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www.golder.com

July 2, 2007 Our Ref.: 053-7466-100

Mr. Balaji Angle
B & C Gas Mini Mart
35584 Connovan Lane
Fremont, CA 94536

RE: MTBE BIODEGRADATION BACTERIA SAMPLING RESULTS, FORMER DESERT PETROLEUM, B&C GAS MINI MART, 2008 FIRST STREET, LIVERMORE, CALIFORNIA (STATION ID RO 0000278)

Dear Mr. Angle:

This letter transmits results of recent groundwater sampling and analyses for evidence of MTBE degrading microbes for the Desert Petroleum/B&C Gas Mini Mart at 2008 First Street, Livermore, California. This sampling and analysis was performed to respond to a request from Alameda County Environmental Health (ACEH) by letter dated March 26, 2007 to collect evidence to demonstrate natural attenuation of MTBE.

Groundwater samples were obtained from four downgradient monitoring wells (MW-5, MW-7, MW-13, and CMT-2 Z-3 [zone 2 of CMT-2 was essentially dry and a sample could not be obtained]) on June 25, 2007. Groundwater from each well was passed through laboratory-supplied filters, which were submitted to Microbial Insights, Inc., a laboratory that specializes in cutting edge genetic and chemical diagnostic tests to describe and quantify microbes and microbial communities. A laboratory test was run on each sample to detect a strain of bacteria (Methylobium petroleophilum strain, PM1) that is the primary organism shown to degrade MTBE aerobically.

Pilot and field studies have demonstrated aerobic degradation of MTBE by PM1.[1] PM1-like bacteria have been shown to be naturally occurring in a number of MTBE-contaminated aquifers in

[1] Eweis, J.B., E.D. Schroeder, D.P. Chang, and K.M. Scow. 1998. Biodegradation of MTBE in a pilot-scale biofilter, p. 342-346. In: Wickramanayake, G.B., and R.E. Hinchee (Eds.). Natural attenuation. Chlorinated and recalcitrant compounds. Battelle Press, Columbus, Ohio.

Wilson, R.D., D.M. Mackay, and K.M. Scow. 2001. In situ MTBE biodegradation supported by diffusive oxygen release. Environ. Sci. Technol. 36:190-199.

Stavnes S.A., J. Fleischman, J. Goetz, K. Hristova, S. Hunt, M. Kemper, K. Knutson, W. Mahaffee, M. Roulier, K. Scow, D.J. Slomczynski, and W.J. Davis-Hoover. 2002. MTBE bioremediation with BioNets containing Isolite, PM1, SOS or air. 2B-66. In: A. R. Gavaskar and A.S.C. Chen (Eds.), Proceedings of the Third International Conference of Chlorinated and Recalcitrant Compounds. Battelle Press, Columbus, OH.

Davis-Hoover , W.J., S.A. Stavnes, J.J. Fleischman, S. C. Hunt , J. Goetz, M. Kemper, M. Roulier ,K. Hristova, K. Scow, K. Knutson, W.R. Mahaffey, and D.J. Slomczynski. 2003. BTEX/MTBE bioremediation: Bionets containing Isolite, PM1, SOS or air. E-25. In: V.S. Magar and M.E. Kelley (Eds.) Proceedings of the Seventh International In Situ and On-site Bioremediation Symposium. Battelle Press, Columbus, OH.

Smith, A., K. Hristova, I. Wood, D.M. Mackay, E. Lory, and K.M. Scow. 2004. Comparison of biostimulation versus bioaugmentation with bacterial strain PM1 for treatment of groundwater contaminated with methyl tertiary butyl ether (MTBE). Environ. Health Perspectives • Volume 113, Number 3, March 2005

California.[2] The presence of PM1-like bacteria has been correlated with MTBE degradation activity in numerous sites.[3] Increases in PM1-like bacterial populations correspond to MTBE removal, which suggests that a PM1-like organism may play a major role in MTBE biodegradation under aerobic aquifer conditions.

Analytical Results

Molecular community analysis of groundwater samples obtained downgradient of the Desert Petroleum/B&C site confirmed the presence of PM1. Therefore, indigenous microbes that are capable of degrading MTBE are present in the site groundwater. Population densities ranged as high as 4.47E+03 cells/milliliter (cells/ml) in well MW-5, where MTBE concentrations are high, to 2.33E+01 cells/ml in CMT-2 Z-3, where MTBE concentrations are low or non-detect. The following table presents the analytical results (see attached analytical report).

Groundwater Monitoring Results
MTBE-degrading Bacteria PM1

Well Number	**MW-5**	**MW-7**	**MW-13**	**CMT-2 Z-3**
Sample Date	06/25/07	06/25/07	06/25/07	06/25/07
Units	cells/ml	cells/ml	cells/ml	cells/ml
MTBE-degrading Bacteria PM1	4,470	326	28.5	23.3
Previous MTBE Concentrations, µg/l (First quarter 2007)	23	22	4.6	<0.5 (Z-2)

Conclusions

These results confirm the previous observations made with regard to the degradation of MTBE downgradient of the site. The MTBE plume is stable or decreasing and all geochemical indicators provide evidence of biological processes within the plume. Now there is evidence for MTBE-

[2] Kane, S.R., H.R. Beller, T.C. Legler, C.J. Koester, H.C. Pinkart, R.U. Halden, and A. M. Happel. 2001. Aerobic biodegradation of methyl tert-butyl ether by aquifer bacteria from leaking underground storage tank sites. Appl. Environ. Microbiol. 67:5824-5829.

Kane, S.R., T.C. Legler, L.M. Balser, and K.T. O'Reilly. 2003. Aerobic biodegradation of MTBE by aquifer bacteria from LUFT sites. E-12. In: V.S. Magar and M.E. Kelley (Eds.) Proceedings of the Seventh International In Situ and On-site Bioremediation Symposium. Battelle Press, Columbus, OH.

Hristova, K., B. Gebreyesus, D. Mackay, and K.M. Scow. 2003. Naturally occurring bacteria similar to the methyl tert-butyl ether (MTBE)-degrading strain PM1 are present in MTBE-contaminated groundwater. Appl. Environ. Microbiol. 69(5):2616-2623.

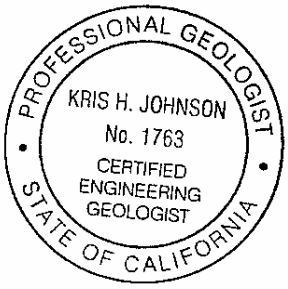
[3] Hristova, K.R., C.M. Lutenegger, and K.M. Scow. 2001. Detection and quantification of MTBE-degrading strain PM1 by real-time TaqMan PCR. Appl. Environ. Microbiol. 67: 5154-5160.

degrading bacteria within the groundwater downgradient of the site, with higher populations where there is higher MTBE concentrations.

These sample results also will be included and discussed in the second quarter 2007 monitoring report. Please call if you have questions regarding this letter.

Sincerely,

GOLDER ASSOCIATES INC.



Kris H. Johnson C.E.G. 1763
Senior Consultant

Attachments: Laboratory Certified Analytical Report

cc: Ms. Donna Drogos, ACEH (electronic upload)
Ms. Colleen Winey, Alameda Co. Flood Control and Water Cons. District Zone 7 (electronic)
Ms. Chris Davidson, City of Livermore (electronic)
Ms. Mary Rose Cassa, RWQCB (electronic)
Ms. Danielle Stefani, Livermore-Pleasanton Fire Department (electronic)
Mr. Sunil Ramdass, SWRCB (electronic)
Mr. John Freeman, California Water Service Co. (electronic)
Mr. Michael Veiluva (electronic)
Mr. Glenn Young, Fugro West (electronic)

microbialinsights

2340 Stock Creek Blvd.
Rockford TN 37853-3044
Phone: (865) 573-8188
Fax: (865) 573-8133
Email: info@microbe.com

DNA Analysis Report

Client: Kris Johnson
Golder Associates Inc.
2580 Wyandotte St
Suite G
Mountain View, CA 94043

Phone: (650) 386-3828

Fax:

MI Identifier: 063EF **Date Rec:** 06/26/2007 **Report Date:** 06/26/2007

Client Project #: 0537466100 **Client Project Name:** BandC Gas Mini Mart, Livermore CA

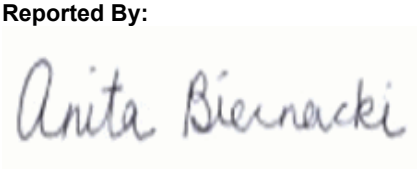
Purchase Order #:

Analysis Requested: CENSUS

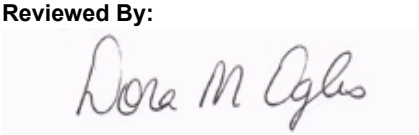
Comments:

All samples within this data package were analyzed under U.S. EPA Good Laboratory Practice Standards: Toxic Substances Control Act (40 CFR part 790). All samples were processed according to standard operating procedures. Test results submitted in this data package meet the quality assurance requirements established by Microbial Insights, Inc.

Reported By:



Reviewed By:



MICROBIAL INSIGHTS, INC.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel: (865) 573-8188; Fax: (865) 573-8133

Q Potential (DNA)

Client: **Golder Associates Inc.**
Project: BandC Gas Mini Mart, Livermore CA

MI Project Number: **063EF**
Date Received: 06/26/2007

Sample Information

Client Sample ID:		**MW-5**	**MW-7**	**MW-13**	**CMT2-Z3**
Sample Date:		06/25/2007	06/25/2007	06/25/2007	06/25/2007
Units:		cells/mL	cells/mL	cells/mL	cells/mL
MTBE degrading Bacteria PM1	PM1	**4.47E+03**	**3.26E+02**	**2.85E+01**	**2.33E+01**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Notes:
1 Bio-Dechlor Census technology was developed by Dr. Loeffler and colleagues at Georgia Institute of Technology and was licensed for use through Regenesis.

REPORT TO:

Reports will be provided to the contact(s) listed below. Parties other than the contact(s) listed below will require prior approval.

Name: Kris Johnson

Company: Golder Associates

Address: 2580 Wyandotte st. Ste G
MT. View, CA 94043

email: KJohnson@Golder.com

Phone: (650) 386-3828

Fax: (650) 386-3815

Project Manager: Kris Johnson

Project Name: BandC Gas Mini Mart, Livermore CA

Project No.: 0537466100

INVOICE TO:

For Invoices **paid by a third party** it is imperative that contact information & corresponding reference No. be provided.

Name: Golder Associates

Company: Golder Associates

Address: Same

email:

Phone: ( )

Fax: ( )

Purchase Order No.

Subcontract No.

microbialinsights

2340 Stock Creek Blvd.
Rockford, TN 37853-3044
phone (865) 573-8188
fax: (865) 573-8133
email: info@microbe.com
www.microbe.com

Please Check One:

☐ More samples to follow

☒ No Additional Samples

Saturday Delivery

Please see sampling protocol for instructions

Report Type: ☒ Standard (default) ☐ Comprehensive (15% surcharge) ☐ Historical (30% surcharge)

Please contact us prior to submitting samples regarding questions about the analyses you are requesting at (865) 573-8188 (8:00 am to 4:00 pm M-F). After these hours please call (865) 300-8053.

Sample Information												Q-Targets: Prior to selecting targets mark either Q-Potential for DNA or Q-Expression for RNA																							
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	VFA	M/E/E	DGGE+3ID	DGGE+5ID	Q-Potential (DNA)	Q-Expression (RNA)*	qDHC (Dehalococcoides)	qTCE R-Dase	qBAV1 VC R-Dase	qDHB (Dehalobacter)	qDSM (Desulfuromonas)	qDSB (Desulfitobacterium)	qEBAC (Total)	qDSR (SRBs only)	qSRB/IRB	qMGN (methanogens)	qMOB (methanotrophs)	qDNF (Denitrifying)	qAOB (ammonia oxidizing)	qPM1 (MTBE aerobic)	qTOD (Initial PAHs aerobic)	qCAT (Intermediate PAHs aerobic)	qBSS (Toluene/Xylene Anaerobic)	qNAH (Napthalene aerobic)	add. qPCR:	add. qPCR:	add. qPCR:	Other:	Other:	Other:
063EF 1	MW-5	6/25/07	1415	W																					X										
2	MW-7		1445																						X										
3	MW-13		1500																						X										
4	CMT2-Z3		1525																						X										

Relinquished by: [signature] Date: 6/25/07 Received by: Tiffany Morgan Date 6/26/07

In order for analysis to be completed correctly, it is vital that chain of custody is filled out correctly & that all relative information is provided. Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable. * **additional cost and sample preservation are associated with RNA samples.**