CytoCulture
ENVIRONMENTAL
BIOTECHNOLOGY
A DIVISION OF CYTOCULTURE INTERNATIONAL INC.

89 NOV 27 AM 11:46

August 1989

Mr. William Meckel
Source Control Division
EAST BAY MUNICIPAL UTILITY DISTRICT
Mail Stop 59 P.O. Box 24055
Oakland, CA 94623

RE: Wastewater Discharge Permit (Groundwater Treatment)
EBMUD Account No. 001-00002
Fifth monthly report of treatment and discharge operations for **JULY** 1989

CytoCulture/Sybron Chemicals are herein reporting on the results for the **fifth** month of continuous biological treatment of diesel-contaminated groundwater and discharge of the treated water into an EBMUD interceptor at the former P.I.E. Nationwide truck terminal in Emeryville. Laboratory analytical results are enclosed along with our Daily Facility Log Sheets.

SUMMARY OF EVENTS AND OPERATIONS IN **JULY**

Operating Conditions at Beginning of Month

At the end of June, both bioreactor systems were in continuous operation processing diesel-contaminated groundwater at a rate of 2 to 3 gpm (2,880 to 4,320 gpd). Free product was collected routinely with a well pump oil skimmer and recovery system. From the system start up on March 2 through June 30, approximately 281,000 gallons of contaminated groundwater had been treated by the combined north and south bioreactor systems. In the month of June, approximately 150 gallons of free product were recovered.

Groundwater Treatment in July

On July 1, the bioreactor systems were processing groundwater from both the north and south trenches with a net flow of 2 gpm. The oil skimmer operating in the east well of the south extraction trench was recovering free product. An effluent sample (E-66) taken on this day for routine analysis indicated a week later that the system was operating close to normal. Although the previous 2 days of sampling (since a re-start on June 26) had shown there was no detectable levels of hydrocarbon in the discharge effluent, the E-66 sample had a TPH level of 2.2 ppm for July 1. The next day, a similar effluent sample (E-67) was taken which was found to contain trace amounts of diesel (about 0.5 ppm). All effluent samples had non-detectable levels of BTXE, however. Routine ammonium and phosphate readings indicated that the nutrient levels were normal. EBMUD sampled the effluent discharge stream on July 3.

124 WASHINGTON AVENUE POINT RICHMOND CA 94801
415 233 6660 FAX 415 233 8[illegible]

A subsequent effluent sample test for July 4 indicated again a small amount of diesel recorded at 0.8 ppm while free product was being recovered from the influent upstream of the bioreactors. Flow rates were maintained at 2 to 3 gpm during this time.

During this first week of July, an estimated 10-15 gallons of free product was recovered as the south trench well pump continued to skim the oil plume along the south boundary of the property. Routine compressor maintenance was conducted on July 5, with a system interruption of less than 3 hours.

On July 10, a noticeable increase in free product was recovered from the north trench. This influent had previously yielded small patches of oil or just a sheen of free product whereas since May most of the recovered diesel had come from the south trench. The increased flow of free product would suggest that the established groundwater depression zone was now pulling floating product from previously untapped contaminated areas upfield of the trench.

A combined north/south trench influent sample (I-69) taken the next day (July 11) had a TPH (diesel) reading of 350 ppm. The corresponding discharge effluent taken at the same time gave non-detectable readings for TPH and BTXE, indicating the system was operating normally at 3 gpm.

Theft Damage Report / System Interruption

On Tuesday, July 18 (0830), during a routine maintenance visit to the site, it was discovered that the north basin had been burglarized the night before. The gate lock was missing and a quick inspection revealed that the 10 HP electric motor had been stolen from the Quincy rotary screw compressor. In addition, the automatic discharge drain system on the main receiver had been stolen. The system had been shut down (circuits had been turned off at the fuse box) and the motor had been cleanly unbolted from the compressor chassis. The cooling fan assembly and belts had apparently been taken along with the motor.

A new compressor motor assembly and automatic receiver discharge system were installed on July 27. After a 3 hour trial run, groundwater flow was started up again at 1.5 gpm (0.5 gpm N, 1.0 gpm S). During the 9 day system interruption, the bioreactors were maintained in near normal operation (aeration, mixing, nutrients) to permit a rapid start-up once the compressor was functional. The bioreactors were re-inoculated with fresh cultures. As is the usual practice, the 2,000 gallon effluent holding tank was partially drained (used to treat the contaminated soil being land farmed on site) to increase the residence time of the initially treated groundwater.

A treated groundwater effluent sample taken on July 31 indicated non-detectable levels of BTXE and TPH as diesel while the flow rate was maintained at 3 gpm (normal operation).

SUMMARY OF GROUNDWATER TREATMENT RATES

Dates	Average Flow	Net Volume
July 1-18	2.11	54,700
July 27-31	2.3	11,300
Estimated volume of treated water in July:		66,000 gal
March-June:		231,000 gal
Total groundwater treated to date:		297,000 gal

LABORATORY ANALYSIS OF GROUNDWATER TREATMENT SAMPLES

Tests run by Curtis & Tompkins, Ltd. on samples collected by CytoCulture field technicians:

1) EPA 602 - Volatile Aromatic Hydrocarbons in Water
2) EPA 8015 (modified) - Total Extractable Petroleum Hydrocarbons in Aqueous Solutions (TPH/TEH)

ND = Not Detectable; Detection limits for BTXE, ND = 1 ug/L; for TPH, ND = 0.5 mg/L

			ug/L (ppb)			mg/L(ppm)
No.	Date	Description / Comment	Benz.	Tol.	Xyl.	TPH/TEH
E-66	7/1	Combined N/S Effluent 2 gpm	ND	ND	ND	2.2
E-67	7/2	Combined N/S Effluent 2 gpm	ND	ND	ND	trace
E-68	7/4	Combined N/S Effluent 2 gpm	ND	ND	ND	0.8
I-69	7/11	Combined N/S **INFLUENT**	4	ND	ND	350
E-70	7/11	Combined N/S Effluent 2.5 gpm	ND	ND	ND	ND
E-71	7/31	Combined N/S Effluent 3 gpm	ND	ND	ND	ND

Effluent treated water discharged into the EBMUD interceptor at the end of July was at non-detectable levels of BTXE and total extractable petroleum hydrocarbons. Upon standing 20 minutes to allow the bacterial floc to settle, this treated water appears clear and odorless. Independent monthly sampling and testing for priority pollutants was conducted by EBMUD on July 3.

GENERAL OPERATION NOTES

Aeration and mixing are continuous, providing saturated oxygen levels in the water and little accumulation of sediment on the bottom of the tanks. The aeration blower and air compressor for powering the pneumatic well pumps in the extraction trenches performed very well in the field. After proper adjustment, the well pumps themselves now easily deliver 2 gpm apiece assuming there is adequate groundwater to pump. The tidally influenced north well works intermittently.

Daily observations of the turbidity, color and foam accumulation confirmed that the bioreactors were maintaining healthy bacterial cultures. Continual diammonium phosphate addition is supposed to keep ammonium nitrogen levels at 10 ppm or greater, and ortho phosphate levels at 5 ppm or greater, to ensure adequate nutrients for full degradation of the diesel COD. When the bioreactors were overwhelmed with free-product, the nutrient addition rate is increased to support the greater biomass.

All discharges of treated water leaving either bioreactor system are directed first to the 2,000 gallon aerated holding tank. This tank continues to serve as a final "polishing" step in the biological treatment process by extending the actual retention rate of contaminated water within the system.

Soil infiltration with treated water and bacterial cultures will utilize the effluent from the 2,000 gallon aerated holding tank which is now being discharged into the EBMUD interceptor.

UPDATE ON REINFILTRATION PLANS

CytoCulture plans to construct a series of infiltration galleries under the parking lot pavement along both sides of building D (upfield of both the north and south extraction trenches in an attempt to achieve some "hydraulic control" of infiltrated water). Please refer to CytoCulture's Phase II Report and Operational Plan for details on the proposed infiltration program for seeding contaminated soil with bacteria.

The Regional Water Quality Control Board (SF Bay Region) is still evaluating CytoCulture's request to reinfiltrate the treated water with bacteria and nutrients. The most recent discussions with DHS in Sacramento led to the decision to reinfiltrate at a level of 6 feet below the pavement surface in the parking lots upfield of the current extraction trenches. There is still concern for possible mounding effects which might be caused by reinfiltrating too much treated water. The DHS recommends that we generate groundwater level data simultaneously in six or more wells at various tide cycles to determine what gradient exists and how it is influenced by the tide. The DHS also recommends that we extend (at least double) the length of extraction trenching to establish better hydraulic control over the proposed reinfiltration area.

CytoCulture Bioremediation Project
for P.I.E. Nationwide former Truck Terminal Site
Emeryville, CA

Laboratory Analytical Results for July 1989
including BTXE and TPH/TEH Data
provided by Curtis & Tompkins, Ltd.

Each sample data set is preceded by the
corresponding Chain of Custody sheet

Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, California 94710
(415) 486-0900

Samplers _____

Job Description PIE

Job Number CYTO

Client Contact _____ Recorder _____

ANALYSIS REQUESTED

Matrix						#Containers	Method Preserved					Sample Number	Sampling Date				SAMPLE NOTES
Water	Soil	Waste	Oil				H_2SO_4	HNO_3	Ice	None	Other		Yr	Mo	Dy	Time	
✓									✓			E62	89	06	16	1700	3GPM
✓									✓			E64	89	06	29	1530	2GPM
✓									✓			E65	89	06	30	1830	2GPM
✓									✓			E66	89	07	01	1120	2GPM
✓									✓			E67	89	07	02	1900	2GPM
✓									✓			E68	89	07	04	1030	2GPM

EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (#)	TPH Method- TEH	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's					
						✓	✓							
						✓	✓							
						✓	✓							
						✓	✓							
						✓	✓							
						✓	✓							

June
July

Laboratory Notes :

Normal

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
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Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature)

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 17771
CLIENT: CYTO CULTURE
PROJECT ID: PIE

DATE RECEIVED: 07/05/89
DATE ANALYZED: 07/13/99
DATE REPORTED: 07/14/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSINE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
17771-1	E62 6/16	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
17771-2	E64 6/29	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
17771-3	E65 6/30	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
17771-4	E66 July 1	ND(0.5)	ND(0.5)	2.2*	ND(0.5)
17771-5	E67 July 2	ND(0.5)	ND(0.5)	TRACE*	ND(0.5)
17771-6	E68 July 4	ND(0.5)	ND(0.5)	0.8*	ND(0.5)

*C12-C22 RANGE

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	7
Spike: % Recovery	98

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 17771
CLIENT: CYTO CULTURE
PROJECT ID: PIE

DATE RECEIVED: 07/05/89
DATE ANALYZED: 07/06/89
DATE REPORTED: 07/14/89

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	TOTAL XYLENES (ug/L)	ETHYL BENZENE (ug/L)
17771-1	E62	ND(1)	ND(1)	ND(1)	ND(1)
17771-2	E64	ND(1)	ND(1)	ND(1)	ND(1)
17771-3	E65	ND(1)	ND(1)	ND(1)	ND(1)
17771-4	E66	ND(1)	ND(1)	ND(1)	ND(1)
17771-5	E67	ND(1)	ND(1)	ND(1)	ND(1)
17771-6	E68	ND(1)	ND(1)	ND(1)	ND(1)

QA/QC SUMMARY

%RPD	2
%RECOVERY	98

Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, CA 94710
Phone 415-486-0900
FAX 415-486-0532

Samplers R.v.W.

Job Description PIE Emeryville

Job Number Cyto

Client Contact R. vonWodel

Recorder R.v.W

Matrix						#Containers	Method Preserved						Sample Number	Sampling Date				SAMPLE NOTES
Water	Soil	Waste	Oil				H_2SO_4	HNO_3	Ice	None	Other			Yr	Mo	Dy	Time	
		✓								✓			I-69	89	07	11	1200	Influent - combined N/S
		✓								✓			E-70	89	07	11	1200	Effluent at 2.5 gpm

ANALYSIS REQUESTED

EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	CAM 17 Metals	EPA PP Metals (#)	TPH Method- TEH	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pest's&PCB's
						X	X		
						X	X		

Laboratory Notes :

1 wk normal turnaround

Some trace free product in influent

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
R v Wodel	
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature) Nancy Griffin 8/7/91

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 17803
CLIENT: CYTO CULTURE
JOB LOCATION: PIE EMERYVILLE

DATE RECEIVED: 07/11/89
DATE ANALYZED: 07/12/89
DATE REPORTED: 07/17/89

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 602
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	TOTAL XYLENES (ug/L)	ETHYL BENZENE (ug/L)
17803-1	I-69	4	ND(1)	ND(1)	ND(1)
17803-2	E-70	ND(1)	ND(1)	ND(1)	ND(1)

> July 11

ND = NONE DETECTED; LIMIT OF DETECTION INDICATED IN PARENTHESES.

QA/QC SUMMARY

%RPD	2
%RECOVERY	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 17803
CLIENT: CYTO CULTURE
LOCATION: PIE EMERYVILLE

DATE RECEIVED: 07/11/89
DATE ANALYZED: 07/13/89
DATE REPORTED: 07/17/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSINE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
17803-1	I-69	ND(0.5)	ND(0.5)	350*	ND(0.5)
17803-2	E-70	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

* Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on largest peaks within C12-C22 boiling range.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	7
Spike: % Recovery	98

1-7118

Chain of Custody Form

Curtis & Tompkins, Ltd
2323 Fifth Street
Berkeley, California 94710
(415) 486-0900

Samplers: RvW

Job Description: Cyto

Job Number: PIE

Client Contact: Ronwald

Recorder: RvW

Matrix						#Containers	Method Preserved					Sample Number	Sampling Date				SAMPLE NOTES
Water	Soil	Waste	Oil				H_2SO_4	HNO_3	Ice	None	Other		Yr	Mo	Dy	Time	
X										X		E-71	89	07	31	1430	Effluent 3 ppm after compressor motor replaced (24 hrs after startup)

ANALYSIS REQUESTED														
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (#)	TPH Method- TEH	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's					
						X	X							

Laboratory Notes : 7 day normal turn-around time for Aug 7

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
R Ronwald	
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Relinquished by: (signature) Date/Hr	Received by (signature)
Dispatched by: (signature) Date/Hr	Received for Lab by (signature) 7/31/89

15:17

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 17918
CLIENT: CYTO CULTURE
JOB LOCATION: PIE EMERYVILLE

DATE RECEIVED: 07/31/89
DATE ANALYZED: 07/31/89
DATE REPORTED: 08/07/89

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	TOTAL XYLENES (ug/L)	ETHYL BENZENE (ug/L)
17918-1	E-71	ND(1)	ND(1)	ND(1)	ND(1)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

%RPD	9
%RECOVERY	88

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 17918
CLIENT: CYTO CULTURE
LOCATION: PIE EMERYVILLE

DATE RECEIVED: 07/31/89
DATE ANALYZED: 08/03/89
DATE REPORTED: 08/07/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSINE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
17918-1	E-71	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	7
Spike: % Recovery	95

Daily Facility Log Sheets for July 1989

CytoCulture - PIE Bioremediation Project, Emeryville

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: JH

DATE: 7/1/89 TIME: 12:15 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+2 Discharge 0+2 Pressure 80

East well flow setting: ~~ME~~ 1/4 West well flow setting: ~~2~~ 3/4

NORTH TRENCH: Refill B+2 Discharge 0+2 Pressure 80

South well flow setting: OOC North well flow setting: ON FOR

COMPRESSOR CHECKS: Hours 1996 Temperature 120 Oil Foamy

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 82 in. Blower: 82 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 1 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 20/120 90 % South: 20/120 80 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit) 6/28

North Units: 6/28 (2) South Units: 2 2,000 Gal. Unit 1

CULTURE OBSERVATIONS:

DOURs: ✓ [NH4]: ✓ [PO4]: ✓

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. E-66 TPH/TEH: X BTXE: X Comment: 2 gpm

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

OPERATIONAL CHANGES TODAY:

Everything o.k.

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: DJ

DATE: 7/2/09 TIME: 1850 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+2 Discharge 0+2 Pressure 80

East well flow setting: 1/4 West well flow setting: 3/4

NORTH TRENCH: Refill B+2 Discharge 0+2 Pressure 98

South well flow setting: 00s North well flow setting: Full

COMPRESSOR CHECKS: Hours 2026 Temperature 130 Oil ✓

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 92 in. South system: 92 in. Blower: 92 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 1 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 20/20 25 % South: 20/20 85 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. E-67 TPH/TEH: ✓ BTXE: ✓ Comment: 2 GPM

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

OPERATIONAL CHANGES TODAY:

Skimmer off South

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: JPH

DATE: July 3 TIME: 6pm HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill ___ Discharge ___ Pressure ___

East well flow setting: _____ West well flow setting: _____

NORTH TRENCH: Refill ___ Discharge ___ Pressure ___

South well flow setting: _____ North well flow setting: _____

COMPRESSOR CHECKS: Hours 1978.6 Temperature 145 Oil ✓

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: ___ in. South system: ___ in. Blower: ___ in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1-1.5 GPM South Trench: 1.5-2 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5-3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 20/20 60 % South: ___/___ _____ %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

OPERATIONAL CHANGES TODAY: OK

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: PDW

DATE: 4/26/89 TIME: 1030 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill Brz Discharge 04z Pressure 80

East well flow setting: 4/4 West well flow setting: 3/4

NORTH TRENCH: Refill Brz Discharge 04z Pressure 80

South well flow setting: 00c North well flow setting: Full

COMPRESSOR CHECKS: Hours 2061 Temperature 133 Oil ✓

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 82 in. Blower: 82 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 1 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 20 / 20 20 % South: 20 / 20 80 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. B-68 TPH/TEH: ✓ BTXE: ✓ Comment: 2GPM

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

OPERATIONAL CHANGES TODAY:

Skimmed oil/ South system

(Compressor Routine Maintenance O.A.S. Present 11:30 - 1 PM

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: DBD

DATE: 5 July 09 TIME: 1715 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS: —

SOUTH TRENCH: Refill Bt2 Discharge Ot2 Pressure 80

East well flow setting: 1/4 West well flow setting: 3/4

NORTH TRENCH: Refill Bt2 Discharge Ot2 Pressure 80

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2097 Temperature 147 Oil N C

Air Filter drain checks: 1) ~ 2) ~ 3) ~

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 80 in. South system: 80 in. Blower: 80 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 1 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 20 / 50 17 % South: 20 / 50 75 % changed to 30/30

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 5 July A South Units: 5 July A 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Row:

DOURs: [NH4]: [PO4]: NE = 2-3ppm PO4 NW = 0-1 ppm

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

Skimmed oil North & South / Blew out all Airators (W S E)

Repaired N/S Well / Cleaned Blower air filter

Reset N Well Pressures / Cleaned North Controller filter

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: DJC - RVW

DATE: 6 July 89 TIME: 1200 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B Discharge 0+2 Pressure 80

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill B Discharge 0+2 Pressure 80

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2120 Temperature 130 Oil N

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 81 in. Blower: 82 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 30 / 30 100 % South: 30 / 30 73 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. _____ TPH-TEH: ___ BTXE: ___ Comment: _____

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

OPERATIONAL CHANGES TODAY: (OAS)

Refill N Nutrient Tank / Maintenance AC / Reset Controller to 1.5

Skimmed oil N/S and Consolidated S 2½ Barrels

Cleaned Controller filters N

Consolidated May Clean up Oil 15 gal S

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

D. McEdwards here at 2pm from TransTech Serv

CH2M Hill site visit today

OPERATOR: Rob + DV + Buck (ok from Sybron

DATE: 7-7-89 TIME: 11 am HIGH TIDE: noon

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B Discharge 0+2 Pressure 80

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill ____ Discharge ____ Pressure ____

South well flow setting: ____ North well flow setting: ____

COMPRESSOR CHECKS: Hours 2131 Temperature 140° Oil at "1/2" (clear - OK

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 81 in. South system: 80 in. Blower: 82 in. ← watch for Δ

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1.5-2 GPM South Trench: off GPM ← above trench low on water in spite of high tide

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 1.5-2.0 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 30 / 30 98 % South: 30 / 30 70 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 7/5 South Units: 7/5 2,000 Gal. Unit 6/28

CULTURE OBSERVATIONS:

NW 5ppm/hr. NE <5 ppm/hr. NW: ≥10 NE: ≥10 NW <1 NE <1

DOURs: SW SE [NH4]: SW: ≥10 SE ≥10 [PO4]: SW ≥10, SE ≥10

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. ____ TPH/TEH: ___ BTXE: ___ Comment: None

Sample No. ____ TPH/TEH: ___ BTXE: ___ Comment: ____

OPERATIONAL CHANGES TODAY: North DAP 9 to 40/40 since NE was low on PO4

STEADY STATE D.O. NW 6.9 ppm
NE 7.6 ppm

EBMUD took their sample July 3

10 PM 7/10
all OK
at 2220 hr
North trench off
S. " on
Intermittently ~1-1.5
(set at B, 0+1½

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: Russ

DATE: 7-10 Mon TIME: 1^15 pm HIGH TIDE: ______

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill ~~D+2~~ B Discharge ~~B~~ 0+2 ← leave as is Pressure 80/5 ← turned down after found air splatter

East well flow setting: ~1/2-2/3 West well flow setting: ~1/2-2/3

On only 1/10 min → Diverted south trench at ~1gpm to North system

NORTH TRENCH: Refill B Discharge 0+2 Pressure 80/5

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2211 Temperature 125→140° Oil 1/6th green - seems low but clear (no foam)

Air Filter drain checks: 1) ✓ 2) ✓ 3) top one - receiver → a lot of water.

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 83 in. (81.5 - 3 turns open on bypass) After blast: ___ (bypass closed) South system: ___ in. Blower: (81.5) in. going up - strong air press. on relief valve and N system seems clogged ↓ Blast out; cool

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 0→0.5 GPM South Trench: intern. 2-2.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2-3.0 → 4.0 with North trench on GPM intermittent

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

turned down North: 10/20 100 % ← Refilled today w/ 50 gal water + 25 lbs DAP South: 10/20 70 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 7/5 South Units: 7/5 2,000 Gal. Unit 6/29

CULTURE OBSERVATIONS: all look good - white foam

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Still a lot of air coming through south system

Sample No.____ TPH/TEH:___ BTXE:___ Comment:______

Sample No.____ TPH/TEH:___ BTXE:___ Comment:______

OPERATIONAL CHANGES TODAY:

Checked system - no explanation for brief compressor shut-down (red light / power surge?)

Still water-limited on N Trench. Blast-clean N system w/ psi

Lowered sensor bubbling tube in N S well to 2" from bottom of pump - better flow to ~1.5 gpm

Note oily water + free product now in North trench too

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: DV / RUW

DATE: 7-11-99 TIME: 12 Noon HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+ Discharge 0+2 Pressure 80

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill B Discharge 0+2 Pressure 80

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2234 Temperature 115 Oil W

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

NEW after scrubbing all aerator heads

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 81 in. South system: 81 in. Blower: 81 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 2 GPM] North system intermittent flow

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 120 97 % South: 10 170 68 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 7/11 South Units: 7/11 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: good

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. I 69 TPH/TEH: ___ BTXE: ___ Comment: Influent combined N+S

Sample No. E 70 TPH/TEH: ___ BTXE: ___ Comment: Effluent 2000 gal.

OPERATIONAL CHANGES TODAY: David cleaned / replaced all aerator heads - scrubbed
Note new air pressure readings after cleaning.
Tested ATS Shut Down

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GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: RvW

DATE: 7-14 TIME: 12:30 pm - 3:30 pm HIGH TIDE: ____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B Discharge 0+1½ Pressure 80/6

East well flow setting: ½ West well flow setting: ½

still same air → ↓ Intermittent flow (on at noon, off at 3 pm)

NORTH TRENCH: Refill B Discharge 0+2 Pressure 80/7

South well flow setting: ½ North well flow setting: ½ – turned up a little

COMPRESSOR CHECKS: Found off at Hours 2305 Temperature 110-140° range Oil OK (½)

Air Filter drain checks: 1) ✓ 2) — 3) — but see ¾" foam

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 → 81" w/ bypass in. South system: ___ in. Blower: 83 in. ← lowered to 82" by opening by-pass on

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: when on ½-1 GPM South Trench: 1.5-2 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: ~2 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 20 80 % South: 10 / 20 70 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 7/1 South Units: 7/1 2,000 Gal. Unit ——

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No.____ TPH/TEH:___ BTXE:___ Comment:____________

Sample No.____ TPH/TEH:___ BTXE:___ Comment:____________

OPERATIONAL CHANGES TODAY:

Restart compressor after temp. shutdown (power surges?)

N trench discharge 0+2 → 0+1½

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: RVW

DATE: 7/16 SUN TIME: 1PM - 5PM 4hr HIGH TIDE: ________

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 8 Discharge 0+1½ Pressure 80/6

East well flow setting: ½ West well flow setting: ½

NORTH TRENCH: Refill B Discharge 0+1½ Pressure 80/7

South well flow setting: ½ North well flow setting: ½

COMPRESSOR CHECKS: Hours 2354 Temperature 130-150° variation Oil ok (½)

Compressor seems fine - kicks on/off w/load

Air Filter drain checks: 1) lot of water 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: After blast clean 82 in. (w/out bypass = 84") South system: 81 in. Blower: 82 in. - temp. ok

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: intermittent 1.0 GPM South Trench: interm. 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 0.5-2.0 GPM variable - we need more trenches for more water

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 20 80 % South: 10 / 20 70 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: today (1) East South Units: today (1) East 2,000 Gal. Unit ______

CULTURE OBSERVATIONS:

DOURs: — [NH4]: — [PO4]: —

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. — TPH/TEH: ___ BTXE: ___ Comment: ________

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: ________

OPERATIONAL CHANGES TODAY:

Water tested overflow level control sensor N clarifier

1) repaired gasket (replaced) + installed extra O ring on N oil-water sep. skimmer bulkhead fitting

2) repaired air leak in N system high press. blast cleaning line - replaced press. coupling apparently overtightened before + cut ½" pl. line

3) cleaned up oil drips - splatter / cleaned whole job site for Bd Directors tomorrow

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: RvW

DATE: 7/18 Tues TIME: 8:30 Am HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill ____ Discharge _____ Pressure _____

East well flow setting: _____ West well flow setting: _____

NORTH TRENCH: Refill ____ Discharge _____ Pressure _____

South well flow setting: _____ North well flow setting: _____

COMPRESSOR CHECKS: Hours _____ Temperature _____ Oil ____

Air Filter drain checks: 1) _____ 2) _____ 3) _____

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: ___ in. South system: ___ in. Blower: ___ in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: _____ GPM South Trench: _____ GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: _____ GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: ____/____ _____% South: ____/____ _____%

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY:

System off; Burglary – electric motor stolen from compressor; also took tank bleeder auto. 10+IP 6E

Called Chris Fallbo 845

Police report made @ 915

called ERM-W D 10 AM

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: RvW, RB

DATE: 7/27 TIME: 10 AM - 1:30 PM against 3 PM HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill ____ Discharge _____ Pressure _____

East well flow setting: _____ West well flow setting: _____

NORTH TRENCH: Refill ____ Discharge _____ Pressure _____

South well flow setting: _____ North well flow setting: _____

COMPRESSOR CHECKS: Hours _____ Temperature _____ Oil ____

Air Filter drain checks: 1) _____ 2) _____ 3) _____

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: ___ in. South system: ___ in. Blower: ___ in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: _____ GPM South Trench: _____ GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: _____ GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: ____/____ _____% South: ____/____ _____%

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

OPERATIONAL CHANGES TODAY:

New motor installed by OAS Preston.

Trial run for 3 hr

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: R.W

DATE: 7-29 Saturday TIME: 3:30 - 7 pm HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 8+1 (Adjusted today) Discharge 0+1 Pressure 80/5

East well flow setting: 8 & 1/2 West well flow setting: ~~2 Ea~~ 1/2 or less

NORTH TRENCH: Refill 0 (normal) Discharge 0+1½ Pressure 80/7

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2381 ← at start-up Temperature 150° (after 2 1/2 hr) Oil OK but looking gray

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 81.5 in. South system: 82 in. Blower: 82.5 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES: Now seems north east reactor fine but south east not getting enough ↓ clean

North Trench: 1 GPM South Trench: 1 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: ~2 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 30/10 40 % South: 30/10 80 % ← ↑ to get started

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: _____ South Units: _____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: both west look good (diesel spikes helped during past week) good foam North system has good biofilm growth

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

Sample No. _____ TPH/TEH: ___ BTXE: ___ Comment: _____

OPERATIONAL CHANGES TODAY:

1) slowed down flow South
2) shortened discharge time on south controls to avoid air bumps
3) cleaned out all tank-tank connections
4) cleaned oil splash on south

Try system overnight

South system keeps forced sogs slow

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: RVW

DATE: Sunday 7/30 TIME: 4pm-7pm HIGH TIDE: ________

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 0+1 Discharge 0+1 Pressure 80/5

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Normal Refill B Discharge 0+1 1/2 Pressure 80/6

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2403 Temperature 160 Oil ok

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: ~~84.5~~ 85. in. Blower: 83 in. ← pressure ↑ from ↑ wtr levels

(South system: → back to 82" after opening fil Bypass) (Blower: → 82.5 after opening bypass-South)

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: ________ GPM South Trench: ________ GPM } after adjustment 4:45 PM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: ________ GPM

(Left margin: South system gets insufficient air w/out Bypass on 86 vs 82")

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10/20 30 % South: 10 / 20 ________ % } slowed down again

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit) Today

North Units: 7/30 South Units: 7/30 2,000 Gal. Unit 7/30 older stock

(North Units: E = one ea. new (7/25) stock; W = older stock (1 ea))

CULTURE OBSERVATIONS:

steady state NW = 9.2

DOURs: NE = 9.2 [NH4]: [PO4]:

Static test drops to 6.0 ppm for 500ml bottle - no stirring

Static test 2000 gal tank = 6.2

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No.____ TPH/TEH:___ BTXE:___ Comment:________________

Sample No.____ TPH/TEH:___ BTXE:___ Comment:________________

(Right margin: South east static DOUR = 5.3 (Bot) 4.3 PP)

OPERATIONAL CHANGES TODAY: Fixed south system comp. air line again; leak had slowed down flow to ~ 1/2 gpm total overnight

New biosocks (5) today

Irrigated soil farming for 3hr ~400gal

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

P.I.E. NATIONWIDE BIOREMEDIATION SITE, EMERYVILLE, CA

OPERATOR: DJW

DATE: July 31 TIME: 1430 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill BH1 Discharge OH1 Pressure 81

East well flow setting: 1/2 West well flow setting: 1/2

NORTH TRENCH: Refill B Discharge OH1½ Pressure 80

South well flow setting: 1/2 North well flow setting: 1/2

COMPRESSOR CHECKS: Hours 2425 Temperature 155 Oil ✓

Air Filter drain checks: 1) ✓ 2) ✓ 3) ✓

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 82 in. Blower: 83 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 2 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 3 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10 / 15 35 % South: 15 / 20 35 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units:_____ South Units:_____ 2,000 Gal. Unit _____

CULTURE OBSERVATIONS:

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. E-71 TPH/TEH: ✓ BTXE: ✓ Comment: 2,000 gal @ 3 gpm

Sample No._____ TPH/TEH:___ BTXE:___ Comment:_____

OPERATIONAL CHANGES TODAY: