CytoCulture
ENVIRONMENTAL
BIOTECHNOLOGY
A DIVISION OF CYTOCULTURE INTERNATIONAL INC

89 NOV 27 AM 11:47

22 November 1989

Dennis Byrne
Hazardous Materials Specialist
Alameda County Environmental Health Dept.
80 Swan Way, Room 200
Oakland, CA 94621

Dear Mr. Byrne:

Pursuant to your conversation with Chris Faldo of Blymer Engineers, please find enclosed monthly progress reports for the past five months of operation at the former P.I.E. site in Emeryville. Please contact CytoCulture if you have additional questions about the project.

Sincerely,

Robert Greenwald

Robert Greenwald

CytoCulture
ENVIRONMENTAL
BIOTECHNOLOGY
A DIVISION OF CYTOCULTURE INTERNATIONAL INC.

October 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
Seventh monthly report of treatment and discharge operations for **September 1989**

CytoCulture/Sybron Chemicals are herein reporting on the results for the seventh 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 **SEPTEMBER**

Operating Conditions at Beginning of Month

At the end of August, both bioreactor systems were in continuous operation processing diesel-contaminated groundwater at a rate of 1.5 to 2 gpm (2,000-3,000 gpd). Free product was collected almost continuously from the south trench. From the system start up on March 2 through August approximately 421,000 gallons of contaminated groundwater had been treated by the combined north and south bioreactor systems.

All treated groundwater effluent discharges registered as non-detectable for benzene, toluene, xylene and ethyl benzene as well as for total petroleum hydrocarbons (TPH). Effluent treated water contained a healthy bacterial floc which settled out in about one hour to leave a clear, transparent and odorless supernatant.

Groundwater Treatment in September

For the first week of September, the north and south extraction trenches were pumping contaminated groundwater through both bioreactor systems at a net flow rate of about 2.5 gpm. The oil skimmer operating in the east well of the south extraction trench recovered free product intermittently. Approximately 20 gallons of "aged diesel oil" were recovered and stored in tight lid drums on site (now approximately 250 gallons were on site).

124 WASHINGTON AVENUE POINT RICHMOND CA 94801
415 233 6000 FAX 415 233 3[illegible]

On September 6, 200 gallons of recovered free product (oil) was pumped from the storage drums by a commercial oil recycling company. Testing conducted by this firm confirmed that the oil was old diesel and did not contain PCB or other chlorinated hydrocarbons.

During long periods of normal operation, the treated effluent is monitored weekly and the groundwater influent is monitored biweekly. An effluent sample (E-78) taken on September 8 for routine analysis confirmed a week later that the system was discharging treated groundwater with non-detectable levels of BTXE and total petroleum hydrocarbons (TPH).

A compressor oil leak caused a temporary interuption of flow for 24 hours on September 7-8. After the repair, groundwater treatment was resumed at 2.5 gpm. An effluent sample (E-78) taken later that day indicated that discharge TPH and BTXE levels were non-detectable. Free product was collected from the influent.

On September 15, the south trench INFLUENT was sampled (flow rate from the trench at 1.5 gpm) and found to contain 4,500 ppm TPH as diesel, clearly indicating contamination with free product. The corresponding effluent sample taken that day had non-detectable levels of TPH and BTXE, confirming the proper operation of the bioreactor systems. Effluent sampled (E-81) on September 22 gave the same result.

By the third week of the month, the system was running at a slower flow rate as the the pumping rate decreased with the dropping water table. With a system treatment rate of 1-2 gpm, an INFLUENT sample was taken on September 29 (I-83) and tested to reveal a TPH level of 2,200 ppm (with sheen). The benzene level of that sample was 90 ppb. The corresponding discharge effluent sample (E-82) taken at the same time gave non-detectable levels of TPH and BTXE.

Routine ammonium and phosphate readings indicated that the nutrient levels were normal. Visual inspection of the cultures confirmed the presence of a good floc. No free product was detected in the bioreactors.

Towards the end of the dry summer season, groundwater levels in both trenches continued to drop predictably leading to intermittent pumping, particularly noticeable in the north trench (automatic sensors turn off the well pumps when the water table drops beyond a set point). On several days in the last two weeks of the month, the flow rate from the north trench was negligible and the overall system effluent discharge rate dropped to 1 gpm. Influent groundwater was diverted to the north basin to keep both bioreactor cultures active when little or no water was being pumped from the north trench.

With the decreasing flow rate caused by the falling water table in the dry season, the compressor began to suffer from condensation problems caused by the system inactivity. When less water is available, the well pumps draw less air from the receiver and the compressor idles without the normal load. The condensation and lower oil temperature caused serious fouling of the pneumatic controls, particularly for the south trench pumps.

The low operating temperature / oil-water droplet condensation problem led to premature servicing of the south trench pnuematic controller. The underground air lines were completely replaced with hard piping to improve compressed air service. The controller was re-installed on September 26 and a dramatic increase of groundwater flow (up to 4 gpm total) was observed.

SUMMARY OF GROUNDWATER TREATMENT RATES

Dates	Average Flow	Net Volume
September 1-30	2.1 gpm (3,000 gpd)	90,000 gal
Estimated volume of treated water, March-August:		421,000 gal
Total groundwater treated to date:		511,000 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)			Diesel mg/L(ppm)
No.	Date	Description / Comment	Benz.	Tol.	Xyl.	TPH/TEH
E-78	9/8	Combined N/S Effluent 2.5 gpm	ND	ND	ND	ND
E-79	9/15	Combined N/S Effluent 2.5 gpm	ND	ND	ND	ND
I-80	9/15	South trench INFLUENT	ND	ND	ND	4,500
E-81	9/22	Combined N/S Effluent 1 gpm	ND	ND	ND	ND
I-83	9/29	South trench INFLUENT 4 gpm	90	ND	ND	2,200
E-82	9/29	Combined N/S Effluent	ND	ND	ND	ND

Effluent treated water discharged into the EBMUD interceptor at the end of September 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 by EBMUD confirm these results.

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 (there are two wells per trench), although 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.

Telephone conversations with DHS indicate they will review all the data collected to date as the next step in working with us to start up the reifiltration program. RWQCB will continue to function as the enforcement agency even though DHS will serve as the lead agency for this project.

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

Laboratory Analytical Results for September 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 C4TO

Client Contact _____ Recorder _____

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	
✓									✓			E-78	89	09	08	1230	

ANALYSIS REQUESTED																	
EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Title 22 Metals	EPA PP Metals (#)	TPH Method- FE4	Benzene-Toluene-Xylene(s)	Oil and Grease	EPA 608/8080 Pesticides & PCB's								
						✓	✓										

Laboratory Notes :

Normal

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
	Belinda J. Peters
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)

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18218
CLIENT: CYTOCULTURE
PROJECT NAME: PIE EMERYVILLE

DATE RECEIVED: 09/08/89
DATE ANALYZED: 09/21/89
DATE REPORTED: 09/21/89

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

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18218-1A	E-78	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	11
Spike: % Recovery	96

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18218
CLIENT: CYTOCULTURE
PROJECT NAME: PIE EMERYVILLE

DATE RECEIVED: 09/08/89
DATE ANALYZED: 09/13/89
DATE REPORTED: 09/21/89

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)
18218-1B	E-78	ND(1)	ND(1)	ND(1)	ND(1)

ND = None Detected; Limit of Detection in parentheses.

QA/QC SUMMARY

%RPD	18
%RECOVERY	93

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

Chain of Custody Form

Samplers Virus

Job Description PIE

Job Number CYTO

Client Contact D Virus

Recorder

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	
✓									✓			E-79	89	09	15	1330	Effluent of 2.5
✓									✓			I-80	89	09	15	1330	Influent South

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

Laboratory Notes :

Normal

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
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)

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18284
CLIENT: CYTO CULTURE INTERNATIONAL
LOCATION: PIE EMERYVILLE

DATE RECEIVED: 09/15/89
DATE ANALYZED: 09/27/89
DATE REPORTED: 09/29/89

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

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18284-1	E-79 effluent	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
18284-2	I-80 influent	ND(0.5)	ND(0.5)	4,500*	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, %	1
Spike: % Recovery	100

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18284
CLIENT: CYTO CULTURE INTERNATIONAL
JOB LOCATION: PIE EMERYVILLE

DATE RECEIVED: 09/15/89
DATE ANALYZED: 09/18/89
DATE REPORTED: 09/29/89

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)
18284-1	E-79	ND(1)	ND(1)	ND(1)	ND(1)
18284-2	I-80	ND(1)	ND(1)	ND(1)	ND(1)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

%RPD	10
%RECOVERY	84

Chain of Custody Form

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

Samplers: [illegible]

Job Description: PIE

Job Number: CATO

Client Contact: DDJ

Recorder:

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	
✓									✓			E81	90	09	22	1130	Effect 16Pm

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					
						✓	✓							

Laboratory Notes :

Normal

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
[signature]	Belinda Peters
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)

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18338
CLIENT: CYTO CULTURE
JOB NAME: PIE-EMERYVILLE

DATE RECEIVED: 09/22/89
DATE ANALYZED: 09/22/89
DATE REPORTED: 10/05/89

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)
18338-1	E - 81	ND(1)	ND(1)	ND(1)	ND(1)

ND = NOT DETECTED; LIMIT OF DETECTION IN PARENTHESES

QA/QC SUMMARY

%RPD	13
%RECOVERY	85

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18338
CLIENT: CYTO CULTURE
PROJECT NAME: PIE-EMERYVILLE

DATE RECEIVED: 09/22/89
DATE ANALYZED: 10/04/89
DATE REPORTED: 10/05/89

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

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18338-1	E - 81	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	5
Spike: % Recovery	93

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 R.J. van Woudenberg

Recorder

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	
✓									✓			E-82	89	09	29	1500	Effluent at 4
✓									✓			I-82	89	09	29	1500	Influent at 2

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									
						✓	✓											

Laboratory Notes :

Normal

Chain of Custody Record

Relinquished by: (signature) Date/Hr	Received by (signature)
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)

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18397
CLIENT: CYTO CULTURE
PROJECT NAME: PIE EMERYVILLE

DATE RECEIVED: 09/29/89
DATE ANALYZED: 10/11/89
DATE REPORTED: 10/12/89

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

LAB ID	CLIENT ID	GASOLINE (mg/L)	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18397-1b	E-82	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
18397-2b	I-83	ND(10)	ND(10)	2,200*	ND(10)

ND = Not Detected; Limit of detection in parentheses.

* = Fingerprint pattern does not match Hydrocarbon Standards.
Quantitation based on area sum within C12 to C26 boiling range.

QA/QC SUMMARY

RPD, %	17
Spike: % Recovery	86

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18397
CLIENT: CYTO CULTURE
JOB NAME: PIE EMERYVILLE

DATE RECEIVED: 09/29/89
DATE ANALYZED: 10/02/9
DATE REPORTED: 10/12/89

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)
18397-1a	E-82	ND(1)	ND(1)	ND(1)	ND(1)
18397-2a	I-83	90	ND(1)	ND(1)	ND(1)

ND = Not Dectected; Limit of dectection in parentheses.

QA/QC SUMMARY

%RPD	13
%RECOVERY	81

Daily Facility Log Sheets for September 1989

CytoCulture - PIE Bioremediation Project, Emeryville

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DJ

DATE: 1 Sep TIME: 1230 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 1/1 Discharge 04 1/2 Pressure 81

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

NORTH TRENCH: Refill 1 Discharge 04 3/4 Pressure 81

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

COMPRESSOR CHECKS: Hours 3189 Temperature 110 Oil W

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: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 / 20 15 % South: 30 / 70 50 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DO'Rs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

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

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

OPERATIONAL CHANGES TODAY:

Skimmed Oil 1 hr.

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: QQ

DATE: 3 Sep TIME: 1402 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 04 Discharge 04 1/2 Pressure 80

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

NORTH TRENCH: Refill 5 Discharge 04 1/4 Pressure 81

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

COMPRESSOR CHECKS: Hours 3230 Temperature 115 Oil W

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: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 / 18 12 % South: 30 / 70 40 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DDJ

DATE: 5 Sep TIME: 1230 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 6+1 Discharge 0+1½ Pressure 81

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

NORTH TRENCH: Refill 6 Discharge 0+1¼ Pressure 81

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

COMPRESSOR CHECKS: Hours 3282 Temperature 120 Oil N

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 93 in. South system: 92 in. Blower: 83 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 / 20 9 % South: 30 / 20 34 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DJ

DATE: 2 Sep TIME: 1230 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 3321 Temperature ____ Oil L

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

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

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM — until shut down

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 1 OFF % South: 1 OFF %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:

Shut Down Air Compressor due to oil Leak

Shut off Nutrients due to No flow

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DJJ

DATE: 8 Sep TIME: 1100 HIGH TIDE: ______

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 8+1 Discharge 0+1 1/2 Pressure 81

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

NORTH TRENCH: Refill 8 Discharge 0+1 3/4 Pressure 81

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

COMPRESSOR CHECKS: Hours 3322 Temperature 110 Oil N

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: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 70 / 70 100 % South: 70 / 70 100 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 8 Sep South Units: 8 Sep 2,000 Gal. Unit ______

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. E 78 TPH/TEH: ✓ BTXE: ✓ Comment: ______

Sample No. ______ TPH/TEH: ___ BTXF: ___ Comment: ______

OPERATIONAL CHANGES TODAY:

Repair Air Compressor and Started flow at 1200 w/s

Also Restarted Nutrients w/s N/N well Shut Down due to [illegible]

Refill Nutrients W/S Oil Compressor [illegible]

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: _____

DATE: _____ TIME: _____ 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: Water Temperature: ____ Deg.C.

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:

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DDD

DATE: 12 Sep TIME: 1800 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 6+1 Discharge 0+1½ Pressure 81

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

NORTH TRENCH: Refill 0 Discharge 0+1¾ Pressure 81

South well flow setting: ½ North well flow setting: OFF Air Leak

COMPRESSOR CHECKS: Hours 3427 Temperature 100 Oil N

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: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 / 20 85 % South: 70 / 70 93 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

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

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

OPERATIONAL CHANGES TODAY:

Skimmed Oil South

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DBJ

DATE: 13 Sep TIME: 1230 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+1 Discharge 0+1½ Pressure 81

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

NORTH TRENCH: Refill B Discharge 0+1¾ Pressure 81

South well flow setting: ½ North well flow setting: OFF Air Leak

COMPRESSOR CHECKS: Hours 3440 Temperature 95 Oil N

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 82 in. South system: 82 in. Blower: 92 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1. GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 / 20 83 % South: 20 / 20 80 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:

All Conditions Normal

skimmed Oil S

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DJ

DATE: 14 Sep TIME: 1145 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+1 Discharge 0+1½ Pressure 80

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

NORTH TRENCH: Refill B Discharge 0+1¾ Pressure 80

South well flow setting: ½ North well flow setting: OFF Air Leak

COMPRESSOR CHECKS: Hours 3461 Temperature 95 Oil W

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: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15/20 80 % South: 15/20 78 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: S=10+/N=10+ [PO4]: S=5/N=2

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

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

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

OPERATIONAL CHANGES TODAY:

Reset South Nutrients to 15/20

Skimmed Oil South

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DJC

DATE: 15 Sep TIME: 1330 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B+I Discharge 0+1 1/2 Pressure 80

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

NORTH TRENCH: Refill A Discharge 0+134 Pressure 91

South well flow setting: 1/2 North well flow setting: OFF Air Leak

COMPRESSOR CHECKS: Hours 3485 Temperature 95 Oil N

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

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

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 120 75 % South: 15 170 76 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

North Units: 15 Sep South Units: 15 Sep 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOURs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. E-79 TPH/TEH: ✓ BTXE: ✓ Comment: Effluent at 2.5 gpm

Sample No. I-80 TPH/TEH: ✓ BTXE: ✓ Comment: Influent South at 1 gpm

OPERATIONAL CHANGES TODAY:

Skimmed Oil South

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: PJO

DATE: 12 Sep TIME: 1300 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 0+1 Discharge 0+1½ Pressure 80

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

NORTH TRENCH: Refill 6 Discharge 0+¾ Pressure 81

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

COMPRESSOR CHECKS: Hours 3522 Temperature 110 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: 1.5 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 2.5 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 / 20 73 % South: 15 / 20 23 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:

Skimmed Oil South

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DJO

DATE: 18 Sep TIME: 1300 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill ___ Discharge ___ Pressure ___

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

NORTH TRENCH: Refill 0 Discharge 0+1/4 Pressure 81

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

Also COMPRESSOR CHECKS: Hours 3546 Temperature 120 Oil N

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 83 in. South system: 82 in. Blower: 81 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: _____ GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 1 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 / 22 70 % South: 15 / 20 70 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ___ Deg.C.

DOURs: [NH_4]: [PO_4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

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

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

OPERATIONAL CHANGES TODAY:

Skimmed Oil South

Remove South Controller for Maintnance

All flow North

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: PJU

DATE: 19 Sep TIME: 1200 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill ___ Discharge ___ Pressure ___

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

NORTH TRENCH: Refill B Discharge ON 1¼ Pressure 81

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

A/to COMPRESSOR CHECKS: Hours 3569 Temperature 130 Oil N

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 83 in. South system: 85 in. Blower: 83 in.

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: — GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 1 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 / 20 66 % South: 15 / 20 66 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ___ Deg.C.

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:

Switch flow to ~~North Bio~~ South Bio

Cleaned Oil out of ~~North~~ South

Cond Formed 500 gal.

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DAC

DATE: 20 Sep TIME: 1100 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill ____ Discharge _____ Pressure _____

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

NORTH TRENCH: Refill B Discharge 07 1/4 Pressure 81

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

COMPRESSOR CHECKS: Hours 3175 Temperature 100 Oil N.

Air Filter drain checks: 1) ~~3575~~ ON 2) ~~100~~ 3) ~~N~~ ON

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

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

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1. GPM South Trench: — GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 1 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 10/10 64 % South: 10/10 64 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:

Switch flow to North Trench

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DCV

DATE: 21 Sep TIME: 1330 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill ____ Discharge ____ Pressure ____

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

NORTH TRENCH: Refill 6 Discharge 6+1/4 Pressure 81

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

COMPRESSOR CHECKS: Hours 3582 Temperature 95 Oil W

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: 15 / 20 60 % South: 15 / 20 61 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: OOJ

DATE: 21 Sep TIME: 1000 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 3603 Temperature 100 Oil Cloudy

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 98 in. South system: 85 in. Blower: 82 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: 19 Sep South Units: 20 Sep 2,000 Gal. Unit _____

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

DOUPs: [NH4]: [PO4]:

SAMPLES TAKEN AND TESTS REQUESTED FOR ANALYSIS:

Sample No. E-81 TPH/TEH: ✓ BTXE: ✓ Comment: Effluent at 1gpm

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

OPERATIONAL CHANGES TODAY:

Shut Down Air compressor Cloudy Oil

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DJC

DATE: 25 Sep TIME: 1500 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 0 V Discharge ____ Pressure ____

East well flow setting: ____ West well flow setting: HALF

NORTH TRENCH: Refill B Discharge 0+1¾ Pressure 80

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

COMPRESSOR CHECKS: Hours 3605 Temperature 150 Oil N

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

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

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 1 GPM South Trench: — GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 1 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 / 30 50 % South: — / 1 60 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:

Started AC at 1300 All Flow North

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: RJC

DATE: 26 Sep TIME: 2000 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill 8 Discharge 0+1½ Pressure 80

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

NORTH TRENCH: Refill 8+1 Discharge 0+1½ Pressure 80

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

COMPRESSOR CHECKS: Hours 3628 Temperature 140 Oil N

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

North system: 83 in. South system: 83 in. Blower: 83 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: 15 / 20 43 % South: 15 / 20 57 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:
Installed South Controller
Replaced Air Lines

CytoCulture International, Inc.

GROUNDWATER TREATMENT DAILY FACILITY INSPECTION LOG

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

OPERATOR: DJU

DATE: 28 Sep TIME: 1200 HIGH TIDE: _____

WELL PUMP CONTROLLER SETTINGS AND OBSERVATIONS:

SOUTH TRENCH: Refill B Discharge 0+1½ Pressure 80

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

NORTH TRENCH: Refill B+1 Discharge 0+1½ Pressure 80

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

COMPRESSOR CHECKS: Hours 3663 Temperature 140 Oil N

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

BLOWER AIR PRESSURE READINGS and TEMPERATURE CHECKS:

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

GROUNDWATER EXTRACTION TRENCH FLOW RATES:

North Trench: 2 GPM South Trench: 2 GPM

TOTAL GROUNDWATER TREATMENT DISCHARGE RATE: 4 GPM

DIAMMONIUM PHOSPHATE FLOW AND PERCENT REMAINING:

North: 15 120 35 % South: 15 120 55 %

DATE OF LAST BIOSOCK INOCULATIONS: (# per unit)

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

CULTURE OBSERVATIONS: Water Temperature: ____ Deg.C.

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:

Refit all well Hd

Skimmed oil South