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Australia Sludge Demonstration for a Major Oil Company

A major oil company requested that OSE II be demonstrated on their sludge. The major oil company hand delivered the sludge to our to the OSEI Corporation distributor CMTA International, who's field office was within walking distance to the Major oil company. The major oil company periodically dropped by the demonstration area to view the progress OSE II was obtaining on the remediation of the sludge.

The major oil company was interested in finding a solution for handling their sludge produced in operations. Currently the sludge is decanted into hazardous waste hauling trucks, a 100's of miles to be disposed of, which is extremely costly.

The sludge was placed in an aquarium, where a sample was extracted to see the starting point of the sludge TPH. The starting point was 360,000 and 340,000 mg/l in two of the measurements, this is quite elevated, but not as elevated as other trials and clean ups OSE II has handled.

OSE II was applied at a mixing ratio of 50 to1 or 2%, and then applied 1 to 1 to the sludge with the mixed OSE II and natural water. 22 days after the initial application of OSE II, samples were extracted, and the TPH was reduced to 16,000 and 17,000 down from 340,000, and 360,000 mg/l great reduction which is over a 95% reduction in TPH, once again great results.

The sludge was sampled 55 days after applying OSE II, where the results showed 1400, and 1300, which is over a 99% reduction in TPH, the major oil company has decided to incorporate OSE II into their system to reduce the sludge on site rather than paying the hazardous waste haulers large amounts of money, projecting a great savings of money.

OSE II and natural water mixture showed how effective OSE II is at remediating even high TPH sludge of 90%, and over 95% within 55 days, this allows oil companies to produce a zero footprint while carry out oil and gas operations, this is protecting

the environment! OSE II emulates Mother Natures own process to convert hazardous wastes to a safe end point of CO2 and water.

Steven Pedigo

CEO OSEI Corporation

See Initial and 22 day Laboratory tests below



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Certificate of Analysis MFF0198

Client Details

Client	Hibbs & Associates Pty Ltd
Contact	George Dervusoski
Address	PO Box 4266, HOMEBUSH, NSW, 2140

Sample Details

Your Reference	S13167
Number of Samples	2 Oil
Date Samples Received	13/06/2024
Date Instructions Received	13/06/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date Results Requested by	17/06/2024
Date of Issue	17/06/2024

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Authorisation Details

Results Approved By	Tianna Milburn, Senior Chemist
Laboratory Manager	Pamela Adams

Certificate of Analysis MFF0198

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
MFF0198-01	Sludge 1 Untreated	Oil	13/06/2024	13/06/2024
MFF0198-02	Sludge 2-22 days post treatment	Oil	13/06/2024	13/06/2024

Certificate of Analysis MFF0198

Semi-volatile TRH (Oil)

Envirolab ID	Units	PQL	MFF0198-01	MFF0198-02
Your Reference			Sludge 1-Untreated	Sludge 2-22 days post treatment
Date Sampled			13/06/2024	13/06/2024
TRH C10-C14*	mg/kg	50	9200	<500
TRH C15-C28*	mg/kg	100	340000	16000
TRH C29-C36*	mg/kg	100	63000	2900
TRH >C10-C16*	mg/kg	50	34000	1400
TRH >C16-C31 (E3)*	mg/kg	100	360000	17000
TRH >C34-C40 (F4)*	mg/kg	100	22000	1200
Surrogate o-Topheny**	%		## [1]	## [1]

Certificate of Analysis MFF0198

Result Comments

Identifier	Description
[1]	Surrogate recovery is outside routine acceptance criteria (60-140%) as a result of the high concentration of analyte(s) in the sample.

Certificate of Analysis MFF0198

Method Summary

Method ID	Methodology Summary
ORG (20_OIL	Oil samples are diluted with solvent and analysed by GC-FID. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).

Certificate of Analysis MFF0198

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Certificate of Analysis MFF0198

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QA/QC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/- 50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10³xPQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary MFF0198

Client Details

Client	Hibbs & Associates Pty Ltd
Your Reference	513167
Date Issued	17/06/2024

Recommended Holding Time Compliance

No recommended holding time exceedances

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	Yes	No Outliers
Surrogates / Extracted Internal Standards	No	Surrogates / Extracted ISTD Outliers Exist - See detailed list below
QC Frequency	No	QC Frequency Outliers Exist - See detailed list below

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary MFF0198

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
sTRH Oil	1	13/06/2024	14/06/2024	15/06/2024	Yes
	2	13/06/2024	14/06/2024	16/06/2024	Yes

Outliers: Surrogate / Extracted Internal Standards

ORG-020_OIL | Semi-volatile TRH (Matrix) | Batch BFF2111

Sample ID	Analyte	% Limits	% Recovery
MFF0198-01	o-Terphenyl	60 - 140	## [1]
MFF0198-02	o-Terphenyl	60 - 140	## [1]

Outliers: QC Frequency

ORG-020_OIL | Semi-volatile TRH (Oil) | Batch BFF2111

Analysis	QC Type	Expected	Reported
sTRH	Duplicate	1	0

Quality Control MFF0198

ORG-020_OIL | Semi-volatile TRH (Oil) | Batch BFF2111

Analyte	Units	PQL	Blank	LCS %
TRH C10-C14	mg/kg	50	<50	117
TRH C15-C28	mg/kg	100	<100	94.0
TRH C29-C36	mg/kg	100	<100	107
TRH >C10-C16	mg/kg	50	<50	89.6
TRH >C16-C34 (F3)	mg/kg	100	<100	96.6
TRH >C34-C40 (F4)	mg/kg	100	<100	111
Surrogate-o-Terphenyl	%		93.7	94.4

Batch QC Comments: [2]

QC Comments

Identifier	Description
[2]	Unable to perform all QC according to our internal guidelines on a non-routine matrix.

3rd Laboratory Test, carried out 55 days after the initial application of OSE II
Below.



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Certificate of Analysis MFG0290

Client Details

Client Hibbs & Associates Pty Ltd
Contact George Dervusoski
Address PO Box 4266, HOME BUSH, NSW, 2140

Sample Details

Your Reference S13167
Number of Samples 2 Sludge, 3 Soil
Date Samples Received 16/07/2024
Date Instructions Received 16/07/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

Report Details

Date Results Requested by 23/07/2024
Date of Reissue 07/10/2024 - This report supercedes previous report, see amendment history for details

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Authorisation Details

Results Approved By Tianna Milburn, Senior Chemist
Laboratory Manager Pamela Adams

Certificate of Analysis MFG0290

Report Amendment History

Revision	Reason for Amendment
R-01	This work order supersedes MFG0290_R00 due to report only containing results for sludge samples.
R-02	This report supercedes MFG0290_R01 due to removing unlisted soil sample

Your Reference: S13167
Revision: R-02 Certificate of Analysis Generated: 07/10/2024 14:40

Certificate of Analysis MFG0290

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
MFG0290-04	Sample 01	Sludge	16/07/2024	16/07/2024
MFG0290-05	Sample 02	Sludge	16/07/2024	16/07/2024

Your Reference:
Revision: R-02

S13167
Certificate of Analysis Generated: 07/10/2024 14:40

Certificate of Analysis MFG0290

Semi-volatile TRH (Sludge)

EnviroLab ID	Units	PQL	MFG0290-04	MFG0290-05
Your Reference			Sample 01	Sample 02
Date Sampled			16/07/2024	16/07/2024
TRH C10-C14	mg/kg	50	<50	<50
TRH C15-C28	mg/kg	100	1900	1400
TRH C29-C36	mg/kg	100	210	<100
Total +ve TRH C10-C36	mg/kg	50	2100	1400
TRH >C10-C16	mg/kg	50	190	160
TRH >C16-C34 (F3)	mg/kg	100	1900	1300
TRH >C34-C40 (F4)	mg/kg	100	<100	<100
Total +ve TRH >C10-C40	mg/kg	50	2100	1500
Surrogate o-Terphenyl	%		103	100

Your Reference:
Revision: R-02

S13167
Certificate of Analysis Generated: 07/10/2024 14:40

Certificate of Analysis MFG0290

Method Summary

Method ID	Methodology Summary
ORG-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).

Your Reference:
Revision: R-02

S13167
Certificate of Analysis Generated: 07/10/2024 14:40

Certificate of Analysis MFG0290

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Certificate of Analysis MFG0290

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Urine Analysis - The BEI values listed are taken from the 2022 edition of *TLVs and BEIs Threshold Limits by ACGIH*.

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary MFG0290

Client Details

Client Hibbs & Associates Pty Ltd
Your Reference S13167
Date Issued 07/10/2024

Recommended Holding Time Compliance

No recommended holding time exceedances

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	No	Matrix Spike Outliers Exist - See detailed list below
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary MFG0290

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
sTRH Soil	4-5	16/07/2024	18/07/2024	18/07/2024	Yes

Outliers: Matrix Spike

ORG-020 | Semi-volatile TRH (Soil) | Batch BFG3021

Sample ID	Analyte	% Limits	% Recovery
BFG3021-MS1#	TRH >C34-C40 (F4)	60 - 140	##[1]
BFG3021-MS1#	TRH C29-C36	60 - 140	##[1]

Quality Control MFG0290

ORG-020 | Semi-volatile TRH (Soil) | Batch BFG3021

Analyte	Units	PQL	Blank	DUP1	DUP2	LCS %	Spike % BFG3021-MS1#
				BFG3021-DUP1# Samp QC RPD %	BFG3021-DUP2# Samp QC RPD %		
TRH C10-C14	mg/kg	50	<50	<50 <50 [NA]		104	97.1
TRH C15-C28	mg/kg	100	<100	<100 <100 [NA]		88.1	80.7
TRH C29-C36	mg/kg	100	<100	<100 <100 [NA]		91.5	# [1]
TRH >C10-C16	mg/kg	50	<50	<50 <50 [NA]		81.8	80.2
TRH >C16-C34 (F3)	mg/kg	100	<100	<100 <100 [NA]		91.0	77.1
TRH >C34-C40 (F4)	mg/kg	100	<100	<100 <100 [NA]		83.4	# [1]
Surrogate o-Terphenyl	%		97.4	96.2 96.2		96.2	106

Analyte	Units	PQL	Blank	DUP3	DUP4	LCS %
				BFG3021-DUP3# Samp QC RPD %	BFG3021-DUP4# Samp QC RPD %	
TRH C10-C14	mg/kg	50		<50 <50 [NA]		[NA]
TRH C15-C28	mg/kg	100		<100 <100 [NA]		[NA]
TRH C29-C36	mg/kg	100		<100 <100 [NA]		[NA]
TRH >C10-C16	mg/kg	50		<50 <50 [NA]		[NA]
TRH >C16-C34 (F3)	mg/kg	100		117 <100 [NA] [2]		[NA]
TRH >C34-C40 (F4)	mg/kg	100		<100 <100 [NA]		[NA]
Surrogate o-Terphenyl	%			91.1 90.6		[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

INORG-008 | Inorganics - Moisture (Soil) | Batch BFG3013

Analyte	Units	PQL	Blank	DUP1	DUP2	LCS %
				BFG3013-DUP1# Samp QC RPD %	BFG3013-DUP2# Samp QC RPD %	
Moisture	%	0.1		23.3 26.6 13.3	12.1 11.0 9.17	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

QC Comments

Identifier	Description
[1]	Spike recovery is outside routine acceptance criteria (60-140%), this may be due to suspected non-homogeneity and/or matrix interference effects. However, an acceptable recovery was achieved for the LCS.
[2]	Duplicate %RPD may be flagged as an outlier to routine laboratory acceptance, however, where one or both results are <10*PQL, the RPD acceptance criteria increases exponentially.



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OSEI Sludge Table Top Demonstration

I. Parameters of contaminated site:

1. 1 liter of sludge to be placed in a container that is 500 cm X 500 cm by 50 cm deep, the sludge will be 2cm deep or equivalent.

II. Calculations:

1. 1 liter of sludge will cover 1000 cm³, however you will place the sludge 2 cm deep, the liter of sludge will then cover an area 500cm X 500 cm X 2cm deep

2. 1 liter of sludge will require (1 liter divided by 25 equals 40ml) therefore 1 liter of sludge will require 40 ml of OSE with 1000 ml's of natural ocean water will be utilized if used in an ocean setting, or fresh water if used in a fresh water area.

3 Sludge will need to have the same amount of ocean water as there is sludge to start the demonstration therefore an additional 1000 ml or 1 liter of natural ocean water will be utilized if used in an ocean setting, or fresh water if used in a fresh water area

III. Materials needed:

1. 1 liter of sludge

2. 40 ml of OSE II

3. 5 liters of ocean water

4. A container that is 500 cm X 500 cm X 50 cm in depth the area of the container, can be approximate size required.

5. a 2 liter container to mix OSE II and ocean water

6. small tool to till sludge
7. small aquarium pump
8. Tool to extract samples of the sludge
9. glass containers with Teflon sealed caps
10. Labels/marker
11. ice chest with ice to transport samples to the lab
12. Aerator with 2 opening to supply air, plastic tubing for both air ports, and two diffusers.

IV. Procedure:

1. Extract a small sample of the sludge and place it in the Teflon sealed jar and label it initial sludge test, if a test has not already been performed.
2. Place in the ice chest with ice that has been added to the ice chest 1 hour before placing the jar into the ice chest for the initial extraction, and transport to the laboratory
3. Place aerator diffusers in the container and connect air tubes to aerator.
4. place sludge into the container and spread to a depth of 2cm.
5. Set up and place the circulation pump.
6. Add 36 ml's of OSE II to 2 liter container. Add 9000 ml of the ocean or fresh water to the container with the OSE II, and mix the total volume of the 936 ml together until homogenous.
7. Apply half of the OSE II and water mixture to the container with the sludge which is 468 ml. Apply the OSE II and ocean water mix to the sludge as evenly as possible and stir then re-spread the sludge out evenly.
8. Turn circulation pump.
9. Add 1 liter of ocean water or fresh water, and stir sludge then re spread it out evenly.
10. Wait on hour after apply the first half of the OSE II and water mixture, then add the second half of the OSE II and water mixture, which is 468 ml.
11. Turn on aerator

12. 21 days after the initial OSE II and water have been added, add 4 ml of OSE II to the mixing/application container, then add 100 ml of natural water, mix thoroughly, and apply to the sludge in the test container.

V. Test requirements: discover what TPH or ppm hydrocarbon test is appropriate for your area and have the laboratory perform this test each time an extraction is brought to the laboratory:

1. 15 days after applying OSE II extract a sample of the sludge and place in the Teflon sealed jar, and place in the ice chest that has had ice in it 1 hour prior to placing the jar in the ice chest. Transport to the laboratory for testing.

2. 30 days after applying OSE II extract a sample of the sludge and place in the Teflon sealed jar, and place in the ice chest that has had ice in it 1 hour prior to placing the jar in the ice chest. Transport to the laboratory for testing.

3. 45 days after applying OSE II extract a sample of the sludge and place in the Teflon sealed jar, and place in the ice chest that has had ice in it 1 hour prior to placing the jar in the ice chest. Transport to the laboratory for testing.

Note if the level is not down to acceptable level then perform #12 a second time.

4. 60 days after applying OSE II extract a sample of the sludge and place in the Teflon sealed jar, and place in the ice chest that has had ice in it 1 hour prior to placing the jar in the ice chest. Transport to the laboratory for testing.

5. 90 days after applying OSE II extract a sample of the sludge and place in the Teflon sealed jar, and place in the ice chest that has had ice in it 1 hour prior to placing the jar in the ice chest. Transport to the laboratory for testing.

VI. Site maintenance:

1. twice a week stir the sludge the re-spread it out evenly.
2. Leave the aerator on for the duration of the demonstration.
3. Replace any water that has evaporated twice a week.

VII. Observations:

1. write down observations after each step and after the application of OSE II and after each stirring, including the smells if any.

VIII. Expected results/Conclusion:

- 1. The sludge should lose smells in a few days and after approximately 14 days the sludge should start to fall apart and lose its adhesion properties and start breaking down to grit.**
- 2. The TPH or ppm should start reducing over time to the acceptable levels.**

Eng Chace Smith