APPENDIX D

SEDIMENT SAMPLE RESULTS

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

January 27, 2015

CLS Work Order #: CXL1044
COC #: 158555

Lauren Fancy
Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project Name: Nimbus Dam

Enclosed are the results of analyses for samples received by the laboratory on 12/19/14 12:55. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

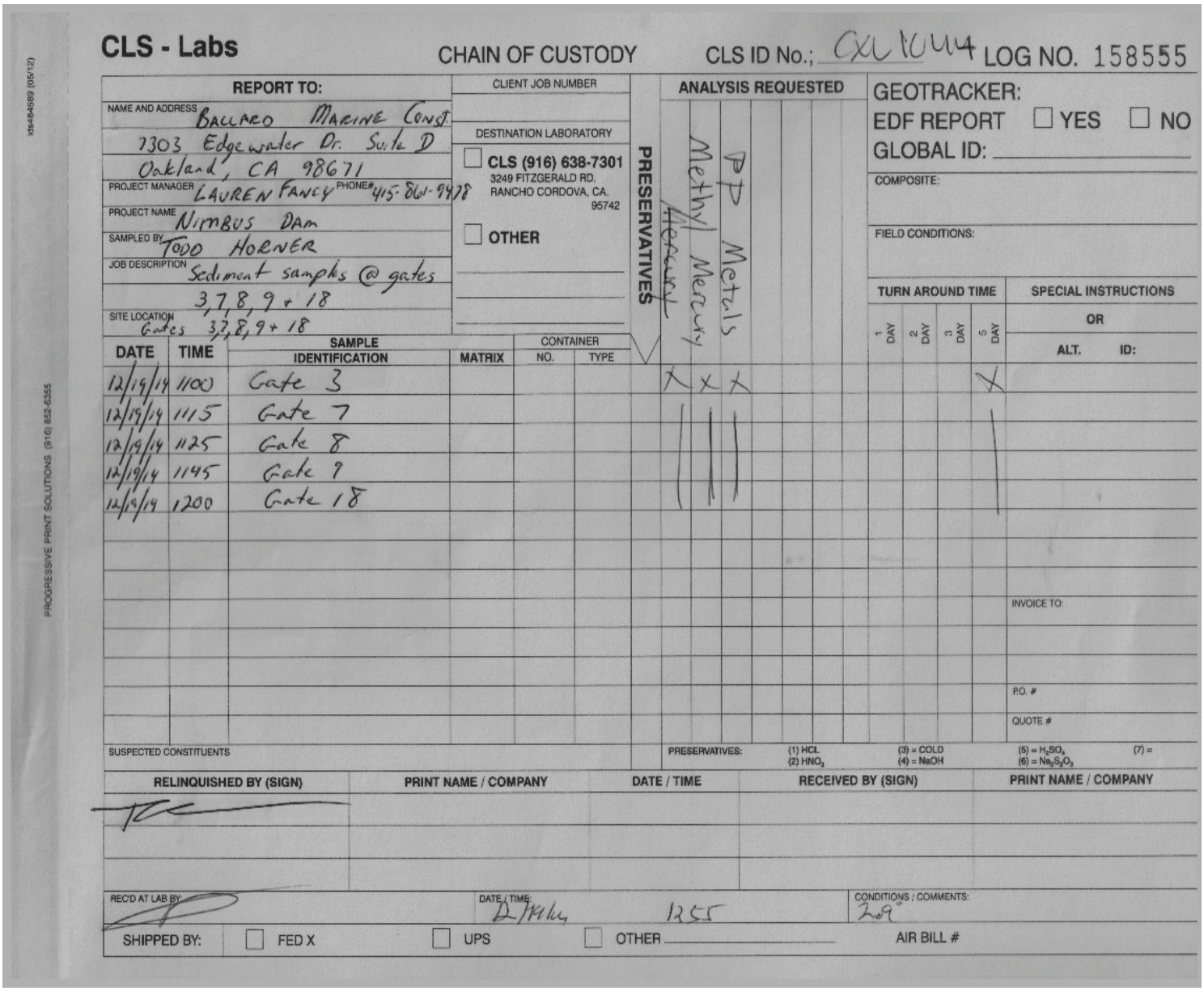
James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

01/27/15 09:49

Ballard Marine Const.	Project: Nimbus Dam	
7303 Edgewater Dr. Suite D	Project Number: [none]	**CLS Work Order #: CXL1044**
Oakland, CA 98671	Project Manager: Lauren Fancy	COC #: 158555



CLS - Labs CHAIN OF CUSTODY CLS ID No.: CXL1044 LOG NO. 158555

REPORT TO:
NAME AND ADDRESS: Ballard Marine Const. 7303 Edgewater Dr. Suite D Oakland, CA 98671
PROJECT MANAGER: Lauren Fancy PHONE#: 415-861-9978
PROJECT NAME: Nimbus Dam
SAMPLED BY: Todd Horner
JOB DESCRIPTION: Sediment samples @ gates 3, 7, 8, 9 + 18
SITE LOCATION: Gates 3, 7, 8, 9 + 18

CLIENT JOB NUMBER

DESTINATION LABORATORY
☐ CLS (916) 638-7301 3249 FITZGERALD RD. RANCHO CORDOVA, CA. 95742
☐ OTHER

PRESERVATIVES

ANALYSIS REQUESTED: Methyl Mercury; PP Metals

GEOTRACKER:
EDF REPORT ☐ YES ☐ NO
GLOBAL ID:
COMPOSITE:
FIELD CONDITIONS:

TURN AROUND TIME: 1 DAY; 2 DAY; 3 DAY; 5 DAY
SPECIAL INSTRUCTIONS: OR; ALT. ID:

DATE	TIME	SAMPLE IDENTIFICATION	MATRIX	CONTAINER NO.	CONTAINER TYPE	Methyl Mercury	PP Metals	5 DAY
12/19/14	1100	Gate 3				X	X	X
12/19/14	1115	Gate 7						
12/19/14	1125	Gate 8						
12/19/14	1145	Gate 9						
12/19/14	1200	Gate 18						

INVOICE TO:
P.O. #
QUOTE #

SUSPECTED CONSTITUENTS

PRESERVATIVES: (1) HCL (2) HNO_3 (3) = COLD (4) = NaOH (5) = H_2SO_4 (6) = $Na_2S_2O_3$ (7) =

RELINQUISHED BY (SIGN)	PRINT NAME / COMPANY	DATE / TIME	RECEIVED BY (SIGN)	PRINT NAME / COMPANY

REC'D AT LAB BY: DATE / TIME: 12/19/14 1255 CONDITIONS / COMMENTS: 2.9°

SHIPPED BY: ☐ FED X ☐ UPS ☐ OTHER AIR BILL #

PROGRESSIVE PRINT SOLUTIONS (916) 852-6355

01/27/15 09:49

CALIFORNIA LABORATORY SERVICES

Ballard Marine Const.	Project: Nimbus Dam	
7303 Edgewater Dr. Suite D	Project Number: [none]	**CLS Work Order #: CXL1044**
Oakland, CA 98671	Project Manager: Lauren Fancy	COC #: 158555

Metals by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gate 3 (CXL1044-01) Soil Sampled: 12/19/14 11:00 Received: 12/19/14 12:55									
Mercury	ND	0.10	mg/kg	1	CX09162	12/24/14	12/24/14	EPA 7471A	
Antimony	ND	2.5	"	"	CX09115	12/22/14	12/23/14	EPA 6010B	
Beryllium	ND	0.25	"	"	"	"	"	"	
Cadmium	ND	0.50	"	"	"	"	"	"	
Chromium	**5.8**	1.0	"	"	"	"	"	"	
Copper	**5.0**	1.0	"	"	"	"	"	"	
Lead	ND	2.5	"	"	"	"	"	"	
Nickel	**5.8**	1.0	"	"	"	"	"	"	
Silver	ND	0.50	"	"	"	"	"	"	
Zinc	**8.7**	1.0	"	"	"	"	"	"	
Arsenic	ND	1.0	"	"	"	"	"	"	
Selenium	ND	2.5	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Gate 7 (CXL1044-02) Soil Sampled: 12/19/14 11:15 Received: 12/19/14 12:55									
Mercury	ND	0.10	mg/kg	1	CX09162	12/24/14	12/24/14	EPA 7471A	
Antimony	ND	2.5	"	"	CX09115	12/22/14	12/23/14	EPA 6010B	
Beryllium	ND	0.25	"	"	"	"	"	"	
Cadmium	ND	0.50	"	"	"	"	"	"	
Chromium	**7.0**	1.0	"	"	"	"	"	"	
Copper	**5.8**	1.0	"	"	"	"	"	"	
Lead	ND	2.5	"	"	"	"	"	"	
Nickel	**6.5**	1.0	"	"	"	"	"	"	
Silver	ND	0.50	"	"	"	"	"	"	
Zinc	**9.8**	1.0	"	"	"	"	"	"	
Arsenic	ND	1.0	"	"	"	"	"	"	
Selenium	ND	2.5	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	

Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project: Nimbus Dam
Project Number: [none]
Project Manager: Lauren Fancy

CLS Work Order #: CXL1044
COC #: 158555

Metals by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gate 8 (CXL1044-03) Soil Sampled: 12/19/14 11:25 Received: 12/19/14 12:55									
Mercury	ND	0.10	mg/kg	1	CX09162	12/24/14	12/24/14	EPA 7471A	
Antimony	ND	2.5	"	"	CX09115	12/22/14	12/23/14	EPA 6010B	
Beryllium	ND	0.25	"	"	"	"	"	"	
Cadmium	ND	0.50	"	"	"	"	"	"	
Chromium	**8.8**	1.0	"	"	"	"	"	"	
Copper	**7.6**	1.0	"	"	"	"	"	"	
Lead	ND	2.5	"	"	"	"	"	"	
Nickel	**8.6**	1.0	"	"	"	"	"	"	
Silver	ND	0.50	"	"	"	"	"	"	
Zinc	**12**	1.0	"	"	"	"	"	"	
Arsenic	ND	1.0	"	"	"	"	"	"	
Selenium	ND	2.5	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	
Gate 9 (CXL1044-04) Soil Sampled: 12/19/14 11:45 Received: 12/19/14 12:55									
Mercury	ND	0.10	mg/kg	1	CX09162	12/24/14	12/24/14	EPA 7471A	
Antimony	ND	2.5	"	"	CX09115	12/22/14	12/23/14	EPA 6010B	
Beryllium	ND	0.25	"	"	"	"	"	"	
Cadmium	ND	0.50	"	"	"	"	"	"	
Chromium	**11**	1.0	"	"	"	"	"	"	
Copper	**8.2**	1.0	"	"	"	"	"	"	
Lead	ND	2.5	"	"	"	"	"	"	
Nickel	**10**	1.0	"	"	"	"	"	"	
Silver	ND	0.50	"	"	"	"	"	"	
Zinc	**15**	1.0	"	"	"	"	"	"	
Arsenic	ND	1.0	"	"	"	"	"	"	
Selenium	ND	2.5	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	

Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project: Nimbus Dam
Project Number: [none]
Project Manager: Lauren Fancy

CLS Work Order #: CXL1044
COC #: 158555

Metals by EPA 6000/7000 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gate 18 (CXL1044-05) Soil Sampled: 12/19/14 12:00 Received: 12/19/14 12:55									
Mercury	ND	0.10	mg/kg	1	CX09162	12/24/14	12/24/14	EPA 7471A	
Antimony	ND	2.5	"	"	CX09115	12/22/14	12/23/14	EPA 6010B	
Beryllium	ND	0.25	"	"	"	"	"	"	
Cadmium	ND	0.50	"	"	"	"	"	"	
Chromium	**8.9**	1.0	"	"	"	"	"	"	
Copper	**7.4**	1.0	"	"	"	"	"	"	
Lead	ND	2.5	"	"	"	"	"	"	
Nickel	**8.1**	1.0	"	"	"	"	"	"	
Silver	ND	0.50	"	"	"	"	"	"	
Zinc	**15**	1.0	"	"	"	"	"	"	
Arsenic	ND	1.0	"	"	"	"	"	"	
Selenium	ND	2.5	"	"	"	"	"	"	
Thallium	ND	4.0	"	"	"	"	"	"	

Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project: Nimbus Dam
Project Number: [none]
Project Manager: Lauren Fancy

CLS Work Order #: CXL1044
COC #: 158555

Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CX09115 - EPA 3050B										
Blank (CX09115-BLK1)				Prepared: 12/22/14 Analyzed: 12/23/14						
Antimony	ND	2.5	mg/kg							
Beryllium	ND	0.25	"							
Cadmium	ND	0.50	"							
Chromium	ND	1.0	"							
Copper	ND	1.0	"							
Lead	ND	2.5	"							
Nickel	ND	1.0	"							
Silver	ND	0.50	"							
Zinc	ND	1.0	"							
Arsenic	ND	1.0	"							
Selenium	ND	2.5	"							
Thallium	ND	4.0	"							
LCS (CX09115-BS1)				Prepared: 12/22/14 Analyzed: 12/23/14						
Antimony	45.5	2.5	mg/kg	50.0		91	75-125			
Beryllium	48.4	0.25	"	50.0		97	75-125			
Cadmium	49.1	0.50	"	50.0		98	75-125			
Chromium	48.9	1.0	"	50.0		98	75-125			
Copper	49.5	1.0	"	50.0		99	75-125			
Lead	49.3	2.5	"	50.0		99	75-125			
Nickel	47.6	1.0	"	50.0		95	75-125			
Silver	41.4	0.50	"	50.0		83	75-125			
Zinc	47.0	1.0	"	50.0		94	75-125			
Arsenic	47.6	1.0	"	50.0		95	75-125			
Selenium	46.6	2.5	"	50.0		93	75-125			
Thallium	50.0	4.0	"	50.0		100	75-125			
Matrix Spike (CX09115-MS1)	**Source: CXL1044-01**			Prepared: 12/22/14 Analyzed: 12/23/14						
Antimony	23.1	2.5	mg/kg	50.0	ND	46	75-125			QM-5
Beryllium	49.5	0.25	"	50.0	0.0926	99	75-125			
Cadmium	50.5	0.50	"	50.0	ND	101	75-125			
Chromium	56.2	1.0	"	50.0	5.83	101	75-125			

Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project: Nimbus Dam
Project Number: [none]
Project Manager: Lauren Fancy

CLS Work Order #: CXL1044
COC #: 158555

Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CX09115 - EPA 3050B										
Matrix Spike (CX09115-MS1)	**Source: CXL1044-01**			Prepared: 12/22/14	Analyzed: 12/23/14					
Copper	55.8	1.0	mg/kg	50.0	4.98	102	75-125			
Lead	49.3	2.5	"	50.0	1.49	96	75-125			
Nickel	54.9	1.0	"	50.0	5.82	98	75-125			
Silver	49.8	0.50	"	50.0	ND	100	75-125			
Zinc	57.6	1.0	"	50.0	8.75	98	75-125			
Arsenic	49.1	1.0	"	50.0	0.916	96	75-125			
Selenium	46.4	2.5	"	50.0	ND	93	75-125			
Thallium	48.5	4.0	"	50.0	ND	97	75-125			
Matrix Spike Dup (CX09115-MSD1)	**Source: CXL1044-01**			Prepared: 12/22/14	Analyzed: 12/23/14					
Antimony	23.1	2.5	mg/kg	50.0	ND	46	75-125	0.03	30	QM-5
Beryllium	49.2	0.25	"	50.0	0.0926	98	75-125	0.5	30	
Cadmium	50.4	0.50	"	50.0	ND	101	75-125	0.1	30	
Chromium	54.9	1.0	"	50.0	5.83	98	75-125	2	30	
Copper	55.4	1.0	"	50.0	4.98	101	75-125	0.7	30	
Lead	49.9	2.5	"	50.0	1.49	97	75-125	1	30	
Nickel	54.4	1.0	"	50.0	5.82	97	75-125	0.8	30	
Silver	48.8	0.50	"	50.0	ND	98	75-125	2	30	
Zinc	57.3	1.0	"	50.0	8.75	97	75-125	0.5	30	
Arsenic	49.2	1.0	"	50.0	0.916	97	75-125	0.2	30	
Selenium	47.0	2.5	"	50.0	ND	94	75-125	1	30	
Thallium	48.8	4.0	"	50.0	ND	98	75-125	0.6	30	
Batch CX09162 - EPA 7471A										
Blank (CX09162-BLK1)				Prepared & Analyzed: 12/24/14						
Mercury	ND	0.10	mg/kg							

Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project: Nimbus Dam
Project Number: [none]
Project Manager: Lauren Fancy

CLS Work Order #: CXL1044
COC #: 158555

Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CX09162 - EPA 7471A										
LCS (CX09162-BS1)				Prepared & Analyzed: 12/24/14						
Mercury	0.279	0.10	mg/kg	0.250		111	75-125			
Matrix Spike (CX09162-MS1)		**Source: CXL1044-01**		Prepared & Analyzed: 12/24/14						
Mercury	0.310	0.10	mg/kg	0.250	0.0360	110	75-125			
Matrix Spike Dup (CX09162-MSD1)		**Source: CXL1044-01**		Prepared & Analyzed: 12/24/14						
Mercury	0.311	0.10	mg/kg	0.250	0.0360	110	75-125	0.3	25	

Ballard Marine Const.	Project: Nimbus Dam	
7303 Edgewater Dr. Suite D	Project Number: [none]	**CLS Work Order #: CXL1044**
Oakland, CA 98671	Project Manager: Lauren Fancy	COC #: 158555

Notes and Definitions

QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

February 05, 2015

CLS Work Order #: CYA1165
COC #: GREEN

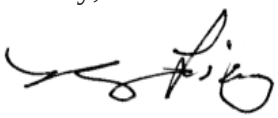
Lauren Fancy
Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project Name: Nimbus Dam

Enclosed are the results of analyses for samples received by the laboratory on 01/30/15 09:37. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

Ballard Marine Const.	Project: Nimbus Dam	
7303 Edgewater Dr. Suite D	Project Number: [none]	**CLS Work Order #: CYA1165**
Oakland, CA 98671	Project Manager: Lauren Fancy	COC #: GREEN

CHANGE OF STATUS

CYA1165

CLS Labs Job # CXL1044

Project Name: Nimbus Dam

Date Sample(s) Were Received: 12/19/14 **Original Date** 12/29/14

Rick Mellenhoff (Client Contacted) **of** B Bilfel Eng. (Company) emailed ~~called~~

on 1/30/15 (Date) **at** 0733 (Time).

... and requested the following:

Please run % moisture on samples:

2, 3, 4, 5

- Sample #1 has been consumed

Turnaround time requested for additional work: 5 day

(Signature) 1/30/2015 (Date)

Updated lab job database and file folder by:

Cc:

H:\Will\Orellana\ChangeOfStatus.Doc

Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project: Nimbus Dam
Project Number: [none]
Project Manager: Lauren Fancy

CLS Work Order #: CYA1165
COC #: GREEN

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gate 7 (CYA1165-02) Soil	**Sampled: 12/19/14 11:15**	**Received: 01/30/15 09:37**							
% Moisture	**80**	1.0	%	1	CY00690	02/02/15	02/02/15	SM 2540G	HT-3
Gate 8 (CYA1165-03) Soil	**Sampled: 12/19/14 11:25**	**Received: 01/30/15 09:37**							
% Moisture	**77**	1.0	%	1	CY00690	02/02/15	02/02/15	SM 2540G	HT-3
Gate 9 (CYA1165-04) Soil	**Sampled: 12/19/14 11:45**	**Received: 01/30/15 09:37**							
% Moisture	**78**	1.0	%	1	CY00690	02/02/15	02/02/15	SM 2540G	HT-3
Gate 18 (CYA1165-05) Soil	**Sampled: 12/19/14 12:00**	**Received: 01/30/15 09:37**							
% Moisture	**66**	1.0	%	1	CY00690	02/02/15	02/02/15	SM 2540G	HT-3

Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project: Nimbus Dam
Project Number: [none]
Project Manager: Lauren Fancy

CLS Work Order #: CYA1165
COC #: GREEN

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY00690 - General Preparation										
Blank (CY00690-BLK1)				Prepared & Analyzed: 02/02/15						
% Moisture	ND	1.0	%							

CALIFORNIA LABORATORY SERVICES

02/05/15 08:12

Ballard Marine Const.	Project: Nimbus Dam	
7303 Edgewater Dr. Suite D	Project Number: [none]	**CLS Work Order #: CYA1165**
Oakland, CA 98671	Project Manager: Lauren Fancy	COC #: GREEN

Notes and Definitions

HT-3	Sample was from a previous job and was extracted/analyzed outside the EPA recommended holding time per client's request.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

February 05, 2015

CLS Work Order #: CYA1165
COC #: GREEN

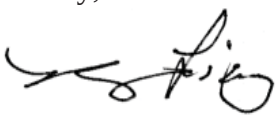
Lauren Fancy
Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project Name: Nimbus Dam

Enclosed are the results of analyses for samples received by the laboratory on 01/30/15 09:37. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

Ballard Marine Const.	Project: Nimbus Dam	
7303 Edgewater Dr. Suite D	Project Number: [none]	**CLS Work Order #: CYA1165**
Oakland, CA 98671	Project Manager: Lauren Fancy	COC #: GREEN

CHANGE OF STATUS

CYA1165

CLS Labs Job # CXL1044

Project Name: Nimbus Dam

Date Sample(s) Were Received: 12/19/14 **Original Date** 12/29/14

Rick Mellenhoff (Client Contacted) **of** B Bilfel Eng. (Company) emailed ~~called~~

on 1/30/15 (Date) **at** 0733 (Time).

... and requested the following:

Please run % moisture on samples:

2, 3, 4, 5

- Sample #1 has been consumed

Turnaround time requested for additional work: 5 day

(Signature) 1/30/2015 (Date)

Updated lab job database and file folder by:

Cc:

H:\Will\Orellana\ChangeOfStatus.Doc

Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project: Nimbus Dam
Project Number: [none]
Project Manager: Lauren Fancy

CLS Work Order #: CYA1165
COC #: GREEN

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Gate 7 (CYA1165-02) Soil	**Sampled: 12/19/14 11:15**	**Received: 01/30/15 09:37**							
% Moisture	**80**	1.0	%	1	CY00690	02/02/15	02/02/15	SM 2540G	HT-3
Gate 8 (CYA1165-03) Soil	**Sampled: 12/19/14 11:25**	**Received: 01/30/15 09:37**							
% Moisture	**77**	1.0	%	1	CY00690	02/02/15	02/02/15	SM 2540G	HT-3
Gate 9 (CYA1165-04) Soil	**Sampled: 12/19/14 11:45**	**Received: 01/30/15 09:37**							
% Moisture	**78**	1.0	%	1	CY00690	02/02/15	02/02/15	SM 2540G	HT-3
Gate 18 (CYA1165-05) Soil	**Sampled: 12/19/14 12:00**	**Received: 01/30/15 09:37**							
% Moisture	**66**	1.0	%	1	CY00690	02/02/15	02/02/15	SM 2540G	HT-3

Ballard Marine Const.
7303 Edgewater Dr. Suite D
Oakland, CA 98671

Project: Nimbus Dam
Project Number: [none]
Project Manager: Lauren Fancy

CLS Work Order #: CYA1165
COC #: GREEN

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch CY00690 - General Preparation										
Blank (CY00690-BLK1)				Prepared & Analyzed: 02/02/15						
% Moisture	ND	1.0	%							

CALIFORNIA LABORATORY SERVICES

02/05/15 08:12

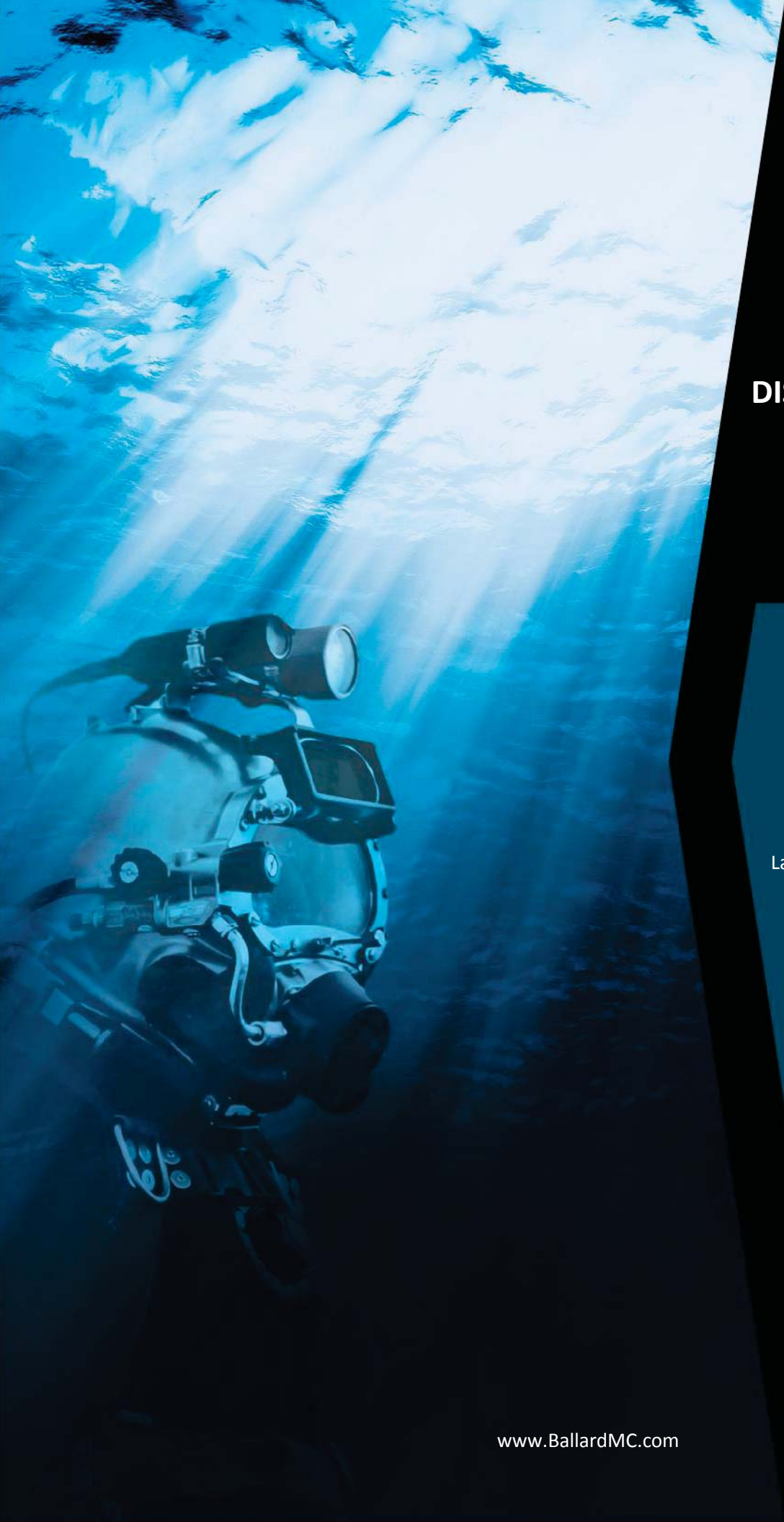
Ballard Marine Const.	Project: Nimbus Dam	
7303 Edgewater Dr. Suite D	Project Number: [none]	**CLS Work Order #: CYA1165**
Oakland, CA 98671	Project Manager: Lauren Fancy	COC #: GREEN

Notes and Definitions

HT-3	Sample was from a previous job and was extracted/analyzed outside the EPA recommended holding time per client's request.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

APPENDIX E

SEDIMENT DREDGING AND DISPOSAL PLAN



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DREDGING AND DISPOSAL OF SEDIMENT PLAN

Nimbus Dam Project

Date: March 27, 2015
Revision 03

Prepared For:
Alltech Engineering

Prepared By:
Ballard Marine Construction, LLC
Lauren Fancy, Operations Coordinator
BMC Project Number 0314031

www.BallardMC.com

BALLARD MARINE CONSTRUCTION

Contents

Purpose

BMC prepared the following Dredging and Disposal of Sediment Plan for Alltech Engineering, for the Nimbus Dam Project in Fair Oaks, CA. This plan is intended to provide guidance to remove the desired material quantity, minimize turbidity and meet any existing permit requirements. This plan describes the approach, methods, and operational procedures to be employed to conduct dredging activities. The environmental resources within the project boundaries and those affected outside the limits of work must be protected during the entire duration of the contract. BMC will comply with all applicable environmental, federal, state, and local laws and regulations. A copy of the Dredge Plan shall be at the dive site at all times and be available to the client representative upon request. Along with the Dive Plan and associated documents, the Dredge Plan will be reviewed at pre-shift safety meetings when dredging operations occur.

Turbidity Curtain Installation/Removal

Prior to commencing dredging operations, BMC will deploy two sections of Type II HD turbidity curtain[1]. Starting with the end at the top of the pallet, workers will "un-fold" the turbidity curtain section float-by-float and stretch it out in the lay down area. BMC will remove the next turbidity curtain section in a similar fashion and place it end-to-end in line with the previous section. At the turbidity curtain section ends to be joined, we will remove the first few poly ties (or furling lines) and stretch out the skirt top to bottom. To connect turbidity curtain sections, workers will slide the mating connectors together and lock the connectors by inserting each of the ASTM toggle pins into the lock pin holes provided. Each pin is spring-loaded and secured to its connector by a lanyard.

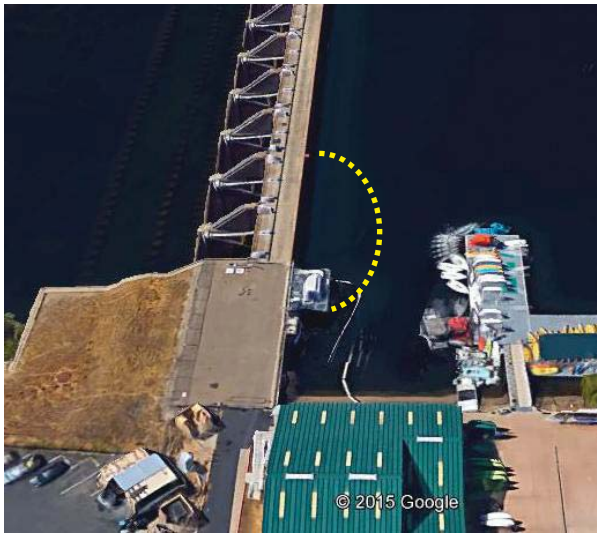


Figure 1: Turbidity Curtain Deployment at Gate 18

The turbidity curtain sections will now be bundled at the water's edge or even floated in a staging pattern in the water until all sections are connected. A tow bridle will be used to tow the assembled turbidity curtain into place. This method of towing will prevent damage to the curtain and connector. The tow bridle mates directly to the connector on the curtain and is secured with a toggle pin. The curtain will then be towed to the first location on the south upstream side of Gate 18[2] and over to the north bullnose pier of Gate 17 (see Figure 1). Once the curtain is on station, the anchoring sequence according to the anchor lay out plan will be completed. The skirt portion of the curtain remains furled up and secured under the floats until the anchoring operation is complete.

[1] Type II HD Turbidity Curtain sketch and installation manual included in this submittal.

[2] The curtain will be secured to the north side of the screens on the fish hatchery intake to mitigate the intakes exposure to turbidity. The 60-inch slide gate will need to be closed during dredging operations near Gate 18.

Twenty five pound Danforth's are used for anchoring. Once the anchoring operation is complete, the poly ties holding the skirt will be cut allowing the skirt to fall towards the lake bottom. Current loads now acting on the skirt may influence the curtain shape and adjustment of one or more anchors may be necessary.

This process will be repeated during upstream dredging operations of Gates 7-9. The curtain will be deployed in a manner that ensures complete coverage of the turbidity areas of influence (I.e. the south end of the curtain will be secured to the bullnose pier of Gate 10 and the north side to Gate 6. Removal of the curtain will take place in roughly the opposite process.

Work Layout and Dredging Methods

BMC proposes utilizing the existing 10 foot wide concrete drive at the top of the dam to stage a 4-ton carry deck crane[3] that will lower and raise the 4" Digester Hydraulic Submersible Pump with agitator (or equivalent) at each Gate (7,8,9 and 18). BMC anticipates the total quantity for removed sediment is approximately 370 yd^3: 280 yd^3 upstream of Gate 18, 10 yd^3 at Gate 7, 40 yd^3 at Gate 8 and 40 yd^3 at Gate 9. These estimated quantities will be confirmed and/or adjusted (if needed) based on the results of the Bathymetric survey performed by eTrac. BMC anticipates the estimated quantities assume a 2:1 excavation slope upstream of the approximately 8-foot wide flat clearance area adjacent to the bulkhead placement. BMC will determine the actual slope, 2:1 or 1:1, at Gate 18 and adjust the dredging quantity IAW 30 20 23-3, Section D.1. The submersible pump will supply the necessary flow through HDPE piping across the dam to the first set of three settling tanks (pre-treatment tanks). No chemical treatment will be performed during this phase.

The gravity settling process will take place when the dredged material is transferred from the submersible pump into the pre-treatment tanks. This phase is necessary to protect sensitive monitoring and injection equipment from damage caused by contact with large solids. ATS, Inc. will work in conjunction will Ballard to ensure safe and efficient transfer of the material from the reservoir to the pre-treatment tanks.

Water Treatment System

Prior to dredging operations, a water treatment system will be staged and assembled in the parking lot southwest from the dam (see Figure 2 *Water Treatment*). The water treatment system consists generally of pumps, plumbing, tanks, chemical injection; ATS control unit, and filtration. A slurry of water, sediment, and organic material will be pumped by Ballard via 6-imch diameter heavy duty hose with camlock fittings into tanks, and ATS, Inc. will treat and discharge the water. The system is designed to operate at a maximum flow rate of 600 gallons per minute (GPM). Actual flow rates will be determined by the operator in the field, depending on water quality. The water process flow is most simply described by breaking the system up into phases. Each phase has a specific purpose, which is described below. Chemical treatment and monitoring are performed throughout this process in multiple stages

[3] The crane will be removed from the deck of the dam after each shift and secured at the south staging area inside of the gate.

Figure 2: Water Treatment Site Plan

using an Active Treatment System that will be controlled by a certified ATS, Inc. operator. These stages are described in each phase listed below. Some notes are included as well.

- Dredging and pumping: transferring dredged material to tanks for heavy solids settling
- Pre-treatment: flocculant injection, enhanced settling, and monitoring
- Process treatment and discharge: filtration, final monitoring, and discharge

Pre-Treatment

The pre-treatment process involves pumping water from the pre-treatment tanks through the ATS unit, and into to the second set of three tanks (process tanks). An electric centrifugal pump will transfer water through the ATS unit for flow rate monitoring, chemical injection, and mixing. The polymer dose will be adjusted by the operator to provide optimal settling and flocculation. Onsite bench scale testing will be performed in the ATS unit to determine ideal dose rates. After the water has been transferred through the ATS unit, it will be routed into the process tanks for additional settling.

Process Treatment and Discharge

Process treatment and discharge is the final stage of the treatment system. After the pre-treatment phase is complete, an electric centrifugal pump will transfer the water from the process tanks, through the ATS unit again, into the filtration system, and discharge the treated water. This pass through the ATS will allow for further monitoring, chemical injection, and mixing. The first step in the filtration system is the sand filter. The sand filter is a 4-pod unit that will be loaded with a mixed media bed designed for chemical treatment, consisting of three layers of media. The media will consist of a gravel base, a garnet intermediary layer, and sand on top. The filter pods are mounted together on a skid, and are equipped with an automated back flush system. The back flush water will be transferred to the pre-treatment tanks for storage. The quantity of back flush cycles may vary greatly with water quality, but we anticipate two 8-minute back flush cycles every 30 minutes, at approximately 225 gallons per minute, for a total of 3,600 gallons per hour. Discharge will continue during back flush cycles at a reduced rate.

The water will be discharged from the sand filter and into a bag media filter. The filter micron size will be determined by the operator in the field based on water quality. Bag filter media can be disposed in an onsite dumpster or other appropriate facility. The bag filter is a precautionary measure designed to ensure that discharge water quality parameters are met. If field testing proves that the sand filter is sufficient to manage the solids loading, the bag filter may be bypassed at the discretion of the operator.

The water will be transferred from the bag filter back into the ATS unit for final monitoring. At this stage, the ATS unit will engage a computer controlled, automated, pneumatic valve system that will direct water to the discharge point, or recirculate the water to the tanks based on water quality parameters. The appropriate water quality parameters will be determined in advance by discharge limits set forth in the discharge permit, and in consultation with regulatory personnel. If the water is recirculated, it will pass through the system for additional treatment until the water quality parameters are met. When the water is discharged, it will be returned to the reservoir. The discharge point should be designed to avoid soil erosion and increased turbidity. Discharge diffusers are recommended.

NOTES

• *Tanks: The tanks have one over weir and one under weir. The majority of the solids will be captured behind the first set of weirs (under weirs). The solids will accumulate until the operator determines that sediment scour is negatively affecting the treatment system efficiency. When the solids have accumulated beyond the capacity of the weir to retain them effectively, the operator will recommend a clean out of the tanks. The tank system was designed in part to allow for continued operation during tank clean outs. One tank can be cleaned while the others remain operational. A vacuum truck is an effective and recommended means of tank cleaning.*

• *Chitosan Residual Testing: A chitosan residual field test will be performed at least once per day by the certified operator, and 3rd-party laboratory certified testing can be provided as a quality control measure on a bi-weekly basis. This testing protocol is a recommendation only; actual testing protocol may be dictated by the discharge permit requirements.*

Diver-Assisted Dredging Methods (Contingency)

In the even the primary dredge pump cannot access the required dredge areas; BMC will use handheld dredge methods to capture remaining material. Prior to commencement of work, the 60” fish hatchery intake will be secured and LOTO (Lock Out/Tag Out) will be performed. Personnel will utilize the existing 10 foot wide concrete drive at the top of the dam to stage a 4” diesel powered dredge pump equipped with a secondary containment device to prevent any spills. Prior to operating the dredge pump the topside crew will attach all suction hoses, discharge hoses and test the system. Strain reliefs will be provided for all hoses to prevent stress on the fittings. All submerged fittings will be seized and wrapped with absorbent fabric to prevent any fluid from entering the water. An inline camlock fitting to the Heavy-duty rubber hose will be installed to allow the diver-dredged spoils to travel to the treatment system. The diver will then instruct the topside team to “make the pump hot” or activate the pump. The diver will then maneuver the dredge head/suction hose into the material. The diver will direct topside to “make it cold” or deactivate the pump when checking elevation, removing debris from the dredge head,

etc. Topside personnel will monitor the dredge pump frequently to prevent downtime. The diver will verify a 2:1 excavation slope angle in the areas that have been dredged.

Enclosure(s)

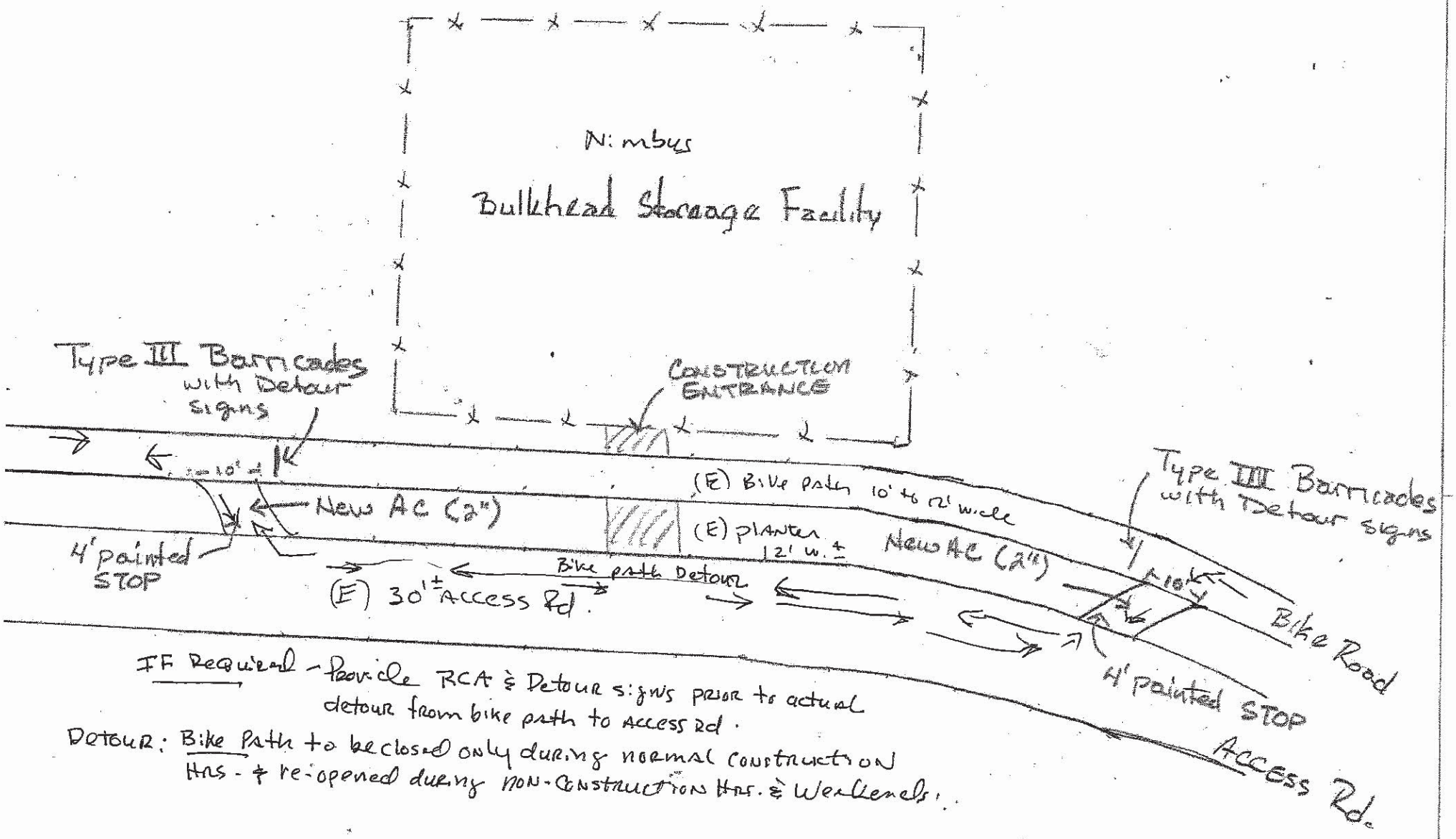
Nimbus Dam Water Treatment System Flow Diagram (ATS, dated 3/17/2015)

Equipment Specifications

APPENDIX F

BULKHEAD STORAGE FACILITY TRAFFIC CONTROL PLAN

NOT TO SCALE



IF Required - Provide RCA & Detour signs prior to actual detour from bike path to Access Rd.

DETOUR: Bike Path to be closed only during normal construction Hrs - & re-opened during non-construction Hrs. & Weekends.

APPENDIX G

EMISSIONS CALCULATIONS

Construction GHG Emissions

Construction Equipment	Horsepower (bhp)	Load Factor	Hours in Use (hours/day)	Emission Factors (g/bhp/hr)	Emisssion (metric tons/year)
				CO_2	CO_2
Air Compressor (sandblaster)	750	0.48	8	568.30	597.40
3 Other Material Handing Equipment	167	0.4	6	510.77	74.72
Genset	84	0.74	8	568.30	103.15
Other Construction Equipment	172	0.42	6	509.31	80.58
Pumps	84	0.74	6	568.30	77.36
Concrete Saw	81	0.73	2	568.30	24.53
Concrete Mixer	9	0.56	6	568.30	6.27
Tractors/Loaders/Backhoes	98	0.37	7	517.37	47.93
Welder	46	0.45	2	568.30	8.59
	Miles Traveled			**Emission Factors (g/miles)**	**Emisssion (metric tons/year)**
Soil Haul Trucks		250		500.02	0.13
Employee Trips		2000		552.80	1.11
Total GHG Construction Emissions					**1,021.76**

Source: 2015 CalEEMod Emission Factors; AES, 2014