones of Discharge (ZOD): For groundwater remediation, the composition of a fluid to be injected must meet the primary and secondary drinking water standards set forth in Chapter 62-550, F.A.C., and the minimum groundwater criteria of Chapter 62-520, F.A.C. [and Chapter 62-777], pursuant to UIC Rule 62-528.600(2)(d), F.A.C. Aquifer remediation products that do not meet these requirements must seek relief from water quality criteria by one of two mechanisms as follows. Permission for a temporary ZOD may be obtained via Rule 62-520.310(8)(c), F.A.C. If permission for a ZOD cannot be obtained by rule, then it will be necessary to seek a variance from Department rules in accordance with Section 120.542, Florida Statutes.

Rule 62-520.310(8)(c), F.A.C., allows for a temporary ZOD for closed-loop re-injection systems, for the prime constituents of the reagents used to remediate site contaminants, and for groundwater secondary standards. In order to obtain permission for a temporary ZOD by rule, a site-specific Remedial Action Plan must indicate: (a) the chemical ingredients of concern in the fluid to be injected that will be present in excess of groundwater standards; (b) the size of the ZOD that is needed; (c) the amount of time that the ZOD will be needed; and (d) a plan for monitoring the injected chemical ingredients of concern.

The size of the temporary ZOD will usually be the injection well radius of influence when the treatment system is a single injection point. For a multiple point system, the ZOD can usually be

ENCLOSURE 2

REGULATORY INFORMATION

Micro-Blaze® ELSC

Micro-Blaze® Non-Formulated

April 30, 2017

expressed and illustrated as the total area covered by all the injection points, located side-by-side with overlapping radii of influence.

5. Site-specific Remedial Action Plans shall indicate the volume and concentration of the aqueous Micro-Blaze® ELCS or Micro-Blaze® Non-Formulated slurry/solution that will be injected. Verde Environmental should clearly indicate the full name of the product “Micro-Blaze® ELCS” or “Micro-Blaze® Non-Formulated”, since each formulation is subject to the specific set of provisions described in this letter.
6. On September 12, 2001, the Florida Department of Environmental Protection granted a variance to Verde Environmental Incorporated for a temporary zone of discharge when Micro-Blaze® is injected for the purpose of aquifer remediation. While this variance is still active, it was intended for broader concentrations applications. For concentrations of Micro-Blaze® ELCS outlined in the subject acceptance letter, obtaining permission for a temporary injection ZOD by way of Rule 62-520.310(8)(c), F.A.C., is preferred.
7. Specific ZOD information for Micro-Blaze® ELCS:
 - a. Obtain permission for a temporary injection ZOD by way of Rule 62-520.310(8)(c), F.A.C., for ammonia and nitrate.
 - b. For the ZOD parameters ammonia and nitrate, reviewers of Remedial Action Plans, when filling out the UIC Notification memorandum, should check the box labeled as follows:

“☐ 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. ...”.
8. Specific ZOD information for Micro-Blaze® Non-Formulated:
 - a. Due to Micro-Blaze® Non-Formulated does not contain surfactants and nutrients and consists only of non-pathogenic naturally occurring bacteria, there is no need to establish a ZOD.
9. Required UIC ZOD compliance monitoring for Micro-Blaze® ELCS: In order to comply with Rule 62-520.310(8)(c), F.A.C., the receiving groundwater must be monitored for ammonia and nitrate. Quarterly monitoring should suffice in most cases. Ammonia is classified as a minimum groundwater criterion contaminant with a current standard of 2.8 milligrams per liter (mg/L) maximum. Nitrate is classified as a primary groundwater contaminant with a standard of 10 milligrams per liter (mg/L). Per the November 5, 2001, PRP’s acceptance letter, the concentration of nitrate in Micro-Blaze® ELCS (aka Micro-Blaze®) does not exceed the 10 milligrams per liter primary drinking water standard, but it is significant in comparison to the standard. Additionally, when aquifers contaminated by chlorinated hydrocarbon solvents are remediated using Micro-Blaze® ELCS, the concentration of chloride in the groundwater may temporarily exceed its secondary drinking water standard of 250 milligrams per liter, depending on the concentration of chlorinated solvent initially present.

Upon expiration of the time period granted for the ZOD by way of Rule 62-520.310(8) (c), F.A.C., the concentrations/ values of these two (2) parameters must meet their respective groundwater standards or their natural-occurring background values at the specific cleanup site, whichever is less

ENCLOSURE 2

REGULATORY INFORMATION

Micro-Blaze® ELSC

Micro-Blaze® Non-Formulated

April 30, 2017

stringent. Conditional closure with exceedances of the primary and/or secondary standard (or background) is also allowable provided the closure criteria of Chapter 62-780.680, F.A.C. are met. Note that such conditional closure may require a modification of the size or duration of the ZOD. This modification must be approved in an enforceable order of the Department, such as a conditional Site Rehabilitation Completion Order.

10. Operating parameters: Remedial Action Plans should identify one of the Micro-Blaze® products (Micro-Blaze® ELCS or Micro-Blaze® Non-Formulated) operating parameters to be monitored in the groundwater during the period of active bioremediation. This type of monitoring is not for UIC compliance but rather the measurement of parameters that serve as indicators of biological activity; for example: dissolved oxygen; pH; temperature, oxidation-reduction potential; total organic carbon; phosphorus; electron acceptors such as sulfate and nitrate/nitrite; etc.
11. Utilization of wells: If a remediation site happens to have an abundance of monitoring wells, then the Division of Waste Management has no objection to the use of some wells for the injection of either Micro-Blaze® ELCS or Micro-Blaze® Non-Formulated solution/slurry if the wells are suitable for the purpose. However, no “designated” monitoring well, dedicated to the tracking of remediation progress (by sampling) shall be used to apply either Micro-Blaze® ELCS or Micro-Blaze® Non-Formulated. This will avoid a premature conclusion that the entire site meets cleanup goals. By making sure that designated tracking wells are not 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.
12. Three categories of groundwater monitoring:
 - a. Active remediation monitoring for a cleanup site’s contaminants of concern: During the period of active remediation, groundwater shall be monitored in accordance with the requirements set forth in Section 62-780.700, F.A.C.
 - b. Post Active Remediation Monitoring for a cleanup site’s contaminants of concern: At least one (1) year of quarterly post remediation groundwater monitoring for the contaminants of concern shall be conducted at a minimum of two (2) wells: one located in the area of highest contamination, the other at the downgradient edge of the contamination plume, pursuant to Section 62-780.750, F.A.C.
 - c. Monitoring of the UIC zone of discharge: For Micro-Blaze® ELCS, in order to comply with Rule 62-520.310(8)(c), F.A.C., monitor the ZOD for ammonia and nitrate as discussed in paragraph seven (7) above.
13. Injection operations:
 1. Avoidance of migration: For injection-type, in-situ aquifer remediation projects, injection of Micro-Blaze® ELCS and Micro-Blaze® Non-Formulated shall be performed in such a way, and at such a rate and volume that no undesirable migration of either the Micro-Blaze® ELCS, Micro-Blaze® Non-Formulated, or the contaminants of concern in the aquifer results, pursuant to Rule 62-528.630(3), F.A.C.

ENCLOSURE 2

REGULATORY INFORMATION

Micro-Blaze® ELSC
Micro-Blaze® Non-Formulated
April 30, 2017

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 contamination plume is expected to accompany the 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.
14. Abandonment of wells: Upon issuance of a 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.
15. Open-pit application: There is no objection to the introduction of either Micro-Blaze® ELCS or Micro-Blaze® Non-Formulated to an open excavation pit in which the groundwater has been exposed. Open-pit application is not injection, and it is not necessary to notify the Underground Injection Control Section, but this should not be construed as carte blanche to introduce to the pit any substance at any concentration with no regard to potential toxicological effects. The Division of Waste Management therefore recommends that the groundwater in the area of the pit be monitored for the same zone of discharge parameters that would have been monitored (if any) had the application actually been an injection.
16. Limitation: Micro-Blaze® ELCS and Micro-Blaze® Non-Formulated are not intended for bulk removal of free product. Per Verde Environmental web. site, if Micro-Blaze® ELCS is utilized for control of vapors and flammability, the residue and run-off after applying the diluted Micro-Blaze® ELCS solution must be collected and sent to industrial and municipal waste water treatment plants. The onus shall be on the user to properly collect and dispose treated contamination after Micro-Blaze® ELCS has been used.

ENCLOSURE 3

SUPPLEMENTAL INFORMATION

Micro-Blaze® ELSC
 Micro-Blaze® Non-Formulated
 April 30, 2017

1. Manufacturer/Distributor: Verde Environmental, Inc. – <http://www.micro-blaze.com>
2. Description: Per manufacturer's description,
 - **Micro-Blaze® ELCS** augments the bioremediation of contaminants by the application of a mixture of biodegradable alcohol ethoxylate surfactants, nutrients, and naturally occurring, non-toxic, non-pathogenic bacteria.
 - **Micro-Blaze® Non-Formulated** is the same product as Micro-Blaze® ELCS, except it does not contain surfactants or nutrients. It consists of naturally occurring, non-toxic, non-pathogenic bacteria preserved in water.
 - Micro-Blaze® ELCS and Micro-Blaze® Non-Formulated are concentrated liquids that are diluted to a 3% or less mixture with water and are user applied.

3. Chemical Composition:

- Per manufacturer's MSDS (published on its web. site), **Micro-Blaze® ELCS** consists of:

Name	CAS No	EC No
Water	7732-18-5	231-791-2
Viable Spore Forming Cultures	N/A	N/A
Alcohol Ethoxylate	68131-39-5	500-195-7
Urea	57-13-6	200-315-5
Dipotassium Phosphate	7758-11-4	231-834-5
Diammonium Phosphate	7783-28-0	231-987-8
EDTA	64-02-8	200-573-9
Fragrance	Proprietary	Proprietary

* The exact percentage (concentration) of composition has been withheld as a trade secret

- Per manufacturer's MSDS (published on its web. site), **Micro-Blaze® Non-Formulated** consists of:

Name	CAS No	EC No
Water	7732-18-5	231-791-2
Viable Spore Forming Cultures	N/A	N/A
EDTA	64-02-8	200-573-9
Fragrance	Proprietary	Proprietary

* The exact percentage (concentration) of composition has been withheld as a trade secret

3. NCP Federal Preapproval: The Environmental Protection Agency (EPA) maintains a schedule, called the National Contingency Plan (NCP) Product Schedule, of dispersants and other chemicals or bioremediation products that may be used on oil discharges in accordance with procedures set forth in 40 Code of Federal Regulations Section 300.910. Micro-Blaze® is listed in the NCP Product schedule.