US Army Corps of Engineers®

Seattle District

RFP No. W912DW-05-R-0032

O & M Services, Central Treatment Plant, Bunker Hill Superfund Site, Kellogg, Idaho

Service Solicitation and Specifications

This is a 100% Hubzone Set-Aside

September 2005

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THIS PROCUREMENT IS:

100% set-aside for Hub Zone

SITE VISIT:

A site visit is scheduled for October 12, 2005 at 10:00 a.m. local time, at the O&M Plant. The gate will be unlocked and parking is available. The point of contact is Bradley Brandt at 208-762-5915 x 227.

OFFERORS ARE URGED and expected to inspect the site where construction is to be performed and to satisfy themselves as to all general and local conditions which may affect the cost of performance of the contract, to the extent, such information is reasonably obtainable. In no event, will a failure to inspect the site constitute grounds for withdrawal of an offer after closing or for a claim after award of the contract.

BIDDING DOCUMENTS: Register for solicitations at the Internet site:
http://www.nws.usace.army.mil/ct/

PLANHOLDER'S LISTS: Lists may also be obtained from the same site

FOR INQUIRIES, CONTACT THE FOLLOWING INDIVIDUAL(S) Monday through Friday between the hours of 8:00 a.m. and 3:30 p.m.:

ADMINISTRATIVE MATTERS:

Bonilie Lackey (206)764-4481 FAX: (206)764-6817 bonilie.l.lackey@usace.army.mil

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!!!CAUTION TO OFFERORS!!!

1. **TELEPHONES:** Limited telephone service is provided in the lobby. Only two public telephones may be used by offerors for completing offers.

2. **BUSINESS HOURS:** For the Seattle District Corps of Engineers are from 7:30 A.M. to 4:00 P.M., Monday through Friday.

BEFORE SIGNING AND MAILING THIS OFFER, PLEASE TAKE NOTE OF THE FOLLOWING, AS FAILURE TO PERFORM ANY ONE OF THESE ACTIONS MAY CAUSE YOUR OFFER TO BE REJECTED

3. **AMENDMENTS: Have you acknowledged receipt of ALL** amendments? If in doubt as to the number of amendments issued, please contact the representative listed on the Information Page.

4. **AMENDED PAGES: If any of the amendments furnished amended pages, the amended pages must be used** in submitting your offer.

5. **MISTAKE IN OFFER:** Have you reviewed your offer price for possible errors in calculation or work left out?

6. **TELEGRAPHIC MODIFICATIONS:** The Seattle District does not have the capability of receiving commercial telegrams directly. Offerors who wish to modify their offer by telegram are urged to ensure that telegrams are submitted within enough time to arrive at the opening office prior to the time specified for receipt of proposals. Any doubt as to time should be resolved in favor of **EXTRA TIME.** Transmission by Fax to this office is **NOT ACCEPTABLE**.

7. **OFFER ACCEPTANCE PERIOD:** The minimum offer acceptance period is specified in block 12 Standard Form 33, Solicitation, Offer and Award. Please ensure that you allow at least the stated number of calendar days for the Government to accept your offer.

8. **CENTRAL CONTRACTOR REGISTRATION:** Per DFARS Clause 252.204-7004, REQUIRED CENTRAL CONTRACTOR REGISTRATION, in Section I, registration is required prior to award of any contract from a Solicitation issued after May 31, 1998. No Contract Award will be made to an unregistered contractor. Internet access allows contractors to register by completing an electronic on-line registration application from CCR homepage at http://www.ccr.gov/. For further assistance in completing your on-line registration, contact the nearest Procurement Technical Assistance Center (PTAC) near you. A list of the nearest PTAC is located at: http://www.dla.mil/db/procurem.htm.

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SOLICITATION, OFFER AND AWARD	1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)	RATING	PAGE OF PAGES

2. CONTRACT NO.	3. SOLICITATION NO.	4. TYPE OF SOLICITATION	5. DATE ISSUED	6. REQUISITION/PURCHASE NO.
	W912DW-05-R-0032	☐ SEALED BID (IFB) ☒ NEGOTIATED (RFP)	Sep 28, 2005	W68MD9-5034-0717

7. ISSUED BY CODE W912DW
USA Engineer District, Seattle
ATTN: CENWS-CT Tel: 206-764-4481
PO Box 3755, Seattle, WA 98124-3755 Fax: 206-764-6817

8. ADDRESS OFFER TO *(Ιφ οτηερ τηαν Ιτεμ 7)*
See Item 7 or Handcarry to: Seattle District, USACE
4735 E. Marginal Way South
Seattle, WA 98134

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

SOLICITATION

9. Sealed offers in original and 4 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in Contracting Division, 2nd Floor, Col C-5 until 2:00 PM *(Hour)* local time 10/28/05 *(Date)*

CAUTION - LATE Submissions, Modifications, and Withdrawals: Section L, Provision No. 52.214-7 or 52.215-10.
All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. *(Include area code) (NO COLLECT CALLS)*
	Bonilie L. Lackey	(206)764-4481

11. TABLE OF CONTENTS

(X)	SEC.	DESCRIPTION	PAGE(S)	(X)	SEC.	DESCRIPTION	PAGE(S)
		PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES	
X	A	SOLICITATION/CONTRACT FORM		X	I	CONTRACT CLAUSES	
X	B	SUPPLIES OR SERVICES AND PRICES/COST				PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.	
X	C	DESCRIPTION/SPECS./WORK STATEMENT		X	J	LIST OF ATTACHMENTS	
	D	PACKAGING AND MARKING				PART IV - REPRESENTATIONS AND INSTRUCTIONS	
X	E	INSPECTION AND ACCEPTANCE		X	K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	
X	F	DELIVERIES OR PERFORMANCE					
X	G	CONTRACT ADMINISTRATION DATA		X	L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
X	H	SPECIAL CONTRACT REQUIREMENTS		X	M	EVALUATION FACTORS FOR AWARD	

OFFER *(Must be fully completed by offeror)*

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within _____ calendar days *(60 calendar days unless a different period is inserted by the offeror)* from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT *(See Section I, Clause No. 52.232-8)*	10 CALENDAR DAYS %	20 CALENDAR DAYS %	30 CALENDAR DAYS %	CALENDAR DAYS %

14. ACKNOWLEDGMENT OF AMENDMENTS *(The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated:*	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*

15B. TELEPHONE NO. *(Ινχλυδε αρεα χοδε)*	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.	17. SIGNATURE	18. OFFER DATE
	☐		

AWARD *(To be completed by Government)*

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION
		SEE SECTION G

22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION:
☐ 10 U.S.C. 2304(c) ( ) ☐ 10 U.S.C. 253(c) ( )

23. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)* ITEM See Section G

24. ADMINISTERED BY *(Ιφ οτηερ τηαν Ιτεμ 7)* CODE

25. PAYMENT WILL BE MADE BY CODE
US Army Corps of Engineers Finance Center
CEFC-AO-P
5722 Integrity Dr Millington, TN 308054-5004

26. NAME OF CONTRACTING OFFICER *(Τψπε ορ πριντ)*	27. UNITED STATES OF AMERICA *(Signature of Contracting Officer)*	28. AWARD DATE

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

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IF THE CONTRACTOR IS A CORPORATION OR PARTNERSHIP, THE **APPLICABLE PORTION** OF THE FORM LISTED BELOW MUST BE COMPLETED. IN THE ALTERNATIVE, OTHER EVIDENCE MUST BE SUBMITTED TO SUBSTANTIATE THE AUTHORITY OF THE PERSON SIGNING THE CONTRACT. IF A CORPORATION, **THE SAME OFFICER SHALL NOT EXECUTE BOTH THE CONTRACT AND THE CERTIFICATE.**

CORPORATE CERTIFICATE

I, _____, certify that I am the _____ Secretary of the Corporation named as Contractor herein; that _____, who signed this contract on behalf of the Contractor was then _____of said corporation; that said contract was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

_____ (CORPORATE
(Secretary) SEAL)

AUTHORITY TO BIND PARTNERSHIP

This is to certify that the names, signatures and Social Security Numbers of all partners are listed below and that the person signing the contract has authority actually to bind the partnership pursuant to its partnership agreements. Each of the partners individually has full authority to enter into and execute contractual instruments on behalf of said partnership with the United States of America, except as follows: (state "none" or describe limitations, if any)

_____

This authority shall remain in full force and effect until such time as the revocation of authority by any cause whatsoever has been furnished in writing to, and acknowledged by, the Contracting Officer.

(Names, Signatures and Social Security Numbers of all Partners)

NAME	SIGNATURE	SOCIAL SECURITY NO.
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

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SECTION B

SUPPLIES OR SERVICES AND PRICES/COST

Operation and Maintenance Services, Central Treatment Plant
Bunker Hill Superfund Site, Kellogg, Idaho

BASE PERIOD

Item No.	Description of Item	Quantity	Unit	Unit Price	Amount
FIXED PRICE WORK					
0001	CONTRACT STARTUP AND INITIATION SERVICES (Applies only at start of contract period)	1	JOB	LS	$_____
0002	OPERATE AND MAINTAIN CENTRAL TREATMENT PLANT—Meet substantive requirements of the expired NPDES permit and in accordance with all other applicable regulations and contract documents to include all required analytical monitoring and reporting. Furnish all supplies and consumables. Provide all recurring and preventive maintenance as specified and in accordance with equipment identification plates and current plant procedures. Maintain at the plant site complete maintenance records and operational logs. Provide and maintain QC program to cover all required recurring Operations and Maintenance activities and all associated contract data. Perform all other Work except Items separately listed.	12	MONTH	$_____	$_____
	TOTAL BASE PERIOD FIXED PRICE (LINE ITEMS 0001 THROUGH 0002)				$_____

SECTION B (CON'T)

SUPPLIES OR SERVICES AND PRICES/COST

BASE PERIOD

Item No.	Description of Item	Quantity	Unit	Unit Price	Amount
0003	INDEFINITE QUANTITY WORK—PROFESSIONAL SERVICES				NSP
0003AA	Process Engineer	100 NTE	HR	$_____	$_____
0003AB	Per Diem	DAY	10 NTE	JTR	$2,000 NTE
0004	INDEFINITE QUANTITY WORK—ON-CALL MAINTENANCE AND EMERGENCY REPAIR	1	LS	---	$200,000* NTE
	TOTAL PRICE FOR INDEFINITE QUANTITY WORK (LINE ITEMS 0003 THROUGH 0004)				$_____
	TOTAL PRICE FOR BASE CONTRACT PERIOD (LINE ITEMS 0001 THROUGH 0004)				$_____

SECTION B (CON'T)

SUPPLIES OR SERVICES AND PRICES/COST

FIRST OPTIONAL PERIOD

Item No.	Description of Item	Quantity	Unit	Unit Price	Amount
FIXED PRICE WORK					
1001	OPERATE AND MAINTAIN CENTRAL TREATMENT PLANT—Meet substantive requirements of the expired NPDES permit and in accordance with all other applicable regulations and contract documents to include all required analytical monitoring and reporting. Furnish all supplies and consumables. Provide all recurring and preventive maintenance as specified and in accordance with equipment identification plates and current plant procedures. Maintain at the plant site complete maintenance records and operational logs. Provide and maintain QC program to cover all required recurring Operations and Maintenance activities and all associated contract data. Perform all other Work except Items separately listed.	12	MONTH	$_____	$_____
	TOTAL FIRST OPTIONAL PERIOD FIXED PRICE (LINE ITEM 1001)				$_____
1002	INDEFINITE QUANTITY WORK—PROFESSIONAL SERVICES				NSP
1002AA	Process Engineer	100 NTE	HR	$_____	$_____
1002AB	Per Diem	DAY	10 NTE	JTR	$2,000 NTE
1003	INDEFINITE QUANTITY WORK—ON-CALL MAINTENANCE AND EMERGENCY REPAIR	1	LS	---	$200,000* NTE
	TOTAL PRICE FOR INDEFINITE QUANTITY WORK (FIRST OPTIONAL PERIOD LINE ITEMS 1002 THROUGH 1003)				$_____
	TOTAL PRICE FOR FIRST OPTIONAL PERIOD (LINE ITEMS 1001 THROUGH 1003)				$_____

SECTION B (CON'T)

SUPPLIES OR SERVICES AND PRICES/COST

SECOND OPTIONAL PERIOD

Item No.	Description of Item	Quantity	Unit	Unit Price	Amount
FIXED PRICE WORK					
2001	OPERATE AND MAINTAIN CENTRAL TREATMENT PLANT—Meet substantive requirements of the expired NPDES permit and in accordance with all other applicable regulations and contract documents to include all required analytical monitoring and reporting. Furnish all supplies and consumables. Provide all recurring and preventive maintenance as specified and in accordance with equipment identification plates and current plant procedures. Maintain at the plant site complete maintenance records and operational logs. Provide and maintain QC program to cover all required recurring Operations and Maintenance activities and all associated contract data. Perform all other Work except Items separately listed.	12	MONTH	$_____	$_____
2002	CONTRACTOR CHANGEOVER TRANSITION PERIOD (Applies only at end of contract period)	14	DAYS	$_____	$_____
	TOTAL SECOND OPTIONAL PERIOD FIXED PRICE (LINE ITEM 2001 THROUGH 2002)				$_____
2003	INDEFINITE QUANTITY WORK—PROFESSIONAL SERVICES				NSP
2003AA	Process Engineer	100 NTE	HR	$_____	$_____
2003AB	Per Diem	DAY	10 NTE	JTR	$2,000 NTE

SECTION B (CON'T)

SUPPLIES OR SERVICES AND PRICES/COST

SECOND OPTIONAL PERIOD

Item No.	Description of Item	Quantity	Unit	Unit Price	Amount
2004	INDEFINITE QUANTITY WORK— ON-CALL MAINTENANCE AND EMERGENCY REPAIR	1	LS	---	$200,000* NTE
	TOTAL PRICE FOR INDEFINITE QUANTITY WORK (LINE ITEMS 2003 THROUGH 2004)				$_____
	TOTAL PRICE FOR SECOND OPTIONAL PERIOD (LINE ITEMS 2001 THROUGH 2004)				$_____

Notes

1. This is a firm fixed–price contract, with indefinite quantity allowances for Government-requested process engineering services and on-call maintenance and emergency repair services.
2. Contract Line Item Number (CLIN) 0002/1001/2001—The Contractor shall bid a unit price for each month of Central Treatment Plant (CTP) operation and maintenance; the monthly unit price shall include the distributed costs of contract-required daily, weekly, monthly, quarterly, bi-annual, and annual operation and maintenance activities (routine, recurring, and preventative), including labor, equipment, materials, supplies, subcontract services, overhead, and profit. Labor rates shall be in accordance with current Service Contract Act wage rates.
3. CLIN 0003AA /1002AA /2003AA—The Contractor shall bid a unit price for this pre-priced labor item in accordance with current Service Contract Act wage rates. Unit price shall be fully burdened to include overhead and profit. The Contractor shall be compensated at this rate for any Government-requested process engineer services for the first 12 months of the contract. Thereafter, this pre-priced item may be adjusted in accordance with the current Service Contract Act wage determination for the succeeding option periods exercised.
4. CLIN 0003AB /1002AB/2003AB—Per diem costs for the process engineer will be paid by the Government if the work requires travel that is eligible for compensation in accordance with the Joint Travel Regulations (JTR) for Department of Defense, Civilian Personnel. Daily per diem rate will be limited to the current amount specified under the JTR; the standard CONUS rate applies for this contract.
5. CLIN 0004/1003/2004—The Government may authorize indefinite quantity work by the Contractor using On-call Maintenance and Emergency Repair (OMER) work requests. For each OMER request, the Contractor and Government will negotiate the costs of labor, equipment, materials, and supplies costs, including overhead and profit. Payment will be made for the work covered under each OMER and the negotiated price. The Government may exercise less than the full not to exceed (NTE) amount of the CLIN, based upon available funds. The Government may exercise work up to the NTE value, after which the total NTE value may be increased by modification to the contract.
6. CLIN 0004/1003/2004—Labor rates shall be in accordance with current Service Contract Act wage rates.

Abbreviations

NSP	not separately priced
NTE	not to exceed (payment will be made for actual quantity)
HR	Hour
JTR	Joint Travel Regulations
OMER	On-call Maintenance and Emergency Repair
DAY	Regular 8-hour workday; per diem basis will conform to JTR rules.

SECTION C

DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

SCOPE OF SERVICES

The Performance Work Statement, Solicitation No. W912DW-05-R-0032 covers the detailed requirements for the services listed in the Schedule, and is attached to and made a part hereof in Section J, Attachment J1.

Changes in the Scope of Services

The right is reserved as the interest of the government may require, to revise or amend the Scope of Services prior to the date set for Receipt of Proposals. Such revisions and amendments, if any, will be announced by amendment or amendments to this solicitation. Copies of such amendments as may be issued will be furnished to all prospective offerors. If the revisions and amendments are of a nature which require material changes in quantities or prices proposed, or both, the date set for receipt of proposals may be postponed in order to provide offerors with sufficient time to revise their proposals. In such cases, the amendment will include an announcement of the new date for receipt of proposals.

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SECTION E
INSPECTION AND ACCEPTANCE

E.1 52.246-4 INSPECTION OF SERVICES--FIXED-PRICE (AUG 1996)

(a) Definitions. "Services," as used in this Clause, includes service performed, workmanship, and material furnished or utilized in the performance of services.
(b) The Contractor shall provide and maintain an inspection system acceptable to the Government covering the services under this contract. Complete records of all inspection work performed by the Contractor shall be maintained and made available to the Government during contract performance and for as long afterwards as the contract requires.
(c) The Government has the right to inspect and test all services called for by the contract, to the extent practicable at all times and places during the term of the contract. The Government shall perform inspections and tests in a manner that will not unduly delay the work.
(d) If the Government performs inspections or tests on the premises of the Contractor or a subcontractor, the Contractor shall furnish, and shall require subcontractors to furnish, at no increase in contract price, all reasonable facilities and assistance for the safe and convenient performance of these duties.
(e) If any of the services do not conform with contract requirements, the Government may require the Contractor to perform the services again in conformity with contract requirements, at no increase in contract amount. When the defects in services cannot be corrected by reperformance, the Government may (1) require the Contractor to take necessary action to ensure that future performance conforms to contract requirements and (2) reduce the contract price to reflect the reduced value of the services performed.
(f) If the Contractor fails to promptly perform the services again or to take the necessary action to ensure future performance in conformity with contract requirements, the Government may (1) by contract or otherwise perform the services and charge to the Contractor any cost incurred by the Government that is directly related to the performance of such service or (2) terminate the contract for default.

(End of clause)

E.2 INSPECTION AND ACCEPTANCE.

Inspection and acceptance of the Services will be performed at Bunker Hill Superfund Site by Government Quality Assurance Evaluators.

E.3 PERFORMANCE REQUIREMENTS SUMMARY

The Performance Requirements Summary attached hereinafter this section identifies the key service outputs and surveillance methods the Government will use to evaluate the Contractor's success in meeting the performance standards of the Performance Work Statement (See Section J, Attachment J1). The Contractor's performance will be evaluated based on an Acceptable Quality Level (AQL) for each of the specified outputs. The AQL represents the maximum number of defects for which the associated item is considered to be acceptable.

E.4 CONSEQUENCES OF CONTRACTOR'S FAILURE TO PERFORM

Reductions for Unsatisfactory or Nonperformed Work: The Government may, in accordance with Clause E.1 and E.3 above, deduct an amount equal to the value of the unsatisfactory or non performed work, as determined by the Contracting Officer using the procedures described in Performance Requirements Summary (PRS), from any payment due the Contractor. In the event the Contractor disagrees with the Contracting Officer as to any reduction, such disagreement shall be subject to the contract clause entitled "Disputes".

END OF SECTION E

Performance Requirement	SOW Paragraph	Performance Standard	Method of Surveillance
Operate plant to meet substantive requirements of the expired NPDES permit.	TE-6	0 defects per month - Met	VCC
		1 defect per month - Partially Met	Periodic Inspection
		2 defects per month - Not Met	
Provide qualified on-site staff personnel with necessary skills to perform the job.	01310	0 defects per month - Met	Periodic Inspection
		1 defect per month - Not Met	
Perform general operation of all plant functions	J1	0 defects per month - Met	Periodic Inspection
		1 defect per month - Not Met	

Performance Requirement	***SOW Paragraph***	***Performance Standard***	***Method of Surveillance***
Perform all recurring and preventive maintenance activities as required and scheduled	J1	0 defects per month - Met	Periodic Inspection
		1 defect per month - not Met	
Respond to all service/trouble calls including after hours within timely manner.	C1	+15 minutes 0 defects per month - Met	Periodic Inspection
		+15 minutes 1 defect per month - Partially Met	Direct Observation
		+ 15 minutes 2 defects per month - Not Met	
Prepare and submit all required reports and documents in timely manner	J1	0 defects per month - Met	100 % Inspection
A defect will be considered a failure to submit one or more separate submittal items		1 defect per month - Partially Met	
for any week of operation.		2 defects per month - Not Met	

Performance Requirement	*SOW Paragraph*	*Performance Standard*	*Method of Surveillance*
Maintain Health & Safety Program	C.35, C.38	100 % of time	Periodic Inspection
Maintain Environmental Protection Program	C.35	100 % of time	Periodic Inspection
Maintain Quality Control Program	C.25	100 % of time	Periodic Inspection
Perform all OMER work conforming to SOW as required and scheduled	H.10	100 % completion of work	Periodic Inspection
		90 % on schedule	Direct Observation

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Section E - Inspection and Acceptance

CLAUSES INCORPORATED BY FULL TEXT

52.246-4 INSPECTION OF SERVICES--FIXED-PRICE (AUG 1996)

(a) Definitions. "Services," as used in this clause, includes services performed, workmanship, and material furnished or utilized in the performance of services.

(b) The Contractor shall provide and maintain an inspection system acceptable to the Government covering the services under this contract. Complete records of all inspection work performed by the Contractor shall be maintained and made available to the Government during contract performance and for as long afterwards as the contract requires.

(c) The Government has the right to inspect and test all services called for by the contract, to the extent practicable at all times and places during the term of the contract. The Government shall perform inspections and tests in a manner that will not unduly delay the work.

(d) If the Government performs inspections or tests on the premises of the Contractor or a subcontractor, the Contractor shall furnish, and shall require subcontractors to furnish, at no increase in contract price, all reasonable facilities and assistance for the safe and convenient performance of these duties.

(e) If any of the services do not conform with contract requirements, the Government may require the Contractor to perform the services again in conformity with contract requirements, at no increase in contract amount. When the defects in services cannot be corrected by reperformance, the Government may (1) require the Contractor to take necessary action to ensure that future performance conforms to contract requirements and (2) reduce the contract price to reflect the reduced value of the services performed.

(f) If the Contractor fails to promptly perform the services again or to take the necessary action to ensure future performance in conformity with contract requirements, the Government may (1) by contract or otherwise, perform the services and charge to the Contractor any cost incurred by the Government that is directly related to the performance of such service or (2) terminate the contract for default.

(End of clause)

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SECTION F

DELIVERIES OR PERFORMANCE

F.1 CONTRACT PERIOD(S)

(a) General: The services required under these specifications will be for a "BASE " period and, if awarded, up to two "OPTION" periods for the purpose of operation and maintenance of the Central Treatment Plant. (Refer to Section I clause entitled "Option to Extend Term of Contract"). Notice to proceed may be issued verbally at time of award but will usually be issued by separate correspondence.

(b) Contract Period: Any contract awarded hereunder will commence on date of Notice to Proceed (NTP) is issued and shall end 365 calendar days after date of NTP for the "BASE PERIOD" unless sooner terminated under the provisions of the contract. If any ensuing "OPTION PERIOD," from first option period up to second option period, is exercised, the commencement date will be the first calendar date following the last day of the previous contract period and end 365 days after commencement date unless terminated under the provisions of the contract. The total contract period shall not exceed 36 months.

F.2 PLACE OF PERFORMANCE

Services under this contract are required to be performed at the following location: Bunker Hill Superfund Site, Kellogg, Idaho.

F.3 MEASUREMENT AND PAYMENT

See Section C1 paragraph Measurement and Payment of the attachment J1 of Section J.

END OF SECTION F

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Section F - Deliveries or Performance

CLAUSES INCORPORATED BY FULL TEXT

52.242-15 STOP-WORK ORDER (AUG 1989)

(a) The Contracting Officer may, at any time, by written order to the Contractor, require the Contractor to stop all, or any part, of the work called for by this contract for a period of 90 days after the order is delivered to the Contractor, and for any further period to which the parties may agree. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Within a period of 90 days after a stop-work is delivered to the Contractor, or within any extension of that period to which the parties shall have agreed, the Contracting Officer shall either--

(1) Cancel the stop-work order; or

(2) Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.

(b) If a stop-work order issued under this clause is canceled or the period of the order or any extension thereof expires, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if--

(1) The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract; and

(2) The Contractor asserts its right to the adjustment within 30 days after the end of the period of work stoppage; provided, that, if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon the claim submitted at any time before final payment under this contract.

(c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.

(d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

(End of clause)

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SECTION G

CONTRACT ADMINISTRATION DATA

G.1 ADMINISTRATION OFFICES

(a) Contract Administration Office and Administrator

Seattle District, Corps of Engineers
CENWS-CT-CB-CU
P.O. Box 3755
Seattle, Washington 98124-2255

Name: Ms. Bonnie Lackey
Telephone: (206) 764-4481

(b) Invoice Submittal

Submit invoices to:

2 copies:

ATTN: Mr. Rich Fink
Contracting Officer's Representative
Eastern Environmental Resident Office, USACE
7600 Mineral Drive, Suite 100
Coeur D'Alene, ID 83815

1 copy:

ATTN: Mr. Harald Ehlers (CENWS-PM-EM)
Alternate Contracting Officer's Representative
Seattle District, Corps of Engineers
P.O. Box 3755
Seattle, Washington 98124-2255

G.2 INVOICE REQUIREMENTS.

(a) An invoice, defined as a written request for payment under the contract for supplies delivered or services rendered, shall include the following:

1. Invoice date.

2. Name & address of Contractor.

3. Contract number, contract line item number, contract description of supplies or services, quantity, contract unit of measure and unit price, and extended total.

4. Name and address to which payment is to be sent (must be the same as that in the contract).

5. Name and telephone number of person responsible for preparation of invoice.

(b) The Contractor shall submit separate invoices for scheduled, recurring requirements, and OMER work items(s),.

1. For scheduled, recurring requirements performed for the firm fixed price, 1/12 of the annual price may be invoiced each month.

2. For OMER work items, a single invoice for each item shall be submitted, not more frequently than once every 30 calendar days, for any OMER work performed and accepted at the project site prior to the date of the invoice. Invoices for OMER's must itemize each work item being invoiced. Progress or interim payments will not be made for work performed under an OMER work item.

(c) Payments will be made only for actual services satisfactorily completed under the contract specifications and under the specific items as listed on the Schedule. Payment made for each item shall be considered as full compensation.

(d) The total number of hours worked by all Contractor employees shall be submitted in conjunction with the monthly invoice for the purposes of safety data. If the total hours are not submitted, payment will be delayed until the COR receives such information.

G.3 PAYMENT PERFORMANCE MEETING

(a) Monthly Meeting. The Contractor Manager shall meet with the COR at the Bunker Hill Resident Office or by telephone conference, if agreeable, on a monthly basis, to review the past month's work performance. These meetings will occur within the first seven days of each month. The Contractor shall submit a copy of the invoice(s) for the past month's services prior to this meeting or bring a copy of the invoice to the meeting so agreement may be reached on work performed. Failure to appear for such a meeting will result in withholding payment until the meeting is accomplished.

(b) After the monthly meeting, the original invoice(s) and two copies shall be submitted for processing to the Government office listed under G.1. If the past performance exceeds the AQL (see Section E INSPECTION AND ACCEPTANCE) the Contracting Officer may adjust the payment in accordance with the Performance Requirements Summary for the required service item that is unsatisfactory. The Contracting Officer will provide the resulting payment computations to the Contractor.

G.4 COMPENSATION RATES

(a) In consideration of the performance of his undertaking, the Contractor will be paid for services ordered and accepted in accordance with contract clauses 52.232-1 Payments and 52.232-25 Prompt Payment.

(b) All payments by the Government will be made in accordance with FAR clause 52.232-33 Mandatory Information for Electronic Funds Transfer Payment. Upon receipt of award documents, the Contractor shall complete Standard Form 3881, ACH Vendor/Miscellaneous Payment form (to be provided by the Government with award), and mail it to the office designated under G.5.

(c) The Contractor will be compensated at the rates shown in Section B SCHEDULE of "SUPPLIES OR SERVICES AND PRICES/COSTS" for the applicable work covered under each schedule for the duration of the contract period covered by the SCHEDULE.

(d) The Contractor will not be reimbursed for attendance during negotiations, site visits, or other costs incurred prior to award of any indefinite quantity work.

G.5 PAYMENT

Payment will be made by:

Environmental Protection Agency
Cincinnati Financial Management CTR
ATTN: Accounting Operations, Suite 300
4411 Montgomery Road
Cincinnati, Ohio 45212

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SECTION H

SPECIAL CONTRACT REQUIREMENTS

PARAGRAPH NO.	PARAGRAPH TITLE
H.1	PROVISION ON CONTRACTING OFFICER'S AUTHORITY.
H.2	SUPERVISION
H.3	GOVERNMENT PERFORMANCE OF SERVICE
H.4	WORK BY THE CONTRACTOR
H.5	SUBCONTRACTOR
H.6	INSURANCE - WORK ON A GOVERNMENT INSTALLATION
H.7	SERVICES BEYOND THE ORIGINAL SCOPE OF WORK
H.8	MAINTENANCE AND REPAIR COST LIMITATION
H.9	REPAIR AND REPLACEMENT
H.10	ON-CALL WORK MAINTENANCE & EMERGENCY REPAIR (OMER)
H.11	IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY
H.12	SITE CONDITIONS
H.13	PRE- PERFORMANCE CONFERENCE
H.14	EXISTING DRAWINGS AND DETAILS
H.15	SHOP DRAWINGS
H.16	SUBMITTAL OF CONTRACT DATA
H.17	TRANSITION OF WORK
H.18	DISASTER EVENTS AND RESPONSE WORK
H.19	WAGE PROVISIONS

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SECTION H

SPECIAL CONTRACT REQUIREMENTS

H.1 PROVISION ON CONTRACTING OFFICER'S AUTHORITY

No oral statement of any person whomever shall, in any manner or degree, modify or otherwise affect the terms of this contract. The Contracting Officer is the only person authorized to approve changes in any of the requirements and/or terms of this contract and notwithstanding terms contained elsewhere, the said authority remains solely with the Contracting Officer. In the event the contractor effects a change at the direction of any person other than the Contracting Officer, the change will be considered to have been made without authority, and no adjustment will be made in the contract price to cover any increase in costs incurred.

H.2 SUPERVISION

The Government shall not exercise any supervision or control over the contractor's employees performing services under this contract. Such employees shall be accountable not to the Government, but solely to the Contractor, who in turn, is responsible to the Government.

H.3 GOVERNMENT PERFORMANCE OF SERVICE

(a.) If, for any reason, the Contractor fails to perform any services covered by this contract, or should any emergency require performance of services beyond the capability of the Contractor, the government may, if the Contracting Officer determines that the mission is endangered, perform or supplement performance of such contract services with Government personnel or other contractor. Such performance shall not constitute a breach of contract by the Government or a termination for convenience by the Government within the meaning of FAR 52.249-2.

(b.) If the Government performs services with Government personnel or other contractor because of the Contractor's failure to perform or in an emergency as provided in paragraph H.3(a.) above, the Contractor shall permit the Government to use and operate such equipment as is necessary to perform the function. The Government's right to use Contractor-owned or Contractor leased equipment, pursuant to this subparagraph; (2) shall cease in the event of termination pursuant to FAR 52.249.2, Termination. During this period, any Contractor-owned or leased equipment used by the Government shall be maintained by the Government.

(c.) The Government’s right to perform or supplement performance of contract functions with Government personnel includes such actions during periods of disaster, war, emergency, police action, or acts of God.

H.4 WORK BY THE CONTRACTOR

As a minimum, the Contractor selected for this procurement shall perform on the site, with its own organization, work equivalent to at least 35 percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government. Housekeeping services, major maintenance tasks, construction and design services, and certain other specialty work items may be subcontracted.

H.5 SUBCONTRACTOR

a. Provisions in Subcontract. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relating to this contract, and ensure sufficient fulfillment by subcontractors of all contractual provisions.

b. Relationship Between Subcontractor and Government. Nothing contained in this contract shall be construed as a contractual relationship between any subcontractor and the Government.

c. Approval of Subcontractors. Prior to award of any contract in which subcontractors will be utilized, the Contractor shall provide, in writing, a list of all the subcontractors, a statement to the extent and character of the work to be done under subcontract and the following information:

1) Name and designation.

2) Experience with respect to performing their element(s) of work as referenced in the contract drawings and specifications.

d. Once a subcontractor is submitted with a proposal, and award has been made, the Contractor cannot change subcontractors unless justification has been made in writing and Contracting Officer approves.

H.6 INSURANCE - WORK ON A GOVERNMENT INSTALLATION (SEP 1989) (FAR 52.228-5)

(a) The Contractor shall, at its own expense, provide and maintain during the entire performance period of this Contract at least the kinds and minimum amounts of insurance required in the Insurance Liability Schedule or elsewhere in the Contract.

(b) Before commencing work under this Contract, the Contractor shall certify to the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective:

(1) for such period as the laws of the State in which this Contract is to be performed prescribe; or

(2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

(c) The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this Contract that require work on a Government installation, including the Bunker Hill Superfund Site, and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the Contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

H.6.1 Insurance Liability Schedule (FAR 28.307-2)

(a) Workers' compensation and employer's liability. Contractors are required to comply with applicable Federal and State workers' compensation and occupational disease statutes. If occupational diseases are not compensable under those statutes, they shall be covered under the employer's liability section of the insurance policy, except when Contract operations are so commingled with a Contractor's commercial operation that it would not be practical to require this coverage. Employer's liability coverage of at least $100,000 shall be required, except in states with exclusive or monopolistic funds that do not permit workers' compensation to be written by private carriers.

(b) General Liability.

a. The Contracting Officer shall require bodily injury liability insurance coverage written on the comprehensive form of policy of at least $500,000 per occurrence.

b. Property damage liability insurance shall be required only in special circumstances as determined by the agency.

(c) Automobile liability. The Contracting Officer shall require automobile liability insurance written on the comprehensive form of policy. The policy shall provide for bodily injury and property damage liability covering the operation of all automobiles used in connection with performing the Contract. Policies covering automobiles operated in the United States shall provide coverage of at least $200,000 per person and $500,000 per occurrence for bodily injury and $20,000 per occurrence for property damage. The amount of liability coverage on other policies shall be commensurate with any legal requirements of the locality and sufficient to meet normal and customary claims.

(d) Environmental Liability If this contract includes the transport, treatment, storage, or disposal of hazardous material waste the following coverage is required.

The Contractor shall ensure the transporter and disposal facility have liability insurance if effect for claims arising out of the death or bodily injury and property damage from hazardous material/waste transport, treatment, storage and disposal, including vehicle liability and legal defense costs in the amount of $1,000,000.00 as evidenced by a certificate of insurance for General, Automobile, and Environmental Liability Coverage. Proof of this insurance shall be provided to the Contracting Officer.

H.7 SERVICES BEYOND THE ORIGINAL SCOPE OF WORK

The Contractor is advised not to perform any extra services under this contract requested by any person, orally or in writing, which the Contractor considers to be a change in work or services required and which necessitates an adjustment in the contract price, until the Contractor has been requested by the Contracting Officer to: (a) review an OMER work item; (b) make a written proposal covering such extra services; and (c) has negotiated a mutually satisfactory price and received a written modification signed by the Contracting

Officer. Any such extra services executed by the Contractor without the appropriate written notice is undertaken at its own risk and expense.

H.8 MAINTENANCE AND REPAIR COST LIMITATION

The Contractor's liability under the firm fixed-price portion of the contract for maintenance and repair work, excluding preventative and routine maintenance activity and warranty items, shall be limited as follows (All terms are subject to the definitions under Section C paragraph Definitions):

(a) Labor. Trouble/Service Calls. This category is composed of three types of work: routine calls, urgent calls, and emergency calls. Trouble calls, including emergency calls, are part of the firm fixed-price portion of the Contract within the following limits for each Contract Monthly Billing Period:

(1) Routine, Urgent and Emergency calls – Contractor is responsible for all calls (no additional costs will be paid) occurring during regular business hours, including weekend or holiday work if work occurred during the normal staffing period and work can be completed by onsite staff during regular business hours. Any exceptions to use of regular on-site personnel must be approved by the COR before starting work.

(2) Calls Outside Regular Business hours – Contractor is responsible for responding to the first call and up to four hours labor to resolve a trouble condition during any monthly billing cycle. All calls after the first call will be additional. Initial response will be assumed to be one “plant operator.”

(3) All calls requiring additional staff to complete the work beyond the normal on-site personnel during regular business hours or outside regular business hours will be an additional cost.

(b) Materials. All costs for parts and materials used for non-routine maintenance and repair activities shall be approved and included under an OMER.

H.9 REPAIR AND REPLACEMENT

(a.) Contractor Repairs and Replacement. The Contractor shall be responsible for the repair and replacement of all items of materials, parts or equipment of the Central Treatment Plant Facility, unless specifically obtained otherwise by the Government. Maintenance, repair, minor construction and service type work requirements that are beyond the scope of maintenance work cost limitations specified under paragraph H.8 and the firm-fixed price work under the contract will be performed under an OMER (See H.10) as directed by the Contracting Officer.

(b.) Repairs and Replacement. If it becomes necessary to incur repair or replacement (including spare parts) expense with respect to items of materials, parts or equipment designated as outside the fixed price cost limits, then the cost of such item shall be borne by the Government.

(c.) Notice to the Government. The Contractor, before repairing or replacing or agreeing to repair or replace any structure, parts or equipment which would be paid for by the Government as part of an OMER, in accordance with paragraph H.9.b hereof, shall notify the Government of its intent to replace structure, parts or equipment and report the circumstances thereof including a breakdown of cost and method of repair or replacement. Such notice shall be given at least thirty (30) days in advance of the date the Contractor intends so to repair or replace structure, parts or equipment for items amenable to future maintenance. The Government will notify the Contractor within thirty (30) days if the Government approves the need for any

repair or replacement. If the Contractor in good faith determined an emergency to exist or immediate repairs or replacements are necessary to mitigate damages and/or shutdown, the Contractor shall notify the Government immediately and upon approval by the Contracting Officer proceed with the repair or replacement under the requirements of the clause H.10 for OMER WORK. The Government shall have access to all structures, parts or equipment for purposes of inspection to determine the necessity of the replacement.

(d) Requirements for Materials Replacement

(1) For material items, the Contractor shall procure the items on a competitive basis or, if there is lack of competition, provide justification. Discounts and rebates on items provided to the Contractor shall be credited to the Government. All purchase documents shall be made available for Contracting Officer or COR review and audit. The Contracting Officer or his/her designated representative reserves the right to approve proposed replacement items considering quality, size, efficiency and aesthetic requirements of all items. Procedures of FAR part 13 apply. The Contractor shall demonstrate the price is fair and reasonable for replacement material purchases up to $1,000.00. Over $1,000.00, the Contractor shall obtain quotes from three competitive sources to ensure the lowest price is available to the Government. The Contractor shall document the competitive records of purchases upon request by the Government.

(2) The Contractor shall bill for replacement materials once each month. The billing shall be supported by an itemized list of all replaced materials used, showing the item description, quantity, unit cost, total cost and the end use of the item. The Contractor shall maintain original delivery tickets, sales slips, or other documents identifying items purchased under the materials portion of the contract. Purchase documents shall be available for Contracting Officer review and audit. All original sales tickets shall be turned in with invoice for monthly payment. If not accompanied by the original sales ticket the item will not be paid until furnished.

(3) Any item with a replacement cost over $500.00 removed from equipment or facilities shall be inspected by the Contracting Officer or COR prior to final disposition. If such an item is removed due to an emergency or work after duty hours, the Contractor shall retain that item for the Contracting Officer or COR 's inspection.

(4) Items with a replacement cost over $500.00, which are deemed by the Contracting Officer or COR to be repairable shall be repaired by the Contractor for reuse by the Contractor. Repaired items shall be used before newly purchased items are used.

(5) Items with a replacement cost over $500.00, which are determined by the Contracting Officer or COR to be nonrepairable shall be disposed of by the Contractor. Items identified by the Contracting Officer or COR as having salvage value, such as pumps, motors, valves, etc., shall be properly tagged and stored as directed by the Contracting Officer. Any substance or item considered an environmental waste (such as grease, used oil, etc.) shall be disposed of by the Contractor at an off-site facility in accordance in accordance with Federal, state, and local ordinances. Records of such disposals shall be maintained by the Contractor at the treatment plant site for the duration of the contract and turned over to the Government after the completion of the contract.

(d.) All labor costs incurred and determined under this clause will be based on the “Labor Hour” as defined under paragraph C.2, Definitions. All materials costs incurred and determined under this clause will be based on the “Direct Material Costs” defined under paragraph C.2, Definitions.

H.10 ON-CALL MAINTENANCE AND EMERGENCY REPAIR (OMER) WORK

The OMER system is a series of numbered indefinite quantity work items issued to the Contractor for non-routine maintenance/repair work items to be executed under the contract and requiring immediate response. Examples of such features are pump replacement, well screen repair, or other miscellaneous mechanical/electrical/ plumbing/welding/painting/labor work of a non-routine nature. Each OMER contains an agreed-upon scope and budget amount. The dollar amount of the OMER shall be limited to $50,000 and it may not be exceeded without the approval of the Contracting Officer. Normally, an OMER will be issued after agreement on the scope and budget cost estimate for the work included. Costs for labor required to perform work under an OMER will be based on the applicable CLIN for prepriced labor rates. Non-prepriced costs for labor will be negotiated for the OMER. If there is a delay in agreement regarding the budget amount or other features of a OMER, the Contracting Officer may direct the Contractor to perform the work under emergency procedures.

Following issuance of a OMER, the Contractor will prepare sequentially-numbered work orders for execution of the work. The work order will include the number of the OMER, a description of the work, resources involved, and a budget estimate of the cost of the work order. The contractor will agree to the level of effort for each skill before work is initiated under the OMER process. If materials are needed from the Spare Parts, a Spare Parts Requisition will be prepared, identifying the equipment and any accessories. The Spare Parts Requisition will need to be signed by the Government Site Manager or Project Manager before the item is taken from the spare parts inventory. Upon agreement, the budget amount will be a fixed price. The cumulative budget estimate for work orders submitted for each OMER shall not exceed the total budget estimate for the OMER without approval of the Contracting Officer.

The Contractor shall maintain backup data justifying all expenditures under each OMER, and will provide cumulative expenditure status reports (actual against budget) for each OMER included in a payment request. No payment will be made for any OMER work items until the entire work under the OMER is completed.

H.11 IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY

(a) In accordance with FAR 52.245-2 the Government will furnish to the Contractor the property identified in the schedule to be incorporated or installed into the work or used in performing the contract. See Section C, paragraphC.7 Government Furnished Property, for conditions for use of such property. The listed property will be furnished to the Contractor at the Bunker Hill Superfund site unless otherwise specified. See Technical Exhibit TE-2 “Government Furnished Property, Equipment and Materials Inventory.”

H.12 SITE CONDITIONS

(a.) Transportation Facilities. The Contractor shall make its own investigation of the conditions of existing public and private roads and of clearances, restrictions, bridge load limits and other limitations affecting transportation and ingress and egress at the job site.

(b.) The Contractor may transport onto the site such necessary temporary facilities as trailers for field offices and storage, to be located where approved by the Contracting Officer.

H.13 PRE-PERFORMANCE CONFERENCE

(a) Pre-Performance Conference

Prior to commencement of work, the Contractor shall meet with Government representatives for a pre-performance conference. The date of the meeting will be mutually agreed upon by the participants but will be within five working days after the contract award. The meeting will be held to acquaint the Contractor with the general plan of contract administration and requirements under which the work shall proceed. The Contractor shall provide and discuss its initial draft of the Management Plan. The meeting shall review the basic job conditions and tasks including characteristics of influent, system and equipment operation and maintenance, sampling and analysis, safety procedures, report and documentation requirements, OMER procedures and any other pertinent issues. The Conference will be held at the work site. The Contractor shall keep and distribute conference meeting minutes to attendees.

(1) Government representatives will include but are not limited to:

CONTRACTING OFFICER or representatives
CORPS OF ENGINEERS site manager
CORPS OF ENGINEERS project office representatives
CORPS OF ENGINEERS project manager (may also be COR)
ENVIRONMENTAL PROTECTION AGENCY project manager

(2.) Contractor representatives shall include:

CONTRACTOR's Contract Manager
CONTRACTOR's On-site Staff (all primary operating and maintenance personnel)
CONTRACTOR's quality control and safety representatives

(3.) Other representatives may include:

Existing contractor's Contract Manager or chief operator

H.14 EXISTING DRAWINGS AND DETAILS

Existing drawings and reference data are furnished for information only. The Government makes no representation as to the completeness or accuracy of these drawings. Minor deviations can be anticipated and shall not be the basis for a claim for extra compensation. The operation of this facility is ongoing and includes updating and repair of existing systems and equipment. The Contractor shall annotate the existing drawings and submit to the Contracting Officer to reflect all changes implemented during the contract period.

H.15 SHOP DRAWINGS

In the event major system equipment items are to be modified and/or replaced, shop drawings shall be prepared in strict accordance with the design details of the existing system. These drawings shall be clear, complete and thoroughly checked. Submittals shall be provided in accordance with paragraph H.16, SUBMITTAL OF CONTRACT DATA. The payment for such shop drawings shall be included as an integral cost under the replacement costs for the equipment.

H.16 SUBMITTAL OF CONTRACT DATA

The Contractor shall submit all documents required by these specifications within the time frames specified. A preliminary list of submittals is attached under Section J, Attachment J6 CONTRACTOR SUBMISSIONS LIST.

(a.) Within 14 days after award the Contractor shall prepare a listing of all recurring and administrative data items (safety plans, management plans, CQC plans, environmental plans, etc.) to be submitted to the Government in accordance with the requirements of the specifications. The listing shall include all applicable submittal items including pre work, weekly data and monthly data items and post work reports. The listing shall reference the specification paragraph requiring the item, frequency and submittal schedule (one time (OTIME), daily (D), weekly (W), monthly (M), Quarterly (Q)) and may be on a Contractor furnished form acceptable to the COR. The submittal list will be reviewed by the COR and corrections made as required. Non-routine or special submittal items not listed in J6, such as may required by the CONTRACT CLAUSES, shall be made as appropriate (ie; incident safety reports or spill reports).

(b) All submittals, other than copies of licenses and documents obtained from other sources, shall be typed and the original and one copy shall be furnished to the COR. If the Government determines that any submittals do not comply with these specifications, the Contractor shall resubmit these documents within three (3) calendar days of receipt of notification of deficiencies.

(c) Transmittal Form (ENG Form 4025). Transmittal Form 4025 (See Section J, Attachment J6.1 for copy of form) shall be used for submitting both Government-approval and information-only submittals in accordance with the instructions on the reverse side of the form and as further described in this section. Transmittal numbers shall be assigned sequentially. Electronic generated 4025 forms shall be printed on carbonless paper and be a reasonable facsimile of the original 4025. If electronic forms are not used, the original 4025 forms shall be used (do not photo copy) and will be furnished by the COR. These forms shall be filled in completely prior to submittal. Special care shall be exercised to ensure proper listing of the specification paragraph submitted for each item. Each submittal item shall be listed separately on the form, naming subcontractor, supplier, or manufacturer, applicable specification paragraph number(s), drawing/sheet number, pay item number, and any other information needed to identify the item, define its use, and locate it in the work. One or more 4025 forms may be used per specification section, however, DO NOT include more than one specification section per transmittal.

(d) Government review. Submittals may require Government approval or may be for information only. The preliminary list of submittals includes a submittal classification indicating Government approval is required for submittals with a "G" designation anal submittals not having a "G" designation are for information only. The submittal classification for each submittal item is subject to approval of the Contracting Officer.

(e) Brand Name or Equal. References in the specifications to equipment, materials, articles, or patented processes by trade name, make, or catalog number shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at his/her option, use any material, equipment, article, or process that, in the judgment of the Contracting Officer, is equal to that named in the specification, unless otherwise specifically provided in this contract.

H.17 TRANSITION OF WORK

(a) Prior to Contractor's responsibility for the Central Treatment Plant facility's operations, a transition period will be used for familiarization, training and learning the characteristics of the existing treatment facilities.

(1) The Contractor shall begin the transition period under this contract on the date approved by the Contracting Officer.

(2) Training and Licensing. The Contractor shall provide all required initial and subsequent training and applicable licensing for Contractor employees at no additional cost to the Government. Prior to the issuance of Notice-To-Proceed, the Contractor shall provide evidence to the COR that all of his/her personnel have the appropriate training and licenses to perform their duties associated with these contract requirements. See Section 01310 PROJECT MANAGEMENT for detailed requirements. This training and licensing includes, but is not limited to first aid, CPR, safety, confined space entry, and water treatment operation. Each employee shall be trained in first aid and CPR and have a valid first aid and CPR card in his/her possession at all times when on duty.

(3) The Contractor is to assume full responsibility for the Central Treatment Plant facility and its operation upon completion of the transition period.

H.18 DISASTER EVENTS AND RESPONSE WORK

The Contractor shall monitor weather conditions and provide notice to the Contracting Officer of any conditions which could endanger the facility. In the event Government property is endangered by causes of disastrous nature, such as hail, flood, tornado, etc., the Contracting Officer will determine the emergency action necessary to protect Government and personal property, and shall direct the Contractor to do emergency work to the extent necessary. An equitable adjustment will be made for directed work. In addition to the provisions of the clause H.3 GOVERNMENT PERFORMANCE OF SERVICE, the Contractor will not be liable for any unperformed work or for operating conditions beyond the allowable requirements during a disaster event, if all reasonable and prudent efforts with appropriate safety considerations have been made to comply with operating standards and Contracting Officer directives.

H.19 WAGE PROVISIONS

The requirements under this contract will be predominantly for services and subject to the Service Contract Act. Any construction requirements will be identified under individual work order(s) and will be subject to and include the prevailing Davis-Bacon Wage Rates.

END OF SECTION H

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Section I - Contract Clauses

CLAUSES INCORPORATED BY FULL TEXT

52.202-1 DEFINITIONS (JUL 2004)

(a) When a solicitation provision or contract clause uses a word or term that is defined in the Federal Acquisition Regulation (FAR), the word or term has the same meaning as the definition in FAR 2.101 in effect at the time the solicitation was issued, unless--

(1) The solicitation, or amended solicitation, provides a different definition;

(2) The contracting parties agree to a different definition;

(3) The part, subpart, or section of the FAR where the provision or clause is prescribed provides a different meaning; or

(4) The word or term is defined in FAR Part 31, for use in the cost principles and procedures.

(b) The FAR Index is a guide to words and terms the FAR defines and shows where each definition is located. The FAR Index is available via the Internet at http://www.acqnet.gov at the end of the FAR, after the FAR Appendix.

(End of clause)

52.203-3 GRATUITIES (APR 1984)

(a) The right of the Contractor to proceed may be terminated by written notice if, after notice and hearing, the agency head or a designee determines that the Contractor, its agent, or another representative--

(1) Offered or gave a gratuity (e.g., an entertainment or gift) to an officer, official, or employee of the Government; and

(2) Intended, by the gratuity, to obtain a contract or favorable treatment under a contract.

(b) The facts supporting this determination may be reviewed by any court having lawful jurisdiction.

(c) If this contract is terminated under paragraph (a) of this clause, the Government is entitled--

(1) To pursue the same remedies as in a breach of the contract; and

(2) In addition to any other damages provided by law, to exemplary damages of not less than 3 nor more than 10 times the cost incurred by the Contractor in giving gratuities to the person concerned, as determined by the agency head or a designee. (This subparagraph (c)(2) is applicable only if this contract uses money appropriated to the Department of Defense.)

(d) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

52.203-5 COVENANT AGAINST CONTINGENT FEES (APR 1984)

(a) The Contractor warrants that no person or agency has been employed or retained to solicit or obtain this contract upon an agreement or understanding for a contingent fee, except a bona fide employee or agency. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or, in its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of the contingent fee.

(b) "Bona fide agency," as used in this clause, means an established commercial or selling agency, maintained by a contractor for the purpose of securing business, that neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds itself out as being able to obtain any Government contract or contracts through improper influence.

"Bona fide employee," as used in this clause, means a person, employed by a contractor and subject to the contractor's supervision and control as to time, place, and manner of performance, who neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds out as being able to obtain any Government contract or contracts through improper influence.

"Contingent fee," as used in this clause, means any commission, percentage, brokerage, or other fee that is contingent upon the success that a person or concern has in securing a Government contract.

"Improper influence," as used in this clause, means any influence that induces or tends to induce a Government employee or officer to give consideration or to act regarding a Government contract on any basis other than the merits of the matter.

(End of clause)

52.203-6 RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT (JUL 1995)

(a) Except as provided in (b) of this clause, the Contractor shall not enter into any agreement with an actual or prospective subcontractor, nor otherwise act in any manner, which has or may have the effect of restricting sales by such subcontractors directly to the Government of any item or process (including computer software) made or furnished by the subcontractor under this contract or under any follow-on production contract.

(b) The prohibition in (a) of this clause does not preclude the Contractor from asserting rights that are otherwise authorized by law or regulation.

(c) The Contractor agrees to incorporate the substance of this clause, including this paragraph (c), in all subcontracts under this contract which exceed $100,000.

52.203-7 ANTI-KICKBACK PROCEDURES. (JUL 1995)

(a) Definitions.

"Kickback," as used in this clause, means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided, directly or indirectly, to any prime Contractor, prime Contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a subcontract relating to a prime contract.

"Person," as used in this clause, means a corporation, partnership, business association of any kind, trust, joint-

stock company, or individual.

"Prime contract," as used in this clause, means a contract or contractual action entered into by the United States for the purpose of obtaining supplies, materials, equipment, or services of any kind.

"Prime Contractor," as used in this clause, means a person who has entered into a prime contract with the United States.

"Prime Contractor employee," as used in this clause, means any officer, partner, employee, or agent of a prime Contractor.

"Subcontract," as used in this clause, means a contract or contractual action entered into by a prime Contractor or subcontractor for the purpose of obtaining supplies, materials, equipment, or services of any kind under a prime contract.

"Subcontractor," as used in this clause, (1) means any person, other than the prime Contractor, who offers to furnish or furnishes any supplies, materials, equipment, or services of any kind under a prime contract or a subcontract entered into in connection with such prime contract, and (2) includes any person who offers to furnish or furnishes general supplies to the prime Contractor or a higher tier subcontractor.

"Subcontractor employee," as used in this clause, means any officer, partner, employee, or agent of a subcontractor.

(b) The Anti-Kickback Act of 1986 (41 U.S.C. 51-58) (the Act), prohibits any person from -

(1) Providing or attempting to provide or offering to provide any kickback;

(2) Soliciting, accepting, or attempting to accept any kickback; or

(3) Including, directly or indirectly, the amount of any kickback in the contract price charged by a prime Contractor to the United States or in the contract price charged by a subcontractor to a prime Contractor or higher tier subcontractor.

(c)(1) The Contractor shall have in place and follow reasonable procedures designed to prevent and detect possible violations described in paragraph (b) of this clause in its own operations and direct business relationships.

(2) When the Contractor has reasonable grounds to believe that a violation described in paragraph (b) of this clause may have occurred, the Contractor shall promptly report in writing the possible violation. Such reports shall be made to the inspector general of the contracting agency, the head of the contracting agency if the agency does not have an inspector general, or the Department of Justice.

(3) The Contractor shall cooperate fully with any Federal agency investigating a possible violation described in paragraph (b) of this clause.

(4) The Contracting Officer may (i) offset the amount of the kickback against any monies owed by the United States under the prime contract and/or (ii) direct that the Prime Contractor withhold, from sums owed a subcontractor under the prime contract, the amount of any kickback. The Contracting Officer may order the monies withheld under subdivision (c)(4)(ii) of this clause be paid over to the Government unless the Government has already offset those monies under subdivision (c)(4)(i) of this clause. In either case, the Prime Contractor shall notify the Contracting Officer when the monies are withheld.

(5) The Contractor agrees to incorporate the substance of this clause, including this subparagraph (c)(5) but excepting subparagraph (c)(1), in all subcontracts under this contract which exceed $100,000.

52.203-8 CANCELLATION, RESCISSION, AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)

(a) If the Government receives information that a contractor or a person has engaged in conduct constituting a violation of subsection (a), (b), (c), or (d) of Section 27 of the Office of Federal Procurement Policy Act (41 U.S.C. 423) (the Act), as amended by section 4304 of the 1996 National Defense Authorization Act for Fiscal Year 1996 (Pub. L. 104-106), the Government may--

(1) Cancel the solicitation, if the contract has not yet been awarded or issued; or

(2) Rescind the contract with respect to which--

(i) The Contractor or someone acting for the Contractor has been convicted for an offense where the conduct constitutes a violation of subsection 27(a) or (b) of the Act for the purpose of either--

(A) Exchanging the information covered by such subsections for anything of value; or

(B) Obtaining or giving anyone a competitive advantage in the award of a Federal agency procurement contract; or

(ii) The head of the contracting activity has determined, based upon a preponderance of the evidence, that the Contractor or someone acting for the Contractor has engaged in conduct constituting an offense punishable under subsections 27(e)(1) of the Act.

(b) If the Government rescinds the contract under paragraph (a) of this clause, the Government is entitled to recover, in addition to any penalty prescribed by law, the amount expended under the contract.

(c) The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law, regulation, or under this contract.

(End of clause)

52.203-10 PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY (JAN 1997)

(a) The Government, at its election, may reduce the price of a fixed-price type contract and the total cost and fee under a cost-type contract by the amount of profit or fee determined as set forth in paragraph (b) of this clause if the head of the contracting activity or designee determines that there was a violation of subsection 27 (a), (b), or (c) of the Office of Federal Procurement Policy Act, as amended (41 U.S.C. 423), as implemented in section 3.104 of the Federal Acquisition Regulation.

(b) The price or fee reduction referred to in paragraph (a) of this clause shall be--

(1) For cost-plus-fixed-fee contracts, the amount of the fee specified in the contract at the time of award;

(2) For cost-plus-incentive-fee contracts, the target fee specified in the contract at the time of award, notwithstanding any minimum fee or "fee floor" specified in the contract;

(3) For cost-plus-award-fee contracts--

(i) The base fee established in the contract at the time of contract award;

(ii) If no base fee is specified in the contract, 30 percent of the amount of each award fee otherwise payable to the Contractor for each award fee evaluation period or at each award fee determination point.

(4) For fixed-price-incentive contracts, the Government may--

(i) Reduce the contract target price and contract target profit both by an amount equal to the initial target profit specified in the contract at the time of contract award; or

(ii) If an immediate adjustment to the contract target price and contract target profit would have a significant adverse impact on the incentive price revision relationship under the contract, or adversely affect the contract financing provisions, the Contracting Officer may defer such adjustment until establishment of the total final price of the contract. The total final price established in accordance with the incentive price revision provisions of the contract shall be reduced by an amount equal to the initial target profit specified in the contract at the time of contract award and such reduced price shall be the total final contract price.

(5) For firm-fixed-price contracts, by 10 percent of the initial contract price or a profit amount determined by the Contracting Officer from records or documents in existence prior to the date of the contract award.

(c) The Government may, at its election, reduce a prime contractor's price or fee in accordance with the procedures of paragraph (b) of this clause for violations of the Act by its subcontractors by an amount not to exceed the amount of profit or fee reflected in the subcontract at the time the subcontract was first definitively priced.

(d) In addition to the remedies in paragraphs (a) and (c) of this clause, the Government may terminate this contract for default. The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

52.203-12 LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (JUN 2003)

(a) Definitions.

"Agency," as used in this clause, means executive agency as defined in 2.101.

"Covered Federal action," as used in this clause, means any of the following Federal actions:

(1) The awarding of any Federal contract.

(2) The making of any Federal grant.

(3) The making of any Federal loan.

(4) The entering into of any cooperative agreement.

(5) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

"Indian tribe" and "tribal organization," as used in this clause, have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) and include Alaskan Natives.

"Influencing or attempting to influence," as used in this clause, means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

"Local government," as used in this clause, means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

"Officer or employee of an agency," as used in this clause, includes the following individuals who are employed by an agency:

(1) An individual who is appointed to a position in the Government under Title 5, United States Code, including a position under a temporary appointment.

(2) A member of the uniformed services, as defined in subsection 101(3),Title 37, United States Code.

(3) A special Government employee, as defined in section 202, Title 18, United States Code.

(4) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, Title 5, United States Code, appendix 2.

"Person," as used in this clause, means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit, or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Reasonable compensation," as used in this clause, means, with respect to a regularly employed officer or emp loyee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

"Reasonable payment," as used in this clause, means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

"Recipient," as used in this clause, includes the Contractor and all subcontractors. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Regularly employed," as used in this clause, means, with respect to an officer or employee of a person requesting or receiving a Federal contract, an officer or employee who is employed by such person for at least 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

State, as used in this clause, means a State of the United States, the District of Columbia, or an outlying area of the United States, an agency or instrumentality of a State, and multi-State, regional, or interstate entity having governmental duties and powers.

(b) Prohibitions.

(1) Section 1352 of Title 31, United States Code, among other things, prohibits a recipient of a Federal contract, grant, loan, or cooperative agreement from using appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an

employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

(2) The Act also requires Contractors to furnish a disclosure if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

(3) The prohibitions of the Act do not apply under the following conditions:

(i) Agency and legislative liaison by own employees.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(B) For purposes of subdivision (b)(3)(i)(A) of this clause, providing any information specifically requested by an agency or Congress is permitted at any time.

(C) The following agency and legislative liaison activities are permitted at any time where they are not related to a specific solicitation for any covered Federal action:

(1) Discussing with an agency the qualities and characteristics (including individual demonstrations) of the person's products or services, conditions or terms of sale, and service capabilities.

(2) Technical discussions and other activities regarding the application or adaptation of the person's products or services for an agency's use.

(D) The following agency and legislative liaison activities are permitted where they are prior to formal solicitation of any covered Federal action--

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Pub. L. 95-507, and subsequent amendments.

(E) Only those services expressly authorized by subdivision (b)(3)(i)(A) of this clause are permitted under this clause.

(ii) Professional and technical services.

(A) The prohibition on the use of appropriated funds, in subparagraph (b)(1) of this clause, does not apply in the case of--

(1) A payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action, if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action.

(2) Any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action if the payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action. Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(B) For purposes of subdivision (b)(3)(ii)(A) of this clause, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting of a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(C) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation and any other requirements in the actual award documents.

(D) Only those services expressly authorized by subdivisions (b)(3)(ii)(A)(1) and (2) of this clause are permitted under this clause.

(E) The reporting requirements of FAR 3.803(a) shall not apply with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

(c) Disclosure.

(1) The Contractor who requests or receives from an agency a Federal contract shall file with that agency a disclosure form, OMB standard form LLL, Disclosure of Lobbying Activities, if such person has made or has agreed to make any payment using nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under subparagraph (b)(1) of this clause, if paid for with appropriated funds.

(2) The Contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under subparagraph (c)(1) of this clause. An event that materially affects the accuracy of the information reported includes--

(i) A cumulative increase of $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(ii) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

(iii) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(3) The Contractor shall require the submittal of a certification, and if required, a disclosure form by any person who requests or receives any subcontract exceeding $100,000 under the Federal contract.

(4) All subcontractor disclosure forms (but not certifications) shall be forwarded from tier to tier until received by the prime Contractor. The prime Contractor shall submit all disclosures to the Contracting Officer at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding Contractor.

(d) Agreement. The Contractor agrees not to make any payment prohibited by this clause.

(e) Penalties.

(1) Any person who makes an expenditure prohibited under paragraph (a) of this clause or who fails to file or amend the disclosure form to be filed or amended by paragraph (b) of this clause shall be subject to civil penalties as provided for by 31 U.S.C. 1352. An imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

(2) Contractors may rely without liability on the representation made by their subcontractors in the certification and disclosure form.

(f) Cost allowability. Nothing in this clause makes allowable or reasonable any costs which would otherwise be unallowable or unreasonable. Conversely, costs made specifically unallowable by the requirements in this clause will not be made allowable under any other provision.

(End of clause)

52.204-4 PRINTED OR COPIED DOUBLE-SIDED ON RECYCLED PAPER (AUG 2000)

(a) Definitions. As used in this clause--

“Postconsumer material” means a material or finished product that has served its intended use and has been discarded for disposal or recovery, having completed its life as a consumer item. Postconsumer material is a part of the broader category of “recovered material.” For paper and paper products, postconsumer material means “postconsumer fiber” defined by the U.S. Environmental Protection Agency (EPA) as--

(1) Paper, paperboard, and fibrous materials from retail stores, office buildings, homes, and so forth, after they have passed through their end-usage as a consumer item, including: used corrugated boxes; old newspapers; old magazines; mixed waste paper; tabulating cards; and used cordage; or

(2) All paper, paperboard, and fibrous materials that enter and are collected from municipal solid waste; but not

(3) Fiber derived from printers' over-runs, converters' scrap, and over-issue publications.

“Printed or copied double-sided” means printing or reproducing a document so that information is on both sides of a sheet of paper.

“Recovered material,” for paper and paper products, is defined by EPA in its Comprehensive Procurement Guideline as “recovered fiber” and means the following materials:

(1) Postconsumer fiber; and

(2) Manufacturing wastes such as--

(i) Dry paper and paperboard waste generated after completion of the papermaking process (that is, those manufacturing operations up to and including the cutting and trimming of the paper machine reel into smaller rolls or rough sheets) including: envelope cuttings, bindery trimmings, and other paper and paperboard waste resulting from printing, cutting, forming, and other converting operations; bag, box, and carton manufacturing wastes; and butt rolls, mill wrappers, and rejected unused stock; and

(ii) Repulped finished paper and paperboard from obsolete inventories of paper and paperboard manufacturers, merchants, wholesalers, dealers, printers, converters, or others.

(b) In accordance with Section 101 of Executive Order 13101 of September 14, 1998, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition, the Contractor is encouraged to submit paper documents, such as offers, letters, or reports, that are printed or copied double-sided on recycled paper that meet minimum content standards specified in Section 505 of Executive Order 13101, when not using electronic commerce methods to submit information or data to the Government.

(c) If the Contractor cannot purchase high-speed copier paper, offset paper, forms bond, computer printout paper, carbonless paper, file folders, white wove envelopes, writing and office paper, book paper, cotton fiber paper, and cover stock meeting the 30 percent postconsumer material standard for use in submitting paper documents to the Government, it should use paper containing no less than 20 percent postconsumer material. This lesser standard should be used only when paper meeting the 30 percent postconsumer material standard is not obtainable at a reasonable price or does not meet reasonable performance standards.

(End of clause)

52.204-7 CENTRAL CONTRACTOR REGISTRATION (OCT 2003)

(a) Definitions. As used in this clause--

Central Contractor Registration (CCR) database means the primary Government repository for Contractor information required for the conduct of business with the Government.

Data Universal Numbering System (DUNS) number means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

Data Universal Numbering System +4 (DUNS+4) number means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see the FAR at Subpart 32.11) for the same parent concern.

Registered in the CCR database means that--

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database; and

(2) The Government has validated all mandatory data fields and has marked the record “Active”.

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation “DUNS” or “DUNS +4” followed by the DUNS or DUNS +4 number that identifies the offeror's name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number--

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at http://www.dnb.com; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company Physical Street Address, City, State, and Zip Code.

(iv) Company Mailing Address, City, State and Zip Code (if separate from physical).

(v) Company Telephone Number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(g)(1)(i) If a Contractor has legally changed its business name, “doing business as” name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of Subpart 42.12 of the

FAR; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(h) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at http://www.ccr.gov or by calling 1-888-227-2423, or 269-961-5757.

(End of clause)

52.209-6 PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (JAN 2005)

(a) The Government suspends or debars Contractors to protect the Government's interests. The Contractor shall not enter into any subcontract in excess of the $25,000 with a Contractor that is debarred, suspended, or proposed for debarment unless there is a compelling reason to do so.

(b) The Contractor shall require each proposed first-tier subcontractor, whose subcontract will exceed $25,000, to disclose to the Contractor, in writing, whether as of the time of award of the subcontract, the subcontractor, or its principles, is or is not debarred, suspended, or proposed for debarment by the Federal Government.

(c) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party that is debarred, suspended, or proposed for debarment (see FAR 9.404 for information on the in the Excluded Parties List System). The notice must include the following:

(1) The name of the subcontractor.

(2) The Contractor's knowledge of the reasons for the subcontractor being in the Excluded Parties List System.

(3) The compelling reason(s) for doing business with the subcontractor notwithstanding its inclusion in the Excluded Parties List System.

(4) The systems and procedures the Contractor has established to ensure that it is fully protecting the Government's interests when dealing with such subcontractor in view of the specific basis for the party's debarment, suspension, or proposed debarment.

(End of clause)

52.215-2 AUDIT AND RECORDS--NEGOTIATION (JUN 1999)

(a) As used in this clause, "records" includes books, documents, accounting procedures and practices, and other data, regardless of type and regardless of whether such items are in written form, in the form of computer data, or in any other form.

(b) Examination of costs. If this is a cost-reimbursement, incentive, time-and-materials, labor-hour, or price redeterminable contract, or any combination of these, the Contractor shall maintain and the Contracting Officer, or an authorized representative of the Contracting Officer, shall have the right to examine and audit all records and other evidence sufficient to reflect properly all costs claimed to have been incurred or anticipated to be incurred directly or indirectly in performance of this contract. This right of examination shall include inspection at all reasonable times of the Contractor's plants, or parts of them, engaged in performing the contract.

(c) Cost or pricing data. If the Contractor has been required to submit cost or pricing data in connection with any pricing action relating to this contract, the Contracting Officer, or an authorized representative of the Contracting Officer, in order to evaluate the accuracy, completeness, and currency of the cost or pricing data, shall have the right to examine and audit all of the Contractor's records, including computations and projections, related to--

(1) The proposal for the contract, subcontract, or modification;

(2) The discussions conducted on the proposal(s), including those related to negotiating;

(3) Pricing of the contract, subcontract, or modification; or

(4) Performance of the contract, subcontract or modification.

(d) Comptroller General--(1) The Comptroller General of the United States, or an authorized representative, shall have access to and the right to examine any of the Contractor's directly pertinent records involving transactions related to this contract or a subcontract hereunder.

(2) This paragraph may not be construed to require the Contractor or subcontractor to create or maintain any record that the Contractor or subcontractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e) Reports. If the Contractor is required to furnish cost, funding, or performance reports, the Contracting Officer or an authorized representative of the Contracting Officer shall have the right to examine and audit the supporting records and materials, for the purpose of evaluating (1) the effectiveness of the Contractor's policies and procedures to produce data compatible with the objectives of these reports and (2) the data reported.

(f) Availability. The Contractor shall make available at its office at all reasonable times the records, materials, and other evidence described in paragraphs (a), (b), (c), (d), and (e) of this clause, for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specified in Subpart 4.7, Contractor Records Retention, of the Federal Acquisition Regulation (FAR), or for any longer period required by statute or by other clauses of this contract. In addition--

(1) If this contract is completely or partially terminated, the Contractor shall make available the records relating to the work terminated until 3 years after any resulting final termination settlement; and

(2) The Contractor shall make available records relating to appeals under the Disputes clause or to litigation or the settlement of claims arising under or relating to this contract until such appeals, litigation, or claims are finally resolved.

(g) The Contractor shall insert a clause containing all the terms of this clause, including this paragraph (g), in all subcontracts under this contract that exceed the simplified acquisition threshold, and--

(1) That are cost-reimbursement, incentive, time-and-materials, labor-hour, or price-redeterminable type or any combination of these;

(2) For which cost or pricing data are required; or

(3) That require the subcontractor to furnish reports as discussed in paragraph (e) of this clause.

The clause may be altered only as necessary to identify properly the contracting parties and the Contracting Officer under the Government prime contract.

(End of clause)

52.215-8 ORDER OF PRECEDENCE--UNIFORM CONTRACT FORMAT (OCT 1997)

Any inconsistency in this solicitation or contract shall be resolved by giving precedence in the following order:

(a) The Schedule (excluding the specifications).

(b) Representations and other instructions.

(c) Contract clauses.

(d) Other documents, exhibits, and attachments.

(e) The specifications.

(End of clause)

52.216-18 ORDERING. (OCT 1995)

(a) Any supplies and services to be furnished under this contract shall be ordered by issuance of delivery orders or task orders by the individuals or activities designated in the Schedule. Such orders may be issued from the date of awars through one year period.

(b) All delivery orders or task orders are subject to the terms and conditions of this contract. In the event of conflict between a delivery order or task order and this contract, the contract shall control.

(c) If mailed, a delivery order or task order is considered "issued" when the Government deposits the order in the mail. Orders may be issued orally, by facsimile, or by electronic commerce methods only if authorized in the Schedule.

(End of clause)

52.216-19 ORDER LIMITATIONS. (OCT 1995)

(a) Minimum order. When the Government requires supplies or services covered by this contract in an amount of less than $1,000, the Government is not obligated to purchase, nor is the Contractor obligated to furnish, those supplies or services under the contract.

(b) Maximum order. The Contractor is not obligated to honor:

(1) Any order for a single item in excess of $700,000;

(2) Any order for a combination of items in excess of $700,000; or

(3) A series of orders from the same ordering office within 30 calendar days that together call for quantities exceeding the limitation in subparagraph (1) or (2) above.

(c) If this is a requirements contract (i.e., includes the Requirements clause at subsection 52.216-21 of the Federal Acquisition Regulation (FAR)), the Government is not required to order a part of any one requirement from the Contractor if that requirement exceeds the maximum-order limitations in paragraph (b) above.

(d) Notwithstanding paragraphs (b) and (c) above, the Contractor shall honor any order exceeding the maximum order limitations in paragraph (b), unless that order (or orders) is returned to the ordering office within 5 calendar days after issuance, with written notice stating the Contractor's intent not to ship the item (or items) called for and the reasons. Upon receiving this notice, the Government may acquire the supplies or services from another source.

(End of clause)

52.216-22 INDEFINITE QUANTITY. (OCT 1995)

(a) This is an indefinite-quantity contract for the supplies or services specified, and effective for the period stated, in the Schedule. The quantities of supplies and services specified in the Schedule are estimates only and are not purchased by this contract.

(b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the supplies or services specified in the Schedule up to and including the quantity designated in the Schedule as the "maximum". The Government shall order at least the quantity of supplies or services designated in the Schedule as the "minimum".

(c) Except for any limitations on quantities in the Order Limitations clause or in the Schedule, there is no limit on the number of orders that may be issued. The Government may issue orders requiring delivery to multiple destinations or performance at multiple locations.

(d) Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period; provided, that the Contractor shall not be required to make any deliveries under this contract after completion of the effective period.

(End of clause)

52.217-8 OPTION TO EXTEND SERVICES (NOV 1999)

The Government may require continued performance of any services within the limits and at the rates specified in the contract. These rates may be adjusted only as a result of revisions to prevailing labor rates provided by the Secretary of Labor. The option provision may be exercised more than once, but the total extension of performance hereunder shall not exceed 6 months. The Contracting Officer may exercise the option by written notice to the Contractor within the time specified in the Schedule.

(End of clause)

52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000)

(a) The Government may extend the term of this contract by written notice to the Contractor within 30 calendar; provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least 60 calendar days before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option clause.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed 3 years.
(End of clause)

52.219-3 NOTICE OF TOTAL HUBZONE SET-ASIDE (JAN 1999)

(a) Definition. HUBZone small business concern, as used in this clause, means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

(b) General. (1) Offers are solicited only from HUBZone small business concerns. Offers received from concerns that are not HUBZone small business concerns shall not be considered.

(2) Any award resulting from this solicitation will be made to a HUBZone small business concern.

(c) Agreement. A HUBZone small business concern agrees that in the performance of the contract, in the case of a contract for--

(1) Services (except construction), at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern or employees of other HUBZone small business concerns;

(2) Supplies (other than acquisition from a nonmanufacturer of the supplies), at least 50 percent of the cost of manufacturing, excluding the cost of materials, will be performed by the concern or other HUBZone small business concerns;

(3) General construction, at least 15 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns; or

(4) Construction by special trade contractors, at least 25 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns.

(d) A HUBZone joint venture agrees that, in the performance of the contract, the applicable percentage specified in paragraph (c) of this clause will be performed by the HUBZone small business participant or participants.

(e) A HUBZone small business concern nonmanufacturer agrees to furnish in performing this contract only end items manufactured or produced by HUBZone small business manufacturer concerns. This paragraph does not apply in connection with construction or service contracts.

(End of clause)

52.219-8 UTILIZATION OF SMALL BUSINESS CONCERNS (MAY 2004)

(a) It is the policy of the United States that small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, HUBZone small business concerns, small disadvantaged business concerns, and women-owned small business concerns shall have the maximum practicable opportunity to participate in performing contracts let by any Federal agency, including contracts and subcontracts for subsystems, assemblies, components, and related services for major systems. It is further the policy of the United States that its prime contractors establish procedures to ensure the timely payment of amounts due pursuant to the terms of their subcontracts with small business concerns, veteran-owned small business concerns, service-disabled veteran-owned small business concerns, HUBZone small business concerns, small disadvantaged business concerns, and women-owned small business concerns.

(b) The Contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with efficient contract performance. The Contractor further agrees to cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or the awarding agency of the United States as may be necessary to determine the extent of the Contractor's compliance with this clause.

Definitions. As used in this contract--

HUBZone small business concern means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

Service-disabled veteran-owned small business concern--

(1) Means a small business concern--

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) Service-disabled veteran means a veteran, as defined in 38 U.S.C. 101(2), with a disability that is service-connected, as defined in 38 U.S.C. 101(16).

Small business concern means a small business as defined pursuant to Section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto.

Small disadvantaged business concern means a small business concern that represents, as part of its offer that--

(1) It has received certification as a small disadvantaged business concern consistent with 13 CFR part 124, subpart B;

(2) No material change in disadvantaged ownership and control has occurred since its certification;

(3) Where the concern is owned by one or more individuals, the net worth of each individual upon whom the certification is based does not exceed $750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(4) It is identified, on the date of its representation, as a certified small disadvantaged business in the database maintained by the Small Business Administration (PRO-Net).

Veteran-owned small business concern means a small business concern--

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at 38 U.S.C. 101(2)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

Women-owned small business concern means a small business concern--

(1) That is at least 51 percent owned by one or more women, or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Contractors acting in good faith may rely on written representations by their subcontractors regarding their status as a small business concern, a veteran-owned small business concern, a service-disabled veteran-owned small business concern, a HUBZone small business concern, a small disadvantaged business concern, or a women-owned small business concern.

(End of clause)

52.219-14 LIMITATIONS ON SUBCONTRACTING (DEC 1996)

(a) This clause does not apply to the unrestricted portion of a partial set-aside.

(b) By submission of an offer and execution of a contract, the Offeror/Contractor agrees that in performance of the contract in the case of a contract for--

(1) Services (except construction). At least 50 percent of the cost of contract performance incurred for personnel shall be expended for employees of the concern.

(2) Supplies (other than procurement from a nonmanufacturer of such supplies). The concern shall perform work for at least 50 percent of the cost of manufacturing the supplies, not including the cost of materials.

(3) General construction. The concern will perform at least 15 percent of the cost of the contract, not including the cost of materials, with its own employees.

(4) Construction by special trade contractors. The concern will perform at least 25 percent of the cost of the contract, not including the cost of materials, with its own employees.

52.222-3 CONVICT LABOR (JUN 2003)

(a) Except as provided in paragraph (b) of this clause, the Contractor shall not employ in the performance of this contract any person undergoing a sentence of imprisonment imposed by any court of a State, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, or the U.S. Virgin Islands.

(b) The Contractor is not prohibited from employing persons--

(1) On parole or probation to work at paid employment during the term of their sentence;

(2) Who have been pardoned or who have served their terms; or

(3) Confined for violation of the laws of any of the States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, or the U.S. Virgin Islands who are authorized to work at paid employment in the community under the laws of such jurisdiction, if--

(i) The worker is paid or is in an approved work training program on a voluntary basis;

(ii) Representatives of local union central bodies or similar labor union organizations have been consulted;

(iii) Such paid employment will not result in the displacement of employed workers, or be applied in skills, crafts, or trades in which there is a surplus of available gainful labor in the locality, or impair existing contracts for services;

(iv) The rates of pay and other conditions of employment will not be less than those paid or provided for work of a similar nature in the locality in which the work is being performed; and

(v) The Attorney General of the United States has certified that the work-release laws or **regulations** of the jurisdiction involved are in conformity with the requirements of Executive Order 11755, as amended by Executive Orders 12608 and 12943.

(End of clause)

52.222-4 CONTRACT WORK HOURS AND SAFETY STANDARDS ACT - OVERTIME COMPENSATION. (JUL 2005)

(a) Overtime requirements. No Contractor or subcontractor employing laborers or mechanics (see Federal Acquisition Regulation 22.300) shall require or permit them to work over 40 hours in any workweek unless they are paid at least 1 and 1/2 times the basic rate of pay for each hour worked over 40 hours.

(b) Violation; liability for unpaid wages; liquidated damages. The responsible Contractor and subcontractor are liable for unpaid wages if they violate the terms in paragraph (a) of this clause. In addition, the Contractor and subcontractor are liable for liquidated damages payable to the Government. The Contracting Officer will assess liquidated damages at the rate of $10 per affected employee for each calendar day on which the employer required or permitted the employee to work in excess of the standard workweek of 40 hours without paying overtime wages required by the Contract Work Hours and Safety Standards Act.

(c) Withholding for unpaid wages and liquidated damages. The Contracting Officer will withhold from payments due under the contract sufficient funds required to satisfy any Contractor or subcontractor liabilities for unpaid wages and liquidated damages. If amounts withheld under the contract are insufficient to satisfy Contractor or subcontractor liabilities, the Contracting Officer will withhold payments from other Federal or Federally assisted contracts held by the same Contractor that are subject to the Contract Work Hours and Safety Standards Act.

(d) Payrolls and basic records.

(1) The Contractor and its subcontractors shall maintain payrolls and basic payroll records for all laborers and mechanics working on the contract during the contract and shall make them available to the Government until 3 years after contract completion. The records shall contain the name and address of each employee, social security number, labor classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. The records need not duplicate those required for construction work by Department of Labor regulations at 29 CFR 5.5(a)(3) implementing the Davis-Bacon Act.

(2) The Contractor and its subcontractors shall allow authorized representatives of the Contracting Officer or the Department of Labor to inspect, copy, or transcribe records maintained under paragraph (d)(1) of this clause. The Contractor or subcontractor also shall allow authorized representatives of the Contracting Officer or Department of Labor to interview employees in the workplace during working hours.

(e) Subcontracts. The Contractor shall insert the provisions set forth in paragraphs (a) through (d) of this clause in subcontracts that may require or involve the employment of laborers and mechanics and require subcontractors to include these provisions in any such lower tier subcontracts. The Contractor shall be responsible for compliance by any subcontractor or lower-tier subcontractor with the provisions set forth in paragraphs (a) through (d) of this clause.

(End of clause)

52.222-21 PROHIBITION OF SEGREGATED FACILITIES (FEB 1999)

(a) Segregated facilities, as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(b) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

(End of clause)

52.222-26 EQUAL OPPORTUNITY (APR 2002)

(a) Definition. United States, as used in this clause, means the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.

(b) If, during any 12-month period (including the 12 months preceding the award of this contract), the Contractor has been or is awarded nonexempt Federal contracts and/or subcontracts that have an aggregate value in excess of $10,000, the Contractor shall comply with paragraphs (b)(1) through (b)(11) of this clause, except for work performed outside the United States by employees who were not recruited within the United States. Upon request, the Contractor shall provide information necessary to determine the applicability of this clause.

(1) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. However, it shall not be a violation of this clause for the Contractor to extend a publicly announced preference in employment to Indians living on or near an Indian reservation, in connection with employment opportunities on or near an Indian reservation, as permitted by 41 CFR 60-1.5.

(2) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. This shall include, but not be

limited to, (i) employment, (ii) upgrading, (iii) demotion, (iv) transfer, (v) recruitment or recruitment advertising, (vi) layoff or termination, (vii) rates of pay or other forms of compensation, and (viii) selection for training, including apprenticeship.

(3) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.

(4) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(5) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.

(6) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

(7) The Contractor shall furnish to the contracting agency all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. The Contractor shall also file Standard Form 100 (EEO-1), or any successor form, as prescribed in 41 CFR part 60-1. Unless the Contractor has filed within the 12 months preceding the date of contract award, the Contractor shall, within 30 days after contract award, apply to either the regional Office of Federal Contract Compliance Programs (OFCCP) or the local office of the Equal Employment Opportunity Commission for the necessary forms.

(8) The Contractor shall permit access to its premises, during normal business hours, by the contracting agency or the OFCCP for the purpose of conducting on-site compliance evaluations and complaint investigations. The Contractor shall permit the Government to inspect and copy any books, accounts, records (including computerized records), and other material that may be relevant to the matter under investigation and pertinent to compliance with Executive Order 11246, as amended, and rules and regulations that implement the Executive Order.

(9) If the OFCCP determines that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts, under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended; in the rules, regulations, and orders of the Secretary of Labor; or as otherwise provided by law.

(10) The Contractor shall include the terms and conditions of subparagraphs (b)(1) through (11) of this clause in every subcontract or purchase order that is not exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor.

(11) The Contractor shall take such action with respect to any subcontract or purchase order as the contracting officer may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of any direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

(c) Notwithstanding any other clause in this contract, disputes relative to this clause will be governed by the procedures in 41 CFR 60-1.1.

(End of clause)

52.222-35 EQUAL OPPORTUNITY FOR SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS (DEC 2001)

(a) Definitions. As used in this clause--

All employment openings means all positions except executive and top management, those positions that will be filled from within the Contractor's organization, and positions lasting 3 days or less. This term includes full-time employment, temporary employment of more than 3 days duration, and part-time employment.

Executive and top management means any employee--

(1) Whose primary duty consists of the management of the enterprise in which the individual is employed or of a customarily recognized department or subdivision thereof;

(2) Who customarily and regularly directs the work of two or more other employees;

(3) Who has the authority to hire or fire other employees or whose suggestions and recommendations as to the hiring or firing and as to the advancement and promotion or any other change of status of other employees will be given particular weight;

(4) Who customarily and regularly exercises discretionary powers; and

(5) Who does not devote more than 20 percent or, in the case of an employee of a retail or service establishment, who does not devote more than 40 percent of total hours of work in the work week to activities that are not directly and closely related to the performance of the work described in paragraphs (1) through (4) of this definition. This paragraph (5) does not apply in the case of an employee who is in sole charge of an establishment or a physically separated branch establishment, or who owns at least a 20 percent interest in the enterprise in which the individual is employed.

Other eligible veteran means any other veteran who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized.

Positions that will be filled from within the Contractor's organization means employment openings for which the Contractor will give no consideration to persons outside the Contractor's organization (including any affiliates, subsidiaries, and parent companies) and includes any openings the Contractor proposes to fill from regularly established “recall” lists. The exception does not apply to a particular opening once an emp loyer decides to consider applicants outside of its organization.

Qualified special disabled veteran means a special disabled veteran who satisfies the requisite skill, experience, education, and other job-related requirements of the employment position such veteran holds or desires, and who, with or without reasonable accommodation, can perform the essential functions of such position.

Special disabled veteran means--

(1) A veteran who is entitled to compensation (or who but for the receipt of military retired pay would be entitled to compensation) under laws administered by the Department of Veterans Affairs for a disability--

(i) Rated at 30 percent or more; or

(ii) Rated at 10 or 20 percent in the case of a veteran who has been determined under 38 U.S.C. 3106 to have a serious employment handicap (i.e., a significant impairment of the veteran's ability to prepare for, obtain, or retain employment consistent with the veteran's abilities, aptitudes, and interests); or

(2) A person who was discharged or released from active duty because of a service-connected disability.

Veteran of the Vietnam era means a person who--

(1) Served on active duty for a period of more than 180 days and was discharged or released from active duty with other than a dishonorable discharge, if any part of such active duty occurred--

(i) In the Republic of Vietnam between February 28, 1961, and May 7, 1975; or

(ii) Between August 5, 1964, and May 7, 1975, in all other cases; or

(2) Was discharged or released from active duty for a service-connected disability if any part of the active duty was performed--

(i) In the Republic of Vietnam between February 28, 1961, and May 7, 1975; or

(ii) Between August 5, 1964, and May 7, 1975, in all other cases.
(b) General. (1) The Contractor shall not discriminate against the individual because the individual is a special disabled veteran, a veteran of the Vietnam era, or other eligible veteran, regarding any position for which the employee or applicant for employment is qualified. The Contractor shall take affirmative action to employ, advance in employment, and otherwise treat qualified special disabled veterans, veterans of the Vietnam era, and other eligible veterans without discrimination based upon their disability or veterans' status in all employment practices such as--

(i) Recruitment, advertising, and job application procedures;

(ii) Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff and rehiring;

(iii) Rate of pay or any other form of compensation and changes in compensation;

(iv) Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists;

(v) Leaves of absence, sick leave, or any other leave;

(vi) Fringe benefits available by virtue of employment, whether or not administered by the Contractor;

(vii) Selection and financial support for training, including apprenticeship, and on-the-job training under 38 U.S.C. 3687, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training;

(viii) Activities sponsored by the Contractor including social or recreational programs; and

(ix) Any other term, condition, or privilege of employment.

(2) The Contractor shall comply with the rules, regulations, and relevant orders of the Secretary of Labor issued under the Vietnam Era Veterans' Readjustment Assistance Act of 1972 (the Act), as amended (38 U.S.C. 4211 and 4212).

(c) Listing openings. (1) The Contractor shall immediately list all employment openings that exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by this contract, and including those occurring at an establishment of the Contractor other than the one where the contract is being performed, but excluding those of independently operated corporate affiliates, at an appropriate local public employment service office of the State wherein the opening occurs. Listing employment openings with the U.S. Department of Labor's America's Job Bank shall satisfy the requirement to list jobs with the local employment service office.

(2) The Contractor shall make the listing of employment openings with the local employment service office at least concurrently with using any other recruitment source or effort and shall involve the normal obligations of placing a bona fide job order, including accepting referrals of veterans and nonveterans. This listing of employment openings does not require hiring any particular job applicant or hiring from any particular group of job applicants and is not intended to relieve the Contractor from any requirements of Executive orders or regulations concerning nondiscrimination in employment.

(3) Whenever the Contractor becomes contractually bound to the listing terms of this clause, it shall advise the State public employment agency in each State where it has establishments of the name and location of each hiring location in the State. As long as the Contractor is contractually bound to these terms and has so advised the State agency, it need not advise the State agency of subsequent contracts. The Contractor may advise the State agency when it is no longer bound by this contract clause.

(d) Applicability. This clause does not apply to the listing of employment openings that occur and are filled outside the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, American Samoa, Guam, the Virgin Islands of the United States, and Wake Island.

(e) Postings. (1) The Contractor shall post employment notices in conspicuous places that are available to employees and applicants for employment.

(2) The employment notices shall--

(i) State the rights of applicants and employees as well as the Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified employees and applicants who are special disabled veterans, veterans of the Vietnam era, and other eligible veterans; and

(ii) Be in a form prescribed by the Deputy Assistant Secretary for Federal Contract Compliance Programs, Department of Labor (Deputy Assistant Secretary of Labor), and provided by or through the Contracting Officer.

(3) The Contractor shall ensure that applicants or employees who are special disabled veterans are informed of the contents of the notice (e.g., the Contractor may have the notice read to a visually disabled veteran, or may lower the posted notice so that it can be read by a person in a wheelchair).

(4) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement, or other contract understanding, that the Contractor is bound by the terms of the Act and is committed to take affirmative action to employ, and advance in employment, qualified special disabled veterans, veterans of the Vietnam era, and other eligible veterans.

(f) Noncompliance. If the Contractor does not comply with the requirements of this clause, the Government may take appropriate actions under the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

(g) Subcontracts. The Contractor shall insert the terms of this clause in all subcontracts or purchase orders of $25,000 or more unless exempted by rules, regulations, or orders of the Secretary of Labor. The Contractor shall act as specified by the Deputy Assistant Secretary of Labor to enforce the terms, including action for noncompliance.

(End of clause)

52.222-36 AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES (JUN 1998)

(a) General. (1) Regarding any position for which the employee or applicant for employment is qualified, the Contractor shall not discriminate against any employee or applicant because of physical or mental disability. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified individuals with disabilities without discrimination based upon their physical or mental disability in all employment practices such as--

(i) Recruitment, advertising, and job application procedures;

(ii) Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff, and rehiring;

(iii) Rates of pay or any other form of compensation and changes in compensation;

(iv) Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists;

(v) Leaves of absence, sick leave, or any other leave;

(vi) Fringe benefits available by virtue of employment, whether or not administered by the Contractor;

(vii) Selection and financial support for training, including apprenticeships, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training;

(viii) Activities sponsored by the Contractor, including social or recreational programs; and

(ix) Any other term, condition, or privilege of employment.

(2) The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor (Secretary) issued under the Rehabilitation Act of 1973 (29 U.S.C. 793) (the Act), as amended.

(b) Postings. (1) The Contractor agrees to post employment notices stating--

(i) The Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified individuals with disabilities; and

(ii) The rights of applicants and employees.

(2) These notices shall be posted in conspicuous places that are available to employees and applicants for employment. The Contractor shall ensure that applicants and employees with disabilities are informed of the contents of the notice (e.g., the Contractor may have the notice read to a visually disabled individual, or may lower the posted notice so that it might be read by a person in a wheelchair). The notices shall be in a form prescribed by the Deputy Assistant Secretary for Federal Contract Compliance of the U.S. Department of Labor (Deputy Assistant Secretary) and shall be provided by or through the Contracting Officer.

(3) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of Section 503 of the Act and is committed to take affirmative action to employ, and advance in employment, qualified individuals with physical or mental disabilities.

(c) Noncompliance. If the Contractor does not comply with the requirements of this clause, appropriate actions may be taken under the rules, regulations, and relevant orders of the Secretary issued pursuant to the Act.

(d) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order in excess of $10,000 unless exempted by rules, regulations, or orders of the Secretary. The Contractor shall act as specified by the Deputy Assistant Secretary to enforce the terms, including action for noncompliance.

(End of clause)

52.222-37 EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS (DEC 2001)

(a) Unless the Contractor is a State or local government agency, the Contractor shall report at least annually, as required by the Secretary of Labor, on--

(1) The number of disabled veterans and the number of veterans of the Vietnam era in the workforce of the contractor by job category and hiring location; and

(2) The total number of new employees hired during the period covered by the report, and of that total, the number of disabled veterans, and the number of veterans of the Vietnam era.

(b) The above items shall be reported by completing the form entitled "Federal Contractor Veterans' Employment Report VETS-100."

(c) Reports shall be submitted no later than September 30 of each year beginning September 30, 1988.

(d) The employment activity report required by paragraph (a)(2) of this clause shall reflect total hires during the most recent 12-month period as of the ending date selected for the employment profile report required by paragraph (a)(1) of this clause. Contractors may select an ending date: (1) As of the end of any pay period during the period January through March 1st of the year the report is due, or (2) as of December 31, if the contractor has previous written approval from the Equal Employment Opportunity Commission to do so for purposes of submitting the Employer Information Report EEO-1 (Standard Form 100).

(e) The count of veterans reported according to paragraph (a) of this clause shall be based on voluntary disclosure. Each Contractor subject to the reporting requirements at 38 U.S.C. 4212 shall invite all disabled veterans and veterans of the Vietnam era who wish to benefit under the affirmative action program at 38 U.S.C. 4212 to identify themselves to the Contractor. The invitation shall state that the information is voluntarily provided; that the information will be kept confidential; that disclosure or refusal to provide the information will not subject the applicant or employee to any adverse treatment; and that the information will be used only in accordance with the regulations promulgated under 38 U.S.C. 4212.

(f) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order of $10,000 or more unless exempted by rules, regulations, or orders of the Secretary.

(End of clause)

52.222-39 NOTIFICATION OF EMPLOYEE RIGHTS CONCERNING PAYMENT OF UNION DUES OR FEES (DEC 2004)

(a) Definition. As used in this clause--

United States means the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.

(b) Except as provided in paragraph (e) of this clause, during the term of this contract, the Contractor shall post a notice, in the form of a poster, informing employees of their rights concerning union membership and payment of union dues and fees, in conspicuous places in and about all its plants and offices, including all places where notices to employees are customarily posted. The notice shall include the following information (except that the information pertaining to National Labor Relations Board shall not be included in notices posted in the plants or offices of carriers subject to the Railway Labor Act, as amended (45 U.S.C. 151-188)).

Notice to Employees

Under Federal law, employees cannot be required to join a union or maintain membership in a union in order to retain their jobs. Under certain conditions, the law permits a union and an employer to enter into a union-security agreement requiring employees to pay uniform periodic dues and initiation fees. However, employees who are not union members can object to the use of their payments for certain purposes and can only be required to pay their share of union costs relating to collective bargaining, contract administration, and grievance adjustment.

If you do not want to pay that portion of dues or fees used to support activities not related to collective bargaining, contract administration, or grievance adjustment, you are entitled to an appropriate reduction in your payment. If you believe that you have been required to pay dues or fees used in part to support activities not related to collective bargaining, contract administration, or grievance adjustment, you may be entitled to a refund and to an appropriate reduction in future payments.

For further information concerning your rights, you may wish to contact the National Labor Relations Board (NLRB) either at one of its Regional offices or at the following address or toll free number:

National Labor Relations Board
Division of Information
1099 14th Street, N.W.
Washington, DC 20570
1-866-667-6572
1-866-316-6572 (TTY)

To locate the nearest NLRB office, see NLRB's website at http://www.nlrb.gov.

(c) The Contractor shall comply with all provisions of Executive Order 13201 of February 17, 2001, and related implementing regulations at 29 CFR part 470, and orders of the Secretary of Labor.

(d) In the event that the Contractor does not comply with any of the requirements set forth in paragraphs (b), (c), or (g), the Secretary may direct that this contract be cancelled, terminated, or suspended in whole or in part, and declare the Contractor ineligible for further Government contracts in accordance with procedures at 29 CFR part 470, Subpart B--Compliance Evaluations, Complaint Investigations and Enforcement Procedures. Such other sanctions or remedies may be imposed as are provided by 29 CFR part 470, which implements Executive Order 13201, or as are otherwise provided by law.

(e) The requirement to post the employee notice in paragraph (b) does not apply to--

(1) Contractors and subcontractors that employ fewer than 15 persons;

(2) Contractor establishments or construction work sites where no union has been formally recognized by the Contractor or certified as the exclusive bargaining representative of the Contractor's employees;

(3) Contractor establishments or construction work sites located in a jurisdiction named in the definition of the United States in which the law of that jurisdiction forbids enforcement of union-security agreements;

(4) Contractor facilities where upon the written request of the Contractor, the Department of Labor Deputy Assistant Secretary for Labor-Management Programs has waived the posting requirements with respect to any of the Contractor's facilities if the Deputy Assistant Secretary finds that the Contractor has demonstrated that--

(i) The facility is in all respects separate and distinct from activities of the Contractor related to the performance of a contract; and

(ii) Such a waiver will not interfere with or impede the effectuation of the Executive order; or

(5) Work outside the United States that does not involve the recruitment or employment of workers within the United States.

(f) The Department of Labor publishes the official employee notice in two variations; one for contractors covered by the Railway Labor Act and a second for all other contractors. The Contractor shall--

(1) Obtain the required employee notice poster from the Division of Interpretations and Standards, Office of Labor-Management Standards, U.S. Department of Labor, 200 Constitution Avenue, NW, Room N-5605, Washington, DC 20210, or from any field office of the Department's Office of Labor-Management Standards or Office of Federal Contract Compliance Programs;

(2) Download a copy of the poster from the Office of Labor-Management Standards website at http://www.olms.dol.gov; or

(3) Reproduce and use exact duplicate copies of the Department of Labor's official poster.

(g) The Contractor shall include the substance of this clause in every subcontract or purchase order that exceeds the simplified acquisition threshold, entered into in connection with this contract, unless exempted by the Department of Labor Deputy Assistant Secretary for Labor-Management Programs on account of special circumstances in the national interest under authority of 29 CFR 470.3(c). For indefinite quantity subcontracts, the Contractor shall include the substance of this clause if the value of orders in any calendar year of the subcontract is expected to exceed the simplified acquisition threshold. Pursuant to 29 CFR part 470, Subpart B--Compliance Evaluations, Complaint Investigations and Enforcement Procedures, the Secretary of Labor may direct the Contractor to take such action in the enforcement of these regulations, including the imposition of sanctions for noncompliance with respect to any such subcontract or purchase order. If the Contractor becomes involved in litigation with a subcontractor or vendor, or is threatened with such involvement, as a result of such direction, the Contractor may request the United States, through the Secretary of Labor, to enter into such litigation to protect the interests of the United States.

(End of clause)

52.222-41 SERVICE CONTRACT ACT OF 1965, AS AMENDED (JUL 2005)

(a) Definitions. "Act," as used in this clause, means the Service Contract Act of 1965, as amended (41 U.S.C. 351, et seq.).

"Contractor," as used in this clause or in any subcontract, shall be deemed to refer to the subcontractor, except in the term "Government Prime Contractor."

"Service employee," as used in this clause, means any person engaged in the performance of this contract other than

any person employed in a bona fide executive, administrative, or professional capacity, as these terms are defined in Part 541 of Title 29, Code of Federal Regulations, as revised. It includes all such persons regardless of any contractual relationship that may be alleged to exist between a Contractor or subcontractor and such persons.

(b) Applicability. This contract is subject to the following provisions and to all other applicable provisions of the Act and regulations of the Secretary of Labor (29 CFR Part 4). This clause does not apply to contracts or subcontracts administratively exempted by the Secretary of Labor or exempted by 41 U.S.C. 356, as interpreted in Subpart C of 29 CFR Part 4.

(c) Compensation. (1) Each service employee employed in the performance of this contract by the Contractor or any subcontractor shall be paid not less than the minimum monetary wages and shall be furnished fringe benefits in accordance with the wages and fringe benefits determined by the Secretary of Labor, or authorized representative, as specified in any wage determination attached to this contract.

(2)(i) If a wage determination is attached to this con- tract, the Contractor shall classify any class of service employee which is not listed therein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination) so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed class of employees shall be paid the monetary wages and furnished the fringe benefits as are determined pursuant to the procedures in this paragraph (c).

(ii) This conforming procedure shall be initiated by the Contractor prior to the performance of contract work by the unlisted class of employee. The Contractor shall submit Standard Form (SF) 1444, Request For Authorization of Additional Classification and Rate, to the Contracting Officer no later than 30 days after the unlisted class of employee performs any contract work. The Contracting Officer shall review the proposed classification and rate and promptly submit the completed SF 1444 (which must include information regarding the agreement or disagreement of the employees' authorized representatives or the employees themselves together with the agency recommendation), and all pertinent informa-tion to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor. The Wage and Hour Division will approve, modify, or disapprove the action or render a final determination in the event of disagreement within 30 days of receipt or will notify the Contracting Officer within 30 days of receipt that additional time is necessary.

(iii) The final determination of the conformance action by the Wage and Hour Division shall be transmitted to the Contracting Officer who shall promptly notify the Contractor of the action taken. Each affected employee shall be furnished by the Contractor with a written copy of such determination or it shall be posted as a part of the wage determination.

(iv)(A) The process of establishing wage and fringe benefit rates that bear a reasonable relationship to those listed in a wage determination cannot be reduced to any single formula. The approach used may vary from wage determination to wage determination depending on the circumstances. Standard wage and salary administration practices which rank various job classifications by pay grade pursuant to point schemes or other job factors may, for example, be relied upon. Guidance may also be obtained from the way different jobs are rated under Federal pay systems (Federal Wage Board Pay System and the General Schedule) or from other wage determina- tions issued in the same locality. Basic to the establishment of any conformable wage rate(s) is the concept that a pay relationship should be maintained between job classifications based on the skill required and the duties performed.

(B) In the case of a contract modification, an exercise of an option, or extension of an existing contract, or in any other case where a Contractor succeeds a contract under which the classification in question was previously conformed pursuant to paragraph (c) of this clause, a new conformed wage rate and fringe benefits may be assigned to the conformed classification by indexing (i.e., adjusting) the previous conformed rate and fringe benefits by an amount equal to the average (mean) percentage increase (or decrease, where appropriate) between the wages and fringe benefits specified for all classifications to be used on the contract which are listed in the current wage determination, and those specified for the corresponding classifications in the previously applicable wage determination. Where conforming actions are accomplished in accordance with this paragraph prior to the performance of contract work by

the unlisted class of employees, the Contractor shall advise the Contracting Officer of the action taken but the other procedures in subdivision (c)(2)(ii) of this clause need not be followed.

(C) No employee engaged in performing work on this contract shall in any event be paid less than the currently applicable minimum wage specified under section 6(a)(1) of the Fair Labor Standards Act of 1938, as amended.

(v) The wage rate and fringe benefits finally determined under this subparagraph (c)(2) of this clause shall be paid to all employees performing in the classification from the first day on which contract work is performed by them in the classification. Failure to pay the unlisted employees the compensation agreed upon by the interested parties and/or finally determined by the Wage and Hour Division retroactive to the date such class of employees commenced contract work shall be a violation of the Act and this contract.

(vi) Upon discovery of failure to comply with subparagraph (c)(2) of this clause, the Wage and Hour Division shall make a final determination of conformed classification, wage rate, and/or fringe benefits which shall be retroactive to the date such class or classes of employees commenced contract work.

(3) Adjustment of Compensation. If the term of this contract is more than 1 year, the minimum monetary wages and fringe benefits required to be paid or fur- nished thereunder to service employees under this contract shall be subject to adjustment after 1 year and not less often than once every 2 years, under wage determinations issued by the Wage and Hour Division.

(d) Obligation to Furnish Fringe Benefits. The Contractor or subcontractor may discharge the obligation to furnish fringe benefits specified in the attachment or determined under subparagraph (c)(2) of this clause by furnishing equivalent combinations of bona fide fringe benefits, or by making equivalent or differential cash payments, only in accordance with Subpart D of 29 CFR Part 4.

(e) Minimum Wage. In the absence of a minimum wage attachment for this contract, neither the Contractor nor any subcontractor under this contract shall pay any person performing work under this contract (regardless of whether the person is a service employee) less than the minimum wage specified by section 6(a)(1) of the Fair Labor Standards Act of 1938. Nothing in this clause shall relieve the Contractor or any subcontractor of any other obligation under law or contract for payment of a higher wage to any employee.

(f) Successor Contracts. If this contract succeeds a contract subject to the Act under which substantially the same services were furnished in the same locality and service employees were paid wages and fringe benefits provided for in a collective bargaining agreement, in the absence of the minimum wage attachment for this contract setting forth such collectively bargained wage rates and fringe benefits, neither the Contractor nor any subcontractor under this contract shall pay any service employee performing any of the contract work (regardless of whether or not such employee was employed under the predecessor contract), less than the wages and fringe benefits provided for in such collective bargaining agreement, to which such employee would have been entitled if employed under the predecessor contract, including accrued wages and fringe benefits and any prospective increases in wages and fringe benefits provided for under such agreement. No Contractor or subcontractor under this contract may be relieved of the foregoing obligation unless the limitations of 29 CFR 4.1b(b) apply or unless the Secretary of Labor or the Secretary's authorized representative finds, after a hearing as provided in 29 CFR 4.10 that the wages and/or fringe benefits provided for in such agreement are substantially at variance with those which prevail for services of a character similar in the locality, or determines, as provided in 29 CFR 4.11, that the collective bargaining agreement applicable to service employees employed under the predecessor contract was not entered into as a result of arm's length negotiations. Where it is found in accordance with the review procedures provided in 29 CFR 4.10 and/or 4.11 and Parts 6 and 8 that some or all of the wages and/or fringe benefits contained in a predecessor Contractor's collective bargaining agreement are substantially at variance with those which prevail for services of a character similar in the locality, and/or that the collective bargaining agreement applicable to service employees employed under the predecessor contract was not entered into as a result of arm's length negotiations, the Department will issue a new or revised wage determination setting forth the applicable wage rates and fringe benefits. Such determination shall be made part of the contract or subcontract, in accordance with the decision of the Administrator, the Administrative Law Judge, or the Board of Service Contract Appeals, as the case may be, irrespective of whether

such issuance occurs prior to or after the award of a contract or subcontract (53 Comp. Gen. 401 (1973)). In the case of a wage determination issued solely as a result of a finding of substantial variance, such determination shall be effective as of the date of the final administrative decision.

(g) Notification to Employees. The Contractor and any subcontractor under this contract shall notify each service employee commencing work on this contract of the minimum monetary wage and any fringe benefits required to be paid pursuant to this contract, or shall post the wage determination attached to this contract. The poster provided by the Department of Labor (Publication WH 1313) shall be posted in a prominent and accessible place at the worksite. Failure to comply with this requirement is a violation of section 2(a)(4) of the Act and of this contract.

(h) Safe and Sanitary Working Conditions. The Contractor or subcontractor shall not permit any part of the services called for by this contract to be performed in buildings or surroundings or under working conditions provided by or under the control or supervision of the Contractor or subcontractor which are unsanitary, hazardous, or dangerous to the health or safety of the service employees. The Contractor or subcontractor shall comply with the safety and health standards applied under 29 CFR Part 1925.

(i) Records. (1) The Contractor and each subcontractor performing work subject to the Act shall make and maintain for 3 years from the completion of the work, and make them available for inspection and transcription by authorized representatives of the Wage and Hour Division, Employment Standards Administration, a record of the following:

(i) For each employee subject to the Act--

(A) Name and address and social security number;

(B) Correct work classification or classifications, rate or rates of monetary wages paid and fringe benefits provided, rate or rates of payments in lieu of fringe benefits, and total daily and weekly compensation;

(C) Daily and weekly hours worked by each employee; and

(D) Any deductions, rebates, or refunds from the total daily or weekly compensation of each employee.

(ii) For those classes of service employees not included in any wage determination attached to this contract, wage rates or fringe benefits determined by the interested parties or by the Administrator or authorized representative under the terms of paragraph (c) of this clause. A copy of the report required by subdivision (c)(2)(ii) of this clause will fulfill this requirement.

(iii) Any list of the predecessor Contractor's employees which had been furnished to the Contractor as prescribed by paragraph (n) of this clause.

(2) The Contractor shall also make available a copy of this contract for inspection or transcription by authorized representatives of the Wage and Hour Division.

(3) Failure to make and maintain or to make available these records for inspection and transcription shall be a violation of the regulations and this contract, and in the case of failure to produce these records, the Contracting Officer, upon direction of the Department of Labor and notification to the Contractor, shall take action to cause suspension of any further payment or advance of funds until the violation ceases.

(4) The Contractor shall permit authorized representatives of the Wage and Hour Division to conduct interviews with employees at the worksite during normal working hours.

(j) Pay Periods. The Contractor shall unconditionally pay to each employee subject to the Act all wages due free and clear and without subsequent deduction (except as otherwise provided by law or regulations, 29 CFR Part 4), rebate, or kickback on any account. These payments shall be made no later than one pay period following the end of the regular pay period in which the wages were earned or accrued. A pay period under this Act may not be of any

duration longer than semi-monthly.

(k) Withholding of Payments and Termination of Contract. The Contracting Officer shall withhold or cause to be withheld from the Government Prime Contractor under this or any other Government contract with the Prime Contractor such sums as an appropriate official of the Department of Labor requests or such sums as the Contracting Officer decides may be necessary to pay underpaid employees employed by the Contractor or subcontractor. In the event of failure to pay any employees subject to the Act all or part of the wages or fringe benefits due under the Act, the Contracting Officer may, after authorization or by direction of the Department of Labor and written notification to the Contractor, take action to cause suspension of any further payment or advance of funds until such violations have ceased. Additionally, any failure to comply with the requirements of this clause may be grounds for termination of the right to proceed with the contract work. In such event, the Government may enter into other contracts or arrangements for completion of the work, charging the Contractor in default with any additional cost.

(l) Subcontracts. The Contractor agrees to insert this clause in all subcontracts subject to the Act.

(m) Collective Bargaining Agreements Applicable to Service Employees. If wages to be paid or fringe benefits to be furnished any service employees employed by the Government Prime Contractor or any subcontractor under the contract are provided for in a collective bargaining agreement which is or will be effective during any period in which the contract is being performed, the Government Prime Contractor shall report such fact to the Contracting Officer, together with full information as to the application and accrual of such wages and fringe benefits, including any prospective increases, to service employees engaged in work on the contract, and a copy of the collective bargaining agreement. Such report shall be made upon commencing performance of the contract, in the case of collective bargaining agreements effective at such time, and in the case of such agreements or provisions or amendments thereof effective at a later time during the period of contract performance such agreements shall be reported promptly after negotiation thereof.

(n) Seniority List. Not less than 10 days prior to completion of any contract being performed at a Federal facility where service employees may be retained in the performance of the succeeding contract and subject to a wage determination which contains vacation or other benefit provisions based upon length of service with a Contractor (predecessor) or successor (29 CFR 4.173), the incumbent Prime Contractor shall furnish the Contracting Officer a certified list of the names of all service employees on the Contractor's or subcontractor's payroll during the last month of contract performance. Such list shall also contain anniversary dates of employment on the contract either with the current or predecessor Contractors of each such service employee. The Contracting Officer shall turn over such list to the successor Contractor at the commencement of the succeeding contract.

(o) Rulings and Interpretations. Rulings and interpretations of the Act are contained in Regulations, 29 CFR Part 4.

(p) Contractor's Certification. (1) By entering into this contract, the Contractor (and officials thereof) certifies that neither it (nor he or she) nor any person or firm who has a substantial interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of the sanctions imposed under section 5 of the Act.

(2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract under section 5 of the Act.

(3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(q) Variations, Tolerances, and Exemptions Involving Employment. Notwithstanding any of the provisions in paragraphs (b) through (o) of this clause, the following employees may be employed in accordance with the following variations, tolerances, and exemptions, which the Secretary of Labor, pursuant to section 4(b) of the Act prior to its amendment by Pub. L. 92-473, found to be necessary and proper in the public interest or to avoid serious impairment of the conduct of Government business:

(1) Apprentices, student-learners, and workers whose earning capacity is impaired by age, physical or mental deficiency, or injury may be employed at wages lower than the minimum wages otherwise required by section 2(a)(1)

or 2(b)(1) of the Act without diminishing any fringe benefits or cash payments in lieu thereof required under section 2(a)(2) of the Act, in accordance with the conditions and procedures prescribed for the employment of apprentices, student-learners, handicapped persons, and handicapped clients of sheltered workshops under section 14 of the Fair Labor Standards Act of 1938, in the regulations issued by the Administrator (29 CFR Parts 520, 521, 524, and 525).

(2) The Administrator will issue certificates under the Act for the employment of apprentices, student-learners, handicapped persons, or handicapped clients of sheltered workshops not subject to the Fair Labor Standards Act of 1938, or subject to different minimum rates of pay under the two acts, authorizing appropriate rates of minimum wages (but without changing requirements concerning fringe benefits or supplementary cash payments in lieu thereof), applying procedures prescribed by the applicable regulations issued under the Fair Labor Standards Act of 1938 (29 CFR Parts 520, 521, 524, and 525).

(3) The Administrator will also withdraw, annul, or cancel such certificates in accordance with the regulations in 29 CFR Parts 525 and 528.

(r) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed and individually registered in a bona fide apprenticeship program registered with a State Apprenticeship Agency which is recognized by the U.S. Department of Labor, or if no such recognized agency exists in a State, under a program registered with the Office of Apprenticeship Training, Employer, and Labor Services (OATELS), U.S. Department of Labor. Any employee who is not registered as an apprentice in an approved program shall be paid the wage rate and fringe benefits contained in the applicable wage determination for the journeyman classification of work actually performed. The wage rates paid apprentices shall not be less than the wage rate for their level of progress set forth in the registered program, expressed as the appropriate percentage of the journeyman's rate contained in the applicable wage determination. The allowable ratio of apprentices to journeymen employed on the contract work in any craft classification shall not be greater than the ratio permitted to the Contractor as to his entire work force under the registered program.

(s) Tips. An employee engaged in an occupation in which the employee customarily and regularly receives more than $30 a month in tips may have the amount of these tips credited by the employer against the minimum wage required by section 2(a)(1) or section 2(b)(1) of the Act, in accordance with section 3(m) of the Fair Labor Standards Act and Regulations, 29 CFR Part 531. However, the amount of credit shall not exceed $1.34 per hour beginning January 1, 1981. To use this provision--

(1) The employer must inform tipped employees about this tip credit allowance before the credit is utilized;

(2) The employees must be allowed to retain all tips (individually or through a pooling arrangement and regardless of whether the employer elects to take a credit for tips received);

(3) The employer must be able to show by records that the employee receives at least the applicable Service Contract Act minimum wage through the combination of direct wages and tip credit; and

(4) The use of such tip credit must have been permitted under any predecessor collective bargaining agreement applicable by virtue of section 4(c) of the Act.

Disputes Concerning Labor Standards. The U.S. Department of Labor has set forth in 29 CFR Parts 4, 6, and 8 procedures for resolving disputes concerning labor standards requirements. Such disputes shall be resolved in accordance with those procedures and not the Disputes clause of this contract. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(End of clause)

52.222-43 FAIR LABOR STANDARDS ACT AND SERVICE CONTRACT ACT--PRICE ADJUSTMENT (MULTIPLE YEAR AND OPTION CONTRACTS) (MAY 1989)

(a) This clause applies to both contracts subject to area prevailing wage determinations and contracts subject to collective bargaining agreements.

(b) The Contractor warrants that the prices in this contract do not include any allowance for any contingency to cover increased costs for which adjustment is provided under this clause.

(c) The wage determination, issued under the Service Contract Act of 1965, as amended, (41 U.S.C. 351, et seq.), by the Administrator, Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, current on the anniversary date of a multiple year contract or the beginning of each renewal option period, shall apply to this contract. If no such determination has been made applicable to this contract, then the Federal minimum wage as established by section 6(a)(1) of the Fair Labor Standards Act of 1938, as amended, (29 U.S.C. 206) current on the anniversary date of a multiple year contract or the beginning of each renewal option period, shall apply to this contract.

(d) The contract price or contract unit price labor rates will be adjusted to reflect the Contractor's actual increase or decrease in applicable wages and fringe benefits to the extent that the increase is made to comply with or the decrease is voluntarily made by the Contractor as a result of:

(1) The Department of Labor wage determination applicable on the anniversary date of the multiple year contract, or at the beginning of the renewal option period. For example, the prior year wage determination required a minimum wage rate of $4.00 per hour. The Contractor chose to pay $4.10. The new wage determination increases the minimum rate to $4.50 per hour. Even if the Contractor voluntarily increases the rate to $4.75 per hour, the allowable price adjustment is $.40 per hour;

(2) An increased or decreased wage determination otherwise applied to the contract by operation of law; or

(3) An amendment to the Fair Labor Standards Act of 1938 that is enacted after award of this contract, affects the minimum wage, and becomes applicable to this contract under law.

(e) Any adjustment will be limited to increases or decreases in wages and fringe benefits as described in paragraph (c) of this clause, and the accompanying increases or decreases in social security and unemployment taxes and workers' compensation insurance, but shall not otherwise include any amount for general and administrative costs, overhead, or profit.

(f) The Contractor shall notify the Contracting Officer of any increase claimed under this clause within 30 days after receiving a new wage determination unless this notification period is extended in writing by the Contracting Officer. The Contractor shall promptly notify the Contracting Officer of any decrease under this clause, but nothing in the clause shall preclude the Government from asserting a claim within the period permitted by law. The notice shall contain a statement of the amount claimed and any relevant supporting data, including payroll records, that the Contracting Officer may reasonably require. Upon agreement of the parties, the contract price or contract unit price labor rates shall be modified in writing. The Contractor shall continue performance pending agreement on or determination of any such adjustment and its effective date.

(g) The Contracting Officer or an authorized representative shall have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor until the expiration of 3 years after final payment under the contract.
(End of clause)

52.223-6 DRUG-FREE WORKPLACE (MAY 2001)

(a) Definitions. As used in this clause --

"Controlled substance" means a controlled substance in schedules I through V of section 202 of the Controlled Substances Act (21 U.S.C. 812) and as further defined in regulation at 21 CFR 1308.11 - 1308.15.

"Conviction" means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to deter- mine violations of the Federal or State criminal drug statutes.

"Criminal drug statute" means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, possession, or use of any controlled substance.

"Drug-free workplace" means the site(s) for the performance of work done by the Contractor in connection with a specific contract at which employees of the Contractor are prohibited from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance.

"Employee" means an employee of a Contractor directly engaged in the performance of work under a Government contract. "Directly engaged" is defined to include all direct cost employees and any other Contractor employee who has other than a minimal impact or involvement in contract performance.

"Individual" means an offeror/contractor that has no more than one employee including the offeror/contractor.

(b) The Contractor, if other than an individual, shall-- within 30 days after award (unless a longer period is agreed to in writing for contracts of 30 days or more performance duration), or as soon as possible for contracts of less than 30 days performance duration--

(1) Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;

(2) Establish an ongoing drug-free awareness program to inform such employees about--

(i) The dangers of drug abuse in the workplace;

(ii) The Contractor's policy of maintaining a drug-free workplace;

(iii) Any available drug counseling, rehabilitation, and employee assistance programs; and

(iv) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(3) Provide all employees engaged in performance of the contract with a copy of the statement required by subparagraph (b)(1) of this clause;

(4) Notify such employees in writing in the statement required by subparagraph (b)(1) of this clause that, as a condition of continued employment on this contract, the employee will--

(i) Abide by the terms of the statement; and

(ii) Notify the employer in writing of the employee's conviction under a criminal drug statute for a violation occurring in the workplace no later than 5 days after such conviction.

(5) Notify the Contracting Officer in writing within 10 days after receiving notice under subdivision (b)(4)(ii) of this clause, from an employee or otherwise receiving actual notice of such conviction. The notice shall include the position title of the employee;

(6) Within 30 days after receiving notice under subdivision (b)(4)(ii) of this clause of a conviction, take one of the following actions with respect to any employee who is convicted of a drug abuse violation occurring in the workplace:

(i) Taking appropriate personnel action against such employee, up to and including termination; or

(ii) Require such employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency; and

(7) Make a good faith effort to maintain a drug-free workplace through implementation of subparagraphs (b)(1) though (b)(6) of this clause.

(c) The Contractor, if an individual, agrees by award of the contract or acceptance of a purchase order, not to engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance while performing this contract.

(d) In addition to other remedies available to the Government, the Contractor's failure to comply with the requirements of paragraph (b) or (c) of this clause may, pursuant to FAR 23.506, render the Contractor subject to suspension of contract payments, termination of the contract for default, and suspension or debarment.

(End of clause)

52.223-14 TOXIC CHEMICAL RELEASE REPORTING (AUG 2003)

(a) Unless otherwise exempt, the Contractor, as owner or operator of a facility used in the performance of this contract, shall file by July 1 for the prior calendar year an annual Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023(a) and (g)), and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106). The Contractor shall file, for each facility subject to the Form R filing and reporting requirements, the annual Form R throughout the life of the contract.

(b) A Contractor-owned or -operated facility used in the performance of this contract is exempt from the requirement to file an annual Form R if--

(1) The facility does not manufacture, process, or otherwise use any toxic chemicals listed in 40 CFR 372.65;

(2) The facility does not have 10 or more full-time employees as specified in section 313(b)(1)(A) of EPCRA, 42 U.S.C. 11023(b)(1)(A);

(3) The facility does not meet the reporting thresholds of toxic chemicals established under of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

(4) The facility does not fall within the following Standard Industrial Classification (SIC) codes or their corresponding North American Industry Classification System sectors:

(i) Major group code 10 (except 1011, 1081, and 1094.

(ii) Major group code 12 (except 1241).

(iii) Major group codes 20 through 39.

(iv) Industry code 4911, 4931, or 4939 (limited to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce).

(v) Industry code 4953 (limited to facilities regulated under the Resource Conservation and Recovery Act, Subtitle C (42 U.S.C. 6921, et seq.)), 5169, 5171, or 7389 (limited to facilities primarily engaged in solvent recovery services on a contract or fee basis); or

(5) The facility is not located in the United States or its outlying areas.

(c) If the Contractor has certified to an exemption in accordance with one or more of the criteria in paragraph (b) of this clause, and after award of the contract circumstances change so that any of its owned or operated facilities used in the performance of this contract is no longer exempt--

(1) The Contractor shall notify the Contracting Officer; and

(2) The Contractor, as owner or operator of a facility used in the performance of this contract that is no longer exempt, shall (i) submit a Toxic Chemical Release Inventory Form (Form R) on or before July 1 for the prior calendar year during which the facility becomes eligible; and (ii) continue to file the annual Form R for the life of the contract for such facility.

(d) The Contracting Officer may terminate this contract or take other action as appropriate, if the Contractor fails to comply accurately and fully with the EPCRA and PPA toxic chemical release filing and reporting requirements.

(e) Except for acquisitions of commercial items, as defined in FAR Part 2, the Contractor shall--

(1) For competitive subcontracts expected to exceed $100,000 (including all options), include a solicitation provision substantially the same as the provision at FAR 52.223-13, Certification of Toxic Chemical Release Reporting; and

(2) Include in any resultant subcontract exceeding $100,000 (including all options), the substance of this clause, except this paragraph (e).

(End of clause)

52.225-13 RESTRICTIONS ON CERTAIN FOREIGN PURCHASES (MAR 2005)

(a) Except as authorized by the Office of Foreign Assets Control (OFAC) in the Department of the Treasury, the Contractor shall not acquire, for use in the performance of this contract, any supplies or services if any proclamation, Executive order, or statute administered by OFAC, or if OFAC's implementing regulations at 31 CFR chapter V, would prohibit such a transaction by a person subject to the jurisdiction of the United States.

(b) Except as authorized by OFAC, most transactions involving Cuba, Iran, Libya, and Sudan are prohibited, as are most imports from North Korea, into the United States or its outlying areas. Lists of entities and individuals subject to economic sanctions are included in OFAC's List of Specially Designated Nationals and Blocked Persons at TerList1.html. More information about these restrictions, as well as updates, is available in the OFAC's regulations at 31 CFR chapter V and/or on OFAC's Web site at http://epls.arnet.gov/News.html.

(c) The Contractor shall insert this clause, including this paragraph (c), in all subcontracts.

(End of clause)

52.227-1 AUTHORIZATION AND CONSENT (JUL 1995)

(a) The Government authorizes and consents to all use and manufacture, in performing this contract or any subcontract at any tier, of any invention described in and covered by a United States patent (1) embodied in the structure or composition of any article the delivery of which is accepted by the Government under this contract or (2) used in machinery, tools, or methods whose use necessarily results from compliance by the Contractor or a subcontractor with (i) specifications or written provisions forming a part of this contract or (ii) specific written instructions given by the Contracting Officer directing the manner of performance. The entire liability to the Government for infringement of a patent of the United States shall be determined solely by the provisions of the indemnity clause, if any, included in this contract or any subcontract hereunder (including any lower-tier subcontract), and the Government assumes liability for all other infringement to the extent of the authorization and consent hereinabove granted.

(b) The Contractor agrees to include, and require inclusion of, this clause, suitably modified to identify the parties, in all subcontracts at any tier for supplies or services (including construction, architect-engineer services, and materials, supplies, models, samples, and design or testing services expected to exceed the simplified acquisition threshold (however, omission of this clause from any subcontract, including those at or below the simplified acquisition threshold, does not affect this authorization and consent.)

(End of clause)

52.227-2 NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (AUG 1996)

(a) The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

(b) In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed under this contract, the Contractor shall furnish to the Government, when requested by the Contracting Officer, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the Contractor has agreed to indemnify the Government.

(c) The Contractor agrees to include, and require inclusion of, this clause in all subcontracts at any tier for supplies or services (including construction and architect-engineer subcontracts and those for material, supplies, models, samples, or design or testing services) expected to exceed the simplified acquisition threshold at (FAR) 2.101.to exceed the dollar amount set forth in 13.000 of the Federal Acquisition Regulation (FAR).

(End of clause)

52.229-3 FEDERAL, STATE, AND LOCAL TAXES (APR 2003)

(a) As used in this clause--

"Contract date" means the date set for bid opening or, if this is a negotiated contract or a modification, the effective date of this contract or modification.

"All applicable Federal, State, and local taxes and duties" means all taxes and duties, in effect on the contract date, that the taxing authority is imposing and collecting on the transactions or property covered by this contract.

"After-imposed Federal tax" means any new or increased Federal excise tax or duty, or tax that was exempted or excluded on the contract date but whose exemption was later revoked or reduced during the contract period, on the transactions or property covered by this contract that the Contractor is required to pay or bear as the result of legislative, judicial, or administrative action taking effect after the contract date. It does not include social security tax or other employment taxes.

"After-relieved Federal tax" means any amount of Federal excise tax or duty, except social security or other employment taxes, that would otherwise have been payable on the transactions or property covered by this contract, but which the Contractor is not required to pay or bear, or for which the Contractor obtains a refund or drawback, as the result of legislative, judicial, or administrative action taking effect after the contract date.

Local taxes includes taxes imposed by a possession or territory of the United States, Puerto Rico, or the Northern Mariana Islands, if the contract is performed wholly or partly in any of those areas.

(b) The contract price includes all applicable Federal, State, and local taxes and duties.

(c) The contract price shall be increased by the amount of any after-imposed Federal tax, provided the Contractor warrants in writing that no amount for such newly imposed Federal excise tax or duty or rate increase was included in the contract price, as a contingency reserve or otherwise.

(d) The contract price shall be decreased by the amount of any after-relieved Federal tax.

(e) The contract price shall be decreased by the amount of any Federal excise tax or duty, except social security or other employment taxes, that the Contractor is required to pay or bear, or does not obtain a refund of, through the Contractor's fault, negligence, or failure to follow instructions of the Contracting Officer.

(f) No adjustment shall be made in the contract price under this clause unless the amount of the adjustment exceeds $250.

(g) The Contractor shall promptly notify the Contracting Officer of all matters relating to any Federal excise tax or duty that reasonably may be expected to result in either an increase or decrease in the contract price and shall take appropriate action as the Contracting Officer directs.

(h) The Government shall, without liability, furnish evidence appropriate to establish exemption from any Federal, State, or local tax when the Contractor requests such evidence and a reasonable basis exists to sustain the exemption.

(End of clause)

52.232-1 PAYMENTS (APR 1984)

The Government shall pay the Contractor, upon the submission of proper invoices or vouchers, the prices stipulated in this contract for supplies delivered and accepted or services rendered and accepted, less any deductions provided in this contract. Unless otherwise specified in this contract, payment shall be made on partial deliveries accepted by the Government if--

(a) The amount due on the deliveries warrants it; or

(b) The Contractor requests it and the amount due on the deliveries is at least $1,000 or 50 percent of the total contract price.

(End of clause)

52.232-8 DISCOUNTS FOR PROMPT PAYMENT (FEB 2002)

(a) Discounts for prompt payment will not be considered in the evaluation of offers. However, any offered discount will form a part of the award, and will be taken if payment is made within the discount period indicated in the offer by the offeror. As an alternative to offering a discount for prompt payment in conjunction with the offer, offerors awarded contracts may include discounts for prompt payment on individual invoices.

(b) In connection with any discount offered for prompt payment, time shall be computed from the date of the invoice. If the Contractor has not placed a date on the invoice, the due date shall be calculated from the date the designated billing office receives a proper invoice, provided the agency annotates such invoice with the date of receipt at the time of receipt. For the purpose of computing the discount earned, payment shall be considered to have been made on the date that appears on the payment check or, for an electronic funds transfer, the specified payment date. When the discount date falls on a Saturday, Sunday, or legal holiday when Federal Government offices are closed and Government business is not expected to be conducted, payment may be made on the following business day.

(End of clause)

52.232-11 EXTRAS (APR 1984)

Except as otherwise provided in this contract, no payment for extras shall be made unless such extras and the price therefore have been authorized in writing by the Contracting Officer.

(End of clause)

52.232-17 INTEREST (JUNE 1996)

(a) Except as otherwise provided in this contract under a Price Reduction for Defective Cost or Pricing Data clause or a Cost Accounting Standards clause, all amounts that become payable by the Contractor to the Government under this contract (net of any applicable tax credit under the Internal Revenue Code (26 U.S.C. 1481)) shall bear simple interest from the date due until paid unless paid within 30 days of becoming due. The interest rate shall be the interest rate established by the Secretary of the Treasury as provided in Section 12 of the Contract Disputes Act of 1978 (Public Law 95-563), which is applicable to the period in which the amount becomes due, as provided in paragraph (b) of this clause, and then at the rate applicable for each six-month period as fixed by the Secretary until the amount is paid. reproduce, prepare derivative works, distribute copies to the public, and (b) Amounts shall be due at the earliest of the following dates:

(1) The date fixed under this contract.

(2) The date of the first written demand for payment consistent with this contract, including any demand resulting from a default termination.

(3) The date the Government transmits to the Contractor a proposed supplemental agreement to confirm completed negotiations establishing the amount of debt.

(4) If this contract provides for revision of prices, the date of written notice to the Contractor stating the amount of

refund payable in connection with a pricing proposal or a negotiated pricing agreement not confirmed by contract modification.

(c) The interest charge made under this clause may be reduced under the procedures prescribed in 32.614-2 of the Federal Acquisition Regulation in effect on the date of this contract.

(End of clause)

52.232-23 ASSIGNMENT OF CLAIMS (JAN 1986) - ALTERNATE I (APR 1984)

(a) The Contractor, under the Assignment of Claims Act, as amended, 31 U.S.C. 3727, 41 U.S.C. 15 (hereafter referred to as "the Act"), may assign its rights to be paid amounts due or to become due as a result of the performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency. The assignee under such an assignment may thereafter further assign or reassign its right under the original assignment to any type of financing institution described in the preceding sentence. Unless otherwise stated in this contract, payments to an assignee of any amounts due or to become due under this contract shall not, to the extent specified in the Act, be subject to reduction or setoff.

(b) Any assignment or reassignment authorized under the Act and this clause shall cover all unpaid amounts payable under this contract, and shall not be made to more than one party, except that an assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in the financing of this contract.

(c) The Contractor shall not furnish or disclose to any assignee under this contract any classified document (including this contract) or information related to work under this contract until the Contracting Officer authorizes such action in writing.

(End of clause)

52.232-25 PROMPT PAYMENT (OCT 2003)

Notwithstanding any other payment clause in this contract, the Government will make invoice payments under the terms and conditions specified in this clause. The Government considers payment as being made on the day a check is dated or the date of an electronic funds transfer (EFT). Definitions of pertinent terms are set forth in sections 2.101, 32.001, and 32.902 of the Federal Acquisition Regulation. All days referred to in this clause are calendar days, unless otherwise specified. (However, see paragraph (a)(4) of this clause concerning payments due on Saturdays, Sundays, and legal holidays.)

(a) Invoice payments--(1) Due date. (i) Except as indicated in paragraphs (a)(2) and (c) of this clause, the due date for making invoice payments by the designated payment office is the later of
the following two events:

(A) The 30th day after the designated billing office receives a proper invoice from the Contractor (except as provided in paragraph (a)(1)(ii) of this clause).

(B) The 30th day after Government acceptance of supplies delivered or services performed. For a final invoice, when the payment amount is subject to contract settlement actions, acceptance is deemed to occur on the effective date of the contract settlement.

(ii) If the designated billing office fails to annotate the invoice with the actual date of receipt at the time of receipt, the invoice payment due date is the 30th day after the date of the Contractor's invoice, provided the designated billing

office receives a proper invoice and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(2) Certain food products and other payments. (i) Due dates on Contractor invoices for meat, meat food products, or fish; perishable agricultural commodities; and dairy products, edible fats or oils, and food products prepared from edible fats or oils are--

(A) For meat or meat food products, as defined in section 2(a)(3) of the Packers and Stockyard Act of 1921 (7 U.S.C. 182(3)), and as further defined in Pub. L. 98-181, including any edible fresh or frozen poultry meat, any perishable poultry meat food product, fresh eggs, and any perishable egg product, as close as possible to, but not later than, the 7th day after product delivery.

(B) For fresh or frozen fish, as defined in section 204(3) of the Fish and Seafood Promotion Act of 1986 (16 U.S.C. 4003(3)), as close as possible to, but not later than, the 7th day after product delivery.

C) For perishable agricultural commodities, as defined in section 1(4) of the Perishable Agricultural Commodities Act of 1930 (7 U.S.C. 499a(4)), as close as possible to, but not later than, the 10th day after product delivery, unless another date is specified in the contract.

(D) For dairy products, as defined in section 111(e) of the Dairy Production Stabilization Act of 1983 (7 U.S.C. 4502(e)), edible fats or oils, and food products prepared from edible fats or oils, as close as possible to, but not later than, the 10th day after the date on which a proper invoice has been received. Liquid milk, cheese, certain processed cheese products, butter, yogurt, ice cream, mayonnaise, salad dressings, and other similar products, fall within this classification. Nothing in the Act limits this classification to refrigerated products. When questions arise regarding the proper classification of a specific product, prevailing industry practices will be followed in specifying a contract payment due date. The burden of proof that a classification of a specific product is, in fact, prevailing industry practice is upon the Contractor making the representation.

(ii) If the contract does not require submission of an invoice for payment (e.g., periodic lease payments), the due date will be as specified in the contract.

(3) Contractor's invoice. The Contractor shall prepare and submit invoices to the designated billing office specified in the contract. A proper invoice must include the items listed in paragraphs (a)(3)(i) through (a)(3)(x) of this clause. If the invoice does not comply with these requirements, the designated billing office will return it within 7 days after receipt (3 days for meat, meat food products, or fish; 5 days for perishable agricultural commodities, dairy products, edible fats or oils, and food products prepared from edible fats or oils), with the reasons why it is not a proper invoice. The Government will take into account untimely notification when computing any interest penalty owed the Contractor.

(i) Name and address of the Contractor.

(ii) Invoice date and invoice number. (The Contractor should date invoices as close as possible to the date of the mailing or transmission.)

(iii) Contract number or other authorization for supplies delivered or services performed (including order number and contract line item number).

(iv) Description, quantity, unit of measure, unit price, and extended price of supplies delivered or services performed.

(v) Shipping and payment terms (e.g., shipment number and date of shipment, discount for prompt payment terms). Bill of lading number and weight of shipment will be shown for shipments on Government bills of lading.

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).

(vii) Name (where practicable), title, phone number, and mailing address of person to notify in the event of a defective invoice.

(viii) Taxpayer Identification Number (TIN). The Contractor shall include its TIN on the invoice only if required elsewhere in this contract.

(ix) Electronic funds transfer (EFT) banking information.

(A) The Contractor shall include EFT banking information on the invoice only if required elsewhere in this contract.

(B) If EFT banking information is not required to be on the invoice, in order for the invoice to be a proper invoice, the Contractor shall have submitted correct EFT banking information in accordance with the applicable solicitation provision (e.g., 52.232-38, Submission of Electronic Funds Transfer Information with Offer), contract clause (e.g., 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration, or 52.232-34, Payment by Electronic Funds Transfer--Other Than Central Contractor Registration), or applicable agency procedures.

(C) EFT banking information is not required if the Government waived the requirement to pay by EFT.

(x) Any other information or documentation required by the contract (e.g., evidence of shipment).

(4) Interest penalty. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if payment is not made by the due date and the conditions listed in paragraphs (a)(4)(i) through (a)(4)(iii) of this clause are met, if applicable. However, when the due date falls on a Saturday, Sunday, or legal holiday, the designated payment office may make payment on the following working day without incurring a late payment interest penalty.

(i) The designated billing office received a proper invoice.

(ii) The Government processed a receiving report or other Government documentation authorizing payment, and there was no disagreement over quantity, quality, or Contractor compliance with any contract term or condition.

(iii) In the case of a final invoice for any balance of funds due the Contractor for supplies delivered or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(5) Computing penalty amount. The Government will compute the interest penalty in accordance with the Office of Management and Budget prompt payment regulations at 5 CFR part 1315.

(i) For the sole purpose of computing an interest penalty that might be due the Contractor, Government acceptance is deemed to occur constructively on the 7th day (unless otherwise specified in this contract) after the Contractor delivers the supplies or performs the services in accordance with the terms and conditions of the contract, unless there is a disagreement over quantity, quality, or Contractor compliance with a contract provision. If actual acceptance occurs within the constructive acceptance period, the Government will base the determination of an interest penalty on the actual date of acceptance. The constructive acceptance requirement does not, however, compel Government officials to accept supplies or services, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(ii) The prompt payment regulations at 5 CFR 1315.10(c) do not require the Government to pay interest penalties if payment delays are due to disagreement between the Government and the Contractor over the payment amount or other issues involving contract compliance, or on amounts temporarily withheld or retained in accordance with the terms of the contract. The Government and the Contractor shall resolve claims involving disputes and any interest that may be payable in accordance with the clause at FAR 52.233-1, Disputes.

(6) Discounts for prompt payment. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if the Government takes a discount for prompt payment improperly. The Government will calculate the interest penalty in accordance with the prompt payment regulations at 5 CFR part 1315.

(7) Additional interest penalty. (i) The designated payment office will pay a penalty amount, calculated in accordance with the prompt payment regulations at 5 CFR part 1315 in addition to the interest penalty amount only if--

(A) The Government owes an interest penalty of $1 or more;

(B) The designated payment office does not pay the interest penalty within 10 days after the date the invoice amount is paid; and

(C) The Contractor makes a written demand to the designated payment office for additional penalty payment, in accordance with paragraph (a)(7)(ii) of this clause, postmarked not later than 40 days after the invoice amount is paid.

(ii)(A) The Contractor shall support written demands for additional penalty payments with the following data. The Government will not request any additional data. The Contractor shall--

(1) Specifically assert that late payment interest is due under a specific invoice, and request payment of all overdue late payment interest penalty and such additional penalty as may be required;

(2) Attach a copy of the invoice on which the unpaid late payment interest is due; and

(3) State that payment of the principal has been received, including the date of receipt.

(B) If there is no postmark or the postmark is illegible--

(1) The designated payment office that receives the demand will annotate it with the date of receipt, provided the demand is received on or before the 40th day after payment was made; or

(2) If the designated payment office fails to make the required annotation, the Government will determine the demand's validity based on the date the Contractor has placed on the demand, provided such date is no later than the 40th day after payment was made.

(iii) The additional penalty does not apply to payments regulated by other Government regulations (e.g., payments under utility contracts subject to tariffs and regulation).

(b) Contract financing payment. If this contract provides for contract financing, the Government will make contract financing payments in accordance with the applicable contract financing clause.

(c) Fast payment procedure due dates. If this contract contains the clause at 52.213-1, Fast Payment Procedure, payments will be made within 15 days after the date of receipt of the invoice.

(d) Overpayments. If the Contractor becomes aware of a duplicate contract financing or invoice payment or that the Government has otherwise overpaid on a contract financing or invoice payment, the Contractor shall immediately notify the Contracting Officer and request instructions for disposition of the overpayment.

(End of clause)

52.232-33 PAYMENT BY ELECTRONIC FUNDS TRANSFER—CENTRAL CONTRACTOR REGISTRATION (OCT 2003)

(a) Method of payment. (1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT), except as provided in paragraph (a)(2) of this clause. As used in this clause, the term “EFT” refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either--

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend the payment due date until such time as the Government can make payment by EFT (but see paragraph (d) of this clause).

(b) Contractor's EFT information. The Government shall make payment to the Contractor using the EFT information contained in the Central Contractor Registration (CCR) database. In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to the CCR database.

(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR part 210.

(d) Suspension of payment. If the Contractor's EFT information in the CCR database is incorrect, then the Government need not make payment to the Contractor under this contract until correct EFT information is entered into the CCR database; and any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.

(e) Liability for uncompleted or erroneous transfers. (1) If an uncompleted or erroneous transfer occurs because the Government used the Contractor's EFT information incorrectly, the Government remains responsible for--

(i) Making a correct payment;

(ii) Paying any prompt payment penalty due; and

(iii) Recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and--

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government shall not make payment, and the provisions of paragraph (d) of this clause shall apply.

(f) EFT and prompt payment. A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.

(g) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall register separately in the CCR database and shall be paid by EFT in accordance with the terms of this clause. Notwithstanding any other requirement of this contract, payment to an ultimate recipient other than the

Contractor, or a financial institution properly recognized under an assignment of claims pursuant to subpart 32.8, is not permitted. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.

(h) Liability for change of EFT information by financial agent. The Government is not liable for errors resulting from changes to EFT information made by the Contractor's financial agent.

(i) Payment information. The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address contained in the CCR database.

(End of Clause)

52.233-1 DISPUTES. (JUL 2002)

(a) This contract is subject to the Contract Disputes Act of 1978, as amended (41 U.S.C. 601-613).

(b) Except as provided in the Act, all disputes arising under or relating to this contract shall be resolved under this clause.

(c) Claim, as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to this contract. However, a written demand or written assertion by the Contractor seeking the payment of money exceeding $100,000 is not a claim under the Act until certified. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim under the Act. The submission may be converted to a claim under the Act, by complying with the submission and certification requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.

(d)(1) A claim by the Contractor shall be made in writing and, unless otherwise stated in this contract, submitted within 6 years after accrual of the claim to the Contracting Officer for a written decision. A claim by the Government against the Contractor shall be subject to a written decision by the Contracting Officer.

(2)(i) The contractors shall provide the certification specified in subparagraph (d)(2)(iii) of this clause when submitting any claim -

(A) Exceeding $100,000; or

(B) Regardless of the amount claimed, when using -

(1) Arbitration conducted pursuant to 5 U.S.C. 575-580; or

(2) Any other alternative means of dispute resolution (ADR) technique that the agency elects to handle in accordance with the Administrative Dispute Resolution Act (ADRA).

(ii) The certification requirement does not apply to issues in controversy that have not been submitted as all or part

of a claim.

(iii) The certification shall state as follows: "I certify that the claim is made in good faith; that the supporting data are accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the contract adjustment for which the Contractor believes the Government is liable; and that I am duly authorized to certify the claim on behalf of the Contractor.

(3) The certification may be executed by any person duly authorized to bind the Contractor with respect to the claim.

(e) For Contractor claims of $100,000 or less, the Contracting Officer must, if requested in writing by the Contractor, render a decision within 60 days of the request. For Contractor-certified claims over $100,000, the Contracting Officer must, within 60 days, decide the claim or notify the Contractor of the date by which the decision will be made.

(f) The Contracting Officer's decision shall be final unless the Contractor appeals or files a suit as provided in the Act.

(g) If the claim by the Contractor is submitted to the Contracting Officer or a claim by the Government is presented to the Contractor, the parties, by mutual consent, may agree to use alternative disput resolution (ADR). If the Contractor refuses an offer for ADR, the Contractor shall inform the Contracting Officer, in writing, of the Contractor's specific reasons for rejecting the request.

(h) The Government shall pay interest on the amount found due and unpaid from (1) the date the Contracting Officer receives the claim (certified, if required); or (2) the date that payment otherwise would be due, if that date is later, until the date of payment. With regard to claims having defective certifications, as defined in (FAR) 48 CFR 33.201, interest shall be paid from the date that the Contracting Officer initially receives the claim. Simple interest on claims shall be paid at the rate, fixed by the Secretary of the Treasury as provided in the Act, which is applicable to the period during which the Contracting Officer receives the claim and then at the rate applicable for each 6-month period as fixed by the Treasury Secretary during the pendency of the claim.

(i) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under the contract, and comply with any decision of the Contracting Officer.

(End of clause)

52.233-3 PROTEST AFTER AWARD (AUG. 1996)

(a) Upon receipt of a notice of protest (as defined in FAR 33.101) or a determination that a protest is likely (see FAR 33.102(d)), the Contracting Officer may, by written order to the Contractor, direct the Contractor to stop performance of the work called for by this contract. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Upon receipt of the final decision in the protest, the Contracting Officer shall either--

(1) Cancel the stop-work order; or

(2) Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.

(b) If a stop-work order issued under this clause is canceled either before or after a final decision in the protest, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if--

(1) The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract; and

(2) The Contractor asserts its right to an adjustment within 30 days after the end of the period of work stoppage; provided, that if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon a proposal at any time before final payment under this contract.

(c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.

(d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

(e) The Government's rights to terminate this contract at any time are not affected by action taken under this clause.

(f) If, as the result of the Contractor's intentional or negligent misstatement, misrepresentation, or miscertification, a protest related to this contract is sustained, and the Government pays costs, as provided in FAR 33.102(b)(2) or 33.104(h)(1), the Government may require the Contractor to reimburse the Government the amount of such costs. In addition to any other remedy available, and pursuant to the requirements of Subpart 32.6, the Government may collect this debt by offsetting the amount against any payment due the Contractor under any contract between the Contractor and the Government.

(End of clause)

52.233-4 APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM (OCT 2004)

United States law will apply to resolve any claim of breach of this contract.

(End of clause)

52.242-13 BANKRUPTCY (JUL 1995)

In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish, by certified mail or electronic commerce method authorized by the contract, written notification of the bankruptcy to the Contracting Officer responsible for administering the contract. This notification shall be furnished within five days of the initiation of the proceedings relating to bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of Government contract numbers and contracting offices for all Government contracts against which final payment has not been made. This obligation remains in effect until final payment under this contract.

(End of clause)

52.243-1 CHANGES--FIXED-PRICE (APR 1987)

(a) The Contracting Officer may at any time, by written order, and without notice to the sureties, if any, make changes within the general scope of this contract in any one or more of the following:

(1) Drawings, designs, or specifications when the supplies to be furnished are to be specially manufactured for the Government in accordance with the drawings, designs, or specifications.

(2) Method of shipment or packing.

(3) Place of delivery.

(b) If any such change causes an increase or decrease in the cost of, or the time required for, performance of any part of the work under this contract, whether or not changed by the order, the Contracting Officer shall make an equitable adjustment in the contract price, the delivery schedule, or both, and shall modify the contract.

(c) The Contractor must assert its right to an adjustment under this clause within 30 days from the date of receipt of the written order. However, if the Contracting Officer decides that the facts justify it, the Contracting Officer may receive and act upon a proposal submitted before final payment of the contract.

(d) If the Contractor's proposal includes the cost of property made obsolete or excess by the change, the Contracting Officer shall have the right to prescribe the manner of the disposition of the property.

(e) Failure to agree to any adjustment shall be a dispute under the Disputes clause. However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

(End of clause)

52.244-5 COMPETITION IN SUBCONTRACTING (DEC 1996)

(a) The Contractor shall select subcontractors (including suppliers) on a competitive basis to the maximum practical extent consistent with the objectives and requirements of the contract.

(b) If the Contractor is an approved mentor under the Department of Defense Pilot Mentor-Protege Program (Pub. L. 101–510, section 831 as amended), the Contractor may award subcontracts under this contract on a noncompetitive basis to its proteges.

(End of clause)

52.244-6 SUBCONTRACTS FOR COMMERCIAL ITEMS (DEC 2004)

(a) Definitions.

"Commercial item", has the meaning contained in Federal Acquistion Regulation 2.101, Definitions.

"Subcontract", includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c) (1) The Contractor shall insert the following clauses in subcontracts for commercial items:

(i) 52.219-8, Utilization of Small Business Concerns (MAY 2004) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns)

exceeds $500,000 ($1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (Apr 2002) (E.O. 11246).

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era and Other Eligible Veterans (DEC 2001) (38 U.S.C. 4212(a)).

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998) (29 U.S.C. 793).

(v) 52.222-39, Notification of Employee Rights Concerning Payment of Union Dues or Fees (DEC 2004) (E.O. 13201). Flow down as required in accordance with paragraph (g) of FAR clause 52.222-39).

(vi) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (APR 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631) (flow down required in accordance with paragraph (d) of FAR clause 52.247-64).

(2) While not required, the Contractor may flow down to subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

(End of clause)

52.245-2 GOVERNMENT PROPERTY (FIXED-PRICE CONTRACTS) (MAY 2004)

(a) Government-furnished property.

(1) Overseas contracts. If this contract is to be performed outside of the United States and its outlying areas, the words ``Government'' and ``Government-furnished'' (wherever they appear in this clause) shall be construed as ``United States Government'' and ``United States Government-furnished,'' respectively.

(2) The delivery or performance dates for this contract are based upon the expectation that Government-furnished property suitable for use (except for property furnished "as is") will be delivered to the Contractor at the times stated in the Schedule or, if not so stated, in sufficient time to enable the Contractor to meet the contract's delivery or performance dates.

(3) If Government-furnished property is received by the Contractor in a condition not suitable for the intended use, the Contractor shall, upon receipt of it, notify the Contracting Officer, detailing the facts, and, as directed by the Contracting Officer and at Government expense, either repair, modify, return, or otherwise dispose of the property. After completing the directed action and upon written request of the Contractor, the Contracting Officer shall make an equitable adjustment as provided in paragraph (h) of this clause.

(4) If Government-furnished property is not delivered to the Contractor by the required time, the Contracting Officer shall, upon the Contractor's timely written request, make a determination of the delay, if any, caused the Contractor and shall make an equitable adjustment in accordance with paragraph (h) of this clause.

(b) Changes in Government-furnished property. (1) The Contracting Officer may, by written notice, (i) decrease the Government-furnished property provided or to be provided under this contract, or (ii) substitute other Government-furnished property for the property to be provided by the Government, or to be acquired by the Contractor for the Government, under this contract. The Contractor shall promptly take such action as the Contracting Officer may direct regarding the removal, shipment, or disposal of the property covered by such notice.

(2) Upon the Contractor's written request, the Contracting Officer shall make an equitable adjustment to the contract in accordance with paragraph (h) of this clause, if the Government has agreed in the Schedule to make the property available for performing this contract and there is any--

(i) Decrease or substitution in this property pursuant to subparagraph (b)(1) of this clause; or

(ii) Withdrawal of authority to use this property, if provided under any other contract or lease.

(c) Title in Government property. (1) The Government shall retain title to all Government-furnished property.

(2) All Government-furnished property and all property acquired by the Contractor, title to which vests in the Government under this paragraph (collectively referred to as "Government property"), are subject to the provisions of this clause. However, special tooling accountable to this contract is subject to the provisions of the Special Tooling clause and is not subject to the provisions of this clause. Title to Government property shall not be affected by its incorporation into or attachment to any property not owned by the Government, nor shall Government property become a fixture or lose its identity as personal property by being attached to any real property.

(3) Title to each item of facilities and special test equipment acquired by the Contractor for the Government under this contract shall pass to and vest in the Government when its use in performing this contract commences or when the Government has paid for it, whichever is earlier, whether or not title previously vested in the Government.

(4) If this contract contains a provision directing the Contractor to purchase material for which the Government will reimburse the Contractor as a direct item of cost under this contract--

(i) Title to material purchased from a vendor shall pass to and vest in the Government upon the vendor's delivery of such material; and

(ii) Title to all other material shall pass to and vest in the Government upon--

(A) Issuance of the material for use in contract performance;

(B) Commencement of processing of the material or its use in contract performance; or

(C) Reimbursement of the cost of the material by the Government, whichever occurs first.

(d) Use of Government property. The Government property shall be used only for performing this contract, unless otherwise provided in this contract or approved by the Contracting Officer.

(e) Property administration. (1) The Contractor shall be responsible and accountable for all Government property provided under this contract and shall comply with Federal Acquisition Regulation (FAR) Subpart 45.5, as in effect on the date of this contract.

(2) The Contractor shall establish and maintain a program for the use, maintenance, repair, protection, and preservation of Government property in accordance with sound industrial practice and the applicable provisions of Subpart 45.5 of the FAR.

(3) If damage occurs to Government property, the risk of which has been assumed by the Government under this contract, the Government shall replace the items or the Contractor shall make such repairs as the Government directs. However, if the Contractor cannot effect such repairs within the time required, the Contractor shall dispose of the property as directed by the Contracting Officer. When any property for which the Government is responsible is replaced or repaired, the Contracting Officer shall make an equitable adjustment in accordance with paragraph (h) of this clause.

(4) The Contractor represents that the contract price does not include any amount for repairs or replacement for which the Government is responsible. Repair or replacement of property for which the Contractor is responsible shall be accomplished by the Contractor at its own expense.

(f) Access. The Government and all its designees shall have access at all reasonable times to the premises in which any Government property is located for the purpose of inspecting the Government property.

(g) Risk of loss. Unless otherwise provided in this contract, the Contractor assumes the risk of, and shall be responsible for, any loss or destruction of, or damage to, Government property upon its delivery to the Contractor or upon passage of title to the Government under paragraph (c) of this clause. However, the Contractor is not responsible for reasonable wear and tear to Government property or for Government property properly consumed in performing this contract.

(h) Equitable adjustment. When this clause specifies an equitable adjustment, it shall be made to any affected contract provision in accordance with the procedures of the Changes clause. When appropriate, the Contracting Officer may initiate an equitable adjustment in favor of the Government. The right to an equitable adjustment shall be the Contractor's exclusive remedy. The Government shall not be liable to suit for breach of contract for--

(1) Any delay in delivery of Government-furnished property;

(2) Delivery of Government-furnished property in a condition not suitable for its intended use;

(3) A decrease in or substitution of Government-furnished property; or

(4) Failure to repair or replace Government property for which the Government is responsible.

(i) Government property disposal. Except as provided in paragraphs (i)(1)(i), (i)(2), and (i)(8)(i) of this clause, the Contractor shall not dispose of Government property until authorized to do so by the Plant Clearance Officer.

(1) Scrap (to which the Government has obtained title under paragraph (c) of this clause).--(i) Contractor with an approved scrap procedure.--(A) The Contractor may dispose of scrap resulting from production or testing under this contract without Government approval. However, if the scrap requires demilitarization or is sensitive property, the Contractor shall submit the scrap on an inventory disposal schedule.

(B) For scrap from other than production or testing the Contractor may prepare scrap lists in lieu of inventory disposal schedules (provided such lists are consistent with the approved scrap procedures), except that inventory disposal schedules shall be submitted for scrap aircraft or aircraft parts and scrap that--

(1) Requires demilitarization;

(2) Is a classified item;

(3) Is generated from classified items;

(4) Contains hazardous materials or hazardous wastes;

(5) Contains precious metals; or

(6) Is dangerous to the public health, safety, or welfare.

(ii) Contractor without an approved scrap procedure. The Contractor shall submit an inventory disposal schedule for all scrap.

(2) Pre-disposal requirements. When the Contractor determines that a property item acquired or produced by the Contractor, to which the Government has obtained title under paragraph (c) of this clause, is no longer needed for performance of this contract, the Contractor, in the following order of priority:

(i) May purchase the property at the **acquisition** cost.

(ii) Shall make reasonable efforts to return unused property to the appropriate supplier at fair market value (less, if applicable, a reasonable restocking fee that is consistent with the supplier's customary practices).

(iii) Shall list, on Standard Form 1428, Inventory Disposal Schedule, property that was not purchased under paragraph (i)(2)(i) of this clause, could not be returned to a supplier, or could not be used in the performance of other Government contracts.

(3) Inventory disposal schedules.--(i) The Contractor shall use Standard Form 1428, Inventory Disposal Schedule, to identify--

(A) Government-furnished property that is no longer required for performance of this contract, provided the terms of another Government contract do not require the Government to furnish that property for performance of that contract; and

(B) Property acquired or produced by the Contractor, to which the Government has obtained title under paragraph (c) of this clause, that is no longer required for performance of that contract.

(ii) The Contractor may annotate inventory disposal schedules to identify property the Contractor wishes to purchase from the Government.

(iii) Unless the Plant Clearance Officer has agreed otherwise, or the contract requires electronic submission of inventory disposal schedules, the Contractor shall prepare separate inventory disposal schedules for--

(A) Special test equipment with commercial components;

(B) Special test equipment without commercial components;

(C) Printing equipment;

(D) Computers, components thereof, peripheral equipment, and related equipment;

(E) Precious Metals;

(F) Nonnuclear hazardous materials or hazardous wastes; or

(G) Nuclear materials or nuclear wastes.

(iv) Property with the same description, condition code, and reporting location may be grouped in a single line item. The Contractor shall describe special test equipment in sufficient detail to permit an understanding of the special test equipment's intended use.

(4) Submission requirements. The Contractor shall submit inventory disposal schedules to the Plant Clearance Officer no later than--

(i) Thirty days following the Contractor's determination that a Government property item is no longer required for performance of the contract;

(ii) Sixty days, or such longer period as may be approved by the Plant Clearance Officer, following completion of contract deliveries or performance; or

(iii) One hundred twenty days, or such longer period as may be approved by the Plant Clearance Officer, following contract termination in whole or in part.

(5) Corrections. The Plant Clearance Officer may require the Contractor to correct an inventory disposal schedule or may reject a schedule if the property identified on the schedule is not accountable under this contract or is not in the quantity or condition indicated.

(6) Postsubmission adjustments. The Contractor shall provide the Plant Clearance Officer at least 10 working days advance written notice of its intent to remove a property item from an approved inventory disposal schedule. Unless the Plant Clearance Officer objects to the intended schedule adjustment within the notice period, the Contractor may make the adjustment upon expiration of the notice period.

(7) Storage.--

(i) The Contractor shall store the property identified on an inventory disposal schedule pending receipt of disposal instructions. The Government's failure to provide disposal instructions within 120 days following acceptance of an inventory disposal schedule might entitle the Contractor to an equitable adjustment for costs incurred to store such property on or after the 121st day.

(ii) The Contractor shall obtain the Plant Clearance Officer's approval to remove Government property from the premises at which the property is currently located prior to receipt of final disposition instructions. If approval is granted, any costs incurred by the Contractor to transport or store the property shall not increase the price or fee of any Government contract. The storage facility shall be appropriate for assuring the property's physical safety and suitability for use. Approval does not relieve the Contractor of any liability under this contract for such property.

(8) Disposition instructions.

(i) If the Government does not provide disposition instructions to the Contractor within 45 days following acceptance of a scrap list, the Contractor may dispose of the listed scrap in accordance with the Contractor's approved scrap procedures.

(ii) The Contractor shall prepare for shipment, deliver f.o.b. origin, or dispose of Government property as directed by the Plant Clearance Officer. The Contractor shall remove and destroy any markings identifying the property as Government property prior to disposing of the property.

(iii) The Contracting Officer may require the Contractor to demilitarize the property prior to shipment or disposal. Any equitable adjustment incident to the Contracting Officer's direction to demilitarize Government property shall be made in accordance with paragraph (h) of this clause.

(9) Disposal proceeds. The Contractor shall credit the net proceeds from the disposal of Government property to the price or cost of work covered by this contract or to the Government as the Contracting Officer directs.

(10) Subcontractor inventory disposal schedules. The Contractor shall require a subcontractor that is using property accountable under this contract at a subcontractor-managed site to submit inventory disposal schedules to the Contractor in sufficient time for the Contractor to comply with the requirements of paragraph (i)(4) of this clause.

(j) Abandonment of Government property.

(1) The Government will not abandon sensitive Government property without the Contractor's written consent.

(2) The Government, upon notice to the Contractor, may abandon any nonsensitive Government property in place at which time all obligations of the Government regarding such abandoned property shall cease.

(3) The Government has no obligation to restore or rehabilitate the Contractor's premises under any circumstances; however, if Government-furnished property is withdrawn or is unsuitable for the intended use, or if other Government property is substituted, then the equitable adjustment under paragraph (h) of this clause may properly include restoration or rehabilitation costs.

(k) Communications. All communications under this clause shall be in writing.

(l) Overseas contracts. If this contract is to be performed outside of the United States of America, its territories, or possessions, the words "Government" and "Government-furnished" (wherever they appear in this clause) shall be construed as "United States Government" and "United States Government-furnished," respectively.

(End of clause)

52.246-25 LIMITATION OF LIABILITY--SERVICES (FEB 1997)

(a) Except as provided in paragraphs (b) and (c) below, and except to the extent that the Contractor is expressly responsible under this contract for deficiencies in the services required to be performed under it (including any materials furnished in conjunction with those services), the Contractor shall not be liable for loss of or damage to property of the Government that (1) occurs after Government acceptance of services performed under this contract, and (2) results from any defects or deficiencies in the services performed or materials furnished.

(b) The limitation of liability under paragraph (a) above shall not apply when a defect or deficiency in, or the Government's acceptance of, services performed or materials furnished results from willful misconduct or lack of good faith on the part of any of the Contractor's managerial personnel. The term "Contractor's managerial personnel," as used in this clause, means the Contractor's directors, officers, and any of the Contractor's managers, superintendents, or equivalent representatives who have supervision or direction of--

(1) All or substantially all of the Contractor's business;

(2) All or substantially all of the Contractor's operations at any one plant, laboratory, or separate location at which the contract is being performed; or

(3) A separate and complete major industrial operation connected with the performance of this contract.

(c) If the Contractor carries insurance, or has established a reserve for self-insurance, covering liability for loss or damage suffered by the Government through the Contractor's performance of services or furnishing of materials under this contract, the Contractor shall be liable to the Government, to the extent of such insurance or reserve, for loss of or damage to property of the Government occurring after Government acceptance of, and resulting from any defects and deficiencies in, services performed or materials furnished under this contract.

(End of clause)

52.248-1 VALUE ENGINEERING (FEB 2000)

(a) General. The Contractor is encouraged to develop, prepare, and submit value engineering change proposals (VECP's) voluntarily. The Contractor shall share in any net acquisition savings realized from accepted VECP's, in accordance with the incentive sharing rates in paragraph (f) below.

(b) Definitions. "Acquisition savings," as used in this clause, means savings resulting from the application of a VECP to contracts awarded by the same contracting office or its successor for essentially the same unit. Acquisition savings include--

(1) Instant contract savings, which are the net cost reductions on this, the instant contract, and which are equal to the instant unit cost reduction multiplied by the number of instant contract units affected by the VECP, less the Contractor's allowable development and implementation costs;

(2) Concurrent contract savings, which are net reductions in the prices of other contracts that are definitized and ongoing at the time the VECP is accepted; and

(3) Future contract savings, which are the product of the future unit cost reduction multiplied by the number of future contract units in the sharing base. On an instant contract, future contract savings include savings on increases in quantities after VECP acceptance that are due to contract modifications, exercise of options, additional orders, and funding of subsequent year requirements on a multiyear contract.

"Collateral costs," as used in this clause, means agency cost of operation, maintenance, logistic support, or Government-furnished property.

"Collateral savings," as used in this clause, means those measurable net reductions resulting from a VECP in the agency's overall projected collateral costs, exclusive of acquisition savings, whether or not the acquisition cost changes.

"Contracting office" includes any contracting office that the acquisition is transferred to, such as another branch of the agency or another agency's office that is performing a joint acquisition action.

"Contractor's development and implementation costs," as used in this clause, means those costs the Contractor incurs on a VECP specifically in developing, testing, preparing, and submitting the VECP, as well as those costs the Contractor incurs to make the contractual changes required by Government acceptance of a VECP.

"Future unit cost reduction," as used in this clause, means the instant unit cost reduction adjusted as the Contracting Officer considers necessary for projected learning or changes in quantity during the sharing period. It is calculated at the time the VECP is accepted and applies either (1) throughout the sharing period, unless the Contracting Officer decides that recalculation is necessary because conditions are significantly different from those previously anticipated or (2) to the calculation of a lump -sum payment, which cannot later be revised.

"Government costs," as used in this clause, means those agency costs that result directly from developing and implementing the VECP, such as any net increases in the cost of testing, operations, maintenance, and logistics support. The term does not include the normal administrative costs of processing the VECP or any increase in this contract's cost or price resulting from negative instant contract savings.

"Instant contract," as used in this clause, means this contract, under which the VECP is submitted. It does not include increases in quantities after acceptance of the VECP that are due to contract modifications, exercise of options, or additional orders. If this is a multiyear contract, the term does not include quantities funded after VECP acceptance. If this contract is a fixed-price contract with prospective price redetermination, the term refers to the period for which firm prices have been established.

"Instant unit cost reduction" means the amount of the decrease in unit cost of performance (without deducting any Contractor's development or implementation costs) resulting from using the VECP on this, the instant contract. If this

is a service contract, the instant unit cost reduction is normally equal to the number of hours per line-item task saved by using the VECP on this contract, multiplied by the appropriate contract labor rate.

"Negative instant contract savings" means the increase in the cost or price of this contract when the acceptance of a VECP results in an excess of the Contractor's allowable development and implementation costs over the product of the instant unit cost reduction multiplied by the number of instant contract units affected.

"Net acquisition savings" means total acquisition savings, including instant, concurrent, and future contract savings, less Government costs.

"Sharing base," as used in this clause, means the number of affected end items on contracts of the contracting office accepting the VECP.

Sharing period, as used in this clause, means the period beginning with acceptance of the first unit incorporating the VECP and ending at a calendar date or event determined by the contracting officer for each VECP.

"Unit," as used in this clause, means the item or task to which the Contracting Officer and the Contractor agree the VECP applies.

"Value engineering change proposal (VECP)" means a proposal that--

(1) Requires a change to this, the instant contract, to implement; and

(2) Results in reducing the overall projected cost to the agency without impairing essential functions or characteristics; provided, that it does not involve a change--

(i) In deliverable end item quantities only;

(ii) In research and development (R&D) end items or R&D test quantities that is due solely to results of previous testing under this contract; or

(iii) To the contract type only.

(c) VECP preparation. As a minimum, the Contractor shall include in each VECP the information described in subparagraphs (1) through (8) below. If the proposed change is affected by contractually required configuration management or similar procedures, the instructions in those procedures relating to format, identification, and priority assignment shall govern VECP preparation. The VECP shall include the following:

(1) A description of the difference between the existing contract requirement and the proposed requirement, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, the effect of the change on the end item's performance, and any pertinent objective test data.

(2) A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revisions.

(3) Identification of the unit to which the VECP applies.

(4) A separate, detailed cost estimate for (i) the affected portions of the existing contract requirement and (ii) the VECP. The cost reduction associated with the VECP shall take into account the Contractor's allowable development and implementation costs, including any amount attributable to subcontracts under the Subcontracts paragraph of this clause, below.

(5) A description and estimate of costs the Government may incur in implementing the VECP, such as test and evaluation and operating and support costs.

(6) A prediction of any effects the proposed change would have on collateral costs to the agency.

(7) A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.

(8) Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved, and previous Government actions, if known.

(d) Submission. The Contractor shall submit VECP's to the Contracting Officer, unless this contract states otherwise. If this contract is administered by other than the contracting office, the Contractor shall submit a copy of the VECP simultaneously to the Contracting Officer and to the Administrative Contracting Officer.

(e) Government action. (1) The Contracting Officer will notify the Contractor of the status of the VECP within 45 calendar days after the contracting office receives it. If additional time is required, the Contracting Officer will notify the Contractor within the 45-day period and provide the reason for the delay and the expected date of the decision. The Government will process VECP's expeditiously; however, it shall not be liable for any delay in acting upon a VECP.

(2) If the VECP is not accepted, the Contracting Officer will notify the Contractor in writing, explaining the reasons for rejection. The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Government. The Contracting Officer may require that the Contractor provide written notification before undertaking significant expenditures for VECP effort.

(3) Any VECP may be accepted, in whole or in part, by the Contracting Officer's award of a modification to this contract citing this clause and made either before or within a reasonable time after contract performance is completed. Until such a contract modification applies a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The decision to accept or reject all or part of any VECP is a unilateral decision made solely at the discretion of the Contracting Officer.

(f) Sharing rates. If a VECP is accepted, the Contractor shall share in net acquisition savings according to the percentages shown in the table below. The percentage paid the Contractor depends upon (1) this contract's type (fixed-price, incentive, or cost-reimbursement), (2) the sharing arrangement specified in paragraph (a) above (incentive, program requirement, or a combination as delineated in the Schedule), and (3) the source of the savings (the instant contract, or concurrent and future contracts), as follows:

CONTRACTOR'S SHARE OF NET ACQUISITION SAVINGS

(Figures in percent)

Contract Type	Incentive (Voluntary)		Program Requirement (Mandatory)	
	Instant Contract Rate	Concurrent and Future Contract Rate	Instant Contract Rate	Concurrent and Future Contract Rate
Fixed-price (includes fixed-price-award-fee; excludes other fixed-price incentive contracts)	(1) 50	(1) 50	(1) 25	25
Incentive (fixed-price or cost)	(2)	(1) 50	(2)	25

(other than award fee)				
Cost-reimbursement (includes cost-plus-award-fee; excludes other cost-type incentive Contracts)	(3) 25	(3) 25	15	15

(1) The Contracting Officer may increase the Contractor's sharing rate to as high as 75 percent for each VECP.
(2) Same sharing arrangement as the contract's profit or fee adjustment formula.
(3) The Contracting Officer may increase the Contractor's sharing rate to as high as 50 percent for each VECP.

(g) Calculating net acquisition savings.

(1) Acquisition savings are realized when (i) the cost or price is reduced on the instant contract, (ii) reductions are negotiated in concurrent contracts, (iii) future contracts are awarded, or (iv) agreement is reached on a lump-sum payment for future contract savings (see subparagraph (i)(4) below). Net acquisition savings are first realized, and the Contractor shall be paid a share, when Government costs and any negative instant contract savings have been fully offset against acquisition savings.

(2) Except in incentive contracts, Government costs and any price or cost increases resulting from negative instant contract savings shall be offset against acquisition savings each time such savings are realized until they are fully offset. Then, the Contractor's share is calculated by multiplying net acquisition savings by the appropriate Contractor's percentage sharing rate (see paragraph (f) above). Additional Contractor shares of net acquisition savings shall be paid to the Contractor at the time realized.

(3) If this is an incentive contract, recovery of Government costs on the instant contract shall be deferred and offset against concurrent and future contract savings. The Contractor shall share through the contract incentive structure in savings on the instant contract items affected. Any negative instant contract savings shall be added to the target cost or to the target price and ceiling price, and the amount shall be offset against concurrent and future contract savings.

(4) If the Government does not receive and accept all items on which it paid the Contractor's share, the Contractor shall reimburse the Government for the proportionate share of these payments.

(h) Contract adjustment. The modification accepting the VECP (or a subsequent modification issued as soon as possible after any negotiations are completed) shall--

(1) Reduce the contract price or estimated cost by the amount of instant contract savings, unless this is an incentive contract;

(2) When the amount of instant contract savings is negative, increase the contract price, target price and ceiling price, target cost, or estimated cost by that amount;

(3) Specify the Contractor's dollar share per unit on future contracts, or provide the lump-sum payment;

(4) Specify the amount of any Government costs or negative instant contract savings to be offset in determining net acquisition savings realized from concurrent or future contract savings; and

(5) Provide the Contractor's share of any net acquisition savings under the instant contract in accordance with the following:

(i) Fixed-price contracts--add to contract price.

(ii) Cost-reimbursement contracts--add to contract fee.

(i) Concurrent and future contract savings.

(1) Payments of the Contractor's share of concurrent and future contract savings shall be made by a modification to the instant contract in accordance with subparagraph (h)(5) above. For incentive contracts, shares shall be added as a separate firm-fixed-price line item on the instant contract. The Contractor shall maintain records adequate to identify the first delivered unit for 3 years after final payment under this contract.

(2) The Contracting Officer shall calculate the Contractor's share of concurrent contract savings by (i) subtracting from the reduction in price negotiated on the concurrent contract any Government costs or negative instant contract savings not yet offset and (ii) multiplying the result by the Contractor's sharing rate.

(3) The Contracting Officer shall calculate the Contractor's share of future contract savings by (i) multiplying the future unit cost reduction by the number of future contract units scheduled for delivery during the sharing period, (ii) subtracting any Government costs or negative instant contract savings not yet offset, and (iii) multiplying the result by the Contractor's sharing rate.

(4) When the Government wishes and the Contractor agrees, the Contractor's share of future contract savings may be paid in a single lump sum rather than in a series of payments over time as future contracts are awarded. Under this alternate procedure, the future contract savings may be calculated when the VECP is accepted, on the basis of the Contracting Officer's forecast of the number of units that will be delivered during the sharing period. The Contractor's share shall be included in a modification to this contract (see subparagraph (h)(3) above) and shall not be subject to subsequent adjustment.

(5) Alternate no-cost settlement method. When, in accordance with subsection 48.104-4 of the Federal Acquisition Regulation, the Government and the Contractor mutually agree to use the no-cost settlement method, the following applies:

(i) The Contractor will keep all the savings on the instant contract and on its concurrent contracts only.

(ii) The Government will keep all the savings resulting from concurrent contracts placed on other sources, savings from all future contracts, and all collateral savings.

(j) Collateral savings. If a VECP is accepted, the Contracting Officer will increase the instant contract amount, as specified in paragraph (h)(5) of this clause, by a rate from 20 to 100 percent, as determined by the Contracting Officer, of any projected collateral savings determined to be realized in a typical year of use after subtracting any Government costs not previously offset. However, the Contractor's share of collateral savings will not exceed the contract's firm-fixed-price, target price, target cost, or estimated cost, at the time the VECP is accepted, or $100,000, whichever is greater. The Contracting Officer will be the sole determiner of the amount of collateral savings.

(k) Relationship to other incentives. Only those benefits of an accepted VECP not rewardable under performance, design-to-cost (production unit cost, operating and support costs, reliability and maintainability), or similar incentives shall be rewarded under this clause. However, the targets of such incentives affected by the VECP shall not be adjusted because of VECP acceptance. If this contract specifies targets but provides no incentive to surpass them, the value engineering sharing shall apply only to the amount of achievement better than target.

(l) Subcontracts. The Contractor shall include an appropriate value engineering clause in any subcontract of $100,000 or more and may include one in subcontracts of lesser value. In calculating any adjustment in this contract's price for instant contract savings (or negative instant contract savings), the Contractor's allowable development and implementation costs shall include any subcontractor's allowable development and implementation costs, and any

value engineering incentive payments to a subcontractor, clearly resulting from a VECP accepted by the Government under this contract. The Contractor may choose any arrangement for subcontractor value engineering incentive payments; provided, that the payments shall not reduce the Government's share of concurrent or future contract savings or collateral savings.

(m) Data. The Contractor may restrict the Government's right to use any part of a VECP or the supporting data by marking the following legend on the affected parts:

"These data, furnished under the Value Engineering clause of contract . . . . . , shall not be disclosed outside the Government or duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a value engineering change proposal submitted under the clause. This restriction does not limit the Government's right to use information contained in these data if it has been obtained or is otherwise available from the Contractor or from another source without limitations."

If a VECP is accepted, the Contractor hereby grants the Government unlimited rights in the VECP and supporting data, except that, with respect to data qualifying and submitted as limited rights technical data, the Government shall have the rights specified in the contract modification implementing the VECP and shall appropriately mark the data. (The terms "unlimited rights" and "limited rights" are defined in Part 27 of the Federal Acquisition Regulation.)

(End of clause)

52.249-2 TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FIXED-PRICE) (MAY 2004)

(a) The Government may terminate performance of work under this contract in whole or, from time to time, in part if the Contracting Officer determines that a termination is in the Government's interest. The Contracting Officer shall terminate by delivering to the Contractor a Notice of Termination specifying the extent of termination and the effective date.

(b) After receipt of a Notice of Termination, and except as directed by the Contracting Officer, the Contractor shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due under this clause:

(1) Stop work as specified in the notice.

(2) Place no further subcontracts or orders (referred to as subcontracts in this clause) for materials, services, or facilities, except as necessary to complete the continued portion of the contract.

(3) Terminate all subcontracts to the extent they relate to the work terminated.

(4) Assign to the Government, as directed by the Contracting Officer, all right, title, and interest of the Contractor under the subcontracts terminated, in which case the Government shall have the right to settle or to pay any termination settlement proposal arising out of those terminations.

(5) With approval or ratification to the extent required by the Contracting Officer, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts; the approval or ratification will be final for purposes of this clause.

(6) As directed by the Contracting Officer, transfer title and deliver to the Government (i) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced or acquired for the work terminated, and (ii) the completed or partially completed plans, drawings, information, and other property that, if the contract had been completed, would be required to be furnished to the Government.

(7) Complete performance of the work not terminated.

(8) Take any action that may be necessary, or that the Contracting Officer may direct, for the protection and preservation of the property related to this contract that is in the possession of the Contractor and in which the Government has or may acquire an interest.

(9) Use its best efforts to sell, as directed or authorized by the Contracting Officer, any property of the types referred to in subparagraph (b)(6) of this clause; provided, however, that the Contractor (i) is not required to extend credit to any purchaser and (ii) may acquire the property under the conditions prescribed by, and at prices approved by, the Contracting Officer. The proceeds of any transfer or disposition will be applied to reduce any payments to be made by the Government under this contract, credited to the price or cost of the work, or paid in any other manner directed by the Contracting Officer.

(c) The Contractor shall submit complete termination inventory schedules no later than 120 days from the effective date of termination, unless extended in writing by the Contracting Officer upon written request of the Contractor within this 120-day period.

(d) After expiration of the plant clearance period as defined in Subpart 49.001 of the Federal Acquisition Regulation, the Contractor may submit to the Contracting Officer a list, certified as to quantity and quality, of termination inventory not previously disposed of, excluding items authorized for disposition by the Contracting Officer. The Contractor may request the Government to remove those items or enter into an agreement for their storage. Within 15 days, the Government will accept title to those items and remove them or enter into a storage agreement. The Contracting Officer may verify the list upon removal of the items, or if stored, within 45 days from submission of the list, and shall correct the list, as necessary, before final settlement.

(e) After termination, the Contractor shall submit a final termination settlement proposal to the Contracting Officer in the form and with the certification prescribed by the Contracting Officer. The Contractor shall submit the proposal promptly, but no later than 1 year from the effective date of termination, unless extended in writing by the Contracting Officer upon written request of the Contractor within this 1-year period. However, if the Contracting Officer determines that the facts justify it, a termination settlement proposal may be received and acted on after 1 year or any extension. If the Contractor fails to submit the proposal within the time allowed, the Contracting Officer may determine, on the basis of information available, the amount, if any, due the Contractor because of the termination and shall pay the amount determined.

(f) Subject to paragraph (e) of this clause, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount to be paid or remaining to be paid because of the termination. The amount may include a reasonable allowance for profit on work done. However, the agreed amount, whether under this paragraph (g) or paragraph (g) of this clause, exclusive of costs shown in subparagraph (g)(3) of this clause, may not exceed the total contract price as reduced by (1) the amount of payments previously made and (2) the contract price of work not terminated. The contract shall be modified, and the Contractor paid the agreed amount. Paragraph (g) of this clause shall not limit, restrict, or affect the amount that may be agreed upon to be paid under this paragraph.

(g) If the Contractor and the Contracting Officer fail to agree on the whole amount to be paid because of the termination of work, the Contracting Officer shall pay the Contractor the amounts determined by the Contracting Officer as follows, but without duplication of any amounts agreed on under paragraph (f) of this clause:

(1) The contract price for completed supplies or services accepted by the Government (or sold or acquired under subparagraph (b)(9) of this clause) not previously paid for, adjusted for any saving of freight and other charges.

(2) The total of--

(i) The costs incurred in the performance of the work terminated, including initial costs and preparatory expense allocable thereto, but excluding any costs attributable to supplies or services paid or to be paid under subparagraph (f)(1) of this clause;

(ii) The cost of settling and paying termination settlement proposals under terminated subcontracts that are properly chargeable to the terminated portion of the contract if not included in subdivision (g)(2)(i) of this clause; and

(iii) A sum, as profit on subdivision (g)(2)(i) of this clause, determined by the Contracting Officer under 49.202 of the Federal Acquisition Regulation, in effect on the date of this contract, to be fair and reasonable; however, if it appears that the Contractor would have sustained a loss on the entire contract had it been completed, the Contracting Officer shall allow no profit under this subdivision (iii) and shall reduce the settlement to reflect the indicated rate of loss.

(3) The reasonable costs of settlement of the work terminated, including--

(i) Accounting, legal, clerical, and other expenses reasonably necessary for the preparation of termination settlement proposals and supporting data;

(ii) The termination and settlement of subcontracts (excluding the amounts of such settlements); and

(iii) Storage, transportation, and other costs incurred, reasonably necessary for the preservation, protection, or disposition of the termination inventory.

(h) Except for normal spoilage, and except to the extent that the Government expressly assumed the risk of loss, the Contracting Officer shall exclude from the amounts payable to the Contractor under paragraph (g) of this clause, the fair value, as determined by the Contracting Officer, of property that is destroyed, lost, stolen, or damaged so as to become undeliverable to the Government or to a buyer.

(i) The cost principles and procedures of Part 31 of the Federal Acquisition Regulation, in effect on the date of this contract, shall govern all costs claimed, agreed to, or determined under this clause.

(j) The Contractor shall have the right of appeal, under the Disputes clause, from any determination made by the Contracting Officer under paragraph (e), (g), or (l) of this clause, except that if the Contractor failed to submit the termination settlement proposal or request for equitable adjustment within the time provided in paragraph (e) or (l), respectively, and failed to request a time extension, there is no right of appeal.

(k) In arriving at the amount due the Contractor under this clause, there shall be deducted--

(1) All unliquidated advance or other payments to the Contractor under the terminated portion of this contract;

(2) Any claim which the Government has against the Contractor under this contract; and

(3) The agreed price for, or the proceeds of sale of, materials, supplies, or other things acquired by the Contractor or sold under the provisions of this clause and not recovered by or credited to the Government.

(l) If the termination is partial, the Contractor may file a proposal with the Contracting Officer for an equitable adjustment of the price(s) of the continued portion of the contract. The Contracting Officer shall make any equitable adjustment agreed upon. Any proposal by the Contractor for an equitable adjustment under this clause shall be requested within 90 days from the effective date of termination unless extended in writing by the Contracting Officer.

(m)(1) The Government may, under the terms and conditions it prescribes, make partial payments and payments against costs incurred by the Contractor for the terminated portion of the contract, if the Contracting Officer believes the total of these payments will not exceed the amount to which the Contractor will be entitled.

(2) If the total payments exceed the amount finally determined to be due, the Contractor shall repay the excess to the Government upon demand, together with interest computed at the rate established by the Secretary of the Treasury under 50 U.S.C. App. 1215(b)(2). Interest shall be computed for the period from the date the excess payment is received by the Contractor to the date the excess is repaid. Interest shall not be charged on any excess payment due

to a reduction in the Contractor's termination settlement proposal because of retention or other disposition of termination inventory until 10 days after the date of the retention or disposition, or a later date determined by the Contracting Officer because of the circumstances.

(n) Unless otherwise provided in this contract or by statute, the Contractor shall maintain all records and documents relating to the terminated portion of this contract for 3 years after final settlement. This includes all books and other evidence bearing on the Contractor's costs and expenses under this contract. The Contractor shall make these records and documents available to the Government, at the Contractor's office, at all reasonable times, without any direct charge. If approved by the Contracting Officer, photographs, microphotographs, or other authentic reproductions may be maintained instead of original records and documents.

(End of clause)

52.249-8 DEFAULT (FIXED-PRICE SUPPLY AND SERVICE) (APR 1984)

(a)(1) The Government may, subject to paragraphs (c) and (d) of this clause, by written notice of default to the Contractor, terminate this contract in whole or in part if the Contractor fails to--

(i) Deliver the supplies or to perform the services within the time specified in this contract or any extension;

(ii) Make progress, so as to endanger performance of this contract (but see subparagraph (a)(2) of this clause); or

(iii) Perform any of the other provisions of this contract (but see subparagraph (a)(2) below).

(2) The Government's right to terminate this contract under subdivisions (a)(1)(ii) and (1)(iii) of this clause, may be exercised if the Contractor does not cure such failure within 10 days (or more if authorized in writing by the Contracting Officer) after receipt of the notice from the Contracting Officer specifying the failure.

(b) If the Government terminates this contract in whole or in part, it may acquire, under the terms and in the manner the Contracting Officer considers appropriate, supplies or services similar to those terminated, and the Contractor will be liable to the Government for any excess costs for those supplies or services. However, the Contractor shall continue the work not terminated.

(c) Except for defaults of subcontractors at any tier, the Contractor shall not be liable for any excess costs if the failure to perform the contract arises from causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (1) acts of God or of the public enemy, (2) acts of the Government in either its sovereign or contractual capacity, (3) fires, (4) floods, (5) epidemics, (6) quarantine restrictions, (7) strikes, (8) freight embargoes, and (9) unusually severe weather. In each instance the failure to perform must be beyond the control and without the fault or negligence of the Contractor.

(d) If the failure to perform is caused by the default of a subcontractor at any tier, and if the cause of the default is beyond the control of both the Contractor and subcontractor, and without the fault or negligence of either, the Contractor shall not be liable for any excess costs for failure to perform, unless the subcontracted supplies or services were obtainable from other sources in sufficient time for the Contractor to meet the required delivery schedule.

(e) If this contract is terminated for default, the Government may require the Contractor to transfer title and deliver to the Government, as directed by the Contracting Officer, any (1) completed supplies, and (2) partially completed supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (collectively referred to as "manufacturing materials" in this clause) that the Contractor has specifically produced or acquired for the terminated portion of this contract. Upon direction of the Contracting Officer, the Contractor shall also protect and preserve property in its possession in which the Government has an interest.

(f) The Government shall pay contract price for completed supplies delivered and accepted. The Contractor and Contracting Officer shall agree on the amount of payment for manufacturing materials delivered and accepted and for the protection and preservation of the property. Failure to agree will be a dispute under the Disputes clause. The Government may withhold from these amounts any sum the Contracting Officer determines to be necessary to protect the Government against loss because of outstanding liens or claims of former lien holders.

(g) If, after termination, it is determined that the Contractor was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the Government.

(h) The rights and remedies of the Government in this clause are in addition to any other rights and remedies provided by law or under this contract.

(End of clause)

52.252-4 ALTERATIONS IN CONTRACT (APR 1984)

Portions of this contract are altered as follows:

(End of clause)

52.253-1 COMPUTER GENERATED FORMS (JAN 1991)

(a) Any data required to be submitted on a Standard or Optional Form prescribed by the Federal Acquisition Regulation (FAR) may be submitted on a computer generated version of the form, provided there is no change to the name, content, or sequence of the data elements on the form, and provided the form carries the Standard or Optional Form number and edition date.

(b) Unless prohibited by agency regulations, any data required to be submitted on an agency unique form prescribed by an agency supplement to the FAR may be submitted on a computer generated version of the form provided there is no change to the name, content, or sequence of the data elements on the form and provided the form carries the agency form number and edition date.

(d) If the Contractor submits a computer generated version of a form that is different than the required form, then the rights and obligations of the parties will be determined based on the content of the required form.

(End of clause)

252.201-7000 CONTRACTING OFFICER'S REPRESENTATIVE (DEC 1991)

(a) "Definition. Contracting officer's representative" means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting

officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

(End of clause)

252.203-7001 PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE-CONTRACT-RELATED FELONIES (DEC 2004)

(a) Definitions. As used in this clause—

(1) "Arising out of a contract with the DoD" means any act in connection with—

(i) Attempting to obtain;

(ii) Obtaining, or

(iii) Performing a contract or first-tier subcontract of any agency, department, or component of the Department of Defense (DoD).

(2) "Conviction of fraud or any other felony" means any conviction for fraud or a felony in violation of state or Federal criminal statutes, whether entered on a verdict or plea, including a plea of nolo contendere, for which sentence has been imposed.

(3) "Date of conviction" means the date judgment was entered against the individual.

(b) Any individual who is convicted after September 29, 1988, of fraud or any other felony arising out of a contract with the DoD is prohibited from serving--

(1) In a management or supervisory capacity on this contract;

(2) On the board of directors of the Contractor;

(3) As a consultant, agent, or representative for the Contractor; or

(4) In any other capacity with the authority to influence, advise, or control the decisions of the Contractor with regard to this contract.

(c) Unless waived, the prohibition in paragraph (b) of this clause applies for not less than 5 years from the date of conviction.

(d) 10 U.S.C. 2408 provides that the Contractor shall be subject to a criminal penalty of not more than $500,000 if convicted of knowingly--

(1) Employing a person under a prohibition specified in paragraph (b) of this clause; or

(2) Allowing such a person to serve on the board of directors of the contractor or first-tier subcontractor.

(e) In addition to the criminal penalties contained in 10 U.S.C. 2408, the Government may consider other available remedies, such as—

(1) Suspension or debarment;

(2) Cancellation of the contract at no cost to the Government; or

(3) Termination of the contract for default.

(f) The Contractor may submit written requests for waiver of the prohibition in paragraph (b) of this clause to the Contracting Officer. Requests shall clearly identify—

(1) The person involved;

(2) The nature of the conviction and resultant sentence or punishment imposed;

(3) The reasons for the requested waiver; and

(4) An explanation of why a waiver is in the interest of national security.

(g) The Contractor agrees to include the substance of this clause, appropriately modified to reflect the identity and relationship of the parties, in all first-tier subcontracts exceeding the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation, except those for commercial items or components.

(h) Pursuant to 10 U.S.C. 2408(c), defense contractors and subcontractors may obtain information as to whether a particular person has been convicted of fraud or any other felony arising out of a contract with the DoD by contacting The Office of Justice Programs, The Denial of Federal Benefits Office, U.S. Department of Justice, telephone (301) 809-4904.

(End of clause)

252.204-7000 DISCLOSURE OF INFORMATION (DEC 1991)

(a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless--

(1) The Contracting Officer has given prior written approval; or

(2) The information is otherwise in the public domain before the date of release.

(b) Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release.

(c) The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.

(End of clause)

252.204-7003 CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT (APR 1992)

The Contractor's procedures for protecting against unauthorized disclosure of information shall not require Department of Defense employees or members of the Armed Forces to relinquish control of their work products, whether classified or not, to the contractor.

(End of clause)

252.204-7004 CENTRAL CONTRACTOR REGISTRATION (52.204-7) ALTERNATE A (NOV 2003)

(a) Definitions. As used in this clause--

“Central Contractor Registration (CCR) database” means the primary Government repository for contractor information required for the conduct of business with the Government.

“Commercial and Government Entity (CAGE) code” means--

(1) A code assigned by the Defense Logistics Information Service (DLIS) to identify a commercial or Government entity; or

(2) A code assigned by a member of the North Atlantic Treaty Organization that DLIS records and maintains in the CAGE master file. This type of code is known as an “NCAGE code.”

“Data Universal Numbering System (DUNS) number” means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

“Data Universal Numbering System +4 (DUNS+4) number” means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11 of the Federal Acquisition Regulation) for the same parent concern.

“Registered in the CCR database” means that--

(1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database;

(2) The Contractor's CAGE code is in the CCR database; and

(3) The Government has validated all mandatory data fields and has marked the records “Active.”

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" or "DUNS +4" followed by the DUNS or DUNS +4 number that identifies the offeror's name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number-

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at http://www.dnb.com; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company Physical Street Address, City, State, and Zip Code.

(iv) Company Mailing Address, City, State and Zip Code (if separate from physical).

(v) Company Telephone Number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(g)
(1)
(i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notification of its intention to (A) change the name in the CCR database; (B) comply with the requirements of Subpart 42.12 of the FAR; and (C) agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractor's CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(h) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the internet at http://www.ccr.gov or by calling 1-888-227-2423, or 269-961-5757.

(End of clause)

252.209-7004 SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY THE GOVERNMENT OF A TERRORIST COUNTRY (MAR 1998)

(a) Unless the Government determines that there is a compelling reason to do so, the Contractor shall not enter into any subcontract in excess of $25,000 with a firm, or subsidiary of a firm, that is identified, on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs, as being ineligible for the award of Defense contracts or subcontracts because it is owned or controlled by the government of a terrorist country.

(b) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party that is identified, on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs, as being ineligible for the award of Defense contracts or subcontracts because it is owned or controlled by the government of a terrorist country. The notice must include the name of the proposed subcontractor notwithstanding its inclusion on the List of Parties Excluded From Federal Procurement and Nonprocurement Programs.

(End of clause)

252.226-7001 UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES, AND NATIVE HAWAIIAN SMALL BUSINESS CONCERNS (SEP 2004)

(a) Definitions. As used in this clause--

Indian means--

(1) Any person who is a member of any Indian tribe, band, group, pueblo, or community that is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs (BIA) in accordance with 25 U.S.C. 1452(c); and

(2) Any ``Native" as defined in the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.).

Indian organization means the governing body of any Indian tribe or entity established or recognized by the governing body of an Indian tribe for the purposes of 25 U.S.C. chapter 17.

Indian-owned economic enterprise means any Indian-owned (as determined by the Secretary of the Interior) commercial, industrial, or business activity established or organized for the purpose of profit, provided that Indian ownership constitutes not less than 51 percent of the enterprise.

Indian tribe means any Indian tribe, band, group, pueblo, or community, including native villages and native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, that is recognized by the Federal Government as eligible for services from BIA in accordance with 25 U.S.C. 1452(c).

Interested party means a contractor or an actual or prospective offeror whose direct economic interest would be affected by the award of a subcontract or by the failure to award a subcontract.

Native Hawaiian small business concern means an entity that is --

(1) A small business concern as defined in section 3 of the Small Business Act (15 U.S.C. 632) and relevant implementing regulations; and

(2) Owned and controlled by a Native Hawaiian as defined in 25 U.S.C. 4221(9).

(b) The Contractor shall use its best efforts to give Indian organizations, Indian-owned economic enterprises, and Native Hawaiian small business concerns the maximum practicable opportunity to participate in the subcontracts it awards, to the fullest extent consistent with efficient performance of the contract.

(c) The Contracting Officer and the Contractor, acting in good faith, may rely on the representation of an Indian organization, Indian-owned economic enterprise, or Native Hawaiian small business concern as to its eligibility, unless an interested party challenges its status or the Contracting Officer has independent reason to question that status.

(d) In the event of a challenge to the representation of a subcontractor, the Contracting Officer will refer the matter to--

(1) For matters relating to Indian organizations or Indian-owned economic enterprises: U.S. Department of the Interior, Bureau of Indian Affairs, Attn: Chief, Division of Contracting and Grants Administration, 1849 C Street NW, MS-2626-MIB, Washington, DC 20240-4000. The BIA will determine the eligibility and will notify the Contracting Officer.

(2) For matters relating to Native Hawaiian small business concerns: Department of Hawaiian Home Lands, PO Box 1879, Honolulu, HI 96805. The Department of Hawaiian Home Lands will determine the eligibility and will notify the Contracting Officer.

(e) No incentive payment will be made--

(1) While a challenge is pending; or

(2) If a subcontractor is determined to be an ineligible participant.

(f)(1) The Contractor, on its own behalf or on behalf of a subcontractor at any tier, may request an incentive payment in accordance with this clause.

(2) The incentive amount that may be requested is 5 percent of the estimated cost, target cost, or fixed price included in the subcontract at the time of award to the Indian organization, Indian-owned economic enterprise, or Native Hawaiian small business concern.

(3) In the case of a subcontract for commercial items, the Contractor may receive an incentive payment only if the subcontracted items are produced or manufactured in whole or in part by an Indian organization, Indian-owned economic enterprise, or Native Hawaiian small business concern.

(4) The Contractor has the burden of proving the amount claimed and shall assert its request for an incentive payment prior to completion of contract performance.

(5) The Contracting Officer, subject to the terms and conditions of the contract and the availability of funds, will authorize an incentive payment of 5 percent of the estimated cost, target cost, or fixed price included in the subcontract awarded to the Indian organization, Indian-owned economic enterprise, or Native Hawaiian small business concern.

(6) If the Contractor requests and receives an incentive payment on behalf of a subcontractor, the Contractor is obligated to pay the subcontractor the incentive amount.

(g) The Contractor shall insert the substance of this clause, including this paragraph (g), in all subcontracts exceeding $500,000.
(End of clause)

252.232-7004 DOD PROGRESS PAYMENT RATES (OCT 2001)

(a) If the contractor is a small business concern, the Progress Payments clause of this contract is modified to change each mention of the progress payment rate and liquidation rate (excepting paragraph (k), Limitations on Undefinitized Contract Actions) to 90 percent.

(c) If the contractor is a small disadvantaged business concern, the Progress Payments clause of this contract is modified to change each mention of the progress payment rate and liquidation rate (excepting paragraph (k), Limitations on Undefinitized Contract Actions) to 95 percent.

(End of clause)

252.242-7000 POSTAWARD CONFERENCE (DEC 1991)

The Contractor agrees to attend any postaward conference convened by the contracting activity or contract administration office in accordance with Federal Acquisition Regulation subpart 42.5.

(End of clause)

252.243-7001 PRICING OF CONTRACT MODIFICATIONS (DEC 1991)

When costs are a factor in any price adjustment under this contract, the contract cost principles and procedures in FAR part 31 and DFARS part 231, in effect on the date of this contract, apply.

252.243-7002 REQUESTS FOR EQUITABLE ADJUSTMENT (MAR 1998)

(a) The amount of any request for equitable adjustment to contract terms shall accurately reflect the contract adjustment for which the Contractor believes the Government is liable. The request shall include only costs for performing the change, and shall not include any costs that already have been reimbursed or that have been separately claimed. All indirect costs included in the request shall be properly allocable to the change in accordance with applicable acquisition regulations.

(b) In accordance with 10 U.S.C. 2410(a), any request for equitable adjustment to contract terms that exceeds the simplified acquisition threshold shall bear, at the time of submission, the following certificate executed by an individual authorized to certify the request on behalf of the Contractor:

I certify that the request is made in good faith, and that the supporting data are accurate and complete to the best of my knowledge and belief.

(Official's Name)

(Title)

(c) The certification in paragraph (b) of this clause requires full disclosure of all relevant facts, including--

(1) Cost or pricing data if required in accordance with subsection 15.403-4 of the Federal Acquisition Regulation (FAR); and

(2) Information other than cost or pricing data, in accordance with subsection 15.403-3 of the FAR, including actual cost data and data to support any estimated costs, even if cost or pricing data are not required.

(d) The certification requirement in paragraph (b) of this clause does not apply to----

(1) Requests for routine contract payments; for example, requests for payment for accepted supplies and services, routine vouchers under a cost-reimbursement type contract, or progress payment invoices; or

(2) Final adjustment under an incentive provision of the contract.

252.245-7001 REPORTS OF GOVERNMENT PROPERTY (MAY 1994)

(a) The Contractor shall provide an annual report --

(1) For all DoD property for which the Contractor is accountable under the contract;

(2) Prepared in accordance with the requirements of DD Form 1662, DoD Property in the Custody of Contractors, or approved substitute, including instructions on the reverse side of the form;

(3) In duplicate, to the cognizant Government property administrator, no later than October 31.

(b) The Contractor is responsible for reporting all Government property accountable to this contract, including that at subcontractor and alternate locations.

(End of clause)

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SECTION J

Attachment J1

PERFORMANCE WORK STATEMENT

FOR OPERATION AND MAINTENANCE OF CENTRAL TREATMENT FACILITY

TABLE OF CONTENTS

DOCUMENT NO.	DESCRIPTION
C1	General Requirements
01310	Project Management
01351	Safety, Health, and Emergency Response (HTRW/UST)
01450	Chemical Data Quality Control
	TECHNICAL EXHIBITS (TE)
TE-1	General Description of Facilities to be Operated and Maintained
TE-2	Government Furnished Property, Equipment and Materials Inventory
TE-3	Sampling And Analysis Schedule
TE-4	Historical Maintenance and Operations Data
TE-5	Pipeline Cleaning and Inspection Services
TE-6	Authorization To Discharge Under The National Pollutant Discharge Elimination System
TE-7	Electronic O&M Manual

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SECTION J
ATTACHMENT J1

PERFORMANCE WORK STATEMENT

For

O&M Services, Central Treatment Plant
Bunker Hill Superfund Site, Kellogg, Idaho

TABLE OF CONTENTS

SECTION C1

Paragraph	Title
C.1	Scope
C.2	Definitions
C.3	Applicable Documents
C.4	Measurement and Payment
C.5	Supplementary Requirements
C.6	Site Specific Supplementary Requirements
C.7	Government-Furnished Property
C.8	Contractor-Furnished Property
C.9	Specific Tasks and Services
C.10	Work Levels
C.11	Work Level Priorities
C.12	Emergency Work
C.13	Work Control
C.14	Work Clearance and Unscheduled Plant Shutdowns
C.15	Utility Location
C.16	Manufacturers' Manuals
C.17	Equipment Replacement (Government Property)
C.18	Salvage of Removed Parts
C.19	Reports
C.20	Project Management
C.21	Contingencies
C.22	Temporary Facilities And Controls
C.23	Physical Security
C.24	Utility Services
C.25	Quality Control
C.26	Submittal of Contract Data
C.27	Quality Assurance
C.28	Access to Site
C.29	Performance Evaluation Meetings
C.30	Contractor Notification
C.31	Key Control
C.32	Energy and Utilities Conservation Programs
C.33	Interfaces and Cooperation with Other Contractors
C.34	Warranties

C.35 Environmental Protection and Occupational Safety and Health Requirements
C.36 Record Keeping
C.37 Disasters
C.38 Decontamination
C.39 Operations & Maintenance Manual

C.1 **Scope:**

C.1.1 General. The Contractor shall operate, inspect and maintain the Government owned treatment works, pipelines, support facilities, parts and equipment at the Bunker Hill Mine Central Treatment Plant (Kellogg, Idaho) and associated systems and appurtenances in strict accordance with the terms and conditions of the contract as defined in this Performance Work Statement. Operators shall be qualified in accordance with requirements shown herein and as required by the State of Idaho.

C.1.1.1 Work Located on a Superfund Site. The Contractor is advised that this work will be performed within the Bunker Hill Superfund site, Kellogg , Idaho and that continuing remediation work under other contracts will occur during the period of this Contract within the Superfund site boundaries, including adjacent to or within the limits of the treatment facilities. This contract is subject to certain procurement and construction management/oversight responsibilities by the United States Army Corps of Engineers (USACE) that are established under an Interagency Agreement with the United States Environmental Protection Agency (EPA). Furthermore, this "Agreement" does not preclude any other or additional agreements with the State of Idaho Department of Environmental Quality (DEQ) and the United States Environmental Protection Agency (EPA).

C.1.1.2 Record of Decision. Since 1982, two Records of Decision (RODs), that define the cleanup plan for the Bunker Hill Superfund Site have been written for the EPA, and agreed to by the State of Idaho. The ROD includes the expired NPDES permit that the Contractor shall continue to follow when operating the plant to ensure contaminated water is treated to or below the specified standards. See Technical Exhibit TE-6 for a copy of the expired NPDES permit. For a copy of the complete ROD, see the web site http://www.epa.gov/superfund/sites/rods/index.htm.

C1.1.3 Existing Facilities

All facilities are existing Government-Owned Contractor-Operated (GOCO). See Technical Exhibit TE-1 GENERAL DESCRIPTION OF FACILITIES TO BE OPERATED AND MAINTAINED for descriptions of the plant, site features, and operation of the facilities.

C.1.1.4 Existing Conditions

The Central Treatment Plant (CTP) has a design capacity of 5,000 gpm. The average flow is 10 to 20 million gallons per week of operation. Treatment is accomplished as described in Technical Exhibit TE-1 GENERAL DESCRIPTION OF FACILITIES TO BE OPERATED AND MAINTAINED. A small quantity of consumable materials is used for plant operation including the following items: polymer and lime.

C.1.1.4.1 Wastewater Characteristics

The wastewater characteristics subject to the treatment requirements of this specification are variable. However, for the general purposes of this specification, records of raw water quality are included under Technical Exhibit TE-4 Historic Maintenance and Operating Data.

C.1.2 Operations. The Contractor shall furnish all labor, supervision, tools, materials, supplies and consumable items and equipment except Government furnished equipment and materials and supplies, if any (See C.7), and incidental engineering, and transportation necessary for operation, maintenance, and repair of equipment and support systems of the Central Treatment Plant, hereinafter known as the CTP, and its associated facilities and site works on the Bunker Hill Superfund Site in Kellogg, Idaho in

accordance with the requirements specified under this contract. The work shall include treatment of waste water, corrective and preventive maintenance, repair, operation of treatment facilities, report preparation, laboratory analyses, and other services as specified in these specifications and Technical Exhibits. The Contractor shall perform to all standards in the contract.

C.1.2.1 General Requirements.

Operate the CTP facility to treat contaminated water to or below the standards specified in the expired NPDES Permit (See Technical Exhibit 6 "AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM) and which provides for the effective and efficient operation and maintenance of the CTP. The Contractor shall provide and manage the chemicals and utilities used and required in plant operations. The Contractor shall comply with the specifications and approved O & M manuals.

C.1.2.1.1 Performance Improvement

The Contractor shall develop and implement procedures such that the CTP treatment process is operating at optimum levels during normal conditions. Optimization shall be relative to performance (e.g., meeting/beating NPDES discharge limits), cost, and operational reliability.

C.1.2.1.2 Miscellaneous Maintenance

All housekeeping, custodial, and cleanup services and grounds maintenance within the specified area at the treatment plant site shall be provided by the Contractor.

C.1.2.1.3 The Contractor shall clean up work sites during and after work assignments, and remove all unused material or refuse from the worksite. Refuse and debris shall be removed from the work site at the end of each workday, and deposited in dumpsters.

C.1.2.1.4 Quality and workmanship shall be accomplished in accordance with Industry Standards and applicable Manufacturers' Technical Manuals, Technical Bulletins, and Technical Exhibits as referenced in the contract.

C.1.2.2 Materials and Supplies

C.1.2.2.1 All chemicals and materials for plant operation such as polymer and lime, emergency response, laboratory analysis, maintenance, or for other reasons required for plant operation and maintenance shall be provided by the Contractor.

C.1.2.2.2 Chemicals for plant operations, maintenance and laboratory usage are stored on-site. If any required chemicals cannot be safely and properly stored on-site an adjustment will be made in accordance with the CHANGES clause.

C.1.2.3 Safety. The Contractor shall be responsible for complying with all Federal, state, and local safety standards and shall instruct employees in all appropriate safety measures in regards to (but not limited to) confined space entry, sewers, electrical hazards, mechanical equipment hazards, chemical hazards, temperature hazards, explosion and fire hazards, bacterial hazards, oxygen deficiency and noxious gas hazards, and laboratory hazards. The Contractor shall provide all safety equipment required for its employees. All work shall be accomplished in a manner that insures the protection of workers, and public health and safety. See Section 01351, SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST) for more detailed requirements.

C.1.2.4 Additional Considerations. In addition to maintaining worker safety and health, the operation of CTP systems and related work elements shall be accomplished by the Contractor with full consideration for protecting nearby communities, and mitigating further deleterious impacts to the environment during execution of the work.

C.1.2.5 Documentation And Records. The Contractor shall maintain at the site and furnish copies to the Government, if requested, of all pertinent data records and reports as described in the specifications including operating logs, maintenance functions, discharge monitoring and analysis, and personnel daily sign-in sheets. All documentation, records, schedules, etc., as described in the specifications that are the responsibility of the Contractor are the property of the Government and shall remain so even upon termination of the contract. The Contractor shall keep these items current at all times. Documentation and records shall be turned over to the Government upon completion of the contract or when requested by the Contracting Officer or designated representative.

C.1.2.5.1 The Contractor shall provide complete documentation for all corrective maintenance projects. The documentation required includes the labor hours used for completion, and the parts, materials, and supplies consumed for each project. This documentation may be reported using a commercial operation and maintenance software program. The Government will provide initial training to Contractor personnel under Contract Initiation Services, ongoing technical trouble call assistance during the contract period.

C.1.3 Startup, Initiation and Transition Services

The Contractor shall be prepared to fully commence work on the start date of this contract. Government or previous contractor employees will not be available to guide, direct, or specifically orient each Contractor employee after the start date of this contract. Prior to the start date for responsibility for all services under this contract, the Government will provide orientation to the Contractor's key management and operating personnel performing work under this contract as specified in paragraph C1.3.1 “Contract Initiation Services.” At the end of this contract, the Contractor shall provide personnel to assist in the changeover transition to another contractor as specified in paragraph C1.3.2 “Change over Transition Services.”
‘

C.1.3.1 Contract Initiation Services. The Contractor shall obtain training on the operation of the treatment plant during a 14 calendar day transition period prior to the start date of the contracted O&M service period. The Contractor will be on-site with the existing operating contractor during the transition initiation period. The Contractor shall have the Plant Manager and the plant operators on site during the period to obtain the necessary training on this facility. The start of Contractor's responsibility for all services will commence upon successful completion of training as deemed satisfactory by the Contracting Officer. Any delays in the initiation transition period, including any additional expenses to the Government for continued operation of the treatment faculty due solely to the Contractors failure to perform satisfactorily as determined by the Contracting Officer, will be at the expense of the Contractor.

C.1.3.2 Contract Changeover Transition Services. At the option of the Government and to ensure continuity of essential services, the Contractor shall have the Contract Manager and at least one plant operator on site for a period of 14 calendar days after the completion of this contract for orientation of subsequent contractor employees. The Contractor expenses for this period will be included as an option item under the schedule and will be applicable only once to be made at the end of the contract period, including any extensions (option years).

C.1.4 Replacement And Modernization. During the term of this contract, the Government may replace, renovate, or improve equipment, systems, facilities, components, and fixtures at the Government's expense and by means other than this contract. All replaced, improved, updated, modernized or renovated equipment, fixtures, facilities, components and systems shall be maintained, operated and /or repaired by the Contractor at no additional cost to the Government unless such changes result in an increase or decrease in contract requirements. Changes, replacements, or deletions which result in an increase or decrease in contract requirements will result in adjustments to the applicable contract price(s) in accordance with the CHANGES clause, Section I.

C.1.5 Non-Recurring Work

Non-recurring work may be required during the performance of the contract. The Contractor shall provide all resources (except as expressly stated in this contract as furnished by the Government) necessary to provide such work. Non-recurring work will be paid at the appropriate price under the contract line item for such work or, for work not identified in the Schedule of Prices, at the negotiated fixed price under the applicable wage provision.

Examples of potential non-recurring work are:

Execute upgrade of treatment plant control systems.

Replacement of influent HDPE pipelines.

Repair of Rapid Mix Tank Gear Box

Overhaul or replace sludge recycle and wasting pumps

Cleanout and decommissioning of flocculation basin

C.2 **Definitions:**

The following general terms shall be understood to read as specified:

- Directed, Required, Ordered, Designated, Prescribed

Wherever in the specifications or upon the drawings the words "directed," "required," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the "direction," "requirement," "order," "designation," or "prescription" of the Contracting Officer and/or COR is intended and similarly the words "approved," "acceptable," "satisfactory," or words of like import shall mean "approved by," or "acceptable to," or "satisfactory to" the Contracting Officer unless otherwise expressly stated.

- As Shown, As Indicated, As Detailed

Where "as shown," "as indicated," "as detailed," or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise.

- Provide, Provided

The word “provide” or "provided" as used herein shall be understood to mean "provided complete in-place," that is "furnished and installed." (FAR 52.236-21 (b and c).)

C.2.1 Acceptable Quality Level (AQL): The maximum percent defective, the maximum number of defects per hundred units, or the total number of defects in the lot that will be considered as acceptable variance from a standard.

C.2.2 Acceptance: The act of an authorized representative of the Government by which the Government assumes for itself, or as agent of another, ownership of existing and identified supplies tendered or approves specific services rendered, as partial or complete performance of the contract on the part of the Contractor.

C.2.3 Acronyms: Standard abbreviations used to identify technical items, proper names or organizations. A list of acronyms which are applicable to the contract and work performed by the Contractor are as follows:

AFARS	Army Federal Acquisition Regulation Supplement
ARAR	Applicable or Relevant and Appropriate Requirements
BHSF	Bunker Hill Superfund
ANSI	American National Standards Institution
AQL	Acceptable Quality Level
ARD	Automatic Release Date
ASL	Authorized Stockage List
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
BOD	Biological Oxygen Demand
CDR	Contract Discrepancy Report
CIA	Central Impoundment Area (Bunker Hill Site)
CLIN	Contract Line Item Number
CO	Contracting Officer
COR	Contracting Officer’s Representative
CTP	Central Treatment Plant
CY	Cubic Yards
DA	Department of the Army
DFARS	Defense Federal Acquisition Regulation Supplement
DOD	Department of Defense
EIP	Equipment in Place
EPA	Environmental Protection Agency
FAR	Federal Acquisition Regulation
FOB	Free on Board
FSC	Federal Supply Class
GFE	Government-Furnished Equipment
GFP	Government-Furnished Property
GOCO	Government-Owned, Contractor-Operated

GPM	Gallons per minute
GVW	Gross Vehicular Weight
HQDA	Headquarters, Department of the Army
IAW	In Accordance With
IBE	Installed Building Equipment
IDEQ	Idaho Department of Health and Welfare, Division of Environmental Quality
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
OMER	On-Call Maintenance and Emergency Repair
POL	Petroleum, Oil and Lubricants
PWS	Performance Work Statement
QA	Quality Assurance
QAE	Quality Assurance Evaluator
QASP	Quality Assurance Surveillance Plan
QC	Quality Control
QCP	Quality Control Plan
SOP	Standard Operating Procedure
TB	Technical Bulletin
TDA	Table of Distribution and Allowance
TM	Technical Manual
UCF	Uniform Contract Format

C.2.4 Bi- : A prefix used to denote lasting or occurring every two (2) (i.e., bimonthly = occurring every two (2) months).

C.2.5 Breakdown: The stoppage or collapse of equipment of a facility, or a component thereof, that requires immediate corrective action to restore it to an operating condition.

C.2.6 Check: To examine, test, or compare with a standard to verify that the unit under surveillance is operating within design specifications.

C.2.7 (Not used)

C.2.8 Clean: As used generally, means removal of dirt or impurities. As used for acceptance of work, means gleaming, bright, free from dirt, etc.

C.2.9 Contract Line Item Number (CLIN): An item of work and materials for which the Contractor will receive compensation. The unit bid price of a CLIN represents the unit price the Contractor will receive relative to the cost attributed to that requirement.

C.2.10 Contracting Officer (CO): A person duly appointed with the authority to enter into, to change, and to administer contracts on behalf of the Government.

C.2.11 Contracting Officer’s Representative (COR): An individual, designated in writing by the Contracting Officer, who performs specific contract administrative functions.

C.2.12 Critical Equipment and Facilities: Items of equipment or facilities that must operate continuously or throughout the respective season in order to support critical missions. Failure of equipment or facilities in meeting design output requirements may affect the health and welfare of personnel or damage Government equipment or properties. Emergency or urgent service calls are often required to restore the critical equipment to optimum operating condition and provide the output required. Examples are: Monitoring Equipment and Systems, Electrical Systems, Water Treatment Plants and Systems, Alarms and Phone Call Out System and Fire Prevention and Protection Facilities.

C.2.13 Direct Material Costs. The actual vendor invoice charges for materials used for performance of work under this contract. Direct material costs shall include transportation charges when such charges are included on the invoice by the vendor, as well as any discounts allowed for prompt payment or warranty credits. When questions arise concerning the cost of materials, material costs shall be based on the lowest of quotes provided by the Contractor from at least three different commercial vendors for the direct material costs. The Government retains the right to obtain additional quotes in questionable situations. The lowest price will be used.

C.2.14 Government Contract Inspector: A duly-appointed Government employee whose principal task is to ensure that quality is maintained for the Government. The inspector will be the principal point of contact for coordination and inspection of work performed under the contract.

C.2.15 Government-Furnished Property (GFP): Property owned by the Government and furnished for Contractor use.

C.2.16 Hazardous Wastes: Waste materials that are toxic, poisonous, corrosive, irritating, sensitizing, radioactive, biologically infectious, explosive, or flammable and that present a significant hazard to human health and the environment. Special handling procedures and disposal facilities are required for their disposal. Hazardous wastes, as defined by the Environmental Protection Agency (EPA), shall be handled in accordance with the regulatory requirements of EPA and Idaho Department of Environmental Quality.

C.2.17 Inspection: The examination and testing of supplies or services to determine whether they conform to contract requirements.

C.2.18 Labor Hour: The cost for each hour shall include labor overhead, equipment (such as rakes, chain saws, pick-up trucks, dump trucks and backhoes) and all other costs required to perform a task. No separate measurement for supervision, or helper labor will be made as they are incidental to the service being provided.

C.2.19 Lead Time: The total time from receipt of a work requirement by the Contractor until the work must be initiated.

C.2.20 Litter: Rubbish scattered about the ground.

C.2.21 Maintenance: The work required to preserve and maintain a facility in such condition that it may be effectively used for its designated functional purpose. Maintenance includes work done to prevent damage that would be more costly to restore than to prevent. Maintenance includes work to sustainable components. Examples include renewing disposable filters, painting, caulking, refastening loose siding and sealing bituminous pavements.

C.2.22 (Not used)

C.2.23 Normal Working Day: The Contractor's normal employee work day for operation of the water treatment plant will be eight (8) hours per day for Monday through Friday during the hours of 7:30 am to 4:00 pm. A normal facility work day will be the continuous treatment of mine water and other waste water sources received by the CTP for at least sixteen (16) hours of each twenty-four (24) hour period per day, seven days per week.

C.2.24 "Holidays" - The following are Federal holidays. If the holiday falls on Saturday, the preceding Friday is a holiday; if the holiday falls on a Sunday, the following Monday is a holiday. These represent non-duty days for Federal Government employees.

New Year's Day, January 1
Martin Luther King Jr. Day, 3rd Monday in January
Presidents' Day, 3rd Monday in February
Memorial Day, last Monday in May
Independence Day, July 4
Labor Day, 1st Monday in September
Columbus Day, 2nd Monday in October
Veterans' Day, November 11
Thanksgiving Day, 4th Thursday in November
Christmas Day, December 25

C.2.25 Performance Indicator: A characteristic of work process output that can be measured.

C.2.26 Performance Requirements Summary (PRS): Identifies the key service outputs of the contract that will be evaluated by the Government to assure contract performance standards are met by the Contractor. (See Section E INSPECTION AND ACCEPTANCE and Section J, Attachment J7, QASP.)

C.2.27 Pre-expended bin materials and supplies. The minor materials and supplies, including those that are incidental to the job, for which the total adjusted cost of any one material line item shown on the material estimate is $10.00 or less. Examples of pre-expended bin materials and supplies include, but are not limited to, solder, lead, flux, electrical connectors, electrical tape, fuses, nails, screws, bolts, nuts, washers, spacers, masking tape, sand paper, solvent, cleaners, lubricants, grease, oil, rags, mops, glue, epoxy, spackling compound, joint tape, gases, refrigerants, refrigeration fittings, plumbers tape and compound, clips, welding rods, heat sinks, electrical outlet, switches, cover plates, plumbing fixtures and fittings, touch up paint, and any other item for which the total line item adjusted cost is $10.00 or less.

C.2.28 Quality Assurance (QA): A methodology used by the Government, to assure that the quality of purchased goods and services received are acceptable in accordance with established standards and requirements of the contract. Those actions taken by the Government to evaluate services to ensure that the services will meet the requirements of the contract.

C.2.29 Quality Control (QC): Those actions taken by a Contractor to evaluate services performed to ensure that the requirements of the contract are met.

C.2.30 Response Time: The time from receipt of a work requirement by the Contractor until the Contractor arrives on the site where the work will be performed.

C.2.31 Rubbish: Waste material such as metal, glass, crockery, paper, wrappings, and containers/cartons.

C.2.32 Serviceable: Suitable for the intended use.

C.2.33 Service Call Classifications. Response times and timeliness standards for completion of service orders shall be as follows, unless otherwise stated:

C.2.33.1 Emergency – Priority 1 – Respond within 90 minutes with continuous repair effort or until the emergency can be considered Urgent or Routine.

C.2.33.2 Urgent – Priority 2 – Complete within three (3) working days.

C.2.33.3 Routine – Priority 3 – Complete within 30 calendar days.

C.2.33.4 Other Routine – Priority 4 Complete within next season or other designated non-critical work period.

C.2.34 Shall: The word “shall” is used in connection with the Contractor and specifies that the provisions are binding.

C.2.35 Weekend(s)

Wherever in these specifications the word "weekend(s)" is used, it shall be understood to mean "Saturday, Sunday and Federal Holidays," unless otherwise expressly stated.

C.3 **Applicable Documents:**

C.3.1 Specifications

The following technical specifications accompany and form a part of the Section C requirements and are an attachment thereto regardless of their placement in the contract documents.

Section No.	Title
01310	PROJECT MANAGEMENT
01351	SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST)
01450	CHEMICAL DATA QUALITY CONTROL

C.3.2 Drawings

The available maps/drawings show the location of the various systems and facilities to be maintained under the provisions of the contract. A list of maps and drawings included with the contract is identified under Section J, Attachment J2 List of Drawings.

C.3.2.1 Additional Data

In addition to the drawings for the Contractor's use the following items will also be provided, after award of the contract, upon request to the Contracting Officer or QAE:

a. Floor plans and related facility and equipment manufacturer's literature, where available.

b. Utility systems drawings will be available for review, where available.

C.3.3 Reference Documents

The following documents and directives are applicable to operation and maintenance of water treatment plants. The Contractor shall provide all listed publications at its own expense (Contractor-Furnished) unless otherwise noted as Government Furnished. The Contractor is not required to obtain any publications determined to be not applicable to the project. The listed publications are coded as follows:

Government-Furnished = GF
Contractor-Furnished = CF
Mandatory = M
Advisory = A

EM 385-1-1 (2003) US Army Corps of Engineers Safety and Health Requirements Manual The manual is available on line at: http://www.usace.army.mil/inet/usace-docs/eng-manuals/em385-1-1/toc.htm	CF/M
Occupational Safety and Health Administration (OSHA) Requirements: All Applicable to Contract Services	CF/A
National Institute of Occupational Safety and Health Requirements: All Applicable to Contract Services Industrial References:	CF/A
Manufacturers' Technical Manuals, Operating and Maintenance Bulletins, Parts Lists, Recommended Spares, Drawings, etc. for all equipment (* limited to existing materials available at the project site or included as an exhibit/attachment to the contract. All others are CF.)	CF/GF*/M

INDUSTRIAL STANDARDS AND CODES (latest Editions):

American Water Works Association, Water Pollution Control Federation, and American Society of Civil Engineers : Standard Methods for the Examination of Water and Wastewater	CF/A
American Welding Society	CF/A
American National Standards Institute	CF/A
American Institute of Steel Construction	CF/A

American Society for Testing and Materials	CF/A
Underwriter's Laboratories, Inc.	CF/A
National Fire Code (latest edition of all applicable volumes)	CF/M
Kent's Mechanical Engineers Handbook, (latest edition, 2 volumes), John Wiley and Sons, Inc.	CF/A
ASHRAE Guide and Data Books (latest editions)	CF/A

National Electric Code:

ANSI/NFPA 70	National Electrical Code	CF/M
NFPB 70B	Electrical Equipment Maintenance (1983)	CF/M
ANSI C2	National Electrical Safety Code	CF/M

C.3.4 References. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

33 CFR 328	Definitions
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171 - 178	Hazardous Materials Regulations

C.3.5 Technical Exhibits

Unless otherwise specified all technical exhibits follow this section.

C.3.5.1 Technical Exhibit TE-1 –GENERAL DESCRIPTION OF FACILITIES TO BE OPERATED AND MAINTAINED:

C.3.5.2 Technical Exhibit TE-2 – GOVERNMENT FURNISHED PROPERTY, EQUIPMENT AND MATERIALS INVENTORY:

C.3.5.3 Technical Exhibit TE-3 – SAMPLING AND ANALYSIS SCHEDULE:

C.3.5.4 Technical Exhibit TE-4 – HISTORICAL MAINTENANCE AND OPERATIONS DATA .

C.3.5.5 Technical Exhibit TE-5 –: PIPELINE CLEANING AND INSPECTION SERVICES

C.3.5.6 Technical Exhibit TE-6 –: AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

C.3.5.7 Technical Exhibit TE-7 – ELECTRONIC O&M MANUAL

C.4 **Measurement and Payment**

C.4.1 General Information

In each instance, the contract price for an item will constitute full compensation as herein specified, as shown, or as otherwise approved.

C.4.2 Measurement

C.4.2.1 General

Items measured as a lump sum (LS) or monthly (MO) will be measured for payment as a complete job for the services indicated. This measurement includes all incidental work and materials that are necessary to make a complete job. Unless the description of the payment item on the SUPPLIES OR SERVICES AND PRICES/COST schedule makes a specific exception of any item, incidental items will not be measured under any other item even though there is another listing for the work or material.

C.4.2.2 Hourly Work

A labor-hour is defined as one person working as directed for a period of 60 minutes and include all costs as specified under C.2.18. Time will be computed by rounding off to the next higher one-half (1/2) hour.

C.4.2.3 Per Diem

For workers required to work at the project site that are not under the firm fixed price of the contract Per Diem will be paid in accordance with the maximum limits specified in the Joint Travel Regulations (JTR). Per Diem is only applicable for personnel required on-site for on-call or consulting services not residing within the local commuting area. The Contract Manager and all routine on-site workers and plant operators will not be eligible for per diem at any time. (A process engineer and other engineering consultants will be eligible for per diem if performing duties at the project site under the indefinite portion of the contract and meeting the requirements of the JTR.)

C.4.2.4 Indefinite Quantity Work – Professional Services:

This item will be used as an allowance for additional labor costs to be available at the discretion and approval of the Contracting Officer. Each unit of hourly work approved under this allowance includes direct and indirect costs as defined for "Labor Hour" in paragraph C.2.18 for one performance standard hour of work-in-place. The total "not to exceed" amounts cannot be exceeded without a modification to the contract. Costs applicable under this work item will be issued by On-Call Maintenance and Emergency Repair work items(s) or modification as defined in the contract documents.

C.4.2.5 Indefinite Quantity Work – OMER Allowance

This item will be used as an allowance for additional material and labor costs to be available at the discretion and approval of the Contracting Officer and issued under an On-Call Maintenance and Emergency Repair work item. See the Special Contract Requirements, paragraph H.10 ON-CALL MAINTENANCE AND EMERGENCY REPAIR (OMER) WORK for use of OMER work.
The total "not to exceed" amount cannot be exceeded without a modification to the contract. Payment for materials costs will be the "Direct Materials Costs" defined in paragraph C.2.13.

C.4.3 Payment Procedure. The Contractor will be paid upon submission of proper invoices or vouchers, the price(s) stipulated in the Schedule under the applicable contract line item(s) for services rendered and accepted. For submission of Contractor payment requests, See Section G, CONTRACT ADMINISTRATION DATA.

C.5 **Supplementary Requirements**

C.5.1 Correspondence

C.5.1.1 All correspondence shall be addressed to the Contracting Officer, shall be serially numbered commencing with Number 1, with no numbers missing or duplicated and shall be forwarded in an original and one copy. All copies provided shall be legible. Enclosures attached or transmitted with the correspondence shall also be furnished with the original and copy. Each serial letter shall make reference to the contract name, contract number and shall have only one subject.

C.5.2 Quality Assurance

C.5.2.1 Government Evaluation of Services

In accordance with the Section E, "Inspection of Services" clause, the Government will evaluate the Contractor's performance under the contract. For those tasks listed on the Performance Requirements Summary (PRS), the Quality Assurance Evaluator (QAE) or evaluators will generally follow the methods of surveillance specified in the Quality Assurance Surveillance Plan (QASP) (See Attachments under Section J). Government personnel will record all surveillance observations. When an observation indicates defective performance, the QAE will require the Contract Manager or representative at the site to initial the observation. The initialing of the observation does not necessarily constitute concurrence with the observation, only acknowledgment that he or she has been made aware of the defective performance. Government surveillance of tasks not listed in the PRS (such as provided for by the Inspection of Services clause) may occur during the performance period of the contract. Such surveillance will be done according to standard inspection procedures or other contract provisions. Any action taken by the Contracting Officer as a result of surveillance will be according to the terms of the contract.

C.5.3 Compliance With Applicable Federal, State, And Local Requirements

In performing work under this contract, the Contractor shall comply with all relevant ARARs under Federal, state and local statutes, ordinances, laws and regulations.

C.5.4 Permits For Work.

No permits are required to be obtained by the Contractor for work conducted on the CTP site; however, substantive requirements of the ARARs must be met. The Contractor is responsible for obtaining permits for any work conducted off the CTP facility.

C.6 **Site Specific Supplementary Requirements**

C.6.1 General Access To Site

The CTP lies within the Industrial Complex-Central Impoundment Area portion of the Bunker Hill Superfund Site. This area is presently secured by fences and limited-access gates. The Contractor shall comply with and maintain the site access limitations and general area security requirements of the Bunker Hill Superfund Site. The Contractor shall direct delivery trucks to access the CTP through the Wildcat Way gate

C.6.1.1 Visitor Identification

Site visitors are required to check in with treatment plant operators and present current identification. A current driver's license (or similar) or agency identification card will be sufficient.

C.6.1.2 Visitor Site Logs

Visitor site logs shall be kept to identify the visitors to the CTP facility.

C.6.1.3 Parking

Contractor vehicles shall park within limits of project area or designated staging area while performing on-site contract activities, unless otherwise approved by the Contracting Officer.

C.6.2 Vehicles

C.6.2.1 General

The Contractor shall provide and maintain all vehicles necessary to perform the requirements of the contract. Contractor vehicles shall have the company name prominently displayed on both sides of the vehicle and be maintained clean to present a neat, professional appearance.

C.6.2.2 Usability

All vehicles used in the performance of the contract shall be in operable condition and meet the local, state, and Federal safety requirements. Vehicles found to be unsafe and unable to function as designed, shall be removed from the site and replaced at Contractor expense. Vehicular repairs shall not be done

on-site. The Contracting Officer may inspect the Contractor's vehicles at any time and direct the removal of any unsafe or objectionable vehicle from the project.

C.6.2.3 Regulations

All vehicles shall be registered, licensed, insured, and operated in accordance with state and local traffic regulations by a licensed driver.

C.6.3 Coordination With Other Contractors

Coordination with other on-site contractors shall be made through the Contracting Officer to assist the Contractor to perform the work with a minimum of interference and inconvenience. Under no circumstances shall additional work be performed at the request of another contractor without approval of the Contracting Officer. See paragraph C.33 Interfaces and Cooperation with Other Contractors.

C.6.4 Government Work Hours

Normal Government work hours for the Bunker Hill Superfund site are 7:00 a.m. to 4:00 p.m. daily, Monday through Friday, excluding Federal holidays.

C.6.5 Hours Of Operation

C.6.5.1 Contractor Responsibility

The Contractor is responsible for all waste water operation and maintenance activities 24 hours per day, 7 days-per week. Contract Manager or alternate(s) shall be continuously available for communications via telephone, cellular telephone, or pager. If operation of the wastewater treatment plant requires staffing outside of normal hours to ensure compliance with the requirements of the contract, such operations shall be provided by the Contractor at no additional cost to the Government. The Contractor shall make provisions for responding to and executing emergency mechanical, electrical or treatment process equipment repairs that occur outside of normal hours.

C.6.5.2 Normal Contractor Work Hours

The Contractor shall establish a regular work day and hour schedule for on-site activities by the CTP operator(s). The amount of on-site work performed shall be determined by the Contractor. However, the Contractor must establish a work day and hour schedule that allows for all activities necessary to meet the requirements of the specifications for performing the various features of work.

C.6.5.3 Holidays

The Contractor shall not have in excess of the 10 Federal holidays per year. The Contractor’s holidays do not necessarily have to coincide with the 10 Federal holidays, although the Contractor shall indicate the holiday schedule to be used during the contract term. The Contractor shall not be excused from operating the plant on any Federal holiday. Any additional costs associated with performing work on a Federal holiday shall be included.

C.6.6 Government Access Requirements

The CTP shall be accessible to the COR (or his designee) without notice and at all times. Other government and state employees, including EPA and Idaho DEQ, shall coordinate site visits through the COR, who will, in turn, contact the CTP operator to announce a site.

C.6.6.1 Accommodation of Guests

The Contractor shall assist and cooperate as needed in routine facility inspections and studies, and shall provide for the general accommodation of all guests of the Contracting Officer at the treatment facilities. General accommodation of such guests includes, but is not limited to, guided tours of the facility by knowledgeable contractor personnel, description of process and control data, etc. Such guests may include, for example, representatives of other local and state environmental agencies, and the Environmental Protection Agency. An activity representative may be appointed by the Contracting Officer to act as a liaison in the case of such visits.

C.6.6.2 Contractor Changeover.

The Government reserves the right to conduct site visits in all Contractor-operated facilities in conjunction with the solicitation of offers for the follow-on contract. In the event the follow-on contract is awarded to other than the incumbent, the incumbent Contractor shall cooperate to the extent required to permit an orderly changeover to the successor contractor. With regard to the successor contractor's access to incumbent employees, a recruitment notice may be placed in each facility.

C.6.7 Physical Security

The Contractor shall be responsible for securing all Government property provided for Contractor's use. At the end of each day, Government facilities, materials, and equipment shall be secured.

C.6.8 Contractor Security

The Government will not be responsible for providing specific on-site security for Contractor-owned or controlled equipment, supplies, tools, or materials. The Contractor shall provide its own security measures as necessary.

C.6.9 Protection Of Government Property

In addition to requirements of the Section I CONTRACT CLAUSES, Contractor shall protect all Government property in which it is working, except for such property as is required to be demolished. Protection shall include, but not be limited to, protection from work or operational generated dust, debris, water, and vibration and maintenance of security measures to prevent unauthorized access to CTP facilities.

C.6.10 Utility Outages

Any work or utility outages requiring plant shutdown shall be coordinated with the Contracting Officer at least 7 days in advance. Outages shall be kept to a minimum and any one outage shall not last more than 2 hours unless otherwise approved.

C.6.11 Conservation Of Utilities

The Contractor shall instruct employees in utilities conservation practices. The Contractor shall be responsible for operating under conditions which preclude the waste of utilities.

C.6.12 Storage

C.6.12.1 General

The Contractor shall store all equipment and supplies in areas approved by the Government. The Contractor shall comply with the requirements specified in Section 01351 for storage of hazardous materials, generation of hazardous wastes, and spill response.

C.6.12.2 Paint Storage Facilities

If flammable paints, thinners, and other flammable materials are stored at the waste water treatment plant site, the Contractor shall store such materials in Contractor-supplied NFPA approved flammable storage cabinet(s) and shall comply with the requirements specified in Section 01351.

C.6.13 Contractor Cleanup

The Contractor shall, at all times, keep work areas clean and free from accumulations of waste material, screenings, refuse, tools, equipment, and materials.

C.7 **Government-Furnished Property:**

In accordance with Section I CONTRACT CLAUSES, the "GOVERNMENT PROPERTY (FIXED-PRICED CONTRACTS)" clause, the Government will provide the Contractor the use of certain Government owned facilities, equipment, and materials for use only in connection with this contract. The use of Government furnished property and services for other purposes is prohibited. All such facilities, equipment, materials and supplies will be provided in "as is" condition.

C.7.1 Terminology

C.7.1.1 Installed Building Equipment (IBE)

IBE is designated as real property if it consists of items of equipment affixed to and built into the facility as an integral part of the facility. It is installed equipment which supports the functionality of the facility.

C.7.1.2 Equipment-In-Place (EIP)

Equipment–in-place consists of capital equipment and other non-expendable supplies of personal property which are mission essential. Equipment-in-place is not real property and may be of a movable nature or affixed to real property, but removable without destroying or reducing the usefulness of the facility. Examples of personnel property include: testing and scientific measuring instruments, welding equipment, ladders, furniture, shop equipment, cleaning equipment, wash vats, office equipment, furnishings and furniture.

C.7.1.3 Consumables

Any supplies routinely used up or expendable due to maintenance activities or system operations such as cleaning supplies, housekeeping materials or chemicals or admixtures incorporated into the plant process systems.

C.7.1.4 Spare Items and Critical Reserve Items

Any equipment stored on-site for use as spare items for IBE either owned by the Government or purchased for the O&M of the CTP to use in the event of routine and corrective maintenance or repair activities excluding pre-expended bin materials and supplies. The Government may require the Contractor to stock certain selected items of long lead time parts and materials under paragraph C.7.3.1.2 (Critical Reserve Items) to insure repair of critical equipment in the event of failure.

C.7.2 Description Of Government Furnished Facilities, Equipment, Materials And Services

The Government will provide to the Contractor, for use in connection with the Contract, the following property or services:

C.7.2.1 The existing Central Treatment Plan facility for GOCO services. See Technical Exhibit 1 GENERAL DESCRIPTION OF FACILITIES TO BE OPERATED AND MAINTAINED for description of basic CTP facilities. The Government will not provide office space, laboratory space, and operational facilities (except as described under Technical Exhibit 1) to the Contractor. The Contractor shall at his/her expense, secure and maintain the necessary office space and other facilities required for the performance and management of this contract.

C.7.2.2 Government-furnished Property as identified in TE-2.

C.7.2.3 Spare and reserve items identified at time of O&M transfer.

C.7.2.4 Services

The Contractor is responsible under the firm fixed-price portion of the contract for all services not identified as provided by the Government.

C.7.2.4.1 Refuse Containers and Collection

No Government service is available. The Contractor shall obtain the services of a waste disposal service for this requirement.

C.7.2.4.2 Grounds and Building Maintenance

No Government service is available. General maintenance of the building structures and the fence at the waste water treatment plant shall be provided by the Contractor. Grounds maintenance outside the limits of the site at the waste water treatment plant will be the responsibility of the Government.

C.7.2.4.3 Insect and Rodent Control

The Contractor shall provide insect and rodent control for all Government-furnished facilities. The Contractor shall notify the COR when an insect or rodent problem is detected.

C.7.2.4.4 Utilities

See paragraph C.24 Utility Services.

C.7.2.4.5 Staging Area. The Government will furnish a storage area and parking area at the treatment plant where the Contractor may store vehicles and equipment.

C.7.3 Conditions of use for GFP

Government-furnished property (GFP) is given to the Contractor in a "serviceable" condition, for use in accordance with the terms and conditions of the contract, and exclusively for the performance of the contract. The rights, remedies, and requirements listed in this section are in addition to the general provisions of the contract.

C.7.3.1 Equipment in Place (EIP) and Spare Items. Following the contract award, but prior to the contract start date, the Contracting Officer shall select a date upon which the Government shall conduct a joint inventory with the Contractor of all GFP, identified EIP, and spare items listed in Technical Exhibit 2 GOVERNMENT FURNISHED PROPERTY. The Contractor shall, on the contract start date, accept receipt of all items inventoried. The Contractor and Government representatives shall jointly determine the condition and working order of all listed items. Any irreconcilable disagreement will be settled by the CO. The Contractor and Government representatives shall certify an agreement on working order and discrepancies. If the Contractor, upon five (5) working days written notice, does not participate in the inventory, then the Contractor shall accept the list and condition of the equipment as indicated by the Government. The Contracting Officer may direct the Contractor to repair or replace one or more or none of the items which are determined to be unserviceable at the time of the inventory. The cost for such repairs, if directed by the CO, will be an additional expense to the contract and will be paid under the change provisions of the contract. If the Contractor fails to repair or replace damaged items as directed, then the Government may repair or replace those items, in which case all additional costs, incurred for procurement of such repair or replacement items, as determined by the CO, shall be deducted from monies due to the Contractor. (The Contractor shall not be responsible for repair of equipment which will not be needed for performance under this contract. Such equipment shall be marked as unserviceable and returned to the Government at the time of initial inventory).

C.7.3.1.1 Inspections And Preventative Maintenance. The Contractor shall perform operational inspections and preventative maintenance on each item of EIP and spare and reserve equipment as appropriate and applicable prior to use and shall provide all fuel and lubricants as required except as specified. The Contractor shall perform maintenance as established by the equipment manufacturers and based on the operational condition of the equipment. The Contractor shall furnish and replace all parts, subassemblies, and complete units that have failed or are failing in order to maintain the equipment in an operational condition at all times. Such maintenance may be performed in or be adjacent to the buildings and facilities. The Contractor shall be required to maintain a service log for each item of EIP and spare and reserve equipment. Forms for these service logs will be on a form approved by the CO.

C.7.3.1.2 Critical Reserve Items. If critical equipment spare items are required the Government will pay the full cost of such items initially acquired by the Contractor. The Contractor shall then maintain at least the minimum quantity of all the items specified. These items shall be used by the Contractor in the maintenance and repair of the facilities/systems only as follows:

(a) Critical reserve items shall be used on the systems or facilities with which they are associated.

(b) A replacement critical reserve item shall be ordered within three working days after the use of any critical reserve item that causes the total quantity on hand to fall below the minimum specified level. The Contractor shall bear the cost of replacement of all critical reserve items.

(c) On completion or termination of the contract, all critical reserve items shall be returned to the Government in at least the minimum specified quantities.

C.7.3.2 Expendables

The Government will furnish the expendable materials described in Technical Exhibit 2 GOVERNMENT FURNISHED PROPERTY to the Contractor on a one time basis, unless otherwise specified, for consumption by a plant system. A joint inventory shall be conducted with the Contracting Officer before commencing work under this contract to determine the exact amount and serviceability of Government furnished consumable materials. The Contractor shall then certify the findings of this inventory, assume accounting responsibility for all materials supplied, and shall provide documentation supporting issue/use of such material.

C.7.3.2.1 Replenishment of Materials

On depletion of material provided to the Contractor by the Government, as listed in TE-2, the Contractor shall furnish all consumable materials to perform the work of the contract, except as otherwise specified herein. On completion or termination of this contract a second joint inventory shall be conducted, if necessary, of all unused Government furnished materials, as listed in TE-2. The Contractor shall be held liable for all materials missing which cannot be accounted for by issue/use documentation. The Contractor shall ensure and provide a supply of chemicals to support plant operations for a minimum of 14 calendar days of operations at time of transfer.

C.7.3.3 Installed Building Equipment. (IBE) At some time following the contract award, and within 90 calendar days of transfer the Contractor shall have prepared an inventory of IBE and developed a standard system of tracking maintenance and repair activities for installed equipment such as an equipment maintenance card. See paragraph C.36 for more specific and additional requirements.

C.7.3.4 Miscellaneous Supplies. The Contractor is responsible under the firm fixed-price portion of the contract for all miscellaneous supplies and services, including personnel items, housekeeping and cleaning materials, and paper forms, not identified as provided by the Government or identified as specific line items on the SCHEDULE.

C.7.3.5 It is the responsibility of the Contractor to maintain all GFP in a serviceable condition. The Contractor shall assume responsibility for routine maintenance and repair of the Government-furnished buildings, housekeeping and custodial services, supply and changing of light bulbs, replacement of broken windows and similar tasks which do not involve maintenance or repair to structural components of the buildings. These facilities shall be restored to their original conditions at the contract’s termination, unless otherwise indicated by a mutual agreement between the CO and the Contractor.

C.7.3.6 The Government will not be held responsible for damage due to fire, theft, accident, or any other cause to the Contractor’s supplies, materials, or equipment or to personal belongings of the Contractor’s employees.

C.7.3.7 Title to GFP shall remain with the Government at all times. The Government will have continuous access to any premises wherein GFP is located.

C.7.3.8 The Contractor shall submit an updated list of GFP on the following schedule:

C.7.3.8.1 Equipment-In-Place List - every six-months, with the first revised list due to the Government COR on the first day of the seventh month following contract start.

C.7.3.8.2 Spare Items and Critical Reserve Items - every six-months, with the first revised list due to the Government COR on the first day of the seventh month following contract start.

C.7.3.8.3 IBE – within 90 calendar days of each contract period (year).

C.8 **Contractor-Furnished Property:**

C.8.1 The Contractor shall provide labor, materials, supplies, equipment and vehicles to meet the requirements of the contract, except for what is specified as GFP.

C.8.2 The Contractor shall provide the CO with a list of equipment to be used on the site for performance of the contract work containing the make, model, and serial number of each item within 10 calendar days after start of contract. The Contractor shall report any addition or deletion of equipment to the CO within 24 hours of the change in inventory. Contractor-furnished tools and equipment shall be of a type designed for the intended use and shall be kept in a safe and operable condition at all times.

C.8.3 The Contractor shall provide, and their employees shall use, safety shoes or boots, ear plugs, hard hats and eye protection when operating hazardous equipment and at any time personal protective equipment is required.

C.8.4 The Government will not be held responsible for damage to the Contractor's supplies, materials, equipment, or personal belongings brought onto the installation by employees of the Contractor.

C.8.5 Sanitary Provisions

The Contractor shall provide necessary sanitary accommodations for the use of employees and shall maintain accommodations approved by the CO.

C.8.6 Fire Extinguishers

During the contract period, the Contractor shall provide fire extinguishers in accordance with the safety requirements of the SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1. The Contractor shall remove the fire extinguishers at the completion of the contract.

C.8.7 General Requirements for Materials and Equipment

C.8.7.1 Definitions

C.8.7.1.1 Contractor Furnished Materials

Materials are the expendable physical equipment, materials, and parts that are required to complete any of the maintenance and repair activities. The Contractor shall provide all materials and equipment required at the treatment plant except as specified under C.7 Government Furnished Property.

C.8.7.1.2 Contractor Furnished Supplies

Supplies are those consumable materials that are required for continued operation of the CTP facility. Supplies include, but are not limited to, chemicals required for water treatment; chemicals required for laboratory analyses; items used for custodial services such as cleaners, paper products; items used for preventative maintenance such as grease, oil, etc. Except for items which are listed as a separate payment item, the Contractor shall provide, under the firm fixed-price portion of the contract, all other supplies required at the treatment plant except as specified under C.7 Government Furnished Property.

C.8.7.2 Government Acceptance

The Contracting Officer retains the right to approve the kind and quality of items costing more than $1,000.00.

C.8.7.3 Materials

The Contractor shall locate, purchase, transport, store and dispose of materials and supplies as necessary to complete the work. Chemical or sampling related supplies shall be in accordance with Section 01450, CHEMICAL QUALITY MANAGEMENT. Refer to the Material Data Safety Sheets that are included in the O&M manual of Section J, Attachment J5 that define the standard of quality for lime and polymer flocculant.

C.8.7.3.1 Lime

High calcium lime for slurry treatment of wastewater shall have the following minimum typical analyses:

Total Calcium oxide, CaO: > or = 90% by weight

Basicity Factor (ASTM): > or = 0.93%
Total Insolubles: < or = 5% by weight
Size, pebble (ASTM): < or = 2.5 inch

The material must also either meet or exceed the specifications of the American Society for Testing and Materials (ASTM) for quicklime, hydrated lime and limestone for chemical uses and environmental uses, ASTM C 911 and ASTM C 1529-02a, and the American Water Works Association (AWWA) and ANSI/NSF Standard 60 for Drinking Water Treatment Additives.

C.8.7.3.2 Polymer Flocculant

Polymer used at the CTP is Z Flocc 571 anionic water soluble polymer. The manufacturer is Zeroday Enterprises, LLC; Wilsonville OR; telephone 503-582-9067. Other polymer manufacturers or products may be used by Contractor if the efficiency of substitute product can be shown to meet or exceed the performance of Z Flocc 571 by bench testing. Testing costs and evaluations are the responsibility of the Contractor.

C.8.7.4 Miscellaneous Items

The Contractor shall provide any special tools and materials necessary to maintain site equipment and systems in proper operating condition. This shall include spreading protective materials over equipment to prevent any damage during maintenance activities, as necessary.

C.8.8 General Material And Equipment Replacement Requirements

C.8.8.1 Code Acceptance

All equipment furnished and installed under this contract shall be suitable for the intended application and shall conform to the latest version of the applicable standards of one or more of the following:

American National Standards Institute (ANSI)
American Society for Testing and Materials (ASTM)
Institute of Electrical and Electronics Engineers (IEEE)
National Electrical Manufacturer's Association (NEMA)
National Fire Protection Association (NFPA)
Underwriters Laboratories Inc. (UL)

Where no such standard exists for any product under this contract, the Contractor shall demonstrate the suitability of the product for the application intended to the satisfaction of the Government. Electrical installation shall be in accordance with the National Electrical Code.

C.8.8.2 Standard Products

Materials and equipment required to be installed for replacement of existing items shall be the standard products of a manufacturer regularly engaged in the manufacture of such products and shall essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening.

Items without technical specifications shall be of acceptable industrial grade and quality and shall meet or exceed the manufacturer's original specifications for the item being repaired. If the original manufacturer has updated the quality of parts for current production, parts supplied under this contract shall equal or exceed the updated quality.

C.8.8.3 Nameplates

Each major item of equipment shall have the manufacturer's name, address, type or style, model or serial number, and catalog number on a plate secured to the item of equipment.

C.8.8.4 Special Tools

One set of special tools, calibration devices, and instruments required for operation, calibration, and maintenance of the equipment shall be provided.

C.8.8.5 Protection from Moving Parts

All belts, chains, couplings, and other moving parts shall be completely enclosed by guards to prevent accidental personal injury. Guards shall be removable or so arranged as to allow access to the equipment for maintenance. If equipment is housed in a lockable enclosure, this shall be sufficient protection and no additional guards are necessary.

C.8.9 Required Inventory at Contract Changeover

C.8.9.1 Replacement of Initial Consumable/Expendable Property

The Contractor shall ensure that all initial property inventory (expendable materials and supplies) is restored at end of contract period. The Contractor shall be liable for the replacement of the consumable/expendable property existing at start of Contract. At end of the Contract, the Contractor shall be held liable for all materials and supplies which cannot be accounted for by issue/use documentation.

C.8.9.2 Supplies

At the completion of the contract, or final extension thereof, the Contractor shall ensure a quantity of consumable supplies required to operate the plant for a minimum of 14 calendar days or equal to the initial inventory, whichever is greater, is at the plant. This includes but is not limited to following items: lime and polymer flocculant.

C.8.9.3 Expendable Materials

In addition, all expendable materials existing at start of contract shall be restored in accordance with C.7 Government Furnished Property.

C.8.10 Final Cleanup

The Contractor shall remove all of their equipment, materials, and refuse within 15 calendar days following termination of the contract.

C.9 **Specific Tasks and Services:**

C.9.1 CTP Operations and Maintenance

C.9.1.1 The Contractor shall operate, maintain, and control the collection, treatment and storage of mine water, runoff and drainage process - and decontamination/cleaning - related wastes, sludges, and solids, including the ultimate disposal of the processed water, and solids, in a manner that is safe and meets all Federal and State environmental regulations and the substantive requirements of the expired NPDES permit. The Contractor shall utilize existing operating procedures, applicable manufacturer's Technical Manuals, and industry standards for plant safety procedures and record keeping. All components in the following systems shall be operated and maintained by the Contractor:

C.9.1.1.1 Wastewater Treatment Facilities

The wastewater treatment facilities including collection and pumping systems consist of the elements described under Technical Exhibit TE-1 GENERAL DESCRIPTION OF FACILITIES TO BE OPERATED AND MAINTAINED.

C.9.1.1.2 CIA Runoff Control System

The runoff system consists of three drainage channels that empty into Bunker Creek and the south fork of the Coeur d'Alene River.

C.9.1.1.3 Sludge Handling and Disposal

Sludge is generated as part of the CTP's treatment process. The Contractor shall be responsible for managing sludge disposal. A sludge pond (Decant Pond) is located on the Central Impoundment Area (CIA) near the CTP. This pond is unlined and water that is decanted from the sludge infiltrates from this pond.

C.9.1.1.4 Mine Water Line Maintenance

Water line maintenance shall include cleanout of the acid mine drainage line from the mine portal to the Central Treatment Plant and to the lined pond. Cleanout shall include performing a camera survey of the pipeline and performing hydrojetting and pigging (e.g. launching foam plugs of different configurations to remove solids buildup from the inner surface of the pipe). See Technical Exhibit TE-5 PIPELINE CLEANING AND INSPECTION SERVICES for requirements. The work shall also include routine (e.g. twice per week) manual cleanout of the open channel portion of the water. Pig launching stations are indicated in the drawings.

C.9.1.1.5 PTM Drain Line

Perform quarterly inspection of the collection manhole and exercising of associated valves. Cleanout of the line will be performed as an addition to the fixed price work under a task order.

C.9.1.1.6 Emergency Generator

Perform inspection and periodic operation and testing of emergency generator IAW manufacturer's recommendations.

C.9.1.1.7 Flow Rates

Flow rates shall be measured using the flow meter currently in-place at the outfall to the CTP, at Kellogg Tunnel, and 004/Sweeney. Lined Pond water levels shall be measured.

C.9.1.2 General Services

C.9.1.2.1 Wastewater collection and wastewater pumping system operations shall be conducted to provide continuous, cost effective, and efficient conveyance of all influent wastewater to the Lined Storage Pond and CTP facility. Wastewater treatment and plant maintenance shall be conducted in a manner that limits CTP downtime, such that the limited capacity in the Lined Storage Pond will provide sufficient storage of influent during plant downtime. Operations shall be in accordance with applicable

health and regulatory agency standards at all times. Systems shall be maintained to minimize unsatisfactory service conditions including flooding conditions, pump station failures, pipe blockages, and excessive infiltration and inflow conditions. Facilities shall be maintained clean and orderly with operation and maintenance generated waste (such as used lube and oils, and other solid wastes) routinely collected, as necessary, and removed to an appropriate disposal site. The location of the disposal site shall be subject to CO approval. Transportation and disposal practices shall be in accordance with applicable environmental regulations.

C.9.1.2.2 The Contractor shall perform all routine operations and maintenance functions required in conjunction with the daily operation for a similar water treatment plant and associated equipment as part of the firm-fixed costs whether or not included in any attached exhibits.

C.9.1.2.3 Perform recurring maintenance on EIP and IBE in accordance with Technical Exhibit TE-7 Electronic O&M Manual and industry standard practices. Minor repairs, tightening loose fittings/nuts/bolts/screws, tightening loose electrical connections, and the reinstallation of handles and knobs shall be included in the recurring maintenance check as a routine activity regardless of whether included on any recurring maintenance check lists. All small parts and supplies, such as lubricants, refrigerants, filters, belts, fittings, indicator light bulbs, and fasteners and pre-expended bin materials and supplies are to be provided by the Contractor as part of recurring maintenance under the fixed price work. The Contractor shall report all deficiencies beyond the scope of recurring maintenance the following work day to the CO.

C.9.1.2.4 Service/Trouble Calls

The Contractor is responsible for all service/trouble calls. A service incident report shall be submitted to the COR within 24 hours of any damage to Government property or failure of any equipment item exceeding an estimated value of $1,000.00 in material costs.

C.9.1.2.5 Corrective and Minor Maintenance and Repair

Corrective and minor maintenance and repairs shall be performed as required during the course of routine operations discovered as a result of PM inspections or service/trouble calls. All corrective maintenance and repair work shall be performed by the Contractor.

C.9.1.2.6 Keep plant operator’s manual current and review SOP’s for additional tasks/requirements.

C.9.1.2.7 Review maintenance and operation manuals for additional tasks/requirements.

C.9.1.2.8 The Contractor’s plant operators shall be responsible for assuring that wastewater treatment systems and associated buildings are kept clean and completely operational at all times.

C.9.1.2.9 The Contractor shall adopt a regular cleaning program of all water treatment components. Cleaning shall include emptying all screen baskets, removing scum build-up and floating solids, and removing algae growth and cleaning walls of equipment, removing blockages in lines, removing grease and floating solids from wet wells and other parts of the plant. Daily cleaning shall be performed as required to reduce objectionable or unpleasant odors.

C.9.1.2.10 Preventative Maintenance (PM)

Preventative maintenance (PM) shall be performed by the Contractor in order to help prevent and correct deficiencies with equipment items, thus minimizing breakdowns, extending component service life, and maximizing operating efficiency. PM shall include inspections and services of lubrication, minor adjustment, and minor repair of components based upon manufacturers' recommendations, handbooks, operating/service manuals, Contractor expertise, and general engineering judgments. The work items listed under Technical Exhibit TE-6 ELECTRONIC O&M MANUAL are minimum requirements and shall be updated as necessary to reflect any changes in equipment inventory.

(l) Preventive Maintenance Work. Scheduled PM program and schedule shall be closely adhered to by the Contractor to facilitate the Government's inspection of the work. Any proposed changes to approved schedules must be submitted to the ACO for approval not later than Wednesday of the week prior to scheduled work

(2) Preventive Maintenance Reports. The Contractor shall submit to the ACO a summary of the PM inspections completed during the previous week, a list of those scheduled inspections which were not accomplished, and a description of any corrective maintenance performed or in need of being performed; include in Contractor weekly Quality Control Report (C.25.6.1).

C.9.1.2.11 Control Inspection Program

A control inspection program shall be established and implemented by the Contractor in order to identify and project system deficiencies and to determine the physical condition of system components. Inspections shall be accomplished annually and inspectors shall possess at least a craftsman rating in their respective trades. Government reserves the right to have representatives present during Contractor inspections, or to make separate inspections in order to determine the accuracy and completeness of the Contractor's control inspections. A completed control inspection plan shall be submitted for approval within 60 calendar days after the contract award date. Yearly deficiency listings and condition reports based upon inspection findings, shall be submitted. The formats of these submittals shall conform to standard industry practices. These deficiency listings and condition reports shall be submitted no later than the 240th contract day of each yearly contract period. Records and files documenting the control inspection program shall be maintained up to date, accurate, and available for Government review during all normal working hours.

C.9.1.3 Areas of Responsibility

The Contractor shall be responsible for the satisfaction of all applicable regulatory agency requirements, including those for effluent quality. Also within the scope of Contractor responsibility are avoidance of nuisance conditions, and performance of all necessary and required wastewater collection, pumping, and treatment operations; operational maintenance and repair functions; and other required operations including acceptable disposal of sludge, waste oil, and other waste materials.

C.9.1.3.1 National Pollutant Discharge Elimination System (NPDES)

The Contractor shall be responsible for compliance with all requirements of the expired NPDES permit, as imposed by the Environmental Protection Agency (and/or as imposed by the state or local government) except as modified under Section 01450 CHEMICAL QUALITY MANAGEMENT paragraph 1.4 "Sample Collection." Unless otherwise directed, the Contractor shall not communicate directly with Federal, state, or local environmental agencies, but shall provide any necessary information, applications, or documentation to the CO for submittal to such agencies. The NPDES permit restrictions on effluent quality for treatment wastewater is provided as Technical Exhibit TE-6.

C.9.1.3.2 Influent Treatment and Discharge

All influent (measured at the CTP outfall), including acid mine drainage and stormwater runoff, shall be treated in the CTP and discharged to Bunker Creek via the 006 effluent discharge line at contaminant levels at or below the former NPDES permit requirements.

C.9.1.3.3 State and Local Regulations

The Contractor shall comply with all regulations of state and local regulatory agencies with regard to wastewater effluent quality which are not in conflict with the expired NPDES permit administered by the Environmental Protection Agency.

C.9.1.3.4 Untreated Discharges

The Contractor shall not discharge untreated influent unless directed by the COR.

C.9.1.4 The Contractor shall respond to noticeable changes in the collected waters, recognize potential treatment problems, and institute corrective action when necessary. If minimum effluent standards (i.e. substantive equivalent of the National Pollution Discharge Elimination System [NPDES] permit levels) are not attained, the CO shall be notified immediately.

C.9.2 Sampling And Laboratory Analysis

C.9.2.1 Sampling and laboratory analytical services shall be provided by the Contractor as necessary to support contract and regulatory agency operating requirements. Unless otherwise directed, all sampling and laboratory analyses and records shall be accomplished as described in Section 01450, CHEMICAL QUALITY MANAGEMENT. The Contractor is responsible for such analytical services as listed in Technical Exhibit TE-3 SAMPLING AND ANALYSIS SCHEDULE and at the frequencies indicated. The CO reserves the right to collect wastewater samples and have tests performed to verify the Contractor's performance of work.

C.9.2.1.1 Calibrate all laboratory equipment such as test meters, etc. before use.

C.9.2.1.2 Obtain samples from the effluent and influent sources and at the sampling points listed in Section 01450 for the water treatment plant. Samples may need to be taken from other locations on site depending on the needs and requirements as directed by the COR.

C.9.2.1.3 Observe the water treatment plant influents for any unusual substance that may come into the plant. If such a substance is observed, the operator shall notify the CO immediately.

C.9.2.1.4 Water Sampling: The Contractor at a minimum shall take samples as required to ensure minimum standards for substantive equivalence with the expired NPDES permit are met. Records shall be kept and maintained of all samples, which will include the date, analytic results, and location of the sample.

C.9.3 Reporting Requirements:

C.9.3.1 Reports: The Contractor shall submit the following reports:

C.9.3.1.1 Quarterly Maintenance Plan shall be submitted seven (7) days prior to the start date of the contract and updated quarterly by the 25th calendar day of the third month of the quarterly period.

C.9.3.1.2 Monthly Summary Report shall be discussed at the pre-performance conference and submitted seven (7) days following completion of the first months activities and updated monthly by the 5th calendar day of the month following the reported month.

C.9.3.1.3 Equipment card file shall be maintained and current.

C.9.3.1.4 Submit Inventory of GFP and tracking and dispositions of removed and salvaged parts. See C.7 and C.18.

C.9.3.1.5 Submit quality control program reports, safety reports, environmental protection activities as required.

C.9.3.1.6 Preventive Maintenance Reports. See paragraph C.9.1.2.10.

C.9.3.1.7 Control Inspection Program. See paragraph C.9.1.2.11.

C.9.3.2 Operating Logs: The Contractor shall maintain the operating logs for all systems and equipment included in the contract. These logs shall be completed and made part of the site-wide plant files to be kept on-site throughout the contract period. Operating logs will be subject to inspection by the CO, at the CO's discretion. Operating logs will begin immediately after the contract start date and will be updated daily. Log format is subject to Government approval. On a monthly basis, the Contractor shall submit copies of the daily operating logs, and a monthly overall summary of operation and maintenance tasks performed.

C.9.4 Safety: Safety equipment shall be maintained by the Contractor IAW manufacturers' instructions.

C.9.5 Notice of Violations: Notice of Violations of any apparent substantive expired NPDES permitted parameters, of any water bypassing CTP, and of any discharge of any other type in violation of the substantive equivalent of the expired NPDES permit shall be prepared by the Contractor and submitted to the CO within 24 hours of the Contractor's identification of the noncompliance. The response to any Notice of Violation shall be as directed by the Government. This Notice shall include a description of the discharge, the cause of the noncompliance, and the period of noncompliance including exact dates and times; or if not corrected, the anticipated time the noncompliance is expected to continue and steps being taken to reduce, eliminate, and prevent the recurrence of the non-complying discharge.

C.9.6 Housekeeping And Cleanup

Pursuant to the requirements of Clause CLEANING UP and Clause ACCIDENT PREVENTION, of Section I CONTRACT CLAUSES, the Contractor shall maintain the total work site, structures, and accesses free of debris and obstructions at all times. Work will not be allowed in those areas that, in the opinion of the Contracting Officer, have unsatisfactory cleanup and housekeeping at the end of the preceding day's normal work shift. At least once each day all areas shall be checked by contractor's staff. In addition, the Quality Control person shall take immediate action to ensure compliance with this requirement. Housekeeping and cleanup shall be assigned by the Contractor to specific personnel. The name(s) of the personnel shall be available at the project site.

C.9.7 General Requirements And Procedures For Non Recurring (Indefinite Quantity) Work

Non recurring work is defined as maintenance, repair, and service type work requirements that are beyond the scope of trouble calls, corrective and preventative maintenance; work not separately identified on the price SCHEDULE; and work that cannot be scheduled on a regular basis. All of this work is included in the indefinite quantity portion of the contract and includes the following: Maintenance schedule exceeding one year, Repair, Minor Construction, Replacement of Obsolete Items and Government Service Requests (Task Orders). The work also includes non-recurring support services, such as unscheduled painting, repair of roofing systems, repair of heating and ventilation systems and undefined maintenance and repair to all support buildings and associated site features within the CTP limits, including: structural and architectural components, storage systems, fencing, and other associated building appurtenances..

C.9.7.1 Ordering of Indefinite Quantities Work Items

The Contracting Officer will order this work by issuing a work request in accordance with Section H SPECIAL CONTRACT REQUIREMENTS paragraph "On-Call Maintenance and Emergency Repair (OMER) Work."

C.10 **Work Levels:**

The Contractor shall perform all non-recurring work required by the contract within the following two (2) work categories:

C.10.1 Work Level I: Level I work includes minor construction or alteration, and unscheduled maintenance/repair and service work which does not exceed 32 man-hours of labor and/or a total of $2,000.00 for labor, materials, and equipment rental. Any work request which is determined to exceed $2,000.00 will be handled as Level II work. See Section H SPECIAL CONTRACT REQUIREMENTS.

C.10.2 Work Level II: This level of work is established for work which exceeds the limit for Level I work. Level II work includes construction, alteration, and new work over $2,000.00. Labor, material and equipment rental costs are reimbursable. This work shall be accomplished by the Contractor only when ordered by the COR, except when specified as emergency work, and is reimbursable only after issuance of a work request by the COR. See Section H SPECIAL CONTRACT REQUIREMENTS.

C.11 **Work Level Priorities:**

The Contractor shall identify a point of contact (POC) and telephone number to receive emergency, urgent, and routine work requests during normal working hours. The Contractor shall identify a POC and

telephone number to receive all emergency work requests 24 hours-a-day, seven (7) days-a-week, including holidays. See C.2.33 Service Call Classifications for typical completion periods for service call classifications.

C.11.1 Emergency (Priority 1): Work which takes priority over all other work orders and requires immediate action, including diverting workers from other jobs if necessary to handle the emergency. Usually, the work is necessary for protection of health, for safety, for security of sensitive Government property, or to prevent damage to property.

C.11.2 Urgent (Priority 2): Work to be accomplished by the first available worker. Workers should not be diverted from scheduled work orders for this work. This category includes work which could become an emergency, work that could seriously affect morale, work that has command emphasis, or work required by an activity to accomplish its mission.

C.11.3 Routine (Priority 3): Work which does not meet the criteria for Priority 1 or 2. Work in this category generally shall be done in the most economical manner. These jobs cover required work which, if not accomplished, would extend inconvenience or an unsightly condition.

C.11.4 Other Routine (Priority 4): Work in this category is generally considered non-customer time sensitive (i.e. offseason utility repair).

C.12 **Emergency Work:**

In case of an emergency work requirement, the CO may verbally authorize or direct the Contractor to proceed with Work Level II work which is Priority 1 or Priority 2. Written confirmation will follow at the earliest possible date. Verbal authorization shall be documented by the Contractor to include date and time of the request, who initiated the request, the location of the work to be done, the type of work action required, etc and shall be retained in the files. The CO will establish any limitation to the emergency work request at the time of the verbal authorization.

C.13 **Work Control:**

The Contractor shall schedule, control, and perform all work in the contract. The Contractor shall develop and provide written plans and schedules to the CO for approval. The schedules shall be kept current and submitted for CO review by the 21st day of each month.

C.14 **Work Clearance and Unscheduled Plant Shutdowns:**

C.14.1 Scheduled Work. The Contractor shall obtain a prior Work Clearance from the COR four (4) days prior to work commencement for scheduled work involving disruption of treatment plant operation exceeding six hours, major equipment replacement (cost exceeding $1,000 value), or work involving digging operations.

C.14.2 Unscheduled Shutdown. The Contractor shall monitor and check all CTP systems to ensure optimal operations and maintain the systems such that the CTP is never continuously shut down for more than 48 hours due to break down or other unscheduled shutdowns. The CTP shall be operated and maintained such that direct discharge of untreated system influent does not occur. Notify the COR if any treatment plant system is down for greater than six (6) hours when the system is scheduled to be in operation.

C.15 **Utility Location:**

The Contractor shall locate and stake out underground utility pipes/cables prior to digging operations. Contact local utility locator service prior to any digging operations.

C.16 **Manufacturers' Manuals:**

The Contractor shall provide three (3) copies of the manufacturer's manuals in hardcopy format and two copies on electronic format (PDF on CD-ROM media) on all new equipment installed by the Contractor as part of work under this contract. These manuals and operating instructions shall become the property of the Government at the expiration or termination of the contract.

C.17 **Equipment Replacement (Government Property):**

If an item of Government property is determined by the Contractor to be beyond economical repair, the Contractor shall recommend to the CO in writing that such equipment be replaced. Substantiating data to support the recommended replacement shall be included. If the CO agrees that such equipment should be replaced or repaired, and replacement or repair is authorized, the Contractor shall accomplish the work IAW the appropriate work level criteria determined by the CO. Request for replacement shall include a photograph (minimum 3 inch by 3 inch size) of the existing equipment proposed to be replaced or salvaged. See Section H SPECIAL CONTRACT REQUIREMENTS.

C.18 **Salvage of Removed Parts:**

C.18.1 Salvage

The Government retains all salvage rights to replaced property of value.

C.18.2 Disposition Of Removed Parts and Equipment

The Contractor shall provide a list to the COR of all removed parts and equipment exceeding $1000.00 in value (replacement costs) or as designated by the COR on a weekly basis. The Contractor shall retain the parts and equipment replaced for at least 30 days after completion of the job and make these parts readily available for inspection by the Government representative upon request. When disputes arise concerning material, equipment, and components selected for work items already accomplished, the Contractor shall, at no cost to the Government, remove, replace, and/or rework material, equipment, and components so that compliance with the Government's requirements are satisfied. The resolution of formal disputes is addressed in the "Disputes" clause of Section I CONTRACT CLAUSES.

C.19 **Reports:**

The Contractor shall provide all reports described herein, required in associated technical specifications and in Technical Exhibits, and where not otherwise specified but considered standard practice for a similar treatment facility. Unless otherwise specified or directed, two (2) copies shall be provided to the COR in hardcopy format and two copies on electronic format (PDF on CD-ROM media).

C.19.1 Report any circumstances of needed repair of the facilities, unusual soiling of an area, unhealthy or hazardous conditions, or any delays or interference of work by Government employees. Such reports shall be made as expeditiously as possible to the CO.

C.19.2 Final Report

The Contractor shall prepare and submit for Government review and approval a Final Field Report at the conclusion of the operation and maintenance contract period. Final payment will not be made until the Field Report is approved.

The Field Report shall detail all site actions and shall include:

(1) Brief description of CTP purpose and related site history and location
(2) A description of the work effort performed
(3) Annual costs of operation and disposal activities (See Section 01450 CHEMICAL DATA QUALITY CONTROL.)
(4) Health and Safety Phase-out Report (Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST)
(5) A description of any factors that may compromise the quality of the data or validity of the results
(6) Operations Logs
(7) Major renovations/ repairs/ replacements to any to plant systems
(8) Copy of the field notes and any other documentation (including photographs) supporting Contractor activities at the site.

C.20 **Project Management:**

C20.1 General

The Contractor shall furnish the services of trained, qualified personnel, to operate and maintain the CTP and perform project management functions required during the contract period.

C.20.2 Key Personnel

Certain positions are designated as “key personnel” to be provided under the Contract.
The following positions are defined and designated as key personnel and are further defined under Section 01310:

- Contract Manager
- Chief Operator
- Process Engineer
- Safety and Health Manager
- CQC System Manager

C.20.3 Staffing, Organization and Qualifications Requirements: The Contractor shall provide trained, qualified personnel to perform all of the services required by the contract in accordance with Section 01310 PROJECT MANAGEMENT.

C.20.4 Employee Conduct: All Contractor employees shall abide by those publications listed as mandatory in paragraph C.3.3. The Contractor shall also comply with all applicable Federal, State, and local laws and regulations.

C.21 **Contingencies:**

Sudden or unusual events could have an impact on the Contractor's performance and contract requirements. If a national emergency or natural disaster occurs and results in an increase of work, the contract clause titled "Changes" of Section I will be exercised by the CO.

C.22 **Temporary Facilities and Controls:**

C.22.1 Staging Area

The Contractor will be provided adequate open staging area as directed by the Contracting Officer.

a. The Contractor shall be responsible for keeping staging areas and office areas clean and free of weeds and uncontrolled vegetation growth. Weeds shall be removed by pulling or cutting to within 1 inch of ground level. All loose debris and material subject to being moved by prevailing winds in the area shall be picked up or secured at all times.

b. If the area is not maintained in a safe and clean condition as defined above, the Contracting Officer may have the area cleaned by others with the costs being deducted from the Contractor's payment.

C.22.2 Contractor's Temporary Facilities

C.22.2.1 Administrative Field Offices

A designated site will be available for the Contractor to provide and maintain administrative field office and storage facilities within the project area.

C.22.2.2 Appearance of Trailers

Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the property.

C.22.2.3 Maintenance of Temporary Facilities

Installation and maintenance of temporary contractor facilities is included under the lump sum fixed price of the contract.

C.22.3 Temporary Power and Lighting Systems

The Contractor shall provide any temporary power facilities in accordance with the safety requirements of the National Electric Code NFPA No. 70 and the SAFETY AND HEALTH REQUIREMENTS MANUAL EM 385-1-1. The Contractor, or its delegated subcontractor, shall enforce the safety requirements of electrical extensions for the work of subcontractors. Lights used to illuminate work areas shall have shields directing the light downward to reduce glare outside the facility. Work shall be accomplished by skilled electrical tradesmen.

C.22.3.1 Portable Electrical Equipment

In addition to the requirements of SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1, temporary wiring conductors installed for operation of portable electrical tools and equipment shall be either Type TW or THW contained in metal raceways, or shall be hard usage or extra hard usage multiconductor cord. Temporary wiring shall be secured above the ground or floor in a workmanlike manner and shall not present an obstacle to persons, equipment, or vehicles. Open wiring may only be used in accordance with the provisions of the National Electric Code.

C.22.3.2 Detail Drawings

Submit detail drawings of temporary power connections installed on an indefinite basis such as but not limited to, main disconnect, grounding, service drops, service entrance conductors, feeders, GFCI'S, and all site trailers.

C.22.4 Disposition of Temporary Facilities

All storage trailers, office trailers, meters, and excess materials not designated to remain as Government property, and all debris shall be removed and the site left in a condition acceptable to the Contracting Officer prior to final contract payment. Demobilization from the site shall be considered an incidental cost and will not be separately priced regardless of when the demobilization occurs.

C.23 **Physical Security:**

The Contractor shall develop and implement a security program to control access to the CTP on a 24-hour seven day-a-week basis to prevent unauthorized entrance, vandalism, sabotage and pilferage and fire. Any unauthorized entry shall be reported to the local law enforcement agency.

C.24 **Utility Services**

C.24.1 Water

The Contractor shall obtain all services from the appropriate utility companies.

C.24.3 Sewer

The Contractor shall obtain all services from the appropriate utility companies.

C.24.4 Telephone

The Contractor shall be responsible for all telephone service fees for its use during the contract period.

C.25 **Quality Control:**

The Contractor shall establish a complete quality control (QC) plan to assure that all requirements of the contract are met. Two (2) copies of the Contractor’s draft quality control plan shall be provided to the CO at the preperformance conference. (One copy will be retained by the COR.) The Contractor and COR will agree to an interim CQC plan during this conference. The Contractor will be allowed to perform the O&M work under the interim CQC plan for the first 42 days of the O&M period. The Contractor shall deliver one (1) revised copy of the quality control plan to the COR no later than 21 calendar days after

start of O&M work under the contract, for final review. Comments made by the COR will be included in the next revision of the applicable document or acceptable justification shall be provided for rejected comments. The CQC plan shall incorporate the qualifications, authority and responsibilities of all chemical quality management and support personnel and the Chemical Data Quality Control (CDQC) requirements under Section 01450 CHEMICAL DATA QUALITY CONTROL.

C.25.1 Draft Quality Control Program:

C.25.1.1 All key personnel of the Contractor's organization shall be identified and their authority, or lack of authority, under the contract shall be clearly defined.

C.25.1.2 A Quality Control (QC) inspection system covering all general and specific tasks included in the contract scope of work shall be implemented. Tasks or areas to be inspected on a scheduled or unscheduled basis, and the manner in which inspections are to be conducted will be specified.

C.25.1.3 The names of the firms or individuals tasked to perform inspections and the extent of their authority shall be provided via an organizational chart or some other approved method.

C.25.1.4 Proposed test methods, including names and certifications or licenses of technicians and qualified testing laboratories to be used will be provided.

C.25.1.5 Method(s) of identifying deficiencies in the quality of services performed before the level of performance becomes unacceptable will be included.

C.25.1.6 Method(s) of documenting and enforcing quality control operations of both prime and any subcontractor work, including inspection and testing, will be provided.

C.25.2 Quality Control Organization

C.25.2.1 CQC System Manager(s)

An individual shall be identified within the Contractor's organization who shall be responsible for the overall management of CQC and shall have the authority to act in all CQC matters for the Contractor. This CQC system manager shall be employed by the Contractor and shall be, at a minimum, available to discuss facility operations by telephone during normal Government working hours at the project site and to meet at the site with the GQAR within 24 hours of such notice. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the system manager's absence. The requirements for the alternate will be the same as for the designated CQC system manager.

C.25.2.1.1 Qualifications

The CQC system manager shall have a minimum of 3 years experience working on similar type treatment facilities as the Bunker Hill Central Treatment Plant, Kellogg, Idaho.

C.25.2.1.2 Assignment of Duties

The CQC system manager shall be assigned as QC system manager but may perform other duties in addition to quality control.

C.25.2.1.3 Organizational Changes

The Government's acceptance shall be obtained before replacing any member of the CQC staff. Requests shall include the names, qualifications, duties, and responsibilities of each proposed replacement.

C.25.3 Coordination Meeting

A pre-performance conference and CQC system meeting shall be convened and held within 30 calendar days of the contract award date. The meeting will be held at the Bunker Hill Superfund Site at a time mutually agreed to by both parties and arranged by the Government. The Government and the Contractor shall meet to discuss administrative and technical details, and to discuss and develop a mutual understanding of the CQC system in detail, and the interrelationship of Contractor's management and control with the Government's quality assurance. Minutes of the meeting shall be prepared by the Contractor, signed by both the Contractor and the Government, and become a part of the contract file. There may also be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

C.25.4 QC Meetings

The CQC System Manager shall conduct pre-scheduled monthly QC meetings at the work site with the project personnel; prepare the minutes of the meeting; and provide a copy to the Contracting Officer within 2 working days after the meeting. The Contracting Officer may attend these meetings. The CQC System Manager shall notify the Contracting Officer at least 48 hours in advance of each meeting. As a minimum, the following shall be accomplished at each meeting:

a. Review the minutes of the previous meeting;

b. Review the schedule and the status of work:

(1) Preventative maintenance work accomplished since last meeting

(2) Corrective maintenance or other maintenance and repair work accomplished since last meeting

(3) Rework items identified since last meeting

(4) Rework items completed since last meeting;

(5) Operating conditions at the plant, including any changed conditions.

c. Review the status of submittals:

(1) Submittals reviewed and approved since last meeting

(2) Submittals required in the near future;

d. Review the work to be accomplished in the next 4 weeks and documentation required:

(1) Review completion dates for task orders or rework items

(2) Update the schedule, including testing and any other inspection required by this contract.

(3) Discuss work methods and the approach that will be used to provide quality work performance by planning ahead and identifying potential problems for each definable feature of work.

C.25.5 Contractor Quality Control Report Certification

Each Contractor Quality Control Report shall contain the following statement: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract requirements to the best of my knowledge, except as noted in this report."

C.25.6 Documentation

Current records of CQC operations, activities, and tests performed shall be maintained including the work of subcontractors and suppliers. These records shall be on an approved form and shall include factual evidence that required quality control activities and/or tests have been performed.

C.25.6.1 Contractor Weekly Quality Control Report

The Contractor shall submit weekly Quality Control Reports to the COR by 10 am on the first working day of the following week. The report form shall be submitted to the COR for review and approval as part of the Contractor's Quality Control Plan. (See sample form attached.) The reporting of work shall be identified by terminology consistent with the work schedule. Contractor Weekly Quality Control Reports are to be prepared, signed and dated by the CQC System Manager and shall contain the following information:

a. Identify inspections conducted during the week.

Check that materials are stored properly, preliminary work was done correctly, the testing plan has been reviewed, and work methods and schedule have been discussed, and that safety and hazard analysis was addressed. Identify any safety hazards encountered, instructions given and corrective actions taken.

b. A list of job safety actions taken and safety inspections conducted. Indicate that safety requirements have been met including the results on the following:

(1) Was a job safety meeting held? (If YES, attach a copy of the meeting minutes.)

(2) Were there any lost time accidents? (If YES, attach a copy of the completed OSHA report.)

(3) Was crane/trenching/scaffold/high voltage electrical/high work done? (If YES, attach a statement or checklist showing inspection performed.)

(4) Was hazardous material/waste released into the environment? (If YES, attach a description of meetings held and accidents that happened.)

(5) List safety actions taken and safety inspections conducted.

c. List the rework items identified, but not corrected.

d. List the rework items corrected from the rework items list along with the corrective action taken.

e. Identify submittals which have been checked for compliance with the PWS and submitted as required.

f. Include a "remarks" section in this report which will contain pertinent information including directions received, quality control problem areas, deviations from the QC plan, deficiencies or delays encountered, QC meetings held, corrective direction given by the QC Organization and corrective action taken by the Contractor. Also note conflicts or errors in the O & M Manual.

g. The report from the CQC system manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

C.25.6.2 Contractor Quality Control Daily Discrepancy Report

Submit a Contractor Quality Control Daily Discrepancy Report (see sample attached) with the weekly Summary for any given inspection as required to explain special problems, deficiencies, non-work items, unusual operations, etc.

C.25.6.3 Rework Items List

The CQC System Manager shall maintain a list of work that does not comply with the Contract requirements, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. Attach a copy of the "Rework Items List" to the Contractor Weekly Quality Control Report. The Contractor shall be responsible for including on this list items needing rework including those identified by the Contracting Officer.

C.25.7 Notification Of Noncompliance

The Government will notify the Contractor of any detected noncompliance with the foregoing requirements. After receipt of such notice, immediate corrective action shall be taken. Such notice, when delivered to the Contractor at the site of the work, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Government may take appropriate action in accordance with the requirements of Section E, INSPECTION AND ACCEPTANCE.

C.26 **Submittal of Contract Data**

Submissions of data required by the specifications shall conform to Section H SPECIAL CONTRACT REQUIREMENTS, paragraph Submittal of Contract Data.

C.27 **Quality Assurance:**

The Government will monitor the Contractor’s performance under the contract using criteria specified in SECTION E. The Government reserves the option to implement whatever surveillance plan it considers appropriate, and to modify that plan as applicable to assure compliance with the Contract. (Performance Requirements Summary). A Quality Assurance Surveillance Plan (QASP) is attached under section J to

be used for Contractor information and is not part of the contract. The Government has developed and will apply the QASP as a guide to make sure that systematic quality assurance methods are used in the administration of the Performance Based Service Contract (PBSC) standards included in this contract.

C.28 **Access to Site:**

The Contractor shall allow only authorized employees or Government authorities to access work areas on the site.

C.29 **Performance Evaluation Meetings:**

The Contract Manager shall meet with the COR to identify and resolve problems with the quality of the Contractor's performance under the contract once every month during the first three (3) months of the contract. Meetings will be held as often as necessary thereafter. The Contractor may request a meeting with the Contracting Officer when he or she believes such a meeting is necessary. At these meetings the Contracting Officer will apprise the Contractor of how the Government views the Contractor's performance and the Contractor will apprise the Government of problems, if any, being experienced. As a minimum, a meeting will be held whenever the information of a Contract Discrepancy Report (CDR) identifies a problem. If any service performed is not in conformance with the requirements of the contract, the CO will have the right to issue the Contractor a CDR. The CDR requires the Contractor, within ten (10) days, to submit a written statement explaining how performance will be made to comply with the contract, and how to prevent the problem from recurring in the future. Appropriate action shall be taken to resolve outstanding issues. The written minutes of these meetings shall be signed by the Contract Manager and Contracting Officer or Contract Administrator. Should the Contractor not concur with the minutes, the Contractor shall so state any areas of nonconcurrence in writing to the Contracting Officer within ten (10) calendar days of receipt of the signed minutes. A performance report may be issued at the end of the contract for future procurement actions in accordance with Section F DELIVERIES OR PERFORMANCE.

C.30 **Contractor Notification:**

The Contractor shall establish a communication system such that the Chief Operator or an individual designated to act as the Chief Operator can be contacted at any time by the COR within ninety (90) minutes from initiation of notification. As a minimum, such a system shall include the names and home telephone numbers of three (3) individuals.

C.31 **Key Control:**

The Government shall provide the Contractor with keys to the wastewater treatment plant facilities on the contract start date. The Contractor shall establish and implement methods for ensuring that all of the Contractor's keys issued by the CO or keys issued to the Contractor's employees are not misused, lost or misplaced, and are not used by unauthorized persons.

C.31.1 Keys issued to the Contractor by the CO shall not be duplicated.

C.31.2 The Contractor shall be responsible for Government-owned keys issued for this contract.

C.31.3 The Contractor shall report the loss of any Government-issued key to the CO immediately. In the event keys, other than master keys, are lost or duplicated, the Contractor may be required upon written direction of the Contracting Officer, to rekey or replace the affected lock or locks without cost to the Government. The Government may, however, at its option, replace the affected lock or locks or perform rekeying and deduct the cost of such from the monthly payment due to the Contractor. In the event a master key is lost or duplicated, all locks and keys for that system shall be replaced by the Government and the total cost deducted from the monthly payment due the Contractor. If the Government performs the rekeying, charges incurred for replacements will be deducted from monies due to the Contractor at the rate of $250.00 for each rekeying.

C.31.4 The Contractor shall develop procedures covering key control and shall include such procedures in the Quality Control Plan.

C.31.5 Upon completion of the work in an area, or upon request of the Contracting Officer, the key or keys relevant to the completed areas shall be returned.

C.32 **Energy and Utilities Conservation Programs:**

The Contractor shall be responsible for operating under conditions that prevent the waste of utilities. For example, lights shall be used only in areas and times when work is actually performed in that area. Water faucets or valves shall be turned off after the required usage has been accomplished. Connection of any equipment to the utility system must be pertinent to operation of the plant, and the Contractor shall only use those utility connection points specifically designated by the CO.

C.33 **Interfaces And Cooperation With Other Contractors:**

Ongoing Superfund activities may require work by other on-site contractors including use of ground areas and adjacent facilities while the work required in the contract is being performed. The work shall be planned and accomplished so that there will be a minimum of interference and inconvenience to occupants and agencies in the vicinity and to other craftsmen who may have to do work in those areas. The Contractor must be responsive to changing situations prompted by Superfund site activities. The Contractor must reschedule and perform all routine suspended work, and because of such suspension, the Contractor shall not be entitled to an exemption from any requirement of the contract or to an adjustment of the contract price.

C.33.1 Other work activities include the following:

1. A contract is in effect titled “Miscellaneous Remediation Construction Services, Bunker Hill Mining and Metallurgical Complex Superfund Facility ” for general site activities.

2. Other contract activities approved by the Government.

C.33.2 Miscellaneous future work items. Miscellaneous future work activities may include corrosion protection.

C.34 **Warranties:**

The Contractor shall exercise all existing manufacturers’ commercial warranties on GFP on the Government’s behalf. The Contractor shall report difficulties in exercising said warranties to the CO and request assistance as necessary. All new replacement equipment installed by the Contractor shall be

guaranteed for one (1) year. All salvage or used equipment (as approved) installed by the Contractor shall be guaranteed for 90 calendar days.

C.35 **Environmental Protection and Occupational Safety and Health Requirements:**

The Contractor shall be fully responsible for compliance with all local, State, and Federal environmental/occupational safety laws, rules and regulations. This responsibility includes being financially responsible for any fines, citations, litigation, and/or long-term corrections that result from the performance of work required in the contract. Any apparent conflict between compliance with the above information and satisfying the requirements of the contract shall be immediately brought to the attention of the CO for resolution, prior to the performance of the work in question. The Contractor shall not be liable for fines incurred via the operation of the plant to plant design parameters.

C.35.1 Environmental Protection Plan

The Contractor shall submit an Environmental Protection Plan for review and approval by the COR. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during performance of the work.

The environmental protection plan shall include, but shall not be limited to, the following:

a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program.

e. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under state or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer in addition to the legally required Federal, state, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

f. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

g. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from work activities, such as decontamination, and clean-up water.

C.35.2 Environmental Protection Activities

C.35.2.1 Environmental Permits And Commitments

The project lies within the boundaries of a Superfund Site. Consequently, permits for on-site activities are not required for this project. However, the substantive requirements of any permits and its governing laws and regulations shall apply. Any off-site activities are subject to all applicable requirements for permits. Refer to Technical Exhibit TE-6, “AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM."

C.35.2.2 Land Resources

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the responsibility for on-site O&M, the Contractor shall identify any land resources to be preserved within the work area. The Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

C.35.2.2.1 Work Area Limits

Work shall generally be confined to areas within the ”battery limits” of the facility. Where areas are adjacent to O&M activities that need not be disturbed under this contract, the Contractor may be required to mark or fence such areas. Where O&M activities or equipment operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

C.35.2.2.2 Landscape

The Contractor shall restore landscape features damaged or destroyed during O&M operations including features outside the limits of the approved work area.

C.35.2.2.3 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved.

C.35.2.3 Water Resources

The Contractor shall monitor O&M activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by O&M activities shall be monitored by the Contractor. For O&M activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by state or Federally issued Clean Water Act permits.

C.35.2.4 Air Resources

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and state air emission and performance laws and standards.

C.35.2.4.1 Burning

Burning will not be allowed on the project site.

C.35.2.5 Chemical Materials Management And Waste Disposal

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

C.35.2.5.1 Solid Wastes

Solid wastes shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off site and dispose of it in compliance with Federal, state, and local requirements for solid waste disposal.

C.35.2.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 150 mm (6 inches) of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, state, and local laws and regulations.

C.35.2.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable state and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, state, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off project properties within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, state and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

C.35.2.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, state, regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, state, and local laws and regulations. There shall be no storage of fuel on the project site. Fuel must be brought to the project site each day that work is performed.

C.35.2.5 Waste Water.

C.35.2.5.1 Waste water from O&M activities, such as onsite decontamination water shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the O&M site related waste water off-site in accordance with all Federal, state, regional and local laws and regulations.

C.35.2.5.2 Water generated from the flushing of lines in conjunction with cleaning and hydrostatic testing shall be land applied in accordance with all Federal, state, and local laws and regulations.

C.36 **Record Keeping:**

Completion of all forms and/or reports listed within the contract and Technical Exhibits is required. All necessary forms will be as approved by the CO. If completed forms and/or reports are not submitted within the established timeframes, or if the submitted copies are incorrect or incomplete, the CO may, in addition to any other rights of the Government under the contract, withhold payment of any monies due to the Contractor, in full or in part, until correctly completed documents have been submitted.

C.36.1 Computerized Information Management System

The Contractor shall have for immediate implementation a computerized information management system (CIMS) for records-keeping. It must be capable of storing a variety of project and Contractor related information that can be retrieved by use of simple commands in various formats and reports. The system

must utilize a standard reporting format such as from a commercially available computerized information management system. The Contractor shall provide the Government a means to monitor the system.

C.36.1.1 System Capabilities shall include but are not limited to the following items:

(1) Property inventory and control system with master equipment list, repair parts list, equipment vendor list.

(2) Budget tracking system including operating cost records, and maintenance cost records and all work performed under OMER work requests.

(3) System operational data including analytical data, periodic operating logs, periodic chemical Quality Control Reports, Notification of Unscheduled Maintenance Activities Report, Notification of Unscheduled Shut-down Report, preventative maintenance schedule and completions, repair and non-routine maintenance performed.

C.36.1.2 Required Reports:

(1) Cost Report. A monthly report showing by category of expense, cumulative costs which have been distributed to either project level or line item accounts and a separate category showing all Government furnished consumable supplies, materials and utilities.

(a) Description. The description shall provide short descriptive titles of project level accounts and line items on which cost have been incurred.

(b) Work Code. The work code shall identify the assigned job or work code for each line or project account authorized under the contract. As a minimum the work code shall identify the project, contract line item and category of expense.

(2) Miscellaneous Reports. Other data reports including but not limited to those required by; Section 01450, CHEMICAL DATA QUALITY CONTROL, and Section 01351, SAFETY, HEALTH AND EMERGENCY RESPONSE (HTRW/UST).

C.36.1.3 Existing Software and Data:

The Government will not transfer or provide any existing software system to the Contractor to implement this requirement. The Government will furnish to the Contractor a hardcopy printout of data output, forms and schedules prepared under the existing contract and used to comply with the CIMS requirement.

C.36.2 Project Records

The Contractor shall maintain management, operation, and maintenance records and prepare management, operation, and maintenance reports/records and submit records and data as specified and required under the contract.

C.36.2.1 Records shall include but not be limited to:

- Preventative maintenance schedule and completions
- Repair and maintenance performed.
- Master equipment list.

- Repair parts list.
- Equipment vendor list.
- Regulatory permits.
- Analytical data.
- Flow rate data.
- Operating cost records including daily and monthly consumption for all utility services and associated monthly charges and all related fees.
- Maintenance cost records.
- Periodic operating logs.
- Periodic Chemical Quality Control Reports
- Notification of Unscheduled Maintenance Activities Report.
- Notification of Unscheduled Shut-down Report
- Other data and reports as required by the contract.

C.36.2.2 Format

The project records must utilize a standard reporting format and be maintained on a written and bound log as a minimum.

C.36.2.3 Records Retention

All records, data, reports, forms, manuals, plans, drawings, receipts, invoices, memos, correspondence, notes, and other documents generated or received by the Contractor during the Contract term shall be retained by the Contractor for a minimum of three (3) years after the completion of the contract.

C.36.2.4 On-site Records

During the period of on-site services provided, the Contractor shall retain on-site certain items from the information and documents as directed by the Contracting Officer for Government use at any time during the period of on-site services.

C.36.2.5 Notification Prior to Disposal

Prior to discarding any of the information or documents after the specified retention period;

a. Notify the Contracting Officer in writing of the intent to discard these materials.

b. Furnish a written summary of all information and documents to be discarded to the Contracting Officer.

c. Receive written authorization from the Contracting Officer to discard the materials.

d. Furnish original or certified copies of any of the information or documents to the Contracting Officer, at his request.

C.36.2.6 Additional Operation Records

The Contractor shall keep all records, data, reports, forms, manuals, plans, drawings, receipts, invoices, memos, correspondence, notes, operation logs, incident reports, employee medical records, chemical usage data, Material Safety Data Sheets, and other documents generated or received by the Contractor, dealing with CTP operation, during the Contract term.

C.36.2.7 Records Maintenance

Copies of all materials pertinent to operating and maintaining the CTP shall be made on a monthly basis, bound, and kept at a remote location to ensure that no records are lost or misplaced. The Contractor shall be responsible for maintaining an up-to-date set of record drawings for the CTP, including a process flow diagram and piping and instrumentation diagram. See The CTP's Process Flow Diagram and Piping and Instrumentation Diagram included under the Facility Drawings and Section J Attachment J5 O&M Plan**.**

C.37 **Disasters:**

In the event that GFP is damaged by events of a disastrous nature, such as a flood, cyclonic wind, fire, or if the CO determines that disaster response action is necessary to protect GFP from such damage, the CO may direct the Contractor to perform work to protect such GFP. The Contractor shall respond to such disaster work requests from the CO within one (1) hour during normal duty hours and within two (2) hours during non-duty hours following the receipt of the request. When disaster response work is directed by the CO and performed by the Contractor, the contract price may be adjusted pursuant to the "Change" clause of the contract.

C.38 **Decontamination:**

Refer to Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST).

C.39 **Operations & Maintenance Plan:**

The Contractor shall use as a guide the current operations and maintenance manual of procedures for normal activities associated with the day-to-day operations for this facility. See Section J Attachment J-5 OPERATIONS AND MAINTENANCE PLAN. Review the procedures to conform to industry standards and follow industry standards whenever applicable unless otherwise specified. The Government provided final electronic version of the O &M manual (Technical Exhibit TE-7) to be provided to Contractor for execution starting in Base Contract Period.

C.39.1 Revisions

The Contractor shall maintain and update the O&M manuals on a continuing basis as required to conform to actual operating procedures and conditions and after any changes to equipment, or operating criteria. In addition the Contractor shall supplement all existing O&M data with parts catalogs and operating instructions to cover all equipment furnished by the Contractor under this contract. The Contractor shall prepare revisions to the existing Manuals to ensure the operating and maintenance procedures conform to the following, in order of precedence (1) manufacturer's instructions, (2) industry standards and national codes (3) procedures previously developed (4) new procedures not previously included in the manuals.

END OF SECTION C

SECTION 01310

PROJECT MANAGEMENT

PART 1 GENERAL

1.1 CONTRACTOR FUNCTIONS

The Contractor shall provide all on-site and home office support staff necessary to coordinate, oversee, and perform the work specified in the CONTRACT. In addition to providing key personnel designated in Section C (C.20 Project Management) for the CTP, the Contractor shall provide support staff, which may include plant operators, technicians, equipment operators, schedulers, electricians, plumbers, painters, control equipment specialists, welders, laborers, clerical, accountants, and all other support staff and services the Contractor determines as necessary for the project.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only: The following shall be submitted in accordance with Section H, Special Contract Requirements, paragraph "Submittal Of Contract Data:"

Staffing Plan; G.
Organization Charts, G
Listing of Key Personnel, G
Normal Work Schedules, G

Submit for review not later than 7 days after contract award. Submit updates within 7 days of any changes during the contract period.

Qualifications, G

Certification attesting that the designated key personnel are qualified by knowledge and experience to perform the specified functions. Information, which provides evidence of the knowledge and experience necessary to qualify a person for the specified positions for the category of work being certified, will accompany the qualification.

1.3 REGULATORY REQUIREMENTS

The Contractor shall conduct all work in accordance with the appropriate Federal, state, and local regulations and laws. The Contractor shall take all actions necessary to ensure substantive compliance with regulatory requirements, including the Clean Air Act and the Clean Water Act (NPDES).

1.4 PERSONNEL REQUIREMENTS

The Contractor shall coordinate with the Contracting Officer's on-site representatives and prepare a list of key personnel, which shall be maintained and updated by the Contractor as required. Any changes in key personnel shall be coordinated with the Contracting Officer's on-site representatives prior to any personnel action being taken. Key personnel shall be the Contract Manager, Chief Operator, Process

Engineer, Safety and Health Manager, and CQC System Manager with qualifications and responsibilities described in paragraphs 1.4.1 through 1.4.5 below.

1.4.1 Contract Manager

The Contractor shall provide a Contract Manager (CM) to oversee and coordinate the work.. The name and resume of this person, and at least one alternate who shall act for the Contractor when the Contract Manager is not available, shall be designated in writing to the Contracting Officer (CO) prior to the contract start date. The Contract Manager shall be competent, experienced and knowledgeable in management of remediation work similar to the specific activities identified in this contract.

1.4.1.1 Contract Manager Qualifications

(a) A college degree in an engineering related field, industrial management, or other related field;

(b) A minimum of five (5) years experience in project management;

(c) The proven ability to effectively communicate and manage customer expectations; and

(d) The proven ability to locate, coordinate, and utilize resources within their own organization.

1.4.1.2 Contract Manager Responsibilities.

Specific responsibilities include but are not limited to the following:

(a) The Contract Manager or alternate(s) shall have full authority to act for the Contractor on all matters relating to the overall execution of the contract.

(b) Maintaining close communication and coordination with the Government. Reporting any and all problems encountered in work activities. Implementing any special procedures specified by the Government. As part of this close communication, the Contract Manager shall attend up to three "Report Card Meetings" a year either at the Contractor's main office or at the Resident Engineer’s office utilizing this Contract. The purpose of this meeting is to evaluate the progress of routine O&M activities, corrective maintenance activities, special coordination activities, problems incurred, and policy or procedural changes. The Contract Manager shall attend site visits when appropriate.

(c) Retaining and managing the distribution of personnel, equipment, and materials so that all work is performed within the schedule specified.

(d) Negotiating, receiving, acknowledging, approving, and implementing work requested by the Contracting Officer.

(e) Taking immediate corrective action when performance is not acceptable to the Government.

(f) Maintaining an accounting of all costs incurred in accordance with Government cost procedures, other reporting requirements, and controlling costs at all levels of work.

(g) Developing procedures to ensure uniform record keeping and program management documentation.

(h) Developing, implementing, and managing a quality control program.

(i) Implementing a comprehensive safety program.

1.4.2 Chief Operator

The Contractor shall provide an on-site Chief Operator to oversee and coordinate the daily work activities described in the CONTRACT DOCUMENTS.

1.4.2.1 Chief Operator Qualifications

The Chief Operator shall have, as a minimum, the following qualifications:

(a) The ability to supervise all site work activities involved in completing the daily O&M responsibilities;

(b) Technical knowledge in all portions of the site work involved in completing the daily O&M responsibilities;

(c) Trained in the 40-hour OSHA Hazardous Waste Operations course, and be current with 8-hour Refresher courses. In addition, the Chief Operator manager shall be trained in any specific OSHA-regulated activities, such as lockout/tagout or confined space entry, as needed;

(d) knowledge of applicable Federal, state, and local laws and regulations;

(e) The ability to effectively communicate and manage customer expectations;

(f) The ability to locate, coordinate, and utilize resources within their own organization and;

(g) Work experience with the proven ability to effectively manage subcontracts.

1.4.2.2 Chief Operator Responsibilities

Specific Chief Operator responsibilities include but are not limited to the following:

(a) Being present at the site during all regular work shift hours for all stages and phases of the contract. The Chief Operator or a designated alternate must be on site daily during all regular work shift hours.

(b) The authority to supervise all site work activities involved in completing the daily O&M responsibilities.

(c) Maintaining close communication and coordination with the Government for the duration of the contract period, including reporting of any and all problems encountered.

(d) Ensuring that all site work is performed in accordance with applicable specifications and regulations.

(e) Preparing daily logs of the accomplished work.

1.4.3 Process Engineer

1.4.3.1 Process Engineer Qualifications

The Contractor's process engineer(s) shall meet the following minimum qualifications:

(a) Have, at a minimum, a Bachelor of Science degree and hold current Professional Engineer registration to practice in the United States in one of the following engineering disciplines: Chemical Engineering, Environmental Engineering, or Mechanical Engineering (or equivalent), and have at least three years experience in process design, unit operation, and process optimization related to industrial wastewater treatment facilities;

(b) Trained in the 40-hour OSHA Hazardous Waste Operations course, and be current with 8-hour Refresher courses. In addition, all process engineers shall be trained in any specific OSHA-regulated activities, such as lockout/tagout or confined space entry, as needed;

(c) knowledge of applicable Federal, state, and local laws and regulations; and

(d) The ability to effectively communicate and manage customer expectations.

1.4.3.2 Process Engineer Responsibilities

Specific Process Engineer responsibilities include but are not limited to the following:

(a) Under the firm fixed-price portion of the contract the Process Engineer will perform the following functions:

(1) Be familiar with routine plant operations, inspection reports, and working conditions.

(2) Review plant operating conditions and optimization changes.

(3) Be on-site at the plant for one 8 hour day a month. Specific date(s) may be requested by Contracting Officer.

(4) Be available for routine consultation by telephone, email, or FAX with Chief Operator, operators and Government personnel during regular working hours. Maintain close communication and coordination with Government for the duration of the contract, including discussion of any and all problems encountered.

(5) Review all proposed changes to plant systems and process.

(b) Under the indefinite portion of the contract the Process Engineer will perform the following functions:

(1) Be available on call as necessary to be on-site, if requested, on a next day basis.

(2) The Process Engineer may be requested to be available on site from job start to job finish during critical work activities and changes in process functions, unless otherwise approved by COR. Failure to do this will result in poor performance rating.

1.4.4 Safety and Health Manager

The Contractor's Safety and Health Manager shall be designated in accordance with Section 01351 SAFETY, HEALTH, AND EMERGENCY RESPONSE.

1.4.5 CQC System Manager

The Contractor's Quality Control (CQC) System Manager shall be designated in accordance with Section C.25.2.1.

1.5 BASIC PERSONNEL REQUIREMENTS

1.5.1 All Contractor personnel are subject to the following requirements:

(a) The Contract Manager and all on-site personnel must be able to speak, read, write and understand English. All personnel must understand and follow health and safety procedures and follow other instructions. All on-site Contractor personnel shall have writing skills that, at a minimum, allows them to fill out forms, invoices, maintain a legible operations log, Equipment Maintenance Inspection Cards, and prepare operation and maintenance reports.

(b) Certifications shall be maintained up-to-date and valid at all times. Certification records shall be maintained on file and readily available for Contracting Officer or QAE review upon request.

(c) The Contractor shall ensure that employees have prior work experience in the crafts/trades to perform duties of the contract, including any support personnel, in accordance with all applicable codes and regulations.

(d) Laboratory personnel and operators performing sampling or laboratory analyses shall have appropriate waste water sampling and laboratory analysis experience and expertise. Refer to Section 01450 CHEMICAL QUALITY MANAGEMENT for additional requirements for these personnel.

(e) Access Identification/Control: Contractor's on-site personnel shall be easily recognized by wearing distinctive clothing bearing the name of the company and the employee's name. Contractor personnel shall be instructed to present identification credential upon request by proper authority as established by the Contracting Officer.

1.5.2 State or Equivalent Certifications

If State Certificates are applicable to an on-site staff position the certificate must be earned through written examination and must meet those requirements as set by the State Board of Certification or an equivalent certification testing entity such as Association of Boards of Certification (ABC).

1.5.3 Hazardous Activities

For activities that present potential hazards, such as heavy equipment or electrical hazard repair, the Contractor shall utilize two or more workers on-site to perform the work.

1.5.4 Trouble Call Response

For each initial response to a trouble call regardless of time, a single worker is assumed appropriate for classification purposes.

1.5.5 On-Site Staff

The Contractor shall provide sufficiently trained, on-site staff to provide primary operation and maintenance labor for the CTP for all functions required under the fixed price cost. Sufficient personnel shall be trained and available as operators so that any absences by the chief operator will be covered, regardless of the reason for the absence. The plant operator shall be the primary person responsible for the proper operation and maintenance of the CTP. The Contractor shall have a minimum of three trained operators available to meet the requirements of this contract.

1.5.5.1 Plant Operator Qualifications

The plant operators shall meet the following minimum qualifications:

(a) Have the ability to read technical specifications and drawings, and a minimum of two years experience in operation and maintenance of wastewater treatment plants;

(b) Have 40-hour OSHA Hazardous Waste Operations training, and be current with 8-hour Refresher courses. In addition, all operators shall be trained in any specific OSHA-regulated activities, such as lockout/tagout or confined space entry, as needed;

(c) Be trained or experienced in collection, preservation, and general handling of surface water samples;

(d) knowledge of applicable Federal, state, and local laws and regulations; and

(e) The ability to effectively communicate and manage customer expectations.

1.5.5.2 Plant Operator Responsibilities

Specific Plant Operator responsibilities include but are not limited to the following:

(a) Being present at the site during the regular work shift.

(b) Maintaining close communication and coordination with Government for the duration of the site work, including reporting of any and all problems encountered.

(c) Ensuring that all work is performed per the specifications and applicable work order requirements.

(d) Preparing daily logs of the accomplished work.

1.5.6 Other Personnel Requirements

If other personnel are required to perform work, the qualifications for any other personnel will be specified under each specific work order, as applicable.

1.5.7 Assignment of On-Site Personnel

1.5.7.1 When qualified by training or other experience to perform a duty(s) in addition to the nominal designated position, and subject to the approval of the COR, a plant operator may perform maintenance/mechanic functions, environmental monitoring, CQC, or other functions except all regular plant operations must be performed and the Contractor is responsible as part of the lump sum fixed price to meet all regular staff functions, regardless of such assignment of personnel.

1.5.7.2 Contract Manager

If qualified for duties as process engineer, the Contract Manager or alternate(s) may also perform regular duties as a “process engineer” for this Contract.”

1.5.7.3 Chief Operator

The Chief Operator may also be assigned duties as CQC System Manager.

1.5.8 Dismissal/Termination of Contractor Personnel

1.5.8.1 Government Authorized Dismissal of Employee

(a) The Government may require the Contractor to dismiss from the contract work such employees as it deems incompetent, careless, insubordinate, or whose continued employment is deemed adverse to the public, or Corps of Engineers' interest. This requirement shall not be the basis for any claim for compensation or damages against the United States or any of its officers or agents.

(b) The Contractor shall not employ persons for work on this Contract if such employee is identified to the Contractor by the Contracting Officer as a potential threat to the health, safety, security, general well-being or operational mission of the facility.

1.5.8.2 Contractor Employee Resignation or Dismissal

If a Contractor employee resigns or is terminated, the Contracting Officer or designated representative shall be so notified at the earliest opportunity, but in no case later than the start of the succeeding workday.

1.6 DESIGN /CONSULTING SERVICES (Not Used)

1.7 CONTRACTING OFFICER'S REPRESENTATIVE

The Government will designate Contracting Officers Representatives (CORs) who will provide all liaison, supply Government furnished data, provide and confirm all decisions relative to Contractor's work or questions, forward minutes of conferences, meetings, and other necessary documents. Contractor interpretations and associated guidance/direction by the Government shall not be official unless specifically provided by the Contracting Officer or by the CORs. The CORs will be responsible for monitoring the timely progress of the Contractor's work and its satisfactory completion, and will be assisted by others, as may be necessary.

1.8 STAFFING AND ORGANIZATION PLANS

The Contractor shall furnish a staffing plan and organization chart describing the labor requirements and organization proposed to accomplish the work tasks.

1.8.1 Staffing Plan

The Contractor shall submit a complete listing of Contractor personnel, including job title and identification credential number, who will be working on the project. This listing shall be updated as needed to ensure that the Government has been notified of any changes of Contractor personnel in advance of new personnel engaging in work on the project. The Staffing Plan shall describe duties, responsibilities, and qualifications of on-site, off-site, including on-call personnel, and subcontractors proposed for support services for this project. Include the following:

1.8.2 Organization Chart

The Organization Chart shall include telephone numbers, location and addresses of all personnel with oversight responsibilities, on-site duties, and on-call duties, including subcontractors showing relationship to the Contractor's organizational structure. This chart shall be updated as needed to ensure that the Government has the current telephone numbers, location and addresses of the specified personnel in advance of new personnel engaging in work on the project.

1.8.3 Work Schedules

The proposed normal work schedules of on-site and off-site personnel including on-call personnel, shall be submitted for Contracting Officer review. The work schedules shall be updated periodically whenever changes occur.

1.8.4 Meetings With Government Personnel

The Contractor shall ensure that the Chief Operator or an otherwise technically qualified alternate representative, subject to the Contracting Officer's approval, is available to meet with the COR or his designee Monday through Friday from 1200 to 1500 with 60 minutes advance notice, to answer questions, provide documents and information, and perform other requirements discussed in the specifications. After normal duty hours or weekends, the Contract Manager or designated alternate(s) shall be physically present within 90 minutes after the Government personnel's first communication with the Contractor. These general meetings with Government inspectors or representatives, inspections and occasional site visits by others shall be included under the firm fixed-price portion of the contract including one meeting per month after normal duty hours.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01351

SAFETY, HEALTH, AND EMERGENCY RESPONSE

PART 1 GENERAL

1.1 SUMMARY

It shall be the responsibility of the Contractor to ensure that all work carried out by the Contractor's personnel is performed in such a manner as to be safe and protective of human health and the environment. All personnel shall understand, be familiar with, and conform to site safety procedures presented by the Accident Prevention Plan/Site Safety and Health Plan (APP/SSHP) developed by the Contractor for site activities. This section provides additional requirements for implementing the accident prevention provisions of EM 385-1-1. The requirements shall apply to work performed in both "contaminated" and "clean" areas.

1.2 REFERENCES

The publications listed form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH-0104	(2004) Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z358.1 (1998)	Emergency Eyewash and Shower Equipment

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1904	Recording and Reporting Occupational Injuries and Illnesses

ENGINEERING MANUALS

EM 385-1-1	(2003) US Army Corps of Engineers Safety and Health Requirements Manual

ENGINEERING REGULATIONS

ER 385-1-92	(2003) Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

Pub No. 85-115 (1985)	Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section H, Special Contract Requirements clause “Submittal Of Contract Data:”

Statements

APP/SSHP; G.

The content of the required Contractor’s APP/SSHP is described in paragraphs 1.6 through 1.24. The format is provided in ER 385-1-92 (2003) Appendix C. Any items in EM 385-1-1 (2003) Appendix A which have not been addressed in Appendix C of the ER shall be included as well. The APP/SSHP shall include Drawings showing initial work zone boundaries: Exclusion Zone (EZ), including restricted and regulated areas; Contamination Reduction Zone (CRZ); and Support Zone (SZ). The APP/SSHP shall also contain a certificate for each worker performing cleanup operations with potential for contaminant-related occupational exposure signed by the safety and health manager and the occupational physician indicating the workers meet the training and medical surveillance requirements of this contract.

Submit within 14 calendar days after award of contract for Government review and comment. The Contractor shall have 7 calendar days for corrections and resubmittal of the final plan. Resubmit annually for duration of Contract.

Posted Instructions; G

Proposed instructions for emergency and evacuation procedures.

Health and Safety Phase-out Report; G

Submit within 30 calendar days of completion of on-site work activities. The Contractor shall have 14 calendar days for corrections and resubmittal of the final report.

1.4 REGULATORY REQUIREMENTS

Work performed under this contract shall comply with EM 385-1-1, applicable Federal, state, and local safety and occupational health laws and regulations. This includes, but is not limited to, Occupational Safety and Health Administration (OSHA) standards, 29 CFR 1910.120, "Hazardous Waste Site Operations and Emergency Response". Matters of interpretation of standards shall be submitted to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.5 PRE-PERFORMANCE SAFETY CONFERENCE

After acceptance of Contract APP/SSHP but prior to commencement of on-site operations, a pre-performance safety conference shall be held. As a minimum, the Contractor's quality control representative and Contract Manager shall meet with Contracting Officer's representatives (COR). The Contractor shall provide an agenda for said meeting. Topics shall include but not be limited to: equipment safety, personnel protective equipment, medical monitoring, site access and control, engineering controls, and emergency response. This meeting may be conducted in conjunction with the pre-performance CQC meeting if approved by the CO.

1.6 ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN (APP/SSHP)

The Contractor shall develop and implement a Site Safety and Health Plan that shall be attached to the Accident Prevention Plan as an appendix (APP/SSHP). The APP/SSHP shall address all occupational safety and health hazards (traditional construction as well as contaminant-related hazards) associated with the CTP's operations and maintenance. The APP/SSHP shall cover each element in section 28.A.01 of EM 385-1-1 and each APP element in Appendix A of EM 385-1-1. There are overlapping elements in Section 28.A.01 and Appendix A of EM 385-1-1. APP/SSHP appendix elements that overlap with APP elements do not need to be duplicated in the APP/SSHP provided each issue receives adequate attention and in documented in the APP/SSHP. The APP/SSHP is a dynamic document, subject to change as project operations/execution change. The APP/SSHP will require modification to address changing and previously unidentified health and safety conditions. It is the Contractor's responsibility to ensure that the APP/SSHP is updated accordingly. Amendments to the APP/SSHP will be submitted to the COR as the APP/SSHP is updated. For long duration projects the APP/SSHP shall be resubmitted to the COR annually for review. The APP/SSHP will contain all updates.

1.6.1 Acceptance and Modifications

Prior to submittal, the APP/SSHP shall be signed and dated by the Safety and Health Manager, Site Safety and Health Officer and the Contract Manager. The APP/SSHP shall be submitted within 14 days of notice of award. Deficiencies in the APP/SSHP will be discussed at the safety conference, and the APP/SSHP shall be revised to correct the deficiencies and resubmitted for acceptance. On-site work shall not begin until the plan has been accepted. A copy of the written APP/SSHP shall be maintained on-site. Changes and modifications to the accepted APP/SSHP shall be made with the knowledge and concurrence of the Safety and Health Manager, the Contract Manager, and the Contracting Officer (or designee). Should any unforeseen hazard become evident during the performance of the work, the Site Safety and Health Officer (SSHO) shall bring such hazard to the attention of the Safety and Health Manager, the Contract Manager, and the Contracting Officer (or designee), both verbally and in writing, for resolution as soon as possible. In the interim, necessary action shall be taken to re-establish and maintain safe working conditions in order to safeguard on-site personnel, visitors, the public, and the environment. Disregard for the provisions of this specification or the accepted APP/SSHP shall be cause for stopping of work until the matter has been rectified.

1.6.2 Availability

The APP/SSHP shall be made available in accordance with 29 CFR 1910.120 (b)(1)(v) and 29 CFR 1926.65 (b)(1)(v).

1.7 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

1.7.1 Project/Site Conditions

The following information is an overview of site conditions and a description of the project site. This information is provided to assist in preparing the APP/SSHP. Additional information may also be available from the Government for the Contractor's review and use.

The Bunker Hill Superfund Site is located in northern Idaho, in Shoshone County, near Kellogg, Idaho. The site lies in the Silver Valley of the South Fork of the Coeur d'Alene River. Topography of the Silver Valley consists of an alluvial floodplain bordered on the north and the south by steep mountains. The floodplain ranges in width from about 0.1 mile east of Kellogg to approximately 0.9 miles near Smelterville. The elevation of the valley floor ranges from 2,160 feet above mean sea level at the west end to 2,320 feet at the east end of the project site. The valley floor is nearly level, with slopes typically less than 1 percent. The mountains rising from the valley range from 500 to 2,500 feet above the valley floor. The mountainsides typically exhibit slopes of 45 to 90 percent and at some points exceed 110 percent. Numerous valleys and gulches cut through the mountains and general trend north to south, intercepting the valley of the South Fork Coeur d'Alene River.

The Bunker Hill Superfund Site is composed of 21 square miles along Interstate 90 in the Silver Valley area of Northern Idaho. The Site encompasses the now inactive Bunker Hill Mining Complex and former metallurgical and smelting facility (the Bunker Hill Complex); the Cities of Kellogg, Pinehurst, Smelterville, and Wardner; and the residential areas of Page, Elizabeth Park, and Ross Ranch. The sources of contamination are related to the Bunker Hill Mining and Metallurgical Complex, producer of lead and zinc ore as well as tailings from areas mined upstream of the site. The industrial complex consisted of mine, milling and concentrating operations, a large tailings impoundment area, a lead smelter, an electrolytic zinc plant, a phosphoric acid and phosphate fertilizer plant, three sulfuric acid plants, and a cadmium plant. The site has been impacted by over 100 years of mining and 65 years of smelting activity. The smelter and most other operations ceased in late 1981. The Bunker Hill Superfund Site was placed on the National Priorities List (NPL) in December 1982. Since that time, two Records of Decision (RODs) have been written for the site and various remedial actions have been initiated and completed.

Soil, surface water, groundwater and air throughout the site have been contaminated by heavy metals, to varying degrees, through a combination of airborne particulate deposition, alluvial deposition to tailings dumped into the river during mining activity, past waste disposal practices, and contaminant migration from onsite sources. The Central Treatment Plant (CTP) lies within the Industrial Complex-Central Impoundment Area portion of the Bunker Hill Superfund Site. This area is secured by fences and limited-access gates with security personnel on duty. The work zones of the CTP include the Central Treatment Plant, lined storage pond, mine drainage influent line, stormwater influent line, CTP effluent line, and the central impoundment area. As described in the current operation and maintenance contractor's plan, the exclusion zone is located around the CTP's treatment works (including process units, equipment and pipelines comprising the operations area), the contamination reduction zone is just outside the operations area, and clean zones are the office and control room.

Work to be performed during the remediation includes operation and maintenance activities associated with the CTP.

1.7.2 Other Contractors on Site

Other contractors may be present on the CTP site. The APP/SSHP will need to address coordination with the other contractors.

1.7.3 Plan Requirements

The APP/SSHP shall include a site description and contamination characterization section that addresses the following elements:

a. Description of site location, topography, size and past uses of the site.

b. A list of site contaminants, process chemicals, and wastes which may present occupational health and safety hazards. Chemical names, concentration ranges, locations on-site, and estimated quantities to be impacted by site work shall be included, if known. The contamination characterization shall be reviewed and revised if new chemicals are identified as work progresses.

1.8 HAZARD/RISK ANALYSIS

The APP/SSHP shall include a safety and health hazard/risk analysis for each site operation and maintenance task to be performed. The hazard/risk analysis shall provide task-specific information necessary for determining safety and health procedures, equipment, training, medical surveillance, and personal protective equipment requirements to protect on-site personnel, the environment, and the public. Available site information shall be reviewed when preparing the "Hazard/Risk Analysis" section of the APP/SSHP. The following elements, at a minimum, shall be addressed.

1.8.1 Site Tasks and Operations (Work Plan)

The APP/SSHP shall include a section that addresses the tasks and objectives of the site operations and the logistics and resources required to reach those tasks and objectives. Based on the type of remediation required, the following is a list of anticipated major site operations and maintenance tasks to be performed (not necessarily in chronological order):

- CTP operation and maintenance
- Mine water channel and pipeline inspection and cleaning
- Equipment repair
- Wet well screen cleaning
- Lime slurry mixing
- Flocculant mixing
- Water sampling
- Pipe jetting

This is not necessarily a complete list of site tasks and operations; therefore, it shall be expanded and/or revised, during preparation of the APP/SSHP as necessary.

1.9.2 Hazards

The following potential hazards may be encountered during site work. These are not complete lists, therefore, they shall be expanded and/or revised as necessary during preparation of the APP/SSHP.

1.9.2.1 Safety Hazards. The inherent hazards associated with the above activities shall be addressed in the APP/SSHP. The Contractor shall include in the APP/SSHP the measures they will take to reduce the potentially increase of Safety hazards.

1.9.2.2 Chemical Hazards. Potential chemical hazards that may be encountered during site work include metal contaminated water; sludge, sediment and/or soil; and treatment chemicals, commercial products, and petroleum products, lubes and oils. The Hazard/Risk Analysis section of the APP/SSHP shall describe the chemical, physical, and toxicological properties of contaminants, sources and pathways of employee exposures, anticipated on-site and offsite exposure level potentials, and regulatory (including Federal, state, and local) or recommended protective exposure standards. The APP/SSHP shall also address employee exposure to hazardous substances brought on-site, and shall comply with the requirements of 29 CFR 1910.120; 29 CFR 1926.59, Hazard Communication; 29 CFR 1926.62, Lead; 29 CFR 1910.1018, Inorganic Arsenic; and 29 CFR 1926.1127, Cadmium.

1.9.2.3 Physical Agents. Potential physical hazards that may be encountered during site work are slips/trips and falls, heat and/or cold stress (depending on time of year), noise hazards, dust and ultraviolet radiation.

1.9.3 Action Levels

Action levels shall be established for the situations listed below, at a minimum.

a. Implementation of engineering controls and work practices.

b. Upgrade or downgrade in level of personal protective equipment.

c. Work stoppage and/or emergency evacuation of on-site personnel.

d. Prevention and/or minimization of public exposures to hazards created by site activities.

The action levels (at least 1/2 the permissible exposure limit unless otherwise specified in the CFR) and required actions (engineering controls, changes in PPE, etc.) shall be presented in the APP/SSHP in both text and tabular form. The Contractor shall take measures to meet these action levels, as well as demonstrate to the CO that these action levels are being met (e.g., air monitoring/sampling). Initial exposure assessments per 29 CFR 1926.62, 29 CFR 1910.1018, and 29 CFR 1926.1127 need to be addressed as well.

1.10 ACTIVITY HAZARD ANALYSES

Prior to beginning each specific work activity, an Activity Hazard Analysis shall be prepared by the Contractor performing that work and submitted for review and acceptance. The format shall be in accordance with EM 385-1-1, figure 1-1. A major phase of work is defined as an operation involving a type of work presenting hazards not experienced in previous operations or where a new subcontractor or work crew is to perform. The analysis shall define the activities to be performed and identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the activity hazard analysis has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities. The activity hazard analyses shall be continuously reviewed and when appropriate modified to address changing site conditions or

operations, with the concurrence of the Contract Manager and the Contracting Officer. Activity hazard analyses shall be attached to and become a part of the APP/SSHP.

1.11 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

An organizational structure shall be developed that sets forth lines of authority (chain of command), responsibilities, and communication procedures concerning site safety, health, and emergency response. This organizational structure shall cover management, supervisors and employees of the Contractor and subcontractors. The structure shall include the means for coordinating and controlling work activities of subcontractors and suppliers. The APP/SSHP shall include a description of this organizational structure as well as qualifications and responsibilities of each of the following individuals. The Contractor shall obtain Contracting Officer's acceptance before replacing any member of the Safety and Health Staff. Requests shall include the names, qualifications, duties, and responsibilities of each proposed replacement.

1.11.1 Contract Manager

A Contract Manager, who has responsibility to implement the APP/SSHP, the authority to direct work performed under this contract and verify compliance, shall be designated.

1.11.2 Safety and Health Manager

1.11.2.1 Qualifications

The services of a Certified Industrial Hygienist certified by the American Board of Industrial Hygiene or a Safety Professional Certified by the Board of Certified Safety Professionals shall be utilized. The name, qualifications (education summary and documentation, ABIH or BCSP certificate), and work experience summary shall be included in the APP/SSHP. The Safety and Health Manager may hold other duties for the project, including but not limited to, Site Safety and Health Officer (SSHO). The Safety and Health Manager shall have the following additional qualifications:

a. A minimum of 3 years experience in developing and implementing safety and health programs at hazardous waste sites;

b. Documented experience in supervising professional and technician level personnel;

c. Documented experience in developing worker exposure assessment programs and air monitoring programs and techniques;

d. Documented experience in the development of personal protective equipment programs, including programs for working in and around potentially toxic materials; and

e. Working knowledge of state and Federal occupational safety and health regulations.

1.11.2.2 Responsibilities

The Safety and Health Manager shall:

a. Be responsible for the development, implementation, oversight, and enforcement of the APP/SSHP.

b. Sign and date the APP/SSHP prior to submittal.

c. Conduct initial site-specific training.

d. Be present on-site during the first day of maintenance activities with the potential for workers to be exposed to contaminants.

e. Visit the site as needed and at least once per quarter to audit the effectiveness of the APP/SSHP.

f. Be available for emergencies.

g. Provide on-site consultation as needed to ensure the APP/SSHP is fully implemented.

h. Coordinate any modifications to the APP/SSHP with the Contract Manager, the SSHO, and the Contracting Officer.

i. Provide continued support for upgrading/downgrading of the level of personal protection.

j. Be responsible for evaluating air monitoring data and recommending changes to engineering controls, work practices, and PPE.

k. Review accident reports and results of daily inspections.

l. Serve as a member of the Contractor's quality control staff.

1.11.3 Site Safety and Health Officer (SSHO)

1.11.3.1 Qualifications

An individual and one alternate shall be designated the Site Safety and Health Officer (SSHO). The name, qualifications (education and training summary and documentation), and work experience of the Site Safety and Health Officer and alternate shall be included in the APP/SSHP. The SSHO may perform other functions and duties for this project, including but not limited to Safety and Health Manager. The SSHO shall have the following qualifications:

a. A minimum of 2 years experience in implementing safety and health programs at hazardous waste sites where Level C personal protective equipment was required;

b. Documented experience in construction techniques and construction safety procedures;

c. Working knowledge of Federal and state occupational safety and health regulations; and

d. Specific training in personal and respiratory protective equipment program implementation, in the proper use of air monitoring instruments, and air sampling methods.

1.11.3.2 Responsibilities

The Site Safety and Health Officer shall:

a. Assist and represent the Safety and Health Manager in on-site training and the day to day on-site implementation and enforcement of the accepted APP/SSHP,

b. Be assigned to the site on a full time basis for the duration of the contract. The SSHO can have collateral duties in addition to safety and occupational health related duties.

c. Have authority to ensure site compliance with specified safety and health requirements, Federal, state and OSHA regulations and all aspects of the APP/SSHP including, but not limited to, activity hazard analyses, air monitoring, use of PPE, decontamination, site control, standard operating procedures used to minimize hazards, safe use of engineering controls, the emergency response plan, spill containment program, and preparation of records by performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log in accordance with 29 CFR 1904.

d. Have authority to stop work if unacceptable health or safety conditions exist, and take necessary action to re-establish and maintain safe working conditions.

e. Consult with and coordinate any modifications to the APP/SSHP with the Safety and Health Manager, the Contract Manager, and the Contracting Officer (or designee).

f. Serve as a member of the Contractor's quality control staff on matters relating to safety and health.

g. Conduct accident investigations and prepare accident reports.

h. Conduct daily safety inspections and document safety and health findings into the Daily Safety Inspection Log. Track noted safety and health deficiencies to ensure they are corrected.

i. In coordination with site management and the Safety and Health Manager, recommend corrective actions for identified deficiencies and oversee the corrective actions.

j. Coordinate site activities that may affect the safety of other Contractors or residential personnel on site with all Contractors or residents on site.

1.11.4 Persons Certified in First Aid and CPR

At least two persons who are currently certified in first aid and CPR by the American Red Cross or other approved agency shall be on-site at all times. They shall be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910.1030. These persons may perform other duties but shall be immediately available to render first aid when needed.

1.12 TRAINING

Personnel shall receive training in accordance with the Contractor's written safety and health training program and 29 CFR 1910.120, 29 CFR 1926.62 (l), 29 CFR 1910.1018 (o), 29 CFR 126.1127 (m) and 29 CFR 1926.21. The APP/SSHP shall include a section describing training requirements.

1.12.1 General Hazardous Waste Operations Training

Personnel entering the exclusion or contamination reduction zones (except transportation subcontractors) shall meet the requirements of 29 CFR 1910.120, related to HAZWOPER training. On-site supervisors shall have completed the above training and 8 hours of additional, specialized training covering at least the following topics: the employer's safety and health program, personal protective equipment program, spill containment program, and health hazard monitoring procedures and techniques. Copies of current training certification statements shall be kept in an on-site file and training records shall be reviewed prior to initial entry of any worker or visitor onto the work site.

1.12.2 Site-specific Training

Site-specific training sessions shall be documented in accordance with Section 01.B.03.b of EM 385-1-1. All Contractor (and subcontractor) personnel performing work on-site (except for transportation subcontractors) shall receive site-specific training, as described above.

1.12.2.1 Initial Session (Pre-entry Briefing)

Prior to commencement of on-site field activities, all site employees, including those assigned only to the Support Zone, shall attend a site-specific safety and health training session. This session shall be conducted by the Safety and Health Manager and the Site Safety and Health Officer to ensure that all

personnel are familiar with requirements and responsibilities for maintaining a safe and healthful work environment. Procedures and contents of the accepted APP/SSHP and Sections 01.B.02 and 28.D.03 of EM 385-1-1 shall be thoroughly discussed. Each employee shall sign a training log to acknowledge attendance and understanding of the training. The Contracting Officer shall be notified at least 5 days prior to the initial site-specific training session so Corps of Engineers, EPA, Idaho State Department of Environmental Quality and other on-site contractor personnel involved in the project may attend.

1.12.2.2 Periodic Sessions

Periodic on-site training shall be conducted by the SSHO at least weekly for personnel assigned to work at the site during the following week. The training shall address safety and health procedures, work practices, any changes in the APP/SSHP, activity hazard analyses, work tasks, or schedule, review of safety discrepancies, and accidents. Should an operational change affecting on-site field work be made, a meeting prior to implementation of the change shall be convened to explain safety and health procedures. Site-specific training sessions for new personnel, visitors, and suppliers shall be conducted by the SSHO using the training curriculum outlines developed by the Safety and Health Manager.

1.12.2.3 Other Training

Persons involved in any aspect of the transportation of hazardous materials shall be trained in accordance with 49 CFR 172 Subpart H.

1.13 PERSONAL PROTECTIVE EQUIPMENT

1.13.1 Site Specific PPE Program

In accordance with 29 CFR 1910.120 (g)(5), 29 CFR 1926.62 (g), 29 CFR 1910.1018 (j), and 29 CFR 1926.1127 (i), a written Personal Protective Equipment (PPE) program which addresses the elements listed in that regulation, and which complies with respiratory protection program requirements of 29 CFR 1910.134, is to be included in the employer's Safety and Health Program. The Site Safety and Health Plan shall detail the minimum PPE ensembles (including respirators) and specific materials from which the PPE components are constructed for each site-specific task and operation to be performed, based upon the hazard/risk analysis. Components of levels of protection (B, C, D and modifications) must be relevant to site-specific conditions, including heat and cold stress potential and safety hazards. Only respirators approved by NIOSH shall be used. On-site personnel shall be provided with appropriate personal protective equipment. Protective equipment and clothing shall be kept clean and well maintained. The PPE section of the APP/SSHP shall include site-specific procedures to determine PPE program effectiveness and for on-site fit-testing of respirators, cleaning, maintenance, inspection, and storage of PPE.

1.13.2 Levels of Protection

The Safety and Health Manager shall establish and evaluate as work progresses appropriate levels of protection for each work activity based on review of historical site information, existing data, an evaluation of the potential for exposure (inhalation, dermal, ingestion, and injection) during each task, and a continuing safety and health monitoring program. The Safety and Health Manager shall also establish action levels for upgrade or downgrade in levels of PPE from the following specified minimum levels of protection. Protocols and the communication network for changing the level of protection shall be described in the APP/SSHP. The PPE reassessment protocol shall address air monitoring results,

potential for exposure, changes in site conditions, work phases, job tasks, weather, temperature extremes, individual medical considerations, etc.

1.13.2.1 Components of Levels of Protection

The following items constitute minimum protective clothing and equipment ensembles to be utilized during this project:

Level D

A work uniform affording minimal protection, used for nuisance contamination only; along with hard hat and boots/shoes that have a chemical resistant steel toe and shank; outer, chemical resistant, disposable boot covers, and eye protection.

Level D shall be used when (1) the atmosphere contains no known occupational hazard; and (2) work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

Level C

Level D gear along with (1) a half-face air purified respirator using N100, R100 or P100 (HEPA) particulate cartridges, (2) hooded, chemical resistant clothes with (3) outer and inner chemical-resistant gloves if in contact with liquids.

Level C gear shall be used when (1) the atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect or be absorbed through any exposed skin; (2) the types of air contaminants have been identified, concentrations measured, and an air-purifying respirator is available that can remove the contaminants; and (3) all criteria for the use of air-purifying respirators are met.

1.13.2.2 Initial Minimum Levels of PPE by Task

Based on the work to be performed and the contaminants/materials involved, the Contractor shall determine the necessary minimum levels of protection by task. Available site information shall be reviewed and the list of tasks and operations and the levels of protection shall be expanded and/or revised during preparation of the APP/SSHP.

1.13.3 PPE for Government Personnel

Three clean sets of personal protective disposable outer wear (including disposable boot covers) shall be available for use by the Corps' on-site representative or official visitors on a daily basis. The items shall be stored in the Support Zone of the site in a clean, dry place, and "set aside" for Government use.

1.14 MEDICAL SURVEILLANCE

The Safety and Health Manager, shall detail, in the employer's Safety and Health Program and the APP/SSHP, the medical surveillance program that includes scheduling of examinations, certification of fitness for duty, compliance with OSHA requirements, and information provided to the physician. Examinations shall be performed by or under the supervision of a licensed occupational physician, and shall be provided without cost to the employee, without loss of pay and at a reasonable time and place. Medical surveillance protocols and examination and test results shall be reviewed by the Occupational

Physician. The medical surveillance program shall contain the requirements specified below. Personnel working in contaminated areas of the site shall have been examined as prescribed in 29 CFR 1910.120, 29 CFR 1926.62, 29 CFR 1910.1018, and 29 CFR 1926.1127, and determined medically fit to perform their duties.

1.14.1 Frequency of Examinations

Employees shall have been provided with medical examinations as specified, within the past 12 months and shall receive exams annually thereafter (if contract duration exceeds 1 year); on termination of employment; reassignment in accordance with 29 CFR 1910.120 (e)(3)(i)(C), 29 CFR 1926.62 (j), 29 CFR 1910.1018 (n), and 29 CFR 1926.1127 (l); if the employee develops signs or symptoms of illness related to workplace exposures; if the physician determines examinations need to be conducted more often than once a year; and when an employee develops a lost time injury or illness during the period of this contract. The supervisor shall be provided with a written statement signed by the physician prior to allowing the employee to return to the work site after injury or illness resulting in a lost workday, as defined in 29 CFR 1904.12 (f).

1.14.2 Content of Examinations

The following elements shall be included in the medical surveillance program. Additional elements may be included at the discretion of the occupational physician responsible for reviewing the medical surveillance protocols.

a. Baseline health conditions and exposure history.

b. Allergies/sensitivity/susceptibility to hazardous substance exposure.

c. Ability to wear personal protective equipment inclusive of NIOSH certified respirator under extreme temperature conditions.

d. Fitness to perform assigned duties.

e. Audiometric testing (as required by Hearing Conservation Program).

f. Visual acuity.

g. Blood lead level; Hemoglobin and hematocrit determinations, red cell indices, and examination of peripheral smear morphology; Zinc protoporphyrin;

h. Cadmium in urine (CdU), Beta-2 microglobulin in urine (B(2)-M), Cadmium in blood; determination of albumin, glucose, and total and low molecular weight proteins

i. Blood urea nitrogen; and Serum creatinine

j. nasal and skin examination

1.14.3 Information Provided to the Occupational Physician

The physician shall be furnished with the following information, related to the duties generally performed by Contractor (or subcontractor) personnel, not necessarily information specific to this project:

a. Information on the employee's anticipated or measured exposure.

b. A description of any PPE used or to be used.

c. A description of the employee's duties as they relate to the employee's exposures (including physical demands on the employee and heat/cold stress).

d. A copy of 29 CFR 1910.120.

e. Information from previous examinations not readily available to the examining physician.

f. A copy of Section 5.0 of NIOSH Pub No. 85-115.

g. Information required by 29 CFR 1910.134.

h. Information required by 29 CFR 1926.62, 29 CFR 1910.1018, and 29 CFR 1926.1127

1.14.4 Physician's Written Opinion

Before work begins a copy of the physician's written opinion for each employee shall be obtained and furnished to the Safety and Health Manager, the employee, and the Contracting Officer. The opinion shall address the employee's ability to perform hazardous remediation work and shall contain the following:

a. The physician's verification of the employee's fitness to perform duties as well as recommended limitations upon the employee's assigned work and/or PPE usage.

b. The physician's opinion about increased risk to the employee's health resulting from work; and

c. A statement that the employee has been informed and advised about the results of the examination.

1.14.5 Medical Records

Documentation of medical exams shall be provided as part of the Certificate of Worker or Visitor Acknowledgment. Medical records shall be maintained in accordance with 29 CFR 1910.120, 29 CFR 1910.1020, 29 CFR 1926.62, 29 CFR 1910.1018, and 29 CFR 1926.1127.

1.15 EXPOSURE MONITORING/AIR SAMPLING PROGRAM

The Safety and Health Manager shall prepare and implement an exposure monitoring/air sampling program to identify and quantify safety and health hazards and airborne levels of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment for affected site personnel. Available site information shall be reviewed and the exposure monitoring/air sampling program shall be expanded and/or revised for submittal as part of the APP/SSHP. If air sampling is determined to be appropriate for a particular task, all samples must be analyzed by an AIHA accredited laboratory utilizing NIOSH or OSHA methodology.

1.16 HEAT AND COLD STRESS MONITORING

The Safety and Health Manager shall develop a heat stress and cold stress monitoring program for on-site activities. Details of the monitoring program, including schedules for work and rest, and physiological monitoring requirements, shall be described in the APP/SSHP. Personnel shall be trained to recognize the symptoms of heat and cold stress. The SSHO and an alternate person shall be designated, in writing, to be responsible for the heat and cold stress monitoring program.

1.16.1 Heat Stress

Procedures, practices and physiological monitoring protocol shall follow the guidelines specified in EM 385-1-1 Section 06.J and the 2004 ACGIH TLVs and BEIs. An adequate supply of cool drinking water shall be provided for the workers. NIOSH Pub No. 85-115 may be consulted for guidance in determining protocols for prevention of heat stress.

1.16.2 Cold Stress

To guard against cold injury, appropriate clothing and warm shelter for rest periods shall be provided. Procedures to monitor and avoid cold stress shall be followed in accordance with the current TLVs for Cold Stress as recommended in ACGIH-0104.

1.17 SPILL DISCHARGE AND CONTROL

Written spill and discharge containment/control procedures shall be developed and implemented. These procedures shall address material handling equipment as well as drum and container handling, shipping and transport. These procedures shall describe prevention measures, such as building berms or dikes; spill control measures and material to be used (e.g. booms, vermiculite); location of spill control material; personal protective equipment required to cleanup spills; disposal of contaminated material; and who is responsible to report the spill. Storage of contaminated material or hazardous materials shall be appropriately bermed, diked, and/or contained to prevent any spillage of material on uncontaminated soil. If the spill or discharge is reportable, and/or human health or the environment are threatened, the National Response Center, the state, and the Contracting Officer shall be notified as soon as possible.

1.18 SAFETY PROCEDURES, ENGINEERING CONTROLS AND WORK PRACTICES

The APP/SSHP shall describe the standard operating safety procedures, engineering controls and safe work practices to be implemented for the work covered. These shall include, but not be limited to, the following:

1.18.1 General Site Rules/Prohibitions

General site rules/prohibitions (buddy system, eating, drinking, and smoking restrictions, etc).

1.18.2 Work Permit Requirements

No special work permits are required for this site.

1.18.3 Material Handling Procedures

The Contractor shall expect to handle metals-contaminated media as part of the operation and maintenance of the CTP, sampling, removal, and disposal activities of this project. The Contractor shall submit a Hazardous Materials Storage Plan (HMSP) for storage of hazardous materials, which includes, but is not limited to, cleaning agents, chemical additives, or other substances the Contractor plans to use and/or store at the CTP. The HMSP shall also be included as an appendix to the Contractor's updated Operations and Maintenance Manual as specified under Section C1, paragraph Operations and Maintenance Plan. Contractor shall provide DOT-compliant storage containers, cabinets and bulk storage areas for Contractor- and Government-provided chemicals and DOT-designated hazardous materials.

1.18.3.1 Materials Transfer Safety

Materials shall be transferred into DOT-approved containers for storage and/or transportation. Any chemical/material specific requirements shall be discussed in the APP/SSHP. Any bonding/grounding requirements shall also be addressed.

1.18.4 Ignition Sources, and Fire Protection and Prevention

The requirements of EM 385-1-1 Section 9 shall be addressed as specific to this project.

1.18.5 Electrical Safety

The requirements of EM 385-1-1 Section 11 shall be addressed as specific to this project.

1.18.6 Excavation and Trench Safety

Any excavations dug during O&M activities will meet the requirements of EM 385-1-1 section 25.

1.18.7 Guarding of Machinery and Equipment

The requirements of EM 385-1-1 Section 16.B shall be addressed as specific to this project.

1.18.8 Lock Out/Tag Out

The requirements of EM 385-1-1 Section 12 shall be addressed as specific to this project.

1.18.9 Fall Protection

The requirements of EM 385-1-1 Section 21 shall be addressed as specific to this project.

1.18.10 Hazard Communication

The Contractor shall address hazard communication for site workers. Normally scheduled (e.g., weekly) site safety meetings, as well as any additional necessary meetings, shall be used to communicate site hazards.

1.18.11 Illumination

The requirements of EM 385-1-1 Section 7 shall be addressed as specific to this project.

1.8.12 Sanitation

The requirements of EM 385-1-1 Section 2 shall be addressed as specific to this project.

1.18.13 Engineering Controls

Use of Engineering Controls to minimize potential for exposure shall be specified in the APP/SSHP.

1.18.14 Signs and Labels

The Contractor shall use signs and labels to clearly mark containerized waste materials, supplies, etc.

1.18.15 Waste Disposal

Comply with Section C1, paragraph C.35 Environmental Protection and Occupational Safety and Health Requirements.

1.19 SITE CONTROL MEASURES

Decontamination of personnel, vehicles, and equipment is required prior to leaving the site. The APP/SSHP shall describe the methodology to be used by the Safety and Health Manager and SSHO in determining work zone designations and their modifications, and procedures to limit the spread of contamination.

1.19.1 Work Zones

Work zone boundaries shall be clearly defined and delineated at the CTP site by the Contractor. Work zone boundaries (exclusion zone, including restricted and regulated areas; contamination reduction zone; and support zone) and access points shall be established and the boundary delineation's shall be included on the drawings and in the APP/SSHP. Delineation of work zone boundaries shall be based on the contamination characterization data and the hazard/risk analysis to be performed as described in paragraph: HAZARD/RISK ANALYSIS. As work progresses and field conditions are monitored, work zone boundaries may be modified with approval of the Contracting Officer. Work zones shall be clearly identified for all site workers and visitors (using fencing, tape, signs, etc.). A site map, showing work zone boundaries and locations of decontamination facilities, shall be posted in the on-site office. Work zones shall consist of the following:

a. Exclusion Zone (EZ): The exclusion zone is the area where hazardous contamination is either known or expected to occur and the greatest potential for exposure exists. Entry into this area shall be controlled and exit may only be made through the CRZ. Other types of EZ's could be areas where unusual physical hazards exist due to short-term activities.

b. Contamination Reduction Zone (CRZ): The CRZ is the transition area between the Exclusion Zone and the Support Zone. The personnel and equipment decontamination areas shall be separate and unique areas located in the CRZ.

c. Support Zone (SZ): The Support Zone is defined as areas of the site, other than exclusion zones and contamination reduction zones, where workers do not have the potential to be exposed to hazardous substances or dangerous conditions resulting from hazardous waste operations. The Support Zone shall be secured against active or passive contamination. Site offices, parking areas, and other support facilities shall be located in the Support Zone.

1.19.2 Site Control Log

A log of personnel visiting, entering, or working on the site shall be maintained. The log shall include the following: date, name, agency or company, time entering and exiting the site, time entering and exiting the exclusion zone (if applicable), and personal protective equipment utilized. Before visitors are allowed to enter the Contamination Reduction Zone or Exclusion Zone, they shall show proof of current training, medical surveillance and respirator fit testing (if respirators are required for the tasks to be performed) and shall fill out the Certificate of Worker or Visitor Acknowledgment. This visitor information, including date, shall be recorded in the log. The Contractor is not required to "man" the log during the day, but shall review the log at the end of the day to determine whether all personnel visiting, entering, or working on the site have signed in and out.

1.19.3 Communication

An employee alarm system that has adequate means of on and off site communication shall be provided and installed in accordance with 29 CFR 1910.65. The means of communication shall be able to be perceived above ambient noise or light levels by employees in the affected portions of the workplace. The signals shall be distinctive and recognizable as messages to evacuate or to perform critical operations. This includes the use of "walkie-talkies," radios, and telephones. The Contractor shall also address "hand signals" or other means of non-auditory communication necessary to effectively communicate safety hazards between site workers during field activities.

1.19.4 Site Security

The Contractor shall establish site security procedures that meet the work zone requirements given in 1.19.1. The Corps' on-site representative shall be given copies of keys or combinations to locks that the Contractor places on gates, if gates and locks are used.

1.20 PERSONAL HYGIENE AND DECONTAMINATION

Personnel entering the Exclusion or Contamination Reduction Zones or otherwise exposed or subject to exposure to hazardous chemical vapors, liquids, or contaminated solids decontaminate themselves and their equipment in the CRZ prior to entering the Support Zone from the Exclusion Zone. Chapter 10.0 of NIOSH Pub No. 85-115 shall be consulted when preparing decontamination procedures. A detailed discussion of personal hygiene and decontamination facilities and procedures to be followed by site

workers shall be submitted as part of the APP/SSHP. Employees shall be trained in the procedures and the procedures shall be enforced throughout site operations. Persons disregarding these provisions of the APP/SSHP shall be barred from the site.

1.20.1 Decontamination Facilities

The Contractor shall establish a personnel decontamination facility that, at a minimum, includes containers to place disposable PPE (e.g., nitrile gloves, Tyvek overalls, boot covers) and boot wash vessels.

1.20.2 Procedures

Minimum decontamination procedures shall be specified in the APP/SSHP. Available site information shall be reviewed and these procedures shall be expanded and/or revised for submittal as part of the APP/SSHP. It is the responsibility of the SSHO to recommend techniques to improve personal decontamination procedures, if necessary.

1.20.3 Decontamination Water Disposal

The Contractor shall collect all decontamination water used during the project. Collected decontamination water shall be processed through the treatment plant.

1.21 EQUIPMENT DECONTAMINATION

Vehicles and equipment used in the EZ shall be decontaminated in the CRZ prior to leaving the site. The procedures for decontamination of vehicles and equipment shall be addressed in the APP/SSHP. The Contractor shall perform a preliminary “gross” decontamination of vehicles and equipment in the exclusion zone area itself, when vehicles and equipment have been heavily contaminated.

1.21.1 Equipment Decontamination Facilities

The Contractor shall specify in the APP/SSHP the type of decontamination facilities that will be used on-site.

1.21.2 Procedures

Procedures for equipment decontamination shall be developed and utilized to prevent the spread of contamination into the SZ and off-site areas. These procedures shall address disposal of contaminated products and spent materials used on the site, including containers, fluids, etc. Any item taken into the EZ shall be assumed to be contaminated and shall be inspected and/or decontaminated before the item leaves the area. Vehicles, equipment, and materials shall be cleaned and decontaminated prior to leaving the site. Prior to exiting the site, vehicles and equipment shall be inspected to ensure the adequacy of decontamination.

1.22 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

The APP/SSHP shall describe the emergency and first aid equipment to be available on-site. The following items, as a minimum, shall be maintained on-site and available for immediate use:

a. First aid equipment and supplies approved by the consulting physician.

b. Emergency eyewash equipment (may include small, manual, portable eyewashes that can be purchased from sampling and first aid supply stores) and showers. Both must meet the requirements of ANSI Z358.1.

c. Fire extinguishers with a minimum rating of 2-A: 20-B:C shall be provided at site facilities and in all vehicles and at any other site locations where flammable or combustible materials present a fire risk.

1.23 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

An Emergency Response Plan that meets the substantive requirements of 29 CFR 1910.120 (l), 29 CFR 1926.65 (l) , 29 CFR 1926.62, 29 CFR 1910.1018, and 29 CFR 1926.1127, shall be developed and implemented as a section of the APP/SSHP. In the event of any emergency associated with remedial action, the Contractor shall, without delay, alert all on-site employees that there is an emergency situation; take action to remove or otherwise minimize the cause of the emergency; alert the Corps' on-site representative and Contracting Officer; and institute measures necessary to prevent repetition of the conditions or actions leading to, or resulting in, the emergency. Employees that are required to respond to hazardous emergency situations shall be trained to their level of responsibility according to the requirements of 29 CFR 1910.120 (q) and 29 CR 1926.65 (q). The plan shall be rehearsed regularly as part of the overall training program for site operations. The plan shall be reviewed and revised as necessary to reflect new or changing site conditions or information.

The procedures shall include route maps to nearest pre-notified medical facility. Site-support vehicles shall be equipped with maps. At the beginning of project operations, drivers of the support vehicles shall become familiar with the emergency route and the travel time required. Emergency alerting and response procedures, including posted instructions and a list of names and telephone numbers of emergency contacts (physician, nearby medical facility, fire and police departments, ambulance service, Federal, state, and local environmental agencies; as well as Safety and Health Manager, the Contract Manager, Chief Operator, the Contracting Officer and/or their alternates), shall also be included.

Copies of the Emergency Response Portion of the accepted APP/SSHP shall be provided to the affected local emergency response agencies. The following elements, as a minimum, shall be addressed in the plan:

a. Pre-emergency planning. The Contractor shall coordinate with local emergency response providers during preparation of the Emergency Response Plan. At a minimum, coordinate with local fire, rescue, hazardous materials response teams, police and emergency medical providers to assure all organizations are capable and willing to respond to and provide services for on-site emergencies. The Contractor shall ensure the Emergency Response Plan for the site is compatible and integrated with the local fire, rescue, medical and police security services available from local emergency response planning agencies.

b. Personnel roles, lines of authority, communications for emergencies.

c. Emergency recognition and prevention.

d. Site topography, layout, and prevailing weather conditions.

e. Criteria and procedures for site evacuation (emergency alerting procedures, employee alarm system, emergency PPE and equipment, safe distances, places of refuge, evacuation routes, site security and control).

f. Specific procedures for decontamination and medical treatment of injured personnel.

g. Route maps to nearest pre-notified medical facility. Site-support vehicles shall be equipped with maps. At the beginning of project operations, drivers of the support vehicles shall become familiar with the emergency route and the travel time required.

h. Emergency alerting and response procedures including posted instructions and a list of names and telephone numbers of emergency contacts (physician, nearby medical facility, fire and police departments, ambulance service, Federal, state and local agencies; as well as Safety and Health Manager, the Contract Manager, Chief Operator and the Contracting Officer and/or their alternates).

i. Criteria for initiating community alert program, contacts, and responsibilities.

j. Procedures for reporting incidents to appropriate government agencies. In the event that an incident such as an explosion or fire, or a spill or release of toxic materials during the course of the project, the appropriate government agencies shall be immediately notified. In addition, the Contracting Officer and the Seattle District Safety and Occupational Health Office (206-764-3503) shall be verbally notified immediately and receive a written notification within 24 hours. The report shall include the following items:

(1) Name, organization, telephone number, and location of the Contractor.

(2) Name and title of the person(s) reporting.

(3) Date and time of the incident.

(4) Location of the incident (i.e., site location, facility name).

(5) Brief summary of the incident giving pertinent details including type of operation ongoing at the time of the incident.

(6) Cause of the incident, if known.

(7) Casualties (fatalities, disabling injuries).

(8) Details of any existing chemical hazard or contamination.

(9) Estimated property damage (if applicable).

(10) Nature of damage, effect on contract schedule.

(11) Action taken to ensure safety and security.

(12) Other damage or injuries sustained, public or private.

k. Procedures for critique of emergency responses and follow-up.

1.24 CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGEMENT

A copy of a Contractor-generated certificate or worker/visitor acknowledgement shall be completed and submitted for each visitor allowed to enter contamination reduction or exclusion zones, and for each employee.

1.25 INSPECTIONS

The SSHO shall perform daily inspections of the job site and the work in progress to ensure compliance with EM 385-1-1, the Safety and Health Program, the APP/SSHP and other occupational health and safety requirements of the contract, and to determine the effectiveness of the APP/SSHP. Procedures for correcting deficiencies (including actions, timetable and responsibilities) shall be described in the APP/SSHP. Follow-up inspections to ensure correction of deficiencies shall be conducted and documented. Daily safety inspection shall be documented in the Contractor's Daily Quality Control reports, and used to document the inspections, noting safety and health deficiencies, deficiencies in the effectiveness of the APP/SSHP, and corrective actions taken. Each entry shall include the following: date, work area checked, employees present in work area, PPE and work equipment being used in each area, special safety and health issues and notes, and signature of preparer. In the event of an accident, the Contracting Officer shall be notified according to EM 385-1-1. Within 2 working days of any reportable accident, an Accident Report shall be completed on ENG Form 3394 and submitted.

1.26 SAFETY AND HEALTH PHASE-OUT REPORT

A Safety and Health Phase-out Report shall be submitted within 14 working days following completion of the work and prior to final acceptance of work. The following minimum information shall be included:

a. Summary of the overall performance of safety and health (accidents or incidents, including near misses, unusual events, lessons learned, etc.) as well as deviations from/modifications to the approved APP/SSHP and rationale.

b. Final decontamination documentation including procedures and techniques used to decontaminate equipment, vehicles, and on-site facilities.

c. Summary of exposure monitoring and air sampling accomplished during the project.

d. Signatures of the Safety and Health Manager, Site Safety and Health Officer, and Contract Manager.

1.27 POSTED INSTRUCTIONS

Instructions for Emergency and Evacuation Procedures shall be clearly posted in the Control Room of the CTP and the main onsite office. A sample of the proposed instructions for posting shall be submitted to the Contracting Officer for approval.

1.28 EMERGENCY RESPONSE

It shall be the responsibility of the Contractor's personnel to respond quickly and appropriately to any emergencies that may arise at the CTP. This includes emergencies due to Operator error or negligence, error or negligence by others, equipment failure, acts of God, or any other unforeseen circumstances.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01450

CHEMICAL QUALITY MANAGEMENT

PART 1 - GENERAL

1.1 SUMMARY

This section includes sample collection and analysis requirements for influent and effluent water samples for the Bunker Hill Central Treatment Plant (CTP). This information shall be used by the Contractor as guidance in preparing a Sampling and Analysis Plan (SAP). The Contractor shall collect influent and effluent water samples for chemical analysis to ensure that contaminated water is treated to or below the standards specified in the CTP's NPDES Permit, except where noted by EPA and Corps changes.

1.2 REFERENCES

The publications listed below form a part of this section to the extent referenced. The publications are referenced in the text by basic designation only.

Department of Defense (DOD)

DOD QSM	Department of Defense Quality Systems Manual for Environmental Laboratories. DOD Environmental Data Quality Workshop Department of Navy, Lead Service. Final Version 3, March 2005. http://www.navylabs.navy.mil/ManualsDocs.htm

U.S. Army Corps of Engineers (USACE)

EM 200-1-3	Engineers Manual, Requirements for the Preparation of Sampling and Analysis Plans (1 February 2001). http://www.usace.army.mil/inet/usace-docs/eng-manuals/em200-1-3/toc.htm
EM 200-1-6	Engineers Manual, Chemical Quality Assurance for HTRW Projects (10 October 1997). http://www.usace.army.mil/inet/usace-docs/eng-manuals/em200-1-6/toc.htm.
EM 200-1-7	Performance Evaluation (PE) Program (01 February 2001) http://www.usace.army.mil/inet/information/usace-docs/eng-manuals/em200-1-7/toc.htm
ER 1110-1-263	Engineers Regulation, Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities (30 April 1998). http://www.usace.army.mil/inet/usace-docs/eng-regs/er1110-1-263/toc.htm

CEMP-CE	Memorandum dated 30 September 2004, Subject: Hazardous, Toxic, and Radioactive Waste (HTRW) Chemical Data Quality Management Policy for Environmental Laboratory Testing. http://www.environmental.usace.army.mil/info/technical/chem/chemfaqs/faqpolicy/faqpolicy.html
SR 96-9	Grant, Clarence L., Jenkins, Thomas F., and Mudambi, Anand R. 1996. "Comparison Criteria for Environmental Chemical Analyses of Split Samples Sent to Different Laboratories: Corps of Engineers Archived Data," CRREL Special Report 96-9, U.S. Army Engineer Cold Regions Research and Engineering Laboratory, Hanover, NH http://www.crrel.usace.army.mil/techpub/CRREL_Reports/reports/SR96_09.pdf

Environmental Protection Agency (EPA)

EPA SW-846	EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Revision O, Updates I, II, IIA, IIB, and III (Volume IA, IB, IC, and II) (April 1998) http://www.epa.gov/SW-846/main.htm
MIR	EPA OSWER Methods Innovation Rule (MIR) http://www.epa.gov/epaoswer/hazwaste/test/mir.htm
PBMS	Performance-Based Measurement Systems http://www.epa.gov/epaoswer/hazwaste/test/pbms.htm
EPA/540/R-04/004	EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) http://www.epa.gov/superfund/programs/clp/download/inorgfg10-08-04.pdf
EPA QA/R-5	EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, Draft Final (1997). http://www.epa.gov/quality/qs-docs/r5-final.pdf.
EPA QA/G-4*	EPA Guidance for the Data Quality Objectives Process, EPA/600/R-96/055, Final (September 1994). http://www.epa.gov/quality/qs-docs/g4-final.pdf
EPA QA/G-5	EPA Guidance for Quality Assurance Project Plans, EPA/600/R-98/018 (February 1998). http://www.epa.gov/quality/qs-docs/g5-final.pdf
UFP-QAPP*	Uniform Federal Policy of Quality Assurance Project Plans, Part 1: QAPP Manual, Review Draft Version 1 (August 2003). http://www.epa.gov/swerffrr/pdf/ufp_qapp_manual_aud_2003.pdf.

	Uniform Federal Policy of Quality Assurance Project Plans, Part 2A: UFP – QAPP Workbook, Review Draft Version 1 (August 2003). http://www.epa.gov/swerffrr/pdf/qapp_workbook_aud_2003.pdf.
	Uniform Federal Policy of Quality Assurance Project Plans, Part 2B: Quality Assurance/Quality Control Compendium: Minimum QA/QC Activities, Review Draft Version 1 (August 2003). http://www.epa.gov/swerffrr/pdf/qa_qc_compendium_august_2003.pfd
SEDD Implementation	EPA Superfund Analytical Services/Contract Laboratory Program http://www.epa.gov/superfund/programs/clp/sedd-labs.htm
NELAP	National Laboratory Accreditation Program http://www.epa.gov/nelac/nelap.html

*Note: Either the EPA or DOD guidance documents are suitable for the QAPP format.

1.3 ACRONYMS

The definition of acronyms used by the Contractor that pertain to chemical data quality control shall be clearly defined for all contract-related products and communications.

1.4 MEASUREMENT AND PAYMENT

Separate payment will not be made for providing and maintaining the chemical data quality requirements including the chemical data quality management, chemical data validation, minimum chemical data reporting requirements, and chemical data quality submittal requirements; these costs shall be included in the applicable unit prices or lump sum prices contained in the bidding schedule.

1.5 CHEMISTRY REQUIREMENTS

The operation of the Central Treatment Plant (CTP) at the Bunker Hill Superfund Site requires chemical testing of influent and effluent to the treatment plant. The Contractor shall perform chemical testing to demonstrate compliance with discharge criteria for the CTP, as defined in Permit No. ID000007-8, Authorization to Discharge under the National Pollutant Discharge Elimination System (NPDES) (See copy attached as Technical Exhibit 6). The requirements of this permit, which expired October 29, 1991, shall be met for the duration of this contract.

1.5.1 Project Quality Objectives (PQOs)

The project objectives for sampling and analysis are: 1) ensure that effluent discharged into Bunker Creek meets NPDES requirements; and 2) ensure optimal treatment plant operations. The project-specific sampling and analysis plan should document the acceptance and performance criteria developed through the systematic planning process guidance found in the UFP-QAPP documents or EPA QA/G4.

1.5.2 Sampling, Analysis, and Measurement

The following sections describe the sampling frequency and general procedures for each sample type and matrix. The analytical method selected for this work must be capable of supporting the PQOs and have defined and demonstrable method quality objectives (MQOs). Sampling frequencies are shown in Table 1. The quantitative measurements of MQOs for fixed base analysis are listed in Table 2.

Performance-based methods may be utilized. However, the contractor shall ensure that the processes documented by the EPA in *Methods Innovation Rule* (MIR) and *Performance-Based Measurement Systems (PBMS)* are applied. The method must have verifiable selectivity, precision, accuracy, comparability and sensitivity. If a field-based technology is selected, the operator must have sufficient training to operate, maintain and troubleshoot the measurement system.

1.5.2.1 Sample Collection

a. The Contractor shall collect project samples and quality control (QC) samples. Samples shall be collected consistent with the schedule in Table 1.

b. QC samples shall be collected at a rate of 5% of all project samples, or one sample per month, whichever is greater. The samples will represent influent and effluent in approximately equal proportion. Rather than follow a prescriptive QC sample collection strategy, the Contractor should actively consider when and where the data provide the highest benefit. Considerations could include such factors as verification of suspect results, the importance of effluent results in demonstrating regulatory compliance and other factors that are revealed during the operation of the CPT. QC samples shall be collected as blind duplicates of the corresponding primary sample. Both samples shall be digested and analyzed in the same batch.

c. Project samples shall have sufficient volume so that the project laboratory can analyze matrix spike/matrix spike duplicate (MS/MSD) samples made from project samples at a rate of 1 per analytical batch. The contractors should attempt to maximize batch size without compromising hold-time or turn-around-time requirements. However, if batch size falls below 5 samples, an overall frequency of 5% MS/MSD may be applied to those batches alone.

d. The Contractor shall perform routine pH monitoring and testing of the CTP System, and shall, at a minimum, take pH measurements (with the instrument calibrated to ±0.1 pH unit) of plant influent and effluent during each influent and effluent sampling event.

e. Sample collection shall be performed at a regularly scheduled time for each day that samples are collected, and the sampling schedule shall be provided to the COR. The Contractor shall assist Corps personnel during the collection of unscheduled QA samples, which will be collected at the discretion of the Government during normal working hours for the Contractor's plant operators.

f. The Contractor shall submit certified water Performance Evaluation (PE) samples. The PE samples shall have total concentrations of cadmium, lead and zinc set within the ranges specified in EM 200-1-7 Section 3.2.4. The levels of concern for this SOW are determined by the NPDES permit requirements and the operation conditions for the treatment plant. These levels are:

Cadmium $\leq$ 0.05 mg/L
Lead $\leq$ 0.30 mg/L
Zinc $\leq$ 0.73 mg/L.

Concentrations of the PE samples are subject to final approval by USACE. If the vendor proposed by the contractor is unable to meet project needs, another vendor must be selected.

One double-blind PE sample shall be submitted and approved results received prior to the start of project sample analyses. Throughout the duration of the project, one (1) PE sample per heavy metal analysis shall be submitted for analysis once a week. If the laboratory does not meet the certified PE sample acceptance limits, the USACE Project Manager will be notified with 24-hours and project sample analysis shall be terminated until corrective actions have been implemented. The Contractor shall supply the PE sample results and the vendor's acceptance limit documentation to the CO within the monthly discharge monitoring report.

g. If a performance-based method (PMB) is selected, five percent of samples shall be collected as splits along with the QC duplicate sample (three samples total). The split samples shall be analyzed at a fixed-based laboratory by a determinative method. If the ratio of the determinative result to the PMB result is outside 0.5 – 2.00, the reason for the discrepancy shall be determined and appropriate corrective actions shall be taken. Background information related to split sample comparison can be found in the CRREL Special Report 96-9.

1.6 QUALITY ASSURANCE ELEMENTS

The Contractor shall be responsible for the following quality assurance elements necessary to monitor and ensure the quality of chemical data produced.

1.6.1 Laboratory Accreditation Requirements

In September 2004, USACE suspended their laboratory validation program as documented in the policy memorandum, *Hazardous, Toxic and Radioactive Waste (HTRW) Chemical Data Quality Management Policy for Environmental Laboratory Testing (CEMP-CE).* For work performed under this contract, environmental laboratory services are to be provided only by laboratories compliant with the most recently published version of the DOD QSM and holding a current National Environmental Laboratory Accreditation Program (NELAP) accreditation for all appropriate fields of testing. The Contractor shall submit, prior to the start of work, the proposed laboratory's the self-declaration forms (including supporting documentation), as well as information related to NELAP accreditation. Before testing services can be performed by the laboratory, the COR will notify the Contractor of the acceptability of the declaration and supporting documentation. Self-declaration and provision of NELAP accreditation information for the Contractor's laboratory shall be provided annually while supporting USACE contracts. An environmental laboratory either anticipating, or engaged in support of USACE contracts, shall notify the prime contractor and COR immediately of changes in the status of laboratory operations that may affect on-going compliance with these requirements. The USACE COR may, at any time, conduct audits (including requests for pertinent data or information) of the environmental laboratory's self-declaration of compliance with this policy. If the COR finds the Contractor's laboratory non-compliant, the Contractor shall provide the services of an alternate, compliant laboratory services, until such time as compliance is again demonstrated by the Contractor's laboratory. Before performing environmental testing for USACE, the laboratory shall have access to the approved Quality Assurance Project Plan.

The Contractor shall propose a minimum number of laboratories, prior to the start of work, that have or can attain a NELAP certification consistent with contract required chemical data quality. A laboratory with an unexpired USACE Laboratory Validation will meet this requirement until such time as their validation expires. The Contractor shall identify all proposed project laboratories no later than the coordination meeting. If a proposed analytical laboratory cannot meet specified analytical requirements or achieve the required validation or certification, the Contractor shall select another laboratory. The laboratory accreditation/validations shall be provided in the QAPP.

In addition to the accreditation requirements described above, the laboratory must maintain the capability of generating well-formed SEDD 2a files throughout the lifetime of the project. This deliverable shall be available at no additional cost to the Government.

1.6.2 Analytical Data Review

1.6.2.1 Requirements

The Contractor shall review 100 percent of the data collected. Review will be conducted following *EPA/540/R-04/004* (*US EPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review)* using method requirements, (e.g., EPA SW-846) and the project quality objectives established in the Contractor's SAP. All data shall be flagged in accordance with this guidance, applying reviewer judgment as it is appropriate. Documentation of data review shall be consistent with the worksheets available in *Appendix B of EPA/540/R-04/004*. The Data Review Worksheets, variances from MQO's, and Corrective Action Reports shall be documented in the Weekly QC Report and delivered via email to the USACE Project Chemist no later than one week after the Contractor receives the data from the laboratory.

1.6.2.2 Corrective Actions

If, at any time throughout the duration of this project, chemical data quality objectives are not met, the Contractor responsibilities are as follows:

a. Notify the USACE Project Manager and take appropriate corrective action(s) within 48 hours of discovery. In cases where contract or technical noncompliance can be demonstrated, samples shall be re-analyzed and/or re-collected at the expense of the Contractor. Samples shall be re-collected and re-analyzed at the discretion of the USACE PM**.**

b. Document the corrective action(s) within 48 hours of discovery. Information technical or contractual non-compliance shall be documented along with the acceptance criteria and corrective actions necessary to reestablish control. Personnel responsible for initiating and carrying out corrective action shall be indicated.

c. The Contractor shall be responsible under this contract for any actions that occur due to analytical uncertainties. If any data are not usable due to reasons such as data being rejected or sample integrity having been compromised, the cost of the response action, including sampling and further analytical testing to correct the error, and any downtime associated with this response action shall be borne by the Contractor.

1.6.3 Quality Control Summary Report (QCSR)

A Quality Control Summary Report shall be prepared biannually for this contract. This report shall summarize issues covered in Weekly QC Report, a discussion of all data points which may have been compromised, and their impact on the usability. The QCSR shall be received by the CO within 30 days of the anniversary of NTP. The QAPP shall acknowledge this requirement. If the QCSR is unacceptable relative to the content of this specifications, the Contractor shall revise the document to the satisfaction of the Government within 15 days of receipt of comments from the Contracting Officer.

1.6.3.1 QCSR Format

The QCSR shall be prepared according to the following:

a. Project Scope—This section will address the sampling and field events covered by the QCSR. For the purpose of this project, a short description will suffice. This information may be presented in the cover sheet for the QCSR tables.

b. Project Description—This section shall describe the site background and purpose for treatment. For the purpose of this project, a short description will suffice. This information may be presented in the cover sheet for the QCSR tables.

c. Corrective Action Requests and Resolution—The Contractor shall provide a summary of all corrective actions requested and resolutions taken which impact data quality or compliance of the laboratory with the requirements of this contract.

d. Data Summary Tables—The following data tables shall be required in each QCSR:

Cross-Reference Table – results cross-reference by sample type, sample delivery group, date, location, laboratory name, etc.)

Field Duplicate Result Table
Results Table (all analytical results with qualifiers)
Rejected Results Table (must include reason codes)
- QC Sample Summaries:
  - Method Blank Summary
  - LCS Summary
  - MS Summary
- PE Sample Evaluation
  - Completeness Summary

All internal QC data (splits, duplicates, etc.) generated during the course of the project must be included in the QCSR. The QC data presentation shall include tabular summaries correlating sample identifiers with all blank results, matrix spike results, duplicate results (S/SD as appropriate), LCS results, and batch identifiers.

This contract specification requires the calculation technical and field sampling completeness:

$$\text{Technical Completeness} = \frac{\text{\# useable results}^{\dagger}}{\text{\# results reported}} \times 100$$

$$\text{Field Sampling Completeness} = \frac{\text{\# samples collected}}{\text{\# samples planned}} \times 100$$

Results for field duplicates shall be discussed in field sampling completeness.
Field sampling completeness must be calculated separately for each field QC element. The minimum goals for completeness are as follows: 1) Technical = 95% or greater, and 2) Field = 100% or greater. The goal for holding times is 100%. Each metal compound is considered a separate analytical parameter rather than considering all of the analytes or compounds in a single analytical category for the purpose of calculating completeness. A complete sample will be considered a sample for which all QC parameters are within acceptable limits.

e. References—This section will provide those references (project and guidance) used to review the data.

f. Appendices—Data Qualifier and Reason Code Definitions, Field Work Variances, Analytical Non-conformance reports.

1.7 SUBMITTALS

The following submittals are the responsibility of the Contractor. Government approval is required for submittals with a "GA" designation; submittals having no designation are for information only. The following shall be submitted in accordance with Section H, SPECIAL CONTRACT REQUIREMENTS, paragraph, Submittal of Contract Data.

Sampling and Analysis Plan, GA

A Sampling and Analysis Plan (SAP), including the Field Sampling Plan (FSP) and the Quality Assurance Project Plan (QAPP), no later than 30 days after receipt of notice to proceed.

PE Sample Concentrations and Acceptance Ranges, GA

An acceptable PE vendor must be identified and one set of acceptable results must be submitted prior to the start of analyses.

Analytical Data Package, GA

Data generated by the analytical testing shall be supplied to the COR both in hard copy and electronically (PDF and Excel) as it becomes available, along with the weekly information supplied to the COR in the Weekly Quality Control Inspection Logs, or on an alternative schedule that is agreeable to the COR. The Contractor shall report in writing within two working days any significant problems with analytical procedures, instrument calibrations or QC limit upsets along with the corrective actions that have been taken to solve the problems. The Chemical Data Package shall be submitted with the Data Review Worksheets.

Signed, original hardcopy data packages shall be provided as factual evidence that required chemical data have been produced and chemical data quality has been achieved. This data package shall be provided on a biannual basis with the Quality Control Summary Report (QCSR). The documentation shall comply with the requirements specified in paragraphs SAMPLING AND ANALYSIS PLAN and ANALYTICAL DATA PACKAGE.

Discharge Monitoring Reports, GA

The Contractor shall complete the Discharge Monitoring Report (DMR) form on a monthly basis. The completed DMR form shall be submitted to the COR by the 7th day of the following month. A representative of USACE will have signatory responsibility and will forward the DMR to the appropriate regulatory offices. Historical Discharge Monitoring Reports are attached under Technical Exhibit 4 and sample DMR forms are included under Section J, Attachment J3.

Data Review Worksheets; FIO

The Data Review Worksheets, variances from MQO's, and Corrective Action Reports shall be documented in the Weekly QC Report and delivered via email to the USACE Project Chemist no later than one week after the Contractor receives the data from the laboratory.

Quality Control Summary Report; GA

A QCSR shall be provided to the USACE Project Chemist on a biannual basis. The QCSR shall be labeled with the contractor name and contact information, revision number, issue date, contract number, project name and location(s). The completed QCSR form shall be submitted to the COR by the 7th day of the following month.

1.8 QUALIFICATIONS

1.8.1 Quality Assurance Officer

As a minimum, the Contractor's Quality Assurance Officer shall have: 5 years of experience related to investigations, studies, design, and remedial actions at HTRW sites; and 4 field seasons (or one continuous calendar year experience) in calibration and operation of various field monitoring devices. The Quality Assurance Officer shall ensure that all chemistry-related objectives including responsibilities for PQO's (see EPA QA/G-4), sampling and analysis, project requirements for data documentation and validation, and final project reports are attained. The Quality Assurance officer need not be present on site during routine sampling, but shall be available for consultation with Government and Contractor personnel.

1.8.2 Project Chemist

As a minimum, the Contractor's Project Chemist shall have the following qualifications: a 4-year college degree in Chemistry, Biology, Environmental Science or Environmental Engineering from an accredited post-secondary institution; 2 years of experience directly related to environmental investigations and/or remedial actions as a part of a Contractor management team (i.e. not primarily employed at a laboratory); and 2 years of experience in the development and preparation of SAP and work plans. The project chemist shall ensure that all chemistry related goals are attained.

The Project Chemist will be expected to have a "hands on" role in sampling and analysis, including preparation of the Sampling and Analysis Plan, general oversight of field personnel involved in sampling activities, coordination with the analytical laboratory to ensure readiness to implement project specific requirements, review of analytical data for conformance with quality standards, implementation of corrective actions in accordance with these specifications when review of data uncovers deficiencies, and serve as a point of contact for the Contracting Officer for issues related to environmental chemistry. The Project Chemist shall also prepare or oversee preparation of the QCSR.

1.8.3 Environmental Sampler

As a minimum, the Contractor's Environmental Sampler shall have 2 years of experience in and knowledge of EPA methods for collecting environmental and hazardous waste samples including operation of field screening equipment; and 2 field seasons of experience with the particular field screening techniques for use on this project. The Environmental Sampler shall collect all onsite samples and perform all field screening tests. The Environmental Sampler shall review the sampling results, and provide recommendations for the Contractor's sampling program. The Environmental Sampler shall be onsite during all sampling activities.

1.9 COORDINATION MEETING

After the pre-construction conference, before any sampling or testing, the Contractor and the CO will meet at the construction site to discuss the SAP. A list of definable features that involve chemical measurements shall be agreed upon. Management of the chemical data quality system including PQOs, project submittals, chemical data documentation, chemical data assessment, required sampling and analysis protocols, and minimum data reporting requirements shall be agreed upon. The meeting will establish an interrelationship between the Contractor's chemical data quality management and Government chemical quality assurance requirements. The Contractor’s project chemist and QA officer shall be present at these meetings unless otherwise approved by the Contracting Officer. Minutes of the meeting will be documented by the Government and shall be signed by both the Contractor and the CO. The minutes will include any or all unresolved chemical issues along with the conditions for resolution and will become a part of the contract file.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 SAMPLING AND ANALYSIS PLAN

The SAP shall confirm the Contractor’s understanding of the contract requirements for chemical quality control, and shall describe procedures for field sampling and sample submittal for analysis, data documentation, data assessment, and data reporting requirements. The SAP shall delineate the methods the Contractor intends to use to accomplish the chemical quality control items to assure accurate, precise, representative, complete, legally defensible, and comparable data. The SAP shall describe all chemical parameter measurements for all matrices for all phases of this contract. As a single interrelated document, the SAP shall be provided to field and laboratory personnel. The Contractor may propose original/innovative approaches to chemical parameter measurements for cost reduction and remediation efficiency by abbreviated sampling, contingency sampling and/or contingency analysis, indicator or tracer analysis, on-site analytical services, equivalency or screening methods. However, the SAP shall at a minimum include the required testing in Table 1. The SAP shall clearly identify the Contractor’s

laboratory. The Contractor shall furnish copies of the Government-approved SAP to the laboratory and the Contractor's field sampling crew. The SAP shall contain enough detail to be a document which may be used as an audit guide for field and laboratory work.

Execution of field work shall be described in SOPs which are included in the SAP and laboratory SOPs shall be reviewed by the Contractor's Project Chemist prior to selection of a laboratory. The SAP format may conform to one of two options. It may follow the more traditional approach to include a separate Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) under the overall heading of SAP (see EPA QA/R-5). The UFP-QAPP Guidance allows the same information to be contained in a single document (a SAP), which integrates the elements of the FSP and QAPP. This approach is designed to minimize redundancies and inconsistencies, as well as reducing the overall time and cost associated with document preparation and review. In either case, the SAP shall include detailed systematic planning elements for sampling, analysis, and chemical quality control (QC) activities; the overriding guidance shall be derived from the UFP-QAPP rather than the EPA QA/G-5.

3.1.1 Field Sampling Plan

The SAP/FSP shall contain necessary technical detail and direction for the field personnel to understand sampling and field measurement requirements. The SAP/FSP shall provide a comprehensive description and full detail for personnel to perform all on-site activities required to attain project PQOs, including: locations of samples, sampling procedures for on-site and off-site chemical analysis, performance of on-site and off-site instrumental parameter measurements, data documentation, and reporting requirements. If the traditional SAP format is selected, the Contractor shall follow the requirements in EM 200-1-3 (Table 3-1).

3.1.2 Quality Assurance Project Plan

The SAP/QAPP shall contain necessary technical detail and direction for field and laboratory personnel to understand project sample analysis, quality control and data reporting requirements, analytical methods, required detection limits, QC requirements, and data validation and reporting requirements. The Contractor shall follow the format requirements in the UFP-QAPP Manual Part 1 (Table 1).

3.2 ANALYTICAL DATA PACKAGE

The analytical data packages shall be provided to the COR with the data review worksheet. The original, signed copy of the laboratory deliverable shall be delivered to the Corps. All acceptance criteria indicated on certificates of analysis shall be project-specific. The following sections describe the general requirements for analytical data packages.

3.2.1 Requirements

3.2.1.1 Format for the Certificates of Analysis

a. The "Cooler Receipt Form" shall be completed by the Contract Laboratory documenting sample conditions on arrival at the laboratory. Original copies of cooler receipt forms as well as original copies of chain of custody forms shall be provided with certificates of analysis. Examples of both forms shall be provided in the QAPP.

b. For each analytical method the Contract Laboratory shall report all analytes as a detected concentration or as less than the Practical Quantitation Limit (PQL). All samples with out of control spike recoveries being attributed to matrix interference will be designated as such. All soil samples will be reported on a dry weight basis with the percent moisture reported for each sample. Dilution factors, date of extraction, date of analysis, and practical quantitation limits shall be reported for each analyte and method.

c. Reports of method blanks shall include all analytes for each analytical method. Analytical results for each sample shall be clearly associated with a particular method blank. Any detected concentration found in method blanks shall be reported. Reports of concentrations below the PQL are necessary to evaluate low level determinations of target compounds in samples.

d. Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries shall be reported for all analyses. All sample results shall be designated as corresponding to a particular set of MS/MSD analyses. MS/MSD analyses not meeting quality control criteria specified in the QAPP shall be rerun once. If subsequent analyses result in out of control recoveries both results shall be reported and the data flagged. Only samples from this project shall be used for MS/MSD analyses. (The Contract Laboratory shall not use samples from other projects for MS/MSD analyses.) The report shall also specify control limits for spike recoveries and RPD for each spiked analyte.

e. Results for laboratory duplicates shall be reported with relative percent difference (RPD) limits for duplicate analyses.

f. Laboratory control sample (LCS) results shall be reported with control limits for LCS analyses. Analytical results for each sample shall be clearly associated with a particular LCS sample.

g. Results of initial and continuing calibration analyses for all analyses shall be included in the data package. Continuing calibration results shall be organized such that sample results shall be clearly correlated with the calibration check samples that bracket the sample results. Injection records for all sample analyses shall be included with the calibration data. Summaries of calibration data should be provided as a CLP Form II modified for SW-846 analyses for inorganic analyses. (Note: Copied pages of handwritten laboratory notebooks will be unacceptable to fulfill the requirements of these specifications.)

h. The Contract Laboratory shall prepare a summary of all samples with detected concentrations of target compounds indexed by method and by sample ID.

i. The Contract Laboratory shall prepare a summary of all MS/MSD analyses for each applicable method indicating acceptable recovery ranges and QC acceptance criteria for RPD.

j. The Contract Laboratory shall prepare a summary of all laboratory control samples with QC acceptance criteria for RPD clearly indicated.

k. The comprehensive certificate of analysis shall contain a narrative section identifying samples not meeting quality control criteria and any other out of control condition. The narrative shall describe the corrective action taken. If "matrix effects" are invoked as a cause for out of control recoveries a subsection of the narrative shall present a detailed justification for this assertion to include a summary of all relevant quality control data.

3.2.1.2 Numbering

All data for analyses during the period covered by the comprehensive certificate of analysis shall be included as an appendix to the comprehensive report. This data shall be presented on numbered pages with an index or table of contents describing the contents of the appendix.

3.3 CONTROL OF CHEMICAL DATA QUALITY

Contractor chemical data quality control shall ensure that a quality control program is in place that assures sampling and analytical activities and the resulting chemical parameter measurement data comply with the PQOs and the requirements of the SAP. USACE guidance on chemical data quality control can be found in EM 200-1-6 and ER 1110-1-263.

The Contractor shall utilize the three-phase control system that includes a preparatory, initial, and follow-up phase for each definable feature of work. The Contractor's three-phase chemical data control process shall ensure that data reporting requirements are achieved.

3.4 ANALYTICAL TESTING LABORATORIES

The Contractor shall propose the analytical laboratories to be used to for the samples analyses. Laboratory accreditation requirements are in paragraph LABORATORY ACCREDITATION REQUIREMENT. The Contractor may utilize its own laboratory or utilize subcontract laboratories to perform analytical services.

3.4.1 Laboratory Analytical Requirements

The Contractor shall provide chemical analyses that meet the PQOs. The EPA SW-846 generally contains the methods employed for the analytical testing of environmental samples. If other methodology is proposed, it must be approved in advance by the USACE Project Chemist and documented in the SAP.

3.4.2 Laboratory Performance

The Contractor shall provide continued acceptable analytical performance and shall establish a procedure to address data deficiencies noted by review. The Contractor shall provide and implement a mechanism for providing analytical labs with the SAP, or QAPP portion of the SAP, for performing corrective action procedures. The Contractor shall acquire analytical services with additional laboratories in the event a project lab is disqualified through poor performance or loss of applicable accreditation.

3.5 NOTIFICATION OF NON-COMPLIANCE

The CO will notify the Contractor of any detected non-compliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice.

Table 1: Sampling Requirements

Location	Frequency	Analytes	Method
Outfall 006 (CTP Effluent)	Composite sample collected each day of CTP operation	Cadmium (Cd), Lead (Pb), Manganese (Mn), Zinc (Zn), Total Suspended Solids (TSS), pH	EPA SW-846 6000 (3050, 3010) or 7000 series for metals; EPA Method 160.2 for TSS; EPA Method 150.1 for pH
Kellogg Tunnel (CTP Influent)	Collect a grab sample on two days per week	Cd, Pb, Mn, Zn, TSS, pH	EPA SW-846 6000 (3050, 3010) or 7000 series for metals; EPA Method 160.2 for TSS; EPA Method 150.1 for pH
PTM 004/Sweeney Pump Station Sump	Collect a grab sample once each week	Cd, Pb, Zn, TSS, pH	EPA SW-846 6000 (3050, 3010) or 7000 series for metals; EPA Method 160.2 for TSS; EPA Method 150.1 for pH
Lined Pond Pump Station Discharge	Collect a grab sample once each week during a pumping event	Cd, Pb, Zn, TSS, pH	EPA SW-846 6000 (3050, 3010) or 7000 series for metals; EPA Method 160.2 for TSS; EPA Method 150.1 for pH

Table 2: Analytical Requirements

Analyte	Practical Quantitation Limit	Accuracy (Recovery)	Precision (RPD)
Cadmium	≤ 0.025 mg/L	80 - 120%	≤ 20%
Lead	≤ 0.15 mg/L	80	≤ 20%
Manganese	≤ 0.025 mg/L	80	≤ 20%
Zinc	< 0.30 mg/L	80	≤ 20%
pH	≤ 0.1 pH unit	per manufacturer instructions	per manufacturer instructions
TSS	≤ 5 mg/L	75 - 125%	≤ 20%

END OF SECTION

TECHNICAL EXHIBITS

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TECHNICAL EXHIBIT 1

GENERAL DESCRIPTION OF FACILITIES TO BE OPERATED AND MAINTAINED

1. SUMMARY

The purpose of this Technical Exhibit is to provide a general description of the processes and equipment for water collection, pumping and treatment at the Central Treatment Plant on the Bunker Hill Superfund Site. This exhibit includes a background on the location, physical setting and history of the Bunker Hill Superfund Site and operating history of the Central Treatment Plant at the Bunker Hill Superfund Site.

2. PROJECT LOCATION

The Bunker Hill Superfund Site is located in northern Idaho, in Shoshone County, near Kellogg, Idaho. The site lies in the Silver Valley of the South Fork of the Coeur d'Alene River.

3. SITE BACKGROUND

The elevation of the valley floor ranges from 2,160 feet above mean sea level at the west end to 2,320 feet at the east end of the project site. The valley floor is nearly level, with slopes typically less than 1 percent.

Major mining and mineral production had taken place at Bunker Hill from 1883 to 1981. The major products over the 100 year period included lead, antimony, zinc, cadmium, silver, gold, sulfuric acid, phosphoric acid, and dry fertilizer. Asbestos, copper, mercury, and polychlorinated biphenyl's (PCB's) also can be found at the site. In addition to zinc and lead, contaminants associated with stack emission include thallium. The Lead Smelter dates back to construction in 1917, and the Zinc Plant began production in 1928. The Lead Smelter and the Zinc Plant have been demolished as part of the Superfund Remedial Action for the Industrial Complex.

Bunker Hill was added to the Superfund National Priorities List (NPL) in 1982. The Bunker Hill site encompasses a 21 square mile area, including populated and non-populated areas, and includes several industrial complexes. Within the site are four towns and several unincorporated areas. Approximately 6,000 to 7,000 people live within the site boundaries. Contamination has also extended into the adjacent communities. The presence of elevated levels of metals, such as lead, zinc, cadmium; and arsenic in the soil, groundwater and surface water, is the result of the over 100 years of mining and 65 years of smelting activity.

4. SITE ACCESS

The CTP lies within the Industrial Complex-Central Impoundment Area portion of the Bunker Hill Superfund Site. This area is presently secured by fences and limited-access gates. The Central Treatment Plant is located approximately one mile west of Kellogg, Idaho on McKinley Avenue W.

5. CENTRAL TREATMENT PLANT

5.1 General

The CTP was constructed in 1974 and was designed to treat industrial wastewater from the industrial complex operations. The design flow capacity of the CTP is 5,000 gallons per minute (gpm), or 50.4 million gallons per week, based on 24 hours per day, 7 days per week operation. A lined storage pond, with capacity of approximately 7.5 million gallons, was constructed in 1994 to equalize wastewater flows and provide a more constant feed to the CTP in terms of flow rate and contaminant characteristics. Three 1,800 gpm pumps assist in the transport of wastewater from the storage pond to the CTP head house. Early in 2002, a pipeline was installed to convey acid mine drainage directly to the treatment plant. Flow can still be diverted to the lined pond, if needed.

The CTP treats stormwater runoff from the Bunker Hill Superfund Site, currently undergoing remediation, and acid mine drainage from the active Bunker Hill Mine. The industrial complex area of the Superfund site, prior to initiation of the remedial action, included a former ore mill, phosphoric acid plant, lead smelter, and zinc plant.

5.2 CTP Process

The CTP process consists of neutralizing the industrial wastewater using hydrated lime slurry treatment, reducing the lead, zinc, and cadmium ions; precipitating those heavy metals from the wastewater; aerating of the neutralized wastewater for enhanced precipitation; re-circulating precipitated solids to provide precipitation seeds and decrease the effective lime dosage; flocculating precipitated solids with the aid of anionic polyacrylamide flocculant addition; liquid-solids separation by gravity sedimentation in a clarifier; treated water discharge to the polishing basin; and discharging treated water at the 006 outfall to Bunker Creek. The excess lime sludge from the clarifier bottom is currently pumped to an unlined sludge storage pond, located on the Central Impoundment Area (CIA). See the facility drawings titled “CTP Process Flow Diagram;” “Lime System Process Flow Diagram;” and “Piping and Instrumentation Diagram.”

5.3 CTP Operating Schedule

Currently the CTP operates 24 hours per day, 4-7 days a week, depending upon the amount of Acid Mine Drainage collected and sent to the plant.

5.4 Equipment List

A list of Government provided property and equipment is provided in Technical Exhibit TE-2 for information only. The listing is not all inclusive and may not necessarily represent the installed equipment at time of award.

6. WATER TREATMENT FACILITIES

Terminology contained in reference documents related to the CTP may not be consistent with these descriptions. Unless otherwise noted, the requirements specified herein shall take precedence.

6.1 Central Treatment Plant

The CTP is the industrial wastewater treatment system, which includes associated piping, the lined storage pond, the treatment operable units, the control room for the plant, and all other associated systems and equipment, except for the sludge pond on the CIA. The CTP currently treats acid mine drainage and stormwater runoff at flow rates averaging approximately 10-20 million gallons per week. Influent flows shall also include any precipitation that falls into CTP equipment (e.g., Lined Storage Pond, Clarifier, etc.).

6.2 Lined Storage Pond

A 7.5 million gallon capacity storage pond, constructed in 1994, historically received the CTP influent. The CTP influent then flowed through the Lined Storage Pond en route to the treatment operable units of the plant. In early 2002, a direct feed line was installed to convey acid mine drainage directly to the treatment plant. The lined pond will be available for temporary use during maintenance of the direct feed line and/or emergencies. The lined pond capacity is 7.5 million gallons. The current usable storage capacity of the lined pond is 7.0 million gallons, as approximately 0.5 million gallons of storage is below the lined pond pump intakes for draining the pond to the CTP.

6.3 Mine Drainage Influent Line

In 1999, a new pipeline was installed that transports water pumped from the Bunker Hill Mine to the lined storage pond with a wye for the future installation of a direct pipeline to the treatment plant. This direct feed piping was installed in early 2002. Flow rates for water in this line are metered at the mine portal using a totalrin flow meter. This line transports > 90% of the total influent flow to the central treatment plant. The pH of the mine drainage has historically fluctuated between 1.5 and 5. The Contractor is responsible for the cleanout of the pipeline. Cleanout of the pipeline includes the manual cleanout of the open channel portion of the water line near the mine portal. See the facility drawing titled “Kellogg Tunnel Portal.”

6.4 Stormwater Influent Line

Also known as the 004 line, this pipeline transports seepage from the Smelter Closure Landfill portion of the Superfund site to the lined storage pond via the Sweeney/004 Pump Station. The pH of this influent varies, but typically remains above pH 5. In 2005 a gravity feed line was installed that allows the landfill portion of the flow to bypass the Sweeney pump station and flow directly into the lined pond. The Sweeney pump station is still operational and transfers flows from the west decontamination station and minor flows originating in Government Gulch to the lined pond. This line contributes < 10% of the CTP influent.

Maintenance of this line and the pump station is included in the CTP O&M Contract.

6.5 CTP Effluent Line

Also known as the 006 effluent line, this pipeline transports treated discharge from the CTP outfall to Bunker Creek. An in-line flume-type flow meter is located at the head of this line. Maintenance of this line is included in the CTP O&M Contract.

6.6 Sludge Handling and Disposal

Sludge is generated as part of the CTP's treatment process. The Contractor shall be responsible for managing sludge disposal. A sludge pond (Decant Pond) is located on the Central Impoundment Area (CIA) near the CTP. This pond is unlined and water that is decanted from the sludge infiltrates from this pond. The Contractor shall manage waste disposal and maintains the pond area's use under the CTP O&M contract.

6.7 Central Impoundment Area

Also known as the CIA, this tailings impoundment currently includes an unlined decant pond, used to store sludge generated in the CTP. The Contractor's responsibilities are limited to operation and maintenance associated with sludge handling and disposal in the decant pond.

6.8 Battery Limits

The battery limits of the CTP shall be defined as structures, equipment, and property reasonably defined as part of the CTP system. This shall include, but not be limited to: the Kellogg Tunnel portal channel mine water influent piping to the lined storage pond and associated pump station, pipe transporting water from the pump house to the Aeration Basin, the lime silo, lime slurry mixing system, lime slurry holding tank, Rapid Mix Tank, Aeration Basin, Flocculation Basin, Clarifier/Thickener Pond, Polishing Basin, piping transporting sludge from the Clarifier/Thickener Pond to the Rapid Mix Tank, piping and pump transporting sludge and de-watered sludge water to and from the CTP to the pond on the CIA, the Head House/Control Room, the 006 effluent discharge line that runs from the CTP outfall to Bunker Creek, and all land on which the CTP resides.

END OF EXHIBIT TE-1

TECHNICAL EXHIBIT 2

GOVERNMENT FURNISHED PROPERTY, EQUIPMENT,
AND MATERIALS INVENTORY [1, 2]

ITEM	USE	Availability
1. Installed Building Equipment (Spare items)		
7 hp 3 phase motor (USED)	Emergency backup situations	4
1/2 hp Sump Pump	Control Room, Head House, Polishing Pond Pump	3
3/4 HP High Yield Sump Pump	10-26-04 replaced 1/2 hp sump pumps for Control Room, Head House, Polishing Pond Pump (w/warranty)	3
Woods HS Coupling Assembly Part #806605PSP	Rapid Mix or Lime Slurry gear box-drive motor	1
Grit Screen 30-inch	Spare	4
Variable Speed Floc Pump (Viking)	Floc Mix Room	1
Floc Mixer (Lightnin)	Floc Mix Room	2
6-inch stainless steel victolic flange	Draining direct feed line	1
Replacement Pinch Valve	Lime Injection system	2
Driver	Sharpe Mixer	1
Red 8-inch Pinch Valve, Series 75	(4 control room, 1 rapid mix tank)	5
Red 8-inch Resilient Seat Valve Series G		1
Red 12-inch Resilient Seat Valve Series G New Drop Box(11-03 Ferguson)		1
Drive motor (11-03 CH2M Hill)	New slurry tank mixer	1
5-inch Master Gear Stainless Steel butterfly valve	#3 sludge pump supply line	1
Automatic valve	Lime injection	1
Drive Mechanism (Emico)	Clarifier	1
Drive Mechanism (US Motors gear box, Hercules Motor)	Aeration Basin	1
Lime Slurry Transfer Pump (Backup Pump and motor)	CTP	0

TECHNICAL EXHIBIT 2

GOVERNMENT FURNISHED PROPERTY, EQUIPMENT,
AND MATERIALS INVENTORY

ITEM NO.	DESCRIPTION	USE	Availability
2. Equipment-In-Place (EIP)		---	
UPC #23742	Crosley Washing Machine	CTP	1
UPC #23762	Portable Honda/North Star heated pressure washer with spray hose	CTP	1
	Ultrasonic flow meter Model #2200 purchased 9-12-02	006 outfall	
upc #24329	HF Scientific Turbidity Meter	Clarifier	1
	Sigma bubble flow meter (not operable)	006 outfall	2
USACE #8	ISCO Flow bubble flow meter	Kellogg Tunnel	1
	Fire Extinguisher	CTP	17
upc #25615	Orion pH meter	CTP	1
upc #34135	Hydac portable pH meter	CTP	1
	Triple beam balance scale Serial number 04309	sludge specific gravity scale	1
upc #23233,	12-foot extension ladder (orange)	CTP	1
upc #23416	8-foot extension ladder (blue)	CTP	1
upc #23463	3-inch Metabo electric grinder	CTP	1
(no upc#)	1/2 inch Makita drill	CTP	1
	Makita cordless drill with 1 battery and charger model #6093D	CTP	1
	6-foot two door gray cabinet	CTP	1
	Small gear pully system	CTP	1
	Gray tool box with wrenches and miscellaneous small tools	CTP	1
UPC #23690	6-foot Single Door Locker	CTP	2
	Concrete Blanket		7

TECHNICAL EXHIBIT 2

GOVERNMENT FURNISHED PROPERTY, EQUIPMENT,
AND MATERIALS INVENTORY

ITEM NO.	DESCRIPTION	USE	Availability
2. Equipment-In-Place (EIP)		---	
Serial #H31971895	Model #1260 Hotsy Pressure Washer	CTP	1
	6-foot Shower Enclosure	CTP	1
	6-foot 3-Door Locker 18-inch x 54-inch (brown)	CTP	1
	Eyewash Station installed in Lime Silos	CTP	3
	Hammer Drill	CTP	1
USACE #3	165,000 BTU Kerosene Heater	CTP	1
USACE #7	165,000 BTU Kerosene Heater	CTP	1
USACE #9	Laptop Computer-Dell Latitude D600	CTP	1
UPC #25585	8-inch Godwin Pump skid plated mounted Pump #D8088	CTP	1
UPC #25587	6-inch Godwin Pump Trailer Mounted Pump# D6678	CTP	1
UPC #25588	Godwin Pump Float Control	CTP	1
UPC #25589	Godwin Pump Float Control	CTP	1
UPC #25590	Godwin Pump Float Control	CTP	1
	8-inch x 20 feet Galvanized piping for Godwin Pumps	CTP	15
	8-inch x 10 feet Flexible Inlet Hose for Godwin Pumps	CTP	9
	8-inch Fittings for Godwin Pumps	CTP	6
Serial #1Q0009	Pro H000E Generator (LP and Direct Feed Line actuators power supply)	CTP	1
	30/30-10/10 Universal AIAI 2 Dual Rectifier Control Unit(Cath. Protection Sys)	CTP	1
	Lime Silo Ladder	CTP	

TECHNICAL EXHIBIT 2

GOVERNMENT FURNISHED PROPERTY, EQUIPMENT,
AND MATERIALS INVENTORY

ITEM	USE	Availability	Suggested Stock
3. Government Furnished Expendable Items – One time issue at changeover		(Estimate - Subject to inventory)	
Belt pulley	one for each pump and motor on site	12	13
Replacement belt	one set for each pump and motor on site	25	25
6-inch Victolic coupler fitting with gasket	Pipe connection	8	1
3-inch Victolic coupler fitting with gasket	Pipe connection	4	4
2-inch Victolic coupler fitting with gasket	Pipe connection	4	4
2-inch Victolic replacement gasket	Pipe connection	4	4
Refill Desiccant Crystals	Kellogg Tunnel Flow Meter	4	4
Refill role print paper	Kellogg Tunnel Flow Meter	6	6
500 ml beakers	Sludge sample	5	2
Numerous sized (used) fittings	emergency repairs (scrap pile)	10-12	6-8
Numerous sized (used) nuts and bolts	emergency repairs (scrap pile)	10-20	10

TECHNICAL EXHIBIT 2

GOVERNMENT FURNISHED PROPERTY, EQUIPMENT,
AND MATERIALS INVENTORY

ITEM	USE	Availability	Suggested Stock
3. Government Furnished Expendable Materials – One time issue at changeover		(Estimate - Subject to inventory)	
Sock	Lime Chute	4	--
Miscellaneous Bearings	Silos	--	--
Bags	Baghouse	48	--
Hydrated Lime (stored in the Lime Silo)	Treatment	Inventory	Above 100 tons
Polymer Flocculent (50 lbs per bag)	Treatment	Inventory	Above 800 lbs

TECHNICAL EXHIBIT 2

GOVERNMENT FURNISHED PROPERTY, EQUIPMENT,
AND MATERIALS INVENTORY

ITEM	USE	Availability	Suggested Stock
4. Critical Reserve Items		(Estimate - Subject to inventory)	
Model 381 pH Probe rebuild kits	CTP flow pH probes	1	6
Model 381 pH Probe body	CTP flow pH probes	2	4
Control Probes	Lime Slurry Transfer Pump (BW controls 04126400)	2	6
500 ml 7.0 pH standard	pH meter and probe calibration	12	6
500 ml 4.0 pH standard	pH meter and probe calibration	10	4
500 ml 10.0 pH standard	pH meter and probe calibration	4	4
1/2 hp pump	Sump	0	1
pH meters (rebuilt for critical back up meters) 5-01-03	Uniloc control panel	1	2
Used ware plate	#1 or #2 sludge pump	0	0
Pump rebuild kit	Floc injection pump	1	1

1. See Section C, paragraph C.7 for definitions of GFP.

2. Government and Contractor will perform joint inventory prior to contract changeover date to update this inventory list, evaluate condition, and turn over to Contractor for use for the contract period.

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TECHNICAL EXHIBIT 3

CENTRAL TREATMENT PLANT
SAMPLING AND ANALYTICAL SCHEDULE

LOCATION		**PARAMETER**	**TYPE**	**FREQUENCY**
1	CTP Outfall	Zn	C	D
		Pb	C	D
		Cd	C	D
		TSS	C	D
		PH	C	D
2	Kellogg Tunnel	Zn	G	2W
		Pb	G	2W
		Cd	G	2W
		TSS	G	2W
		PH	G	2W
3	004/Sweeney	Zn	G	W
		Pb	G	W
		Cd	G	W
		TSS	G	W
		PH	G	W

TECHNICAL EXHIBIT 3

CENTRAL TREATMENT PLANT
SAMPLING AND ANALYTICAL SCHEDULE

LOCATION		**PARAMETER**	**TYPE**	**FREQUENCY**
4	Lined Pond Pump Station Discharge	Zn	G	D
		Pb	G	W
		Cd	G	W
		TDS	G	W
		TSS	G	W

NOTE: G = Grab Sample, C = Composite Sample, D = Daily for Each Day of Operation, 2W = Two Days Per Week, W = Weekly

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TECHNICAL EXHIBIT 4

HISTORICAL MAINTENANCE AND OPERATIONS DATA

Part 1 General O&M and Discharge Monitoring Reports

Part 2 Annual Preventative Maintenance Report

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PART 1

GENERAL O&M AND DISCHARGE MONITORING REPORTS

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Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month: March, 03

Facility: Central Treatment Plant

Location: Bunker Hill Superfund Site

Total Flow For The Month From 006(in gallons): 49,760,000

Total Flow From Kellogg Tunnel (in gallons): 60,162,290

Percent of Influent Successfully Treated (in percentage): 100.0%

30 flow days * 6 parameters (Pb,Cd,Zn,Mn,TSS,&pH) = 180 potential exceedances
180 - 0 exceedances =180 180/180 =100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with the specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with five PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). This samples consisted of preserved 500ml samples to be analyzed for Cd, Pb, and Zn. The PE acceptable quantitation range is listed on the QC page of this report.

Trip Blank and Rinsate samples were also taken with the results being reported on the RB & TB page of this report.

Highlights of Plant Maintenance and/or Plant Optimization:

03-07-03 CIA staff gauge reading is 2.25ft.
03-07-03 to 03-11-03 Cleaned all CTP hand rails and walkways.
03-07-03 Reduced the Lined Pond elevation for Eagle North America, patched liner hole in the east end of the pond.
03-11-03 CIA staff gauge reading is 2.10ft.
03-14-03 McCunes Instruments were called in to repair the Clarifier, and Aeration Basin pH meters in the control room.
03-19-03 The Aeration Basin pH probe failed and was replaced with a rebuilt probe.
03-25-03 Replaced the Clarifier pH meter with the rebuilt meter from McCunes instruments.
03-31-03 The remaining pH meters in need of repair were sent to McCunes Instruments for repairs.
03-31-03 The CIA staff gauge reading is 2.60ft.
04-01-03 Completed dredging of the Lined Pond.

Lessons Learned

Due to the greater density of sludge caused by the influent of sediment from the lined pond cleanout activities, the increased sludge blanket created a tendency to plug the sludge underflow lines. Backflushing the lines only temporarily solved the problem.

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
2003	3	1		2003	3	31
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	MAXIMUM	Quantity or Loading (54-61) UNITS	(4 Card Only) (38-45) MINIMUM	(46-53) AVERAGE	Quality or Concentration (54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				6.5		8.5			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.66	2.36	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.58	1.38	Lbs/Day		0.04	0.08	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	0.9	2.2	Lbs/Day		0.07	0.17	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.053	0.07	Lbs/Day		0.004	0.004	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	20.2	150	Lbs/Day		1.45	8.30	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	42.7	303	Lbs/Day		2.9	18	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY:__ Gary Fulton

REVIEWED BY:__ Don Ferguson

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: March, 03

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.040	0.487	0.163	1.986	0.004	0.049	8.25	101	7.10	1.5	0.2	2.437	1.11
2	0.061	0.789	0.171	2.212	0.004	0.052	4.74	61.3	7.20	1.6	0.2	2.587	1.17
3	0.040	0.484	0.158	1.912	0.004	0.048	2.86	34.6	7.20	1.5	0.2	2.420	1.10
4	0.040	0.601	0.109	1.637	0.004	0.060	1.55	23.3	7.30	1.8	0.2	3.004	1.36
5	0.040	0.437	0.068	0.743	0.004	0.044	1.01	11.0	7.70	1.3	0.8	8.746	3.97
6	0.040	0.387	0.068	0.658	0.004	0.039	0.86	8.28	7.40	1.2	1.0	9.680	4.39
7	0.040	0.431	0.069	0.743	0.004	0.043	0.72	7.70	7.90	1.3	1.2	12.918	5.86
8	0.040	0.704	0.030	0.528	0.004	0.070	1.20	21.1	8.20	2.1	0.8	14.086	6.39
9	0.040	0.624	0.032	0.499	0.004	0.062	0.41	6.34	8.50	1.9	1.0	15.605	7.08
10	0.040	0.611	0.022	0.336	0.004	0.061	0.47	7.21	8.50	1.8	0.4	6.109	2.77
11		0.000		0.000		0.000		0.00		0.0		0.000	0.00
12	0.040	0.587	0.051	0.749	0.004	0.059	5.40	79.3	7.40	1.8	0.8	11.75	5.33
13	0.076	1.376	0.073	1.322	0.004	0.072	8.30	150	7.00	2.2	1.2	21.73	9.86
14	0.040	0.417	0.075	0.782	0.004	0.042	2.15	22.4	7.30	1.3	2.4	25.04	11.4
15	0.040	0.276	0.053	0.365	0.004	0.028	1.08	7.44	6.80	0.8	4.8	33.09	15.0
16	0.040	0.457	0.165	1.886	0.004	0.046	0.47	5.42	6.80	1.4	6.6	75.46	34.2
17	0.040	0.167	0.065	0.271	0.004	0.017	0.29	1.21	6.80	0.5	3.2	13.35	6.06
18	0.040	0.714	0.061	1.089	0.004	0.071	0.10	1.79	6.50	2.1	16	289.3	131
19	0.040	0.671	0.071	0.024	0.004	0.067	0.09	1.51	7.10	2.0	7.2	120.8	54.8
20	0.040	0.674	0.050	0.843	0.004	0.067	0.10	1.69	7.20	2.0	18	303.4	138
21	0.040	0.567	0.029	0.411	0.004	0.057	0.06	0.89	6.90	1.7	3.0	42.56	19.3
22	0.040	0.694	0.045	0.781	0.004	0.069	0.11	1.93	6.80	2.1	1.8	31.24	14.2
23	0.040	0.674	0.071	1.197	0.004	0.067	0.10	1.69	7.00	2.0	4.4	74.17	33.6
24	0.040	0.788	0.074	1.457	0.004	0.011	0.45	8.86	8.20	2.4	1.0	19.69	8.93
25	0.040	0.724	0.025	0.453	0.004	0.072	0.25	4.53	8.00	2.2	1.8	32.60	14.8
26	0.040	0.654	0.065	1.063	0.004	0.065	0.17	2.81	8.10	2.0	1.8	29.44	13.4
27	0.040	0.262	0.059	0.386	0.004	0.026	0.21	1.39	7.70	0.8	1.0	6.551	2.97
28	0.040	0.347	0.041	0.356	0.004	0.035	0.26	2.26	8.30	1.0	2.0	17.36	7.87
29	0.040	0.654	0.039	0.638	0.004	0.065	0.28	4.61	8.20	2.0	1.6	26.17	11.9
30	0.040	0.577	0.043	0.621	0.004	0.058	0.43	6.19	8.00	1.7	1.6	23.10	10.5
31	0.040	0.694	0.047	0.815	0.004	0.069	1.00	17.3	8.00	2.1	0.4	6.940	3.15
TOTAL	1.257	17.53	2.092	26.77	0.120	1.593	43.367	605	225.10	49.76	86.80	1,281.32	581
Sample Events	30	30	30	30	30	30	30	30	30	30	30	30	30
Daily Average	0.042	0.584	0.070	0.892	0.004	0.053	1.446	20.164	7.50	1.66	2.89	42.71	19.4
MIN	0.040	0.000	0.022	0.000	0.004	0.000	0.063	0.000	6.500	0.000	0.200	0.000	0.000
MAX	0.076	1.376	0.171	2.212	0.004	0.072	8.300	150	8.500	2.360	18.000	303.424	137.623

CTP - INLET (Lined Pond Discharge)
CENTRAL TREATMENT PLANT
MONTH: March, 03

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						1.5		0.000
2						1.6		0.000
3	20.00	93.20	0.514	78.800	2.40	1.5	10.6	58.07
4	26.40	124.2	0.632	137.40	2.20	1.8	21.3	145.4
5	2.880	79.40	0.266	173.60	2.40	1.3	1.37	6.793
6	29.20	126.4	0.484	197.20	2.10	1.2	21.6	94.97
7						1.3		0.000
8						2.1		0.000
9						1.9		0.000
10						1.8		0.000
11						0.0		0.000
12	1.520	70.00	0.210	195.00	3.10	1.8	115	766.1
13	0.426	60.20	0.130	164.00	3.20	2.2	35.0	287.5
14	17.40	71.80	0.366	151.00	2.40	1.3	16.3	76.98
15	31.00	84.60	0.372	131.00	2.30	0.8	21.6	67.59
16						1.4		0.000
17	11.80	83.20	0.310	87.600	2.60	0.5	742	1404
18	8.380	75.40	0.234	75.200	2.60	2.1	2.87	23.25
19	61.20	210.0	0.856	149.00	2.80	2.0	45.9	349.2
20	24.00	89.60	0.380	113.00	3.20	2.0	4.75	36.32
21	64.80	164.0	0.630	122.00	3.30	1.7	2.83	18.21
22	12.00	76.20	0.256	106.00	2.60	2.1	2.26	17.79
23						2.0		0.000
24	24.20	72.6	0.248	113.00	2.60	2.4	6.72	60.03
25	4.160	63.0	0.206	102.00	2.40	2.2	45.6	374.5
26	3.800	116	0.316	148.00	2.80	2.0	1.32	9.793
27	1.480	61.4	0.146	102.60	2.80	0.8	130	386.3
28	28.80	99.6	0.388	118.00	2.50	1.0	10.3	40.54
29	43.80	99.0	0.504	110.00	2.50	2.0	19.5	144.7
30						1.7		0.000
31	23.40	74.8	0.246	104.00	2.70	2.1	452	3557

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: March, 03

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						1.5		
2						1.6		
3	0.398	97.8	0.156	38.40	2.70	1.5	115	631
4						1.8		
5						1.3		
6	0.740	67.8	0.072	179.0	3.20	1.2	115	505
7						1.3		
8						2.1		
9						1.9		
10	0.752	64.6	0.066	170.2	3.80	1.8	101	700
11						0.0		
12						1.8		
13	0.612	58.6	0.086	170.0	3.40	2.2	107	879
14						1.3		
15						0.8		
16						1.4		
17	1.150	81.2	0.158	96.60	2.70	0.5	92.0	174
18						2.1		
19						2.0		
20	1.970	88.8	0.164	39.60	2.90	2.0	437	3341
21						1.7		
22						2.1		
23						2.0		
24	1.020	55.4	0.078	143.0	3.40	2.4	84.0	750
25						2.2		
26						2.0		
27	0.696	60.6	0.088	155.0	3.20	0.8	103	306
28						1.0		
29						2.0		
30						1.7		
31	1.490	148.0	0.180	328.0	3.30	2.1	109	858

CTP CLARIFIER EFFLUENT
CENTRAL TREATMENT PLANT
MONTH: March, 03

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						1.5		0.000
2						1.6		0.000
3						1.5		0.000
4						1.8		0.000
5						1.3		0.000
6	0.040	0.030	0.004	na	na	1.2	na	0.000
7						1.3		0.000
8						2.1		0.000
9						1.9		0.000
10						1.8		0.000
11						0.0		0.000
12						1.8		0.000
13	0.062	0.116	0.004	2.600	7.80	2.2	2.60	21.35
14	0.040	0.130	0.004	0.371	7.90	1.3	8.00	37.85
15-A	0.040	0.097	0.004	0.196	7.00	0.8	9.20	28.76
15-B	0.040	0.184	0.004	0.338	7.10	0.8	18.4	28.76
16						1.4		0.000
17	0.04	0.08	0.005	0.096	5.90	0.5	9.60	18.17
18	0.04	0.14	0.004	0.221	7.20	2.1	11.6	93.96
19	0.04	0.18	0.004	0.352	7.40	2.0	16.6	126.3
20	0.04	0.07	0.004	0.112	7.70	2.0	4.60	35.17
21	0.04	0.05	0.004	0.183	7.20	1.7	4.20	27.02
22						2.1		0.000
23						2.0		0.000
24						2.4		0.000
25						2.2		0.000
26						2.0		0.000
27						0.8		0.000
28						1.0		0.000
29						2.0		0.000
30						1.7		0.000
31						2.1		0.000

004 & SWEENEY **MONTH : March, 03**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
03/06/03	0.05	15.6	2.09	7.40	10.0
03/13/03	0.14	14.8	1.98	7.20	10.6
03/20/03	0.08	14.6	1.87	6.90	11.2
03/27/03	0.04	16.2	1.84	7.10	13.2

CENTRAL TREATMENT PLANT

RINSATE AND TRIP BLANKS
Month: March, 03

Rinsate and Trip Blank samples will be taken approximately every twenty QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
CTP INLET	03/31/03	**RB-03-31-03**	<0.04	<0.02	<0.004	<0.020
Trip Blank (D.I.water)	03/31/03	**TB-03-31-03**	<0.04	<0.02	<0.004	<0.020

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: March, 03

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	03/03/03	Lead	0.040	0.040	mg/L	96%		0.0%		
MS/MSD		Zinc	0.158	0.136	mg/L	104%		15.0%		
Lab Duplicate		Cadmium	0.004	0.004	mg/L	97%		0.0%		
		Manganese	2.860	2.860	units	98%		0.0%		
		pH	7.200		mg/L					
		TSS	0.200		mg/L					
Performance	03/06/03	Lead	0.399	0.400	mg/L			-0.3%		
Evaluation		Zinc	0.793	0.800	mg/L			-0.9%		
Sample		Cadmium	0.057	0.060	mg/L			-5.1%		
(CTPXX-03-06-03)		Manganese			units					
		pH			mg/L					
		TSS			mg/L					
006/CTP Outfall	03/12/03	Lead	0.040	0.040	mg/L	93%		0.0%		
MS/MSD		Zinc	0.051	0.060	mg/L	97%		-16.2%		
Lab Duplicate		Cadmium	0.004	0.004	mg/L	94%		0.0%		
		Manganese	5.400	5.410	units	98%		-0.2%		
		pH	7.400		mg/L					
		TSS	0.800		mg/L					
Performance	03/13/03	Lead	0.385	0.400	mg/L			-3.8%		
Evaluation		Zinc	0.745	0.800	mg/L			-7.1%		
Sample		Cadmium	0.059	0.060	mg/L			-1.7%		
(CTPXX-03-13-03)		Manganese			units					
		pH			mg/L					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Kellogg Tunnel	03/13/03	Lead	0.612	0.566	mg/L			-7.8%		
		Zinc	58.60	60.20	mg/L			-2.7%		
QC Sample		Cadmium	0.086	0.082	mg/L			4.8%		
		Manganese	170.0	175.0	units			-2.9%		
		pH	3.400	3.500	mg/L			-2.9%		
		TSS	107.0	93.00	mg/L			14.0%		
006/CTP Outfall	03/18/03	Lead	0.040	0.040	mg/L			0.0%		
		Zinc	0.061	0.097	mg/L			-45.6%		Results are below specified
QC Sample		Cadmium	0.004	0.004	mg/L			0.0%		detection limits.
		Manganese	0.095	0.092	units			3.2%		
		pH	6.500	6.700	mg/L			-3.0%		
		TSS	16.20	14.60	mg/L			10.4%		
004 Sweeny	03/20/03	Lead	0.083	0.084	mg/L			-1.2%		
		Zinc	14.60	14.60	mg/L			0.0%		
QC Sample		Cadmium	1.870	1.870	mg/L			0.0%		
		Manganese	na	na	units					
		pH	6.900	7.100	mg/L			-2.9%		
		TSS	11.20	12.00	mg/L			-6.9%		
Performance	03/20/03	Lead	0.397	0.400	mg/L			-0.8%		
Evaluation		Zinc	0.758	0.800	mg/L			-5.4%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-03-13-03)		Manganese			units					
		pH			mg/L					
		TSS			mg/L					
Performance	03/27/03	Lead	0.395	0.400	mg/L			-1.3%		
Evaluation		Zinc	0.851	0.800	mg/L			6.2%		
Sample		Cadmium	0.064	0.060	mg/L			6.5%		
(CTPXX-03-27-03)		Manganese			units					
		pH			mg/L					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	03/30/03	Lead	0.040	0.040	mg/L	98%		0.0%		
MS/MSD		Zinc	0.043	0.038	mg/L	109%		12.3%		
Lab Duplicate		Cadmium	0.004	0.004	mg/L	98%		0.0%		
		Manganese	0.429	0.435	units	101%		-1.4%		
		pH	8.000		mg/L					
		TSS	1.600		mg/L					
Inlet	03/31/03	Lead	23.40	27.20	mg/L			-15.0%		
		Zinc	74.80	78.00	mg/L			-4.2%		
QC Sample		Cadmium	0.246	0.256	mg/L			-4.0%		
		Manganese	104.0	103.0	units			1.0%		
		pH	2.700	2.800	mg/L			-3.6%		
		TSS	452.0	499.0	mg/L			-9.9%		
March, 2003 Completeness		Lead	11	Valid		11	Total	100.0%		
		Zinc	11	Valid		11	Total	100.0%		
		Cadmium	11	Valid		11	Total	100.0%		
		Manganese	6	Valid		6	Total	100.0%		
		pH	4	Valid		4	Total	100.0%		
		TSS	4	Valid		4	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **March, 03**

KELLOGG TUNNEL FLOW

Day	**KT METER** mgd	Ft/Flume		**KT STAFF** mgd	**GAUGE** Ft/Flume
03/03/03	1.02	0.54		1.0	0.54
03/06/03	2.18	0.89		2.18	0.89
03/10/03	2.09	0.87		2.1	0.87
03/11/03	2.13	0.88		2.1	0.88
03/17/03	0.96	0.52		0.96	0.52
03/20/03	2.10	0.87		2.1	0.87
03/24/03	2.10	0.87		2.1	0.87
03/27/03	1.10	0.57		1.1	0.57
04/03/03	2.50	0.98		2.3	0.93

Day	**KT Flow Meter Reading**
02/28/03	99,560,360
03/31/03	159,722,650
KT Total for month	60,162,290

Day	**006 Flow Meter Reading**
02/28/03	0
03/31/03	49,720,000
006 total for month	49,720,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
02/25/03	0.7	Hours	527.9	Hours
03/31/03	0.7	Hours	575.6	Hours
Total Hours	0.0	Hours	47.7	Hours
Total Flow for 004/Sweeney For The Month =			1,431,000	Gallons

004/Sweeny discharge pipe flow

Date	Flow (GPM)
3-Apr	18.8

Day	**Lined Pond Water Level**			
02/28/03	3,000,000	gal	Elev. =	2276.5
03/31/03	3,000,000	gal	Elev. =	2276.5
.	Note: Does not include sludge (sludge level @ 2271.5).			

Central Treatment Plant

Daily log March, 2003

			INFLUENT		AERATION BASIN			CLARIFIER			DISCHARGE 006			RECYCLE		SLUDGE PUMP		POND PUMP	
DATE	TIME	INITIALS	GPM	pH	SET	pH2	GRAB	pH4	GRAB	TEMP	pH3	GRAB	FLOW	SpG	FLOW	ON	OFF	ON	OFF
3/1	5:40	GN,GF			8.1	8.5		N/A	8.6	44	8.0	8.1	1.46	1.02	750gpm				
3/2	5:40	DY			8.1	8.3		N/A	8.2	52	8.2	7.7	1.55	1.03	750gpm	#3-6:45	14:00	#1-9:30	14:25
3/3	5:45	GF,DY	708	3.1	8.1	8.8		N/A	8.5	43	8.0	7.8	1.45	1.02	750gpm	#1-7:45	14:45	#1-7:30	15:00
3/4	5:40	GF,GN,DY			8.5	9.0		N/A	8.3	43	8.0	7.7	1.80	1.04	750gpm	#1-6:00	16:00	#1-9:00	18:50
3/5	5:50	GF,GN,DY			9.0	8.7		N/A	8.8	50	8.2	8.1	1.32	1.02	750gpm	#1-6:10	18:00	#1-6:00	20:00
3/6	5:30	GN,GF,DY			9.0	9.0		N/A	8.6	50	8.3	7.8	1.16	1.02	750gpm	#1-6:30		#1-6:20	
3/7	5:45	GN,GF			9.3	9.3		N/A	8.9	50	8.7	8.7	1.29	1.01	750gpm	#3-001	7:15	#1-6:30	7:30
3/8	6:00	GN			8.5	9.2		N/A	9.0	50	8.5	8.6	2.11	1.03	750gpm	#1-7:10	7:50		
3/9	5:40	DY			8.5	9.2		N/A	9.6	54	8.8	9.0	1.87	1.025	750gpm	#1-6:15	8:20		
3/10	5:30	GF,DY	1513	2.2	8.5	9.2		N/A	9.1	60	8.8	8.7	1.83	1.023	750gpm	#16:15	7:00		
3/11	5:45	GF,GN,DY	N/F		8.5	9.0		N/A	9.0	55	NF	NF	NF	1.023	750gpm	None			
3/12	5:20	GF,GN,DY			9.0	9.0		N/A	8.8	54	8.4	8.5	1.75	1.033	750gpm			#1-6:00	
3/13	5:00	GN,GF,DY		3.4	9.0	9.5	9.5	N/A	8.8	47	7.6	7.6	2.16	1.07	750gpm				
3/14	5:15	GN,GF			9.0	9.2	9.1	N/A	8.9	54	7.9	7.9	1.25	1.06	750gpm				
3/15	5:00	GN		2.0	9.0	9.1		N/A	8.7	52	7.8	7.8	0.83	1.06	750gpm				
3/16	6:00	DY			8.5	8.7		N/A	7.7	51	7.8	7.1	1.37	1.063	750gpm	#3-7:00	9:00	#1-9:00-10:00	
3/17	5:30	GF,DY			9.0	8.5		N/A	7.3	50	7.4	7.3	0.50	1.048	750gpm			#1-5:30	17:00
3/18	5:30	GF,GN,DY	1500	2.5	9.0	9.1	9.1	N/A	7.8	53	7.4	7.3	2.14	1.070	750gpm	see sample log		#1-06:00	17:00
3/19	5:00	GF,GN,DY		2.0	9.0	9.0	8.9	N/A	8.0	52	7.7	7.6	2.01	1.074	750gpm	see sample log		#1-6:15	ON
3/20	5:30	GF,GN,DY		2.3	9.0	9.1	9.0	N/A	9.2	50	7.7	6.7	2.02	1.103	750gpm	see sample log		#1-On	19:00
3/21	5:30	GN,GF		2.3	9.0	9.0		N/A	8.1	52	7.7	7.6	1.70	1.087	750gpm	see sample log		#1-5:30	16:00
3/22	5:40	GN		2.4	9.0	9.1	9.0	N/A	8.8	54	7.7	7.6	2.07	1.067	750gpm	see sample log		#1-5:30	
3/23	5:55	DY			9.0	9.7		N/A	8.1	54	7.8	9.0	2.02	1.088	750gpm	#1-6:40	7:50		
3/24	5:20	GF,DY		2.4	9.0	9.5		N/A	8.7	54	8.0	8.5	2.36	1.053	750gpm	#3-7:00		#2-6:15	16:30
3/25	5:40	GF,GN,DY		2.5	9.0	9.4		N/A	8.6	54	8.5	8.6	2.17	1.072	750gpm	#3-5:45		#2-5:45	16:30
3/26	5:30	GF,GN,DY		3.0	9.0	9.2	9.2	N/A	9.1	50	9.0	9.0	1.95	1.070	750gpm	#3-7:00			
3/27	5:30	GN,GF,DY		3.0	9.0	9.4	9.5	9.5	9.5	53	7.9	7.9	0.79	1.011	750gpm	see sample log		#2-6:00	16:30
3/28	4:45	GN,GF		2.4	9.0	9.5	9.4	9.4	9.0	53	8.9	8.6	1.04	1.030	750gpm	see sample log		#2-5:25	15:30
3/29	5:30	GN		2.4	9.0	9.3	9.4	9.1	9.0	52	8.8	8.7	1.99	1.078	750gpm	see sample log		#2-6:00	15:30
3/30	5:50	DY			9.0	9.5		8.4	8.8	53	8.5	8.6	1.73	1.065	750gpm	#1-6:05	7:05		
3/31	5:20	GF,DY		2.6	9.0	9.2		8.5	8.6	55	8.5	8.4	2.08	1.056	750gpm			#1-6:45	3:00 PM

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 03/05/03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in goo condition at this time.

The Kellogg Tunnel flume flow is 2.18MGD, Staff Gauge reading 0.893ft/flume 1500 GPM

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 03-12-03 Inspected By: G.Fulton

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.13 MGD, Staff Gauge reading 0.88 ft/flume 1480 GPM.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 03-20-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.24 MGD, Staff Gauge reading 0.616 ft/flume.

Removed debris from both trash racks.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 03-27-03 Inspected By: G. Fulton

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***	
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***	
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***	

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.50 MGD, Staff Gauge reading 0.98 ft/flume 1736 GPM.

AMERICAN ANALYTICAL SERVICES

BHCTP: 031303

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp date	Pb	Zn	Mn	Cd	pH	TSS
1	006-03-01-03	water	030103	<0.040	0.163	8.25	<0.004	7.10	0.20
2	006-03-02-03	water	030203	0.061	0.171	4.74	<0.004	7.20	<0.20
3	006-03-03-03	water	030303	<0.040	0.158	2.86	<0.004	7.20	0.20
4	IN-03-03-03	water	030303	20.0	93.2	78.8	0.514	2.40	10,580
5	KT-03-03-03	water	030303	0.398	97.8	38.4	0.156	2.70	115.0
6	006-03-04-03	water	030403	<0.040	0.109	1.55	<0.004	7.30	0.20
7	IN-03-04-03	water	030403	26.4	124.2	137.4	0.632	2.20	21,340
8	006-03-05-03	water	030503	<0.040	0.068	1.01	<0.004	7.70	0.80
9	IN-03-05-03	water	030503	2.88	79.4	173.6	0.266	2.40	1,370
10	006-03-06-03	water	030603	<0.040	0.068	0.855	<0.004	7.40	1.00
11	IN-03-06-03	water	030603	29.2	126.4	197.2	0.484	2.10	21,630
12	KT-03-06-03	water	030603	0.740	67.8	179.0	0.072	3.20	115.0
13	004-03-06-03	water	030603	0.045	15.6	na	2.09	7.40	10.0
14	CTPXX-03-06-03	water	030603	0.399	0.793	na	0.057	na	na
15	006-03-07-03	water	030703	<0.040	0.069	0.715	<0.004	7.90	1.20
16	006-03-08-03	water	030803	<0.040	0.030	1.20	<0.004	8.20	0.80
17	006-03-09-03	water	030903	<0.040	0.032	0.406	<0.004	8.50	1.00
18	006-03-10-03	water	031003	<0.040	0.022	0.472	<0.004	8.50	0.40
19	KT-03-10-03	water	031003	0.752	64.6	170.2	0.066	3.80	101.0
	006-03-03-03	duplicate	030303	<0.040	0.136	2.86	<0.004		
	006-03-03-03	spike	030303	95.8%	104%	98.4%	96.8%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 032603

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp date	Pb	Zn	Mn	Cd	pH	TSS
1	006-03-12-03	water	031203	<0.040	0.051	5.40	<0.004	7.40	0.80
2	IN-03-12-03	water	031203	1.52	70.0	195.0	0.210	3.10	115.0
3	QC-03-12-03	water	031203	1.44	64.8	173.0	0.190	3.20	103.0
4	006-03-13-03	water	031303	0.076	0.073	8.30	<0.004	7.00	1.20
5	IN-03-13-03	water	031303	0.426	60.2	164.0	0.130	3.20	35.0
6	KT-03-13-03	water	031303	0.612	58.6	170.0	0.086	3.40	107.0
7	QC-03-13-03	water	031303	0.566	60.2	175.0	0.082	3.50	93.0
8	004-03-13-03	water	031303	0.142	14.8	na	1.98	7.20	11.2
9	CTPXX-03-13-03	water	031303	0.385	0.745	na	0.059	na	na
10	006-03-14-03	water	031403	<0.040	0.075	2.15	<0.004	7.30	2.40
11	IN-03-14-03	water	031403	17.4	71.8	151.0	0.366	2.40	16,270
12	006-03-15-03	water	031503	<0.040	0.053	1.08	<0.004	6.80	4.80
13	IN-03-15-03	water	031503	31.0	84.6	131.0	0.372	2.30	21,620
14	006-03-16-03	water	031603	<0.040	0.165	0.474	<0.004	6.80	6.60
15	006-03-17-03	water	031703	<0.040	0.065	0.291	<0.004	6.80	3.20
16	IN-03-17-03	water	031703	11.8	83.2	87.6	0.310	2.60	742.0
17	KT-03-17-03	water	031703	1.15	81.2	36.6	0.158	2.70	92.0
18	006-03-18-03	water	031803	<0.040	0.061	0.095	<0.004	6.50	16.2
19	IN-03-18-03	water	031803	8.38	75.4	75.2	0.234	2.60	2,870
20	QC-03-18-03	water	031803	<0.040	0.097	0.092	<0.004	6.70	14.6
21	006-03-19-03	water	031903	<0.040	0.071	0.090	<0.004	7.10	7.20
22	IN-03-19-03	water	031903	61.2	210.0	149.0	0.856	2.80	45,900
23	006-03-20-03	water	032003	<0.040	0.050	0.100	<0.004	7.20	18.0
24	IN-03-20-03	water	032003	24.0	89.6	113.0	0.380	3.20	4,750
25	KT-03-20-03	water	032003	1.97	88.8	39.6	0.164	2.90	437.0
26	004-03-20-03	water	032003	0.083	14.6	na	1.87	6.90	11.2
27	QC-03-20-03	water	032003	0.084	14.6	na	1.87	7.10	12.0
28	CTPXX-03-20-03	water	032003	0.397	0.758	na	0.062	na	na
29	006-03-21-03	water	032103	<0.040	0.029	0.063	<0.004	6.90	3.00
30	IN-03-21-03	water	032103	64.8	164.0	122.0	0.630	3.30	2,830
	006-03-12-03	duplicate	031203	<0.040	0.060	5.41	<0.004		
	006-03-12-03	spike	031203	92.6%	97.0%	97.6%	94.0%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 040203

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp date	Pb	Zn	Mn	Cd	pH	TSS
1	006-03-22-03	water	032203	<0.040	0.045	0.111	<0.004	6.80	1.80
2	IN-03-22-03	water	032203	12.0	76.2	106.0	0.256	2.60	2,260
3	006-03-23-03	water	032303	<0.040	0.071	0.100	<0.004	7.00	4.40
4	006-03-24-03	water	032403	<0.040	0.074	0.452	<0.004	8.20	1.00
5	IN-03-24-03	water	032403	24.2	72.6	113.0	0.248	2.60	6,720
6	KT-03-24-03	water	032403	1.02	55.4	143.0	0.078	3.40	84.0
7	006-03-25-03	water	032503	<0.040	0.025	0.259	<0.004	8.00	1.80
8	IN-03-25-03	water	032503	4.16	63.0	102.0	0.206	2.40	45,640
9	006-03-26-03	water	032603	<0.040	0.065	0.172	<0.004	8.10	1.80
10	IN-03-26-03	water	032603	3.80	116.0	148.0	0.316	2.80	1,320
11	006-03-27-03	water	032703	<0.040	0.059	0.212	<0.004	7.70	1.00
12	IN-03-27-03	water	032703	1.48	61.4	102.6	0.146	2.80	130.0
13	KT-03-27-03	water	032703	0.696	60.6	155.0	0.088	3.20	103.0
14	004-03-27-03	water	032703	<0.040	16.2	na	1.84	7.10	13.2
15	CTPXX-03-27-03	water	032703	0.395	0.851	na	0.064	na	na
16	006-03-28-03	water	032803	<0.040	0.041	0.260	<0.004	8.30	2.00
17	IN-03-28-03	water	032803	28.8	99.6	118.0	0.388	2.50	10,320
18	006-03-29-03	water	032903	<0.040	0.039	0.282	<0.004	8.20	1.60
19	IN-03-29-03	water	032903	43.8	99.0	110.0	0.504	2.50	19,580
20	006-03-30-03	water	033003	<0.040	0.043	0.429	<0.004	8.00	1.60
21	006-03-31-03	water	033103	<0.040	0.047	0.995	<0.004	8.00	0.40
22	IN-03-31-03	water	033103	23.4	74.8	104.0	0.246	2.70	452.0
23	KT-03-31-03	water	033103	1.49	148.0	328.0	0.180	3.30	109.0
24	RB-03-31-03	water	033103	<0.040	<0.020	<0.020	<0.004	na	na
25	TB-03-31-03	water	033103	<0.040	<0.020	<0.020	<0.004	na	na
26	QC-03-31-03	water	033103	27.2	78.0	103.0	0.256	2.80	499.0
	006-03-30-03	duplicate	033003	<0.040	0.038	0.435	<0.004		
	006-03-30-03	spike	033003	97.6%	109%	101%	97.6%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month: April, 03

Facility: Central Treatment Plant

Location: Bunker Hill Superfund Site

Total Flow For The Month From 006(in gallons): 61,127,300

Total Flow From Kellogg Tunnel (in gallons): 63,335,350

Percent of Influent Successfully Treated (in percentage): 100.0%

30 flow days * 6 parameters (Pb,Cd,Zn,Mn,TSS,&pH) = 180 potential exceedances
180 - 0 exceedances =180 180/180 =100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with the specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with five PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). This samples consisted of preserved 500ml samples to be analyzed for Cd, Pb, and Zn. The PE acceptable quantitation range is listed on the QC page of this report.

Trip Blank and Rinsate samples were also taken with the results being reported on the RB & TB page of this report.

Highlights of Plant Maintenance and/or Plant Optimization:

04-01-03 to 04-30-03 The CTP recycle sludge specific gravity was maintained around 1.08.
04-01-03 Completed dredging of the Lined Pond; the dredge will be removed on Friday 04-04-03.
04-01-03 CIA staff gauge reading is 2.60 ft.
04-01-03 Quarterly pump and motor analysis performed by Balancing Service Company.
04-03-03 Began drawing down the Lined Pond and treating the remaining sludge.
04-14-03 Began cleaning the Lined Pond liner.
04-14-03 to 04-23-03 Removed debris from the Lined Pond pumps.
04-16-03 All CTP fire extinguishers were annual inspected and refilled as needed by J's fire extinguisher company.
04-23-03 Completed the cleaning of the Lined Pond liner.
04-24-03 Used a vacuum truck to complete the removal of sand and rock from the Lined Pond liner and wet well.
04-28-03 The CTP lost recycle flow from the Clarifier center well to the Rapid Mix tank. After repeated back-flushing of the underflow lines, the recycle flow was restored.
04-29-03 Installed new water transfer piping from the Polishing Pond Pump House to the Lime Silo.
04-29-03 Pigging preparations.
04-30-03 Performed quarterly Direct Feed Line cleaning (line pigging).
04-30-03 Continued pumping the 004 Outfall water into the Lined Pond wet well. This water is then pumped by the Lined Pond pump to the CTP for treatment. This is done to minimize the amount of standing water in the Lined Pond.
05-02-03 Completed the Lined Pond liner repairs with N.W. Linings. Task Order #05 is complete.

Lessons Learned

During the final stages of the Lined Pond cleaning, it was discovered that it is not possible to remove all water from the pond with the Lined Pond pumps. The lined pond effluent pipe is approximately the same elevation as the pump influent. The Lined Pond pumps fill with air and cavitate before the pond is fully drained. Modifications to the wet well will be necessary in order to be able to keep the lined pond water level drawn down.

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
2003	4	1		2003	4	30
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	Quantity or Loading (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	Quality or Concentration (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				7.3		8.6			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	2.02	4.15	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.71	1.70	Lbs/Day		0.04	0.06	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	0.4	0.8	Lbs/Day		0.02	0.04	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.065	0.14	Lbs/Day		0.004	0.004	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	19.9	170	Lbs/Day		1.03	6.18	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	7.5	26	Lbs/Day		0.4	1	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY:__ Gary Fulton

REVIEWED BY:__ Don Ferguson

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: April, 03

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.043	0.951	0.020	0.442	0.004	0.088	1.19	26.3	7.80	2.7	0.6	13.27	6.02
2	0.040	0.995	0.020	0.497	0.004	0.099	1.75	43.5	7.60	3.0	0.6	14.92	6.77
3	0.049	1.697	0.024	0.831	0.004	0.139	4.90	170	7.90	4.2	0.6	20.78	9.42
4	0.040	0.768	0.020	0.384	0.004	0.077	6.18	119	7.80	2.3	0.2	3.839	1.74
5	0.040	0.387	0.020	0.194	0.004	0.039	4.25	41.1	7.30	1.2	0.2	1.936	0.88
6	0.040	0.598	0.030	0.448	0.004	0.060	2.04	30.5	7.40	1.8	0.2	2.988	1.36
7	0.040	0.354	0.021	0.186	0.004	0.035	0.93	8.20	8.60	1.1	0.2	1.769	0.80
8	0.040	0.511	0.020	0.255	0.004	0.051	0.30	3.88	8.60	1.5	0.2	2.554	1.16
9	0.040	0.437	0.020	0.219	0.004	0.044	0.10	1.05	8.00	1.3	0.4	4.373	1.98
10	0.040	0.654	0.020	0.327	0.004	0.065	0.11	1.75	8.20	2.0	0.8	13.08	5.93
11	0.040	0.681	0.020	0.340	0.004	0.068	0.39	6.57	8.30	2.0	0.8	13.62	6.18
12	0.040	0.658	0.020	0.329	0.004	0.066	0.55	9.07	8.40	2.0	0.4	6.576	2.98
13	0.040	0.658	0.020	0.329	0.004	0.066	0.84	13.8	8.40	2.0	0.2	3.288	1.49
14	0.040	0.581	0.020	0.290	0.004	0.058	1.19	17.3	8.50	1.7	1.0	14.52	6.59
15	0.062	1.076	0.022	0.382	0.004	0.069	1.04	18.1	8.10	2.1	0.2	3.472	1.57
16	0.056	1.033	0.026	0.480	0.004	0.074	0.55	10.2	8.30	2.2	0.2	3.688	1.67
17	0.040	0.811	0.020	0.406	0.004	0.081	0.30	6.14	8.30	2.4	0.8	16.22	7.36
18	0.040	0.744	0.023	0.428	0.004	0.074	0.26	4.78	8.40	2.2	1.4	26.05	11.8
19	0.040	0.444	0.030	0.024	0.004	0.044	0.23	2.57	7.90	1.3	0.8	8.879	4.03
20	0.040	0.421	0.032	0.336	0.004	0.042	0.12	1.23	8.20	1.3	0.6	6.309	2.86
21	0.040	0.417	0.041	0.428	0.004	0.042	0.08	0.79	8.30	1.3	0.6	6.259	2.84
22	0.040	0.714	0.030	0.536	0.004	0.071	0.10	1.84	8.00	2.1	0.2	3.572	1.62
23	0.040	0.741	0.028	0.519	0.004	0.074	0.26	4.78	8.30	2.2	0.2	3.705	1.68
24	0.040	0.704	0.029	0.511	0.004	0.011	0.32	5.60	8.30	2.1	0.2	3.522	1.60
25	0.040	0.721	0.020	0.361	0.004	0.072	0.43	7.71	7.90	2.2	0.2	3.605	1.64
26	0.040	0.768	0.020	0.384	0.004	0.077	0.46	8.75	8.10	2.3	0.4	7.677	3.48
27	0.040	0.734	0.021	0.386	0.004	0.073	0.49	8.98	8.20	2.2	0.2	3.672	1.67
28	0.040	0.744	0.020	0.372	0.004	0.074	0.47	8.75	8.20	2.2	0.2	3.722	1.69
29	0.040	0.654	0.023	0.376	0.004	0.065	0.53	8.67	8.40	2.0	0.2	3.271	1.48
30	0.040	0.577	0.020	0.289	0.004	0.058	0.43	6.15	8.60	1.7	0.2	2.887	1.31
31		0.000		0.000		0.000		0.00				0.000	0.00
TOTAL	1.250	21.23	0.700	11.29	0.120	1.958	30.766	596	244.30	60.45	13.00	224.03	102
Sample Events	30	30	30	30	30	30	30	30	30	30	30	30	30
Daily Average	0.042	0.708	0.023	0.376	0.004	0.065	1.026	19.878	8.14	2.02	0.43	7.47	3.4
MIN	0.040	0.000	0.020	0.000	0.004	0.000	0.076	0.000	7.300	1.060	0.200	0.000	0.000
MAX	0.062	1.697	0.041	0.831	0.004	0.139	6.180	170	8.600	4.150	1.400	26.053	11.817

CTP - INLET (Lined Pond Discharge)
CENTRAL TREATMENT PLANT
MONTH: April, 03

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1	1.660	90.80	0.180	90.800	2.60	2.7	1.03	10.331
2	5.600	65.40	0.232	97.600	2.50	3.0	3.61	40.718
3						4.2		
4						2.3		
5						1.2		
6						1.8		
7						1.1		
8						1.5		
9						1.3		
10						2.0		
11						2.0		
12						2.0		
13						2.0		
14						1.7		
15						2.1		
16						2.2		
17						2.4		
18						2.2		
19						1.3		
20						1.3		
21						1.3		
22						2.1		
23						2.2		
24						2.1		
25						2.2		
26						2.3		
27						2.2		
28						2.2		
29						2.0		
30						1.7		
31						0.0		

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: April, 03

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						2.7		
2						3.0		
3	0.800	70.2	0.140	148.0	3.00	4.2	116	1822
4						2.3		
5						1.2		
6						1.8		
7	1.140	126	0.220	45.00	2.70	1.1	110	441
8						1.5		
9						1.3		
10	0.850	77.4	0.130	169.0	2.90	2.0	159	1180
11						2.0		
12						2.0		
13						2.0		
14	0.858	80.6	0.134	158.0	2.90	1.7	139	915
15						2.1		
16						2.2		
17	0.954	85.4	0.128	160.0	2.90	2.4	145	1334
18						2.2		
19						1.3		
20						1.3		
21	0.908	92.8	0.144	145.0	2.90	1.3	183	866
22						2.1		
23						2.2		
24	0.954	85.6	0.128	170.0	2.90	2.1	145	1158
25						2.2		
26						2.3		
27						2.2		
28	0.908	81.6	0.122	154.0	2.80	2.2	154	1300
29						2.0		
30						1.7		
31						0.0		0.00

004 & SWEENEY **MONTH : April, 03**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
04/03/03	0.68	15.6	1.76	7.40	13.2
04/10/03	0.07	16.7	1.92	7.10	3.80
04/17/03	0.10	15.6	1.70	7.30	13.0
04/24/03	0.06	15.4	1.79	7.20	11.6

CENTRAL TREATMENT PLANT

RINSATE AND TRIP BLANKS
Month: April, 03

Rinsate and Trip Blank samples will be taken approximately every twenty QC events, or one each per month.

LOCATION Rinsate Container	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
006 Outfall	04/23/03	**RB-04-23-03**	<0.04	<0.02	<0.004	<0.020
Trip Blank (D.I.water)	04/23/03	**TB-04-23-03**	<0.04	<0.02	<0.004	<0.020

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: April, 03

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	04/02/03	Lead	0.040	0.040	mg/L	94%		0.0%		
MS/MSD		Zinc	0.020	0.020	mg/L	102%		0.0%		
Lab Duplicate		Cadmium	0.004	0.004	mg/L	90%		0.0%		
		Manganese	1.750	1.730	mg/L	92%		1.1%		
		pH	7.800		units					
		TSS	0.060		mg/L					
Performance	04/03/03	Lead	0.402	0.400	mg/L			0.5%		
Evaluation		Zinc	0.807	0.800	mg/L			0.9%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-04-03-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	04/04/03	Lead	0.040	0.040	mg/L			0.0%		
		Zinc	0.020	0.020	mg/L			0.0%		
QC Sample		Cadmium	0.004	0.004	mg/L			0.0%		
		Manganese	6.180	6.250	mg/L			-1.1%		
		pH	7.800	7.700	units			1.3%		Results are below specified
		TSS	0.20	0.80	mg/L			-120.0%		detection limits.
006/CTP Outfall	04/09/03	Lead	0.040	0.040	mg/L	90%		0.0%		
MS/MSD		Zinc	0.020	0.020	mg/L	97%		0.0%		
Lab Duplicate		Cadmium	0.004	0.004	mg/L	93%		0.0%		
		Manganese	0.096	0.093	mg/L	97%		3.2%		
		pH	8.000		units					
		TSS	0.400		mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	04/10/03	Lead	0.409	0.400	mg/L			2.2%		
Evaluation		Zinc	0.746	0.800	mg/L			-7.0%		
Sample		Cadmium	0.060	0.060	mg/L			0.0%		
(CTPXX-04-10-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
Kellogg Tunnel	04/10/03	Lead	0.850	0.938	mg/L			9.8%		
		Zinc	77.40	78.20	mg/L			-1.0%		
QC Sample		Cadmium	0.130	0.132	mg/L			-1.5%		
		Manganese	169.0	165.0	mg/L			2.4%		
		pH	2.900	2.900	units			0.0%		
		TSS	159.0	160.0	mg/L			-0.6%		
004 Sweeny	04/17/03	Lead	0.099	0.095	mg/L			4.1%		
		Zinc	15.60	15.70	mg/L			-0.6%		
QC Sample		Cadmium	1.700	1.740	mg/L			-2.3%		
		Manganese	na	na	mg/L					
		pH	7.300	7.300	units			0.0%		
		TSS	13.00	12.40	mg/L			4.7%		
Performance	04/17/03	Lead	0.421	0.400	mg/L			5.1%		
Evaluation		Zinc	0.754	0.800	mg/L			-5.9%		
Sample		Cadmium	0.056	0.060	mg/L			-6.9%		
(CTPXX-04-17-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	04/20/03	Lead	0.040	0.040	mg/L	94%		0.0%		
MS/MSD		Zinc	0.032	0.029	mg/L	102%		9.8%		
Lab Duplicate		Cadmium	0.004	0.004	mg/L	87%		0.0%		
		Manganese	0.117	0.116	mg/L	91%		0.9%		
		pH	8.200		units					
		TSS	0.600		mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	04/23/03	Lead	0.040	0.040	mg/L			0.0%		
		Zinc	0.028	0.041	mg/L			-37.7%		Results are below specified
QC Sample		Cadmium	0.004	0.004	mg/L			0.0%		detection limits.
		Manganese	0.258	0.268	mg/L			-3.8%		
		pH	8.300	8.300	units			0.0%		
		TSS	0.20	0.20	mg/L			0.0%		
Performance	04/24/03	Lead	0.406	0.400	mg/L			1.5%		
Evaluation		Zinc	0.807	0.800	mg/L			0.9%		
Sample		Cadmium	0.060	0.060	mg/L			0.0%		
(CTPXX-04-24-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	04/25/03	Lead	0.040	0.040	mg/L	94%		0.0%		
MS/MSD		Zinc	0.020	0.020	mg/L	101%		0.0%		
Lab Duplicate		Cadmium	0.004	0.004	mg/L	86%		0.0%		
		Manganese	0.428	0.422	mg/L	88%		1.4%		
		pH	7.900		units					
		TSS	0.200		mg/L					
April, 2003 Completeness		Lead	12	Valid		12	Total	100.0%		
		Zinc	12	Valid		12	Total	100.0%		
		Cadmium	12	Valid		12	Total	100.0%		
		Manganese	7	Valid		7	Total	100.0%		
		pH	4	Valid		4	Total	100.0%		
		TSS	4	Valid		4	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **April, 03**

KELLOGG TUNNEL FLOW

Day	**KT METER** mgd	Ft/Flume		**KT STAFF** mgd	**GAUGE** Ft/Flume
04/03/03	2.30	0.93		2.3	0.93
04/07/03	1.40	0.67		1.40	0.67
04/10/03	2.40	0.95		2.4	0.95
04/14/03	2.44	0.95		2.4	0.95
04/17/03	0.96	0.52		0.96	0.52
04/21/03	2.10	0.87		2.1	0.87
04/24/03	2.10	0.87		2.1	0.87
04/28/03	1.10	0.57		1.1	0.57

Day	**KT Flow Meter Reading**
03/31/03	159,722,650
04/30/03	223,058,000
KT Total for month	63,335,350

Day	**006 Flow Meter Reading**
03/31/03	0
04/30/03	61,127,300
006 total for month	61,127,300

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
04/30/03	0.7	Hours	562.6	Hours
03/31/03	0.7	Hours	575.6	Hours
Total Hours	0.0	Hours	13	Hours
Total Flow for 004/Sweeney For The Month =			390,000	Gallons

004/Sweeny discharge pipe flow

Date	Flow (GPM)
3-Apr	18.8

Day	**Lined Pond Water Level**			
03/31/03	3,000,000	gal	Elev. =	2276.5
04/30/03	0	gal	Elev. =	2266.0
.				

Central Treatment Plant

Daily log April, 2003

			INFLUENT (KT)		AERATION BASIN			CLARIFIER			DISCHARGE 006			RECYCLE		SLUDGE PUMP		POND PUMP	
DATE	TIME	INITIALS	GPM	pH	SET	pH2	GRAB	pH4	GRAB	TEMP	pH3	GRAB	FLOW	SpG	FLOW	ON	OFF	ON	OFF
4/1	5:20	GF,GN,DY	1500	2.7	9.0	9.3		8.6	8.5	55	8.3	8.1	2.65	1.065	750gpm	Periodic		#1-6:15	15:30
4/2	5:30	GF,GN,DY	1500	2.7	9.0	9.4		8.3	8.4	56	8.2	8.1	2.89	1.055	750gpm	Periodic		#1-6:30	15:30
4/3	5:45	GN,GF,DY	kt-1597	3.4	9.0	9.5		8.6	8.6	54	8.3	8.3	4.16	1.032	750gpm	None		#1-0001	7:45
4/4	4:30	GN,GF			9.0	9.3		8.5	8.5	51	8.0	7.8	2.30	1.051	750gpm	None		#1-0001	4:30
4/5	6:00	GN			9.0	9.0		8.5	8.5	51	7.8	7.8	1.16	1.052	750gpm	None		#2-7:00	14:00
4/6	6:00	DY			9.0	8.4		8.6	8.9	50	8.2	8.4	1.25	1.08	750gpm	#1-10:00	11:30	#2-15:00	15:30
4/7	5:50	GF,DY	975	3.1	9.0	10.4		9.3	9.4	49	8.8	8.9	737	1.033	750gpm	#1-10:10	10:30	Periodic	
4/8	5:55	GF,GN,DY			9.0	8.8		9.2	9.1	50	8.8	8.9	1.53	1.042	750gpm	see log book		Periodic	
4/9	6:00	GF,GN,DY			9.0	8.8		9.0	8.9	52	8.7	8.8	1.31	1.059	750gpm	see log book		Periodic	
4/10	5:50	GN,GF,DY	1666	3.3	9.0	8.7		9.0	9.3	52	8.7	8.6	1.96	1.054	750gpm	see log book		Periodic	
4/11	6:00	GN,GF			9.0	8.8		9.1	9.2	56	8.6	8.4	2.04	1.055	750gpm	see log book		Periodic	
4/12	6:00	GN			9.0	9.3	9.4	9.1	9.2	58	8.5	8.3	1.97	1.051	750gpm	see log book		none	
4/13	6:00	DY			9.0	9.2		8.8	8.9	58	8.5	8.6	1.97	1.043	750gpm	see log book		none	
4/14	5:00	GF,DY	1666	3.0	9.0	9.2		9.1	8.8	54	8.9	8.8	1.74	1.029	750gpm	see log book		none	
4/15	6:00	GF,GN,DY			9.0	9.1		8.9	9.2	56	9.0	8.9	2.08	1.033	750gpm	None		none	
4/16	5:50	GF,GN,DY			9.0	8.9		8.8	9.1	57	8.7	8.9	2.21	1.036	750gpm	None		Periodic	
4/17	5:45	GF,GN,DY	1625	3.4	9.0	8.8		9.0	9.1	57	8.1	8.4	2.43	1.103	750gpm	#1-6:05	8:10	Periodic	
4/18	6:00	GN,GF			9.0	8.8		8.9	8.9	56	8.7	8.6	2.23	1.1	750gpm	see log book		Periodic	
4/19	6:00	GN			9.0	9.5	9.6	9.1	9.0	55	8.7	8.6	1.33	1.077	750gpm	None			
4/20	5:45	DY			9.0	9.6		9.2	9.2	54	8.8	8.7	1.26	1.087	750gpm	#3-6:30	8:30	none	
4/21	5:45	GF,DY	1576	3.3	9.0	8.7		9.3	9.3	54	8.8	8.7	1.25	1.088	750gpm	see log book		Periodic	
4/22	6:00	GF,GN,DY			9.0	9.1		9.0	9.1	57	8.6	8.5	2.14	1.117	750gpm	#1-6:30	8:15	Periodic	
4/23	6:00	GF,GN,DY			9.0	9.2		9.0	9.1	57	8.9	8.9	2.22	1.069	750gpm	#1-9:50	10:50	Periodic	
4/24	6:00	GN,GF,DY	1638	3.4	9.0	9.4		9.2	9.1	52	8.9	8.8	2.11	1.107	750gpm	#3-6:15	9:45	Periodic	
4/25	5:30	GN,GF			9.0	9.3	9.2	9.0	9.0	58	8.7	8.8	2.16	1.073	750gpm	#3-10:30	11:30	Periodic	
4/26	5:30	GN			9.0	9.3		9.1	9.1	58	8.9	8.9	2.30	1.074	750gpm			Periodic	
4/27	5:30	DY			9.0	8.9		8.8	8.9	56	8.6	8.8	2.20	1.089	750gpm	#3-5:40	7:30	Periodic	
4/28	5:30	GF,DY	1638	3.4	9.0	9.3		9.0	8.9	56	8.5	8.6	2.24	1.120	750gpm	#1-7:15	8:45	Periodic	
4/29	5:30	GF,GN,DY			9.0	9.2		9.0	8.9	58	8.6	8.6	2.02	1.065	750gpm	None		Periodic	
4/30	5:30	GF,GN,DY			9.0	9.3		9.0	8.8	59	8.5	8.4	2.03	1.082	750gpm	#1-10:30	11:30	Periodic	

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 04-03-03 Inspected By: G.Fulton

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.13 MGD, Staff Gauge reading 0.88 ft/flume 1480 GPM.

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 04/09/03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in goo
condition at this time.

The Kellogg Tunnel flume flow is 2.44MGD, Staff Gauge reading 0.94ft/flume 1700 GPM

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 04-14-03 Inspected By: D. Young

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.24 MGD, Staff Gauge reading 0.616 ft/flume.

Removed debris from both trash racks.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 04-24-03 Inspected By: D. Young

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***	
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***	
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***	

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.50 MGD, Staff Gauge reading 0.98 ft/flume 1736 GPM.

AMERICAN ANALYTICAL SERVICES

BHCTP: 041703

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp date	Pb	Zn	Mn	Cd	pH	TSS
1	006-04-01-03	water	040103	0.043	<0.020	1.19	<0.004	7.80	0.60
2	IN-04-01-03	water	040103	1.66	59.8	90.8	0.180	2.60	1,030
3	006-04-02-03	water	040203	<0.040	<0.020	1.75	<0.004	7.80	0.60
4	IN-04-02-03	water	040203	5.60	65.4	97.6	0.232	2.50	3,610
5	006-04-03-03	water	040303	0.049	0.024	4.90	<0.004	7.90	0.60
6	KT-04-03-03	water	040303	0.800	70.2	148.0	0.140	3.00	116.0
7	004-04-03-03	water	040303	0.068	15.6	na	1.76	7.40	13.2
8	CTPXX-04-03-03	water	040303	0.402	0.807	na	0.062	na	na
9	006-04-04-03	water	040403	<0.040	<0.020	6.18	<0.004	7.80	<0.20
10	QC-04-04-03	water	040403	<0.040	<0.020	6.25	<0.004	7.70	0.80
11	006-04-05-03	water	040503	<0.040	<0.020	4.25	<0.004	7.30	0.20
12	006-04-06-03	water	040603	<0.040	0.030	2.04	<0.004	7.40	0.20
13	006-04-07-03	water	040703	<0.040	0.021	0.927	<0.004	8.60	0.20
14	KT-04-07-03	water	040703	1.14	126.0	45.0	0.220	2.70	110.0
15	006-04-08-03	water	040803	<0.040	0.020	0.304	<0.004	8.60	0.20
16	006-04-09-03	water	040903	<0.040	<0.020	0.096	<0.004	8.00	0.40
17	006-04-10-03	water	041003	<0.040	<0.020	0.107	<0.004	8.20	0.80
18	KT-04-10-03	water	041003	0.850	77.4	169.0	0.130	2.90	159.0
19	QC-04-10-03	water	041003	0.938	78.2	165.0	0.132	2.90	160.0
20	004-04-10-03	water	041003	0.071	16.7	na	1.92	7.10	3.80
21	CTPXX-04-10-03	water	041003	0.409	0.746	na	0.060	na	na
22	006-04-11-03	water	041103	<0.040	<0.020	0.386	<0.004	8.30	0.80
23	006-04-12-03	water	041203	<0.040	<0.020	0.552	<0.004	8.40	0.40
24	006-04-13-03	water	041303	<0.040	<0.020	0.839	<0.004	8.40	0.20
25	006-04-14-03	water	041403	<0.040	<0.020	1.19	<0.004	8.50	1.00
26	KT-04-14-03	water	041403	0.858	80.6	158.0	0.134	2.90	139.0
	006-04-02-03	duplicate	040203	<0.040	<0.020	1.73	<0.004		
	006-04-02-03	spike	040203	93.6%	102%	91.6%	90.0%		
	006-04-09-03	duplicate	040903	<0.040	<0.020	0.093	<0.004		
	006-04-09-03	spike	040903	90.2%	97.2%	96.8%	92.8%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 050503

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp date	Pb	Zn	Mn	Cd	pH	TSS
1	006-04-15-03	water	041503	0.062	0.022	1.04	<0.004	8.10	0.20
2	006-04-16-03	water	041603	0.056	0.026	0.552	<0.004	8.30	<0.20
3	006-04-17-03	water	041703	<0.040	0.020	0.303	<0.004	8.30	0.80
4	KT-04-17-03	water	041703	0.954	85.4	160.0	0.128	2.90	145.0
5	004-04-17-03	water	041703	0.099	15.6	na	1.70	7.30	13.0
6	QC-04-17-03	water	041703	0.095	15.7	na	1.74	7.30	12.4
7	CTPXX-04-17-03	water	041703	0.421	0.754	na	0.056	na	na
8	006-04-18-03	water	041803	<0.040	0.023	0.257	<0.004	8.40	1.40
9	006-04-19-03	water	041903	<0.040	0.030	0.232	<0.004	7.90	0.80
10	006-04-20-03	water	042003	<0.040	0.032	0.117	<0.004	8.20	0.60
11	006-04-21-03	water	042103	<0.040	0.041	0.076	<0.004	8.30	0.60
12	KT-04-21-03	water	042103	0.908	92.8	145.0	0.144	2.90	183.0
13	006-04-22-03	water	042203	<0.040	0.030	0.103	<0.004	8.00	<0.20
14	006-04-23-03	water	042303	<0.040	0.028	0.258	<0.004	8.30	<0.20
15	RB-04-23-03	water	042303	<0.040	<0.020	<0.020	<0.004	na	na
16	TB-04-23-03	water	042303	<0.040	<0.020	<0.020	<0.004	na	na
17	QC-04-23-03	water	042303	<0.040	0.041	0.268	<0.004	8.30	0.20
18	006-04-24-03	water	042403	<0.040	0.029	0.318	<0.004	8.30	0.20
19	KT-04-24-03	water	042403	0.954	85.6	170.0	0.128	2.90	145.0
20	004-04-24-03	water	042403	0.061	15.4	na	1.79	7.20	11.6
21	CTPXX-04-24-03	water	042403	0.406	0.807	na	0.060	na	na
22	006-04-25-03	water	042503	<0.040	<0.020	0.428	<0.004	7.90	0.20
23	006-04-26-03	water	042603	<0.040	<0.020	0.456	<0.004	8.10	0.40
24	006-04-27-03	water	042703	<0.040	0.021	0.489	<0.004	8.20	<0.20
25	006-04-28-03	water	042803	<0.040	<0.020	0.470	<0.004	8.20	<0.20
26	KT-04-28-03	water	042803	0.908	81.6	154.0	0.122	2.80	154.0
27	006-04-29-03	water	042903	<0.040	0.023	0.530	<0.004	8.40	<0.20
28	006-04-30-03	water	043003	<0.040	<0.020	0.426	<0.004	8.60	<0.20
	006-04-20-03	duplicate	042003	<0.040	0.029	0.116	<0.004		
	006-04-20-03	spike	042003	94.0%	102%	91.4%	86.8%		
	006-04-25-03	duplicate	042503	<0.040	<0.020	0.422	<0.004		
	006-04-25-03	spike	042503	94.2%	101%	88.3%	86.4%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month:	May-03	
Facility:	Central Treatment Plant	
Location:	Bunker Hill Superfund Site	
Total Flow For The Month From 006:	56,510,000	gallons
Total Flow From Kellogg Tunnel:	63,335,350	gallons
Percent of Influent Successfully Treated:		100.0%

31 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 186 potential exceedances
186 - 0 exceedances = 186 186/186 = 100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with five PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500 ml samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the 'RB & TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

05-02-03 Completed the Lined Pond liner repairs with N.W. Linings.
05-05-03 Performed a sludge settling test on the CTP recycled sludge.
05-07-03 Performed a sludge settling test on the CTP recycled sludge.
05-07-03 CIA sludge pond staff gauge reading: 2.80 ft.
05-08-03 Reduced the CTP recycled sludge specific gravity to an average of 1.06, down from 1.08.
05-08-03 Replaced the elevation markings on the Lined Pond liner. The elevation markings will be used to determine the water volume in the Lined Pond.
05-09-03 Clarifier walk-through with Bill Jacks of EIMCO, and Mike Atwell and Paul Erickson of USACE.
05-12-03 Performed a sludge settling test on the CTP recycled sludge.
05-12-03 Started Condition 3 of the Increased Sludge Density Pilot Test, with a lower CTP operating pH setpoint of 8.5.
05-13-03 Repaired the broken main water line leading to the CTP. This main line was repaired approximately two years ago by MCS. This repaired area failed.
05-14-03 Performed a sludge settling test on the CTP recycled sludge. Started using sludge gun to measure sludge level in the Clarifier as part of the Increased Sludge Density Pilot Test.
05-19-03 Performed a sludge settling test on the CTP recycled sludge.
05-21-03 Performed a sludge settling test on the CTP recycled sludge.
05-21-03 CIA staff gauge reading is 2.85 ft.
05-20-03, 05-21-03, 05-22-03 Performed the six-month oil changes on all pumps and motors at the CTP.
05-27-03 Performed a sludge settling test on the CTP recycled sludge.
05-29-03 Performed a sludge settling test on the CTP recycled sludge.
06-02-03 Started Condition #4 of the Sludge Settling Test. Condition #4 requires the CTP pH setpoint to be reduced to 8.0 and maintain a floc dosage of 6 ppm.
06-02-03 Performed a sludge settling test on the CTP recycled sludge.

Lessons Learned

1) Lowering the CTP pH setpoint from 9.0 to 8.5 increased the total zinc concentration from approximately 0.03 mg/L to approximately 0.11 mg/L. The total manganese concentration increased from approximately 1 mg/L to 10-20 mg/L.
2) Lowering the pH setpoint had no effect on turbidity or TSS concentrations, which remained very low.
3) The #3 sludge pump rate is only approximately 100 gpm when the sludge is at a specific gravity of 1.06, compared to an estimated 250 gpm with a specific gravity of 1.02.

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
2003	5	1		2003	5	31
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	Quantity or Loading (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	Quality or Concentration (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				6.9		8.9			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.82	2.32	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.76	0.97	Lbs/Day		0.05	0.05	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	1.22	2.63	Lbs/Day		0.08	0.17	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.147	0.19	Lbs/Day		0.010	0.010	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	168.8	504	Lbs/Day		10.24	28.70	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	7.6	18	Lbs/Day		0.5	2	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY:__ Gary Fulton

REVIEWED BY:__ Don Ferguson

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: May-03

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.050	0.488	0.026	0.254	0.010	0.098	0.28	2.753	7.50	1.2	0.6	5.858	2.66
2	0.050	0.880	0.031	0.546	0.010	0.176	0.20	3.522	8.10	2.1	0.8	14.09	6.39
3	0.050	0.789	0.020	0.315	0.010	0.158	0.33	5.205	8.90	1.9	0.8	12.618	5.72
4	0.050	0.914	0.020	0.366	0.010	0.183	0.26	4.733	8.80	2.2	1.0	18.28	8.29
5	0.050	0.905	0.021	0.380	0.010	0.181	0.24	4.256	8.60	2.2	0.2	3.622	1.64
6	0.050	0.872	0.037	0.645	0.010	0.174	2.57	44.823	7.60	2.1	0.4	6.976	3.16
7	0.050	0.914	0.045	0.822	0.010	0.183	5.88	107.46	7.40	2.2	0.4	7.310	3.32
8	0.050	0.910	0.042	0.764	0.010	0.182	3.02	54.94	7.60	2.2	0.6	10.915	4.95
9	0.050	0.484	0.042	0.407	0.010	0.097	3.52	34.07	7.70	1.2	1.0	9.680	4.39
10	0.050	0.572	0.036	0.412	0.010	0.114	3.46	39.56	7.60	1.4	1.6	18.29	8.30
11	0.050	0.467	0.083	0.776	0.010	0.093	0.89	8.309	6.90	1.1	0.2	1.869	0.85
12	0.050	0.488	0.079	0.771	0.010	0.098	0.37	3.652	7.00	1.2	0.2	1.953	0.89
13	0.050	0.497	0.111	1.102	0.010	0.099	0.31	3.059	6.90	1.2	0.2	1.986	0.90
14	0.050	0.413	0.171	1.413	0.010	0.083	0.58	4.759	6.90	1.0	0.2	1.652	0.75
15	0.050	0.905	0.145	2.626	0.010	0.181	2.55	46.18	7.20	2.2	1.0	18.109	8.21
16	0.050	0.905	0.135	2.445	0.010	0.181	10.4	188.3	6.90	2.2	0.4	7.243	3.29
17	0.050	0.880	0.135	2.377	0.010	0.176	16.9	297.6	7.30	2.1	0.2	3.522	1.60
18	0.050	0.872	0.135	2.355	0.010	0.174	20.8	362.8	7.20	2.1	0.6	10.46	4.75
19	0.050	0.860	0.125	0.024	0.010	0.172	24.0	412.6	7.30	2.1	0.4	6.876	3.12
20	0.050	0.826	0.107	1.768	0.010	0.165	28.7	474.2	7.00	2.0	0.2	3.305	1.50
21	0.050	0.855	0.090	1.540	0.010	0.171	24.4	417.4	7.40	2.1	0.2	3.421	1.55
22	0.050	0.868	0.095	1.649	0.010	0.174	24.9	432.2	7.40	2.1	0.2	3.472	1.57
23	0.050	0.885	0.106	1.875	0.010	0.177	28.5	504.2	7.40	2.1	0.2	3.538	1.60
24	0.050	0.855	0.115	1.967	0.010	0.011	24.8	424.3	7.00	2.1	0.2	3.421	1.55
25	0.050	0.872	0.132	2.302	0.010	0.174	23.7	413.4	7.40	2.1	0.6	10.46	4.75
26	0.050	0.843	0.103	1.736	0.010	0.169	21.0	354.0	7.50	2.0	0.8	13.49	6.12
27	0.050	0.408	0.130	1.060	0.010	0.082	18.1	147.6	7.60	1.0	0.4	3.261	1.48
28	0.050	0.968	0.103	1.994	0.010	0.194	9.63	186.4	7.60	2.3	0.8	15.49	7.02
29	0.050	0.905	0.082	1.484	0.010	0.181	5.90	106.8	7.30	2.2	0.2	3.620	1.64
30	0.050	0.755	0.063	0.952	0.010	0.151	5.58	84.28	7.60	1.8	0.6	9.063	4.11
31	0.050	0.522	0.064	0.668	0.010	0.104	5.68	59.25	7.50	1.3	0.2	2.086	0.95
TOTAL	1.550	23.58	2.629	37.79	0.310	4.555	317.443	5,233	232.10	56.51	15.40	235.93	107
Sample Events	31	31	31	31	31	31	31	31	31	31	31	31	31
Daily Average	0.050	0.761	0.085	1.219	0.010	0.147	10.240	168.791	7.49	1.82	0.50	7.61	3.5

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: May-03
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1	0.676	164.0	0.286	40.4	3.10	1.2	75	332
2						2.1		
3						1.9		
4						2.2		
5	0.564	82	0.134	158.00	3.10	2.2	150	1232
6						2.1		
7						2.2		
8	0.838	90.6	0.138	148.0	2.90	2.2	154	1271
9						1.2		
10						1.4		
11						1.1		
12	0.604	147	0.250	42.60	2.80	1.2	112	496
13						1.2		
14						1.0		
15	0.756	79.0	0.130	161.0	3.00	2.2	149	1224
16						2.2		
17						2.1		
18						2.1		
19	0.780	77.4	0.116	168.0	3.00	2.1	134	1045
20						2.0		
21						2.1		
22	0.718	77.6	0.118	169.0	2.90	2.1	139	1094
23						2.1		
24						2.1		
25						2.1		
26	0.598	158	0.300	42.00	2.70	2.0	107	818
27						1.0		
28						2.3		
29	0.658	81.2	0.122	151.0	2.90	2.2	146	1199
30						1.8		
31						1.3		

004/SWEENY **Month: May-03**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
05/01/03	0.05	14.0	1.82	7.30	11.4
05/08/03	0.05	14.2	2.00	7.30	12.0
05/15/03	0.09	13.5	2.02	7.10	10.8
05/22/03	0.09	13.0	2.01	7.30	9.40
05/29/03	0.08	17.7	2.73	6.90	1.00

RINSATE AND TRIP BLANKS **Month: May-03**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
004/Sweeny	05/08/03	**RB-05-08-03**	<0.04	<0.02	<0.01	N/A
Trip Blank (D.I.water)	05/08/03	**TB-05-08-03**	<0.04	<0.02	<0.01	N/A

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: May,03

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	05/01/03	Lead	0.360	0.400	mg/L			-10.5%		
Evaluation		Zinc	0.753	0.800	mg/L			-6.1%		
Sample		Cadmium	0.060	0.060	mg/L			0.0%		
(CTPXX-05-01-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	05/02/03	Lead	0.050	0.050	mg/L	91%		0.0%		
MS/MSD		Zinc	0.031	0.025	mg/L	97%		21.4%		Results are below specified
Lab Duplicate		Cadmium	0.010	0.010	mg/L	92%		0.0%		detection limits.
		Manganese	0.200	0.203	mg/L	90%		-1.5%		
		pH	8.10		units					
		TSS	0.800		mg/L					
006/CTP Outfall	05/06/03	Lead	0.050	0.050	mg/L	94%		0.0%		
MS/MSD		Zinc	0.037	0.029	mg/L	95%		24.2%		Results are below specified
Lab Duplicate		Cadmium	0.010	0.010	mg/L	90%		0.0%		detection limits.
		Manganese	2.570	2.610	mg/L	93%		-1.5%		
		pH	7.60		units					
		TSS	0.400		mg/L					
Performance	05/08/03	Lead	0.369	0.400	mg/L			-8.1%		
Evaluation		Zinc	0.756	0.800	mg/L			-5.7%		
Sample		Cadmium	0.058	0.060	mg/L			-3.4%		
(CTPXX-05-08-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Kellogg Tunnel	05/08/03	Lead	0.838	0.836	mg/L			-0.2%		
		Zinc	90.60	80.60	mg/L			11.7%		
QC Sample A		Cadmium	0.138	0.146	mg/L			-5.6%		
		Manganese	148.0	164.0	mg/L			-10.3%		
		pH	2.900	2.900	units			0.0%		
		TSS	154.0	153.0	mg/L			0.7%		
004 Sweeny	05/08/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	14.20	13.70	mg/L			3.6%		
QC Sample B		Cadmium	2.000	1.910	mg/L			4.6%		
		Manganese	na	na	mg/L					
		pH	7.300	7.300	units			0.0%		
		TSS	12.00	12.00	mg/L			0.0%		
006/CTP Outfall	05/09/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.042	0.073	mg/L			-53.9%		Results are below specified
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		detection limits.
		Manganese	3.520	3.770	mg/L			-6.9%		
		pH	7.700	7.800	units			-1.3%		Results are below specified
		TSS	1.00	1.40	mg/L			-33.3%		detection limits.
Performance	05/15/03	Lead	0.413	0.400	mg/L			3.2%		
Evaluation		Zinc	0.799	0.800	mg/L			-0.1%		
Sample		Cadmium	0.057	0.060	mg/L			-5.1%		
(CTPXX-05-15-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	05/18/03	Lead	0.050	0.050	mg/L	100%		0.0%		
MS/MSD		Zinc	0.135	0.130	mg/L	101%		3.8%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	91%		0.0%		
		Manganese	20.80	21.70	mg/L	104%		-4.2%		
		pH	7.200		units					
		TSS	0.600		mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	05/22/03	Lead	0.379	0.400	mg/L			-5.4%		
Evaluation		Zinc	0.783	0.800	mg/L			-2.1%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-05-22-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	05/28/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.160	0.171	mg/L			-6.6%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	9.630	9.530	mg/L			1.0%		
		pH	7.600		units					
		TSS	0.80		mg/L					
006/CTP Outfall	05/28/03	Lead	0.050	0.050	mg/L	93%		0.0%		
MS/MSD		Zinc	0.16	0.171	mg/L	100%		-6.6%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	100%		0.0%		
		Manganese	9.63	9.53	mg/L	99%		1.0%		
		pH	7.600		units					
		TSS	0.800		mg/L					
Performance	05/29/03	Lead	0.426	0.400	mg/L			6.3%		
Evaluation		Zinc	0.796	0.800	mg/L			-0.5%		
Sample		Cadmium	0.061	0.060	mg/L			1.7%		
(CTPXX-05-29-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
May, 2003 Completeness		Lead	13	Valid		13	Total	100.0%		
		Zinc	13	Valid		13	Total	100.0%		
		Cadmium	13	Valid		13	Total	100.0%		
		Manganese	7	Valid		7	Total	100.0%		
		pH	3	Valid		3	Total	100.0%		
		TSS	3	Valid		3	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **May-03**

KELLOGG TUNNEL FLOW

Day	**KT METER** mgd	Ft/Flume		**KT STAFF** mgd	**GAUGE** Ft/Flume
05/01/03	1.20	0.60		1.2	0.60
05/05/03	2.20	0.90		2.20	0.90
05/08/03	2.30	0.92		2.3	0.92
05/12/03	1.30	0.62		1.3	0.62
05/15/03	2.47	0.97		2.47	0.97
05/19/03	2.20	0.91		2.2	0.91
05/22/03	2.39	0.95		2.4	0.95
05/26/03	1.24	0.60		1.2	0.60
05/29/03	2.58	0.99		2.6	1.00

Day	**KT Flow Meter Reading**
04/30/03	223,058,000
05/31/03	286,393,350
KT Total for month	63,335,350

Day	**006 Flow Meter Reading**
04/30/03	61,127,300
05/31/03	117,637,300
006 Total for month	56,510,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
04/30/03	0.7	Hours	575.6	Hours
05/31/03	0.7	Hours	585.0	Hours
Total Hours	0.0	Hours	9.4	Hours
Total Flow for 004/Sweeny For The Month =			282,000	Gallons

004/Sweeny Discharge Pipe Flov

Date	Flow (GPM)
8-May	10.0

Day	**Lined Pond Water Level**			
04/30/03	0	gal	Elev. =	2268.0
05/31/03	500,000	gal	Elev. =	2269.0
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CTP Operator Daily Log

May 2003

			INFLUENT (KT)		AERATION BASIN			CLARIFIER			DISCHARGE 006			RECYCLE		SLUDGE PUMP		POND PUMP	
DATE	TIME	INITIALS	GPM	pH	SET	pH2	GRAB	pH4	GRAB	TEMP	pH3	GRAB	FLOW	SpG	FLOW	ON	OFF	ON	OFF
5/1	6:00	GN,GF,DY	833	3.1	9.0	8.8		9.0	9.2	57	8.6	9.7	1.17	1.052	750gpm				
5/2	6:00	GN,GF			9.0	9.1		9.1	9.1	58	8.7	8.8	2.11	1.087	750gpm	see log book			
5/3	5:30	GN			9.0	9.2		9.5	9.4	58	9.1	9.0	1.89	1.035	750gpm	#3-6:00	7:00		
5/4	5:45	DY			9.0	9.3		9.2	9.3	58	8.9	9.1	2.19	1.042	750gpm	None			
5/5	6:00	GF,DY	1527	3.2	9.0	9.6	9.8	9.2	9.4	58	8.8	9.2	2.17	1.049	750gpm	None			
5/6	5:30	GF,GN,DY			9.0	8.3		8.4	8.4	54	8.5	8.9	2.10	1.056	750gpm	None			
5/7	5:30	GF,GN,DY			9.0	9.2		8.6	8.6	54	8.3	8.1	2.19	1.068	750gpm	None			
5/8	5:45	GN,GF,DY	1597	3.1	9.0	9.3	9.2	8.4	8.3	56	8.2	8.1	2.18	1.101	750gpm	#1-2hrs			
5/9	6:00	GN,GF			9.0	9.3		8.9	8.9	56	8.6	8.5	1.16	1.050	750gpm	None		#1-9:00	12:00
5/10	5:50	GN			9.0	9.2		8.8	8.8	56	8.3	8.4	1.37	1.050	750gpm	#3-6:10	7:00		
5/11	5:30	DY			9.0	9.3		8.7	8.8	52	8.2	8.3	1.12	1.048	750gpm	None			
5/12	5:45	GF,DY	903	3.2	**8.5**	9.2		8.5	8.5	54	8.2	8.0	1.17	1.052	750gpm	None			
5/13	5:30	GF,GN,DY			**8.5**	8.7		8.4	8.0	54	8.0	8.0	1.19	1.051	750gpm	None			
5/14	5:30	GF,GN,DY			**8.5**	8.7	8.8	8.4	8.3	54	7.9	7.8	1.00	1.058	750gpm	#1&#3		#2-8:30	10:30
5/15	5:25	GF,GN,DY	1715	3.1	**8.5**	8.7		8.5	8.5	55	8.6	8.7	2.17	1.072	750gpm	#3-5:45	8:45		
5/16	6:00	GN,GF			**8.5**	8.5		8.2	8.2	57	8.0	8.0	2.17	1.076	750gpm	#3-5:50	8:50		
5/17	6:00	GN			**8.5**	8.4		8.0	8.0	56	7.9	7.8	2.11	1.062	750gpm	#3-6:30	7:30		
5/18	6:00	DY			**8.5**	8.5		8.0	8.1	56	7.7	7.7	2.09	1.080	750gpm	see log book			
5/19	5:30	GF,DY	1541	3.6	**8.5**	8.7	8.6	8.0	7.9	56	7.6	7.6	2.06	1.081	750gpm	#1-5:45	7:15		
5/20	5:30	GF,GN,DY			**8.5**	8.6		8.1	7.8	57	7.7	7.5	1.98	1.066	750gpm	#3-5:30			
5/21	5:40	GF,GN,DY			**8.5**	8.6		8.2	8.2	60	7.5	7.5	2.05	1.066	750gpm	#3-8:10	10:40		
5/22	5:30	GN,GF,DY	1659	3.2	**8.5**	8.6		8.2	8.2	60	7.6	7.7	2.08	1.069	750gpm	#3-5:45	9:15		
5/23	5:30	GN,GF			**8.5**	8.7		8.2	8.2	60	7.6	7.6	2.12	1.075	750gpm	#3,#1			
5/24	6:00	GN			**8.5**	8.6		8.2	8.1	62	7.5	7.4	2.04	1.062	750gpm	#3-6:10	7:40		
5/25	5:20	DY			**8.5**	8.3		8.0	7.8	65	7.4	7.7	2.09	1.076	750gpm	#3-5:20	6:45		
5/26	5:10	GF,DY	861	3.0	**8.5**	8.6		8.1	8.1	64	7.6	7.7	2.01	1.056	750gpm	None			
5/27	5:20	GF,GN,DY			**8.5**	8.5	8.1	8.0	8.0	62	7.5	7.7	0.98	1.063	750gpm	#1-8:15	9:15	#2-6:20	11:20
5/28	5:30	GF,GN,DY			**8.5**	8.6	8.5	8.3	8.3	62	7.9	8.0	2.32	1.066	750gpm	#1-13:15	14:15		
5/29	5:45	GF,GN,DY	1791	3.2	**8.5**	8.5		8.3	8.3	62	7.9	8.0	2.17	1.099	750gpm	#1-1:15	2:15		
5/30	5:50	GF,GN			**8.5**	8.6		8.5	8.5	62	7.6	7.5	1.82	1.090	750gpm	#1-6:00	7:30		
5/31	6:00	GN			**8.5**	8.5		8.5	8.4	62	7.8	8	1.25	1.053	750gpm				

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 05-01-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.20 MGD, Staff Gauge reading 0.60 ft/flume.

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 05/07/03 Inspected By: G. Fulton

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in goo
condition at this time.

The Kellogg Tunnel flume flow is 2.30MGD, Staff Gauge reading 0.92ft/flume 1597 GPM

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 05-15-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.47 MGD, Staff Gauge reading 0.97 ft/flume.1715 GPM

Removed a small amount of debris from both trash racks.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 05-22-03 Inspected By: D. Young

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.39 MGD, Staff Gauge reading 0.95 ft/flume 1660 GPM.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 05-29-03 Inspected By: D. Young

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***	
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***	
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***	

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.58 MGD, Staff Gauge reading 0.999 ft/flume 1791 GPM.

AMERICAN ANALYTICAL SERVICES

BHCTP: 051603a

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	type	samp date	Pb	Zn	Mn	Cd	run date	time	type
1	006-05-01-03	water	050103	<0.050	0.026	0.282	<0.010	051303	12:01	total
2	KT-05-01-03	water	050103	0.676	164.0	40.4	0.286	051503	12:22	total
3	004-05-01-03	water	050103	<0.050	14.0	na	1.82	051303	13:26	total
4	CTPXX-05-01-03	water	050103	0.360	0.753	na	0.060	051303	11:52	total
5	006-05-02-03	water	050203	<0.050	0.031	0.200	<0.010	051303	12:04	total
6	006-05-03-03	water	050303	<0.050	<0.020	0.330	<0.010	051303	12:18	total
7	006-05-04-03	water	050403	<0.050	0.020	0.259	<0.010	051303	12:22	total
8	006-05-05-03	water	050503	<0.050	0.021	0.235	<0.010	051303	12:26	total
9	KT-05-05-03	water	050503	0.564	82.4	158.0	0.134	051503	12:30	total
10	006-05-06-03	water	050603	<0.050	0.037	2.57	<0.010	051303	12:29	total
11	006-05-07-03	water	050703	<0.050	0.045	5.88	<0.010	051303	12:33	total
12	006-05-08-03	water	050803	<0.050	0.042	3.02	<0.010	051303	12:37	total
13	KT-05-08-03	water	050803	0.838	90.6	148.0	0.138	051503	12:39	total
14	004-05-08-03	water	050803	<0.050	14.2	na	2.00	051303	13:30	total
15	CTPXX-05-08-03	water	050803	0.369	0.756	na	0.058	051303	11:56	total
16	RB-05-08-03	water	050803	<0.050	<0.020	<0.020	<0.010	051303	11:38	total
17	TB-05-08-03	water	050803	<0.050	<0.020	<0.020	<0.010	051303	11:43	total
18	QC-05-08-03 A	water	050803	0.836	80.6	164.0	0.146	051503	12:07	total
19	QC-05-08-03 B	water	050803	<0.050	13.7	na	1.91	051303	13:18	total
20	006-05-09-03	water	050903	<0.050	0.042	3.52	<0.010	051303	12:41	total
21	QC-05-09-03	water	050903	<0.050	0.073	3.77	<0.010	051303	13:22	total
22	006-05-10-03	water	051003	<0.050	0.036	3.46	<0.010	051303	12:46	total
	006-05-02-03	duplicate	050203	<0.050	0.025	0.203	<0.010	051303	12:58	total
	006-05-02-03	spike	050203	91.0%	96.6%	90.0%	92.0%	051303	13:02	total
	006-05-06-03	duplicate	050603	<0.050	0.029	2.61	<0.010	051303	13:06	total
	006-05-06-03	spike	050603	93.6%	95.4%	93.2%	90.0%	051303	13:10	total
	LCS	q.c.		98.0%	110%	90.7%	97.2%	051303	13:14	
	RGB	q.c.		<0.050	<0.020	<0.020	<0.010	051303	11:48	
	ICV	q.c.		94.0%	96.4%	95.2%	94.8%	051303	11:29	
	ICB	q.c.		<0.050	<0.020	<0.020	<0.010	051303	11:34	
	CCV 1	q.c.		98.8%	99.0%	94.4%	97.6%	051303	12:08	
	CCB 1	q.c.		<0.050	<0.020	<0.020	<0.010	051303	12:13	
	CCV 2	q.c.		97.0%	100%	95.2%	96.0%	051303	12:49	
	CCB 2	q.c.		<0.050	<0.020	<0.020	<0.010	051303	12:54	
	CCV 3	q.c.		97.8%	102%	98.4%	101%	051303	13:35	
	CCB 3	q.c.		<0.050	<0.020	<0.020	<0.010	051303	13:40	
	LCS	q.c.		98.0%	109%	94.7%	95.5%	051503	11:57	
	RGB	q.c.		<0.050	<0.020	<0.020	<0.010	051503	11:53	
	ICV	q.c.		96.4%	97.6%	94.0%	98.0%	051503	11:44	
	ICB	q.c.		<0.050	<0.020	<0.020	<0.010	051503	11:49	
	CCV 1	q.c.		101%	106%	99.6%	101%	051503	12:12	
	CCB 1	q.c.		<0.050	<0.020	<0.020	<0.010	051503	12:17	
	CCV 2	q.c.		103%	107%	100%	101%	051503	12:45	
	CCB 2	q.c.		<0.050	<0.020	<0.020	<0.010	051503	12:50	
	RPD 1			na	21.4%	1.49%	na			
	RPD 2			na	24.2%	1.54%	na			
	LCS	Reported	Value	0.789	0.110	1.36	0.173			
	LCS	Reported	Value	0.789	0.109	1.42	0.170			
	WP 32699	Known	Value	0.805	0.100	1.50	0.178			
			Method	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**			
	QAL			<0.300	<0.150	<0.150	<0.025			

AMERICAN ANALYTICAL SERVICES

BHCTP: 051603b

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	type	samp date	pH	TSS	run date	time	type
1	006-05-01-03	water	050103	7.50	0.60	050603	13:30	total
2	KT-05-01-03	water	050103	3.10	75.0	050603	14:30	total
3	004-05-01-03	water	050103	7.30	11.4	050603	14:20	total
4	006-05-02-03	water	050203	8.10	0.80	050603	13:40	total
5	006-05-03-03	water	050303	8.90	0.80	050603	13:50	total
6	006-05-04-03	water	050403	8.80	1.00	050603	14:00	total
7	006-05-05-03	water	050503	8.60	0.20	050603	14:10	total
8	KT-05-05-03	water	050503	3.10	150.0	050603	14:40	total
9	006-05-06-03	water	050603	7.60	0.40	050903	11:40	total
10	006-05-07-03	water	050703	7.40	0.40	050903	11:50	total
11	006-05-08-03	water	050803	7.60	0.60	050903	12:00	total
12	KT-05-08-03	water	050803	2.90	154.0	050903	13:10	total
13	004-05-08-03	water	050803	7.30	12.0	050903	12:30	total
14	QC-05-08-03 A	water	050803	2.90	153.0	050903	13:00	total
15	QC-05-08-03 B	water	050803	7.30	12.0	050903	12:40	total
16	006-05-09-03	water	050903	7.70	1.00	050903	12:10	total
17	QC-05-09-03	water	050903	7.80	1.40	050903	12:50	total
18	006-05-10-03	water	051003	7.60	1.60	050903	12:20	total
	KT-05-01-03	duplicate	050103	3.10	77.0	050603	14:50	total
	QC-05-08-03 A	duplicate	050803	2.90	158.0	050903	13:20	total
	TSS Blank	q.c.			<0.20	050603	15:00	
	TSS Blank	q.c.			<0.20	050903	13:30	
	TSS LCS	q.c.			51.0	050903	13:40	
	LCS Known Value	q.c.			59.0			
	pH control	q.c.		7.40		050603	15:00	
	pH control	q.c.		7.40		050903	13:30	
	Known Value	q.c.		7.44				
			Method	**4500B**	**2540D**			
	QAL			<0.1pH	<15.0mg/L			

AMERICAN ANALYTICAL SERVICES

BHCTP: 052803

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp date	Pb	Zn	Mn	Cd	pH	TSS
1	006-05-11-03	water	051103	<0.050	0.083	0.889	<0.010	6.90	0.20
2	006-05-12-03	water	051203	<0.050	0.079	0.374	<0.010	7.00	<0.20
3	KT-05-12-03	water	051203	0.604	147.0	42.6	0.250	2.80	112.0
4	006-05-13-03	water	051303	<0.050	0.111	0.308	<0.010	6.90	<0.20
5	006-05-14-03	water	051403	<0.050	0.171	0.576	<0.010	6.90	<0.20
6	006-05-15-03	water	051503	<0.050	0.145	2.55	<0.010	7.20	1.00
7	KT-05-15-03	water	051503	0.756	79.0	161.0	0.130	3.00	149.0
8	004-05-15-03	water	051503	0.085	13.5	na	2.02	7.10	10.8
9	CTPXX-05-15-03	water	051503	0.413	0.799	na	0.057	na	na
10	006-05-16-03	water	051603	<0.050	0.135	10.4	<0.010	6.90	0.40
11	006-05-17-03	water	051703	<0.050	0.135	16.9	<0.010	7.30	0.20
12	006-05-18-03	water	051803	<0.050	0.135	20.8	<0.010	7.20	0.60
13	006-05-19-03	water	051903	<0.050	0.125	24.0	<0.010	7.30	0.40
14	KT-05-19-03	water	051903	0.780	77.4	168.0	0.116	3.00	134.0
15	006-05-20-03	water	052003	<0.050	0.107	28.7	<0.010	7.00	0.20
16	006-05-21-03	water	052103	<0.050	0.090	24.4	<0.010	7.40	0.20
17	006-05-22-03	water	052203	<0.050	0.095	24.9	<0.010	7.40	0.20
18	KT-05-22-03	water	052203	0.718	77.6	169.0	0.118	2.90	139.0
19	004-05-22-03	water	052203	0.089	13.0	na	2.01	7.30	9.40
20	CTPXX-05-22-03	water	052203	0.379	0.783	na	0.062	na	na
21	006-05-23-03	water	052303	<0.050	0.106	28.5	<0.010	7.40	0.20
	006-05-18-03	duplicate	051803	<0.050	0.130	21.7	<0.010		
	006-05-18-03	spike	051803	100%	101%	104%	90.8%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 060603

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp date	Pb	Zn	Mn	Cd	pH	TSS
1	006-05-24-03	water	052403	<0.050	0.115	24.8	<0.010	7.00	0.20
2	006-05-25-03	water	052503	<0.050	0.132	23.7	<0.010	7.40	0.60
3	006-05-26-03	water	052603	<0.050	0.103	21.0	<0.010	7.50	0.80
4	KT-05-26-03	water	052603	0.598	158.0	42.0	0.300	2.70	107.0
5	006-05-27-03	water	052703	<0.050	0.130	18.1	<0.010	7.60	0.40
6	006-05-28-03	water	052803	<0.050	0.160	9.63	<0.010	7.60	0.80
7	QC-05-28-03	water	052803	<0.050	0.163	9.72	<0.010	7.60	<0.20
8	006-05-29-03	water	052903	<0.050	0.082	5.90	<0.010	7.30	0.20
9	KT-05-29-03	water	052903	0.658	81.2	151.0	0.122	2.90	146.0
10	004-05-29-03	water	052903	0.078	17.7	na	2.73	6.90	1.00
11	CTPXX-05-29-03	water	052903	0.426	0.796	na	0.061	na	na
12	006-05-30-03	water	053003	<0.050	0.063	5.58	<0.010	7.60	0.60
13	006-05-31-03	water	053103	<0.050	0.064	5.68	<0.010	7.50	<0.20
	006-05-28-03	duplicate	052803	<0.050	0.171	9.53	<0.010		
	006-05-28-03	spike	052803	93.4%	99.6%	98.8%	100%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month:	June-03		
Facility:	Central Treatment Plant		
Location:	Bunker Hill Superfund Site		
Total Flow For The Month From 006:		53,770,000	gallons
Total Flow From Kellogg Tunnel:		59,532,434	gallons
Percent of Influent Successfully Treated:			100.0%

30 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 180 potential exceedances
180 - 0 exceedances = 180 180/180 = 100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with five PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500 ml samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the 'RB & TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

06-02-03 Started Condition #4 of the Sludge Settling Test. Condition #4 requires the CTP pH setpoint to be reduced to 8.0 and maintain a floc dosage of 6 ppm.
06-02-03 Performed a sludge settling test on the CTP recycled sludge.
06-02-03 Performed Clarifier sludge depth testing.
06-04-03 Performed a sludge settling test on the CTP recycled sludge.
06-05-03 Performed Clarifier sludge depth testing.
06-09-03 Performed Clarifier sludge depth testing.
06-09-03 Repaired the failed lime slurry pump control
06-10-03 CIA staff gauge reading 2.85ft.
06-10-03 Performed 004/Sweeny flow verification, 9.38GPM.
06-11-03 Performed Clarifier sludge depth testing.
06-11-03 Flushed the Clarifier underflow lines with high pressure city water to unplug the underflow lines.
06-14-03 Responded to CTP power outage, reset all pumps and motors, restarted the CTP.
06-16-03 Performed a sludge settling test on the CTP recycled sludge.
06-16-03 Performed Clarifier sludge depth testing.
06-17-03 Performed a sludge settling test on the CTP recycle.
06-17-03 Mine Fabrication repaired the Head House Valve.
06-19-03 Performed a sludge settling test.
06-20-03 Paint sampling from the Clarifier Out buildings.
06-21-03 Flushed the Clarifier Underflow Lines with high pressure city water to unplug the underflow lines.
06-23-03 Started condition #5 of Sludge Testing, pH 8.0, floc dosage 3 ppm, recycled sludge average 1.06sg
06-24-03 Performed a plant systems and process inspection with Mark Reinsel, process engineer.
06-25-03 Performed a plant safety inspection with Safety Manager Paul Brox. No discrepancies were found.
06-25-06 Performed a sludge settling test.
06-26-03 Performed a Direct Feed Line test draining with the use of a water truck.
06-30-03 Performed Main Line, Direct Feed Line, and Lined Pond Line camera inspections.
06-30-03 Performed hydro jetting of the upper main line, and direct feed "T" area.
07-01-03 Performed Main Line, Direct Feed Branch, and Lined Pond Branch cleaning (pigging)
07-02-03 Performed Main Line, Direct Feed Line, and Lined Pond Line post cleaning camera inspections.

Lessons Learned

1) Lowered the floc dosage from 6ppm to 3 ppm with little to no change in 006 discharge water quality.
2) When performing a pigging event using the water truck, refill the truck each time prior to launching a cleaning pig.

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
2003	6	1		2003	6	30
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	Quantity or Loading (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	Quality or Concentration (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				7.0		7.6			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.78	2.26	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.74	0.94	Lbs/Day		0.05	0.05	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	2.46	4.35	Lbs/Day		0.17	0.28	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.143	0.19	Lbs/Day		0.010	0.010	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	274.5	647	Lbs/Day		17.79	37.90	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	10.2	34	Lbs/Day		0.7	2	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY:__ Gary Fulton

REVIEWED BY:__ Don Ferguson

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: Jun-03

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.050	0.385	0.057	0.439	0.010	0.077	2.89	22.26	7.60	0.9	0.2	1.540	0.70
2	0.050	0.417	0.065	0.542	0.010	0.083	1.39	11.60	7.60	1.0	0.2	1.669	0.76
3	0.050	0.851	0.117	1.992	0.010	0.170	2.29	38.98	7.60	2.0	0.2	3.405	1.54
4	0.050	0.860	0.116	1.994	0.010	0.172	8.09	139.1	7.10	2.1	0.2	3.438	1.56
5	0.050	0.851	0.127	2.162	0.010	0.170	11.9	202.6	7.50	2.0	0.2	3.405	1.54
6	0.050	0.851	0.132	2.247	0.010	0.170	14.7	250.2	7.40	2.0	0.6	10.21	4.63
7	0.050	0.562	0.123	1.382	0.010	0.112	14.8	166.2	7.00	1.3	0.2	2.246	1.02
8	0.050	0.415	0.119	0.988	0.010	0.083	14.7	122.1	7.20	1.0	0.4	3.321	1.51
9	0.050	0.400	0.200	1.601	0.010	0.080	7.32	58.58	7.20	1.0	0.8	6.402	2.90
10	0.050	0.855	0.254	4.345	0.010	0.171	4.94	84.51	7.40	2.1	0.2	3.421	1.55
11	0.050	0.941	0.175	3.295	0.010	0.188	7.76	146.1	7.40	2.3	0.2	3.765	1.71
12	0.050	0.901	0.143	2.576	0.010	0.180	12.8	230.6	7.40	2.2	1.4	25.22	11.4
13	0.050	0.880	0.131	2.307	0.010	0.176	18.6	327.5	7.40	2.1	1.0	17.61	7.99
14	0.050	0.880	0.157	2.764	0.010	0.176	22.0	387.4	7.10	2.1	0.8	14.09	6.39
15	0.050	0.526	0.227	2.387	0.010	0.105	23.8	250.2	7.20	1.3	0.4	4.206	1.91
16	0.050	0.406	0.281	2.279	0.010	0.081	18.4	149.2	7.30	1.0	1.2	9.734	4.41
17	0.050	0.733	0.280	4.103	0.010	0.147	10.9	159.7	7.10	1.8	0.6	8.792	3.99
18	0.050	0.809	0.206	3.335	0.010	0.162	10.5	170.0	7.30	1.9	0.8	12.95	5.87
19	0.050	0.842	0.149	0.024	0.010	0.168	11.6	195.3	7.40	2.0	0.4	6.736	3.06
20	0.050	0.832	0.132	2.198	0.010	0.166	12.9	214.8	7.40	2.0	0.4	6.659	3.02
21	0.050	0.872	0.132	2.302	0.010	0.174	16.0	279.1	7.50	2.1	0.2	3.488	1.58
22	0.050	0.643	0.150	1.928	0.010	0.129	20.0	257.0	7.50	1.5	0.6	7.711	3.50
23	0.050	0.814	0.197	3.206	0.010	0.163	17.9	291.3	7.50	2.0	1.4	22.78	10.3
24	0.050	0.855	0.211	3.610	0.010	0.011	29.7	508.1	7.10	2.1	1.2	20.53	9.31
25	0.050	0.910	0.227	4.130	0.010	0.182	35.0	636.7	7.10	2.2	0.2	3.638	1.65
26	0.050	0.876	0.214	3.750	0.010	0.175	36.9	646.7	7.10	2.1	0.8	14.02	6.36
27	0.050	0.797	0.207	3.299	0.010	0.159	35.6	567.4	7.10	1.9	0.2	3.188	1.45
28	0.050	0.801	0.172	2.756	0.010	0.160	36.3	581.6	7.40	1.9	1.8	28.84	13.1
29	0.050	0.845	0.211	3.566	0.010	0.169	36.2	611.7	7.40	2.0	2.0	33.80	15.3
30	0.050	0.697	0.175	2.439	0.010	0.139	37.9	528.2	7.40	1.7	1.4	19.51	8.85
31													
TOTAL	1.500	22.31	5.087	73.94	0.300	4.301	533.780	8,235	219.70	53.46	20.20	306.33	139
Sample Events	30	30	30	30	30	30	30	30	30	30	30	30	30
Daily Average	0.050	0.744	0.170	2.465	0.010	0.143	17.793	274.5	7.32	1.78	0.67	10.21	4.6

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: Jun-03
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						0.9		
2	0.674	158.0	0.284	40.4	2.70	1.0	100	379
3						2.0		
4						2.1		
5	0.798	82.40	0.142	161	3.00	2.0	143	1104
6						2.0		
7						1.3		
8						1.0		
9	0.502	177.0	0.290	40.2	2.60	1.0	92.0	334
10						2.1		
11						2.3		
12	0.718	76.80	0.118	148	2.90	2.2	136	1111
13						2.1		
14						2.1		
15						1.3		
16	0.528	168.0	0.282	40.4	2.70	1.0	109	401
17						1.8		
18						1.9		
19	0.712	95.20	0.146	170	3.10	2.0	154	1176
20						2.0		
21						2.1		
22						1.5		
23	0.702	85.20	0.120	159	3.10	2.0	121	893
24						2.1		
25						2.2		
26	0.656	78.60	0.656	152	3.20	2.1	126	1002
27						1.9		
28						1.9		
29						2.0		
30	0.666	165.0	0.262	165	2.80	1.7	85.0	537
31						0.0		

004/SWEENY **Month: Jun-03**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
06/05/03	0.08	12.1	2.09	7.20	7.4
06/12/03	0.07	11.5	2.09	7.30	8.2
06/19/03	0.08	16.1	2.69	6.90	1.0
06/26/03	0.05	12.9	2.39	7.30	6.2

RINSATE AND TRIP BLANKS **Month: Jun-03**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
Kellogg Tunnel	06/12/03	**RB-06-12-03**	<0.05	<0.03	<0.01	<0.02
Trip Blank (D.I.water)	06/12/03	**TB-06-12-03**	<0.05	<0.03	<0.01	<0.02

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: June, 03

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	06/04/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.116	0.111	mg/L			4.4%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	8.090	7.970	mg/L			1.5%		
		pH	7.10	7.50	units			-5.5%		
		TSS	0.200	0.200	mg/L			0.0%		
Performance	06/05/03	Lead	0.401	0.400	mg/L			0.2%		
Evaluation		Zinc	0.786	0.800	mg/L			-1.8%		
Sample		Cadmium	0.057	0.060	mg/L			-5.1%		
(CTPXX-06-05-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	06/09/03	Lead	0.050	0.050	mg/L	98%		0.0%		
MS/MSD		Zinc	0.200	0.209	mg/L	100%		-4.4%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	97%		0.0%		
		Manganese	7.32	7.49	mg/L	89%		-2.3%		
		pH	7.20		units					
		TSS	0.80		mg/L					
Performance	06/12/03	Lead	0.422	0.400	mg/L			5.4%		
Evaluation		Zinc	0.805	0.800	mg/L			0.6%		
Sample		Cadmium	0.061	0.060	mg/L			1.7%		
(CTPXX-06-12-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Kellogg Tunnel	06/12/03	Lead	0.718	0.680	mg/L			-5.4%		
		Zinc	76.80	78.40	mg/L			-2.1%		
QC Sample A		Cadmium	0.118	0.106	mg/L			10.7%		
		Manganese	148.0	150.0	mg/L			-1.3%		
		pH	2.90	3.00	units			-3.4%		
		TSS	136.0	135.0	mg/L			0.7%		
006/CTP Outfall	06/18/03	Lead	0.050	0.050	mg/L	91%		0.0%		
MS/MSD		Zinc	0.206	0.211	mg/L	95%		-2.4%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	92%		0.0%		
		Manganese	10.50	10.70	mg/L	84%		-1.9%		
		pH	7.30		units					
		TSS	0.800		mg/L					
004 Sweeny	06/19/03	Lead	0.083	0.069	mg/L			-18.4%		
		Zinc	16.100	16.000	mg/L			0.6%		
QC Sample		Cadmium	2.690	2.650	mg/L			1.5%		
		Manganese	na	na	mg/L					
		pH	6.90	6.90	units			0.0%		Not applicable to the
		TSS	1.00	1.40	mg/L			-33.3%		NPDES Permit.
Performance	06/19/03	Lead	0.381	0.400	mg/L			-4.9%		
Evaluation		Zinc	0.744	0.800	mg/L			-7.3%		
Sample		Cadmium	0.058	0.060	mg/L			-3.4%		
(CTPXX-06-19-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	06/23/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.197	0.215	mg/L			-8.7%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	17.90	18.30	mg/L			-2.2%		
		pH	7.50	7.50	units			0.0%		
		TSS	1.400	1.400	mg/L			0.0%		

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	06/26/03	Lead	0.370	0.400	mg/L			-7.8%		
Evaluation		Zinc	0.790	0.800	mg/L			-1.3%		
Sample		Cadmium	0.063	0.060	mg/L			4.9%		
(CTPXX-06-26-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	06/28/03	Lead	0.050	0.050	mg/L	93%		0.0%		
MS/MSD		Zinc	0.172	0.175	mg/L	97%		-1.7%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	99%		0.0%		
		Manganese	36.30	37.60	mg/L	115%		-3.5%		
		pH	7.40		units					
		TSS	1.800		mg/L					
June, 2003 Completeness		Lead	11	Valid		11	Total	100.0%		
		Zinc	11	Valid		11	Total	100.0%		
		Cadmium	11	Valid		11	Total	100.0%		
		Manganese	6	Valid		6	Total	100.0%		
		pH	4	Valid		4	Total	100.0%		
		TSS	4	Valid		4	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **Jun-03**

KELLOGG TUNNEL FLOW

Day	KT METER mgd	Ft/Flume		KT STAFF mgd	GAUGE Ft/Flume
06/02/03	1.25	0.62		1.3	0.62
06/05/03	2.36	0.93		2.36	0.93
06/09/03	1.21	0.61		1.2	0.61
06/12/03	2.40	0.95		2.4	0.95
06/16/03	1.09	0.56		1.09	0.56
06/19/03	2.27	0.92		2.2	0.92
06/23/03	2.30	0.94		2.3	0.94
06/26/03	2.37	0.94		2.4	0.94
06/30/03	2.58	0.99		2.6	1.00

Day	**KT Flow Meter Reading**
05/31/03	286,393,350
06/30/03	345,925,784
KT Total for month	59,532,434

Day	**006 Flow Meter Reading**
05/31/03	0
06/30/03	53,770,000
006 Total for month	53,770,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
05/31/03	0.7	Hours	585.0	Hours
06/30/03	0.8	Hours	587.9	Hours
Total Hours	0.1	Hours	2.9	Hours
Total Flow for 004/Sweeny For The Month =			87,000	Gallons

004/Sweeny Discharge Pipe Flov

Date	Flow (GPM)
10-Jun	9.4

Day	**Lined Pond Water Level**			
05/31/03	500,000	gal	Elev. =	2269.0
06/30/03	750,000	gal	Elev. =	2270.5
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Central Treatment Plant

Daily log June, 2003

			INFLUENT (KT)		AERATION BASIN			CLARIFIER			DISCHARGE 006			RECYCLE		SLUDGE PUMP		POND PUMP	
DATE	TIME	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TEMP	pH4	GRAB	FLOW	SpG	FLOW	ON	OFF	ON	OFF
6/1	5:15	DY			8.5	8.6		8.7	8.8	60	8.3	8.2	0.92	1.052	750gpm	None			
6/2	5:30	GF,DY	868	3.00	**8.0**	8.4		8.8	8.9	60	8.2	8.2	1.00	1.078	750gpm	#1-12:00	13:00	#2-7:30	9:45
6/3	5:30	GF,GN,DY			**8.0**	8.2		8.5	8.5	60	8.2	8.1	2.04	1.069	750gpm	#3-7:00	9:30		
6/4	5:00	GF,GN,DY			**8.0**	8.3		8.2	8.1	64	7.9	7.9	2.06	1.080	750gpm	#3-5:00	8:30		
6/5	5:30	GF,GN,DY	1652	3.10	**8.0**	8.1		7.9	7.9	60	7.7	7.6	2.36	1.085	750gpm	#3-5:45	9:45		
6/6	4:45	GF,GN			**8.0**	8.2		7.9	7.8	62	7.6	7.5	2.04	1.076	750gpm	#3-5:00	8:30		
6/7	6:50	GN			**8.0**	8.3		7.8	7.8	64	7.5	7.5	1.35	1.050	750gpm	None			
6/8	5:25	DY			**8.0**	8.5		7.7	8.0	62	7.5	7.7	0.89	1.057	750gpm	#1-15:15	15:45		
6/9	5:30	GF,DY	840	3.10	**8.0**	8.3		8.1	8.1	62	7.7	7.7	0.96	1.059	750gpm	#1-12:30	13:30	#1-9:00	12:10
6/10	5:30	GF,GN,DY			**8.0**	8.4		8.1	8.2	62	7.7	7.8	2.05	1.059	750gpm	#3-6:10	9:10		
6/11	5:00	GF,GN,DY			**8.0**	7.9		8.0	8.0	63	7.7	7.8	2.25	1.114	750gpm	#1-6:00	#1-7:00		
6/12	5:30	GF,GN,DY	1666	2.97	**8.0**	8.4	8.4	7.8	7.9	62	7.7	7.9	2.16	1.081	750gpm	#3-6:00	10:30		
6/13	5:00	GF,GN			**8.0**	8.4		7.7	7.7	63	7.6	7.5	2.11	1.068	750gpm	#3-5:15	8:15		
6/14	6:00	GN			**8.0**	8.3		7.6	7.5	63	7.5	7.5	2.11	1.100	750gpm	#3-6:00	9:30		
6/15	5:20	DY			**8.0**	8.0	8.0	7.5	7.6	62	7.4	7.5	1.26	1.044	750gpm	None			
6/16	5:30	GF,DY	757	2.63	**8.0**	8.5		7.7	8.0	63	7.7	7.5	0.97	1.062	750gpm	#3:645	8:45		
6/17	5:30	GF,GN,DY			**8.0**	8.3		7.7	7.6	62	7.6	7.6	1.77	1.099	750gpm	#1-5:456	7:15		
6/18	5:20	GF,GN,DY			**8.0**	8.4		7.7	7.7	63	7.6	7.7	1.94	1.061	750gpm	#3-5:30	8:00		
6/19	5:00	GF,GN,DY	1576	2.27	**8.0**	8.5		7.7	7.7	64	7.6	7.5	2.02	1.104	750gpm	#3-3hr	#1-1hr		
6/20	4:50	GF,GN			**8.0**	8.4		7.7	7.7	64	7.5	7.5	1.99	1.084	750gpm				
6/21	5:40	GN			**8.0**	9.0		7.7	7.7	62	7.5	7.5	2.09	1.087	750gpm	#1-1.5hr			
6/22	6:00	DY			**8.0**	9.0		7.8	8.0	60	7.5	7.5	1.54	1.037	750gpm	#1-14:55	15:30		
6/23	5:15	GF,DY	1597	3.2	**8.0**	8.6		7.7	7.7	60	7.5	7.6	1.95	1.069	750gpm	#3-6:30	9:30		
6/24	5:30	GF,GN,DY			**8.0**			7.7	7.6	60	7.5	7.6	2.12	1.074	750gpm	#3-5:45	9:45		
6/25	4:45	GF,GN,DY			**8.0**	8.7		7.6	7.7	61	7.7	7.7	2.18	1.049	750gpm	#3-5:30	7:30		
6/26	5:30	GF,GN,DY	1645	3.4	**8.0**	8.8		7.6	7.6	63	7.6	7.6	2.12	1.079	750gpm	#1-6:00	7:00		
6/27	4:50	GF,GN			**8.0**	8.4		7.6	7.5	63	7.6	7.6	1.92	1.095	750gpm	#1-4:45	5:15		
6/28	5:50	GN			**8.0**	8.4	8.45	7.7	7.6	64	7.6	7.6	1.92	1.053	750gpm	#1-6:00	7:00		
6/29	5:45	DY			**8.0**	8.5		7.5	7.6	64	7.6	7.5	2.02	1.089	750gpm	#1-6:00	7:00		
6/30	5:20	Gn,Gf,Dy,Gc,Ws			**8.0**	8.0	8.1	7.7	7.6	65	7.6	7.6	1.67	1.049	750gpm	None			
					8.0														

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 06-05-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.20 MGD, Staff Gauge reading 0.60 ft/flume.

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 06/10/03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in goo
condition at this time.

The Kellogg Tunnel flume flow is 2.35MGD, Staff Gauge reading 0.938ft/flume 1632 GPM

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 06-19-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.47 MGD, Staff Gauge reading 0.97 ft/flume.1715 GPM

Removed a small amount of debris from both trash racks.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 06-26-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***	
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***	
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***	

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.32 MGD, Staff Gauge reading 0.931 ft/flume 1611 GPM.

The trash racks had a lot of debris in them.

AMERICAN ANALYTICAL SERVICES

BHCTP: 061803

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp date	Pb	Zn	Mn	Cd	pH	TSS
1	006-06-01-03	water	060103	<0.050	0.057	2.89	<0.010	7.60	<0.20
2	006-06-02-03	water	060203	<0.050	0.065	1.39	<0.010	7.60	0.20
3	KT-06-02-03	water	060203	0.674	158.0	40.4	0.284	2.70	100.0
4	006-06-03-03	water	060303	<0.050	0.117	2.29	<0.010	7.60	<0.20
5	006-06-04-03	water	060403	<0.050	0.116	8.09	<0.010	7.10	<0.20
6	QC-06-04-03	water	060403	<0.050	0.111	7.97	<0.010	7.50	<0.20
7	006-06-05-03	water	060503	<0.050	0.127	11.9	<0.010	7.50	0.20
8	KT-06-05-03	water	060503	0.798	82.4	161.0	0.142	3.00	143.0
9	004-06-05-03	water	060503	0.080	12.1	na	2.09	7.20	7.40
10	CTPXX-06-05-03	water	060503	0.401	0.786	na	0.057	na	na
11	006-06-06-03	water	060603	<0.050	0.132	14.7	<0.010	7.40	0.60
12	006-06-07-03	water	060703	<0.050	0.123	14.8	<0.010	7.00	0.20
13	006-06-08-03	water	060803	<0.050	0.119	14.7	<0.010	7.20	0.40
14	006-06-09-03	water	060903	<0.050	0.200	7.32	<0.010	7.20	0.80
15	KT-06-09-03	water	060903	0.502	177.0	40.2	0.290	2.60	92.0
16	006-06-10-03	water	061003	<0.050	0.254	4.94	<0.010	7.40	<0.20
17	006-06-11-03	water	061103	<0.050	0.175	7.76	<0.010	7.40	<0.20
18	006-06-12-03	water	061203	<0.050	0.143	12.8	<0.010	7.40	1.40
19	KT-06-12-03	water	061203	0.718	76.8	148.0	0.118	2.90	136.0
20	QC-06-12-03	water	061203	0.680	78.4	150.0	0.106	3.00	135.0
21	004-06-12-03	water	061203	0.066	11.5	na	2.09	7.30	8.20
22	RB-06-12-03	water	061203	<0.050	0.034	<0.020	<0.010	na	na
23	TB-06-12-03	water	061203	<0.050	0.031	<0.020	<0.010	na	na
24	CTPXX-06-12-03	water	061203	0.422	0.805	na	0.061	na	na
25	006-06-13-03	water	061303	<0.050	0.131	18.6	<0.010	7.40	1.00
	006-06-09-03	duplicate	060903	<0.050	0.209	7.49	<0.010		
	006-06-09-03	spike	060903	97.6%	100%	88.8%	97.2%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 070103

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp date	Pb	Zn	Mn	Cd	pH	TSS
1	006-06-14-03	water	061403	<0.050	0.157	22.0	<0.010	7.10	0.80
2	006-06-15-03	water	061503	<0.050	0.227	23.8	<0.010	7.20	0.40
3	006-06-16-03	water	061603	<0.050	0.281	18.4	<0.010	7.30	1.20
4	KT-06-16-03	water	061603	0.528	168.0	40.4	0.282	2.70	109.0
5	006-06-17-03	water	061703	<0.050	0.280	10.9	<0.010	7.10	0.60
6	006-06-18-03	water	061803	<0.050	0.206	10.5	<0.010	7.30	0.80
7	006-06-19-03	water	061903	<0.050	0.149	11.6	<0.010	7.40	0.40
8	KT-06-19-03	water	061903	0.712	95.2	170.0	0.146	3.10	154.0
9	004-06-19-03	water	061903	0.083	16.1	na	2.69	6.90	1.00
10	QC-06-19-03	water	061903	0.069	16.0	na	2.65	6.90	1.40
11	CTPXX-06-19-03	water	061903	0.381	0.744	na	0.058	na	na
12	006-06-20-03	water	062003	<0.050	0.132	12.9	<0.010	7.40	0.40
13	006-06-21-03	water	062103	<0.050	0.132	16.0	<0.010	7.50	<0.20
14	006-06-22-03	water	062203	<0.050	0.150	20.0	<0.010	7.50	0.60
15	006-06-23-03	water	062303	<0.050	0.197	17.9	<0.010	7.50	1.40
16	KT-06-23-03	water	062303	0.702	85.2	159.0	0.120	3.10	121.0
17	QC-06-23-03	water	062303	<0.050	0.215	18.3	<0.010	7.50	1.40
18	006-06-24-03	water	062403	<0.050	0.211	29.7	<0.010	7.10	1.20
19	006-06-25-03	water	062503	<0.050	0.227	35.0	<0.010	7.10	0.20
20	006-06-26-03	water	062603	<0.050	0.214	36.9	<0.010	7.10	0.80
21	KT-06-26-03	water	062603	0.656	78.6	152.0	0.106	3.20	126.0
22	004-06-26-03	water	062603	0.051	12.9	na	2.39	7.30	6.20
23	CTPXX-06-26-03	water	062603	0.370	0.790	na	0.063	na	na
24	006-06-27-03	water	062703	<0.050	0.207	35.6	<0.010	7.10	<0.20
25	006-06-28-03	water	062803	<0.050	0.172	36.3	<0.010	7.40	1.80
26	006-06-29-03	water	062903	<0.050	0.211	36.2	<0.010	7.40	2.00
27	006-06-30-03	water	063003	<0.050	0.175	37.9	<0.010	7.40	1.40
28	KT-06-30-03	water	063003	0.666	165.0	40.6	0.262	2.80	85.0
	006-06-18-03	duplicate	061803	<0.050	0.211	10.7	<0.010		
	006-06-18-03	spike	061803	91.0%	95.2%	84.0%	91.6%		
	006-06-28-03	duplicate	062803	<0.050	0.175	37.6	<0.010		
	006-06-28-03	spike	062803	93.2%	97.1%	115%	98.8%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

Ferguson Contracting

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Monthly Operation & Maintenance Report

Month: July-03

Facility: Central Treatment Plant

Location: Bunker Hill Superfund Site

Total Flow For The Month From 006:	60,670,000	gallons
Total Flow From Kellogg Tunnel:	66,252,746	gallons
Percent of Influent Successfully Treated:		100.0%

31 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 186 potential exceedances
186 - 0 exceedances = 186 186/186 = 100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with five PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the '004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

07-01-03 Performed the Bunker Hill Conveyance System line cleaning. Pigging events of all three AMD lines.
07-01-03 Cleaned the Main Line, Lined Pond Branch, and Direct Feed Line Branch.
07-02-03 Post-AMD line camera inspection with Big Sky Industries.
07-03-03 Performed Quarterly Pump and Motor analysis with Cash Balancing Service Company.
07-04-03 Performed monthly fire extinguisher inspections.
07-07-03 Started work on Task Order #0008--Clarifier Repairs and Upgrades.
07-14-03 Requested that Avista remove the main power supply to the CTP Control Room while digging near the buried main electrical lin
07-16,17,18-03 Performed 12-hour turnaround sample analysis for the beginning of condition #6 of Task Order #0006.
07-29-03 Started using #1 pump for sludge recycle instead of #2.
07-1 to 07-31 Experienced Clarifier underflow line blockage several times during this month.
07-01 to 07-31 Performed several sludge settling and sludge depth checks for condition #6 of Task Order #0006.
07-31-03 Performed recycle pump flow rate testing on the #2 pump--measured 100 gpm.
07-31-03 Perform adjustments to the #2 sludge recycle pump impeller in an attempt to increase the output.
The adjustment to the #2 pump did not increase the output. The pump impeller will be exposed and inspected for damage.
07-31-03 Performed recycle pump flow rate testing on the #1 pump--measured 2400 gpm.

Lessons Learned

1) Possible cause of the Clarifier underflow line blockage may be the poor condition of the #2 pump impeller.
2) Using the #1 pump for sludge recycle greatly increased the amount of solids being recycled. This significantly increased the Clarifier turbidity until the recycle flow was reduced (from 2400 to 1000 gpm) and the floc dosage was increased (from 2 to 6 ppm).
3) Sludge flow rates may change over time due to pump wear or other factors. Flowmeters on the sludge lines would minimize this problem.

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
2003	7	1		2003	7	31
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	Quantity or Loading (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	Quality or Concentration (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				7.0		7.6			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.96	2.40	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.82	1.00	Lbs/Day		0.05	0.05	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	2.35	4.35	Lbs/Day		0.15	0.27	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.155	0.20	Lbs/Day		0.010	0.010	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	368.9	663	Lbs/Day		22.60	38.90	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	16.4	62	Lbs/Day		1.0	4	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY:__ Gary Fulton

REVIEWED BY:__ Don Ferguson

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: Jul-03

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.050	0.605	0.269	3.255	0.010	0.121	34.7	419.879	7.10	1.5	0.8	9.680	4.39
2	0.050	0.743	0.207	3.075	0.010	0.149	31.6	469.390	7.40	1.8	0.6	8.912	4.04
3	0.050	0.780	0.242	3.776	0.010	0.156	23.2	362.039	7.40	1.9	0.4	6.242	2.83
4	0.050	0.893	0.171	3.054	0.010	0.179	22.2	396.454	7.40	2.1	0.2	3.572	1.62
5	0.050	0.860	0.145	2.493	0.010	0.172	22.5	386.791	7.40	2.1	0.2	3.438	1.56
6	0.050	0.843	0.140	2.360	0.010	0.169	22.5	379.280	7.40	2.0	0.6	10.114	4.59
7	0.050	0.864	0.111	1.917	0.010	0.173	21.3	367.939	7.50	2.1	0.8	13.819	6.27
8	0.050	0.993	0.116	2.304	0.010	0.199	23.4	464.750	7.50	2.4	0.6	11.917	5.40
9	0.050	0.868	0.130	2.256	0.010	0.174	21.1	366.245	7.50	2.1	0.2	3.472	1.57
10	0.050	0.592	0.128	1.517	0.010	0.118	16.7	197.893	7.50	1.4	1.8	21.33	9.67
11	0.050	0.688	0.149	2.052	0.010	0.138	11.5	158.346	7.60	1.7	0.8	11.015	5.00
12	0.050	0.868	0.121	2.100	0.010	0.174	11.3	196.141	7.20	2.1	1.0	17.36	7.87
13	0.050	0.826	0.110	1.818	0.010	0.165	12.5	206.539	7.30	2.0	1.2	19.83	8.99
14	0.050	0.893	0.109	1.947	0.010	0.179	15.3	273.232	7.40	2.1	1.4	25.00	11.3
15	0.050	0.826	0.117	1.933	0.010	0.165	19.0	313.939	7.40	2.0	1.0	16.52	7.49
16	0.050	0.601	0.131	1.574	0.010	0.120	23.1	277.588	7.10	1.4	0.8	9.613	4.36
17	0.050	0.780	0.123	1.919	0.010	0.156	21.8	340.192	7.00	1.9	1.2	18.73	8.49
18	0.050	0.797	0.115	1.833	0.010	0.159	20.7	329.936	7.20	1.9	0.6	9.563	4.34
19	0.050	0.814	0.119	0.024	0.010	0.163	18.2	296.164	7.10	2.0	0.6	9.764	4.43
20	0.050	0.789	0.136	2.145	0.010	0.158	19.9	313.864	7.30	1.9	1.0	15.772	7.15
21	0.050	0.830	0.152	2.524	0.010	0.166	20.6	342.095	7.30	2.0	1.2	19.928	9.04
22	0.050	0.529	0.173	1.829	0.010	0.106	20.7	218.863	7.00	1.3	1.2	12.688	5.75
23	0.050	0.966	0.167	3.225	0.010	0.193	21.1	407.448	7.10	2.3	2.0	38.62	17.5
24	0.050	1.000	0.123	2.459	0.010	0.011	21.3	425.885	7.00	2.4	1.0	19.99	9.07
25	0.050	0.993	0.126	2.502	0.010	0.199	21.3	423.041	7.10	2.4	0.2	3.972	1.80
26	0.050	0.830	0.137	2.275	0.010	0.166	24.0	398.557	7.10	2.0	0.6	9.964	4.52
27	0.050	0.850	0.132	2.244	0.010	0.170	34.0	577.958	7.20	2.0	1.0	17.00	7.71
28	0.050	0.867	0.251	4.355	0.010	0.173	35.6	617.633	7.30	2.1	3.6	62.46	28.3
29	0.050	0.852	0.186	3.168	0.010	0.170	38.9	662.550	7.30	2.0	2.2	37.47	17.0
30	0.050	0.835	0.098	1.636	0.010	0.167	31.3	522.397	7.00	2.0	0.6	10.01	4.54
31	0.050	0.843	0.202	3.405	0.010	0.100	19.2	323.652	7.20	2.0	1.8	30.34	13.76
TOTAL	1.550	25.32	4.636	72.97	0.310	4.806	700.500	11,437	225.30	60.67	31.20	508.11	230
Sample Events	31	31	31	31	31	31	31	31	31	31	31	31	31
Daily Average	0.050	0.817	0.150	2.354	0.010	0.155	22.597	368.925	7.27	1.96	1.01	16.39	7.4

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: Jul-03
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						1.5		
2						1.8		
3	0.602	75.0	0.108	160	3.20	1.9	132	934
4						2.1		
5						2.1		
6						2.0		
7	0.650	80.2	0.108	152	3.10	2.1	136	1066
8						2.4		
9						2.1		
10	0.762	132.0	0.210	46.4	2.90	1.4	111	597
11						1.7		
12						2.1		
13						2.0		
14	0.722	67.00	0.106	141	3.10	2.1	117	948
15						2.0		
16						1.4		
17	0.794	67.6	0.100	147	3.20	1.9	109	771
18						1.9		
19						2.0		
20						1.9		
21	0.592	80.60	0.122	158	3.10	2.0	131	987
22						1.3		
23						2.3		
24	0.796	78.20	0.126	153	3.10	2.4	146	1324
25						2.4		
26						2.0		
27						2.0		
28	0.586	69.40	0.090	152	3.10	2.1	116	913
29						2.0		
30						2.0		
31	0.484	68.40	0.086	158	3.20	2.0	101	772

004/SWEENY **Month: Jul-03**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
07/03/03	0.05	11.4	2.20	7.30	4.4
07/10/03	0.05	19.3	3.18	6.90	0.8
07/17/03	0.05	9.7	1.85	7.20	3.2
07/24/03	0.05	13.4	2.46	7.20	5.0
07/31/03	0.05	10.0	2.00	7.00	4.0

RINSATE AND TRIP BLANKS **Month: Jul-03**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
006 Outfall	07/23/03	**RB-07-23-03**	<0.05	<0.02	<0.01	<0.02
Trip Blank (D.I.water)	07/23/03	**TB-07-23-03**	<0.05	<0.02	<0.01	<0.02

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: Jul-03

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	07/02/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.207	0.202	mg/L			2.4%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	31.60	32.30	mg/L			-2.2%		
		pH	7.40	7.40	units			0.0%		Results are below specified
		TSS	0.600	0.400	mg/L			40.0%		detection limits.
Performance	07/03/03	Lead	0.356	0.400	mg/L			-11.6%		
Evaluation		Zinc	0.840	0.800	mg/L			4.9%		
Sample		Cadmium	0.061	0.060	mg/L			1.7%		
(CTPXX-07-03-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	07/04/03	Lead	0.050	0.050	mg/L	97%		0.0%		
MS/MSD		Zinc	0.171	0.161	mg/L	101%		6.0%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	97%		0.0%		
		Manganese	22.20	23.30	mg/L	92%		-4.8%		
		pH	7.40		units					
		TSS	0.200		mg/L					
006/CTP Outfall	07/08/03	Lead	0.050	0.050	mg/L	94%		0.0%		
MS/MSD		Zinc	0.116	0.119	mg/L	100%		-2.6%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	97%		0.0%		
		Manganese	23.40	23.90	mg/L	96%		-2.1%		
		pH	7.50		units					
		TSS	0.600		mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	07/10/03	Lead	0.348	0.400	mg/L			-13.9%		
Evaluation		Zinc	0.853	0.800	mg/L			6.4%		
Sample		Cadmium	0.059	0.060	mg/L			-1.7%		
(CTPXX-07-10-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
Kellogg Tunnel	07/10/03	Lead	0.762	0.796	mg/L			-4.4%		
		Zinc	132.0	125.0	mg/L			5.4%		
QC Sample		Cadmium	0.210	0.210	mg/L			0.0%		
		Manganese	46.40	45.20	mg/L			2.6%		
		pH	2.90	2.90	units			0.0%		
		TSS	111.0	113.0	mg/L			-1.8%		
006/CTP Outfall	07/14/03	Lead	0.050	0.050	mg/L	85%		0.0%		
MS/MSD		Zinc	0.109	0.116	mg/L	88%		-6.2%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	81%		0.0%		
		Manganese	15.30	15.60	mg/L	80%		-1.9%		
		pH	7.400		units					
		TSS	1.400		mg/L					
Performance	07/17/03	Lead	0.363	0.400	mg/L			-9.7%		
Evaluation		Zinc	0.759	0.800	mg/L			-5.3%		
Sample		Cadmium	0.056	0.060	mg/L			-6.9%		
(CTPXX-07-17-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	07/19/03	Lead	0.050	0.050	mg/L	96%		0.0%		
MS/MSD		Zinc	0.119	0.109	mg/L	103%		8.8%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	102%		0.0%		
		Manganese	18.20	21.30	mg/L	128%		-15.7%		
		pH	7.10		units					
		TSS	0.600		mg/L					
006/CTP Outfall	07/23/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.167	0.166	mg/L			0.6%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	21.10	24.90	mg/L			-16.5%		
		pH	7.10	7.10	units			0.0%		Results are below specified
		TSS	2.000	1.400	mg/L			35.3%		detection limits.
Performance	07/24/03	Lead	0.376	0.400	mg/L			-6.2%		
Evaluation		Zinc	0.745	0.800	mg/L			-7.1%		
Sample		Cadmium	0.059	0.060	mg/L			-1.7%		
(CTPXX-07-24-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
004/Sweeny	07/24/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	13.400	12.800	mg/L			4.6%		
QC Sample		Cadmium	2.460	2.560	mg/L			-4.0%		
		Manganese	na	na	mg/L					
		pH	7.20	7.20	units			0.0%		
		TSS	5.00	5.20	mg/L			-3.9%		
006/CTP Outfall	07/26/03	Lead	0.050	0.050	mg/L	84%		0.0%		
MS/MSD		Zinc	0.137	0.131	mg/L	94%		4.5%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	88%		0.0%		
		Manganese	24.00	23.30	mg/L	84%		3.0%		
		pH	7.10		units					
		TSS	0.600		mg/L					
Performance	07/31/03	Lead	0.384	0.400	mg/L			-4.1%		
Evaluation		Zinc	0.794	0.800	mg/L			-0.8%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-07-31-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
July, 2003 Completeness		Lead	14	Valid		14	Total	100.0%		
		Zinc	14	Valid		14	Total	100.0%		

	Cadmium	14	Valid	14	Total	100.0%		
	Manganese	8	Valid	8	Total	100.0%		
	pH	4	Valid	4	Total	100.0%		
	TSS	4	Valid	4	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **Jul-03**

KELLOGG TUNNEL FLOW
KT METER

Day	mgd	Ft/Flume
07/03/03	2.25	0.91
07/07/03	2.23	0.91
07/10/03	1.22	0.61
07/14/03	2.21	0.90
07/17/03	2.18	0.90
07/21/03	2.19	0.90
07/24/03	2.03	0.85
07/28/03	2.23	0.90
07/31/03	2.18	0.88

Day	**KT Flow Meter Reading**
06/30/03	345,925,784
07/31/03	412,178,530
KT Total for month	66,252,746

Day	**006 Flow Meter Reading**
06/30/03	0
07/31/03	60,670,000
006 Total for month	60,670,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
06/30/03	0.8	Hours	587.9	Hours
07/31/03	0.8	Hours	589.6	Hours
Total Hours	0.0	Hours	2	Hours
Total Flow for 004/Sweeny For The Month =			51,000.00	Gallons

004/Sweeny Discharge Pipe Flov	
Date	Flow (GPM)
	No flow verifications we

Day	**Lined Pond Water Level**			
06/30/03	500,000	gal	Elev. =	2269.0
07/30/03	500,000	gal	Elev. =	2269.0
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FERGUSON CONTRACTING, INC.

Central Treatment Plant

Daily log July, 2003

			INFLUENT (KT)		AERATION BASIN			CLARIFIER			DISCHARGE 006			RECYCLE		SLUDGE PUMP		POND PUMP	
DATE	TIME	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TEMP	pH4	GRAB	FLOW	SpG	FLOW	ON	OFF	ON	OFF
7/1	5;00	GF,GN,DY			8.0	8.1	8.0	7.5	7.6	66	7.5	7.2	1.45	1.085	750gpm	#1&#3		#11:00	13:00
7/2	5:30	GF,GN,DY			8.0	8.4		7.5	7.4	63	7.6	7.4	1.78	1.045	750gpm	see log		#1-9:50	13:45
7/3	5:30	GF,GN,DY	1562	3.3	8.0			7.7	7.6	61	7.4	7.7	1.87	1.053	750gpm	#3 4hrs			
7/4	6:00	GN			8.0	8.3	8.4	7.8	7.7	62	7.3	7.3	2.14	1.068	750gpm	#1			
7/5	5:45	GN			8.0	9.0		7.8	7.8	61	7.4	7.4	2.06	1.073	750gpm	#1 6::10	7:30		
7/6	5:30	DY			8.0	8.9		7.8	7.7	62	7.4	7.4	2.02	1.036	750gpm	see log			
7/7	6:00	GF,DY	1611	3.3	8.0	8.5		7.8	7.8	62	7.6	7.6	2.07	1.045	750gpm	#3-6:00	14:00	#1-7:00	11:00
7/8	4:40	GF,GN,DY			8.0	8.6		7.6	7.7	64	7.4	7.5	2.38	1.056	750gpm	#3-6:00	11:00		
7/9	6:00	GF,GN,DY			8.0	8.1		8.0	7.7	63	7.7	7.5	2.08	1.046	750gpm	see log		#1-7:15	12:00
7/10	5:00	GF,GN,DY	847	2.7	8.0	9.1		8.2	7.9	64	7.7	7.7	1.42	1.034	750gpm	None			
7/11	5:15	GF,GN			8.0	9.3	9.4	8.2	8.1	68	7.7	7.7	1.65	1.032	750gpm	#1-2hrs			
7/12	6:00	GN			8.0	9.3		8.0	8.1	66	7.7	7.6	2.08	1.081	750gpm				
7/13	5:15	DY			8.0	8.6		8.2	8.2	65	7.8	7.7	1.98	1.047	750gpm	see log			
7/14	5:45	GF,DY	1534	3.1	8.0	8.5		7.7	7.6	64	7.7	7.7	2.14	1.051	750gpm	#3-7:05	12:30		
7/15	5:45	GF,GN,DY			8.0	8.6		7.7	7.6	64	7.5	7.5	1.98	1.051	750gpm	#3-7:05	8:45		
7/16	5:45	GF,GN,DY			8.0	8.5		7.6	7.5	65	7.3	7.5	1.44	1.032	750gpm	see log			
7/17	5:45	GF,GN,DY	1513	3.2	8.0	8.2		7.7	7.9	64	7.4	7.2	1.87	1.06	750gpm	see log			
7/18	5:30	GF,GN			8.0	8.5	8.4	7.8	7.8	63	7.4	7.5	1.91	1.054	750gpm	#3 6:00	9:00		
7/19	5:30	GN			8.0	8.5		7.5	7.9	63	7.5	7.6	1.95	1.062	750gpm	#1 5:40	6:40		
7/20	5:20	DY			8.0	8.3		7.9	7.9	64	7.6	7.5	1.89	1.042	750gpm	#1-5:30	6:00		
7/21	5:45	GF,DY	1520	3.1	8.0	9.1		7.8	7.9	65	7.6	7.5	1.99	1.042	750gpm	#1-5;30	7:00		
7/22	5:45	GF,GN,DY			8.0	8.2		7.8	8.0	64	7.6	7.5	1.27	1.039	750gpm	see log		#1-8:30	13:00
7/23	5:50	GF,GN,DY			8.0	8.0		8.0	8.0	67	7.6	7.6	2.31	1.04	750gpm	see log		#1-8:00	13:30
7/24	5:45	GF,GN,DY	1409	3.0	8.0	7.9		8.0	7.9	68	7.7	7.5	2.40	1.048	750gpm	#3-7:00	12:45	#1-7:45	13:00
7/25	5:50	GF,GN			8.0	8.1	8.2	8.0	8.0	68	7.6	7.5	2.38	1.051	750gpm	#1 -5:55	6:25		
7/26	5:30	GN			8.0	8.3		8.0	8.0	68	7.6	7.6	1.99	1.051	750gpm	#3-6:00	9:00		
7/27	5:15	DY			8.0	8.1		8.0	7.9	68	7.6	7.5	2.04	1.072	750gpm	#1-5:20	6:20		
7/28	5:50	DY, GF	1546	3.2	8.0	8.2		7.9	7.9	67	7.7	7.6	2.08	1.043	750gpm	see log			
7/29	5:50	GF,GN,DY			8.0	8.1		7.6	8.0	67	7.6	7.7	2.04	1.050	750gpm	see log			
7/30	5:30	GF,GN,DY			8.0	8.1		7.9	7.7	67	7.7	7.6	2.00	1.035	750gpm	none			
7/31	5:30	GF,GN,DY			8.0	8.3		8.0	7.9	68	7.7	7.5	2.02	1.026	750gpm	None			

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 07-02-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.20 MGD, Staff Gauge reading 0.60 ft/flume.

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 07/10/03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in goo condition at this time.

The Kellogg Tunnel flume flow is 2.35MGD, Staff Gauge reading 0.938ft/flume 1632 GPM

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 07-17-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.18 MGD, Staff Gauge reading 0.90 ft/flume.1514 GPM

Removed a small amount of debris from both trash racks.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 07-24-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.18 MGD, Staff Gauge reading 0.90 ft/flume.1514 GPM

Removed a small amount of debris from both trash racks.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 7/31/2003 Inspected By: Doug Young

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.15 MGD, Staff Gauge reading 0.887ft/flume 1493 GPM.

AMERICAN ANALYTICAL SERVICES

BHCTP: 071503

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-07-01-03	water	070103	<0.050	0.269	34.7	<0.010	7.10	0.80
2	006-07-02-03	water	070203	<0.050	0.207	31.6	<0.010	7.40	0.60
3	QC-07-02-03	water	070203	<0.050	0.202	32.3	<0.010	7.40	0.40
4	RB-07-02-03	water	070203	<0.050	0.034	<0.020	<0.010	na	na
5	TB-07-02-03	water	070203	<0.050	0.037	<0.020	<0.010	na	na
6	006-07-03-03	water	070303	<0.050	0.242	23.2	<0.010	7.40	0.40
7	KT-07-03-03	water	070303	0.602	75.0	160.0	0.108	3.20	132.0
8	004-07-03-03	water	070303	0.052	11.4	na	2.20	7.30	4.40
9	CTPXX-07-03-03	water	070303	0.356	0.840	na	0.061	na	na
10	006-07-04-03	water	070403	<0.050	0.171	22.2	<0.010	7.40	<0.20
11	006-07-05-03	water	070503	<0.050	0.145	22.5	<0.010	7.40	<0.20
12	006-07-06-03	water	070603	<0.050	0.140	22.5	<0.010	7.40	0.60
13	006-07-07-03	water	070703	<0.050	0.111	21.3	<0.010	7.50	0.80
14	KT-07-07-03	water	070703	0.650	80.2	152.0	0.108	3.10	136.0
15	006-07-08-03	water	070803	<0.050	0.116	23.4	<0.010	7.50	0.60
16	006-07-09-03	water	070903	<0.050	0.130	21.1	<0.010	7.50	<0.20
17	006-07-10-03	water	071003	<0.050	0.128	16.7	<0.010	7.50	1.80
18	KT-07-10-03	water	071003	0.762	132.0	46.4	0.210	2.90	111.0
19	004-07-10-03	water	071003	<0.050	19.3	na	3.18	6.90	0.80
20	CTPXX-07-10-03	water	071003	0.348	0.853	na	0.059	na	na
21	QC-07-10-03	water	071003	0.796	125.0	45.2	0.210	2.90	113.0
22	006-07-11-03	water	071103	<0.050	0.149	11.5	<0.010	7.60	0.80
	006-07-04-03	duplicate	070403	<0.050	0.161	23.3	<0.010		
	006-07-04-03	spike	070403	97.0%	101%	92.0%	97.2%		
	006-07-08-03	duplicate	070803	<0.050	0.119	23.9	<0.010		
	006-07-08-03	spike	070803	93.6%	99.8%	96.0%	97.2%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 072103

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-07-12-03	water	071203	<0.050	0.121	11.3	<0.010	7.20	1.00
2	006-07-13-03	water	071303	<0.050	0.110	12.5	<0.010	7.30	1.20
3	006-07-14-03	water	071403	<0.050	0.109	15.3	<0.010	7.40	1.40
4	KT-07-14-03	water	071403	0.722	67.0	141.0	0.106	3.10	117.0
5	006-07-15-03	water	071503	<0.050	0.117	19.0	<0.010	7.40	1.00
6	006-07-16-03	water	071603	<0.050	0.131	23.1	<0.010	7.10	0.80
7	006-07-17-03	water	071703	<0.050	0.123	21.8	<0.010	7.00	1.20
8	KT-07-17-03	water	071703	0.794	67.6	147.0	0.100	3.20	109.0
9	004-07-17-03	water	071703	<0.050	9.66	na	1.85	7.20	3.20
10	CTPXX-07-17-03	water	071703	0.363	0.759	na	0.056	na	na
11	006-07-18-03	water	071803	<0.050	0.115	20.7	<0.010	7.20	0.60
	006-07-14-03	duplicate	071403	<0.050	0.116	15.6	<0.010		
	006-07-14-03	spike	071403	85.4%	88.1%	80.0%	81.2%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 080103

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-07-19-03	water	071903	<0.050	0.119	18.2	<0.010	7.10	0.60
2	006-07-20-03	water	072003	<0.050	0.136	19.9	<0.010	7.30	1.00
3	006-07-21-03	water	072103	<0.050	0.152	20.6	<0.010	7.30	1.20
4	KT-07-21-03	water	072103	0.592	80.6	158.0	0.122	3.10	131.0
5	006-07-22-03	water	072203	<0.050	0.173	20.7	<0.010	7.00	1.20
6	006-07-23-03	water	072303	<0.050	0.167	21.1	<0.010	7.10	2.00
7	QC-07-23-03	water	072303	<0.050	0.166	24.9	<0.010	7.10	1.40
8	RB-07-23-03	water	072303	<0.050	<0.020	<0.020	<0.010	na	na
9	TB-07-23-03	water	072303	<0.050	<0.020	<0.020	<0.010	na	na
10	006-07-24-03	water	072403	<0.050	0.123	21.3	<0.010	7.00	1.00
11	KT-07-24-03	water	072403	0.796	78.2	153.0	0.126	3.10	146.0
12	004-07-24-03	water	072403	<0.050	13.4	na	2.46	7.20	5.00
13	CTPXX-07-24-03	water	072403	0.376	0.745	na	0.059	na	na
14	QC-07-24-03	water	072403	<0.050	12.8	na	2.56	7.20	5.20
15	006-07-25-03	water	072503	<0.050	0.126	21.3	<0.010	7.10	0.20
16	006-07-26-03	water	072603	<0.050	0.137	24.0	<0.010	7.10	0.60
17	006-07-27-03	water	072703	<0.050	0.132	34.0	<0.010	7.20	1.00
18	006-07-28-03	water	072803	<0.050	0.251	35.6	<0.010	7.30	3.60
19	KT-07-28-03	water	072803	0.586	69.4	152.0	0.090	3.10	116.0
20	006-07-29-03	water	072903	<0.050	0.186	38.9	<0.010	7.30	2.20
21	006-07-30-03	water	073003	<0.050	0.098	31.3	<0.010	7.00	0.60
22	006-07-31-03	water	073103	<0.050	0.202	19.2	<0.010	7.20	1.80
23	KT-07-31-03	water	073103	0.484	68.4	158.0	0.086	3.20	101.0
24	004-07-31-03	water	073103	<0.050	10.0	na	2.00	7.00	4.00
25	CTPXX-07-31-03	water	073103	0.384	0.794	na	0.062	na	na
	006-07-19-03	duplicate	071903	<0.050	0.109	21.3	<0.010		
	006-07-19-03	spike	071903	95.8%	103%	128%	102%		
	006-07-26-03	duplicate	072603	<0.050	0.131	23.3	<0.010		
	006-07-26-03	spike	072603	84.0%	94.2%	84.0%	87.6%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month:	August-03		
Facility:	Central Treatment Plant		
Location:	Bunker Hill Superfund Site		
Total Flow For The Month From 006:		56,906,000	gallons
Total Flow From Kellogg Tunnel:		62,074,750	gallons
Percent of Influent Successfully Treated:			100.0%

29 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 174 potential exceedances
174 - 0 exceedances = 174 174/174 = 100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with five PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the '004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

08/01-08/10 Data validation will be performed as a CTP shutdown is scheduled for September second.
08-06-03 Inspected the #2 pump impeller while changing the wear plate. The impeller is in worn condition but is expected to operate for an estimated time of one year before replacement may be needed.
08-06-03 Removed the worn wear plate from the #2 recycle pump. Replaced it with a used (spare) wear plate. This replacement wear plate was saved from the rebuild of #1 pump.
08-07-03 Repaired a broken water main supplying water to the CTP.
08-11-13 to 08-19-03 Performed daily shutdowns of the CTP to allow Apollo working area for the ice baffle installation.
08-19-03 Apollo completed the ice baffle installation, launder spreader bar installation, and prep work for the weir mounting.
08-14-03 Resized the Rapid Mix Tank effluent box to reduce the water level in the tank.
08-14-03 Installed pipe extensions on the Rapid Mix 8" and 10" influent pipes.
08-18-03 Prepared work plan and activity hazard analysis for T.O. 0007 W.A.D. 003.
08-19-03 Installed the Rapid Mix Tank platforms.
08-19-03 Started to clean out the Floc Basin as directed by USACE. T.O. 0007 W.A.D. 003
08-19-03 Continued removing sediment from the floc basin until 8pm. Approximately 30% of the sediment was removed.
08-20-03 Continued removing sediment from the floc basin until 5pm. Approximately 50% of sediment removed.
08-21-03 Continued removing sediment from the floc basin. Approximately 85% of sediment was removed.
08-21-03 Completed the Rapid Mix Tank upgrades with Mine Fabrication.
08-25-03 Continued removing sediment from the floc basin. 6am-4:30pm.
08-26-03 Prep work for Clarifier Shutdown, set up pumps and hoses, clean launder and set up decontaminating stations.

Lessons Learned

1) The existing water supply line to the CTP control room is a very old PVC pipe that is slowly separating at the glued joints.
2) The sediment in the Floc Basin becomes very dense if not pumped out on a regular basis.

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2003	8	1	2003	8	31
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	Quantity or Loading (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	Quality or Concentration (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				7.0		7.7			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.91	2.69	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.80	1.12	Lbs/Day		0.05	0.05	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	2.03	4.44	Lbs/Day		0.16	0.88	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.151	0.22	Lbs/Day		0.010	0.010	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	218.5	514	Lbs/Day		14.07	31.60	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	15.7	75	Lbs/Day		1.1	4	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY:__ Gary Fulton

REVIEWED BY:__ Don Ferguson

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: Aug-03

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.050	0.701	0.221	3.098	0.010	0.140	13.6	190.7	7.10	1.7	1.2	16.824	7.63
2	0.050	0.814	0.176	2.864	0.010	0.163	31.6	514.2	7.40	2.0	1.2	19.527	8.86
3	0.050	0.809	0.209	3.384	0.010	0.162	11.9	192.7	7.40	1.9	3.8	61.519	27.9
4	0.050	0.801	0.238	3.813	0.010	0.160	14.1	225.9	7.40	1.9	1.2	19.227	8.72
5	0.050	0.542	0.212	2.296	0.010	0.108	14.3	154.9	7.40	1.3	1.4	15.165	6.88
6	0.050	0.656	0.167	2.191	0.010	0.131	13.7	179.7	7.40	1.6	1.2	15.742	7.14
7	0.050	0.628	0.237	2.979	0.010	0.126	18.4	231.2	7.40	1.5	3.8	47.757	21.7
8	0.050	0.415	0.199	1.651	0.010	0.083	21.2	175.9	7.30	1.0	0.8	6.636	3.01
9	0.050	0.951	0.105	1.997	0.010	0.190	20.8	395.6	7.50	2.3	0.2	3.804	1.73
10	0.050	0.784	0.090	1.412	0.010	0.157	17.0	266.7	7.40	1.9	0.6	9.413	4.27
11	0.050	1.010	0.103	2.080	0.010	0.202	16.7	337.3	7.00	2.4	0.6	12.117	5.50
12	0.050	0.113	0.879	1.981	0.010	0.023	16.8	37.85	7.00	0.3	3.0	6.759	3.07
13		0.000		0.000		0.000		0.000				0.000	0.00
14	0.050	0.743	0.100	1.485	0.010	0.149	12.5	185.68	7.30	1.8	0.1	1.485	0.67
15	0.050	0.960	0.107	2.054	0.010	0.192	14.9	286.0	7.70	2.3	0.2	3.839	1.74
16	0.050	1.081	0.075	1.621	0.010	0.216	12.8	276.7	7.10	2.6	0.2	4.323	1.96
17	0.050	1.122	0.074	1.661	0.010	0.224	10.0	224.5	7.20	2.7	0.2	4.490	2.04
18	0.050	0.964	0.055	1.060	0.010	0.193	8.23	158.6	7.30	2.3	0.2	3.855	1.75
19	0.050	0.643	0.194	0.024	0.010	0.129	11.1	142.6	7.00	1.5	0.8	10.28	4.66
20		0.000		0.000		0.000		0.000				0.000	0.00
21	0.050	0.830	0.225	3.736	0.010	0.166	16.8	279.0	7.20	2.0	1.6	26.57	12.1
22	0.050	0.529	0.118	1.248	0.010	0.106	16.3	172.3	7.10	1.3	0.2	2.115	0.96
23	0.050	0.966	0.067	1.294	0.010	0.193	14.9	287.7	7.20	2.3	0.6	11.59	5.3
24	0.050	1.000	0.054	1.080	0.010	0.011	11.1	221.9	7.40	2.4	0.4	7.998	3.63
25	0.050	0.993	0.061	1.212	0.010	0.199	8.38	166.4	7.50	2.4	0.2	3.972	1.80
26	0.050	0.830	0.061	1.013	0.010	0.166	8.62	143.1	7.50	2.0	0.4	6.643	3.01
27	0.050	0.850	0.261	4.437	0.010	0.170	9.03	153.5	7.00	2.0	4.4	74.79	33.9
28	0.050	0.867	0.243	4.216	0.010	0.173	9.72	168.6	7.30	2.1	1.8	31.23	14.2
29	0.050	0.852	0.062	1.056	0.010	0.170	11.6	197.6	7.50	2.0	0.2	3.406	1.55
30	0.050	0.835	0.054	0.901	0.010	0.167	10.6	176.9	7.60	2.0	0.6	10.01	4.54
31	0.050	0.843	0.066	1.113	0.010	0.100	11.4	192.2	7.50	2.0	0.8	13.49	6.12
TOTAL	1.450	23.13	4.713	58.96	0.290	4.368	408.080	6,336	212.10	55.43	31.90	454.58	206
Sample Events	29	29	29	29	29	29	29	29	29	29	29	29	29
Daily Average	0.050	0.798	0.163	2.033	0.010	0.151	14.072	218.483	7.31	1.91	1.10	15.68	7.1

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: Aug-03
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						1.7		
2						2.0		
3						1.9		
4	0.746	70.2	0.106	154	3.50	1.9	120	872
5						1.3		
6						1.6		
7	0.548	67.2	0.110	162	3.20	1.5	123	701
8						1.0		
9						2.3		
10						1.9		
11	0.538	73.6	0.090	153	3.20	2.4	113	1035
12						0.3		
13						0.0		
14	0.468	66.8	0.080	150	3.30	1.8	99	667
15						2.3		
16						2.6		
17						2.7		
18	0.424	66.40	0.090	147	3.40	2.3	93	813
19						1.5		
20						0.0		
21	0.646	62.00	0.094	144	3.40	2.0	101	761
22						1.3		
23						2.3		
24						2.4		
25	0.650	63.00	0.092	146	3.30	2.4	91	820
26						2.0		
27						2.0		
28	0.530	56.00	0.092	139	3.40	2.1	84	661
29						2.0		
30						2.0		
31						2.0		

004/SWEENY **Month: Aug-03**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
08/07/03	0.05	16.9	3.35	6.80	1.8
08/14/03	0.07	10.4	2.19	7.20	3.6
08/21/03	0.05	9.8	2.41	7.10	3.4
08/28/03	0.08	9.6	2.44	7.00	5.0

RINSATE AND TRIP BLANKS **Month: Aug-03**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
004 Sweeny	08/07/03	**RB-08-07-03**	<0.05	<0.02	<0.01	<0.02
Trip Blank (D.I.water)	08/07/03	**TB-08-07-03**	<0.05	<0.02	<0.01	<0.02

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: Aug-03

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Kellogg Tunnel	08/04/03	Lead	0.746	0.628	mg/L			-17.2%		
		Zinc	70.20	71.00	mg/L			-1.1%		
QC Sample		Cadmium	0.106	0.108	mg/L			-1.9%		
		Manganese	154.0	157.0	mg/L			-1.9%		
		pH	3.50	3.40	units			2.9%		
		TSS	120.0	121.0	mg/L			-0.8%		
006/CTP Outfall	08/06/03	Lead	0.050	0.050	mg/L	90%		0.0%		
MS/MSD		Zinc	0.167	0.172	mg/L	96%		-2.9%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	76%		0.0%		
		Manganese	13.70	13.90	mg/L	97%		-1.4%		
		pH	7.40		units					
		TSS	1.200		mg/L					
006/CTP Outfall	08/06/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.17	0.17	mg/L			-3.5%		
QC Sample		Cadmium	0.01	0.01	mg/L			0.0%		
		Manganese	13.70	13.80	mg/L			-0.7%		
		pH	7.40	7.40	units			0.0%		Results are below specified
		TSS	1.20	0.80	mg/L			40.0%		detection limits.
004 Sweeny	08/07/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	16.90	16.70	mg/L			1.2%		
QC Sample		Cadmium	3.35	3.32	mg/L			0.9%		
		Manganese	na	na	mg/L					
		pH	6.80	6.80	units			0.0%		
		TSS	1.80	1.60	mg/L			11.8%		
Performance	08/07/03	Lead	0.420	0.400	mg/L			4.9%		
Evaluation		Zinc	0.782	0.800	mg/L			-2.3%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-08-07-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	08/08/03	Lead	0.050	0.050	mg/L	95%		0.0%		
MS/MSD		Zinc	0.199	0.204	mg/L	92%		-2.5%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	98%		0.0%		
		Manganese	21.20	21.00	mg/L	96%		0.9%		
		pH	7.30		units					
		TSS	0.800		mg/L					
006/CTP Outfall	08/12/03	Lead	0.050	0.050	mg/L	99%		0.0%		
MS/MSD		Zinc	0.879	0.831	mg/L	101%		5.6%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	96%		0.0%		
		Manganese	16.80	17.10	mg/L	92%		-1.8%		
		pH	7.00		units					
		TSS	3.000		mg/L					
Performance	08/14/03	Lead	0.409	0.400	mg/L			2.2%		
Evaluation		Zinc	0.844	0.800	mg/L			5.4%		
Sample		Cadmium	0.060	0.060	mg/L			0.0%		
(CTPXX-08-14-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
Performance	08/21/03	Lead	0.441	0.400	mg/L			-9.8%		
Evaluation		Zinc	0.845	0.800	mg/L			5.5%		
Sample		Cadmium	0.064	0.060	mg/L			6.5%		
(CTPXX-08-21-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	08/25/03	Lead	0.050	0.050	mg/L	102%		0.0%		
MS/MSD		Zinc	0.061	0.057	mg/L	96%		6.8%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	115%		0.0%		
		Manganese	8.38	7.98	mg/L	89%		4.9%		
		pH	7.50		units					
		TSS	0.200		mg/L					
006/CTP Outfall	08/26/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.061	0.064	mg/L			-4.8%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	8.6	8.5	mg/L			1.2%		
		pH	7.5	7.5	units			0.0%		Results are below specified
		TSS	0.4	0.2	mg/L			66.7%		detection limits.
Performance	08/28/03	Lead	0.362	0.400	mg/L			-10.0%		
Evaluation		Zinc	0.826	0.800	mg/L			3.2%		
Sample		Cadmium	0.064	0.060	mg/L			6.5%		
(CTPXX-08-28-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
August, 2003 Completeness		Lead	12	Valid		12	Total	100.0%		
		Zinc	12	Valid		12	Total	100.0%		
		Cadmium	12	Valid		12	Total	100.0%		
		Manganese	7	Valid		7	Total	100.0%		
		pH	8	Valid		8	Total	100.0%		
		TSS	8	Valid		8	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **Aug-03**

KELLOGG TUNNEL FLOW
KT METER

Day	mgd	Ft/Flume
08/04/03	2.25	0.91
08/07/03	2.23	0.91
08/11/03	1.22	0.61
08/14/03	2.21	0.90
08/18/03	2.18	0.90
08/21/03	2.19	0.90
08/25/03	2.03	0.85
08/28/03	2.23	0.90

Day	**KT Flow Meter Reading**
07/31/03	0
08/31/03	62,074,750
KT Total for month	62,074,750

K.T. flow meter was reset to 0.0 on July 31st.

Day	**006 Flow Meter Reading**
07/31/03	0
08/30/03	56,906,000
006 Total for month	56,906,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
07/31/03	0.8	Hours	589.6	Hours
08/31/03	0.8	Hours	593.3	Hours
Total Hours	0.0	Hours	4	Hours
Total Flow for 004/Sweeny For The Month =			111,000.00	Gallons

004/Sweeny Discharge Pipe Flow

Date	Flow (GPM)
28-Aug	3.9

Day	**Lined Pond Water Level**			
07/30/03	500,000	gal	Elev. =	2269.0
08/31/03	500,000	gal	Elev. =	2269.0
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FERGUSON CONTRACTING, INC.

Central Treatment Plant

Daily log August, 2003

			INFLUENT (KT)		AERATION BASIN			CLARIFIER			DISCHARGE 006			RECYCLE		SLUDGE PUMP		POND PUMP	
DATE	TIME	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TEMP	pH4	GRAB	FLOW	SpG	FLOW	ON	OFF	ON	OFF
8/1	5:30	GN			8.0	8.2	8.3	8.0	8.1	68	7.7	7.7	1.68	1.031	1000gpm				
8/2	6:00	GN			8.0	8.3	8.4	8.1	8.2	67	7.7	7.8	1.95	1.052	1000gpm				
8/3	5:50	DY			8.0	8.0		7.8	7.9	67	7.7	7.6	1.93	1.061	1000gpm				
8/4	4:40	GF,DY	13.26	3.2	8.0	8.1		7.8	7.8	66	7.7	7.5	1.92	1.066	1000gpm	see log			
8/5	4:45	GF,GN,DY			8.0	8.0		7.9	7.9	65	7.7	7.5	1.29	1.046	1000gpm	#1-4:50	9:30	#1-16:00	3:00
8/6	3:00	GF,GN,DY			8.0	8.2		8	8.0	67	7.8	7.6	1.57	1.021	1000gpm	#1-3:00	9:00	#1-14;00	3:00
8/7	3:00	GF,GN,DY	1354	3.2	8.0	8.5		8.1	7.9	67	7.8	7.6	1.50	1.047	1000gpm	#1-3:00	8:30		
8/8	5:30	GF,GN			8.0	8.4	8.3	8.1	8.0	67	7.6	7.6	0.994	1.027	750gpm			#1-8:30	13:00
8/9	5:55	GN			8.0	8.3		8	8.0	67	7.6	7.5	2.27	1.046	750gpm				
8/10	6:00	DY			8.0	8.2		8	7.9	67	7.6	7.5	1.88	1.042	750gpm			#1-6:30	12:30
8/11	2:45	GF,DY	1319	3.2	8.0	8.1		8	7.9	66	7.7	7.5	2.41	1.06	750gpm	#1-3:00	8:30		
8/12	2:50	GF,GN,DY			8.0	8.2		7.9	7.8	65	7.3	7.2	2.15	1.01	750gpm	see log		#1-6:30	12:00
8/13	5:00	GF,GN,DY			8.0	8.0		8.1	8.4	66	n/a	n/a	n/a	1	750gpm	#1-5:00	6:00	see log	
8/14	3:00	GF,GN,DY	1562	3.4	8.0	8.6		8.5	8.5	67	8.0	8.0	1.78	1.012	750gpm	#1-3:00			
8/15	6:00	GF,GN			8.0	8.7	8.6	8.3	8.3	67	8.1	8.0	2.30	1.024	750gpm	None			
8/16	5:50	GN			8.0	8.4		8.2	8.2	67	8.0	7.9	2.59	1.032	750gpm	#1 6:30	7:00	#1 6:45	14:00
8/17	6:00	DY			8.0	8.6		8.3	8.1	66	7.9	7.8	2.69	1.037	750gpm			#1-7:00	12:30
8/18	3:00	GF,DY	1298	3.6	8.0	8.6		8	7.9	66	7.8	7.7	2.31	1.051	750gpm	#1-3:00	7:00		
8/19	2:50	GF,GN,DY			8.0	7.8		7.9	8.0	66	7.9	7.7	1.54	1.039	750gpm	#1-3:00	6:00	see log	
8/20	6:00	GF,GN,DY			8.0	n/a		n/a	n/a	66	n/a	n/a	n/a	n/a	750gpm			see log	
8/21	5:00	GF,GN,DY	1416	2.8	8.0	8.8		7.7	7.8	67	7.5	7.7	1.78	1.032	750gpm	see log		see log	
8/22	5:45	GF,GN			8.0	8.0		8.3	8.1	67	7.8	7.5	2.36	1.024	750gpm	None		see log	
8/23	6:00	GN			8.0	8.3	8.4	8.3	8.2	67	7.5	7.5	3.10	1.027	750gpm	#1 6:30	7:00		
8/24	5:15	DY			8.0	8.5		8.3	8.2	66	7.6	7.6	1.67	1.025	750gpm	None			
8/25	5:30	GF	1305	3.4	8.0	8.7	8.6	8.1	8.0	67	7.5	7.5	1.81	1.031	750gpm	None		18:00	
8/26	6:00	GF,GN,DY			8.0	7.9		8.2	7.9	66	7.7	7.6	1.62	1.013	750gpm	None			
8/27	6:00	GF,GN,DY			8.0	8.8		8	8.3	66	7.7	7.7	1.78	1.021	750gpm	None		#1-8:15	10:15
8/28	5:45	GF,GN,DY	1437	3.3	8.0	8.0		8.2	8.2	67	7.6	7.7	1.85	1.037	750gpm	None		#1-8:00	13:45
8/29	5:50	GF,GN			8.0	8.3	8.4	8.2	8.2	66	7.7	7.7	2.2	1.035	750gpm	#1 30 min		#1 12:55	14:00
8/30	5:50	GN			8.0	8.5		8.3	8.3	66	7.7	7.6	1.76	1.025	750gpm	#1 30 min		#2 6:30	9:30 AM
8/31	7:00	DY			8.0	8.5		7.9	8.1	66	7.7	7.6	2.21	1.024	750gpm	None			

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 08-06-03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.95 MGD, Staff Gauge reading 0.88 ft/flume.

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 08/13/03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in goo
condition at this time.

The Kellogg Tunnel flume flow is 2.35MGD, Staff Gauge reading 0.938ft/flume 1632 GPM

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 08-20-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.18 MGD, Staff Gauge reading 0.90 ft/flume.1514 GPM

Removed a small amount of debris from both trash racks.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 08-27-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.18 MGD, Staff Gauge reading 0.90 ft/flume.1514 GPM

Removed a small amount of debris from both trash racks.

AMERICAN ANALYTICAL SERVICES

BHCTP: 081303a

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	type	samp date	Pb	Zn	Mn	Cd	run date	time	type
1	006-08-01-03	water	080103	<0.050	0.221	13.6	<0.010	081203	11:41	total
2	006-08-02-03	water	080203	<0.050	0.176	11.0	<0.010	081203	11:44	total
3	006-08-03-03	water	080303	<0.050	0.209	11.9	<0.010	081203	11:48	total
4	006-08-04-03	water	080403	<0.050	0.238	14.1	<0.010	081203	11:52	total
5	QC-08-04-03	water	080403	0.628	71.0	157.0	0.108	081203	13:01	total
6	KT-08-04-03	water	080403	0.746	70.2	154.0	0.106	081203	13:18	total
7	006-08-05-03	water	080503	<0.050	0.212	14.3	<0.010	081203	12:03	total
8	006-08-06-03	water	080603	<0.050	0.167	13.7	<0.010	081203	12:07	total
9	006-08-07-03	water	080703	<0.050	0.237	18.4	<0.010	081203	12:10	total
10	KT-08-07-03	water	080703	0.548	67.2	162.0	0.110	081203	13:26	total
11	004-08-07-03	water	080703	<0.050	16.9	na	3.35	081203	12:57	total
12	QC-08-07-03	water	080703	<0.050	16.7	na	3.32	081203	12:53	total
13	RB-08-07-03	water	080703	<0.050	<0.020	<0.020	<0.010	081203	11:33	total
14	TB-08-07-03	water	080703	<0.050	<0.020	<0.020	<0.010	081203	11:30	total
15	CTPXX-08-07-03	water	080703	0.420	0.782	na	0.062	081203	11:37	total
16	006-08-08-03	water	080803	<0.050	0.199	21.2	<0.010	081203	12:14	total
17	006-08-09-03	water	080903	<0.050	0.105	20.8	<0.010	081203	12:18	total
18	006-08-10-03	water	081003	<0.050	0.090	17.0	<0.010	081203	12:22	total
19	QC-08-06-03	water	080603	<0.050	0.173	13.8	<0.010	081203	12:49	total
	006-08-06-03	duplicate	080603	<0.050	0.172	13.9	<0.010	081203	12:26	total
	006-08-06-03	spike	080603	90.0%	96.0%	76.0%	97.2%	081203	12:37	total
	006-08-08-03	duplicate	080803	<0.050	0.204	21.0	<0.010	081203	12:41	total
	006-08-08-03	spike	080803	94.6%	92.3%	96.0%	98.0%	081203	12:45	total
	LCS	q.c.		0.116	1.10	2.29	0.711	081203	13:42	
	RGB	q.c.		<0.050	<0.020	<0.020	<0.010	081203	12:36	
	ICV	q.c.		99.8%	99.6%	100%	99.6%	081203	11:22	
	ICB	q.c.		<0.050	<0.020	<0.020	<0.010	081203	11:26	
	CCV 1	q.c.		101%	97.4%	102%	100%	081203	11:55	
	CCB 1	q.c.		<0.050	<0.020	<0.020	<0.010	081203	11:59	
	CCV 2	q.c.		102%	95.6%	98.4%	102%	081203	12:30	
	CCB 2	q.c.		<0.050	<0.020	<0.020	<0.010	081203	12:34	
	CCV 3	q.c.		102%	100%	103%	102%	081203	13:09	
	CCB 3	q.c.		<0.050	<0.020	<0.020	<0.010	081203	13:13	
	CCV 4	q.c.		102%	102%	103%	104%	081203	13:46	
	CCB 4	q.c.		<0.050	<0.020	<0.020	<0.010	081203	13:50	
	LCS	Reported	Value	0.116	1.10	2.29	0.711			
	WP 36153	Known	Value	0.127	1.10	2.43	0.738			
	RPD 1			na	2.95%	0.27%	na			
	RPD 2			na	2.48%	0.95%	na			
			Method	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**			
	QAL			<0.300	<0.150	<0.150	<0.025			

AMERICAN ANALYTICAL SERVICES

BHCTP: 081303b

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	type	samp date	pH	TSS	run date	time	type
1	006-08-01-03	water	080103	7.10	1.20	080703	11:05	total
2	006-08-02-03	water	080203	7.40	1.20	080703	11:15	total
3	006-08-03-03	water	080303	7.40	3.80	080703	11:25	total
4	006-08-04-03	water	080403	7.40	1.20	080703	11:35	total
5	QC-08-04-03	water	080403	3.40	121.0	080703	11:55	total
6	KT-08-04-03	water	080403	3.50	120.0	080703	12:05	total
7	006-08-05-03	water	080503	7.40	1.40	080703	11:45	total
8	006-08-06-03	water	080603	7.40	1.20	081103	11:00	total
9	006-08-07-03	water	080703	7.40	3.80	081103	11:10	total
10	KT-08-07-03	water	080703	3.20	123.0	081103	12:20	total
11	004-08-07-03	water	080703	6.80	1.80	081103	11:50	total
12	QC-08-07-03	water	080703	6.80	1.60	081103	12:10	total
13	006-08-08-03	water	080803	7.30	0.80	081103	11:20	total
14	006-08-09-03	water	080903	7.50	0.20	081103	11:30	total
15	006-08-10-03	water	081003	7.40	0.60	081103	11:40	total
16	QC-08-06-03	water	080603	7.40	0.80	081103	12:00	total
	QC-08-04-03	duplicate	080403	3.40	129.0	080703	12:15	total
	KT-08-07-03	duplicate	080703	3.20	120.0	081103	12:50	total
	TSS Blank	q.c.		na	<0.20	080703	12:25	
	TSS Blank	q.c.		na	<0.20	081103	12:30	
	TSS LCS	q.c.		na	43.5	080703	12:35	
	TSS LCS	q.c.		na	50.5	081103	12:40	
	LCS Known Value	q.c.		na	59.3			
	pH control	q.c.		7.33	na	080703	12:45	
	pH control	q.c.		7.34	na	081103	12:50	
	pH Known Value	q.c.		7.44	na			
			Method	**4500B**	**2540D**			
	QAL			<0.1pH	<15.0mg/L			

AMERICAN ANALYTICAL SERVICES

BHCTP: 081803

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-08-11-03	water	081103	<0.050	0.103	16.7	<0.010	7.00	0.60
2	KT-08-11-03	water	081103	0.538	73.6	153.0	0.090	3.20	113.0
3	006-08-12-03	water	081203	<0.050	0.879	16.8	<0.010	7.00	3.00
4	006-08-14-03	water	081403	<0.050	0.177	11.7	<0.010	7.60	1.00
5	KT-08-14-03	water	081403	0.468	66.8	150.0	0.080	3.30	99.0
6	004-08-14-03	water	081403	0.065	10.4	na	2.19	7.20	3.60
7	CTPXX-08-14-03	water	081403	0.409	0.844	na	0.060	na	na
8	006-08-15-03	water	081503	<0.050	0.107	14.9	<0.010	7.70	0.20
9	006-08-16-03	water	081603	<0.050	0.075	12.8	<0.010	7.10	<0.20
10	006-08-17-03	water	081703	<0.050	0.074	10.0	<0.010	7.20	<0.20
11	006-08-18-03	water	081803	<0.050	0.055	8.23	<0.010	7.30	<0.20
12	KT-08-18-03	water	081803	0.424	66.4	147.0	0.090	3.40	93.0
	006-08-12-03	duplicate	081203	<0.050	0.831	17.1	<0.010		
	006-08-12-03	spike	081203	99.2%	101%	92.0%	96.0%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 090403

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-08-19-03	water	081903	<0.050	0.194	11.1	<0.010	7.00	0.80
2	006-08-21-03	water	082103	<0.050	0.225	16.8	<0.010	7.20	1.60
3	KT-08-21-03	water	082103	0.646	62.0	144.0	0.094	3.40	101.0
4	004-08-21-03	water	082103	<0.050	9.82	na	2.41	7.10	3.40
5	CTPXX-08-21-03	water	082103	0.441	0.845	na	0.064	na	na
6	006-08-22-03	water	082203	<0.050	0.118	16.3	<0.010	7.10	0.20
7	006-08-23-03	water	082303	<0.050	0.067	14.9	<0.010	7.20	0.60
8	006-08-24-03	water	082403	<0.050	0.054	11.1	<0.010	7.40	0.40
9	006-08-25-03	water	082503	<0.050	0.061	8.38	<0.010	7.50	<0.20
10	KT-08-25-03	water	082503	0.650	63.0	146.0	0.092	3.30	91.0
11	006-08-26-03	water	082603	<0.050	0.061	8.62	<0.010	7.50	0.40
12	QC-08-26-03	water	082603	<0.050	0.064	8.52	<0.010	7.50	<0.20
13	006-08-27-03	water	082703	<0.050	0.261	9.03	<0.010	7.00	4.40
14	006-08-28-03	water	082803	<0.050	0.243	9.72	<0.010	7.30	1.80
15	KT-08-28-03	water	082803	0.530	56.2	139.0	0.092	3.40	84.0
16	004-08-28-03	water	082803	0.075	9.55	na	2.44	7.00	5.00
17	CTPXX-08-28-03	water	082803	0.362	0.826	na	0.064	na	na
18	006-08-29-03	water	082903	<0.050	0.062	11.6	<0.010	7.50	<0.20
19	006-08-30-03	water	083003	<0.050	0.054	10.6	<0.010	7.60	0.60
20	006-08-31-03	water	083103	<0.050	0.066	11.4	<0.010	7.50	0.80
	006-08-25-03	duplicate	082503	<0.050	0.057	7.98	<0.010		
	006-08-25-03	spike	082503	102%	95.9%	88.8%	115%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month: September-03

Facility: Central Treatment Plant

Location: Bunker Hill Superfund Site

Total Flow For The Month From 006: 32,460,000 gallons

Total Flow From Kellogg Tunnel: 43,789,000 gallons

Percent of Influent Successfully Treated: 100.0%

16 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 96 potential exceedances
96 - 0 exceedances = 96 96/96 = 100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with five PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the '004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

09-02-03 The CTP is in shutdown mode for upgrades and repairs. The mine discharge water is at very low flow and being diverted into the Lined Pond for storage.
09-02-03 to 09-15-03 The Kellogg Tunnel flow was diverted to the Lined Pond.
09-02-03 to 09-15-03 Performed CTP upgrades as described in T.O. 0008.
09-15-03 The Bunker Hill mine owner turned the mine pumps on at 10:30 a.m.
09-15-03 A Clarifier sample was taken to A.A.S. for metals analysis, with the results showing zinc levels too high to be discharged into Bunker Creek. Zinc - 4.10mg/L. Clarifier water will be recycled through the CTP prior to discharge.
09-15-03 The Godwin pumps are being used to recycle the Clarifier into the Aeration Basin for retreatment.
09-16-03 A Clarifier sample was taken to A.A.S. for metals analysis, with the results showing zinc levels within NPDS permit limits to be discharged into Bunker Creek. Zinc - 0.861mg/L.
09-16-03 The Godwin pumps are now being used to discharge Clarifier water into the Polishing Pond.
09-17-03 1.6 million gallons of treated water was discharged into Bunker Creek through the night. A composite sample was taken at 6 a.m. this morning. This sample was taken to A.A.S. for analysis, with the results showing zinc levels within NPDS permit limits. Zinc levels are 0.260 mg/L.
09-19-03 Performed a depth verification of the Clarifier center column water, the water level at this time is 21' 9" down from the center column cover plate. This was done in conjunction with W.A.D. 004 study. The groundwater elevation is 2260.4'.
09-19-03 The CIA sludge pond staff gauge reading is 2.65 ft at this time.
09-29-03 Performed a Clarifier center column groundwater elevation check. The groundwater elevation at this time is 2260.2'.
09-29-03 Performed sludge depth readings in the Clarifier. At 11' from the center well, the sludge depth is 2". At 25' from the center well, the sludge depth is 7".
09-29-03 Removed the flocculent basin agitator from service, as the drive motor is near failure.
10-01-03 Quarterly pump and motor analysis was performed by Cash Balancing Services, with the results listed on the CTP daily QC report.
10-01-03 The floc basin drive motor was locked out of service today as it is no longer needed for Task Order 0008 work.

Notes 006 and Kellogg Tunnel flow discrepancy documentation.

During the CTP Clarifier shutdown period, an estimated 2.5 million gallons of Clarifier water was pumped up to the CIA sludge pond.
During the Clarifier startup, an estimated 4.5 million gallons of Kellogg Tunnel discharge was needed to fill the Clarifier.
During the Clarifier startup, an estimated 1 million gallons of treated water was needed to fill the Polishing Pond. The Polishing Pond was drained during the shutdown period to install the new Clarifier discharge pipe fittings. This estimated 1 million gallons of discharge water was pumped into Bunker Creek without being documented as 006 discharge water.
For one week during the Clarifier shutdown, an estimated 1 million gallons of groundwater was removed from the Clarifier and pumped to the CIA via the Flocculent Basin.

Lessons Learned

1) The #3 sludge pump located in the CTP Control Room will not pump sludge to the CIA if the sludge weight is over a specific gravity of 1.05, so the #1 sludge pump will now be used to discharge sludge.
2) Removing the floc basin agitator from service temporarily lowered the CTP recycle specific gravity from 1.05 to 1.01 as the recycled sludge began to settle in the floc basin.

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2003	9	1	2003	9	30
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	MAXIMUM	Quantity or Loading (54-61) UNITS	(4 Card Only) (38-45) MINIMUM	(46-53) AVERAGE	Quality or Concentration (54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				0.0		8.2			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	2.03	3.29	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.89	1.69	Lbs/Day		0.05	0.07	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	1.84	7.93	Lbs/Day		0.12	0.46	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.163	0.27	Lbs/Day		0.010	0.010	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	146.9	522	Lbs/Day		7.75	23.60	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	12.1	66	Lbs/Day		0.8	4	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY:__ Gary Fulton

REVIEWED BY:__ Don Ferguson

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: Sep-03

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.050	0.759	0.064	0.972	0.010	0.152	10.3	156.4	7.10	1.8	0.2	3.038	1.38
2	0.050	1.373	0.149	4.091	0.010	0.275	19.0	521.6	7.30	3.3	0.2	5.491	2.49
3	0.061	1.059	0.457	7.932	0.010	0.174	23.6	409.6	6.60	2.1	3.8	65.96	29.9
4		0.000		0.000		0.000		0.000				0.000	0.00
5		0.000		0.000		0.000		0.000				0.000	0.00
6		0.000		0.000		0.000		0.000				0.000	0.00
7		0.000		0.000		0.000		0.000				0.000	0.00
8		0.000		0.000		0.000		0.000				0.000	0.00
9		0.000		0.000		0.000		0.000				0.000	0.00
10		0.000		0.000		0.000		0.000				0.000	0.00
11		0.000		0.000		0.000		0.000				0.000	0.00
12		0.000		0.000		0.000		0.000				0.000	0.00
13		0.000		0.000		0.000		0.000				0.000	0.00
14		0.000		0.000		0.000		0.000				0.000	0.00
15		0.000		0.000		0.000		0.000				0.000	0.00
16		0.000		0.000		0.000		0.000				0.000	0.00
17	0.050	0.663	0.260	3.450	0.010	0.133	0.31	4.113	7.70	1.6	1.0	13.27	6.02
18	0.058	1.191	0.066	1.355	0.010	0.205	0.33	6.795	7.60	2.5	0.8	16.42	7.45
19	0.050	0.709	0.051	0.024	0.010	0.142	0.60	8.441	7.90	1.7	1.4	19.86	9.01
20	0.050	1.068	0.034	0.726	0.010	0.214	1.20	25.64	8.10	2.6	0.2	4.273	1.94
21	0.050	0.914	0.064	1.170	0.010	0.183	1.28	23.39	8.10	2.2	0.4	7.310	3.3
22	0.050	0.926	0.037	0.685	0.010	0.185	1.51	27.97	8.20	2.2	0.6	11.116	5.04
23	0.050	0.914	0.041	0.749	0.010	0.183	1.80	32.90	7.50	2.2	0.6	10.97	4.97
24	0.050	0.843	0.064	1.079	0.010	0.011	7.95	134.0	7.40	2.0	0.2	3.371	1.53
25	0.050	0.304	0.117	0.711	0.010	0.011	9.78	59.4	7.40	0.7	0.8	4.860	2.20
26		0.000		0.000		0.000		0.000				0.000	0.00
27	0.050	0.184	0.238	0.874	0.010	0.037	1.08	3.966	7.10	0.4	0.4	1.469	0.67
28	0.050	1.323	0.122	3.227	0.010	0.265	16.5	436.5	7.20	3.2	0.4	10.58	4.80
29	0.065	1.687	0.070	1.817	0.010	0.260	15.4	399.7	7.20	3.1	0.4	10.381	4.71
30	0.050	0.371	0.077	0.572	0.010	0.074	13.4	99.52	7.20	0.9	0.8	5.942	2.69
31		0.000		0.000		0.100		0.00				0.000	0.00
TOTAL	0.834	14.29	1.911	29.43	0.160	2.601	124.036	2,350	119.60	32.46	12.20	194.31	88
Sample Events	16	16	16	16	16	16	16	16	16	16	16	16	16
Daily Average	0.052	0.893	0.119	1.840	0.010	0.163	7.752	146.878	7.48	2.03	0.76	12.14	5.5

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: Sep-03
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1	0.466	60.2	0.094	134.0	3.40	1.8	87	599
2						3.3		
3						2.1		
4						0.0		
5						0.0		
6						0.0		
7						0.0		
8						0.0		
9						0.0		
10						0.0		
11						0.0		
12						0.0		
13						0.0		
14						0.0		
15						0.0		
16						0.0		
17						1.6		
18	0.860	60.80	0.084	151	3.40	2.5	126	1173
19						1.7		
20						2.6		
21						2.2		
22	0.618	54.00	0.078	143	3.80	2.2	84	706
23						2.2		
24						2.0		
25	0.680	56.80	0.080	148	3.60	0.7	78	215
26						0.0		
27						0.4		
28						3.2		
29	0.586	53.60	0.062	141	3.70	3.1	78	918
30						0.9		
31						0.0		

004/SWEENY **Month: Sep-03**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
09/04/03					
09/11/03					
09/18/03	0.20	11.4	2.74	7.00	9.4
09/25/03	0.15	10.7	2.60	6.80	6.4

RINSATE AND TRIP BLANKS **Month: Sep-03**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
004 Sweeny	09/25/03	**RB-09-25-03**	<0.05	<0.02	<0.01	<0.02
Trip Blank (D.I.water)	09/25/03	**TB-09-25-03**	<0.05	<0.02	<0.01	<0.02

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: Sep-03

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	09/18/03	Lead	0.391	0.400	mg/L			-2.3%		
Evaluation		Zinc	0.774	0.800	mg/L			-3.3%		
Sample		Cadmium	0.057	0.060	mg/L			-5.1%		
(CTPXX-09-18-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	09/23/03	Lead	0.050	0.050	mg/L	97%		0.0%		
MS/MSD		Zinc	0.041	0.036	mg/L	99%		13.0%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	95%		0.0%		
		Manganese	1.80	1.87	mg/L	108%		-3.8%		
		pH	7.50		units					
		TSS	0.600		mg/L					
Performance	09/25/03	Lead	0.369	0.400	mg/L			-8.1%		
Evaluation		Zinc	0.777	0.800	mg/L			-2.9%		
Sample		Cadmium	0.058	0.060	mg/L			-3.4%		
(CTPXX-09-25-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
004 Sweeny	09/25/03	Lead	0.152	0.112	mg/L			-30.3%		Not applicable to the
		Zinc	10.70	10.60	mg/L			0.9%		NPDES Permit.
QC Sample		Cadmium	2.60	2.57	mg/L			1.2%		
		Manganese	na	na	mg/L					
		pH	6.80	6.80	units			0.0%		
		TSS	6.40	5.80	mg/L			9.8%		
006/CTP Outfall	09/29/03	Lead	0.065	0.050	mg/L			26.1%		Results are below specified
		Zinc	0.070	0.083	mg/L			-17.0%		detection limits.
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	15.4	17.1	mg/L			-10.5%		
		pH	7.2	7.1	units			1.4%		Results are below specified
		TSS	0.4	0.2	mg/L			66.7%		detection limits.

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Kellogg Tunnel	09/29/03	Lead	0.586	0.638	mg/L			8.5%		
		Zinc	53.60	55.20	mg/L			-2.9%		
QC Sample		Cadmium	0.062	0.082	mg/L			-27.8%		Not applicable to the
		Manganese	141.0	140.0	mg/L			0.7%		NPDES Permit.
		pH	3.70	3.70	units			0.0%		
		TSS	78.0	83.0	mg/L			-6.2%		
September, 2003 Completeness		Lead	6	Valid		6	Total	100.0%		
		Zinc	6	Valid		6	Total	100.0%		
		Cadmium	6	Valid		6	Total	100.0%		
		Manganese	3	Valid		3	Total	100.0%		
		pH	4	Valid		4	Total	100.0%		
		TSS	4	Valid		4	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

Central Treatment Plant

Daily log September, 2003

			INFLUENT (KT)		AERATION BASIN			CLARIFIER			DISCHARGE 006			RECYCLE		SLUDGE PUMP		POND PUMP	
DATE	TIME	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TEMP	pH4	GRAB	FLOW	SpG	FLOW	ON	OFF	ON	OFF
9/1	6:00	GF,DY	1451	3.6	8.0	8.5	8.3	7.9	8.0	65	7.6	7.6	1.82	1.033	750gpm	#1-12:00		#2-11:00	14:00
9/2	5:30	GF,DY,GN			8.0	8.4	8.3	NA	NA	NA	7.5	7.5	3.29	1.021	750gpm	#1-6:00			
9/3	5:30	GF,DY,GN	645		8.0	NA	NA	NA	NA	NA	NA	NA	2.08	NA	750gpm	#1 continously			
9/4	5:35	GF,DY,GN			8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	#1 see log book		off	
9/5	5:40	GF, GN			8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	#1 see log book			
9/6	5:30	GN			8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	#1 see log book			
9/7	5:30	DY			8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	#1 see log book			
9/8	6:00	GF,DY	340		8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	#1 see log book			
9/9	6:00	GF,DY,GN			8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	#1 see log book			
9/10	6:00	GF,DY,GN	138		8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	#1 see log book			
9/11	6:00	GF,DY,GN			8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	#1 see log book			
9/12	6:00	GF, GN			8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	None	See log book		
9/13	6:00	GN			8.0	NA	NA	NA	NA	NA	NA	NA	None	NA	750gpm	None			
9/14	6:00	DY	256		9.0	9.1	NA	NA	NA	NA	NA	NA	None	NA	750gpm	None	See log book		
9/15	5:00	GF,DY	1354		9.0	9.2	NA	NA	NA	NA	NA	NA	None	1.028	750gpm	None	See log book		
9/16	5:00	GF,DY,GN	1458		9.0	9.0	9.1	NA	NA	NA	NA	NA	None	1.026	750gpm	None	See log book		
9/17	6:00	GF,DY,GN	1562		9.0	8.9	9.0	NA	NA	NA	NA	8.7	1.59	1.038	750gpm	None	See log book		
9/18	6:00	GF,DY,GN	1597	3.4	9.0	9.2	9.3	NA	8.9	NA	NA	8.7	2.46	1.042	750gpm	None			
9/19	7:30	GF, GN	1583		8.5	9.0		NA	8.6	NA	NA	8.4	1.70	1.050	750gpm	None		#1-9:30	15:30
9/20	6:10	GN			8.5	8.7		NA	8.7	NA	NA	8.5	2.56	1.05	750gpm	None		None	
9/21	6:00	DY			8.5	8.7	8.6	NA	8.8	NA	NA	8.5	2.19	1.056	750gpm	#3-7:00	13;00	None	
9/22	6:00	GF,DY	1562	3.7	8.3	9.0	8.9	NA	8.8	NA	NA	8.5	2.22	1.061	750gpm	#1 see log book		#1-7:00	15:30
9/23	6:00	GF,DY,GN			8.3	8.8		NA	8.8	NA	NA	8.5	2.19	1.042	750gpm	None		None	
9/24	6:00	GF,DY,GN			8.0	8.3		NA	8.6	NA	NA	8.1	2.02	1.046	750gpm	None		None	
9/25	5:30	GC,WS,GN	1868	3.5	8.0	8.5	8.4	NA	NA	NA	NA	8.3	0.728	1.057	750gpm	None			
9/26	5:40	GF, GN			8.0	8.5		NA	NA	NA	NA	NA	None	1.05	750gpm	None			
9/27	6:00	GN			8.0	8.2		NA	8.2	NA	NA	7.9	0.44	1.048	750gpm	None	See log book		
9/28	5:30	DY			8.0	8.2	8.1	NA	8.1	NA	NA	7.8	3.17	1.078	750gpm	#1-5:45	6:30	See log book	
9/29	6:00	GF,DY	1583	3.7	8.0	8.2		NA	8.3	NA	NA	7.8	3.11	1.04	750gpm	#1-8:45	9:25	#2-6:30	8:15
9/30	6:00	GF,DY,GN			8.0	8.5	8.4	NA	8.1	NA	NA	7.5	0.891	1.04	750gpm	None		#1-7:00	2:00 PM
					8.0										750gpm				

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **Sep-03**

KELLOGG TUNNEL FLOW
KT METER

Day	mgd	Ft/Flume
09/18/03	2.30	0.90
09/25/03	2.23	0.91
09/29/03	1.22	0.61

Day	**KT Flow Meter Reading**
08/31/03	62,074,750
10/01/03	105,864,390
KT Total for month	43,789,640

K.T. flow meter was reset to 0.0 on July 31st.

Day	**006 Flow Meter Reading**
08/31/03	0
09/30/03	32,460,000
006 Total for month	32,460,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
08/31/03	0.8	Hours	593.3	Hours
10/01/03	0.8	Hours	598.6	Hours
Total Hours	0.0	Hours	5	Hours
Total Flow for 004/Sweeny For The Month =			159,000.00	Gallons

004/Sweeny Discharge Pipe Flow

Date	Flow (GPM)

No flow readings were taken this month.

Day	**Lined Pond Water Level**			
08/31/03	500,000	gal	Elev. =	2269.0
10/01/03	2,000,000	gal	Elev. =	2271.5
.				

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 09-01-03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.95 MGD, Staff Gauge reading 0.88 ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 09/18/03 Inspected By: G.Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in goo
condition at this time.

The Kellogg Tunnel flume flow is 2.30MGD, Staff Gauge reading 0.90ft/flume 1590 GPM

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 09-25-03 Inspected By: G. Nelson

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.18 MGD, Staff Gauge reading 0.90 ft/flume.1514 GPM

Removed a small amount of debris from both trash racks.

AMERICAN ANALYTICAL SERVICES

BHCTP: 100303

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-09-01-03	water	090103	<0.050	0.064	10.3	<0.010	7.10	<0.20
2	KT-09-01-03	water	090103	0.466	60.2	134.0	0.094	3.40	87.0
3	006-09-02-03	water	090203	<0.050	0.149	19.0	<0.010	7.30	<0.20
4	006-09-03-03	water	090303	0.061	0.457	23.6	<0.010	6.60	3.80
5	006-09-17-03	water	091703	<0.050	0.260	0.310	<0.010	7.70	1.00
6	006-09-18-03	water	091803	0.058	0.066	0.331	<0.010	7.60	0.80
7	KT-09-18-03	water	091803	0.860	60.8	151.0	0.084	3.40	126.0
8	004-09-18-03	water	091803	0.203	11.4	na	2.74	7.00	9.40
9	CTPXX-09-18-03	water	091803	0.391	0.774	na	0.057	na	na
10	006-09-19-03	water	091903	<0.050	0.051	0.595	<0.010	7.90	1.40
11	006-09-20-03	water	092003	<0.050	0.034	1.20	<0.010	8.10	<0.20
12	006-09-21-03	water	092103	<0.050	0.064	1.28	<0.010	8.10	0.40
13	006-09-22-03	water	092203	<0.050	0.037	1.51	<0.010	8.20	0.60
14	KT-09-22-03	water	092203	0.618	54.0	143.0	0.078	3.80	84.0
15	006-09-23-03	water	092303	<0.050	0.041	1.80	<0.010	7.50	0.60
16	006-09-24-03	water	092403	<0.050	0.064	7.95	<0.010	7.40	0.20
17	006-09-25-03	water	092503	<0.050	0.117	9.78	<0.010	7.40	0.80
18	KT-09-25-03	water	092503	0.680	56.8	148.0	0.080	3.60	78.0
19	004-09-25-03	water	092503	0.152	10.7	na	2.60	6.80	6.40
20	CTPXX-09-25-03	water	092503	0.369	0.770	na	0.058	na	na
21	QC-09-25-03	water	092503	0.112	10.6	na	2.57	6.80	5.80
22	006-09-27-03	water	092703	<0.050	0.238	10.8	<0.010	7.10	1.20
23	006-09-28-03	water	092803	<0.050	0.122	16.5	<0.010	7.20	0.40
24	006-09-29-03	water	092903	0.065	0.070	15.4	<0.010	7.20	0.40
25	KT-09-29-03	water	092903	0.586	53.6	141.0	0.062	3.70	78.0
26	QC-09-29-03	water	092903	<0.050	0.083	17.1	<0.010	7.10	<0.20
27	QC-09-29-03	water	092903	0.638	55.2	140.0	0.082	3.70	83.0
28	006-09-30-03	water	093003	<0.050	0.077	13.4	<0.010	7.20	0.80
	006-09-23-03	duplicate	092303	<0.050	0.036	1.87	<0.010		
	006-09-23-03	spike	092303	96.4%	98.6%	94.8%	108%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

Ferguson Contracting

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Monthly Operation & Maintenance Report

Month: October, 2003

Facility: Central Treatment Plant

Location: Bunker Hill Superfund Site

Total Flow For The Month From 006: 51,060,000 gallons

Total Flow From Kellogg Tunnel: 52,869,290 gallons

Percent of Influent Successfully Treated: 100.0%

28 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 168 potential exceedances
186 - 0 exceedances = 186 168/168 = 100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with five PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the '004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

10-01-03 Quarterly pump and motor analysis was performed by Cash Balancing Services, with the results listed on the CTP daily QC report.
10-01-03 The Floc Basin drive motor was locked out of service today, as it is no longer needed for Task Order 0008 work.
10-08-03 Measured the sludge recycle rate at 800-850 gpm with the #2 pump.
10-14-03 The floc dosage was reduced to 2.0 ppm starting today.
10-14-03 The 006 flowmeter power supply breaker was found in the off position and reset. The flow for the past 24 hrs was estimated at 1.5 mgd, as the K.T. flow went to low flow sometime during the night.
10-14-03 The CIA staff gauge reading at this time is 2.50 ft.
10-17-03 Increased the floc dosage from 2.0 ppm to 2.2 ppm to aid in reducing the increasing turbidity. The Clarifier turbidity is 3.0 NTU this morning.
10-17-03 Performed sludge gun testing in the Clarifier today: 11' from the feedwell, the sludge is 13" deep. 25' from the feedwell, the sludge is 6" deep.
10-22-03 Pumped the Direct Feed vault in preparation for Direct Feed line pigging.
10-23-03 Pigged the Direct Feed line with one swab and three cleaning pigs.
10-23-03 Placed the new Clarifier drop box and effluent line in service.
10-24-03 Removed the old drop box and place a 1/4" steel plate over the old drop box opening.
10-25-03 Performed sludge gun testing in the Clarifier today: 11' from the feedwell, the sludge is 24" deep.
10-27-03 Began drawing down the Clarifier for the cathodic protection system installation.
10-27-03 Performed sludge gun testing in the Clarifier today: 11' from the feedwell, the sludge is 12" deep.
10-27-03 Diverted K.T. water to the Lined Pond, began draining the Clarifier for cathodic protection work on 10-28-03.
10-28-03 Pumped with the #1 sludge pump to continue removing sludge and water from the Clarifier for C.P. work.
10-30-03 Completed the installation of all cathodic protection components inside the Clarifier and feedwell.
10-30-03 Diverted K.T. water from the Lined Pond to the CTP at 6 p.m. to begin filling the Clarifier.
10-30-03 Pumped stored water from the Lined Pond to the Clarifier from 6 p.m. 10-30-03 to 7 a.m. 10-31-03.
10-30-03 During the Clarifier filling period, the CTP pH setpoint was temporarily increased to 9.0 and the floc dosage was increased to 6 ppm.
10-30-03 The Floc Basin mixer was placed back in service to aid in treating the mine water used to fill the Clarifier.
10-31-03 Obtained recycle to the Rapid Mix Tank with #1 underflow pump at 07:15 today.
10-31-03 The CIA staff gauge reading is 2.60 ft at this time.
10-29-03 to 10-31-03 The Clarifier was being refilled and had no CTP effluent; therefore, no 006 Outfall sample analysis was reported for this time period.

Lessons Learned

1) The water elevation in the Clarifer needs to be at the outer wall elevation to activate the underflow pumps. Several piping and pumping scenarios were evaluated during the Clarifier filling, in an attempt to provide recycle. As in the past, recycle was only obtained as the water neared the one-foot level on the outer wall.

2) Flow through the 12-inch drain line from the Clarifier is approximately 3600 gpm. Using this line, the Clarifier drains to approximately six feet below the overflow weir. To further drain the Clarifier, the Polishing Pond level must be lowered.

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
2003	10	1		2003	10	31
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	Quantity or Loading (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	Quality or Concentration (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				6.9		7.1			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.82	2.89	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.76	1.21	Lbs/Day		0.05	0.05	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	8.30	20.31	Lbs/Day		0.58	1.01	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.147	0.24	Lbs/Day		0.010	0.014	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	860.1	1836	Lbs/Day		57.31	100.00	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	9.2	21	Lbs/Day		0.6	1.4	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY:__ Gary Fulton

REVIEWED BY:__ Don Ferguson

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: October, 2003

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.050	1.072	0.119	2.552	0.010	0.214	19.0	407.5	7.00	2.57	1.0	21.45	9.73
2	0.050	1.206	0.285	6.873	0.010	0.241	27.5	663.2	7.10	2.89	0.6	14.47	6.56
3	0.050	1.051	0.345	7.255	0.010	0.210	51.6	1085	7.00	2.52	0.4	8.412	3.82
4	0.050	0.668	0.405	5.408	0.010	0.134	58.8	785.1	7.10	1.60	0.2	2.670	1.21
5	0.050	0.390	0.387	3.020	0.010	0.078	41.7	325.4	7.00	0.94	0.2	1.561	0.71
6	0.050	0.417	0.310	2.587	0.010	0.083	24.4	203.6	7.10	1.00	0.8	6.676	3.03
7	0.050	0.885	0.318	5.626	0.010	0.177	17.2	304.3	7.10	2.12	0.2	3.538	1.60
8	0.050	0.826	0.171	2.825	0.010	0.165	24.9	411.4	6.90	1.98	0.2	3.305	1.50
9	0.050	0.751	0.206	3.094	0.010	0.150	40.0	600.8	7.10	1.80	0.8	12.02	5.45
10	0.050	0.822	0.283	4.652	0.010	0.164	51.5	846.6	7.10	1.97	1.2	19.73	8.95
11	0.050	0.801	0.413	6.617	0.010	0.160	67.5	1081.5	7.00	1.92	0.4	6.409	2.91
12	0.050	0.839	0.551	9.242	0.010	0.168	81.7	1370	7.00	2.01	1.2	20.13	9.13
13	0.050	0.818	0.805	13.167	0.010	0.164	81.8	1338	7.10	1.96	0.6	9.814	4.45
14	0.050	0.626	0.870	10.890	0.013	0.163	75.2	941.3	7.10	1.50	0.6	7.511	3.41
15	0.050	0.730	0.921	13.450	0.014	0.204	71.4	1043	7.00	1.75	0.2	2.921	1.32
16	0.050	0.747	0.772	11.532	0.010	0.149	74.4	1111.4	7.00	1.79	0.2	2.988	1.36
17	0.050	0.816	1.000	16.323	0.010	0.163	88.0	1436	7.00	1.96	0.8	13.06	5.92
18	0.050	0.555	0.971	10.777	0.010	0.111	85.7	951.2	6.90	1.33	1.4	15.54	7.05
19	0.050	0.387	0.831	0.024	0.010	0.077	64.4	498.7	6.90	0.93	0.8	6.20	2.81
20	0.050	0.384	0.523	4.020	0.010	0.077	40.0	307.4	6.90	0.92	0.6	4.611	2.09
21	0.050	0.956	0.412	7.873	0.010	0.191	19.6	374.6	7.00	2.29	0.4	7.644	3.47
22	0.050	0.868	0.527	9.147	0.010	0.174	35.7	619.7	7.00	2.08	0.2	3.472	1.57
23	0.050	0.797	0.525	8.368	0.010	0.159	51.7	824.0	7.00	1.91	1.2	19.13	8.68
24	0.050	0.505	0.578	5.836	0.010	0.011	56.5	570.5	7.00	1.21	0.8	8.078	3.66
25	0.050	0.747	0.652	9.739	0.010	0.011	76.7	1146	7.10	1.79	0.4	5.975	2.71
26	0.050	1.085	0.936	20.308	0.010	0.217	84.6	1836	7.10	2.60	0.6	13.02	5.90
27	0.050	0.839	1.010	16.941	0.010	0.168	93.4	1567	7.10	2.01	0.4	6.709	3.04
28	0.050	0.718	0.997	14.310	0.010	0.144	100	1435	7.00	1.72	0.8	11.48	5.21
29		0.000		0.000		0.000		0.00		0.0		0.000	0.00
30		0.000		0.000		0.000		0.00		0.0		0.000	0.00
31		0.000		0.000		0.000		0.00		0.0		0.000	0.00
	Note: October 14th the 006 flow was estimated due to flow meter failure. KT flow was low most of the day 10-13-03.												
TOTAL	1.400	21.30	16.123	232.46	0.287	4.129	1,604.9	24,084	196.70	51.06	17.20	258.50	117.2
Sample Events	28	28	28	28	28	28	28	28	28	28	28	28	28
Daily Average	0.050	0.761	0.576	8.302	0.010	0.147	57.310	860.1	7.03	1.82	0.61	9.23	4.19

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: October, 2003
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						2.6		
2	0.52	51.8	0.074	133	3.50	2.9	84.0	919
3						2.5		
4						1.6		
5						0.9		
6	0.512	51.6	0.070	138	3.40	1.0	87.0	329
7						2.1		
8						2.0		
9	0.52	53.8	0.076	143	3.60	1.8	93.0	634
10						2.0		
11						1.9		
12						2.0		
13	0.662	58	0.072	143	3.70	2.0	81.0	601
14						1.5		
15						1.8		
16	0.73	59.6	0.07	161	3.60	1.8	75.0	508
17						2.0		
18						1.3		
19						0.9		
20	0.36	84.2	0.138	31.8	2.90	0.9	63.0	220
21						2.3		
22						2.1		
23	0.552	57	0.068	147	3.50	1.9	91.0	658
24						1.2		
25						1.8		
26						2.6		
27	0.718	83.4	0.12	43.2	3.10	2.0	84.0	639
28						1.7		
29						0.0		
30						0.0		
31						0.0		

004/SWEENY **Month: October, 2003**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
10/02/03	<0.050	9.42	2.26	6.90	5.4
10/09/03	<0.050	9.43	2.29	7.00	5.4
10/16/03	0.183	11.9	2.56	6.90	8.2
10/23/03	<0.050	11.8	2.55	6.90	5.8

RINSATE AND TRIP BLANKS **Month: October, 2003**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
004 Sweeny	10/09/03	**RB-10-09-03**	<0.05	<0.02	<0.01	<0.02
Trip Blank (D.I.water)	10/09/03	**TB-10-09-03**	<0.05	<0.02	<0.01	<0.02

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **October, 2003**

KELLOGG TUNNEL FLOW
KT METER

Day	mgd	Ft/Flume
10/02/03	2.89	
10/06/03	2.07	0.86
10/09/03	2.14	0.88
10/13/03	2.10	0.86
10/16/03	2.01	0.85
10/20/03	1.08	0.36
10/23/03	1.97	0.85
10/27/03	1.03	0.34
10/30/03	2.01	0.85

Day	**KT Flow Meter Reading**
10/01/03	105,864,390
10/31/03	158,733,680
KT Total for month	52,869,290

K.T. flow meter was reset to 0.0 on July 31st.

Day	**006 Flow Meter Reading**
09/30/03	0
10/31/03	51,060,000
006 Total for month	51,060,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
10/01/03	0.8	Hours	598.6	Hours
10/31/03	0.8	Hours	603.2	Hours
Total Hours	0.0	Hours	5	Hours
Total Flow for 004/Sweeny For The Month =			138,000.00	Gallons

004/Sweeny Discharge Pipe Flow

Date	Flow (GPM)
14-Oct	3.0

Day	**Lined Pond Water Level**			
10/01/03	2,500,000	gal	Elev. =	2271.5
10/31/03	4,750,000	gal	Elev. =	2274.5
.				

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: October, 2003

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	10/02/03	Lead	0.377	0.400	mg/L			-5.9%		
Evaluation		Zinc	0.723	0.800	mg/L			-10.1%		
Sample		Cadmium	0.055	0.060	mg/L			-8.7%		
(CTPXX-10-02-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	10/05/03	Lead	0.050	0.050	mg/L	88%		0.0%		
MS/MSD		Zinc	0.387	0.387	mg/L	90%		0.0%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	95%		0.0%		
		Manganese	41.70	44.90	mg/L	100%		-7.4%		
		pH	7.00		units					
		TSS	0.200		mg/L					
004 Sweeny	10/09/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	9.43	8.99	mg/L			4.8%		
QC Sample		Cadmium	2.29	2.22	mg/L			3.1%		
		Manganese	na	na	mg/L					
		pH	7.00	7.00	units			0.0%		
		TSS	5.40	4.80	mg/L			11.8%		
Performance	10/09/03	Lead	0.379	0.400	mg/L			5.4%		
Evaluation		Zinc	0.758	0.800	mg/L			-5.4%		
Sample		Cadmium	0.055	0.060	mg/L			-8.7%		
(CTPXX-10-09-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	10/16/03	Lead	0.050	0.050	mg/L	97%		0.0%		
MS/MSD		Zinc	0.772	0.824	mg/L	98%		-6.5%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	105%		0.0%		
		Manganese	74.40	75.50	mg/L	104%		-1.5%		
		pH	7.00		units					
		TSS	0.200		mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	10/16/03	Lead	0.405	0.400	mg/L			1.2%		
Evaluation		Zinc	0.815	0.800	mg/L			1.9%		
Sample		Cadmium	0.064	0.060	mg/L			6.5%		
(CTPXX-10-16-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	10/21/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.412	0.448	mg/L			-8.4%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	19.60	21.20	mg/L			-7.8%		
		pH	7.00	7.00	units			0.0%		
		TSS	0.400	0.400	mg/L			0.0%		
Performance	10/23/03	Lead	0.400	0.400	mg/L			0.0%		
Evaluation		Zinc	0.820	0.800	mg/L			2.5%		
Sample		Cadmium	0.065	0.060	mg/L			8.0%		
(CTPXX-10-23-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	10/24/03	Lead	0.050	0.050	mg/L	99%		0.0%		
MS/MSD		Zinc	0.578	0.585	mg/L	105%		-1.2%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	105%		0.0%		
		Manganese	56.50	61.60	mg/L	101%		-8.6%		
		pH	7.00		units					
		TSS	0.80		mg/L					
October, 2003 Completeness		Lead	9	Valid		9	Total	100.0%		
		Zinc	9	Valid		9	Total	100.0%		
		Cadmium	9	Valid		9	Total	100.0%		
		Manganese	4	Valid		4	Total	100.0%		
		pH	5	Valid		5	Total	100.0%		
		TSS	5	Valid		5	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

Central Treatment Plant

Daily log October, 2003

			INFLUENT (KT)		AERATION BASIN			CLARIFIER			DISCHARGE 006			RECYCLE		SLUDGE PUMP		POND PUMP	
DATE	TIME	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TEMP	pH4	GRAB	FLOW	SpG	FLOW	ON	OFF	ON	OFF
10/1	5:30	GF,DY,GN			8.0	8.2		N/A	8.2	N/A	N/A	7.4	2.57	1.060	750gpm	#1-6:00	6:15	#1-5:30	13:30
10/2	6:00	GF,DY,GN	1490	3.8	8.0	8.0		N/A	7.6	59	N/A	7.4	2.89	1.020	750gpm	None		#1-6:00	14:00
10/3	5:50	GF, GN			8.0	8.4	8.4	N/A	7.6	58	N/A	7.6	2.52	1.020	750gpm	None		#1-7:00	13:00
10/4	6:00	GN			8.0	9.0		N/A	7.9	62	N/A	7.6	1.60	1.020	750gpm	None		None	
10/5	5:30	DY			8.0	8.3		N/A	7.7	56	N/A	7.3	0.94	1.018	750gpm	None		None	
10/6	6:00	GF,DY	1437	3.4	8.0	8.4		N/A	7.7	58	N/A	7.6	1.00	1.014	750gpm	None		#1-10:00	12:30
10/7	6:00	GF,DY,GN			8.0	8.2		N/A	7.7	58	N/A	7.5	2.12	1.024	750gpm	None		None	
10/8	6:00	GF,DY,GN			8.0	8.5		N/A	7.7	58	N/A	7.5	1.98	1.029	750gpm	None		None	
10/9	6:00	GF,DY,GN	1486	3.5	8.0	8.4	8.3	N/A	7.8	58	N/A	7.5	1.80	1.030	750gpm	None		None	
10/10	6:00	GF, GN			8.0	8.1		N/A	7.4	57	N/A	7.3	1.97	1.028	750gpm	None		None	
10/11	6:00	GN			8.0	8.0		7.7	7.5	54	N/A	7.3	1.92	1.032	750gpm	None		None	
10/12	6:30	DY			8.0	8.4		7.7	7.7	57	N/A	7.3	2.01	1.039	750gpm	None		None	
10/13	6:00	GF,DY	1458	3.8	8.0	8.0		7.7	7.6	57	N/A	7.3	1.96	1.039	750gpm	None		None	
10/14	6:00	GF,DY,GN			8.0	8.2		7.5	7.4	56	N/A	7.2	1.50	1.033	750gpm	#1-10:15	10:30	None	
10/15	6:00	GF,DY,GN			8.0	8.2		7.6	7.7	56	N/A	7.4	1.75	1.038	750gpm	None		None	
10/16	5:25	GF,DY,GN	1396	3.8	8.0	8.5	8.4	7.6	7.6	57	N/A	7.3	1.79	1.047	750gpm	None		None	
10/17	5:30	GF			8.0	8.1		N/A	7.6	57	N/A	7.4	1.96	1.050	750gpm	None		None	
10/18	6:00	GN			8.0	8.5		N/A	7.6	56	N/A	7.4	1.33	1.037	750gpm	None		None	
10/19	6:00	DY			8.0	8.6		N/A	7.7	54	N/A	7.4	0.93	1.038	750gpm	None		None	
10/20	6:00	GF,DY	750	3.0	8.0	8.0	7.8	N/A	7.8	56	N/A	7.3	0.92	1.039	750gpm	#1-9:55	10:00	#1-8:10	13:10
10/21	6:00	GF,DY,GN			8.0	8.1		N/A	7.8	56	N/A	7.0	2.29	1.049	750gpm	None		None	
10/22	6:00	GF,DY,GN			8.0	8.2		7.7	7.7	58	N/A	7.4	2.08	1.055	750gpm	None		None	
10/23	6:00	GC,WS,GN	1326	4.0	8.0	8.4		7.8	7.7	60	N/A	7.5	1.91	1.058	750gpm	#1-11:10	13:05	None	
10/24	5:50	GF, GN			8.0	8.0	8.0	7.8	7.7	57	N/A	7.3	1.21	1.052	750gpm	None		None	
10/25	6:30	GN			8.0	8.2		N/A	7.7	54	N/A	7..3	1.79	1.065	750gpm	#1-8:15	8:30	#1 7:30	14:30
10/26	6:00	DY			8.0	8.2		N/A	7.6	54	N/A	7.3	2.60	1.045	750gpm	None		None	
10/27	5:30	GF,DY	756	3.3	8.0	8.3		N/A	7.6	57	N/A	7.3	2.01	1.048	750gpm	see log		None	
10/28	6:00	GF,DY,GN			8.0	N/A		N/A	N/A	N/A	N/A	7.2	1.72	N/A	750gpm	see log		None	
10/29	6:00	GF,DY,GN			8.0	N/A		N/A	N/A	N/A	N/A	N/A	N/F	N/A	750gpm			None	
10/30	6:00	GF,DY,GN			9.0	N/A		N/A	N/A	N/A	N/A	N/A	N/F	N/A	750gpm			None	
10/31	6:00	GF,DY	1406		9.0	8.2	8.3	N/A	N/A	N/A	N/A	N/A	N/F	1.128	750gpm			#1-10:00	2:00 PM

AMERICAN ANALYTICAL SERVICES

BHCTP: 101703

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-10-01-03	water	100103	<0.050	0.119	19.0	<0.010	7.00	1.00
2	006-10-02-03	water	100203	<0.050	0.285	27.5	<0.010	7.10	0.60
3	KT-10-02-03	water	100203	0.520	51.8	133.0	0.074	3.50	84.0
4	004-10-02-03	water	100203	<0.050	9.42	na	2.26	6.90	5.40
5	CTPXX-10-02-03	water	100203	0.377	0.723	na	0.055	na	na
6	006-10-03-03	water	100303	<0.050	0.345	51.6	<0.010	7.20	0.40
7	006-10-04-03	water	100403	<0.050	0.405	58.8	<0.010	7.00	0.20
8	006-10-05-03	water	100503	<0.050	0.387	41.7	<0.010	7.00	<0.20
9	006-10-06-03	water	100603	<0.050	0.310	24.4	<0.010	7.00	0.80
10	KT-10-06-03	water	100603	0.512	51.6	138.0	0.070	3.40	87.0
11	006-10-07-03	water	100703	<0.050	0.318	17.2	<0.010	7.10	0.20
12	006-10-08-03	water	100803	<0.050	0.171	24.9	<0.010	6.90	0.20
13	006-10-09-03	water	100903	<0.050	0.206	40.0	<0.010	7.10	0.80
14	KT-10-09-03	water	100903	0.520	53.8	143.0	0.076	3.60	93.0
15	004-10-09-03	water	100903	<0.050	9.43	na	2.29	7.00	5.40
16	QC-10-09-03	water	100903	<0.050	8.99	na	2.22	7.00	4.80
17	RB-10-09-03	water	100903	<0.050	<0.020	<0.020	<0.010	na	na
18	TB-10-09-03	water	100903	<0.050	<0.020	<0.020	<0.010	na	na
19	CTPXX-10-09-03	water	100903	0.379	0.758	na	0.055	na	na
20	006-10-10-03	water	101003	<0.050	0.283	51.5	<0.010	7.10	1.20
	006-10-05-03	duplicate	100503	<0.050	0.387	44.9	<0.010		
	006-10-05-03	spike	100503	87.6%	89.6%	100%	95.6%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 110503

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Cd	Mn	pH	TSS
1	006-10-11-03	water	101103	<0.050	0.413	<0.010	67.5	7.00	0.40
2	006-10-12-03	water	101203	<0.050	0.551	<0.010	81.7	7.00	1.20
3	006-10-13-03	water	101303	<0.050	0.805	<0.010	81.8	7.10	0.60
4	KT-10-13-03	water	101303	0.662	58.0	0.072	143.0	3.70	81.0
5	006-10-14-03	water	101403	<0.050	0.870	0.013	75.2	7.10	0.60
6	006-10-15-03	water	101503	<0.050	0.921	0.014	71.4	7.00	0.20
7	006-10-16-03	water	101603	<0.050	0.772	<0.010	74.4	7.00	0.20
8	KT-10-16-03	water	101603	0.730	59.6	0.070	161.0	3.60	75.0
9	004-10-16-03	water	101603	0.183	11.9	2.56	na	6.90	8.20
10	CTPXX-10-16-03	water	101603	0.405	0.815	0.064	na	na	na
11	006-10-17-03	water	101703	<0.050	1.00	<0.010	88.0	7.00	0.80
12	006-10-18-03	water	101803	<0.050	0.971	<0.010	85.7	6.90	1.40
13	006-10-19-03	water	101903	<0.050	0.831	<0.010	64.4	6.90	0.80
14	006-10-20-03	water	102003	<0.050	0.523	<0.010	40.0	6.90	0.60
15	KT-10-20-03	water	102003	0.360	84.2	0.138	31.8	2.90	63.0
16	006-10-21-03	water	102103	<0.050	0.412	<0.010	19.6	7.00	0.40
17	QC-10-21-03	water	102103	<0.050	0.448	<0.010	21.2	7.00	0.40
18	006-10-22-03	water	102203	<0.050	0.527	<0.010	35.7	7.00	0.20
19	006-10-23-03	water	102303	<0.050	0.525	<0.010	51.7	7.00	1.20
20	KT-10-23-03	water	102303	0.552	57.0	0.068	147.0	3.50	91.0
21	004-10-23-03	water	102303	<0.050	11.8	2.55	na	6.90	5.80
22	CTPXX-10-23-03	water	102303	0.400	0.820	0.065	na	na	na
23	006-10-24-03	water	102403	<0.050	0.578	<0.010	56.5	7.00	0.80
24	006-10-25-03	water	102503	<0.050	0.652	<0.010	76.7	7.10	0.40
25	006-10-26-03	water	102603	<0.050	0.936	<0.010	84.6	7.10	0.60
26	006-10-27-03	water	102703	<0.050	1.01	0.012	93.4	7.10	0.40
27	KT-10-27-03	water	102703	0.718	83.4	0.120	43.2	3.10	84.0
28	006-10-28-03	water	102803	<0.050	0.997	<0.010	100.0	7.00	0.80
	006-10-16-03	duplicate	101603	<0.050	0.824	<0.010	75.5		
	006-10-16-03	spike	101603	97.4%	98.0%	105%	104%		
	006-10-24-03	duplicate	102403	<0.050	0.585	<0.010	61.6		
	006-10-24-03	spike	102403	98.8%	105%	105%	101%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.025	<0.150	<0.1pH	<15.0 mg/L

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 10-02-03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.89 MGD.

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 10/09/03 Inspected By: G.Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in goo condition at this time.

The Kellogg Tunnel flume flow is 2.14MGD, Staff Gauge reading 0.88ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 10-15-03 Inspected By: D. Young

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.01 MGD, Staff Gauge reading 0.860 ft/flume.1395 GPM

Removed a small amount of debris from both trash racks.

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 10-23-03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.97 MGD, Staff Gauge reading 0.85 ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 10-30-03 Inspected By: D. Young

Item Inspected	Condition	Comments		
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***	***cracks***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***	
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***	
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness		***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition		***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections		***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.01 MGD, Staff Gauge reading 0.850 ft/flume.1395 GPM

Removed a small amount of debris from both trash racks.

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month:	November, 2003	
Facility:	Central Treatment Plant	
Location:	Bunker Hill Superfund Site	
Total Flow For The Month From 006:	46,811,000	gallons
Total Flow From Kellogg Tunnel:	47,596,320	gallons
Percent of Influent Successfully Treated:		100.0%

29 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 174 potential exceedances
174 - 1 exceedances = 173 173/174 = 99.4%
11-22-03: TSS exceedance of 59.6 mg/L; the daily discharge limit is 30 mg/L.

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with four PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml trace metal samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the '004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

11/01 - 11/10 Performed quarterly data validation from sample data collected during this time period.
11-01-03 The CIA staff gauge reading is 2.60 ft at this time.
11-03-03 Reduced the flocculent dosage from 6 ppm to 4 ppm, as the Clarifier and 006 effluents have turbidity readings of less than 2.0 NTU.
11-06-03 Reduced the flocculent dosage from 4 ppm to 2.9 ppm with low flow from the Kellogg Tunnel.
11-11-03 Reduced the flocculent dosage from 2.9 ppm to 2.5 ppm.
11-11-03 Reduced the CTP operations pH set point from 8.2 to 8.0.
11-11-03 Rebuilt the failed Clarifier and 006 pH probes, reducing the pH probe spare parts inventory to two complete kits.
11-13-03 S&S Coatings completed the painting of the old drop box area (inside the launder and the outside tank wall).
11-18-03 Received the initial pebble lime shipments for the new lime silos.
11-18-03 Received operator and maintenance training on the new lime injection valve actuators.
11-18-03 Sludge gun test performed in Clarifier: 24" of sludge 11' from center well.
11-18-13 Groundwater elevation in the Clarifier center column is 2259.7 at this time. The groundwater is located 22' 5" down from the center column cover plate.
11-21-03 Reduced the flocculent dosage from 2.5 ppm to 2.0 ppm.
11-22-03 Received initial lime silo operator and maintenance training.
11-22-03 CH2M Hill performed initial lime slurry injection testing from the new lime system.
11-30-03 The volume of lime remaining in the Old Lime Silo at this time is approximately 65 tons, which will last approximately one month if used full-time.

Lessons Learned

1) The groundwater located in the Clarifier center well has decreased eight inches in elevation since last verified, October 29th.
2) Prior to September, the KT flowmeter reading was about 6 million gallons/mo. higher than the 006 reading. In October and November, after accounting for changes in the Lined Pond elevation, the difference is only about 1.3 million gallons/mo. This may be due to the asphalt patch made in the Clarifier in September. We will continue monitoring these readings.

Exceedance Note:

A TSS exceedance was noted on November 22nd, with a TSS level of 59.6 mg/L reported in the analytical data.

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
2003	11	1		2003	11	30
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	Quantity or Loading (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	(46-53) AVERAGE	Quality or Concentration (54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				6.3		7.1			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.61	2.60	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.69	1.14	Lbs/Day		0.05	0.08	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	2.71	7.80	Lbs/Day		0.22	0.51	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.127	0.22	Lbs/Day		0.010	0.010	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	366.2	1262	Lbs/Day		24.65	67.50	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	28.5	561	Lbs/Day		2.7	**59**	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY: GARY FULTON

REVIEWED BY: DON FERGUSON

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: November, 2003

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.050	0.000	0.276	0.000	0.010	0.000	12.5	0.000	6.50	**0.0**	1.6	0.000	0.00
2	0.050	0.626	0.289	3.618	0.010	0.125	12.3	154.0	6.90	1.5	1.8	22.53	10.2
3	0.050	0.809	0.266	4.306	0.010	0.162	12.7	205.6	7.10	1.9	0.6	9.714	4.41
4	0.050	1.085	0.135	2.929	0.010	0.217	19.9	431.8	7.00	2.6	0.2	4.339	1.97
5	0.050	0.818	0.112	1.832	0.010	0.164	28.5	466.2	6.30	2.0	5.0	81.781	37.1
6	0.050	0.768	0.132	2.027	0.010	0.154	37.2	571.2	6.50	1.8	0.2	3.071	1.39
7	0.050	0.442	0.139	1.230	0.010	0.088	37.6	332.6	6.70	1.1	0.2	1.769	0.80
8	0.050	0.421	0.301	2.537	0.010	0.084	31.9	268.9	6.80	1.0	0.2	1.686	0.76
9	0.050	0.417	0.298	2.487	0.010	0.083	32.6	272.0	6.90	1.0	0.4	3.338	1.51
10	0.050	0.367	0.509	3.738	0.010	0.073	15.5	113.8	6.90	0.9	0.2	1.469	0.67
11	0.050	0.880	0.320	5.635	0.010	0.176	10.2	179.6	7.00	2.1	2.0	35.22	16.0
12	0.050	0.780	0.322	5.025	0.010	0.156	19.7	307.4	6.30	1.9	0.6	9.363	4.25
13	0.050	0.922	0.423	7.801	0.010	0.184	21.6	398.4	6.40	2.2	0.2	3.688	1.67
14	0.080	0.587	0.366	2.688	0.010	0.073	25.3	185.8	6.50	0.9	0.2	1.469	0.67
15	0.050	0.584	0.390	4.556	0.010	0.117	24.4	285.1	6.70	1.4	0.2	2.337	1.06
16	0.050	0.789	0.212	3.344	0.010	0.158	38.3	604.1	6.80	1.9	0.2	3.154	1.43
17	0.050	0.847	0.191	3.236	0.010	0.169	47.0	796.2	6.90	2.0	0.2	3.388	1.54
18	0.050	1.060	0.290	6.147	0.010	0.212	59.5	1261	6.90	2.5	0.6	12.72	5.77
19	0.050	0.935	0.332	0.024	0.010	0.187	67.5	1262	6.80	2.2	1.0	18.69	8.48
20	0.050	0.981	0.241	4.726	0.010	0.196	59.9	1175	6.90	2.4	0.4	7.844	3.56
21	0.058	1.137	0.106	2.079	0.010	0.196	33.9	664.8	6.90	2.4	0.6	11.77	5.34
22	0.050	0.476	0.081	0.771	0.010	0.095	20.1	191.2	6.30	1.1	**59.0**	561.3	255
23	0.050	0.380	0.101	0.767	0.010	0.076	11.3	85.81	6.60	0.9	0.4	3.038	1.38
24	0.050	0.388	0.088	0.683	0.010	0.011	6.05	46.95	6.70	0.9	0.2	1.552	0.70
25	0.050	0.860	0.120	2.063	0.010	0.011	5.41	93.00	6.80	2.1	0.2	3.438	1.56
26	0.050	0.826	0.080	1.322	0.010	0.165	8.47	140.0	6.40	2.0	0.6	9.914	4.50
27	0.050	0.501	0.068	0.681	0.010	0.100	1.05	10.51	6.60	1.2	0.2	2.003	0.91
28	0.050	0.413	0.075	0.620	0.010	0.083	7.41	61.22	6.80	1.0	0.2	1.652	0.75
29	0.050	0.430	0.091	0.782	0.010	0.086	4.24	36.44	6.90	1.0	0.2	1.719	0.78
30	0.050	0.380	0.130	0.987	0.010	0.076	2.71	20.58	7.00	0.9	0.2	1.519	0.69
31													
	Note: The 006 sample for November 1st was the initial Polishing Pond effluent sample after the Clarifier shutdown. This was not a 24-hour composite sample; therefore, no flow for the past 24 hours will be noted for this date.												
TOTAL	1.538	19.91	6.484	78.64	0.300	3.679	714.740	10,621	201.80	46.81	77.80	825.45	374
Sample Events	29	29	29	29	29	29	29	29	29	29	29	29	29
Daily Average	0.053	0.687	0.224	2.712	0.010	0.127	24.646	366.230	6.96	1.61	2.68	28.46	12.9

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: November, 2003
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						0.0		
2						1.5		
3	0.466	49.2	0.062	150	3.40	1.9	84	617
4						2.6		
5						2.0		
6	0.602	48.4	0.06	142	3.30	1.8	100	696
7						1.1		
8						1.0		
9						1.0		
10	0.398	79.80	0.128	31	2.80	0.9	69	230
11						2.1		
12						1.9		
13	0.468	76.60	0.116	33	2.90	2.2	57	477
14						0.9		
15						1.4		
16						1.9		
17	0.480	53.60	0.078	151	3.70	2.0	75	576
18						2.5		
19						2.2		
20	0.522	48.20	0.058	130	4.10	2.4	69	614
21						2.4		
22						1.1		
23						0.9		
24	0.286	68.80	0.104	28	2.80	0.9	61	215
25						2.1		
26						2.0		
27	0.638	46.40	0.048	145	3.70	1.2	88	400
28						1.0		
29						1.0		
30						0.9		
31								

004/SWEENY **Month: November, 2003**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
11/06/03	0.20	13.2	2.67	6.70	11.6
11/13/03	0.24	10.9	2.41	6.80	14.4
11/20/03	0.10	11.1	2.38	6.80	8.80
11/27/03	0.12	12.1	2.40	6.80	12.8

RINSATE AND TRIP BLANKS **Month: November, 2003**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
006 Outfall	11/07/01	**RB-11-07-03**	<0.05	<0.02	<0.01	<0.02
Trip Blank (D.I.water)	11/07/03	**TB-11-07-03**	<0.05	<0.02	<0.01	<0.02

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **November, 2003**

KELLOGG TUNNEL FLOW
KT METER

Day	mgd	Ft/Flume
11/03/03	2.01	0.85
11/06/03	1.97	0.85
11/10/03	1.81	0.80
11/13/03	2.01	0.85
11/17/03	2.00	0.85
11/20/03	1.98	0.84
11/24/03	1.97	0.85
11/27/03	1.03	0.34
12/01/03	2.03	0.85

Day	**KT Flow Meter Reading**
10/31/03	158,733,680
11/30/03	206,330,000
KT Total for month	47,596,320

K.T. flow meter was reset to 0.0 on July 31st.

Day	**006 Flow Meter Reading**
10/31/03	0
11/30/03	46,811,000
006 Total for month	46,811,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
10/31/03	0.8	Hours	603.2	Hours
11/30/03	0.8	Hours	607.5	Hours
Total Hours	0.0	Hours	4	Hours
Total Flow for 004/Sweeny For The Month =			129,000.00	Gallons

004/Sweeny Discharge Pipe Flow

Date	Flow (GPM)
5-Nov	3.6

Day	**Lined Pond Water Level**			
10/31/03	4,750,000	gal	Elev. =	2274.5
11/30/03	2,500,000	gal	Elev. =	2271.5
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Bunker Hill Central Treatment Plant

Daily log November, 2003

			INFLUENT (KT)		AERATION BASIN			CLARIFIER				DISCHARGE 006				RECYCLE		SLUDGE PUMP		POND PUMP	
DATE	TIME	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TURB	TEMP	pH4	GRAB	TURB	FLOW	SpG	FLOW	ON	OFF	ON	OFF
11/1	5:30	GF	1530	3.3	8.5	8.6	8.5	N/A	7.6	11.0ntu	50	N/A	7.6	6.00ntu	NF	1.023	750gpm	none		#1-6:30	
11/2	6:00	DY			8.5	8.9		N/A	8.1	3.17ntu	50	N/A	7.5	5.71ntu	1.50	1.032	750gpm	none		None	
11/3	5:45	GF,DY	1357	3.9	8.3	8.7		N/A	7.8	1.50ntu	50	N/A	7.7	2.14ntu	1.94	1.037	750gpm	1-1315	1345	#1-7:00	14:00
11/4	6:00	GF,DY	1800		8.3	8.4		7.4	7.4	.65ntu	46	N/A	7.3	1.20ntu	2.60	1.038	750gpm	none		None	
11/5	5:30	GF,DY	1368	4.1	8.2	8.3		7.6	7.7	.60ntu	46	N/A	7.3	1.12ntu	1.96	1.038	750gpm	test line		None	
11/6	5:30	GF	1368	4.1	8.2	8.3	8.2	7.6	7.5	.80ntu	47	N/A	7.5	.60ntu	1.84	1.053	750gpm	#1-6:00	6:15	None	
11/7	5:30	GF			8.2	8.2		7.5	7.4	.90ntu	47	N/A	7.3	.70ntu	1.06	1.045	750gpm	none		None	
11/8	5:30	GF			8.2	8.3		N/A	7.4	1.40ntu	47	N/A	7.2	1.10ntu	1.01	1.043	750gpm	none		None	
11/9	6:00	GF			8.2	8.4		N/A	7.3	1.50ntu	48	N/A	7.1	1.20ntu	1.00	1.045	750gpm	none		None	
11/10	6:00	DY	1256	3.3	8.2	8.5	8.4	N/A	7.5	1.40ntu	48	N/A	7.3	1.17ntu	0.88	1.041	750gpm	1-1200	12:30	See log	
11/11	6:00	GF,DY			8.1	8.6	8.5	N/A	8.0	1.40ntu	49	N/A	7.2	1.10ntu	2.11	1.039	750gpm	none		#1-6:30	14:00
11/12	6:00	DY	854	3.2	8.0	8.1		7.6	7.6	1.17ntu	46	7.6	7.4	.98ntu	1.87	1.051	750gpm	none		#1-6:10	13:00:00
11/13	6:00	GF,DY			8.0	8.2		7.6	7.6	1.10ntu	46	7.3	7.3	.51ntu	2.21	1.030	750gpm	none		None	
11/14	5:30	GF			8.0	8.1		7.6	7.5	1.10ntu	47	7.2	7.1	.90ntu	0.88	1.021	750gpm	none		None	
11/15	6:00	DY			8.0	8.2		7.6	7.8	1.00ntu	50	7.4	7.4	1.15ntu	1.40	1.044	750gpm	none		None	
11/16	5:30	DY			8.0	8.3		7.6	7.8	.98ntu	50	7.4	7.4	.78ntu	1.89	1.049	750gpm	none		None	
11/17	6:00	GF,DY	1388	3.3	8.0	8.3	8.4	7.5	7.5	1.30ntu	51	7.3	7.4	.79ntu	2.03	1.051	750gpm	1-1215	12:45	#1-7:15	13:30
11/18	5:25	GF,DY,GN			8.0	8.2		7.5	7.6	.96ntu	52	7.3	7.4	1.10ntu	2.54	1.049	750gpm	1-1345	14:00	#1-10:30	13:30
11/19	5:30	GF,DY,GN			8.0	8.1		7.6	7.7	.90ntu	56	7.3	7.4	.86ntu	2.24	1.053	750gpm	none		#1-6:30	13:00
11/20	6:00	GF,DY,GN	1375	4.1	8.0	8.2		7.6	7.7	.65ntu	51	7.4	7.8	.65ntu	2.35	1.042	750gpm	none		#1-6:30	12:20
11/21	6:00	GN			8.0	8.3	8.3	7.9	7.8	.65 ntu	52	7.5	7.6	1.1ntu	2.35	1.046	750gpm	none		None	
11/22	6:00	GN			8.0	8.5		N/A	8.0	.62 ntu	48	7.7	7.6	.60ntu	1.14	1.032	750gpm	none		None	
11/23	6:00	DY			8.0	8.1		N/A	8.2	.68ntu	44	7.5	7.4	.61ntu	0.91	1.031	750gpm	none		None	
11/24	6:00	DY	736	3.4	8.0	8.9	9.0	N/A	8.0	.73ntu	44	7.6	7.6	.67ntu	0.93	1.031	750gpm	none		#1-12:10	14:10
11/25	6:00	GF,DY,GN			8.0	8.3		8.0	8.1	.61ntu	44	7.5	7.4	.67ntu	2.06	1.045	750gpm	none		None	
11/26	5:50	GF,DY,GN			8.0	8.4		8.2	8.1	1.00ntu	50	7.6	7.6	.91ntu	1.98	1.051	750gpm	none		None	
11/27	6:30	GF,DY,GN	1395	4.1	8.0	8.4		8.2	8.1	1.09ntu	50	7.5	7.6	1.30ntu	1.20	1.056	750gpm	none		None	
11/28	6:00	GN			8.0	8.3		8.2	8.1	.70ntu	50	7.6	7.5	.66 ntu	0.99	1.040	750gpm	none		None	
11/29	5:30	GN			8.0	8.4		8.1	8.1	.63ntu	52	7.5	7.5	.63ntu	1.03	1.035	750gpm	none		None	
11/30	6:00	DY			8.0	8.2		8.3	8.1	.71ntu	48	7.5	7.5	.68ntu	0.91	1.036	750gpm	none		None	

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: November, 2003

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	11/05/03	Lead	0.050	0.050	mg/L	105%		0.0%		
MS/MSD		Zinc	0.122	0.135	mg/L	110%		-10.1%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	102%		0.0%		
		Manganese	28.5	31.3	mg/L	90%		-9.4%		
		pH	6.3		units					
		TSS	5.0		mg/L					
Performance	11/06/03	Lead	0.383	0.400	mg/L			-4.3%		
Evaluation		Zinc	0.789	0.800	mg/L			-1.4%		
Sample		Cadmium	0.059	0.060	mg/L			-1.7%		
(CTPXX-11-06-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	11/07/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.139	0.161	mg/L			-14.7%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	37.6	40.3	mg/L			-6.9%		
		pH	6.7	6.9	units			-2.9%		
		TSS	0.2	0.2	mg/L			0.0%		
006/CTP Outfall	11/08/03	Lead	0.050	0.050	mg/L	110%		0.0%		
MS/MSD		Zinc	0.301	0.346	mg/L	109%		-13.9%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	104%		0.0%		
		Manganese	31.9	35.5	mg/L	110%		-10.7%		
		pH	6.8		units					
		TSS	0.2		mg/L					
Kellogg Tunnel	11/10/03	Lead	0.398	0.430	mg/L			-7.7%		
		Zinc	79.8	80.8	mg/L			-1.2%		
QC Sample		Cadmium	0.128	0.128	mg/L			0.0%		
		Manganese	31.2	32.2	mg/L			-3.2%		
		pH	2.8	2.8	units			0.0%		
		TSS	69.0	72.0	mg/L			-4.3%		

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	11/13/03	Lead	0.387	0.400	mg/L			-3.3%		
Evaluation		Zinc	0.763	0.800	mg/L			-4.7%		
Sample		Cadmium	0.060	0.060	mg/L			0.0%		
(CTPXX-11-13-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
004/Sweeny	11/13/03	Lead	0.239	0.236	mg/L			1.3%		
		Zinc	10.900	12.500	mg/L			-13.7%		
QC Sample		Cadmium	2.410	2.740	mg/L			-12.8%		
		Manganese	n/a	n/a	mg/L					
		pH	6.8	6.8	units			0.0%		
		TSS	14.4	14.6	mg/L			-1.4%		
006/CTP Outfall	11/17/03	Lead	0.050	0.050	mg/L	96%		0.0%		
MS/MSD		Zinc	0.191	0.202	mg/L	98%		-5.6%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	97%		0.0%		
		Manganese	47.00	43.60	mg/L	103%		7.5%		
		pH	6.90		units					
		TSS	0.200		mg/L					
Performance	11/20/03	Lead	0.395	0.400	mg/L			-1.3%		
Evaluation		Zinc	0.839	0.800	mg/L			4.8%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-11-20-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	11/27/03	Lead	0.375	0.400	mg/L			-6.5%		
Evaluation		Zinc	0.838	0.800	mg/L			4.6%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-11-27-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	11/27/03	Lead	0.050	0.050	mg/L	106%		0.0%		
MS/MSD		Zinc	0.068	0.074	mg/L	108%		-8.5%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	112%		0.0%		
		Manganese	10.50	11.00	mg/L	110%		-4.7%		
		pH	6.60		units					
		TSS	0.200		mg/L					
November, 2003 Completeness		Lead	11	Valid		11	Total	100.0%		
		Zinc	11	Valid		11	Total	100.0%		
		Cadmium	11	Valid		11	Total	100.0%		
		Manganese	6	Valid		6	Total	100.0%		
		pH	7	Valid		7	Total	100.0%		
		TSS	7	Valid		7	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

AMERICAN ANALYTICAL SERVICES

BHCTP: 111703b

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	type	samp date	pH	TSS	run date	time	type
1	006-11-01-03	water	110103	6.50	1.60	110703	13:45	total
2	006-11-02-03	water	110203	6.90	1.80	110703	13:55	total
3	006-11-03-03	water	110303	7.10	0.60	110703	14:05	total
4	KT-11-03-03	water	110303	3.40	84.0	110703	14:25	total
5	006-11-04-03	water	110403	7.00	<0.20	110703	14:15	total
6	006-11-05-03	water	110503	6.30	5.00	111203	12:10	total
7	006-11-06-03	water	110603	6.50	0.20	111203	12:20	total
8	KT-11-06-03	water	110603	3.30	100.0	111203	14:40	total
9	004-11-06-03	water	110603	6.70	11.6	111203	13:20	total
10	006-11-07-03	water	110603	6.70	<0.20	111203	12:30	total
11	QC-11-07-03	water	110703	6.90	<0.20	111203	13:10	total
12	006-11-08-03	water	110803	6.80	<0.20	111203	12:40	total
13	006-11-09-03	water	110903	6.80	0.40	111203	12:50	total
14	006-11-10-03	water	111003	6.90	<0.20	111203	13:00	total
15	KT-11-10-03	water	111003	2.80	69.0	111203	13:50	total
16	QC-11-10-03	water	111003	2.80	72.0	111203	13:30	total
	KT-11-03-03	duplicate	110303	3.40	89.0	110703	14:35	total
	KT-11-06-03	duplicate	110603	3.30	108.0	111203	14:00	total
	TSS Blank	q.c.		na	<0.20	110703	14:45	
	TSS Blank	q.c.		na	<0.20	111203	14:10	
	TSS LCS	q.c.		na	51.0	110703	14:55	
	TSS LCS	q.c.		na	52.0	111203	14:20	
	LCS Known Value	q.c.		na	63.0			
	pH control	q.c.		7.50	na	110703	15:05	
	pH control	q.c.		7.50	na	111203	14:30	
	pH Known Value	q.c.		7.44	na			
			Method	**4500B**	**2540D**			
	QAL			<0.1pH	<15.0mg/L			

AMERICAN ANALYTICAL SERVICES

BHCTP: 111703a

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	type	samp date	Pb	Zn	Mn	Cd	run date	time	type
1	006-11-01-03	water	110103	<0.050	0.276	12.5	<0.010	111703	13:00	total
2	006-11-02-03	water	110203	<0.050	0.289	12.3	<0.010	111703	13:04	total
3	006-11-03-03	water	110303	<0.050	0.266	12.7	<0.010	111703	13:08	total
4	KT-11-03-03	water	110303	0.466	49.2	150.0	0.062	111703	15:39	total
5	006-11-04-03	water	110403	<0.050	0.135	19.9	<0.010	111703	13:12	total
6	006-11-05-03	water	110503	<0.050	0.112	28.5	<0.010	111703	13:16	total
7	006-11-06-03	water	110603	<0.050	0.132	37.2	<0.010	111703	13:24	total
8	KT-11-06-03	water	110603	0.602	48.4	142.0	0.060	111703	15:47	total
9	004-11-06-03	water	110603	0.196	13.2	na	2.67	111703	14:56	total
10	CTPXX-11-06-03	water	110603	0.383	0.789	na	0.059	111703	12:57	total
11	006-11-07-03	water	110703	<0.050	0.139	37.6	<0.010	111703	13:41	total
12	RB-11-07-03	water	110703	<0.050	<0.020	<0.020	<0.010	111703	12:49	total
13	QC-11-07-03	water	110703	<0.050	0.161	40.3	<0.010	111703	14:49	total
14	TB-11-07-03	water	110703	<0.050	<0.020	<0.020	<0.010	111703	12:53	total
15	006-11-08-03	water	110803	<0.050	0.301	31.9	<0.010	111703	13:49	total
16	006-11-09-03	water	110903	<0.050	0.298	32.6	<0.010	111703	14:01	total
17	006-11-10-03	water	111003	<0.050	0.509	15.5	<0.010	111703	14:05	total
18	KT-11-10-03	water	111003	0.398	79.8	31.2	0.128	111703	15:56	total
19	QC-11-10-03	water	111003	0.430	80.8	32.2	0.128	111703	15:33	total
	006-11-05-03	duplicate	110503	<0.050	0.135	31.3	<0.010	111703	14:10	total
	006-11-05-03	spike	110503	105%	110%	90.0%	102%	111703	14:27	total
	006-11-08-03	duplicate	110803	<0.050	0.346	35.5	<0.010	111703	14:34	total
	006-11-08-03	spike	110803	110%	109%	110%	104%	111703	14:42	total
	LCS	q.c.		0.142	1.16	2.18	0.683	111703	16:01	
	RGB	q.c.		<0.050	<0.020	<0.020	<0.010	111703	15:29	
	ICV	q.c.		102%	101%	102%	103%	111703	12:40	
	ICB	q.c.		<0.050	<0.020	<0.020	<0.010	111703	12:45	
	CCV 1	q.c.		105%	109%	102%	107%	111703	13:30	
	CCB 1	q.c.		<0.050	<0.020	<0.020	<0.010	111703	13:34	
	CCV 2	q.c.		112%	110%	111%	110%	111703	14:18	
	CCB 2	q.c.		<0.050	<0.020	<0.020	<0.010	111703	14:23	
	CCV 3	q.c.		96.0%	103%	103%	102%	111703	15:01	
	CCB 3	q.c.		<0.050	<0.020	<0.020	<0.010	111703	15:06	
	CCV 4	q.c.		93.6%	99.2%	98.4%	92.4%	111703	16:05	
	CCB 4	q.c.		<0.050	<0.020	<0.020	<0.010	111703	16:10	
	LCS	Reported	Value	0.142	1.16	2.18	0.683			
	WP 36153	Known	Value	0.127	1.10	2.43	0.738			
	RPD 1			na	18.5%	9.36%	na			
	RPD 2			na	13.9%	10.7%	na			
			Method	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**			
	QAL			<0.300	<0.150	<0.150	<0.025			

AMERICAN ANALYTICAL SERVICES

BHCTP: 120403

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-11-11-03	water	111103	<0.050	0.320	10.2	<0.010	7.00	2.00
2	006-11-12-03	water	111203	<0.050	0.322	19.7	<0.010	6.30	0.6
3	006-11-13-03	water	111303	<0.050	0.423	21.6	<0.010	6.40	<0.20
4	KT-11-13-03	water	111303	0.468	76.6	32.6	0.116	2.90	57
5	004-11-13-03	water	111303	0.239	10.9	na	2.41	6.80	14.4
6	QC-11-13-03	water	111303	0.236	12.5	na	2.74	6.80	14.6
7	CTPXX-11-13-03	water	111303	0.387	0.763	na	0.06	na	na
8	006-11-14-03	water	111403	0.08	0.366	25.3	<0.010	6.50	<0.20
9	006-11-15-03	water	111503	<0.050	0.39	24.4	<0.010	6.70	<0.20
10	006-11-16-03	water	111603	<0.050	0.212	38.3	<0.010	6.80	<0.20
11	006-11-17-03	water	111703	<0.050	0.191	47	<0.010	6.90	<0.20
12	KT-11-17-03	water	111703	0.48	53.6	151	0.066	3.70	75
13	006-11-18-03	water	111803	<0.050	0.29	59.5	<0.010	6.90	0.6
14	006-11-19-03	water	111903	<0.050	0.332	67.5	<0.010	6.80	1
15	006-11-20-03	water	112003	<0.050	0.241	59.9	<0.010	6.90	0.4
16	KT-11-20-03	water	112003	0.522	48.2	130	0.058	4.10	69
17	004-11-20-03	water	112003	0.095	11.1	na	2.38	6.80	8.8
18	CTPXX-11-20-03	water	112003	0.395	0.839	na	0.062	na	na
19	006-11-21-03	water	112103	0.058	0.106	33.9	<0.010	6.90	0.6
20	006-11-22-03	water	112203	<0.050	0.081	20.1	<0.010	6.30	59.6
21	006-11-23-03	water	112303	<0.050	0.101	11.3	<0.010	6.60	0.4
22	006-11-24-03	water	112403	<0.050	0.088	6.05	<0.010	6.70	<0.20
23	KT-11-24-03	water	112403	0.286	68.8	28.2	0.104	2.80	61
24	006-11-25-03	water	112503	<0.050	0.12	5.41	<0.010	6.80	0.2
25	006-11-26-03	water	112603	<0.050	0.08	8.47	<0.010	6.40	0.6
26	006-11-27-03	water	112703	<0.050	0.068	10.5	<0.010	6.60	<0.20
27	KT-11-27-03	water	112703	0.638	46.4	145	0.048	3.70	88
28	004-11-27-03	water	112703	0.124	12.1	na	2.4	6.80	12.8
29	CTPXX-11-27-03	water	112703	0.375	0.838	na	0.062	na	na
30	006-11-28-03	water	112803	<0.050	0.075	7.41	<0.010	6.80	0.2
31	006-11-29-03	water	112903	<0.050	0.091	4.24	<0.010	6.90	0.2
32	006-11-30-03	water	113003	<0.050	0.13	2.71	<0.010	7.00	0.2
	006-11-17-03	duplicate	111703	<0.050	0.202	43.6	<0.010		
	006-11-17-03	spike	111703	96.0%	98.00%	96.50%	103%		
	006-11-27-03	duplicate	112703	<0.050	0.074	11	<0.010		
	006-11-27-03	spike	112703	106%	108%	110%	112%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 11-06-03 Inspected By: D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.97 MGD, .83ft/flume 1368 gpm.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 11/13/03 Inspected By: D.Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is 2.01MGD, Staff Gauge reading 0.85ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 11/21/03 Inspected By: G.Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacing and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

Removed a small amount of debris from the upper trash rack.

The Kellogg Tunnel flume flow is 1.98MGD, Staff Gauge reading 0.84ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 11/26/03 Inspected By: D.Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is 2.01MGD, Staff Gauge reading 0.85ft/flume.

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month:	December 2003	
Facility:	Central Treatment Plant	
Location:	Bunker Hill Superfund Site	
Total Flow For The Month From 006:	52,191,500	gallons
Total Flow From Kellogg Tunnel:	56,413,080	gallons
Percent of Influent Successfully Treated:		100.0%

31 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 186 potential exceedances
186 - 2 TSS exceedances = 184 184/186 = 99.0%
Two TSS exceedances (daily maximum) were noted on December 24th and 25th.

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with four PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml trace metal samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the '004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

12/02-12/12 Ferguson Contracting personnel provided lime system testing assistance to CH2M Hill personnel.
12/03-12/05 Ferguson Contracting personnel received training on the new lime system from CH2M Hill and ZMI Portec.
12-08-03 McCunes Instruments performed the yearly CTP meter calibrations and flow meter certifications.
12-08-03 Measured slurry concentration for the new lime system--result was 6.0% solids.
12-11-03 Measured slurry concentration for the new lime system--result was 6.3% solids.
12-11-03 Measured flow at the 004 discharge pipe--result was 12 gpm.
12-12-03 Tested flow change scenarios on the new lime injection system with CH2M Hill.
12-15-03 Reduced the slaker supply water from 30 gpm to 25 gpm to allow the slaker to operate longer. By increasing the run time on the slaker, the slaker will operate at a higher temperature. This increased temperature will reduce the amount of waste generated from the slaker.
12-15-03 Monitored the lime slaking process, as the temperature of the slaker increased to a maximum of 165 ^{o}F. ZMI engineers suggest the optimum temperature of the slaker is 170 ^{o}F.
12-15-03 Measured slurry concentration for the new lime system--result was 3.2% solids. Started adding this reading to the daily log.
12-17-03 Measured Clarifier sludge level--11' from center well, the sludge is 24" deep. 25' from the center well, the sludge is 6" deep.
12-17-03 The groundwater elevation in the Clarifier center column was measured to be 2260.3', which is 21'9" below the cover plate in the center well. The groundwater elevation was 2259.7' in November 2003.
12-18-03 The Cathodic Protection system was connected, tested and energized today. The Cathodic Protection system output was tested and verified by Williams personnel to ensure the system output would not affect the gas line operations.
12-18-03 The new lime silo and lime injection system was taken off line due to programming errors in the control software.
12-19-03 The new lime silo and lime injection system was placed back in service after the PLC was reset to the original default settings.
12-29-03 Reset the lime injection valve close period from 372 seconds to 180 seconds to prevent the slurry holding tank from overflowing into the building sump. The Kellogg Tunnel flow decreased to 0.9 mgd on 12-28-03, causing

the lime injection valve close period to increase. This period increases to maintain a consistent pH between 7.95 and 8.05.
12-30-03 13:00 The new lime feed system was removed from service and the old system was placed in service to reduce the lime slurry stored in the old lime slurry holding tank.
12-31-03 The Kellogg Tunnel flow meter was reset to a flow of 0.99 mgd from 1.03 mgd. This was done to correctly track the actual flume flow.
12-31-03 CTP operators discovered a leak in the new lime injection pump housing. The pump housing bolts were installed at less than the specified torque settings. The pump housing bolts were set to the specified torque settings. The pump was tested and has no visible leaks at this time.
12-31-03 The CIA staff gauge reading is 2.70 ft at this time.

Lessons Learned

1) 12-02-03 A problem developed with the pH setpoint controller. The setpoint controller receives a transmitted signal from the new silo pH transmitter. The setpoint controller failed at approximately 07:30. Several repair methods were attempted (switching pH setpoint controllers with inactive ones, placing the pH meter on standby, and placing the pH controller in manual mode), with no success. The power supply to the control panel was shut down for a few minutes and restarted. Removing the power to the controller appeared to reset the controller. The controller was closely monitored for the remainder of the day with no additional problems to note.

2) With the addition of the new lime silo and lime slurry system, there are cross connections to the old system that need to be monitored daily. The Polishing Pond pump house now supplies process water to the new lime system as well as the old system. A new process water supply line has been installed from the Polishing Pond pump house to the new system. A new shut-off valve has been installed in the old system piping to prevent process water from being pumped to the old system while operating the new system on process water.
The new shut-off valve was left open while operating the new system, allowing process water to enter the old system and overflowing the old lime slurry holding tank. Monitoring this valve as well as pump house pump and motor inspections have been added to the CTP daily AM and PM inspections to prevent overflowing the old system.

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2003	12	1	2003	12	31
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	MAXIMUM	Quantity or Loading (54-61) UNITS	(4 Card Only) (38-45) MINIMUM	(46-53) AVERAGE	Quality or Concentration (54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				6.4		7.2			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.68	2.26	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.70	0.94	Lbs/Day		0.05	0.05	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	1.76	3.52	Lbs/Day		0.13	0.26	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.131	0.19	Lbs/Day		0.010	0.010	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	322.4	612	Lbs/Day		21.94	37.90	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	66.5	983	Lbs/Day		4.4	**63**	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY: GARY FULTON

REVIEWED BY: DON FERGUSON

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: December 2003

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.050	0.410	0.145	1.189	0.010	0.082	1.96	16.08	6.60	1.0	0.2	1.6	0.7
2	0.050	0.776	0.144	2.235	0.010	0.155	2.87	44.55	6.70	1.9	0.6	9.3	4.2
3	0.050	0.843	0.133	2.242	0.010	0.169	5.95	100.3	6.80	2.0	0.2	3.4	1.53
4	0.050	0.801	0.127	2.035	0.010	0.160	11.3	181.1	6.80	1.9	0.6	9.61	4.36
5	0.050	0.922	0.084	1.549	0.010	0.184	21.2	391.0	6.90	2.2	0.4	7.4	3.3
6	0.050	0.880	0.093	1.638	0.010	0.176	27.2	478.9	6.70	2.1	0.8	14.09	6.39
7	0.050	0.943	0.111	2.093	0.010	0.189	30.1	567.7	7.00	2.3	1.0	18.86	8.55
8	0.050	0.776	0.087	1.350	0.010	0.155	24.7	383.4	7.10	1.9	0.4	6.21	2.82
9	0.050	0.835	0.105	1.752	0.010	0.167	32.0	534.1	7.10	2.0	0.4	6.68	3.03
10	0.050	0.826	0.099	1.636	0.010	0.165	34.5	570.0	6.80	2.0	0.8	13.22	6.00
11	0.050	0.822	0.130	2.137	0.010	0.164	37.2	611.6	6.80	2.0	1.2	19.73	8.95
12	0.050	0.463	0.095	0.880	0.010	0.093	27.9	258.4	7.00	1.1	0.6	5.56	2.52
13	0.050	0.672	0.104	1.397	0.010	0.134	18.6	249.9	7.10	1.6	0.6	8.06	3.66
14	0.050	0.417	0.112	0.935	0.010	0.083	11.5	95.97	7.10	1.0	0.6	5.01	2.27
15	0.050	0.367	0.134	0.984	0.010	0.073	7.88	57.87	7.10	0.9	1.0	7.34	3.33
16	0.050	0.438	0.213	1.866	0.010	0.088	6.79	59.50	7.10	1.1	0.2	1.75	0.79
17	0.050	0.759	0.232	3.524	0.010	0.152	7.41	112.5	6.80	1.8	0.6	9.1	4.13
18	0.050	0.918	0.168	3.084	0.010	0.184	17.40	319.4	6.90	2.2	0.6	11.0	5.00
19	0.050	0.718	0.083	0.024	0.010	0.144	15.00	215.3	7.20	1.7	0.8	11.5	5.21
20	0.050	0.768	0.081	1.244	0.010	0.154	20.8	319.4	6.40	1.8	1.2	18.43	8.36
21	0.050	0.835	0.120	2.003	0.010	0.167	27.9	465.7	6.70	2.0	1.2	20.03	9.08
22	0.050	0.789	0.148	2.334	0.010	0.158	29.1	459.0	6.90	1.9	0.8	12.62	5.72
23	0.050	0.780	0.094	1.467	0.010	0.156	25.8	402.6	6.90	1.9	1.0	15.61	7.08
24	0.050	0.780	0.155	2.419	0.010	0.011	29.5	460.4	7.00	1.9	**63.0**	983.1	446
25	0.050	0.776	0.149	2.313	0.010	0.011	32.9	510.7	7.00	1.9	**49.8**	773.0	351
26	0.050	0.801	0.158	2.532	0.010	0.160	31.0	496.7	7.00	1.9	1.2	19.23	8.72
27	0.050	0.734	0.125	1.836	0.010	0.147	33.8	496.4	7.00	1.8	1.0	14.69	6.66
28	0.050	0.772	0.121	1.868	0.010	0.154	37.9	585.1	7.10	1.9	0.4	6.18	2.80
29	0.050	0.421	0.114	0.961	0.010	0.084	33.4	281.5	7.10	1.0	0.8	6.74	3.06
30	0.050	0.369	0.166	1.226	0.010	0.074	22.6	166.9	6.70	0.9	1.8	13.29	6.03
31	0.050	0.365	0.256	1.867	0.010	0.073	14.0	102.1	6.80	0.9	1.4	10.21	4.63
TOTAL	1.550	21.78	4.086	54.62	0.310	4.066	680.160	9,994	214.20	52.19	135.20	2,062.54	935
Sample Events	31	31	31	31	31	31	31	31	31	31	31	31	31
Daily Average	0.050	0.702	0.132	1.762	0.010	0.131	21.941	322.386	6.91	1.68	4.36	66.53	30.2

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: December 2003
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1	0.286	81.0	0.136	32	2.90	1.0	60	223
2						1.9		
3						2.0		
4	0.592	51.0	0.07	157	3.90	1.9	68	494
5						2.2		
6						2.1		
7						2.3		
8	0.556	52.6	0.058	162	4.50	1.9	59	415
9						2.0		
10						2.0		
11	0.790	47.2	0.052	148	4.00	2.0	75	559
12						1.1		
13						1.6		
14						1.0		
15	0.618	54.0	0.078	143	3.80	0.9	84	280
16						1.1		
17						1.8		
18	0.502	43.2	0.052	137	4.50	2.2	64	533
19						1.7		
20						1.8		
21						2.0		
22	0.488	44.2	0.060	134	4.60	1.9	59	422
23						1.9		
24						1.9		
25	0.418	44.8	0.060	128	4.30	1.9	67	472
26						1.9		
27						1.8		
28						1.9		
29	0.258	60.0	0.108	25	2.70	1.0	56	214
30						0.9		
31						0.9		

004/SWEENY **Month: December 2003**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
12/04/03	0.56	17	2.60	6.90	31.6
12/11/03	0.05	16.7	2.22	6.90	10.4
12/18/03	0.05	13.1	1.89	7.00	11.0
12/25/03	0.05	14.7	2.20	7.00	10.8

RINSATE AND TRIP BLANKS **Month: December 2003**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
004 Sweeny	12/11/03	**RB-12-11-03**	<0.05	<0.02	<0.01	<0.02
Trip Blank (D.I.water)	12/11/03	**TB-12-11-03**	<0.05	<0.02	<0.01	<0.02

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **December 2003**

KELLOGG TUNNEL FLOW
KT METER

Day	mgd	Ft/Flume
12/01/03	2.03	0.85
12/04/03	2.13	0.86
12/08/03	2.02	0.85
12/11/03	2.01	0.85
12/15/03	1.00	0.53
12/18/03	2.00	0.85
12/22/03	2.00	0.85
12/25/03	1.99	0.84
12/29/03	1.01	0.54

Day	**KT Flow Meter Reading**
11/30/03	206,330,000
12/31/03	262,743,080
KT Total for month	56,413,080

K.T. flow meter was reset to 0.0 on July 31st.

Day	**006 Flow Meter Reading**
11/30/03	0
12/31/03	52,191,500
006 Total for month	52,191,500

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
11/30/03	0.8	Hours	607.5	Hours
12/31/03	0.8	Hours	621.6	Hours
Total Hours	0.0	Hours	14	Hours
Total Flow for 004/Sweeny For The Month =			423,000.00	Gallons

004/Sweeny Discharge Pipe Flow

Date	Flow (GPM)
4-Dec	10-GPM
11-Dec	12-GPM
18-Dec	13-GPM

Day	**Lined Pond Water Level**			
11/30/03	2,500,000	gal	Elev. =	2271.5
12/31/03	1,000,000	gal	Elev. =	2269.0

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Bunker Hill Central Treatment Plant

Daily log December, 2003

		INFLUENT (KT)		AERATION BASIN			CLARIFIER				DISCHARGE 006				RECYCLE		LIME SLURRY		SLUDGE PUMP		POND PUMP	
DATE	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TURB	TEMP	pH4	GRAB	TURB	FLOW	SpG	FLOW	SpG	%solid	ON	OFF	ON	OFF
12/1	GF,DY	1409	3.4	8.0	8.1	8.3	8.4	8.3	0.64ntu	46	7.6	7.6	0.6ntu	0.98	1.034	750gpm			none		none	
12/2	GF,DY,GN			8.0	8.1		8.3	8.1	0.71ntu	48	7.5	7.6	0.68ntu	1.86	1.052	750gpm			none		none	
12/3	GF,DY,GN			8.0	8.1		N/A	8.2	1.78ntu	50	7.5	7.5	1.50ntu	2.02	1.061	750gpm			#3-715	12:30	none	
12/4	GF,DY,GN	1395	4.7	8.0	8.2		N/A	8.1	0.95ntu	50	7.4	7.4	1.19ntu	1.92	1.055.	750gpm			1-1425	14:45	none	
12/5	GN			8.0	8.0	8.1	N/A	7.7	1.16ntu	50	7.3	7.5	1.41ntu	2.21	1.05	750gpm			none		none	
12/6	GN			8.0	8.1	8.1	N/A	7.8	1.12ntu	50	7.4	7.5	0.75ntu	2.11	1.056	750gpm			none		none	
12/7	DY			8.0	8.3		N/A	8.2	0.92ntu	50	7.5	7.6	1.01ntu	2.26	1.062	750gpm			#1-755	8:20	none	
12/8	DY,GF	1402	5.0	8.0	8.3	8.2	N/A	8.2	1.10ntu	52	7.6	7.6	1.18ntu	1.86	1.063	750gpm			#3-815	11:15	none	
12/9	GF,DY,GN			8.0	8.1		8.0	8.1	1.15ntu	50	7.6	7.5	1.14ntu	2.00	1.054	750gpm			none		none	
12/10	GF,DY,GN			8.0	8.1		8.0	8.1	1.20ntu	51	7.6	7.5	1.30ntu	1.99	1.062	750gpm			#3-7:30	10:30	none	
12/11	GF,DY,GN	1400	4.4	8.0	8.1	8.1	8.2	7.9	1.05ntu	52	7.6	7.4	1.80ntu	1.97	1.060	750gpm			#3-7:45	11:45	#1-8:50	9:30
12/12	GN			8.0	8.5		8.5	8.4	1.00ntu	50	7.8	7.7	1.10ntu	1.11	1.030	750gpm			none		#1&2-830	11:00:00
12/13	GN			8.0	8.1	8.0	8.3	8.2	0.78ntu	50	7.7	7.6	0.90ntu	1.61	1.045	750gpm			none		none	
12/14	DY			8.0	8.0		7.8	7.9	0.81ntu	48	7.6	7.7	0.89ntu	1.00	1.048	750gpm			none		none	
12/15	GF,DY	694	3.0	8.0	8.0		8.0	7.9	0.91ntu	48	7.5	7.5	0.82ntu	0.89	1.047	750gpm			none		none	
12/16	GF,DY,GN			8.0	8.0		8.0	7.8	1.01ntu	46	7.5	7.4	0.85ntu	1.05	1.045	750gpm			none		none	
12/17	GF,DY,GN			8.0	8.0		7.8	7.8	1.76 ntu	48	7.4	7.4	1.35ntu	1.82	1.066	750gpm	1.035	5.5	#3-7:15	10:15	See log	
12/18	GF,DY,GN	1396	5.3	8.0	8.8	8.8	8.2	8.2	1.56ntu	48	7.6	7.6	1.53 ntu	2.20	1.045	750gpm	1.040	6.3	none		none	
12/19	GN			8.0	8.2		8.1	8.1	1.83 ntu	50	7.7	7.7	1.83ntu	1.72	1.060	750gpm	nf		#3-8:55	11:55	none	
12/20	GN			8.0	8.1	8.0	7.8	7.7	1.21 ntu	50	7.5	7.5	1.32 ntu	1.84	1.046	750gpm	nf		none		none	
12/21	DY			8.0	8.0		8.0	8.0	1.78ntu	48	7.6	7.5	1.50ntu	2.00	1.058	750gpm	1.035	5.1	none		none	
12/22	DY,GF	1388	5.3	8.0	8.0		8.1	8.0	3.41ntu	54	7.5	7.6	2.48ntu	1.89	1.066	750gpm	1.030	4.8	#3-7:30	10:30	none	
12/23	GF,DY,GN			8.0	8.1	8.1	8.0	8.0	3.56 ntu	50	7.5	7.6	2.56 ntu	1.87	1.06	750gpm	1.035	5.0	#3-9:30	12:30	none	
12/24	GF,DY,GN			8.0	8.0		8.0	8.1	2.23ntu	52	7.6	7.6	**2.05ntu**	1.87	1.049	750gpm	1.040	6.3	none		none	
12/25	GF,DY,GN	1381	4.6	8.0	8.0		8.0	8.0	4.31ntu	52	7.5	7.6	**3.18ntu**	1.86	1.056	750gpm	1.037	6.1	none		none	
12/26	GN			8.0	7.9	7.9	7.9	7.9	7.35ntu	52	7.5	7.6	4.56ntu	1.92	1.061	750gpm	1.043	7.1	#3-7:30	9:30	none	
12/27	GN			8.0	8.0		8.0	7.9	3.56ntu	52	7.5	7.5	2.99ntu	1.76	1.055	750gpm	1.034	5.0	#3-6:30	7:30	none	
12/28	DY			8.0	8.0		8.1	8.0	1.42ntu	51	7.5	7.5	1.28ntu	1.85	1.056	750gpm	1.036	6.0	none		none	
12/29	GF,DY	701	3.0	8.0	7.9		8.0	7.9	1.87nyu	48	7.4	7.4	1.45ntu	1.01	1.040	750gpm	1.026	3.2	none		none	
12/30	GF,DY,GN			8.0	8.1		8.0	7.8	3.25ntu	44	7.4	7.3	1.97ntu	0.88	1.040	750gpm	1.014	2.0	none		none	
12/31	GF,DY,GN	687	3.0	8.0	8.1		7.1	7.9	15.00ntu	46	7.5	7.4	12.12ntu	0.61	1.045	750gpm	N/A	N/A	none		none	

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: December 2003

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	12/04/03	Lead	0.375	0.400	mg/L			-6.5%		
Evaluation		Zinc	0.756	0.800	mg/L			-5.7%		
Sample		Cadmium	0.060	0.060	mg/L			0.0%		
(CTPXX-12-04-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	12/05/03	Lead	0.050	0.050	mg/L	103%		0.0%		
MS/MSD		Zinc	0.084	0.089	mg/L	108%		-5.8%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	106%		0.0%		
		Manganese	21.2	21.0	mg/L	106%		0.9%		
		pH	6.9		units					
		TSS	0.4		mg/L					
Performance	12/11/03	Lead	0.387	0.400	mg/L			-3.3%		
Evaluation		Zinc	0.770	0.800	mg/L			-3.8%		
Sample		Cadmium	0.063	0.060	mg/L			4.9%		
(CTPXX-12-11-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
004/Sweeny	12/11/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	16.7	16.4	mg/L			1.8%		
QC Sample		Cadmium	2.220	2.160	mg/L			2.7%		
		Manganese			mg/L					
		pH	6.9	6.9	units			0.0%		
		TSS	10.4	10.6	mg/L			-1.9%		
006/CTP Outfall	12/12/03	Lead	0.050	0.050	mg/L	105%		0.0%		
MS/MSD		Zinc	0.095	0.081	mg/L	109%		15.9%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	103%		0.0%		
		Manganese	27.9	25.8	mg/L	106%		7.8%		
		pH	7.0		units					
		TSS	0.6		mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Kellogg Tunnel	12/15/03	Lead	0.246	0.308	mg/L			22.4%		Not applicable to the
		Zinc	70.60	67.80	mg/L			4.0%		NPDES Permit.
QC Sample		Cadmium	0.106	0.104	mg/L			1.9%		
		Manganese	31.6	30.0	mg/L			5.2%		
		pH	2.70	2.80	units			-3.6%		
		TSS	68.0	68.0	mg/L			0.0%		
Performance	12/18/03	Lead	0.377	0.400	mg/L			-5.9%		
Evaluation		Zinc	0.750	0.800	mg/L			-6.5%		
Sample		Cadmium	0.063	0.060	mg/L			4.9%		
(CTPXX-12-18-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	12/21/03	Lead	0.050	0.050	mg/L	93%		0.0%		
MS/MSD		Zinc	0.120	0.121	mg/L	94%		-0.8%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	91%		0.0%		
		Manganese	27.90	27.30	mg/L	95%		2.2%		
		pH	6.70		units					
		TSS	1.200		mg/L					
006/CTP Outfall	12/23/03	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.094	0.100	mg/L			-6.2%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	25.80	23.2	mg/L			10.6%		
		pH	6.90	6.9	units			0.0%		Results are below specified
		TSS	1.00	0.80	mg/L			22.2%		detection limits.

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	12/25/03	Lead	0.395	0.400	mg/L			1.3%		
Evaluation		Zinc	0.751	0.800	mg/L			-6.3%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-12-25-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	12/26/03	Lead	0.050	0.050	mg/L	97%		0.0%		
MS/MSD		Zinc	0.158	0.162	mg/L	96%		-2.5%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	100%		0.0%		
		Manganese	31.00	29.40	mg/L	94%		5.3%		
		pH	7.00		units					
		TSS	1.200		mg/L					
December, 2003 Completeness		Lead	11	Valid		11	Total	100.0%		
		Zinc	11	Valid		11	Total	100.0%		
		Cadmium	11	Valid		11	Total	100.0%		
		Manganese	6	Valid		6	Total	100.0%		
		pH	7	Valid		7	Total	100.0%		
		TSS	7	Valid		7	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.69	0.92
Cadmium	0.0600	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

AMERICAN ANALYTICAL SERVICES

BHCTP: 121603

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-12-01-03	water	120103	<0.050	0.145	1.96	<0.010	6.60	0.20
2	KT-12-01-03	water	120103	0.286	81.0	32.0	0.136	2.90	60.0
3	006-12-02-03	water	120203	<0.050	0.144	2.87	<0.010	6.70	0.60
4	006-12-03-03	water	120303	<0.050	0.133	5.95	<0.010	6.80	0.20
5	006-12-04-03	water	120403	<0.050	0.127	11.3	<0.010	6.80	0.60
6	KT-12-04-03	water	120403	0.592	51.0	157.0	0.070	3.90	68.0
7	004-12-04-03	water	120403	0.561	17.1	na	2.60	6.90	31.6
8	CTPXX-12-04-03	water	120403	0.375	0.756	na	0.060	na	na
9	006-12-05-03	water	120503	<0.050	0.084	21.2	<0.010	6.90	0.40
10	006-12-06-03	water	120603	<0.050	0.093	27.2	<0.010	6.70	0.80
11	006-12-07-03	water	120703	<0.050	0.111	30.1	<0.010	7.00	1.00
12	006-12-08-03	water	120803	<0.050	0.087	24.7	<0.010	7.10	0.40
13	KT-12-08-03	water	120803	0.556	52.6	162.0	0.058	4.50	59.0
14	006-12-09-03	water	120903	<0.050	0.105	32.0	<0.010	7.10	0.40
	006-12-05-03	duplicate	120503	<0.050	0.089	21.0	<0.010		
	006-12-05-03	spike	120503	103%	108%	106%	106%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 121803

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-12-10-03	water	121003	<0.050	0.099	34.5	<0.010	6.80	0.80
2	006-12-11-03	water	121103	<0.050	0.130	37.2	<0.010	6.80	1.20
3	KT-12-11-03	water	121103	0.790	47.2	148.0	0.052	4.00	75.0
4	004-12-11-03	water	121103	<0.050	16.7	na	2.22	6.90	10.4
5	QC-12-11-03	water	121103	<0.050	16.4	na	2.16	6.90	10.6
6	TB-12-11-03	water	121103	<0.050	<0.020	<0.020	<0.010	na	na
7	RB-12-11-03	water	121103	<0.050	<0.020	<0.020	<0.010	na	na
8	CTPXX-12-11-03	water	121103	0.387	0.770	na	0.063	na	na
9	006-12-12-03	water	121203	<0.050	0.095	27.9	<0.010	7.00	0.60
10	006-12-13-03	water	121303	<0.050	0.104	18.6	<0.010	7.10	0.60
11	006-12-14-03	water	121403	<0.050	0.112	11.5	<0.010	7.10	0.60
12	006-12-15-03	water	121503	<0.050	0.134	7.88	<0.010	7.10	1.00
13	KT-12-15-03	water	121503	0.246	70.6	31.6	0.106	2.70	68.0
14	QC-12-15-03	water	121503	0.308	67.8	30.0	0.104	2.80	68.0
15	006-12-16-03	water	121603	<0.050	0.213	6.79	<0.010	7.10	0.20
	006-12-12-03	duplicate	121203	<0.050	0.081	25.8	<0.010		
	006-12-12-03	spike	121203	105%	109%	106%	103%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 010704

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-12-17-03	water	121703	<0.050	0.232	7.41	<0.010	6.80	0.60
2	006-12-18-03	water	121803	<0.050	0.168	17.4	<0.010	6.90	0.60
3	KT-12-18-03	water	121803	0.502	43.2	137.0	0.052	4.50	64.0
4	004-12-18-03	water	121803	<0.050	13.1	na	1.89	7.00	11.0
5	CTPXX-12-18-03	water	121803	0.377	0.750	na	0.063	na	na
6	006-12-19-03	water	121903	<0.050	0.083	15.0	<0.010	7.20	0.80
7	006-12-20-03	water	122003	<0.050	0.081	20.8	<0.010	6.40	1.20
8	006-12-21-03	water	122103	<0.050	0.120	27.9	<0.010	6.70	1.20
9	006-12-22-03	water	122203	<0.050	0.148	29.1	<0.010	6.90	0.80
10	KT-12-22-03	water	122203	0.488	44.2	134.0	0.060	4.60	59.0
11	006-12-23-03	water	122303	<0.050	0.094	25.8	<0.010	6.90	1.00
12	QC-12-23-03	water	122303	<0.050	0.100	23.2	<0.010	6.90	0.80
13	006-12-24-03	water	122403	<0.050	0.155	29.5	<0.010	7.00	63.0
14	006-12-25-03	water	122503	<0.050	0.149	32.9	<0.010	7.00	49.8
15	KT-12-25-03	water	122503	0.418	44.8	128.0	0.060	4.30	67.0
16	004-12-25-03	water	122503	<0.050	14.7	na	2.20	7.00	10.8
17	CTPXX-12-25-03	water	122503	0.395	0.751	na	0.062	na	na
18	006-12-26-03	water	122603	<0.050	0.158	31.0	<0.010	7.00	1.20
19	006-12-27-03	water	122703	<0.050	0.125	33.8	<0.010	7.00	1.00
20	006-12-28-03	water	122803	<0.050	0.121	37.9	<0.010	7.10	0.40
21	006-12-29-03	water	122903	<0.050	0.114	33.4	<0.010	7.10	0.80
22	KT-12-29-03	water	122903	0.258	60.0	24.8	0.108	2.70	56.0
23	006-12-30-03	water	123003	<0.050	0.166	22.6	<0.010	6.70	1.80
24	006-12-31-03	water	123103	<0.050	0.256	14.0	<0.010	6.80	1.40
	006-12-21-03	duplicate	122103	<0.050	0.121	27.3	<0.010		
	006-12-21-03	spike	122103	92.6%	93.6%	95.0%	91.2%		
	006-12-26-03	duplicate	122603	<0.050	0.162	29.4	<0.010		
	006-12-26-03	spike	122603	97.4%	96.4%	93.5%	100%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 12-04-03 Inspected By: D. Young, G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.01 MGD, .85ft/flume 1396 gpm.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 10/11/03 Inspected By: D.Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is 2.00MGD, Staff Gauge reading 0.84ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 11/21/03 Inspected By: G.Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacing and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

Removed a small amount of debris from the upper trash rack.

The Kellogg Tunnel flume flow is 1.98MGD, Staff Gauge reading 0.84ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 11/26/03 Inspected By: D.Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is 2.01MGD, Staff Gauge reading 0.85ft/flume.

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month:	January, 2004		
Facility:	Central Treatment Plant		
Location:	Bunker Hill Superfund Site		
Contract Number:	DACW67-02-D-1014		
Total Flow For The Month From 006:		49,012,000	gallons
Total Flow From Kellogg Tunnel:		52,223,080	gallons
Percent of Influent Successfully Treated:			100.0%

31 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 186 potential exceedances
186 - 0 exceedances = 186 186/186 = 100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with five PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml trace metal samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the '004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

01-01-04 The CIA staff gauge reading is 2.70 ft at this time.
01-05-04 07:00 Placed the new lime system into operation, removed the old lime system from service. Flushed all lime lines and pumps associated with the old system.
01-05-04 The groundwater elevation in the Clarifier center column at this time is 2260.1'. This is 22'0" down from the cover plate on the center column. December 2003 groundwater reading was 2260.3'.
01-05-04 Results of the sludge gun test performed today are: 11' out from the center column, the sludge depth is 24". 25' out from the center column, the sludge depth is 6".
01-06-04 During the routine daily am inspection, it was discovered that the old slurry tank had frozen and bent the slurry mixer shaft and mixing blade. This unit was locked out until repairs can be made.
01-06-04 Cash Balancing Services performed the quarterly CTP pump and motor analysis on all CTP pumps and motors. All pumps and motors associated with the new lime system were included in this evaluation.
Listed below are the pumps and motors needing attention:

1) The #3 Clarifier underflow pump needs to be rebuilt, as it is vibrating excessively.
2) The Lined Pond pump #3 needs to be rebuilt, as the bearings and seals are in poor condition.
3) Polishing pond pump #1 needs the impeller cleaned. Buildup on the impeller causes slight vibrations.
4) Silo B grit screw drive motor had excessive vibrations. Inspection revealed loose motor mounts. Motor mounts were tightened, removing the vibration from the motor.
5) Slurry pumps #1 and #2 also are vibrating excessively. The belt pulleys are in need of alignment and balancing.
6) Slaker A drive motor has elevated vibration readings. This may be caused by belt alignment or bad bearings in this motor. The pulleys and belts on this unit may need aligning or pulleys may need balancing.

01-08-04 Repaired the leaking sample line in the head house. The aged and deteriorated sample valve was found to be leaking, filling the head house sump with water. The sump pump was used to remove the water to the Polishing Pond to allow access to the damaged pipe for repairs.
01-08-04 The floc mixer #2 was found to be leaking gear oil from the casing. The failed oil seals were replaced and new shaft drive bushings were ordered. The bushings will be replaced upon arrival.
01-09-04 Placed slaker A in service. Ran slaker A through complete test cycle, working to specifications after unplugging the cone area.

01-13-04 Inspected all mine water line vaults, valves and pipes in preparation for main line pigging.
01-14-04 Performed the main line-lined pond branch cleaning with five cleaning pigs being sent through the line.
01-15-04 Performed the direct feed line branch cleaning with four cleaning pigs being sent through the line.
01-23-04 Increased the flocculant dosage from 2.0 ppm to 2.5 ppm, to control high turbidity and aid in lowering 006 TSS.
01-30-03 Unplugged drainage culvert located behind the water truck fill station, to prevent flooding in the head house.

Lessons Learned

Jan-04 Due to the TSS exceedances occurring in December, the weekly cleaning of the 006 sample collection area has been increased to a minimum of twice weekly. The sample collection unit and 24-hour composite container will now be exchanged with clean units twice weekly. The sample influent line will also be cleaned twice weekly.

01-07-04 The lime injection valve closed period timer on the new lime injection system must be manually reset to 85 seconds each time the close period increases over 400 seconds. The valve closed period will only increase above 400 seconds if the mine water is directed to the lined pond or decreases to low flow from the mine. The closed period timer will need to be reset each time the flow increases from low flow or no flow, to normal flow.

The lime injection valve closed period automatically adjusts to control the amount of lime injected into the treatment process. As the influent flow rate decreases from normal flow to low flow or no flow, the HMI computer program automatically increases the lime injecting valve closed period to slow or stop the flow of lime into the CTP.

CH2M Hill computer programmers will place an automatic valve closed period reset in the HMI programming. This will be performed during the programmer's next scheduled site visit. Manual closed period resets will continue to be performed by the CTP operators until the program change takes place.

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2004	1	1	2004	1	31
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	Quantity or Loading (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	(46-53) AVERAGE	Quality or Concentration (54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				6.4		8.0			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.58	2.64	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.69	1.32	Lbs/Day		0.05	0.14	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	2.66	7.30	Lbs/Day		0.21	0.57	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.126	0.22	Lbs/Day		0.010	0.010	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	313.1	1191	Lbs/Day		21.68	54.10	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	23.3	186	Lbs/Day		1.8	15	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY: GARY FULTON

REVIEWED BY: DON FERGUSON

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: January, 2004

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY	MG/L	LBS/DAY		MGD	MG/L	LBS/DAY	KG/DAY
1	0.050	0.371	0.226	1.677	0.010	0.074	7.47	55.42	6.40	0.89	1.4	10.4	4.71
2	0.050	0.366	0.181	1.325	0.010	0.073	5.02	36.74	6.60	0.88	5.0	36.6	16.6
3	0.050	0.592	0.176	2.086	0.010	0.118	4.00	47.40	6.70	1.42	4.0	47.4	21.5
4	0.050	0.772	0.204	3.149	0.010	0.154	8.30	128.1	6.70	1.85	2.8	43.2	19.6
5	0.050	0.764	0.251	3.833	0.010	0.153	13.1	200.1	6.70	1.83	1.6	24.4	11.1
6	0.050	0.784	0.206	3.232	0.010	0.157	15.7	246.3	6.60	1.88	8.2	129	58.3
7	0.050	0.638	0.572	7.303	0.010	0.128	34.6	441.8	6.70	1.53	14.6	186	84.5
8	0.050	0.722	0.496	7.161	0.010	0.144	42.2	609.2	7.00	1.73	0.8	11.5	5.24
9	0.050	0.787	0.211	3.319	0.010	0.157	42.0	660.7	7.10	1.89	1.2	18.9	8.56
10	0.138	1.324	0.154	1.478	0.010	0.096	42.8	410.7	7.20	1.15	1.0	9.60	4.35
11	0.050	0.371	0.180	1.335	0.010	0.074	18.0	133.5	7.30	0.89	1.0	7.42	3.36
12	0.050	0.366	0.192	1.407	0.010	0.073	12.0	87.92	7.40	0.88	0.6	4.40	1.99
13	0.050	0.359	0.354	2.541	0.010	0.072	7.39	53.04	7.40	0.86	1.8	12.9	5.86
14	0.050	0.643	0.410	5.269	0.010	0.129	6.33	81.35	7.20	1.54	1.6	20.6	9.33
15	0.050	0.572	0.411	4.699	0.010	0.114	13.4	153.2	7.20	1.37	2.2	25.2	11.41
16	0.050	0.759	0.204	3.098	0.010	0.152	18.6	282.5	7.20	1.82	1.0	15.2	6.89
17	0.050	0.759	0.084	1.276	0.010	0.152	24.8	376.7	7.10	1.82	0.6	9.11	4.13
18	0.050	0.801	0.083	1.330	0.010	0.160	19.0	304.4	7.20	1.92	0.8	12.8	5.81
19	0.050	0.755	0.083	0.024	0.010	0.151	24.8	374.6	7.20	1.81	0.6	9.06	4.11
20	0.050	0.739	0.116	1.713	0.010	0.148	27.0	398.8	7.30	1.77	0.4	5.91	2.68
21	0.050	0.922	0.271	4.998	0.010	0.184	41.4	763.5	7.30	2.21	1.2	22.1	10.0
22	0.050	1.043	0.223	4.652	0.010	0.209	45.7	953.4	7.50	2.50	0.8	16.7	7.57
23	0.050	1.101	0.207	4.559	0.010	0.220	54.1	1191.4	7.60	2.64	0.6	13.2	5.99
24	0.050	0.567	0.148	1.680	0.010	0.011	48.9	555.0	7.30	1.36	0.8	9.08	4.12
25	0.050	0.434	0.140	1.215	0.010	0.011	31.8	276.0	7.30	1.04	0.2	1.74	0.79
26	0.050	0.361	0.071	0.513	0.010	0.072	13.5	97.45	7.50	0.87	0.4	2.89	1.31
27	0.050	0.388	0.061	0.473	0.010	0.078	5.03	39.04	8.00	0.93	0.4	3.10	1.41
28	0.050	0.730	0.097	1.417	0.010	0.146	2.91	42.50	7.70	1.75	0.2	2.92	1.32
29	0.050	0.830	0.068	1.129	0.010	0.166	7.88	130.9	7.60	1.99	0.2	3.32	1.51
30	0.055	0.911	0.104	1.723	0.010	0.166	17.4	288.2	7.70	1.99	0.2	3.31	1.50
31	0.050	0.845	0.174	2.940	0.010	0.169	17.0	287.3	7.70	2.03	0.2	3.38	1.53
TOTAL	1.643	21.38	6.358	82.55	0.310	3.912	672.130	9,707	223.40	49.01	56.40	721.43	327
Sample Events	31	31	31	31	31	31	31	31	31	31	31	31	31
Daily Average	0.053	0.690	0.205	2.663	0.010	0.126	21.682	313.134	7.21	1.58	1.82	23.27	10.6

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: January, 2004
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1	0.412	66.2	0.104	28	2.60	0.9	65	219
2						0.9		
3						1.4		
4						1.9		
5	0.588	43.4	0.050	143	4.10	1.8	62	429
6						1.9		
7						1.5		
8	0.540	53.0	0.044	163	4.50	1.7	62	406
9						1.9		
10						1.2		
11						0.9		
12	0.434	80.2	0.096	33	2.80	0.9	63	209
13						0.9		
14						1.5		
15	0.440	45.6	0.054	144	4.60	1.4	64	332
16						1.8		
17						1.8		
18						1.9		
19	0.570	46.6	0.050	143	4.50	1.8	64	438
20						1.8		
21						2.2		
22	0.508	48.8	0.050	146	4.60	2.5	67	634
23						2.6		
24						1.4		
25						1.0		
26	0.276	71.0	0.102	29	2.70	0.9	65	213
27						0.9		
28						1.8		
29	0.600	49.4	0.062	154	4.20	2.0	61	459
30						2.0		
31						2.0		

004/SWEENY **Month: January, 2004**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
01/01/04	0.14	14.3	1.92	6.90	12.2
01/08/04	0.14	13.8	1.93	7.10	10.2
01/15/04	0.05	14.3	1.84	7.10	9.8
01/22/04	0.05	14.3	2.03	7.40	11.2
01/29/04	0.26	15.4	1.96	7.40	15.6

RINSATE AND TRIP BLANKS **Month: January, 2004**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
Kellogg Tunnel	01/05/04	**RB-01-05-04**	<0.05	<0.02	<0.01	<0.02
Trip Blank (D.I.water)	01/05/04	**TB-01-05-04**	<0.05	<0.02	<0.01	<0.02

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **January, 2004**

KELLOGG TUNNEL FLOW
KT METER

Day	mgd	Ft/Flume
01/01/04	0.99	0.53
01/05/04	2.01	0.85
01/08/04	2.03	0.86
01/12/04	1.09	0.56
01/15/04	2.13	0.88
01/19/04	2.01	0.84
01/22/04	2.02	0.85
01/26/04	0.96	0.52
01/29/04	1.01	0.54

Day	**KT Flow Meter Reading**
12/31/03	0
01/31/04	52,223,080
KT Total for month	52,223,080

K.T. flow meter was reset to 0.0 December 31, 8am.

Day	**006 Flow Meter Reading**
12/31/03	0
01/31/04	49,012,000
006 Total for month	49,012,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
12/31/03	0.8	Hours	621.6	Hours
01/31/04	0.8	Hours	632.3	Hours
Total Hours	0.0	Hours	11	Hours
Total Flow for 004/Sweeny For The Month =			321,000.00	Gallons

004/Sweeny Discharge Pipe Flow

Date	Flow (GPM)
8-Jan	9.4
10-Jan	10.0
29-Jan	12.5

Day	**Lined Pond Water Level**			
12/31/03	1,000,000	gal	Elev. =	2269.0
01/31/04	2,200,000	gal	Elev. =	2271.0
.				

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: January, 2004

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	01/01/04	Lead	0.425	0.400	mg/L			6.1%		
Evaluation		Zinc	0.769	0.800	mg/L			-4.0%		
Sample		Cadmium	0.058	0.060	mg/L			-3.4%		
(CTPXX-01-01-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	01/02/04	Lead	0.050	0.050	mg/L	99%		0.0%		
MS/MSD		Zinc	0.181	0.201	mg/L	102%		-10.5%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	98%		0.0%		
		Manganese	5.02	5.30	mg/L	104%		-5.4%		
		pH	6.6		units					
		TSS	5.0		mg/L					
Kellogg Tunnel	01/05/04	Lead	0.588	0.560	mg/L			4.9%		
		Zinc	43.40	40.60	mg/L			6.7%		
QC Sample		Cadmium	0.050	0.048	mg/L			4.1%		
		Manganese	143.0	143.0	mg/L			0.0%		
		pH	4.1	4.1	units			0.0%		
		TSS	62	63	mg/L			-1.6%		
006/CTP Outfall	01/06/04	Lead	0.050	0.050	mg/L	98%		0.0%		
MS/MSD		Zinc	0.206	0.221	mg/L	103%		-7.0%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	95%		0.0%		
		Manganese	15.7	18.2	mg/L	92%		-14.7%		
		pH	6.6		units					
		TSS	8.2		mg/L					
Performance	01/08/04	Lead	0.439	0.400	mg/L			9.3%		
Evaluation		Zinc	0.865	0.800	mg/L			7.8%		
Sample		Cadmium	0.065	0.060	mg/L			8.0%		
(CTPXX-01-08-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	01/09/04	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.21	0.22	mg/L			-3.3%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	42.0	45.0	mg/L			-6.9%		
		pH	7.10	7.30	units			-2.8%		Results are below specified
		TSS	1.2	0.8	mg/L			40.0%		detection limits.
006/CTP Outfall	01/15/04	Lead	0.050	0.050	mg/L	86%		0.0%		
MS/MSD		Zinc	0.411	0.417	mg/L	100%		-1.4%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	86%		0.0%		
		Manganese	13.40	13.90	mg/L	112%		-3.7%		
		pH	7.20		units					
		TSS	2.200		mg/L					
Performance	01/15/04	Lead	0.375	0.400	mg/L			-6.5%		
Evaluation		Zinc	0.799	0.800	mg/L			-0.1%		
Sample		Cadmium	0.060	0.060	mg/L			0.0%		
(CTPXX-01-15-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
004/Sweeny	01/15/04	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	14.3	14.6	mg/L			-2.1%		
QC Sample		Cadmium	1.8	1.9	mg/L			-1.1%		
		Manganese	n/a	n/a	mg/L			n/a		
		pH	7.10	7.10	units			0.0%		
		TSS	9.8	9.4	mg/L			4.2%		
Performance	01/22/04	Lead	0.391	0.400	mg/L			-2.3%		
Evaluation		Zinc	0.931	0.800	mg/L			15.1%		
Sample		Cadmium	0.069	0.060	mg/L			14.0%		
(CTPXX-01-22-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	01/23/04	Lead	0.050	0.050	mg/L	99%		0.0%		
MS/MSD		Zinc	0.207	0.196	mg/L	104%		5.5%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	104%		0.0%		
		Manganese	54.10	56.20	mg/L	100%		-3.8%		
		pH	7.60		units					
		TSS	0.600		mg/L					
006/CTP Outfall	01/28/04	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.097	0.086	mg/L			12.0%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	2.91	2.91	mg/L			0.0%		
		pH	7.7	7.8	units			-1.3%		Results are below specified
		TSS	0.2	0.4	mg/L			-66.7%		detection limits.
Performance	01/29/04	Lead	0.411	0.400	mg/L			2.7%		
Evaluation		Zinc	0.944	0.800	mg/L			16.5%		
Sample		Cadmium	0.072	0.060	mg/L			18.2%		
(CTPXX-01-29-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
January, 2004 Completeness		Lead	13	Valid		13	Total	100.0%		
		Zinc	13	Valid		13	Total	100.0%		
		Cadmium	13	Valid		13	Total	100.0%		
		Manganese	7	Valid		7	Total	100.0%		
		pH	8	Valid		8	Total	100.0%		
		TSS	8	Valid		8	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.690	0.920
Cadmium	0.060	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

Bunker Hill Central Treatment Plant

Daily log January, 2004

		INFLUENT (KT)		AERATION BASIN			CLARIFIER				DISCHARGE 006				RECYCLE		LIME SLURRY		SLUDGE PUMP		POND PUMP	
DATE	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TURB	TEMP	pH4	GRAB	TURB	FLOW	SpG	FLOW	SpG	%solid	ON	OFF	ON	OFF
1/1	GN,DY	687	3.1	8.0	8.0	8.2	8.1	8.0	5.9ntu	50	7.5	7.5	4.7ntu	0.889	1.043	750gpm	old	system	none		none	
1/2	GN,GF			8.0	8.4		8.1	8.0	2.8ntu	50	7.4	7.4	2.7ntu	0.877	1.042	750gpm	old	system	none		none	
1/3	GN			8.0	8.5		8	8.0	2.7ntu	50	7.5	7.5	2.3ntu	1.420	1.062	750gpm	old	system	#1-7:00	7:30	none	
1/4	DY			8.0	8.3		8.2	8.1	4.18ntu	44	7.5	7.6	2.43ntu	1.850	1.054	750gpm	old	system	none		none	
1/5	DY,GF	1395	5.5	8.0	8.2	8.0	8.2	8.0	8.17ntu	42	7.5	7.4	4.56ntu	1.830	1.062	750gpm	1.026	4.0	#3-7:45	10:45	none	
1/6	GF,DY,GN			8.0	8.3		8.1	7.7	14.2ntu	42	7.5	7.3	8.56ntu	1.880	1.056	750gpm	1.043	6.6	none		#1-09:30	10:30
1/7	GF,DY,GN			8.0	7.4		7.5	7.7	8.50ntu	43	7.4	7.4	9.80ntu	1.530	1.064	750gpm	1.024	3.8	#1-7:05	8:00	none	
1/8	GF,DY,GN	1409	5.4	8.0	8.1		8	8.1	1.92ntu	48	7.4	7.5	4.81ntu	1.730	1.047	750gpm	1.045	6.8	none		none	
1/9	GN,GF			8.0	8.1		8.0	8.1	3.05 ntu	50	7.4	7.5	4.35ntu	1.880	1.058	750gpm	1.053	8.3	#1-8:35	9:05	none	
1/10	GN			8.0	8.1	8.1	8.1	8.0	2.25ntu	50	7.4	7.3	1.96ntu	1.150	1.036	750gpm	1.030	4.8	none		none	
1/11	DY			8.0	7.9		7.8	7.9	.98ntu	50	7.5	7.5	1.01ntu	0.889	1.032	750gpm	1.013	3.0	none		none	
1/12	GF,DY	756	3.0	8.0	8.1		8.0	8.0	2.42ntu	48	7.4	7.5	1.51ntu	0.878	1.038	750gpm	1.019	3.2	none		none	
1/13	GF,DY,GN			8.0	8.3		8.0	8.0	6.65ntu	46	7.5	7.4	3.21ntu	0.860	1.038	750gpm	1.023	2.3	nont		none	
1/14	GF,DY,GN			8.0	7.1		N/A	7.9	4.80ntu	48	7.4	7.5	4.34ntu	1.540	1.023	750gpm	1.080	12.3	none		none	
1/15	GF,DY,GN	1479	5.1	8.0	7.9		N/A	8.0	9.21ntu	50	7.6	7.5	5.53ntu	1.370	1.060	750gpm	1.049	7.9	#1-10:40	11:40	#2-12:45	13:35
1/16	GN,GF			8.0	7.9	8.0	8.0	8.0	3.50 ntu	52	7.5	7.6	4.32ntu	1.820	1.051	750gpm	1.050	7.9	none		none	
1/17	GN			8.0	8.2		8.2	8.1	1.38 ntu	52	7.5	7.4	1.36 ntu	1.820	1.060	750gpm	1.073	10.8	#1-6:40	7:15	none	
1/18	DY			8.0	8.0		8.2	8.1	.65ntu	50	7.6	7.7	.83ntu	1.920	1.051	750gpm	1.071	10.9	none		none	
1/19	DY,GF	1395	5.2	8.0	8.0		8.2	8.1	1.03ntu	54	7.5	7.7	.93ntu	1.810	1.057	750gpm	1.062	9.7	none		none	
1/20	GF,DY,GN			8.0	8.0		8.2	8.0	2.21ntu	54	7.5	7.6	1.30ntu	1.770	1.064	750gpm	1.056	9.0	#1-7:30	8:45	#2-10:00	14:00
1/21	GF,DY,GN			8.0	8.0		8.2	8.1	1.41ntu	54	7.5	7.7	2.10ntu	2.210	1.045	750gpm	1.056	9.0	#1-1350	14:15	#2-6:30	14:00
1/22	GF,DY,GN	1402	5.6	8.0	8.1		8.2	8.1	.82ntu	50	7.6	7.8	1.30ntu	2.500	1.040	750gpm	1.057	9.0	none		#2-6:45	14:00
1/23	GN,GF			8.0	8.0	8.4	8.0	8.1	.82 ntu	51	7.5	7.6	.64ntu	2.639	1.045	750gpm	1.057	9.0	none		none	
1/24	GN			8.0	8.4		8.0	8.1	.78ntu	50	7.5	7.5	.86 ntu	1.360	1.038	750gpm	1.056	9.0	none		none	
1/25	DY			8.0	8.5		8.2	8.1	.89ntu	48	7.5	7.6	.71ntu	1.040	1.037	750gpm	1.057	9.0	none		none	
1/26	GF,DY	666	3.0	8.0	8.8	8.7	8.7	8.7	.71ntu	46	7.8	7.8	.74ntu	0.865	1.043	750gpm	1.055	8.7	none		none	
1/27	GF,DY,GN			8.0	8.0		8.5	8.3	1.24ntu	46	8.1	8.1	1.05ntu	0.930	1.042	750gpm	1.049	7.9	none		none	
1/28	GF,DY,GN			8.0	8.1		8.2	8.2	1.11ntu	48	7.7	7.8	1.30ntu	1.750	1.064	750gpm	1.055	8.6	#1-7:30	8:15	none	
1/29	GF,DY,GN	1388	5.1	8.0	8.1		8.1	8.1	1.00ntu	47	7.6	7.6	.90ntu	2.000	1.055	750gpm	1.056	9.0	None		None	
1/30	GF,GN			8.0	8.0	8.1	7.8	7.7	2.31ntu	51	7.4	7.5	1.24ntu	1.980	1.070	750gpm	1.059	9.3	#1-7:30	8:00	none	
1/31	GN			8.0	8.0		7.9	7.8	1.87 ntu	50	7.5	7.5	1.09 ntu	2.025	1.060	750gpm	1.060	9.4	none		none	

AMERICAN ANALYTICAL SERVICES

BHCTP: 011604

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-01-01-04	water	010104	<0.050	0.226	7.47	<0.010	6.40	1.40
2	KT-01-01-04	water	010104	0.412	66.2	28.0	0.104	2.60	65.0
3	004-01-01-04	water	010104	0.138	14.3	na	1.92	6.90	12.2
4	CTPXX-01-01-04	water	010104	0.425	0.769	na	0.058	na	na
5	006-01-02-04	water	010204	<0.050	0.181	5.02	<0.010	6.60	5.00
6	006-01-03-04	water	010304	<0.050	0.176	4.00	<0.010	6.70	4.00
7	006-01-04-04	water	010404	<0.050	0.204	8.36	<0.010	6.70	2.80
8	006-01-05-04	water	010504	<0.050	0.251	13.1	<0.010	6.70	1.60
9	KT-01-05-04	water	010504	0.588	43.4	143.0	0.050	4.10	62.0
10	TB-01-05-04	water	010504	<0.050	<0.020	<0.020	<0.010	na	na
11	RB-01-05-04	water	010504	<0.050	<0.020	<0.020	<0.010	na	na
12	QC-01-05-04	water	010504	0.560	40.6	143.0	0.048	4.10	63.0
13	006-01-06-04	water	010604	<0.050	0.206	15.7	<0.010	6.60	8.20
14	006-01-07-04	water	010704	<0.050	0.572	34.6	<0.010	6.70	14.6
15	006-01-08-04	water	010804	<0.050	0.496	42.2	<0.010	7.00	0.80
16	KT-01-08-04	water	010804	0.540	53.0	163.0	0.044	4.50	62.0
17	004-01-08-04	water	010804	0.114	13.8	na	1.93	7.10	10.2
18	CTPXX-01-08-04	water	010804	0.439	0.865	na	0.065	na	na
19	006-01-09-04	water	010904	<0.050	0.211	42.0	<0.010	7.10	1.20
20	QC-01-09-04	water	010904	<0.050	0.218	45.0	<0.010	7.30	0.80
21	006-01-10-04	water	011004	0.138	0.154	42.8	<0.010	7.20	1.00
22	006-01-11-04	water	011104	<0.050	0.180	18.0	<0.010	7.30	1.00
23	006-01-12-04	water	011204	<0.050	0.192	12.0	<0.010	7.40	0.60
24	KT-01-12-04	water	011204	0.434	80.2	33.0	0.096	2.80	63.0
25	006-01-13-04	water	011304	<0.050	0.354	7.39	<0.010	7.40	1.80
	006-01-02-04	duplicate	010204	<0.050	0.201	5.30	<0.010		
	006-01-02-04	spike	010204	98.8%	102%	104%	98.4%		
	006-01-06-04	duplicate	010604	<0.050	0.221	18.2	<0.010		
	006-01-06-04	spike	010604	97.8%	103%	92.0%	94.8%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 012704

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-01-14-04	water	011404	<0.050	0.410	6.33	<0.010	7.20	1.60
2	006-01-15-04	water	011504	<0.050	0.411	13.4	<0.010	7.20	2.20
3	KT-01-15-04	water	011504	0.440	45.6	144.0	0.054	4.60	64.0
4	004-01-15-04	water	011504	<0.050	14.3	na	1.84	7.10	9.80
5	CTPXX-01-15-04	water	011504	0.375	0.799	na	0.060	na	na
6	QC-01-15-04	water	011504	<0.050	14.6	na	1.86	7.10	9.40
7	006-01-16-04	water	011604	<0.050	0.204	18.6	<0.010	7.20	1.00
8	006-01-17-04	water	011704	<0.050	0.084	24.8	<0.010	7.10	0.60
9	006-01-18-04	water	011804	<0.050	0.083	19.0	<0.010	7.20	0.80
10	006-01-19-04	water	011904	<0.050	0.083	24.8	<0.010	7.20	0.60
11	KT-01-19-04	water	011904	0.570	46.6	143.0	0.050	4.50	64.0
12	006-01-20-04	water	012004	<0.050	0.116	27.0	<0.010	7.30	0.40
	006-01-15-04	duplicate	011504	<0.050	0.417	13.9	<0.010		
	006-01-15-04	spike	011504	86.4%	100%	112%	86.4%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 020504

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-01-21-04	water	012104	<0.050	0.271	41.4	<0.010	7.30	1.20
2	006-01-22-04	water	012204	<0.050	0.223	45.7	<0.010	7.50	0.80
3	KT-01-22-04	water	012204	0.508	48.8	146.0	0.050	4.60	67.0
4	004-01-22-04	water	012204	<0.050	14.3	na	2.03	7.40	11.2
5	CTPXX-01-22-04	water	012204	0.391	0.931	na	0.069	na	na
6	006-01-23-04	water	012304	<0.050	0.207	54.1	<0.010	7.60	0.60
7	006-01-24-04	water	012404	<0.050	0.148	48.9	<0.010	7.30	0.80
8	006-01-25-04	water	012504	<0.050	0.140	31.8	<0.010	7.30	0.20
9	006-01-26-04	water	012604	<0.050	0.071	13.5	<0.010	7.50	0.40
10	KT-01-26-04	water	012604	0.276	71.0	28.8	0.102	2.70	65.0
11	006-01-27-04	water	012704	<0.050	0.061	5.03	<0.010	8.00	0.40
12	006-01-28-04	water	012804	<0.050	0.097	2.91	<0.010	7.70	0.20
13	QC-01-28-04	water	012804	<0.050	0.086	2.91	<0.010	7.80	0.40
14	006-01-29-04	water	012904	<0.050	0.068	7.88	<0.010	7.60	0.20
15	KT-01-29-04	water	012904	0.600	49.4	154.0	0.062	4.20	61.0
16	004-01-29-04	water	012904	0.259	15.4	na	1.96	7.40	15.6
17	CTPXX-01-29-04	water	012904	0.411	0.944	na	0.072	na	na
18	006-01-30-04	water	013004	0.055	0.104	17.4	<0.010	7.70	0.20
19	006-01-31-04	water	013104	<0.050	0.174	17.0	<0.010	7.70	0.20
	006-01-23-04	duplicate	012304	<0.050	0.196	56.2	<0.010		
	006-01-23-04	spike	012304	99.0%	104%	104%	100%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 01-08-04 Inspected By: D. Young, G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.03 MGD, .85ft/flume 1409 gpm.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 01/15/04 Inspected By: G. Nelson, D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is 2.00MGD, Staff Gauge reading 0.84ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 01/23/04 Inspected By: G.Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacing and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:
Removed a small amount of debris from the upper trash rack.
The Kellogg Tunnel flume flow is 2.02MGD, Staff Gauge reading 0.85ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 01/29/04 Inspected By: G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is 2.0MGD, Staff Gauge reading 0.85ft/flume.

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month:	February, 2004		
Facility:	Central Treatment Plant		
Location:	Bunker Hill Superfund Site		
Contract Number:	DACW67-02-D-1014		
Total Flow For The Month From 006:		48,666,000	gallons
Total Flow From Kellogg Tunnel:		48,306,920	gallons
Percent of Influent Successfully Treated:			100.0%

29 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 174 potential exceedances
174 - 0 exceedances = 174 174/174 = 100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) sampling for the CTP continued with four PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml trace metal samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the '004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

02-01-04 through 02-29-04 The Lined Pond volume was reduced by 1.2 mg this month.
02-02-04 The groundwater elevation in the Clarifier center column at this time is 2260.1'. This is 22'0" down from the cover plate on the center column. January 2004 groundwater reading was also 2260.1'.
02-02-04 Results of the sludge gun test performed today are: 11' out from the center column, the sludge depth is 18". 25' out from the center column, the sludge depth is 6". These are similar to last month's readings.
02-02-04 Removed #1 Lined Pond pump from service, as check valve was stuck in the closed position. The valve will need to be removed, manually opened, cleaned and replaced.
02-03-04 Removed lime loop #2 from service and placed lime loop #1 in service to alternate pump and valve usage.
02-04-04 Attempted to repair the old lime slurry shaft. The gear drive shaft located inside the gear box is also bent. This item cannot be repaired unless it is removed from inside the gear box.
02-05-04 Making lime slurry from the old system in an attempt to reduce the amount of lime stored in the old silo. This will only be performed during working hours. The new system will be placed back in service throughout the night.
02-09-04 Raised pH setpoint to 9.0 at 13:00, as the Kellogg Tunnel is at low flow. A setpoint of 9.0 is needed to reduce the amount of slurry in the slurry holding tank in preparation for mixer shaft exchange on 02-10-04. Removed slakers from service and continued pumping automatically with slurry injection pumps.
02-10,11-04 ZMI Portec and Specialty Controls Inc. personnel were on site to perform system repairs on the new lime silo and slurry system.
02-10-04 The new grit bin was installed, with modifications performed on the grit chutes.
02-10-04 The #3 Lined Pond pump and #3 control room sludge pump were removed. Both pumps are being rebuilt.
02-11-04 The Silo A lime slurry tank mixer shaft was removed and replaced with the new mixer shaft.
02-11-04 The slaker lime feeder gear drives were removed and replaced with the new gear drives.
02-11-04 The lime silo exterior ladder safety rail was repaired.
02-11-04 The leaking lime injection valve was repaired by placing new O-rings in the oil reservoir.
02-11-04 The Silo B sump drain leak was repaired.
02-11-04 The lime slurry dilution water indicator light was repaired.
02-11-04 The grit screen A vibrator weights were repositioned in an attempt to keep the screen from plugging.
02-12-04 Placed the new grit bin container in service and modified the grit effluent chutes.
02-17-04 The check valve installed in the Lined Pond #1 pump was removed, manually opened, cleaned and replaced. This valve was stuck in the closed position and would not operate under pump pressure alone.
02-17-04 Performed slurry makeup water pressure changes in an attempt to control grit screen plugging.
02-20-04 Placed the old lime injection system in service to deplete the hydrated lime supply.
02-25-04 Completed rebuilding and installing the #3 sludge pump.
02-29-04 Mine Fabrication completed rebuilding the #3 Lined Pond pump. This pump will be installed March 2nd.

Lessons Learned

02-02-04 The new lime system grit dispenser plugged with grit. This plugging occurred at the inlet of the grit screw. As the grit built up into the screen area, the slurry effluent became restricted. The following repairs were performed to correct the plugging problem:

New weights were installed on the grit screen vibrator.
Grit screen levels were adjusted.
Slurry makeup water was increased to 40 gpm from 30 gpm input into the slaker.

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2004	2	1	2004	2	29
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	Quantity or Loading (54-61) MAXIMUM	UNITS	(4 Card Only) (38-45) MINIMUM	(46-53) AVERAGE	Quality or Concentration (54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				7.1		7.9			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.68	2.42	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.70	1.01	Lbs/Day		0.05	0.05	mg/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	mg/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	2.19	15.52	Lbs/Day		0.16	0.86	mg/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	mg/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.132	0.20	Lbs/Day		0.010	0.010	mg/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	mg/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	243.3	663	Lbs/Day		15.70	36.60	mg/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	mg/L			
Total Suspended Solids - TSS	Sample Measurement	12.9	37	Lbs/Day		0.9	4	mg/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	mg/L			

PREPARED BY: GARY FULTON

REVIEWED BY: DON FERGUSON

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: February, 2004

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		DAILY MASS LOADING
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day		mgd	mg/L	lbs/day	kg/day
1	0.050	0.839	0.251	4.210	0.010	0.168	32.3	541.8	7.40	2.01	2.2	36.9	16.7
2	0.050	0.764	0.208	3.176	0.010	0.153	30.9	471.9	7.50	1.83	1.8	27.5	12.5
3	0.050	0.905	0.857	15.52	0.010	0.181	36.6	662.8	7.50	2.17	1.0	18.1	8.21
4	0.050	0.547	0.085	0.929	0.010	0.109	35.3	385.9	7.30	1.31	0.4	4.37	1.98
5	0.050	1.001	0.132	2.644	0.010	0.200	23.8	476.7	7.40	2.40	0.2	4.01	1.8
6	0.050	1.010	0.079	1.595	0.010	0.202	20.5	414.0	7.80	2.42	0.8	16.2	7.33
7	0.050	0.784	0.051	0.800	0.010	0.157	16.3	255.7	7.20	1.88	0.2	3.14	1.42
8	0.050	0.755	0.094	1.420	0.010	0.151	21.0	317.2	7.20	1.81	0.2	3.02	1.37
9	0.050	0.775	0.126	1.953	0.010	0.155	29.2	452.5	7.40	1.86	1.0	15.5	7.03
10	0.050	0.638	0.078	0.996	0.010	0.128	22.1	282.2	7.60	1.53	1.2	15.3	6.95
11	0.050	0.580	0.157	1.821	0.010	0.116	10.1	117.2	7.40	1.39	1.2	13.9	6.31
12	0.050	0.251	0.081	0.407	0.010	0.050	5.18	26.02	7.40	0.60	0.6	3.01	1.37
13	0.050	0.280	0.039	0.219	0.010	0.056	2.49	13.96	7.80	0.67	0.6	3.36	1.53
14	0.050	0.647	0.053	0.686	0.010	0.129	1.01	13.06	7.90	1.55	0.2	2.59	1.17
15	0.050	0.814	0.107	1.741	0.010	0.163	4.66	75.83	7.60	1.95	0.2	3.25	1.48
16	0.050	0.789	0.138	2.177	0.010	0.158	11.0	173.5	7.60	1.89	1.2	18.9	8.58
17	0.050	0.755	0.106	1.601	0.010	0.151	17.5	264.3	7.60	1.81	0.8	12.1	5.48
18	0.050	0.830	0.366	0.024	0.010	0.166	24.8	411.8	7.10	1.99	2.2	36.5	16.6
19	0.050	0.842	0.337	5.675	0.010	0.168	29.7	500.2	7.30	2.02	2.0	33.7	15.3
20	0.050	0.822	0.110	1.808	0.010	0.164	30.7	504.7	7.30	1.97	1.0	16.4	7.46
21	0.050	0.793	0.077	1.221	0.010	0.159	14.5	229.9	7.60	1.90	0.4	6.34	2.88
22	0.050	0.818	0.107	1.750	0.010	0.164	6.18	101.1	7.60	1.96	0.2	3.27	1.48
23	0.050	0.801	0.133	2.131	0.010	0.160	5.96	95.49	7.40	1.92	0.4	6.41	2.91
24	0.050	0.801	0.103	1.650	0.010	0.011	8.50	136.2	7.50	1.92	1.2	19.2	8.72
25	0.050	0.414	0.098	0.811	0.010	0.011	7.83	64.82	7.20	0.99	0.8	6.62	3.00
26	0.050	0.390	0.036	0.281	0.010	0.078	4.04	31.52	7.40	0.94	0.4	3.12	1.42
27	0.050	0.592	0.046	0.545	0.010	0.118	1.21	14.34	7.50	1.42	0.6	7.11	3.22
28	0.050	0.609	0.072	0.877	0.010	0.122	0.67	8.127	7.40	1.46	0.2	2.44	1.11
29	0.050	0.459	0.514	4.718	0.010	0.092	1.41	12.943	7.30	1.10	3.6	33.0	15.0
30													
31													
TOTAL	1.450	20.31	4.641	63.39	0.290	3.840	455.44	7,056	216.20	48.67	26.80	375.40	170
Sample Events	29	29	29	29	29	29	29	29	29	29	29	29	29
Daily Average	0.050	0.700	0.160	2.186	0.010	0.132	15.705	243.3	7.46	1.68	0.92	12.94	5.9

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: February, 2004
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1						2.0		
2	0.542	43.8	0.058	149	4.30	1.8	64	443
3						2.2		
4						1.3		
5	0.966	68.2	0.110	33	4.10	2.4	67	609
6						2.4		
7						1.9		
8						1.8		
9	0.504	45.2	0.052	147	2.50	1.9	88	619
10						1.5		
11						1.4		
12	0.346	120.0	0.170	34	2.40	0.6	64	146
13						0.7		
14						1.6		
15						2.0		
16	0.612	46.8	0.060	141	3.80	1.9	68	486
17						1.8		
18						2.0		
19	0.538	42.8	0.066	128	3.80	2.0	67	512
20						2.0		
21						1.9		
22						2.0		
23	0.334	44.0	0.060	129	3.60	1.9	71	516
24						1.9		
25						1.0		
26	0.276	66.0	0.120	29	2.50	0.9	67	237
27						1.4		
28						1.5		
29						1.1		
30						0.0		
31						0.0		

004/SWEENY **Month: February, 2004**
CENTRAL TREATMENT PLANT

DAY	LEAD mg/L	ZINC mg/L	CADMIUM mg/L	pH	TSS mg/L
02/05/04	0.05	15.0	1.88	7.30	9.8
02/12/04	0.11	14.2	1.90	7.30	11.0
02/19/04	0.11	14.5	1.86	7.10	12.2
02/26/04	0.08	15.6	1.93	7.20	10.6

RINSATE AND TRIP BLANKS **Month: February, 2004**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD mg/L	ZINC mg/L	CADMIUM mg/L	MANGANESE mg/L
Rinsate Container						
004/Sweeny	02/05/04	**RB-02-05-04**	<0.05	<0.02	<0.01	<0.02
Trip Blank (D.I.water)	02/05/04	**TB-02-05-04**	<0.05	<0.02	<0.01	<0.02

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **February, 2004**

KELLOGG TUNNEL FLOW
KT METER

Day	mgd	Ft/Flume
02/02/04	2.02	0.85
02/05/04	1.90	0.82
02/09/04	1.88	0.81
02/12/04	0.69	0.42
02/16/04	2.07	0.86
02/19/04	2.01	0.84
02/23/04	1.96	0.84
02/26/04	0.96	0.52

Day	**KT Flow Meter Reading**
01/31/04	52,223,080
02/29/04	100,530,000
KT Total for month	48,306,920

K.T. flow meter was reset to 0.0 December 31, 8 a.m.

Day	**006 Flow Meter Reading**
01/31/04	0
02/29/04	48,666,000
006 Total for month	48,666,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
01/31/04	0.8	Hours	632.3	Hours
02/29/04	0.8	Hours	652.7	Hours
Total Hours	0.0	Hours	20	Hours
Total Flow for 004/Sweeny For The Month =			612,000.00	Gallons

004/Sweeny Discharge Pipe Flow

Date	Flow (gpm)
29-Jan	12.5
5-Feb	18.2
19-Feb	20.0
26-Feb	30.0

Day	**Lined Pond Water Level**			
01/31/04	2,200,000	gal	Elev. =	2271.0
02/29/04	1,000,000	gal	Elev. =	2269.0
.				

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: February, 2004

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
006/CTP Outfall	02/02/04	Lead	0.050	0.050	mg/L	92%		0.0%		
MS/MSD		Zinc	0.208	0.193	mg/L	99%		7.5%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	96%		0.0%		
		Manganese	30.9	33.6	mg/L	91%		-8.4%		
		pH	7.5		units					
		TSS	1.8		mg/L					
006/CTP Outfall	02/03/04	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.857	0.790	mg/L			8.1%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	36.6	35.2	mg/L			3.9%		
		pH	7.50	7.50	units			0.0%		Results are below specified
		TSS	1.0	2.6	mg/L			-88.9%		detection limits.
Performance	02/05/04	Lead	0.427	0.400	mg/L			6.5%		
Evaluation		Zinc	0.900	0.800	mg/L			11.8%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-02-05-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
004/Sweeny	02/05/04	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	15.0	15.1	mg/L			-0.7%		
QC Sample		Cadmium	1.88	1.86	mg/L			1.1%		
		Manganese	na	na	mg/L					
		pH	7.30	7.30	units			0.0%		
		TSS	9.8	9.8	mg/L			0.0%		
006/CTP Outfall	02/06/04	Lead	0.050	0.050	mg/L	91%		0.0%		
MS/MSD		Zinc	0.079	0.076	mg/L	97%		3.9%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	98%		0.0%		
		Manganese	20.5	19.4	mg/L	100%		5.5%		
		pH	7.80		units					
		TSS	0.8		mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Kellogg Tunnel	02/09/04	Lead	0.504	0.512	mg/L			-1.6%		
		Zinc	45.20	44.00	mg/L			2.7%		
QC Sample		Cadmium	0.052	0.052	mg/L			0.0%		
		Manganese	147.0	141.0	mg/L			4.2%		
		pH	2.50	2.50	units			0.0%		
		TSS	88	96	mg/L			-8.7%		
Performance	02/12/04	Lead	0.364	0.400	mg/L			-9.4%		
Evaluation		Zinc	0.762	0.800	mg/L			-4.9%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-02-12-03)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	02/14/04	Lead	0.050	0.050	mg/L	98%		0.0%		
MS/MSD		Zinc	0.053	0.058	mg/L	100%		-9.0%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	102%		0.0%		
		Manganese	1.01	1.03	mg/L	102%		-2.0%		
		pH	7.90		units					
		TSS	0.20		mg/L					
006/CTP Outfall	02/17/04	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.106	0.099	mg/L			6.8%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	17.50	17.40	mg/L			0.6%		
		pH	7.60	7.60	units			0.0%		Results are below specified
		TSS	0.80	0.40	mg/L			66.7%		detection limits.

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	02/19/04	Lead	0.360	0.400	mg/L			-10.5%		
Evaluation		Zinc	0.782	0.800	mg/L			-2.3%		
Sample		Cadmium	0.069	0.060	mg/L			14.0%		
(CTPXX-02-19-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	02/23/04	Lead	0.050	0.050	mg/L	107%		0.0%		
MS/MSD		Zinc	0.133	0.098	mg/L	101%		30.3%		Results are below specified
Lab Duplicate		Cadmium	0.010	0.010	mg/L	114%		0.0%		detection limits.
		Manganese	5.96	5.97	mg/L	101%		-0.2%		
		pH	7.40		units					
		TSS	0.40		mg/L					
February, 2004 Completeness		Lead	11	Valid		11	Total	100.0%		
		Zinc	11	Valid		11	Total	100.0%		
		Cadmium	11	Valid		11	Total	100.0%		
		Manganese	7	Valid		7	Total	100.0%		
		pH	8	Valid		8	Total	100.0%		
		TSS	8	Valid		8	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.690	0.920
Cadmium	0.060	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

Bunker Hill Central Treatment Plant

Daily log February, 2004

		INFLUENT (KT)		AERATION BASIN			CLARIFIER				DISCHARGE 006				RECYCLE		LIME SLURRY		SLUDGE PUMP		POND PUMP	
DATE	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TURB	TEMP	pH4	GRAB	TURB	FLOW	SpG	FLOW	SpG	%solid	ON	OFF	ON	OFF
2/1	DY			8.0	8.0		8.0	8.1	3.21ntu	50	7.6	7.5	2.17ntu	2.01	1.063	750gpm	1.060	9.3	none		none	
2/2	GF	1442	5.2	8.0	8.0	8.1	7.8	7.9	11.5ntu	50	7.5	7.4	5.90ntu	1.83	1.070	750gpm	1.060	9.4	#1-5:05	5:43	#2-12:00	14:00
2/3	GF,DY,GN			8.0	8.0	8.2	7.9	8.1	2.58ntu	50	7.6	7.5	4.30n tu	2.17	1.056	750gpm	1.059	9.3	none		none	
2/4	GF,DY,GN			8.0	8.1		7.8	7.9	1.20ntu	50	7.5	7.7	1.96 ntu	1.31	1.079	750gpm	1.052	8.1	#1-7:10	7:50	#2-5:40	14:00
2/5	GF,DY,GN	1319	5.5	8.7	8.0		7.8	7.9	.99 ntu	50	7.6	7.7	1.28 ntu	2.40	1.045	750gpm	1.054	8.4	none		#2-6:50	13-00
2/6	GN,GF			8.7	8.0		8.3	8.3	1.36ntu	50	7.9	7.8	.83 ntu	2.42	1.060	750gpm	1.05	7.9	#1-9:00	9:30	none	
2/7	GN			8.0	8.0	8.0	8.2	8.2	1.0 ntu	50	7.9	7.8	1.11 ntu	1.89	1.056	750gpm	1.053	8.1	none		none	
2/8	DY			8.0	8.0		7.9	7.9	1.22ntu	50	7.5	7.5	1.35ntu	1.81	1.058	750gpm	1.056	8.9	none		none	
2/9	GF,DY	1305	4.9	8.0	8.0		7.9	8.0	3.75ntu	52	7.5	7.4	2.28ntu	1.85	1.071	750gpm	1.053	8.1	#1-800	8:30	none	
2/10	GF,DY,GN			9.0	8.7		8.6	8.4	1.80ntu	50	7.5	7.5	2.20ntu	1.53	1.045	750gpm	1.072	10.9	none		none	
2/11	GF,DY,GN			8.0	8.1		8.6	8.5	1.01ntu	50	8.0	7.9	2.16ntu	1.39	1.047	750gpm	1.068	10.6	none		none	
2/12	GF,DY,GN	479	2.5	8.0	8.3		8.6	8.5	.78 ntu	46	7.9	7.8	1.46ntu	0.60	1.044	750gpm	1.06	9.4	none		none	
2/13	GN,GF			8.0	8.9	8.9	8.7	8.7	1.20ntu	44	8.0	7.9	1.10ntu	0.67	1.051	750gpm	1.057	9.1	none		none	
2/14	GN			8.0	8.1		8.6	8.5	1.80 ntu	46	8.2	8.0	1.11ntu	1.55	1.080	750gpm	1.051	8	#1-7:10	7:40	none	
2/15	DY			8.0	8.1		8.2	8.0	1.50ntu	48	7.8	7.8	1.42ntu	1.95	1.065	750gpm	1.057	9.2	#1-7:05	7:30	none	
2/16	DY,GF	1437	4.1	8.0	8.1	7.9	8.1	8.0	2.52ntu	50	7.6	7.7	1.75ntu	1.89	1.063	750gpm	1.058	9.2	none		none	
2/17	GF,DY,GN			8.0	8.0		7.9	7.9	3.91ntu	52	7.4	7.5	2.65nyu	1.81	1.068	750gpm	1.058	9.2	#1-9:30	10:00	none	
2/18	GF,DY,GN			8.0	8.0		8.0	8.1	1.89nty	54	7.6	7.5	3.10ntu	1.99	1.062	750gpm	1.061	9.5	#1-1346	14:20	none	
2/19	GF,DY,GN	1403	4.9	8.0	8.0		8.0	8.2	1.93 ntu	54	7.5	7.6	2.89 ntu	2.02	1.055	750gpm	1.058	9.2	none		none	
2/20	GN,GF			8.0	8.1		8.2	8.1	1.80 ntu	54	7.6	7.5	1.51ntu	1.97	1.059	750gpm	old	system	#1-11:30	12:00	none	
2/21	GN			8.2	8.8	8.6	8.5	8.4	1.79 ntu	54	7.9	8.0	1.26ntu	1.91	1.059	750gpm	old	system	#1-7:30	8:00	none	
2/22	DY			8.2	8.4		8.5	8.5	1.48ntu	52	7.8	8.0	1.41ntu	1.95	1.064	750gpm	old	system	none		none	
2/23	GF,DY	1364	4.5	8.0	8.2		8.3	8.3	3.89ntu	52	7.6	7.7	1.65ntu	1.92	1.068	750gpm	old	system	#1-7:25	7:55	none	
2/24	GF,DY,GN			8.3	8.2		8.3	8.3	4.09ntu	54	7.7	7.8	2.41ntu	1.91	1.062	750gpm	old	system	#1-13:40	14:10	none	
2/25	GF,DY,GN			8.3	8.3		8.3	8.3	1.50ntu	53	7.5	7.4	2.10ntu	0.99	1.056	750gpm	old	system	none		none	
2/26	GF,DY,GN	729	3.3	8.3	8.4		8.8	8.7	1.19 ntu	53	7.8	7.8	1.15 ntu	0.93	1.041	750gpm	old	system	#3-6:20	8:20	#2-10:00	14:00
2/27	GF,GN			8.3	8.5	8.5	8.5	8.5	.90ntu	51	7.9	7.9	1.06ntu	1.43	1.040	750gpm	old	system	none		#2-10:00	14:00
2/28	GN			8.3	8.4		8.4	8.4	.81 ntu	50	7.9	7.9	.70ntu	1.47	1.037	750gpm	old	system	none		none	
2/29	DY			8.3	8.2		7.7	7.8	.81ntu	54	7.7	7.6	.91ntu	1.10	1.037	750gpm	old	system	none		none	
																750gpm						
																750gpm						

AMERICAN ANALYTICAL SERVICES

BHCTP: 021204b

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	type	samp date	pH	TSS	run date	time	type
1	006-02-01-04	water	020104	7.40	2.20	020304	12:05	total
2	006-02-02-04	water	020204	7.50	1.80	020304	12:10	total
3	KT-02-02-04	water	020204	4.30	64.0	020304	12:15	total
4	006-02-03-04	water	020304	7.50	1.00	020304	12:20	total
5	QC-02-03-04	water	020304	7.50	2.60	020304	12:25	total
6	006-02-04-04	water	020404	7.30	0.40	020604	10:30	total
7	006-02-05-04	water	020504	7.40	0.20	020604	10:35	total
8	KT-02-05-04	water	020504	4.10	67.0	020604	10:40	total
9	004-02-05-04	water	020504	7.30	9.80	020604	10:45	total
10	QC-02-05-04	water	020504	7.30	9.80	020604	10:50	total
11	006-02-06-04	water	020604	7.80	0.80	020604	10:55	total
12	006-02-07-04	water	020704	7.20	0.20	021004	13:00	total
13	006-02-08-04	water	020804	7.20	0.20	021004	13:05	total
14	006-02-09-04	water	020904	7.40	1.00	021004	13:10	total
15	KT-02-09-04	water	020904	2.50	88.0	021004	13:15	total
16	QC-02-09-04	water	020904	2.50	96.0	021004	13:20	total
17	006-02-10-04	water	021004	7.60	1.20	021004	13:25	total
	KT-02-02-04	duplicate	020204	4.30	66.0	020304	12:30	total
	KT-02-05-04	duplicate	020504	4.10	63.0	020604	11:00	total
	KT-02-09-04	duplicate	020904	2.50	88.0	021004	13:30	total
	TSS Blank	q.c.		na	<0.20	020304	12:35	total
	TSS Blank	q.c.		na	<0.20	020604	11:05	
	TSS Blank	q.c.		na	<0.20	021004	13:35	
	TSS LCS	q.c.		na	45.0	020304	12:35	
	TSS LCS	q.c.		na	53.0	020604	11:10	
	TSS LCS	q.c.		na	60.5	021004	13:40	
	LCS Known Value	q.c.		na	59.3			
	pH control	q.c.		8.03	na	020304	12:45	
	pH control	q.c.		8.03	na	020604	11:15	
	pH control	q.c.		8.04	na	021004	13:45	
	pH Known Value	q.c.		8.03	na			
			Method	**4500B**	**2540D**			
	QAL			<0.1pH	<15.0mg/L			

AMERICAN ANALYTICAL SERVICES

BHCTP: 021204a

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	type	samp date	Pb	Zn	Mn	Cd	run date	time	type
1	006-02-01-04	water	020104	<0.050	0.251	32.3	<0.010	021104	10:13	total
2	006-02-02-04	water	020204	<0.050	0.208	30.9	<0.010	021104	10:17	total
3	KT-02-02-04	water	020204	0.542	43.8	149.0	0.058	021104	12:00	total
4	006-02-03-04	water	020304	<0.050	0.857	36.6	<0.010	021104	10:21	total
5	QC-02-03-04	water	020304	<0.050	0.790	35.2	<0.010	021104	11:30	total
6	006-02-04-04	water	020404	<0.050	0.085	35.3	<0.010	021104	10:34	total
7	006-02-05-04	water	020504	<0.050	0.132	23.8	<0.010	021104	10:39	total
8	KT-02-05-04	water	020504	0.966	68.2	33.2	0.110	021104	11:55	total
9	004-02-05-04	water	020504	<0.050	15.0	na	1.88	021104	11:40	total
10	QC-02-05-04	water	020504	<0.050	15.1	na	1.86	021104	11:35	total
11	RB-02-05-04	water	020504	<0.050	<0.020	<0.020	<0.010	021104	10:05	total
12	TB-02-05-04	water	020504	<0.050	<0.020	<0.020	<0.010	021104	10:01	total
13	CTPXX-02-05-04	water	020504	0.427	0.900	na	0.062	021104	10:09	total
14	006-02-06-04	water	020604	<0.050	0.079	20.5	<0.010	021104	10:43	total
15	006-02-07-04	water	020704	<0.050	0.051	16.3	<0.010	021104	10:48	total
16	006-02-08-04	water	020804	<0.050	0.094	21.0	<0.010	021104	10:52	total
17	006-02-09-04	water	020904	<0.050	0.126	29.2	<0.010	021104	10:56	total
18	KT-02-09-04	water	020904	0.504	45.2	147.0	0.052	021104	12:10	total
19	QC-02-09-04	water	020904	0.518	44.0	141.0	0.052	021104	12:05	total
20	006-02-10-04	water	021004	<0.050	0.078	22.1	<0.010	021104	11:00	total
	006-02-02-04	duplicate	020204	<0.050	0.193	33.6	<0.010	021104	11:13	total
	006-02-02-04	spike	020204	92.2%	99.0%	90.8%	96.0%	021104	11:17	total
	006-02-06-04	duplicate	020604	<0.050	0.076	19.4	<0.010	021104	11:21	total
	006-02-06-04	spike	020604	91.4%	96.8%	100%	97.6%	021104	11:26	total
	LCS	q.c.		98.5%	87.1%	91.1%	100%	021104	12:15	
	RGB	q.c.		<0.050	<0.020	<0.020	<0.010	021104	09:57	
	ICV	q.c.		101%	105%	100%	103%	021104	09:47	
	ICB	q.c.		<0.050	<0.020	<0.020	<0.010	021104	09:52	
	CCV 1	q.c.		99.0%	97.2%	98.8%	98.0%	021104	10:26	
	CCB 1	q.c.		<0.050	<0.020	<0.020	<0.010	021104	10:30	
	CCV 2	q.c.		104%	103%	102%	100%	021104	11:05	
	CCB 2	q.c.		<0.050	<0.020	<0.020	<0.010	021104	11:09	
	CCV 3	q.c.		106%	103%	103%	104%	021104	11:45	
	CCB 3	q.c.		<0.050	<0.020	<0.020	<0.010	021104	11:50	
	CCV 4	q.c.		104%	102%	101%	104%	021104	12:20	
	CCB 4	q.c.		<0.050	<0.020	<0.020	<0.010	021104	12:24	
	LCS	Reported	Value	2.61	0.122	1.43	0.541			
	WP 37208	Known	Value	2.65	0.140	1.57	0.540			
	RPD 1			na	7.50%	8.37%	na			
	RPD 2			na	3.87%	5.51%	na			
			Method	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**			
	QAL			<0.300	<0.150	<0.150	<0.025			

AMERICAN ANALYTICAL SERVICES

BHCTP: 022004

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-02-11-04	water	021104	<0.050	0.157	10.1	<0.010	7.40	1.20
2	006-02-12-04	water	021204	<0.050	0.081	5.18	<0.010	7.40	0.60
3	KT-02-12-04	water	021204	0.346	120.0	33.6	0.170	2.40	64.0
4	004-02-12-04	water	021204	0.113	14.2	na	1.90	7.30	11.0
5	CTPXX-02-12-04	water	021204	0.364	0.762	na	0.062	na	na
6	006-02-13-04	water	021304	<0.050	0.039	2.49	<0.010	7.80	0.60
7	006-02-14-04	water	021404	<0.050	0.053	1.01	<0.010	7.90	0.20
8	006-02-15-04	water	021504	<0.050	0.107	4.66	<0.010	7.60	0.20
9	006-02-16-04	water	021604	<0.050	0.138	11.0	<0.010	7.60	1.20
10	KT-02-16-04	water	021604	0.612	46.8	141.0	0.060	3.80	68.0
11	006-02-17-04	water	021704	<0.050	0.106	17.5	<0.010	7.60	0.80
12	QC-02-17-04	water	021704	<0.050	0.099	17.4	<0.010	7.60	0.40
	006-02-14-04	duplicate	021404	<0.050	0.058	1.03	<0.010		
	006-02-14-04	spike	021404	97.6%	100%	102%	102%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 030404

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-02-18-04	water	021804	<0.050	0.366	24.8	<0.010	7.10	2.20
2	006-02-19-04	water	021904	<0.050	0.337	29.7	<0.010	7.30	2.00
3	KT-02-19-04	water	021904	0.538	42.8	128.0	0.066	3.80	67.0
4	004-02-19-04	water	021904	0.110	14.5	na	1.86	7.10	12.2
5	CTPXX-02-19-04	water	021904	0.360	0.782	na	0.069	na	na
6	006-02-20-04	water	022004	<0.050	0.110	30.7	<0.010	7.30	1.00
7	006-02-21-04	water	022104	<0.050	0.077	17.5	<0.010	7.60	0.40
8	006-02-22-04	water	022204	<0.050	0.107	6.18	<0.010	7.60	0.20
9	006-02-23-04	water	022304	<0.050	0.133	5.96	<0.010	7.40	0.40
10	KT-02-23-04	water	022304	0.334	44.0	129.0	0.060	3.60	71.0
11	006-02-24-04	water	022404	<0.050	0.103	8.50	<0.010	7.50	1.20
12	006-02-25-04	water	022504	<0.050	0.098	7.83	<0.010	7.20	0.80
13	006-02-26-04	water	022604	<0.050	0.036	4.04	<0.010	7.40	0.40
14	KT-02-26-04	water	022604	0.276	66.0	28.8	0.120	2.50	67.0
15	004-02-26-04	water	022604	0.080	15.6	na	1.93	7.20	10.6
16	CTPXX-02-26-04	water	022604	0.377	0.794	na	0.072	na	na
17	006-02-27-04	water	022704	<0.050	0.046	1.21	<0.010	7.50	0.60
18	006-02-28-04	water	022804	<0.050	0.072	0.667	<0.010	7.40	0.20
19	006-02-29-04	water	022904	<0.050	0.514	1.41	<0.010	7.30	3.60
	006-02-23-04	duplicate	022304	<0.050	0.098	5.97	<0.010		
	006-02-23-04	spike	022304	107%	101%	101%	114%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 02-05-04 Inspected By: D. Young, G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 1.90 MGD, .818ft/flume 1319 gpm.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 02/12/04 Inspected By: G. Nelson, G. Fulton

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is .69 MGD, 480 gpm, Staff Gauge reading 0.42ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 02/19/04 Inspected By: G.Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacing and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume flow is 2.01MGD, Staff Gauge reading 0.84ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date:02/25/04 Inspected By: G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is .96MGD, Staff Gauge reading 0.52ft/flume.

Ferguson Contracting

P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837
Office 208/784-7604
Fax 208/783-1164

Monthly Operation & Maintenance Report

Month:	March, 2004		
Facility:	Central Treatment Plant		
Location:	Bunker Hill Superfund Site		
Contract Number:	DACW67-02-D-1014		
Total Flow For The Month From 006:		58,272,000	gallons
Total Flow From Kellogg Tunnel:		59,852,720	gallons
Percent of Influent Successfully Treated:			100.0%

29 flow days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 174 potential exceedances
174 - 0 exceedances = 174 174/174 = 100.0%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan. QC and QA samples have been taken as required. All sample analysis results may be found within this DMR.

Performance Evaluation (PE) Sampling for the CTP continued with four PE samples taken to American Analytical Services for this reporting period. The PE samples were identified as CTPXX (random CTP sites). These samples consisted of preserved 500-ml trace metal samples to be analyzed for Cd, Pb and Zn. The PE acceptable quantitation range is listed on the 'QC' page of this DMR.

Trip Blank and Rinsate samples were also taken, with the results being reported on the '004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

03-03-04 Installed the ZMI/Portec-supplied screen bath in silo A.
03-04-04 Placed new piping in the silo control room to allow for process water usage as lime slurry dilution water.
03-05-04 Removed the old lime system from service and placed the new lime system back in service.
03-05-04 Provided a brief tour of the CTP to Spokane Community College water resource class (12 people).
03-08-04 The CTP recycled sludge SG will be increased from 1.06 to 1.07 as requested by the process engineer.
03-08-04 The CTP flocculent injection will remain at 2.5 ppm.
03-10-04 The groundwater elevation in the Clarifier center column at this time is 2264.1'. This is 18'0" down from the cover plate on the center column. This is 4 feet higher than the previous 2 months' readings.
03-10-04 Results of the sludge gun test performed today are: 11' out from the center column, the sludge depth is 24". 25' out from the center column, the sludge depth is 8". This is similar to previous readings.
03-11-04 The old lime silo was emptied as operators performed slurry mixing in the old silo.
03-12-04 The old lime silo was cleaned, removing all excess lime from the silo.
03-16-04 The old lime system was placed in service to reduce the amount of lime slurry in the old system holding tank.
03-18-04 Removed all stored water from the Lined Pond in preparation for CTP vessel leak testing on March 22nd-24th.
03-22-04 The CIA sludge pond staff gauge reading at this time is 2.36 ft.
03-22-04 Diverted all Kellogg Tunnel flow to the Lined Pond in preparation for leak testing.
03-22,23,-04 Mark Reinsel of Apex Engineering performed CTP tank and pond leak testing.
03-23-04 Paul Brox, F.C. safety manager, performed site safety evaluation and lime system procedure evaluation. Paul Brox will also update the F.C. safety manual, along with activity hazard analysis development.
03-24-04 CTP operators completed draining of the old lime slurry tank.
03-25-04 Performed the Direct Feed Line quarterly pigging event.
03-29-04 Received spare sleeves for lime injection pinch valves.

Lessons Learned

No significant water leakage was detected at the CTP during the leak test evaluation performed March 22 and 23rd.

MONITORING PERIOD						
YEAR	MO	DAY		YEAR	MO	DAY
2004	3	1		2004	3	31
(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) (46-53) AVERAGE	MAXIMUM	Quantity or Loading (54-61) UNITS	(4 Card Only) (38-45) MINIMUM	(46-53) AVERAGE	Quality or Concentration (54-61) MAXIMUM	UNITS	No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
pH	Sample Measurement				7.0		7.8			Continuous	Meter
	Permit Required				6		10				
Flow Thru Treatment Plant	Sample Measurement	1.94	2.27	MGD							
	Permit Required	Daily	Daily								
Lead Total - Pb Effluent Gross Value	Sample Measurement	0.81	0.95	Lbs/Day		0.05	0.06	MG/L		Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	MG/L			
Zinc Total - Zn Effluent Gross Value	Sample Measurement	2.73	9.23	Lbs/Day		0.17	0.56	MG/L		Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	MG/L			
Cadmium - Cd Effluent Gross Value	Sample Measurement	0.152	0.19	Lbs/Day		0.010	0.010	MG/L		Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	MG/L			
Manganese - Mn Effluent Gross Value	Sample Measurement	244.4	549	Lbs/Day		14.75	33.20	MG/L		Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	MG/L			
Total Suspended Solids - TSS	Sample Measurement	17.9	53	Lbs/Day		1.1	3	MG/L		Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	MG/L			

PREPARED BY: GARY FULTON

REVIEWED BY: DON FERGUSON

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: March, 2004

	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		LOADING
DAY	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day		(mgd)	mg/L	lbs/day	kg/day
1	0.050	0.408	0.126	1.027	0.010	0.082	0.55	4.509	7.40	0.98	0.2	1.63	0.74
2	0.050	0.780	0.194	3.027	0.010	0.156	1.14	17.79	7.50	1.87	0.2	3.12	1.42
3	0.050	0.851	0.135	2.298	0.010	0.170	2.50	42.56	7.50	2.04	0.8	13.6	6.18
4	0.050	0.842	0.117	1.971	0.010	0.168	4.48	75.48	7.30	2.02	0.6	10.1	4.59
5	0.050	0.847	0.049	0.830	0.010	0.169	6.59	111.58	7.40	2.03	0.6	10.2	4.61
6	0.050	0.860	0.053	0.911	0.010	0.172	16.5	283.6	7.80	2.06	0.8	13.8	6.24
7	0.050	0.847	0.056	0.949	0.010	0.169	15.9	269.4	7.20	2.03	0.4	6.78	3.07
8	0.050	0.797	0.056	0.893	0.010	0.159	19.5	310.8	7.20	1.91	0.8	12.8	5.78
9	0.050	0.830	0.031	0.515	0.010	0.166	20.0	332.1	7.40	1.99	0.8	13.3	6.03
10	0.050	0.835	0.298	4.974	0.010	0.167	21.2	353.8	7.10	2.00	2.4	40.1	18.17
11	0.050	0.818	0.238	3.893	0.010	0.164	21.8	356.6	7.20	1.96	1.2	19.6	8.90
12	0.050	0.555	0.062	0.688	0.010	0.111	19.6	217.5	7.30	1.33	0.8	8.88	4.03
13	0.050	0.793	0.106	1.681	0.010	0.159	13.4	212.5	7.20	1.90	0.4	6.34	2.88
14	0.050	0.835	0.193	3.221	0.010	0.167	24.4	407.2	7.30	2.00	1.0	16.7	7.57
15	0.050	0.864	0.172	2.971	0.010	0.173	23.5	405.9	7.30	2.07	1.4	24.2	11.0
16	0.050	0.847	0.235	3.981	0.010	0.169	20.1	340.5	7.40	2.03	2.6	44.0	20.0
17	0.050	0.922	0.287	5.293	0.010	0.184	21.9	403.9	7.00	2.21	2.4	44.3	20.1
18	0.058	0.924	0.073	1.164	0.010	0.159	11.0	175.3	7.10	1.91	0.4	6.38	2.89
19	0.050	0.563	0.128	0.024	0.010	0.113	7.10	79.99	7.20	1.35	0.8	9.01	4.09
20	0.050	0.879	0.131	2.303	0.010	0.176	5.24	92.13	7.20	2.11	0.4	7.03	3.19
21	0.050	0.947	0.129	2.444	0.010	0.189	10.6	200.8	7.40	2.27	0.8	15.2	6.87
22	0.050	0.885	0.108	1.911	0.010	0.177	12.6	222.9	7.50	2.12	0.8	14.2	6.42
23		0.000		0.000		0.000		0.000				0.00	0.00
24	0.050	0.805	0.104	1.675	0.010	0.011	10.8	173.9	7.60	1.93	1.0	16.1	7.31
25	0.050	0.751	0.287	4.311	0.010	0.011	12.9	193.8	7.30	1.80	1.4	21.0	9.54
26	0.050	0.780	0.096	1.498	0.010	0.156	7.37	115.0	7.40	1.87	0.6	9.36	4.25
27	0.050	0.922	0.135	2.490	0.010	0.184	13.1	241.6	7.30	2.21	1.0	18.4	8.36
28	0.050	0.922	0.247	4.555	0.010	0.184	17.2	317.2	7.40	2.21	1.0	18.4	8.36
29	0.050	0.876	0.297	5.205	0.010	0.175	22.5	394.3	7.40	2.10	1.0	17.5	7.95
30	0.050	0.830	0.556	9.233	0.010	0.166	25.9	430.1	7.40	1.99	3.2	53.1	24.1
31	0.050	0.826	0.356	5.882	0.010	0.165	33.2	548.6	7.50	1.98	2.6	43.0	19.5
TOTAL	1.508	24.44	5.055	81.82	0.300	4.574	442.57	7,331	220.20	58.27	32.40	538.03	244
Sample Events	30	30	30	30	30	30	30	30	30	30	30	30	30
Daily Average	0.050	0.815	0.169	2.727	0.010	0.152	14.752	244.4	7.34	1.94	1.08	17.93	8.1
Lab Detection Limit	0.050		0.020		0.010		0.020		0.01		0.1		

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: March, 2004
Data from American Analytical Services

DAY	LEAD (Pb) MG/L	ZINC (Zn) MG/L	CADMIUM (Cd) MG/L	MANGANESE (Mn) MG/L	pH	OO6 FLOW MGD	TSS MG/L	DAILY MASS LOADING KG/DAY
1	0.354	60.8	0.100	28.6	2.50	1.0	77	285
2						1.9		
3						2.0		
4	0.466	46.4	0.062	133	3.30	2.0	68	520
5						2.0		
6						2.1		
7						2.0		
8	0.522	47.8	0.064	146	3.20	1.9	82	593
9						2.0		
10						2.0		
11	0.668	45.2	0.066	131	3.20	2.0	75	556
12						1.3		
13						1.9		
14						2.0		
15	0.588	50.8	0.066	149	3.50	2.1	78	611
16						2.0		
17						2.2		
18	0.672	79.6	0.124	35	2.60	1.9	73	528
19						1.4		
20						2.1		
21						2.3		
22	1.170	49.4	0.102	49	2.70	2.1	210	1685
23						0.0		
24						1.9		
25	0.844	62.8	0.132	30	2.70	1.8	55	375
26						1.9		
27						2.2		
28						2.2		
29	0.580	46.8	0.080	121	3.10	2.1	86	684
30						2.0		
31						2.0		

004/SWEENY **Month: March, 2004**
CENTRAL TREATMENT PLANT

DAY	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	pH	TSS MG/L
03/04/04	0.05	16.1	1.74	7.20	10.4
03/11/04	0.07	13.8	1.85	7.10	9.0
03/18/04	0.14	13.7	1.98	7.10	9.8
03/25/04	0.07	13.0	1.83	7.20	8.6

RINSATE AND TRIP BLANKS **Month: March, 2004**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION	DAY	SAMPLE	LEAD MG/L	ZINC MG/L	CADMIUM MG/L	MANGANESE MG/L
Rinsate Container						
006 Outfall	03/09/04	**RB-03-09-04**	<0.05	<0.02	<0.01	<0.02
Trip Blank (D.I.water)	03/09/04	**TB-03-09-04**	<0.05	<0.02	<0.01	<0.02

CENTRAL TREATMENT PLANT **MISCELLANEOUS FLOWS**

Month : **March, 2004**

KELLOGG TUNNEL FLOW
KT METER

Day	mgd	Ft/Flume
03/01/04	1.13	0.58
03/04/04	2.05	0.86
03/08/04	2.06	0.86
03/11/04	0.69	0.42
03/15/04	2.07	0.86
03/18/04	1.13	0.58
03/22/04	1.21	0.62
03/25/04	1.37	0.66
03/29/04	2.10	0.87

Day	**KT Flow Meter Reading**
02/29/04	100,530,000
03/31/04	160,382,720
KT Total for month	59,852,720

K.T. flow meter was reset to 0.0 December 31, 8am.

Day	**006 Flow Meter Reading**
02/29/04	0
03/31/04	58,272,000
006 Total for month	58,272,000

004/Sweeny Pump Reading

Day	#1 Pump	620 gpm	#2 Pump	500 gpm
02/29/04	0.8	Hours	652.7	Hours
03/31/04	0.8	Hours	669.1	Hours
Total Hours	0.0	Hours	16	Hours
Total Flow for 004/Sweeny For The Month =			492,000.00	Gallons

004/Sweeny Discharge Pipe Flow

Date	Flow (GPM)
18-Mar	15.0

Day	**Lined Pond Water Level**			
02/29/04	1,000,000	gal	Elev. =	2269.0
03/31/04	1,600,000	gal	Elev. =	2270.3
.				

Bunker Hill Superfund Site
Kellogg, Idaho
Central Treatment Plant Review
Month: March, 2004

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	03/04/04	Lead	0.395	0.400	mg/L			-1.3%		
Evaluation		Zinc	0.755	0.800	mg/L			-5.8%		
Sample		Cadmium	0.059	0.060	mg/L			-1.7%		
(CTPXX-03-04-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	03/05/04	Lead	0.050	0.050	mg/L	92%		0.0%		
MS/MSD		Zinc	0.049	0.046	mg/L	98%		6.3%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	95%		0.0%		
		Manganese	6.59	6.63	mg/L	102%		-0.6%		
		pH	7.1		units					
		TSS	0.6		mg/L					
006/CTP Outfall	03/09/04	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.130	0.124	mg/L			4.7%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	20.0	20.6	mg/L			-3.0%		
		pH	7.20	7.20	units			0.0%		Results are below specified
		TSS	0.8	0.6	mg/L			28.6%		detection limits.
006/CTP Outfall	03/10/04	Lead	0.050	0.050	mg/L	96%		0.0%		
MS/MSD		Zinc	0.298	0.255	mg/L	89%		15.6%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	102%		0.0%		
		Manganese	21.2	18.0	mg/L	98%		16.3%		
		pH	7.1		units					
		TSS	2.4		mg/L					
Performance	03/11/04	Lead	0.407	0.400	mg/L			1.7%		
Evaluation		Zinc	0.841	0.800	mg/L			5.0%		
Sample		Cadmium	0.063	0.060	mg/L			4.9%		
(CTPXX-03-11-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Kellogg Tunnel	03/15/04	Lead	0.588	0.534	mg/L			9.6%		
		Zinc	50.80	46.80	mg/L			8.2%		
QC Sample		Cadmium	0.066	0.066	mg/L			0.0%		
		Manganese	149.0	141.0	mg/L			5.5%		
		pH	3.5	3.5	units			0.0%		
		TSS	78	79	mg/L			-1.3%		
Performance	03/18/04	Lead	0.437	0.400	mg/L			8.8%		
Evaluation		Zinc	0.857	0.800	mg/L			6.9%		
Sample		Cadmium	0.062	0.060	mg/L			3.3%		
(CTPXX-03-18-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
004 Sweeny	03/18/04	Lead	0.142	0.144	mg/L			-1.4%		
		Zinc	13.7	13.2	mg/L			3.7%		
QC Sample		Cadmium	1.98	1.95	mg/L			1.5%		
		Manganese	na	na	mg/L					
		pH	7.10	7.10	units			0.0%		
		TSS	9.80	9.40	mg/L			4.2%		
006/CTP Outfall	03/24/04	Lead	0.050	0.050	mg/L	88%		0.0%		
MS/MSD		Zinc	0.104	0.118	mg/L	90%		-12.6%		
Lab Duplicate		Cadmium	0.010	0.010	mg/L	91%		0.0%		
		Manganese	10.80	13.10	mg/L	104%		-19.2%		
		pH	7.60		units					
		TSS	1.000		mg/L					

SAMPLE LOCATION	DAY	PARAMETER	VALUE	QC RESULTS	UNITS	SPIKE % RECOVERY	FAIL SPIKE %	PRECISION % RPD	FAIL %RPD	COMMENT SECTION
Performance	03/25/04	Lead	0.399	0.400	mg/L			-0.3%		
Evaluation		Zinc	0.861	0.800	mg/L			7.3%		
Sample		Cadmium	0.067	0.060	mg/L			11.0%		
(CTPXX-03-25-04)		Manganese			mg/L					
		pH			units					
		TSS			mg/L					
006/CTP Outfall	03/29/04	Lead	0.050	0.050	mg/L			0.0%		
		Zinc	0.297	0.280	mg/L			5.9%		
QC Sample		Cadmium	0.010	0.010	mg/L			0.0%		
		Manganese	22.5	22.7	mg/L			-0.9%		
		pH	7.4	7.5	units			-1.3%		
		TSS	1.0	1.0	mg/L			0.0%		
March, 2004 Completeness		Lead	11	Valid		11	Total	100.0%		
		Zinc	11	Valid		11	Total	100.0%		
		Cadmium	11	Valid		11	Total	100.0%		
		Manganese	6	Valid		6	Total	100.0%		
		pH	7	Valid		7	Total	100.0%		
		TSS	7	Valid		7	Total	100.0%		

Monthly Performance Evaluation
Acceptable Quantitation Range

Analyte	Concentration	Acceptable Quantitation Range	
	(mg/l)	(mg/l)	(mg/l)
Lead	0.400	0.345	0.470
Zinc	0.800	0.690	0.920
Cadmium	0.060	0.055	0.069

Note: The PE quantitation range (listed above) from our PE sample source is less than required in the contract. The contract limits (listed below) have been utilized for this evaluation.

Note: Performance evaluation samples have been given the designation CTPXX for purposes of blind submission to the analytical laboratory.

Analytical Requirements

	Quantitation	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Lead	≤ 0.15 mg/L	75-125%	≤ 20%	90%
Manganese	≤ 0.025 mg/L	75-125%	≤ 20%	90%
Zinc	≤ 0.30 mg/L	75-125%	≤ 20%	90%
pH	≤ 0.1 pH unit	90-110%	N/A	90%
TSS	≤ 15 mg/L	75-125%	≤ 20%	90%

Bunker Hill Central Treatment Plant

Daily log March, 2004

		INFLUENT (KT)		AERATION BASIN			CLARIFIER				DISCHARGE 006				RECYCLE		LIME SLURRY		SLUDGE PUMP		POND PUMP	
DATE	INITIALS	GPM	pH	SET	pH2	GRAB	pH3	GRAB	TURB	TEMP	pH4	GRAB	TURB	FLOW	SpG	FLOW	SpG	%solid	ON	OFF	ON	OFF
3/1	GF,DY	784	2.7	8.0	8.2	8.3	8.1	7.8	1.55ntu	48	7.6	7.5	.85ntu	0.98	1.042	750gpm	old	system	None		None	
3/2	GF,DY,GN			8.0	8.2		7.8	7.7	1.71ntu	48	7.5	7.4	1.55ntu	1.87	1.062	750gpm	old	system	None		None	
3/3	GF,DY,GN			8.0	8.0		7.9	8.0	1.80ntu	48	7.5	7.6	1.59ntu	2.04	1.069	750gpm	old	system	#3-640	8:15	None	
3/4	GF,DY,GN	1423	3.6	8.0	8.5	8.5	8.0	8.2	1.58ntu	50	7.5	7.6	1.72ntu	2.02	1.061	750gpm	old	system	None		None	
3/5	GN,GF			8.0	8.5	8.6	7.9	7.8	1.51ntu	50	7.6	7.6	1.21 ntu	2.03	1.072	750gpm	old	system	#3 7:00	9:00	#1,3 11:30	14:30
3/6	GN			8.0	8.4		8.0	8.1	4.53ntu	50	7.6	7.6	4.15ntu	2.06	1.052	750gpm	1.053	8.0	None		None	
3/7	DY			8.0	8.1		7.7	7.7	1.52ntu	52	7.6	7.5	1.31ntu	2.03	1.044	750gpm	1.054	8.1	None		None	
3/8	GF,DY	1430	4.0	8.0	8.1		7.7	7.8	.98ntu	52	7.4	7.3	1.41ntu	1.91	1.047	750gpm	1.063	9.6	None		None	
3/9	GF,DY,GN			8.0	8.0		8.0	8.3	6.00ntu	54	7.5	7.6	3.18ntu	1.99	1.059	750gpm	1.069	9.7	None		None	
3/10	GF,DY,GN			9.0	7.9		8.2	8.3	5.81ntu	54	7.4	7.6	4.71ntu	2.00	1.090	750gpm	1.067	10.1	#3-6:25	8:25	None	
3/11	GF,DY,GN	1451	3.8	8.0	8.0		8.2	8.1	1.55ntu	54	7.5	7.7	2.77ntu	1.96	1.051	750gpm	1.064	10.1	None		None	
3/12	GN			8.0	8.2	8.2	8.2	8.2	.85 ntu	54	7.5	7.5	1.25 ntu	1.33	1.043	750gpm	1.063	10.0	None		None	
3/13	GN			8.0	8.1	8.1	8.0	8.1	1.09ntu	50	7.5	7.4	.98 ntu	1.90	1.063	750gpm	1.063	9.7	None		None	
3/14	DY			8.0	8.1		8.2	8.1	3.48ntu	54	7.5	7.6	1.27ntu	2.00	1.066	750gpm	1.064	10.1	#3-1545	16:15	None	
3/15	DY,GF	1430	3.7	8.0	8.1	8.2	8.1	8.2	3.47ntu	54	7.6	7.5	2.74ntu	2.07	1.067	750gpm	1.066	10.2	#3-1100	11:30	None	
3/16	GF,DY,GN			8.0	8.0		8.1	8.2	7.79ntu	54	7.5	7.7	4.78ntu	2.03	1.073	750gpm	1.063	10.0	#3-8:20	10:10	#3-6:15	13:30
3/17	GF,DY,GN			8.0	8.4		8.1	8.0	2.80ntu	54	7.6	7.5	4.61ntu	2.21	1.042	750gpm	old	system	None		#2-6:00	13:30
3/18	GF,DY,GN	812	3.0	8.0	8.5		8.2	8.1	.89ntu	50	7.5	7.6	2.15ntu	1.91	1.044	750gpm	old	system	None		#1-7:00	9:45
3/19	GN,GF			8.0	8.4		8.4	8.3	.96ntu	51	7.2	7.4	.96 ntu	1.35	1.050	750gpm	old	system	None		None	
3/20	GN			8.0	8.1		8.3	8.2	1.25ntu	48	7.4	7.5	.93ntu	2.11	1.070	750gpm	1.067	10.3	#3-6:30	7:00	None	
3/21	DY			8.0	8.1		8.3	8.1	1.48ntu	52	7.5	7.6	1.05ntu	2.27	1.063	750gpm	1.067	10.3	None		None	
3/22	GF,DY	1.23	3.2	8.0	8.0		8.3	8.2	4.29ntu	54	7.5	7.7	2.41ntu	2.12	1.072	750gpm	1.066	10.2	#1-6;10	7:30	None	
3/23	GF,DY,GN			NF	NF		NF	NF	NF	NF	NF	NF	NF	NF	NF		1.066	10.2	None		#2-9:30	13:30
3/24	GF,DY,GN			8.0	8.1	8.1	8.3	8.2	4.01ntu	54	7.6	7.9	3.99ntu	1.93	1.064	750gpm	1.069	10.7	None		#2-6:15	
3/25	GF,DY,GN	951	2.9	8.0	8.1	8.1	8.2	8.2	2.08ntu	52	7.6	7.8	3.69ntu	1.80	1.054	750gpm	1.064	9.8	None		None	
3/26	GF,GN			8.0	8.1		8.3	8.3	4.64ntu	54	7.6	7.8	2.17ntu	1.87	1.073	750gpm	1.056	9.1	None		#1-8:00	9:00
3/27	GN			8.0	8.1		8.2	8.2	4.91ntu	54	7.7	7.7	3.45ntu	2.21	1.075	750gpm	1.060	9.4	#1-12:00	12:45	None	
3/28	DY			8.0	8.1		8.2	8.3	2.97ntu	54	7.7	7.6	3.36ntu	2.21	1.056	750gpm	1.063	9.3	None		None	
3/29	GF,DY	1458	3.6	8.0	8.0		8.2	8.1	10.08ntu	54	7.7	7.6	4.70ntu	2.10	1.068	750gpm	1.059	9.3	#3-9:40	10:15	None	
3/30	GF,DY,GN			8.0	7.9		8.0	8.0	8.89ntu	54	7.5	7.6	10.06ntu	1.99	1.068	750gpm	1.064	9.8	#3-1305	14:00	None	
3/31	GF,DY,GN			8.0	8.1	8.2	8.1	8.2	3.28ntu	56	7.5	7.6	6.04ntu	1.98	1.069	750gpm	1.063	9.7	None		None	

AMERICAN ANALYTICAL SERVICES

BHCTP: 031504

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-03-01-04	water	030104	<0.050	0.126	0.553	<0.010	7.10	0.20
2	KT-03-01-04	water	030104	0.354	60.8	28.6	0.100	2.50	77.0
3	006-03-02-04	water	030204	<0.050	0.194	1.14	<0.010	7.10	0.20
4	006-03-03-04	water	030304	<0.050	0.135	2.50	<0.010	7.30	0.80
5	006-03-04-04	water	030404	<0.050	0.117	4.48	<0.010	7.40	0.60
6	KT-03-04-04	water	030404	0.466	46.4	133.0	0.062	3.30	68.0
7	004-03-04-04	water	030404	<0.050	16.1	na	1.74	7.20	10.4
8	CTPXX-03-04-04	water	030404	0.395	0.755	na	0.059	na	na
9	006-03-05-04	water	030504	<0.050	0.049	6.59	<0.010	7.10	0.60
10	006-03-06-04	water	030604	<0.050	0.053	16.5	<0.010	7.10	0.80
11	006-03-07-04	water	030704	<0.050	0.056	15.9	<0.010	7.10	0.40
12	006-03-08-04	water	030804	<0.050	0.056	19.5	<0.010	7.20	0.80
13	KT-03-08-04	water	030804	0.522	47.8	146.0	0.064	3.20	82.0
14	006-03-09-04	water	030904	<0.050	0.130	20.0	<0.010	7.20	0.80
15	QC-03-09-04	water	030904	<0.050	0.124	20.6	<0.010	7.20	0.60
16	TB-03-09-04	water	030904	<0.050	<0.020	<0.020	<0.010	na	na
17	RB-03-09-04	water	030904	<0.050	<0.020	<0.020	<0.010	na	na
	006-03-05-04	duplicate	030504	<0.050	0.046	6.63	<0.010		
	006-03-05-04	spike	030504	91.6%	98.2%	102%	95.2%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 032204

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-03-10-04	water	031004	<0.050	0.298	21.2	<0.010	7.10	2.40
2	006-03-11-04	water	031104	<0.050	0.238	21.8	<0.010	7.20	1.20
3	KT-03-11-04	water	031104	0.668	45.2	131.0	0.066	3.20	75.0
4	004-03-11-04	water	031104	0.073	13.8	na	1.85	7.10	9.00
5	CTPXX-03-11-04	water	031104	0.407	0.841	na	0.063	na	na
6	006-03-12-04	water	031204	<0.050	0.062	19.6	<0.010	7.30	0.80
7	006-03-13-04	water	031304	<0.050	0.106	13.4	<0.010	7.20	0.40
8	006-03-14-04	water	031404	<0.050	0.193	24.4	<0.010	7.30	1.00
9	006-03-15-04	water	031504	<0.050	0.172	23.5	<0.010	7.30	1.40
10	KT-03-15-04	water	031504	0.588	50.8	149.0	0.066	3.50	78.0
11	QC-03-15-04	water	031504	0.534	46.8	141.0	0.066	3.50	79.0
12	006-03-16-04	water	031604	<0.050	0.235	20.1	<0.010	7.40	2.60
13	006-03-17-04	water	031704	<0.050	0.287	21.9	<0.010	7.00	2.40
14	006-03-18-04	water	031804	<0.050	0.073	11.0	<0.010	7.10	0.40
15	KT-03-18-04	water	031804	0.672	79.6	35.4	0.124	2.60	73.0
16	004-03-18-04	water	031804	0.142	13.7	na	1.98	7.10	9.80
17	CTPXX-03-18-04	water	031804	0.437	0.857	na	0.062	na	na
18	QC-03-18-04	water	031804	0.114	13.2	na	1.95	7.10	9.40
	006-03-10-04	duplicate	031004	<0.050	0.255	18.0	<0.010		
	006-03-10-04	spike	031004	96.4%	88.8%	97.5%	102%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

AMERICAN ANALYTICAL SERVICES

BHCTP: 040504

Client: Ferguson Contracting

Attn: Don Ferguson
Fax # 783-1164

units = mg/L

#	Sample	Type	Samp Date	Pb	Zn	Mn	Cd	pH	TSS
1	006-03-19-04	water	031904	<0.050	0.128	7.10	<0.010	7.20	0.80
2	006-03-20-04	water	032004	<0.050	0.131	5.24	<0.010	7.20	0.40
3	006-03-21-04	water	032104	<0.050	0.129	10.6	<0.010	7.40	0.80
4	006-03-22-04	water	032204	<0.050	0.108	12.6	<0.010	7.50	0.80
5	KT-03-22-04	water	032204	1.11	49.4	49.0	0.102	2.70	210.0
6	006-03-24-04	water	032404	<0.050	0.104	10.8	<0.010	7.60	1.00
7	006-03-25-04	water	032504	<0.050	0.287	12.9	<0.010	7.30	1.40
8	KT-03-25-04	water	032504	0.844	62.8	30.0	0.132	2.70	55.0
9	004-03-25-04	water	032504	0.074	13.0	na	1.83	7.20	8.60
10	CTPXX-03-25-04	water	032504	0.399	0.861	na	0.067	na	na
11	006-03-26-04	water	032604	<0.050	0.096	7.37	<0.010	7.40	0.60
12	006-03-27-04	water	032704	<0.050	0.135	13.1	<0.010	7.30	1.00
13	006-03-28-04	water	032804	<0.050	0.247	17.2	<0.010	7.40	1.00
14	006-03-29-04	water	032904	<0.050	0.297	22.5	<0.010	7.40	1.00
15	KT-03-29-04	water	032904	0.580	46.8	121.0	0.080	3.10	86.0
16	006-03-30-04	water	033004	<0.050	0.556	25.9	<0.010	7.40	3.20
17	006-03-31-04	water	033104	<0.050	0.356	33.2	<0.010	7.50	2.60
18	QC-03-29-04	water	032904	<0.050	0.280	22.7	<0.010	7.50	1.00
	006-03-24-04	duplicate	032404	<0.050	0.118	13.1	<0.010		
	006-03-24-04	spike	032404	87.8%	89.8%	104%	91.2%		
	QAL		**Method**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**ICP 200.7**	**4500B**	**2540D**
				<0.300	<0.150	<0.150	<0.025	<0.1pH	<15.0 mg/L

FERGUSON CONTRACTING

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 03-05-04 Inspected By: G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are in good condition at this time.

The Kellogg Tunnel flume flow is 2.05 MGD, 1423 gpm.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 03/11/04 Inspected By: G. Nelson, D. Young

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is 2.09 MGD, 1451gpm, Staff Gauge reading 0.87ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: 03/18/04 Inspected By: G.Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacing and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume flow is 1.13 MGD, Staff Gauge reading 0.58ft/flume.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date:03/31/04 Inspected By: G. Nelson

Item Inspected	Condition	Comments	
Channel Sections and Joints	***Good*** / Poor	Check for cracks	***NONE.***
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks	***NONE.***
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks	***NONE.***
Channel Bottom (during low flows)	***Good*** / Poor		***OK.***
Bottom Joints (during low flows)	***Good*** / Poor		***OK.***
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness	***OK.***
Trash Racks	***Good*** / Poor	Check spacings and overall condition	***OK.***
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections	***OK.***

General Comments:

The Kellogg Tunnel flume, trash racks, staff gauge, and flow meter supply line are all in good condition at this time.

The Kellogg Tunnel flume flow is 2.18 MGD, 1513gpm, Staff Gauge reading 0.895ft/flume.

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PART 2

ANNUAL PREVENTATIVE MAINTENANCE REPORT

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ANNUAL PREVENTATIVE MAINTENANCE REPORT

CENTRAL TREATMENT PLANT

BUNKER HILL SUPERFUND SITE

Prepared for:

Department of the Army
Corps of Engineers
Eastern Environmental Resident Office
7600 Mineral Drive, Suite 100
Coeur d'Alene, ID 83815

Prepared by:

Ferguson Contracting, Inc.
P.O. Box 642
110 Wildcat Way
Kellogg, ID 83837

February 2005

TABLE OF CONTENTS

LIST OF APPENDICES.....ii

1.0 INTRODUCTION 1

LIST OF APPENDICES

APPENDIX A	WEEKLY MAINTENANCE, INSPECTION AND CALIBRATION FORMS (52)
APPENDIX B	MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS FORMS (12)
APPENDIX C	THREE-MONTH PUMP AND MOTOR INSPECTION FORMS (5)
APPENDIX D	SIX-MONTH OIL CHANGE AND SERVICE POINTS FORMS (3)
APPENDIX E	CTP PLANT MAINTENANCE AND INSPECTION SUMMARY (1)
APPENDIX F	MONTHLY FIRE EXTINGUISHER INSPECTION FORMS (12)
APPENDIX G	CTP MINE WATER LINE PIPELINE INSPECTION FORMS (4)
APPENDIX H	OPERATIONS, MAINTENANCE AND TROUBLESHOOTING TIMELINE (1)

ANNUAL PREVENTATIVE AND MAINTENANCE REPORT

CENTRAL TREATMENT PLANT
BUNKER HILL SUPERFUND SITE

1.0 INTRODUCTION

This document is Ferguson Contracting's Annual Preventative Maintenance Report. The purpose of this document is to provide a centralized location for all of the maintenance reports filled out during the second year of the Operation and Maintenance contract. All materials included herein have already been submitted to the Contracting Officer with the Daily Chemical Reports.

The purpose of Ferguson Contracting's preventative maintenance program is to ensure that all pumps, motors and other process equipment are properly maintained to prevent failures that may cause unscheduled CTP shutdowns. Preventative maintenance is a high priority of Ferguson Contracting to not only protect the environment, but also ensure the safety of all personnel involved with operation and maintenance of the Bunker Hill CTP.

Ferguson Contracting operators perform twice-daily plant inspections of all pumps and motors. These inspections, along with daily pH probe monitoring, help to ensure the efficiency of the treatment process. The daily inspections are identified as AM and PM plant walkthroughs on the Daily Chemical Report. Weekly, monthly, quarterly and six-month pump and motor maintenance and inspections have been compiled, and are being submitted to the Contracting Officer in this Annual Maintenance Report. Also included are a CTP plant maintenance summary, monthly fire extinguisher inspection forms and CTP mine water line inspection forms, which are completed during pigging events. New to this report is an operations, maintenance and troubleshooting timeline for the past year.

APPENDIX A

WEEKLY MAINTENANCE, INSPECTION AND CALIBRATION FORMS

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 10/06/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		10/06/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		10-06/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		10/06/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		10/06/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		10/06/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		10/06/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		10/06/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		10/06/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		10/06/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	10/06/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		10/06/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Not in use
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Not in use, wires are cu t
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		10/06/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			99.2% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		10/06/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 10/14/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		10/14/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		10-14/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		10/14/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		10/14/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		10/06/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		10/14/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		10/14/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		10/14/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		1014/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	10/14/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		10/14/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Not in use
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Not in use, wires are cu t
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		10/14/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			98.4% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		10/14/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 10/21/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		10-21-03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		10-21-03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		10-21-03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		10-21-03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		10-21-03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		10-21-03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		10-21-03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		10-21-03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		10-21-03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	10-21-03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		10-21-03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Not in use
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Not in use, wires are cu t
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		10-21-03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			98.4% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		10-21-03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 10/28/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		10/28/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		10/28/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		10/28/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		10/28/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		10/28/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		10/28/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		10/28/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		10/28/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		10/28/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	10/28/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		10/28/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Not in use
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Not in use, wires are cu t
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		10/28/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			98.7% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		10/28/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 11/03/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		11-03-03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		11-03-03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		11-03-03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		11-03-03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		11-03-03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		11-03-03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		11-03-03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		11-03-03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		11-03-03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	11-03-03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		11-03-03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		11-03-03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			98.7% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		11-03-03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 11/10/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		11/10/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		11/10/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		11/10/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		11/10/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		11/10/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		11/10/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		11/10/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		11/10/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		11/10/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	11/10/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		11/10/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Not in use
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Not in use, wires are cu t
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		11/10/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			99.3% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		11/10/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 11/17/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		11/17/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		11/17/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		11/17/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		11/17/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		11/17/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		11/17/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		11/17/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		11/17/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		11/17/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	11/17/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		11/17/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		11/17/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			98.7% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		11/17/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 11/24/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		11/24/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		11/24/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		11/24/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		11/24/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		11/24/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		11/24/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		11/24/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		11/24/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		11/24/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	11/24/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		11/24/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Out of service
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		11/24/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			98.3% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		11/24/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 12/01/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		12/01/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		12/01/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		12/01/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		12/01/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		12/01/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		12/01/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		12/01/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		12/01/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		12/01/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	12/01/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		12/01/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		12/01/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			98.6% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		12/01/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 12/08/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		12/08/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		12/08/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		12/08/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		12/08/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		12/08/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		12/08/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		12/08/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		12/08/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		12/08/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	12/08/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		12/08/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Not in use at this time.
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		12/08/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			98.3% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		12/08/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 12/15/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		12/15/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		12/15/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		12/15/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		12/15/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		12/15/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		12/15/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		12/15/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		12/15/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		12/15/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	12/15/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		12/15/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		12/15/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			100.3% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		12/15/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 12/22/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		12/22/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		12/22/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		12/22/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		12/22/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		12/22/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		12/22/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		12/22/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		12/22/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		12/22/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	12/22/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		12/22/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		12/22/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			99.4% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		12/22/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 12/29/03

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		12/29/03	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		12/29/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		12/29/03	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		12/29/03	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		12/29/03	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		12/29/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		12/29/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		12/29/03	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		12/29/03	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	12/29/03	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		12/29/03	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		12/29/03	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			98.8% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		12/29/03	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 01-05-04

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		01-05-04	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		01-05-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		01-05-04	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		01-05-04	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Motor OK. Drive unit, fair
Lime Slurry Transfer Pump:		01-05-04	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		01-05-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		01-05-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		01-05-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		01-05-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	01-05-04	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		01-05-04	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		01-05-04	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			99.1% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		01-05-04	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 01-12-04

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		01-12-04	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		01-12-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		01-12-04	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		01-12-04	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Not in use, tagged out.
Lime Slurry Transfer Pump:		01-12-04	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		01-12-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		01-12-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		01-12-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		01-12-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	01-12-04	#2 floc mixer not in use, tagged out.
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		01-12-04	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		01-12-04	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			99.4% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		01-12-04	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 01-19-04

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		01-19-04	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		01-19-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		01-19-04	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		01-19-04	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Not in use, tagged out.
Lime Slurry Transfer Pump:		01-19-04	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		01-19-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		01-19-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		01-19-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		01-19-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	01-19-04	#2 floc mixer not in use, tagged out.
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		01-19-04	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		01-19-04	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			99.7% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		01-19-04	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 01-26-04

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		01-26-04	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		01-26-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		01-26-04	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		01-26-04	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Not in use, tagged out.
Lime Slurry Transfer Pump:		01-26-04	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		01-26-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		01-26-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		01-26-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		01-26-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	01-26-04	#2 floc mixer not in use, tagged out.
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		01-26-04	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		01-26-04	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			99.5% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		01-26-04	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

5. WEEKLY MAINTENANCE, INSPECTIONS AND CALIBRATIONS

Name; D. Young **Date;** 02-03-04

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:		02-03-04	
Worm gear case level gauges	ISO 220		Oil level OK
Worm gear viewpoints	ISO 220		Oil level OK
Drive transfer cases	ISO 220		Oil level OK
Drive torque indicator less than ten			Less than 1
Condition of motor and drive units			Good
Aerator:		02-03-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Lime Injection Pumps:		02-03-04	
#1 pump has sealed bearings and oil pan	N/A		OK
#2 pump gear case	OIL 100		Oil level OK
Condition of motors and pumps			Fair
Lime Slurry Tank:		02-03-04	
Gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Not in use, tagged out.
Lime Slurry Transfer Pump:		02-03-04	
Condition of motor and pump			Bearing in the motor is getting noisy
Clean pump control probes (remove clean & inspect)			Cleaned and inspected
Clean Lime Slurry Aspirator (remove clean & inspect)			*Two operators required. Cleaned
#1 Clarifier U.F. Pump:		02-03-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#2 Clarifier U.F. Pump:		02-03-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Fair
#3 Clarifier U.F. Pump (Waste Pump):		02-03-04	
shaft bearing	OIL 100		Oil level OK
Condition of pump and motor			Good
Rapid Mix:		02-03-04	
gear case	SAE 90		Oil level OK
Condition of motor and drive unit			Good
Floc Mix Tank Agitators:	Gear Oil	02-03-04	
Condition of mixing Agitators	00 - Oil		#1 Floc mixer a little noisy
Condition of pump control probes (clean if needed)			Good
CTP pH Probes: (clean and inspect)		02-03-04	
Clarifier pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
006 Outfall pH probe (Calibrate with 4 & 7 buffer)			Cleaned, calibrated
Aeration Basin pH probe (Calibrate with 7 buffer)			Cleaned, calibrated
Calibration of CTP Sample Equipment:		02-03-04	
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			97.6% Slope
HF Scientific Turbidity meter (.02 standard)			Calibrated
006 outfall:		02-03-04	
Clean composite collection container			Cleaned
Clean sample supply line and container			Cleaned

NOTE: Oil levels must be checked and oil added if needed.

APPENDIX B

MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS FORMS

2. MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

EQUIPMENT	Lube	DATE	REMARKS
Lime Injection Sump Pump: Shaft bearing Operating condition of pump and motor	 Gun	 10-01-03	 Greased Fair
Head House Pump: Shaft bearing Operating condition of pump and motor	 Gun	 10-01-03	 Greased Good
Lime Slurry Transfer Sump Pump: Shaft bearing Operating condition of pump and motor Condition of pump control probes	 Gun	 10-01-03	 Greased Good Good
Lime Slurry Tank: Coupler bearing Operating condition of motor and drive unit	 Gun	 10-01-03	 Greased Good
Lime Silo Bag House Dust Collector: Shaker drive motor oil level Bag shaker arms Condition of dust collection bags Condition of drive belt	 SAE 30 Gun	 10-01-03	 Ok Greased Good Good
Clarifier Over Flow Pumps: (Inactive) Condition of the 1,2,and 3 pump house floor		 10-01-03	 Fair
Rapid Mix Tank: Coupler bearing Drive Gear top bearing Operating Condition of motor and gear unit	 Gun Gun	 10-01-03	 Greased Greased Motor good- Gear unit poor
#1 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		 10-01-03	 Good Good
#2 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		 10-01-03	 Good Good
#3 Clarifier Waste Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		 10-01-03	 Fair Good

NOTE: Check gear case oil and add as required.

2. MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

EQUIPMENT	Lube	DATE	REMARKS
Lime Injection Sump Pump: Shaft bearing Operating condition of pump and motor	 Gun	 11-01-03	 Greased Fair
Head House Pump: Shaft bearing Operating condition of pump and motor	 Gun	 11-01-03	 Greased Good
Lime Slurry Transfer Sump Pump: Shaft bearing Operating condition of pump and motor Condition of pump control probes	 Gun	 11-01-03	 Greased Good Good
Lime Slurry Tank: Coupler bearing Operating condition of motor and drive unit	 Gun	 11-01-03	 Greased Good
Lime Silo Bag House Dust Collector: Shaker drive motor oil level Bag shaker arms Condition of dust collection bags Condition of drive belt	 SAE 30 Gun	 11-01-03	 Ok Greased Good Good
Clarifier Over Flow Pumps: (Inactive) Condition of the 1,2,and 3 pump house floor		 11-01-03	 Fair
Rapid Mix Tank: Coupler bearing Drive Gear top bearing Operating Condition of motor and gear unit	 Gun Gun	 11-01-03	 Greased Greased Motor good- Gear unit poor
#1 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		 11-01-03	 Good Good
#2 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		 11-01-03	 Good Good
#3 Clarifier Waste Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		 11-01-03	 Fair Good

NOTE: Check gear case oil and add as required.

2. MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

EQUIPMENT	Lube	DATE	REMARKS
Lime Injection Sump Pump: Shaft bearing Operating condition of pump and motor	 Gun	 12-03-03	 Greased Fair
Head House Pump: Shaft bearing Operating condition of pump and motor	 Gun	 12-03-03	 Greased Good
Lime Slurry Transfer Sump Pump: Shaft bearing Operating condition of pump and motor Condition of pump control probes	 Gun	 12-03-03	 Greased Good Good
Lime Slurry Tank: Coupler bearing Operating condition of motor and drive unit	 Gun	 12-03-03	 Greased Good
Lime Silo Bag House Dust Collector: Shaker drive motor oil level Bag shaker arms Condition of dust collection bags Condition of drive belt	 SAE 30 Gun	 12-03-03	 Ok Greased Good Good
Clarifier Over Flow Pumps: (Inactive) Condition of the 1,2,and 3 pump house floor		 12-03-03	 Fair
Rapid Mix Tank: Coupler bearing Drive Gear top bearing Operating Condition of motor and gear unit	 Gun Gun	 12-03-03	 Greased Greased Motor good- Gear unit poor
#1 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		 12-03-03	 Good Good
#2 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		 12-03-03	 Good Good
#3 Clarifier Waste Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		 12-03-03	 Fair Good

NOTE: Check gear case oil and add as required.

2. MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

Name: D. Young **Date: 01-03-04**

EQUIPMENT	Lube	DATE	REMARKS
Lime Injection Sump Pump: Shaft bearing Operating condition of pump and motor	Gun	01-03-04	Greased Fair
Head House Pump: Shaft bearing Operating condition of pump and motor	Gun	01-03-04	Greased Good
Lime Slurry Transfer Sump Pump: Shaft bearing Operating condition of pump and motor Condition of pump control probes	Gun	01-03-04	Greased Good Good
Lime Slurry Tank: Coupler bearing Operating condition of motor and drive unit	Gun	01-03-04	Greased Mixer shaft is bent.
Lime Silo Bag House Dust Collector: Shaker drive motor oil level Bag shaker arms Condition of dust collection bags Condition of drive belt	SAE 30 Gun	Not in use.	Not in use. Ok Greased Good Good
Clarifier Over Flow Pumps: (Inactive) Condition of the 1,2,and 3 pump houses		Not in use.	No longer exist
Rapid Mix Tank: Coupler bearing Drive Gear top bearing Operating Condition of motor and gear unit	Gun Gun	01-03-04	Greased Greased Motor good- Gear unit Good
#1 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		01-03-04	Good Good
#2 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		01-03-04	Good Good
#3 Clarifier Waste Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		01-03-04	Needs to be rebuilt. Fair Good

NOTE: Check gear case oil and add as required.

2. MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

Name: D. Young **Date: 02-04-04**

EQUIPMENT	Lube	DATE	REMARKS
Lime Injection Sump Pump: Shaft bearing Operating condition of pump and motor	Gun	02-04-04	Greased Fair
Head House Pump: Shaft bearing Operating condition of pump and motor	Gun	02-04-04	Greased Good
Lime Slurry Transfer Sump Pump: Shaft bearing Operating condition of pump and motor Condition of pump control probes	Gun	02-04-04	Greased Good Good
Lime Slurry Tank: Coupler bearing Operating condition of motor and drive unit	Gun	02-04-04	Greased Mixer shaft is bent.
Lime Silo Bag House Dust Collector: Shaker drive motor oil level Bag shaker arms Condition of dust collection bags Condition of drive belt	SAE 30 Gun	Not in use.	Not in use. Ok Greased Good Good
Clarifier Over Flow Pumps: (Inactive) Condition of the 1,2,and 3 pump house floor		Not in use.	Fair
Rapid Mix Tank: Coupler bearing Drive Gear top bearing Operating Condition of motor and gear unit	Gun Gun	02-04-04	Greased Greased Motor good- Gear unit Good
#1 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		02-04-04	Good Good
#2 Clarifier Underflow Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		02-04-04	Good Good
#3 Clarifier Waste Pump: All bearings are sealed no lube required Operating condition of pump and motor Condition of drive belts		02-04-04	Needs to be rebuilt. Fair Good

NOTE: Check gear case oil and add as required.

Ferguson Contracting, Inc.

MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

Name: D. Young **Date: 3/01/04**

EQUIPMENT	LUBE	DATE	REMARKS
Clarifier Drive Motors:			
Document torque reading	Inspect	03/01/04	Less than 1%
Inspect drive belt condition	Inspect		Good
Head House Pumps:			
Shaft bearing	Grease Gun	03/01/04	Greased
Operating condition of transfer pump and motor	Inspect		Good
Condition of sump pump	Inspect		Good
Flocculant Injection Pump Room:			
Condition of transfer pump	Inspect	03/01/04	Good
Coupler bearing #1 injection pump	Sealed		Good
Coupler bearing #2 injection pump	Grease Gun		Greased
Inspect transfer pump control probes	Inspect		Good
Aeration Basin gear drive unit:			
Lower Bearing Unit	Grease Gun	03/01/04	Greased
Inspect drive shaft for Ice during winter months	Inspect		Good
Polishing Pond Pump House:			
Pump #1	Inspect	03/01/04	Good
Pump #2	Inspect		Good
Sump Pump	Inspect		Good
Water Truck Fill Station Pump:			
Ensure the winter drain valve is open, winter time	Inspect	03/01/04	OK
Rapid Mix Tank:			
Coupler bearing	Grease Gun	03/01/04	Greased
Drive gear top bearing	Grease Gun		Greased
Operating condition of motor and gear unit	Inspect		Motor good-Gear box good
Lime Slurry injection valves	Inspect		Good
#1 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	03/01/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#2 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	03/01/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#3 Clarifier Waste Pump:			
All bearings are sealed--no lube required	Inspect	03/01/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
Silo A Slaker Room:			
Grit screw drive gear box (2 grease points.)	Grease Gun	03/01/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points)	Grease Gun		Greased
Slurry tank mixer gear drive	Grease Gun		Greased
Silo B Slaker Room:			Not in use at this time
Grit screw drive gear box (2 grease points.)	Grease Gun	03/01/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points	Grease Gun		Greased
Silo B Control Room:			
Lime injection pump #1 and #2 operation	Inspect	03/01/04	Good
Building sump pump and motor	Grease Gun		Greased
Pinch valve bearings	Grease Gun		Greased
Operate and flush back up slaker	Inspect		Good
Rexa Lime Slurry Injection Actuators:			
Inspect Oil Reservoir Level	SAE 5W-50	03/05/04	Good
Inspect valve operation	Inspect		Good
Inspect shaft condition	Inspect		Good

NOTE: Oil levels must be checked and oil added if needed.

Revised 02/06/04

Ferguson Contracting, Inc.

MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

Name: D. Young **Date: 4/06/04**

EQUIPMENT	LUBE	DATE	REMARKS
Clarifier Drive Motors:			
Document torque reading	Inspect	04/06/04	Less than 1%
Inspect drive belt condition	Inspect		Good
Head House Pumps:			
Shaft bearing	Grease Gun	04/06/04	Greased
Operating condition of transfer pump and motor	Inspect		Good
Condition of sump pump	Inspect		Good
Flocculant Injection Pump Room:			
Condition of transfer pump	Inspect	04/06/04	Good
Coupler bearing #1 injection pump	Sealed		Good
Coupler bearing #2 injection pump	Grease Gun		Greased
Inspect transfer pump control probes	Inspect		Good
Aeration Basin gear drive unit:			
Lower Bearing Unit	Grease Gun	04/06/04	Greased
Inspect drive shaft for Ice during winter months	Inspect		Good
Polishing Pond Pump House:			
Pump #1	Inspect	04/06/04	Good
Pump #2	Inspect		Good
Sump Pump	Inspect		Good
Water Truck Fill Station Pump:			
Ensure the winter drain valve is open, winter time	Inspect	04/06/04	OK
Rapid Mix Tank:			
Coupler bearing	Grease Gun	04/06/04	Greased
Drive gear top bearing	Grease Gun		Greased
Operating condition of motor and gear unit	Inspect		Motor good-Gear box good
Lime Slurry injection valves	Inspect		Good
#1 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	04/06/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#2 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	04/06/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#3 Clarifier Waste Pump:			
All bearings are sealed--no lube required	Inspect	04/06/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
Silo A Slaker Room:			
Grit screw drive gear box (2 grease points.)	Grease Gun	04/06/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points)	Grease Gun		Greased
Slurry tank mixer gear drive	Grease Gun		Greased
Silo B Slaker Room:			Not in use at this time
Grit screw drive gear box (2 grease points.)	Grease Gun	04/06/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points	Grease Gun		Greased
Silo B Control Room:			
Lime injection pump #1 and #2 operation	Inspect	04/06/04	Good
Building sump pump and motor	Grease Gun		Greased
Pinch valve bearings	Grease Gun		Greased
Operate and flush back up slaker	Inspect		Empty
Rexa Lime Slurry Injection Actuators:			
Inspect Oil Reservoir Level	SAE 5W-50	04/06/04	Good
Inspect valve operation	Inspect		Good
Inspect shaft condition	Inspect		Good

NOTE: Oil levels must be checked and oil added if needed.

Revised 02/06/04

Ferguson Contracting, Inc.

MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

Name: D. Young **Date: 5/03/04**

EQUIPMENT	LUBE	DATE	REMARKS
Clarifier Drive Motors:			
Document torque reading	Inspect	05/03/04	Less than 1%
Inspect drive belt condition	Inspect		Good
Head House Pumps:			
Shaft bearing	Grease Gun	05/03/04	Greased
Operating condition of transfer pump and motor	Inspect		Good
Condition of sump pump	Inspect		Good
Flocculant Injection Pump Room:			
Condition of transfer pump	Inspect	05/03/04	Good
Coupler bearing #1 injection pump	Sealed		Good
Coupler bearing #2 injection pump	Grease Gun		Greased
Inspect transfer pump control probes	Inspect		Good
Aeration Basin gear drive unit:			
Lower Bearing Unit	Grease Gun	05/03/04	Greased
Inspect drive shaft for Ice during winter months	Inspect		Good
Polishing Pond Pump House:			
Pump #1	Inspect	05/03/04	Good
Pump #2	Inspect		Good
Sump Pump	Inspect		Good
Water Truck Fill Station Pump:			
Ensure the winter drain valve is open, winter time	Inspect	05/03/04	OK
Rapid Mix Tank:			
Coupler bearing	Grease Gun	05/03/04	Greased
Drive gear top bearing	Grease Gun		Greased
Operating condition of motor and gear unit	Inspect		Motor good-Gear box good
Lime Slurry injection valves	Inspect		Good
#1 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	05/03/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#2 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	05-03/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#3 Clarifier Waste Pump:			
All bearings are sealed--no lube required	Inspect	05/03/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
Silo A Slaker Room:			
Grit screw drive gear box (2 grease points.)	Grease Gun	05/03/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points)	Grease Gun		Greased
Slurry tank mixer gear drive	Grease Gun		Greased
Silo B Slaker Room:			Not in use at this time
Grit screw drive gear box (2 grease points.)	Grease Gun	05/03/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points	Grease Gun		Greased
Silo B Control Room:			
Lime injection pump #1 and #2 operation	Inspect	05/03/04	Good
Building sump pump and motor	Grease Gun		Greased
Pinch valve bearings	Grease Gun		Greased
Operate and flush back up slaker	Inspect		Empty
Rexa Lime Slurry Injection Actuators:			
Inspect Oil Reservoir Level	SAE 5W-50	05/03/04	Good
Inspect valve operation	Inspect		Good
Inspect shaft condition	Inspect		Good

NOTE: Oil levels must be checked and oil added if needed.

Revised 02/06/04

Ferguson Contracting, Inc.

MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

Name: D. Young **Date: 6/01/04**

EQUIPMENT	LUBE	DATE	REMARKS
Clarifier Drive Motors:			
Document torque reading	Inspect	06/01/04	Less than 1%
Inspect drive belt condition	Inspect		Good
Head House Pumps:			
Shaft bearing	Grease Gun	06/01/04	Greased
Operating condition of transfer pump and motor	Inspect		Good
Condition of sump pump	Inspect		Good
Flocculant Injection Pump Room:			
Condition of transfer pump	Inspect	06/01/04	Good
Coupler bearing #1 injection pump	Sealed		Good
Coupler bearing #2 injection pump	Grease Gun		Greased
Inspect transfer pump control probes	Inspect		Good
Aeration Basin gear drive unit:			
Lower Bearing Unit	Grease Gun	06/01/04	Greased
Inspect drive shaft for Ice during winter months	Inspect		Good
Polishing Pond Pump House:			
Pump #1	Inspect	06/01/04	Good
Pump #2	Inspect		Good
Sump Pump	Inspect		Good
Water Truck Fill Station Pump:			
Ensure the winter drain valve is open, winter time	Inspect	06/01/04	OK
Rapid Mix Tank:			
Coupler bearing	Grease Gun	06/01/04	Greased
Drive gear top bearing	Grease Gun		Greased
Operating condition of motor and gear unit	Inspect		Motor good-Gear box good
Lime Slurry injection valves	Inspect		Good
#1 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	06/01/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#2 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	06/01/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#3 Clarifier Waste Pump:			
All bearings are sealed--no lube required	Inspect	06/01/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
Silo A Slaker Room:			
Grit screw drive gear box (2 grease points.)	Grease Gun	06/01/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points)	Grease Gun		Greased
Slurry tank mixer gear drive	Grease Gun		Greased
Silo B Slaker Room:			Not in use at this time
Grit screw drive gear box (2 grease points.)	Grease Gun	06/01/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points	Grease Gun		Greased
Silo B Control Room:			
Lime injection pump #1 and #2 operation	Inspect	06/01/04	Good
Building sump pump and motor	Grease Gun		Greased
Pinch valve bearings	Grease Gun		Greased
Operate and flush back up slaker	Inspect		Empty
Rexa Lime Slurry Injection Actuators:			
Inspect Oil Reservoir Level	SAE 5W-50	06/01/04	Good
Inspect valve operation	Inspect		Good
Inspect shaft condition	Inspect		Good

NOTE: Oil levels must be checked and oil added if needed.

Revised 02/06/04

Ferguson Contracting, Inc.

MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

Name: D. Young **Date: 7/02/04**

EQUIPMENT	LUBE	DATE	REMARKS
Clarifier Drive Motors:			
Document torque reading	Inspect	07/02/04	Less than 1%
Inspect drive belt condition	Inspect		Good
Head House Pumps:			
Shaft bearing	Grease Gun	07/02/04	Greased
Operating condition of transfer pump and motor	Inspect		Good
Condition of sump pump	Inspect		Good
Flocculant Injection Pump Room:			
Condition of transfer pump	Inspect	07/02/04	Good
Coupler bearing #1 injection pump	Sealed		Good
Coupler bearing #2 injection pump	Grease Gun		Greased
Inspect transfer pump control probes	Inspect		Good
Aeration Basin gear drive unit:			
Lower Bearing Unit	Grease Gun	07/02/04	Greased
Inspect drive shaft for Ice during winter months	Inspect		Good
Polishing Pond Pump House:			
Pump #1	Inspect	07/02/04	Good
Pump #2	Inspect		Good
Sump Pump	Inspect		Good
Water Truck Fill Station Pump:			
Ensure the winter drain valve is open, winter time	Inspect	07/02/04	OK
Rapid Mix Tank:			
Coupler bearing	Grease Gun	07/02/04	Greased
Drive gear top bearing	Grease Gun		Greased
Operating condition of motor and gear unit	Inspect		Motor good-Gear box good
Lime Slurry injection valves	Inspect		Good
#1 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	07/02/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#2 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	07/02/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#3 Clarifier Waste Pump:			
All bearings are sealed--no lube required	Inspect	07/02/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
Silo A Slaker Room:			
Grit screw drive gear box (2 grease points.)	Grease Gun	07/02/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points)	Grease Gun		Greased
Slurry tank mixer gear drive	Grease Gun		Greased
Silo B Slaker Room:			Not in use at this time
Grit screw drive gear box (2 grease points.)	Grease Gun	07/02/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points	Grease Gun		Greased
Silo B Control Room:			
Lime injection pump #1 and #2 operation	Inspect	07/02/04	Good
Building sump pump and motor	Grease Gun		Greased
Pinch valve bearings	Grease Gun		Greased
Operate and flush back up slaker	Inspect		Empty
Rexa Lime Slurry Injection Actuators:			
Inspect Oil Reservoir Level	SAE 5W-50	07/02/04	Good
Inspect valve operation	Inspect		Good
Inspect shaft condition	Inspect		Good

NOTE: Oil levels must be checked and oil added if needed.

Revised 02/06/04

Ferguson Contracting, Inc.

MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

Name: G. Nelson **Date: 8/04/04**

EQUIPMENT	LUBE	DATE	REMARKS
Clarifier Drive Motors:			
Document torque reading	Inspect	08/04/04	Less than 1%
Inspect drive belt condition	Inspect		Good
Head House Pumps:			
Shaft bearing	Grease Gun	08/04/04	Greased
Operating condition of transfer pump and motor	Inspect		Good
Condition of sump pump	Inspect		Good
Flocculant Injection Pump Room:			
Condition of transfer pump	Inspect	08/04/04	Good
Coupler bearing #1 injection pump	Sealed		Good
Coupler bearing #2 injection pump	Grease Gun		Greased
Inspect transfer pump control probes	Inspect		Good
Aeration Basin gear drive unit:			
Lower Bearing Unit	Grease Gun	08/04/04	Greased
Inspect drive shaft for Ice during winter months	Inspect		Good
Polishing Pond Pump House:			
Pump #1	Inspect	08/04/04	Good
Pump #2	Inspect		Good
Sump Pump	Inspect		Good
Water Truck Fill Station Pump:			
Ensure the winter drain valve is open, winter time	Inspect	08/04/04	OK
Rapid Mix Tank:			
Coupler bearing	Grease Gun	08/04/04	Greased
Drive gear top bearing	Grease Gun		Greased
Operating condition of motor and gear unit	Inspect		Motor good-Gear box good
Lime Slurry injection valves	Inspect		Good
#1 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	08/04/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#2 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	08/04/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#3 Clarifier Waste Pump:			
All bearings are sealed--no lube required	Inspect	08/04/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
Silo A Slaker Room:			
Grit screw drive gear box (2 grease points.)	Grease Gun	08/04/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points)	Grease Gun		Greased
Slurry tank mixer gear drive	Grease Gun		Greased
Silo B Slaker Room:			Not in use at this time
Grit screw drive gear box (2 grease points.)	Grease Gun	08/04/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points	Grease Gun		Greased
Silo B Control Room:			
Lime injection pump #1 and #2 operation	Inspect	08/04/04	Good
Building sump pump and motor	Grease Gun		Greased
Pinch valve bearings	Grease Gun		Greased
Operate and flush back up slaker	Inspect		Empty
Rexa Lime Slurry Injection Actuators:			
Inspect Oil Reservoir Level	SAE 5W-50	08/04/04	Good
Inspect valve operation	Inspect		Good
Inspect shaft condition	Inspect		Good

NOTE: Oil levels must be checked and oil added if needed.

Revised 02/06/04

Ferguson Contracting, Inc.

MONTHLY PUMP AND MOTOR INSPECTION AND SERVICE POINTS

Name: G. Nelson **Date: 9/02/04**

EQUIPMENT	LUBE	DATE	REMARKS
Clarifier Drive Motors:			
Document torque reading	Inspect	09/02/04	Less than 1%
Inspect drive belt condition	Inspect		Good
Head House Pumps:			
Shaft bearing	Grease Gun	09/02/04	Greased
Operating condition of transfer pump and motor	Inspect		Good
Condition of sump pump	Inspect		Good
Flocculant Injection Pump Room:			
Condition of transfer pump	Inspect	09/02/04	Good
Coupler bearing #1 injection pump	Sealed		Good
Coupler bearing #2 injection pump	Grease Gun		Greased
Inspect transfer pump control probes	Inspect		Good
Aeration Basin gear drive unit:			
Lower Bearing Unit	Grease Gun	09/02/04	Greased
Inspect drive shaft for Ice during winter months	Inspect		Good
Polishing Pond Pump House:			
Pump #1	Inspect	09/02/04	Good
Pump #2	Inspect		Good
Sump Pump	Inspect		Good
Water Truck Fill Station Pump:			
Ensure the winter drain valve is open, winter time	Inspect	09/02/04	OK
Rapid Mix Tank:			
Coupler bearing	Grease Gun	09/02/04	Greased
Drive gear top bearing	Grease Gun		Greased
Operating condition of motor and gear unit	Inspect		Motor good-Gear box good
Lime Slurry injection valves	Inspect		Good
#1 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	09/02/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#2 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect	09/02/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
#3 Clarifier Waste Pump:			
All bearings are sealed--no lube required	Inspect	09/02/04	
Operating condition of pump and motor	Inspect		Good
Condition of drive belts	Inspect		Good
Silo A Slaker Room:			
Grit screw drive gear box (2 grease points.)	Grease Gun	09/02/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points)	Grease Gun		Greased
Slurry tank mixer gear drive	Grease Gun		Greased
Silo B Slaker Room:			Not in use at this time
Grit screw drive gear box (2 grease points.)	Grease Gun	09/02/04	Greased
Grit screen motor (2 grease points)	Grease Gun		Greased
Slaker drive gear bearings (2 grease points)	Grease Gun		Greased
Volumetric feed drive bearings (2 grease points	Grease Gun		Greased
Silo B Control Room:			
Lime injection pump #1 and #2 operation	Inspect	09/02/04	Good
Building sump pump and motor	Grease Gun		Greased
Pinch valve bearings	Grease Gun		Greased
Operate and flush back up slaker	Inspect		Empty
Rexa Lime Slurry Injection Actuators:			
Inspect Oil Reservoir Level	SAE 5W-50	09/02/04	Good
Inspect valve operation	Inspect		Good
Inspect shaft condition	Inspect		Good

NOTE: Oil levels must be checked and oil added if needed.

Revised 02/06/04

APPENDIX C

THREE-MONTH PUMP AND MOTOR INSPECTION FORMS

3. THREE MONTH PUMP & MOTOR P. M. INSPECTION

STATION NUMBER AND EQUIPMENT	PM Check	DATE	REMARKS
1. No. 1 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	10-01-03	
2. No. 2 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	10-01-03	Same
3. No 3 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	10-01-03	Same
4. Flocculent Transfer Pump and Motor	Cash Balancing Service Inspection	10-01-03	Down a little
5. No. 1 Viking Motor and Pump (Floc Injection pump #1) (A)	Cash Balancing Service Inspection	10-01-03	Same
6. No. 2 Viking Motor and Pump (Floc Injection pump #2) (B)	Cash Balancing Service Inspection	10-01-03	Same
7. North Emco Thickner Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	10-01-03	OK
8. North Emco Thickner Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	10-01-03	Same
9. Floc Basin Agitator Motor and Gearbox	Cash Balancing Service Inspection		This unit is out of service as of 5-01-00
10. Floc Basin Aerator Motor and Gearbox	Cash Balancing Service Inspection	10-01-03	Same
11. Rapid Mix Tank Motor and Gear Box	Cash Balancing Service Inspection	10-01-03	Same
12. No. 1 Lime Injection Motor and Pump	Cash Balancing Service Inspection	10-01-03	Same
13. No. 2 Lime Injection Motor and Pump	Cash Balancing Service Inspection	10-01-03	Same
14. Lime Injection Sump Pump Motor and Pump	Cash Balancing Service Inspection	10-01-03	Same
15. Lime Slurry Holding Tank Motor and Gearbox	Cash Balancing Service Inspection	10-01-03	Same
16. No 1 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	10-01-03	Up a little
17. No 2 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	10-01-03	Same
18. Galllygher Lime Slurry Motor and Sump Pump	Cash Balancing Service Inspection	10-01-03	Same
19. No. 1 Gould Motor and Pump Lined Pond Pump #1	Cash Balancing Service Inspection	10-01-03	Same
20. No. 2 Gould Motor and Pump Lined Pond Pump #2	Cash Balancing Service Inspection	10-01-03	Same
21. No. 3 Gould Motor and Pump Lined Pond Pump #3	Cash Balancing Service Inspection	10-01-03	Locked out

3. THREE MONTH PUMP & MOTOR P. M. INSPECTION

STATION NUMBER AND EQUIPMENT	PM Check	DATE	REMARKS
1. No. 1 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	01-06-04	
2. No. 2 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	01-06-04	Same
3. No 3 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	01-06-04	Excessive cavitation, needs to be rebuilt
4. Flocculent Transfer Pump and Motor	Cash Balancing Service Inspection	01-06-04	Down a little
5. No. 1 Viking Motor and Pump (Floc Injection pump #1) (A)	Cash Balancing Service Inspection	01-06-04	Same
6. No. 2 Viking Motor and Pump (Floc Injection pump #2) (B)	Cash Balancing Service Inspection	01-06-04	Same
7. North Emco Thickner Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	01-06-04	OK
8. North Emco Thickner Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	01-06-04	Same
9. Floc Basin Agitator Motor and Gearbox	Cash Balancing Service Inspection		This unit is out of service as of 5-01-00
10. Floc Basin Aerator Motor and Gearbox	Cash Balancing Service Inspection	01-06-04	Same
11. Rapid Mix Tank Motor and Gear Box	Cash Balancing Service Inspection	01-06-04	Same
12. No. 1 Lime Injection Motor and Pump	Cash Balancing Service Inspection	01-06-04	Same
13. No. 2 Lime Injection Motor and Pump	Cash Balancing Service Inspection	01-06-04	Same
14. Lime Injection Sump Pump Motor and Pump	Cash Balancing Service Inspection	01-06-04	Same
15. Lime Slurry Holding Tank Motor and Gearbox	Cash Balancing Service Inspection	01-06-04	Same
16. No 1 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	01-06-04	Same
17. No 2 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	01-06-04	Same
18. Galllygher Lime Slurry Motor and Sump Pump	Cash Balancing Service Inspection	01-06-04	Same
19. No. 1 Gould Motor and Pump Lined Pond Pump #1	Cash Balancing Service Inspection	01-06-04	Same
20. No. 2 Gould Motor and Pump Lined Pond Pump #2	Cash Balancing Service Inspection	01-06-04	Same
21. No. 3 Gould Motor and Pump Lined Pond Pump #3	Cash Balancing Service Inspection	01-06-04	Locked out

Ferguson Contracting, Inc.

THREE-MONTH PUMP AND MOTOR P. M. INSPECTION FORM

Date:4-01-04 **Name: Gene Nelson**

STATION NUMBER AND EQUIPMENT	PM Check	DATE	REMARKS
1. No. 1 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	4-01-04	
2. No. 2 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	4-01-04	Up a little
3. No 3 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	4-01-04	Okay
4. Flocculent Transfer Pump and Motor	Cash Balancing Service Inspection	4-01-04	Okay
5. No. 1 Viking Motor and Pump (Floc Injection pump #1) (A)	Cash Balancing Service Inspection	4-01-04	Up a little
6. No. 2 Viking Motor and Pump (Floc Injection pump #2) (B)	Cash Balancing Service Inspection	4-01-04	okay
7. North Eimco Thickener Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	4-01-04	Check belt alignment
8. South Eimco Thickener Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	4-01-04	Same
9. Aeration Basin Motor and Gearbox	Cash Balancing Service Inspection	4-01-04	Okay
10. Rapid Mix Tank Motor and Gear Box	Cash Balancing Service Inspection	4-01-04	Okay
11. No 1 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	4-01-04	Not Running
12. No 2 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	4-01-04	Not Running
13. No. 1 Gould Motor and Pump Lined Pond Pump #1	Cash Balancing Service Inspection	4-01-04	Okay
14. No. 2 Gould Motor and Pump Lined Pond Pump #2	Cash Balancing Service Inspection	4-01-04	Okay
15. No. 3 Gould Motor and Pump Lined Pond Pump #3	Cash Balancing Service Inspection	4-01-04	Clean impeller area
16. No 1 Loop Lime Injection Motor and Pump	Cash Balancing Service Inspection	4-01-04	Balancing problem
17. No 2 Loop Lime Injection Motor and Pump	Cash Balancing Service Inspection	4-01-04	Balancing problem
18. Silo Sump Pump to Rapid Mix Tank	Cash Balancing Service Inspection	4-01-04	Okay
19. Slaker A Drive Motor	Cash Balancing Service Inspection	4-01-04	Balancing problem
21. Silo A Lime Slurry Mixer	Cash Balancing Service Inspection	4-01-04	Okay
22. Silo A Lime Feeder	Cash Balancing Service Inspection	4-01-04	Okay

23. Silo A Grit Screen Shaker	Cash Balancing Service Inspection	4-01-04	Housing reading only
24. Silo A Bin Activator	Cash Balancing Service Inspection	4-01-04	Okay
25. Lime Cross Over Transfer Screw	Cash Balancing Service Inspection	4-01-04	Okay
26. Slaker B Drive Motor	Cash Balancing Service Inspection	4-01-04	Balanced
27. Slaker B Grit Screw	Cash Balancing Service Inspection	4-01-04	Okay
28. Silo B Lime Feeder	Cash Balancing Service Inspection	4-01-04	Okay
29. Silo B Grit Screen Shaker	Cash Balancing Service Inspection	4-01-04	Housing reading
30. Slaker B Bin Activator	Cash Balancing Service Inspection	4-01-04	Housing reading

Additional notes:

Ferguson Contracting, Inc.

THREE-MONTH PUMP AND MOTOR P. M. INSPECTION FORM

Date: 07-01-04 **Name: Gene Nelson**

STATION NUMBER AND EQUIPMENT	PM Check	DATE	REMARKS
1. No. 1 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	07-01-04	
2. No. 2 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
3. No 3 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
4. Flocculent Transfer Pump and Motor	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
5. No. 1 Viking Motor and Pump (Floc Injection pump #1) (A)	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
6. No. 2 Viking Motor and Pump (Floc Injection pump #2) (B)	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
7. North Eimco Thickener Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
8. South Eimco Thickener Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
9. Floc Basin Agitator Motor and Gearbox	Cash Balancing Service Inspection		This unit is out of service as of 9-06-03.
10. Rapid Mix Tank Motor and Gear Box	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
11. No 1 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
12. No 2 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
13. No. 1 Gould Motor and Pump Lined Pond Pump #1	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
14. No. 2 Gould Motor and Pump Lined Pond Pump #2	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
15. No. 3 Gould Motor and Pump Lined Pond Pump #3	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
16. No 1 Loop Lime Injection Motor and Pump	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
17. No 2 Loop Lime Injection Motor and Pump	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
18. Silo Sump Pump to Rapid Mix Tank	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
19. Slaker A Drive Motor	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
21. Silo A Lime Slurry Mixer	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
22. Silo A Lime Feeder	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected

23. Silo A Grit Screen Shaker	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
24. Silo A Bin Activator	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
25. Lime Cross Over Transfer Screw	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
26. Slaker B Drive Motor	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
27. Slaker B Grit Screw	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
28. Silo B Lime Feeder	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
29. Silo B Grit Screen Shaker	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected
30. Slaker B Bin Activator	Cash Balancing Service Inspection	07-01-04	No measurable vibration changes were detected

Additional notes:

Ferguson Contracting, Inc.

THREE-MONTH PUMP AND MOTOR P. M. INSPECTION FORM

Date: 09-30-04 **Name: Gene Nelson**

STATION NUMBER AND EQUIPMENT	PM Check	DATE	REMARKS
1. No. 1 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	09-30-04	
2. No. 2 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
3. No 3 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
4. Flocculent Transfer Pump and Motor	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
5. No. 1 Viking Motor and Pump (Floc Injection pump #1) (A)	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
6. No. 2 Viking Motor and Pump (Floc Injection pump #2) (B)	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
7. North Eimco Thickener Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
8. South Eimco Thickener Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
9. Floc Basin Agitator Motor and Gearbox	Cash Balancing Service Inspection		This unit is out of service as of 9-06-03.
10. Rapid Mix Tank Motor and Gear Box	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
11. No 1 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
12. No 2 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
13. No. 1 Gould Motor and Pump Lined Pond Pump #1	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
14. No. 2 Gould Motor and Pump Lined Pond Pump #2	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
15. No. 3 Gould Motor and Pump Lined Pond Pump #3	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
16. No 1 Loop Lime Injection Motor and Pump	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
17. No 2 Loop Lime Injection Motor and Pump	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
18. Silo Sump Pump to Rapid Mix Tank	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
19. Slaker A Drive Motor	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
21. Silo A Lime Slurry Mixer	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
22. Silo A Lime Feeder	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected

23. Silo A Grit Screen Shaker	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
24. Silo A Bin Activator	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
25. Lime Cross Over Transfer Screw	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
26. Slaker B Drive Motor	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
27. Slaker B Grit Screw	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
28. Silo B Lime Feeder	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
29. Silo B Grit Screen Shaker	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected
30. Slaker B Bin Activator	Cash Balancing Service Inspection	09-30-04	No measurable vibration changes were detected

Additional notes:

APPENDIX D

SIX-MONTH OIL CHANGE AND SERVICE POINTS FORMS

Ferguson Contracting, Inc.

SIX-MONTH OIL CHANGE AND SERVICE POINTS

Date: April '04 **Name: Doug Young**

EQUIPMENT	Lube	DATE	REMARKS
Silo B Lime Loop Pumps, #1 & #2:			
#1 Pump sealed gear case--no oil change	Grease	4-14-04	Good
#2 Pump sealed gear case--no oil change	Grease		
Operating condition of pump and motor	Inspect		
Clarifier:			
Torque arm gear cases #3 (yearly only)	EP ISO 220		20 gallons yearly, 2 units
Worm gear case #2 (every six months)	EP ISO 220	4-27-04	5 gallons (total) every six months
Secondary gear case #4 (yearly only)	EP ISO 220		50 gallons yearly, 1 unit only
Main gear case #1 (behind the drive belts)	30 wt oil		3 quarts every six months X2
Operating condition, all Clarifier components		4-13-04	
Silo A Lime Slurry Tank Mixer:		4-14-04	First Oil Change 800 hrs
Gear case	EP ISO 220		Yearly after first oil change
Operating condition of motor and gear drive			
Rapid Mix Tank:			
Gear case	EP 100	4-21-04	5 gallons, oil was foamy
Operating condition of motor and gear unit			
Clarifier Underflow Pumps #1 & #2:			
#1 underflow pump	ISO 100	4-14-04	2 quarts
#2 underflow pump	ISO 100		2 quarts
Operating condition of pumps and motors			
Condition of drive belts			
Pump packing (inspect and replace)			
#3 Clarifier Underflow Waste Pump:			
Pump	ISO 100	4-14-04	1 quart
Operating condition of pump and motor			
Condition of drive belts			
Pump packing (inspect and replace)			
Aerator:			
Gear case	EP 100		10 gallons
Operating condition of motor and gear case		4-21-04	
Lined Pond Pump House Pumps:			
#1 Pump	GST ISO 68		2 quarts
#2 Pump	GST ISO 68		2 quarts
#3 Pump--operating condition of pumps and motors	GST ISO 68	4-14-04	2 quarts
Valve Service Points:			
Control room pinch valves (9 valves)	Gun		
Polishing Pond valves (2 valves)	Gun		Greased
Rapid Mix Tank effluent valves	Grease	4-13-04	
AMD Line Valve Service Points:			
Direct feed line actuator	Grease		Done
Main line actuator	Grease	3-25-04	

8. SIX-MONTH OIL CHANGE AND SERVICE POINTS

Date: 09-17-04 **Name: G. Nelson**

EQUIPMENT	Lube	DATE	REMARKS
Lime Injection Pumps, #1 & #2:			
#1 Pump	ISO 100	09-17-04	1 quart every six months
#2 Pump sealed gear case no oil change	N/A	09-17-04	
Operating condition of pump and motor			
Clarifier:			
Torque arm gear cases #3 (Yearly Only)	EP ISO 220	09-17-04	20 gallons yearly, 2 units
Worm Gear Case #2 (Every Six Months)	EP ISO 220	09-17-04	5 gallons (tdl) every six months
Secondary Gear Case #4 (Yearly Only)	EP ISO 220	09-17-04	50 gallons yearly, 1 unit only
Main Gear Case #1 (Behind the drive belts)	30 wt oil	09-17-04	3 quarts every six months X2
Operating condition all Clarifier components			
Lime Slurry Tank:			
Gear Case	EP 100	09-17-04	4 gallons
Operating condition of motor and gear drive			
Clarifier Over Flow Pumps: (Inactive)			
Condition of the 1,2,and 3 pump house floor		N/A	
Rapid Mix Tank:			
Gear Case	EP 100	10-03-03	5 gallons
Operating Condition of motor and gear unit			
Clarifier Underflow Pumps #1 & #2:			
#1 Underflow Pump	ISO 100	09-17-04	2 quarts
#2 Underflow Pump	ISO 100	09-17-04	2 quarts
Operating condition of pumps and motors		09-17-04	Good
Condition of drive belts		09-17-04	Good
Pump Packing (inspect and replace)			Good Condition
#3 Clarifier Underflow Waste Pump:			
Pump	ISO 100	09-17-04	1 quart
Operating condition of pump and motor			Good
Condition of drive belts			Good
Pump Packing (inspect and replace)			Good condition
Aerator:			
Gear Case	EP 100	09-17-04	10 gallons
Operating condition of motor and gear case			
Lined Pond Pump House Pumps:			
#1 Pump	GST ISO 68	09-17-04	2 quarts
#2 Pump	GST ISO 68	09-17-04	2 quarts
#3 Pump Operating condition of pumps and motors	GST ISO 68	09-17-04	2 quarts
Valve Service Points:			
Control Room Pinch Valves	Gun	09-17-04	
Polishing Pond Pinch Valves	Gun	09-17-04	
5” Sludge Line Drain Pinch Valve	Gun	09-17-04	
10” Sludge Line Pinch Valve	Gun	09-17-04	
Rapid Mix Effluent Valves	Grease	09-17-04	
AMD Line Valve Service Points:			
Direct feed line actuator	Grease	10-01-04	
Main line actuator	Grease	10-03-03	

8. SIX-MONTH OIL CHANGE AND SERVICE POINTS

Date: 10-03-03 **Name: D. Young**

EQUIPMENT	Lube	DATE	REMARKS
Lime Injection Pumps, #1 & #2:			
#1 Pump	ISO 100	10-03-03	1 quart every six months
#2 Pump sealed gear case no oil change	N/A	10-03-03	
Operating condition of pump and motor			
Clarifier:			
Torque arm gear cases #3 (Yearly Only)	EP ISO 220	10-03-03	20 gallons yearly 2 units
Worm Gear Case #2 (Every Six Months)	EP ISO 220	10-03-03	5 gallons(tdl)every six months
Secondary Gear Case #4 (Yearly Only)	EP ISO 220	10-03-03	50 gallons yearly one unit only
Main Gear Case #1 (Behind the drive belts)	30 wt oil	10-03-03	3 quarts every six months X2
Operating condition all Clarifier components			
Lime Slurry Tank:			
Gear Case	EP 100	10-03-03	4 gallons
Operating condition of motor and gear drive			
Clarifier Over Flow Pumps: (Inactive)			
Condition of the 1,2,and 3 pump house floor		N/A	
Rapid Mix Tank:			
Gear Case	EP 100	10-03-03	5 gallons
Operating Condition of motor and gear unit			
Clarifier Underflow Pumps #1 & #2:			
#1 Underflow Pump	ISO 100	10-03-03	2 quarts
#2 Underflow Pump	ISO 100	10-03-03	2 quarts
Operating condition of pumps and motors			
Condition of drive belts			
Pump Packing (inspect and replace)			
#3 Clarifier Underflow Waste Pump:			
Pump	ISO 100	10-03-03	1 quart
Operating condition of pump and motor			
Condition of drive belts			
Pump Packing (inspect and replace)			
Aerator:			
Gear Case	EP 100	10-03-03	10 gallons
Operating condition of motor and gear case			
Lined Pond Pump House Pumps:			
#1 Pump	GST ISO 68	10-03-03	2 quarts
#2 Pump	GST ISO 68	10-03-03	2 quarts
#3 Pump Operating condition of pumps and motors	GST ISO 68	10-03-03	2 quarts
Valve Service Points:			
Control Room Pinch Valves	Gun	10-03-03	
Polishing Pond Pinch Valves	Gun	10-03-03	
Rapid Mix Effluent Valves	Grease	10-03-03	
AMD Line Valve Service Points:			
Direct feed line actuator	Grease	10-03-03	
Main line actuator	Grease	10-03-03	

APPENDIX E

CTP PLANT MAINTENANCE AND INSPECTION SUMMARY

Ferguson Contracting, Inc.

CTP PLANT MAINTENANCE AND INSPECTION SUMMARY

Name: GN,GC **Date: Jan, April,July,Oct 2004**

EQUIPMENT	DATE				REMARKS
Three-Month Plant Maintenance & Inspection:					
Perform a Direct Feed Line Pigging Event	1-15	3-25	6-29	10-01	
Lined Pond Branch Camera Vault (inspect for leaks)	1-15	3-25	6-29	10-01	
Direct Feed Branch Camera Vault (inspect for leaks)	1-15	3-25	6-29	10-01	
AMD Line Valves (inspect for leaks and condition)	1-15	3-25	6-29	10-01	
Lined Storage Pond:					
Remove, inspect, clean and replace wet well screen	1-20	4/14	8-2	10-01	*Two operators required
Replace elevation markings if needed	N/A	N/A	N/A	N/A	
Operate pump house pumps and motors	1-20	4/14	8-2	10-01	
Operating condition of all pumps and motors	1-20	4/14	8-2	10-01	All in good condition
Polishing Pond pump house (operate back up pump)	1-6	N/A	8-2	10-01	Back flushed with #1 prior to
Floc injection room (operate back up pump)	1-6	4/15	8-2	10-01	Good condition
Floc injection room (flush all floc lines with city water)	1-7	4/15	8-2	10-01	Flushed with City Water
F.I. room (back flush floc pumps with city water)	1-7	4/15	8-2	10-04	Flushed wit city water
CTP Control Room (operate back up underflow pumps)	1-7	4/15	8-2	10-04	Good condition
C.Room (clean control room sump and sump pump)	1-7	4/15	8-2	10-04	Lots of debris in sump
Silo A Bag House Bags & Shaker Motor (inspect & grease)	1-7	4/19	8-2	10-04	Good condition
Silo B Bag House Bags & Shaker Motor (inspect & grease)	1-7	4/19	8-2	10-04	Good condition
Silo B building sump inspection and cleaning	1-7	4/15	8-2	10-04	Good conditon
Six-Month Plant Maintenance & Inspection:					
Perform a Main Line & Lined Pond branch pigging event	1-14-04		7-04		
Lined Storage Pond (check sediment level)	2268		2 inches		3-19-04
Lined Storage Pond wet well:					
Remove, clean, inspect and replace pump control rods	12-31-03		N/A		
Place pump house heaters in operation as needed	12-31-03		10-04-04		
Place all outbuilding heaters in service as needed	12-31-03		10-04-04		
Yearly Plant Maintenance & Inspection:					
Video Inspection of D.F. & Main Line AMD pipe system	7-04				
Hydro-jetting D.F. & Main Line sections of the AMD pipe	7-04				
Yearly Fire extinguishers (check charge status and refill)	May-04				
Yearly pH meter calibration (Clarifier, 006, Aeration Basin)	12-09-03				
3 Amp meter calibration (8 meters)	12-09-03				
Torque meters (2 Clarifier, 1 Aeration Basin, 1 Rapid Mix)	12-09-03				
Lined Pond wet well pump control probes (remove, clean)	12-31-03				
Lime Slurry loop pipe inspection (open section of pipe & inspect)					
Lime Slurry feed loop orifice plate inspection (remove & inspect)					
Sludge Discharge Line:					
Drain sludge line if weather is below 30 degrees F	Nov.-March drain daily				New Sludge Line Activated 8-02-04 Winter draining is no longer necessary

APPENDIX F

MONTHLY FIRE EXTINGUISHER INSPECTION FORMS

Ferguson Contracting, Inc.

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: October, 2003 **Inspected By:** Gene Nelson 10-02-03

Location	Condition		Pressure Reading/PSI
Floc Room (#35)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Floc Room (#36)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Contracting Office (#37)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Contracting Office (#38)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Control Room (#24)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Slurry Pump House (#27)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Polishing Pond Pump Room (#25)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Head House Valve Room (#26)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Lunch/Break room (#527)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Silo (#23)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
006 Outfall Sampling Building (#501)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
USACE Storage building (#778)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lined Pond Pump House (#777)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
White Ford Truck (#PU 31)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: **Inspected By:**

Location	Condition	Pressure Reading/PSI
Floc Room	Good / Poor / Use / Not Use	
Floc Room	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Lime Slurr	Good / Poor / Use / Not Use	
Polishing F	Good / Poor / Use / Not Use	
Head Hous	Good / Poor / Use / Not Use	
Well House	Good / Poor / Use / Not Use	
Lime Silo (	Good / Poor / Use / Not Use	
006 Outfall	Good / Poor / Use / Not Use	
USACE St	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Green Ford	Good / Poor / Use / Not Use	

Ferguson Contracting, Inc.

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: November, 2003 **Inspected By:** Gene Nelson 11-02-03

Location	Condition		Pressure Reading/PSI
Floc Room (#35)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Floc Room (#36)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Contracting Office (#37)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Contracting Office (#38)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Control Room (#24)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Slurry Pump House (#27)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Polishing Pond Pump Room (#25)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Head House Valve Room (#26)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Lunch/Break room (#527)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Silo (#23)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
006 Outfall Sampling Building (#501)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
USACE Storage building (#778)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lined Pond Pump House (#777)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
White Ford Truck (#PU 31)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: **Inspected By:**

Location	Condition	Pressure Reading/PSI
Floc Room	Good / Poor / Use / Not Use	
Floc Room	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Lime Slurr	Good / Poor / Use / Not Use	
Polishing F	Good / Poor / Use / Not Use	
Head Hous	Good / Poor / Use / Not Use	
Well House	Good / Poor / Use / Not Use	
Lime Silo (	Good / Poor / Use / Not Use	
006 Outfall	Good / Poor / Use / Not Use	
USACE St	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Green Ford	Good / Poor / Use / Not Use	

Ferguson Contracting, Inc.

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: December, 2003 **Inspected By:** Gene Nelson 12-03-03

Location	Condition		Pressure Reading/PSI
Floc Room (#35)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Floc Room (#36)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Contracting Office (#37)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Contracting Office (#38)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Control Room (#24)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Slurry Pump House (#27)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Polishing Pond Pump Room (#25)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Head House Valve Room (#26)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Lunch/Break room (#527)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Silo (#23)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
006 Outfall Sampling Building (#501)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
USACE Storage building (#778)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lined Pond Pump House (#777)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
White Ford Truck (#PU 31)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI

Ferguson Contracting, Inc.

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: January, 2004 **Inspected By:** Doug Young, 01/05/04

Location	Condition		Pressure Reading/PSI
Floc Room (#35)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Floc Room (#36)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Office Building (#37)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Office Building (#38)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Slurry Pump House (#27)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Break Room (#527)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Polishing Pond Pump Room (#25)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Head House Valve Room (#26)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Control Room (#24)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Silo (#23)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
006 Outfall Sampling Building (#501)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
USACE Storage building (#778)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lined Pond Pump House (#777)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
White Ford Truck (#PU 31)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: **Inspected By:**

Location	Condition	Pressure Reading/PSI
Floc Room	Good / Poor / Use / Not Use	
Floc Room	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Lime Slurr	Good / Poor / Use / Not Use	
Polishing F	Good / Poor / Use / Not Use	
Head Hous	Good / Poor / Use / Not Use	
Well House	Good / Poor / Use / Not Use	
Lime Silo (	Good / Poor / Use / Not Use	
006 Outfall	Good / Poor / Use / Not Use	
USACE St	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Green Ford	Good / Poor / Use / Not Use	

Ferguson Contracting, Inc.

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: February, 2004 **Inspected By:** Doug Young, 02/03/04

Location	Condition		Pressure Reading/PSI
Floc Room (#35)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Floc Room (#36)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Office Building (#37)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Office Building (#38)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Slurry Pump House (#27)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Break Room (#527)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Polishing Pond Pump Room (#25)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Head House Valve Room (#26)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Control Room (#24)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Silo (#23)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
006 Outfall Sampling Building (#501)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
USACE Storage building (#778)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lined Pond Pump House (#777)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
White Ford Truck (#PU 31)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: **Inspected By:**

Location	Condition	Pressure Reading/PSI
Floc Room	Good / Poor / Use / Not Use	
Floc Room	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Lime Slurr	Good / Poor / Use / Not Use	
Polishing F	Good / Poor / Use / Not Use	
Head Hous	Good / Poor / Use / Not Use	
Well House	Good / Poor / Use / Not Use	
Lime Silo (	Good / Poor / Use / Not Use	
006 Outfall	Good / Poor / Use / Not Use	
USACE St	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Green Ford	Good / Poor / Use / Not Use	

Ferguson Contracting, Inc.

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: March, 2004 **Inspected By:** Gene Nelson, 03/10/04

Location	Condition		Pressure Reading/PSI
Floc Room (#35)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Floc Room (#36)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Office Building (#37)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Office Building (#38)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Slurry Pump House (#27)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Ferguson Break Room (#527)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Polishing Pond Pump Room (#25)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Head House Valve Room (#26)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Control Room (#24)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Silo (#23)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
006 Outfall Sampling Building (#501)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
USACE Storage building (#778)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lined Pond Pump House (#777)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
White Ford Truck (#PU 31)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Silo A Slaker Room (#800)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Silo B Slaker Room (#801)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI
Lime Silo B Control Room (#802)	**Good** / Poor	**Ok to use**/ Do not use	195 PSI

CTP O&M Services Contract
Monthly Fire Extinguisher Inspection

Month: **Inspected By:**

Location	Condition	Pressure Reading/PSI
Floc Room	Good / Poor / Use / Not Use	
Floc Room	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Control Ro	Good / Poor / Use / Not Use	
Lime Slurr	Good / Poor / Use / Not Use	
Polishing F	Good / Poor / Use / Not Use	
Head Hous	Good / Poor / Use / Not Use	
Well House	Good / Poor / Use / Not Use	
Lime Silo (	Good / Poor / Use / Not Use	
006 Outfall	Good / Poor / Use / Not Use	
USACE St	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Lined Pond	Good / Poor / Use / Not Use	
Green Ford	Good / Poor / Use / Not Use	

APPENDIX G

CTP MINE WATER LINE PIPELINE INSPECTION FORMS

Ferguson Contracting, Inc.

CTP PLANT MAINTENANCE AND INSPECTION SUMMARY

Name: GN,GC **Date: Jan, April,July,Oct 2004**

EQUIPMENT	DATE				REMARKS
Three-Month Plant Maintenance & Inspection:					
Perform a Direct Feed Line Pigging Event	1-15	3-25	6-29	10-01	
Lined Pond Branch Camera Vault (inspect for leaks)	1-15	3-25	6-29	10-01	
Direct Feed Branch Camera Vault (inspect for leaks)	1-15	3-25	6-29	10-01	
AMD Line Valves (inspect for leaks and condition)	1-15	3-25	6-29	10-01	
Lined Storage Pond:					
Remove, inspect, clean and replace wet well screen	1-20	4/14	8-2	10-01	*Two operators required
Replace elevation markings if needed	N/A	N/A	N/A	N/A	
Operate pump house pumps and motors	1-20	4/14	8-2	10-01	
Operating condition of all pumps and motors	1-20	4/14	8-2	10-01	All in good condition
Polishing Pond pump house (operate back up pump)	1-6	N/A	8-2	10-01	Back flushed with #1 prior to
Floc injection room (operate back up pump)	1-6	4/15	8-2	10-01	Good condition
Floc injection room (flush all floc lines with city water)	1-7	4/15	8-2	10-01	Flushed with City Water
F.I. room (back flush floc pumps with city water)	1-7	4/15	8-2	10-04	Flushed wit city water
CTP Control Room (operate back up underflow pumps)	1-7	4/15	8-2	10-04	Good condition
C.Room (clean control room sump and sump pump)	1-7	4/15	8-2	10-04	Lots of debris in sump
Silo A Bag House Bags & Shaker Motor (inspect & grease)	1-7	4/19	8-2	10-04	Good condition
Silo B Bag House Bags & Shaker Motor (inspect & grease)	1-7	4/19	8-2	10-04	Good condition
Silo B building sump inspection and cleaning	1-7	4/15	8-2	10-04	Good conditon
Six-Month Plant Maintenance & Inspection:					
Perform a Main Line & Lined Pond branch pigging event	1-14-04		7-04		
Lined Storage Pond (check sediment level)	2268		2 inches		3-19-04
Lined Storage Pond wet well:					
Remove, clean, inspect and replace pump control rods	12-31-03		N/A		
Place pump house heaters in operation as needed	12-31-03		10-04-04		
Place all outbuilding heaters in service as needed	12-31-03		10-04-04		
Yearly Plant Maintenance & Inspection:					
Video Inspection of D.F. & Main Line AMD pipe system	7-04				
Hydro-jetting D.F. & Main Line sections of the AMD pipe	7-04				
Yearly Fire extinguishers (check charge status and refill)	May-04				
Yearly pH meter calibration (Clarifier, 006, Aeration Basin)	12-09-03				
3 Amp meter calibration (8 meters)	12-09-03				
Torque meters (2 Clarifier, 1 Aeration Basin, 1 Rapid Mix)	12-09-03				
Lined Pond wet well pump control probes (remove, clean)	12-31-03				
Lime Slurry loop pipe inspection (open section of pipe & inspect)					
Lime Slurry feed loop orifice plate inspection (remove & inspect)					
Sludge Discharge Line:					
Drain sludge line if weather is below 30 degrees F	Nov.-March drain daily				New Sludge Line Activated 8-02-04 Winter draining is no longer necessary

Ferguson Contracting, Inc.

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CTP Mine Water Line Pipeline Inspection Form

Note: This form should be utilized bi-annually or as directed by the USACE.
Results will be included in the Daily Quality Control Report and monthly DMR.

Date: 03-24-05 Inspected By: G. Nelson, G. Fulton

Item Inspected	Condition	Comments
Pipe	Good / Poor	Good
Inspect visible pipe sections and pipe joints for any gouges or sharp cuts on the outside surface which are greater than 10 percen of the wall thickness; minor scuffing or scratching will not affect the pipe and pipe fittings service life per the pipe manufacture		
Manhole/Vaults		
Sta 0+20 Direct Feed Branch Vault	Good / Poor	Good- 6" rain water in vault
Sta 10+00 Pipeline Inlet	Good / Poor	N/A
Sta 11+55 Overflow Manhole	Good / Poor	N/A
Sta 13+95 Upper Pigging Vault	Good / Poor	N/A
Sta 24+44 Lower Camera Vault	Good / Poor	Good- 15" rain water in vault
Inspect the ring, covers, lids, interior walls and floors (floor drains), seals around the pipe sections and joints (Link-Seals)		
Overflow Pipe	Good / Poor	N/A
Inspect the seal around the 24-inch diameter overflow pipe inside the overflow manhole (sta 11+55) and the interior condition o the pipe looking for obstructions and damage		
Knife Gate Valves		
Main Line Valve 20"electric valve	Good / Poor	Good
Direct Feed Line Valve 20" ele. Valve	Good / Poor	Good
Sta 5+40 8-inch Valve D.F. drain	Good / Poor	N/A
Sta 13+95 20-inch Valve	Good / Poor	N/A
Sta 13+95 6-inch Valve	Good / Poor	N/A
Sta 24+34 20-inch Valve	Good / Poor	N/A
Inspect for leaks in the interior selaing surfaces of gate valves by closing the valve and observing possible downstream throug the wye fittings of discharge at the lined pond. Inspect the exterior of the valve and operator and the flanges for signs of corrosion (rusting) and damage.		
Thrust Block L.P. Influent	Good / Poor	Good
Inspect the exterior condition of the thrust block, steel straps, and bolts for damage, and extensive corrosion.		

General Comments: All vaults doors are in good condition at this time.
All vaults will be secured upon completion of pigging event.
This pigging event is a quarterly Direct Feed Line cleaning event only.

Ferguson Contracting, Inc.

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CTP Mine Water Line Pipeline Inspection Form

Note: This form should be utilized Quarterly or as directed by the USACE.
Results will be included in the Daily Quality Control Report and monthly DMR.

Date: 06-30-04 Inspected By: Gary Fulton

Item Inspected	Condition	Comments
Pipe	***Good*** / Poor	
Inspect visible pipe sections and pipe joints for any gouges or sharp cuts on the outside surface which are greater than 10 percen of the wall thickness; minor scuffing or scratching will not affect the pipe and pipe fittings service life per the pipe manufacture		
Manhole/Vaults		
Sta 0+20 Direct Feed Branch Vault	***Good*** / Poor	4" of rain water in vault, pumped into D.F. line
Sta 10+00 Pipeline Inlet	***Good*** / Poor	
Sta 11+55 Overflow Manhole	***Good*** / Poor	
Sta 13+95 Upper Pigging Vault	***Good*** / Poor	3" rain water in vault, pumped into main line
Sta 24+44 Lower Camera Vault	***Good*** / Poor	
Inspect the ring, covers, lids, interior walls and floors (floor drains), seals around the pipe sections and joints (Link-Seals)		
Overflow Pipe	***Good*** / Poor	screen is clear of obstructions
Inspect the seal around the 24-inch diameter overflow pipe inside the overflow manhole (sta 11+55) and the interior condition o the pipe looking for obstructions and damage		
Knife Gate Valves	***Good*** / Poor	Both have small leaks
Main Line Valve 20"electric valve	***Good*** / Poor	Small leak in the knife area
Direct Feed Line Valve 20" ele. Valve	***Good*** / Poor	Small leak in the knife area
Sta 5+40 8-inch Valve D.F. drain	***Good*** / Poor	3" rain water in vault, pumped into main line
Sta 13+95 20-inch Valve	***Good*** / Poor	
Sta 13+95 6-inch Valve	***Good*** / Poor	
Sta 24+34 20-inch Valve	***Good*** / Poor	
Inspect for leaks in the interior sealing surfaces of gate valves by closing the valve and observing possible downstream throug the wye fittings of discharge at the lined pond. Inspect the exterior of the valve and operator and the flanges for signs of corrosion (rusting) and damage.		
Thrust Block L.P. Influent	***Good*** / Poor	Good condition
Inspect the exterior condition of the thrust block, steel straps, and bolts for damage, and extensive corrosion.		

General Comments: Direct feed vault needs a new gasket on the pig launch unit. Gene Nelson will place a new gasket on this unit 7-1-04.

Ferguson Contracting, Inc.

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CTP Mine Water Line Pipeline Inspection Form

Note: This form should be utilized Quarterly or as directed by the USACE.
Results will be included in the Daily Quality Control Report and monthly DMR.

Date: 10-01-04 Inspected By: Gary Fulton

Item Inspected	Condition	Comments
Pipe	***Good*** / Poor	
Inspect visible pipe sections and pipe joints for any gouges or sharp cuts on the outside surface which are greater than 10 percen of the wall thickness; minor scuffing or scratching will not affect the pipe and pipe fittings service life per the pipe manufacture		
Manhole/Vaults		
Sta 0+20 Direct Feed Branch Vault	***Good*** / Poor	
Sta 10+00 Pipeline Inlet	***Good*** / Poor	
Sta 11+55 Overflow Manhole	***Good*** / Poor	
Sta 13+95 Upper Pigging Vault	***Good*** / Poor	
Sta 24+44 Lower Camera Vault	***Good*** / Poor	
Inspect the ring, covers, lids, interior walls and floors (floor drains), seals around the pipe sections and joints (Link-Seals)		
Overflow Pipe	***Good*** / Poor	
Inspect the seal around the 24-inch diameter overflow pipe inside the overflow manhole (sta 11+55) and the interior condition o the pipe looking for obstructions and damage		
Knife Gate Valves	***Good*** / Poor	Both have small leaks
Main Line Valve 20"electric valve	***Good*** / Poor	Small leak in the knife area
Direct Feed Line Valve 20" ele. Valve	***Good*** / Poor	
Sta 5+40 8-inch Valve D.F. drain	***Good*** / Poor	
Sta 13+95 20-inch Valve	***Good*** / Poor	
Sta 13+95 6-inch Valve	***Good*** / Poor	
Sta 24+34 20-inch Valve	***Good*** / Poor	
Inspect for leaks in the interior sealing surfaces of gate valves by closing the valve and observing possible downstream throug the wye fittings of discharge at the lined pond. Inspect the exterior of the valve and operator and the flanges for signs of corrosion (rusting) and damage.		
Thrust Block L.P. Influent	***Good*** / Poor	Good condition
Inspect the exterior condition of the thrust block, steel straps, and bolts for damage, and extensive corrosion.		

General Comments: Direct feed vault was the only vault inspected.

APPENDIX H

OPERATIONS, MAINTENANCE AND TROUBLESHOOTING TIMELINE

OPERATIONS, MAINTENANCE AND TROUBLESHOOTING TIMELINE

Date	Work Performed	Location	Date Completed
10-01-03	Quarterly pump and motor analysis (Cash Balancing Service)		10-01-03
10-23-03	Line Cleaning of the Direct Feed Line		10-23-03
10-23-03	Place the new Clarifier effluent pipe and drop box in service		10-23-03
10-30-03	Completed Cathodic Protection wiring installation (Clarifier)		10-30-03
11-11-03	Rebuilt failed Clarifier and 006 pH probes		11-11-03
11-13-03	Clarifier painting completed		11-13-03
11-18-03	Placed initial pebble lime shipments into new silos		11-19-03
11-22-03	Performed lime slurry injection testing from new system		11-22-03
11-22-03	CTP operators received lime silo O & M training		11-22-03
12-02-03	F.C. ongoing support to CH2M Hill, new lime system tests		ongoing Jan-04
12-18-03	Clarifier cathodic protection system tested and placed in service		12-18-03
12-31-03	Repaired leak in new lime injection pump #2 housing		12-31-03
01-06-04	Removed lime slurry tank mixer from service (frozen tank, bent mixer)		01-06-04
01-06-04	Performed quarterly pump and motor analysis (Cash Balance Service)		01-06-04
	Polishing Pond pump impeller needs cleaning		
	Lined Pond pump #3 needs rebuild (Gould Pump)		
	Clarifier underflow pump #3 needs rebuild (Allis Chalmers)		
	New Lime Silos:		
	Lime injection pump #1 needs pulley balanced		
	Lime injection pump #2 needs pulley balanced		
	Slaker A drive motor needs balance or mounting adjusted		
01-08-04	Repaired leaking sample line in Head House (rusted and broken)		01-08-04
01-08-04	Inspected and ordered parts for leaking floc mixer #2		01-30-04
01-09-04	Placed lime slaker A in service, removed lime slaker B from service		01-09-04
01-14-04	Six-month main line pigging event: 5 pigs		01-14-04
01-15-04	Quarterly direct feed line pigging event: 4 pigs		01-15-04
01-16-04	Labeled all components of the new lime silos		01-16-04
01-16-04	Placed new drain valves on new lime slakers		01-16-04
01-16-04	Placed flow restrictors on the new lime injection cooling water lines		01-16-04
01-22-04	Connected CTP to new 4” water line, placed new flow restrictor on line		01-22-04
01-30-04	Unplugged drainage culvert, causing the Head House to flood		01-30-04
02-11-04	New slurry tank mixer shaft replacement		02-11-04
02-11-04	New lime feeder gear drives A&B silos		02-11-04
02-11-04	Repaired new silo ladder safety rail		02-11-04
02-11-04	Repaired new silo lime level indicators		02-11-04
02-11-04	Repaired slurry tank dilution water indicator		02-11-04
02-12-04	Placed new grit bin dumpster in service		02-12-04
02-12-04	Removed Lined Pond #1 pump, Mine Fab. will rebuild		02-29-04
02-12-04	Removed #3 control room sludge pump, Ferguson will rebuild		02-25-04
02-17-04	L.P. pump #1 check valve removed, cleaned & replaced		02-17-04
02-20-04	Depleted the hydrated lime supply		03-11-04
03-03-04	Completed the new lime silo upgrades		03-03-04
03-12-04	The old lime silo was cleaned and photographed.		03-12-04
03-22-04	Apex Engineering performed CTP leak testing.		03-23-04
03-23-04	Safety Manager performed lime system procedure evaluation.		03-23-04
03-25-04	Performed Direct Feed Line pigging event		03-25-04
04-05-04	T.O. 8 warranty work on Cathodic Protection System		04-05-04
04-15-04	T.O. 8 warranty work on Clarifier weir		04-15-04
04-20-04	Placed Polishing Pond pump in service for lime dilution water		04-20-04

04-20-04	Activated security log on screens on the HMI lap top	04-20-04
04-21-04	Performed quarterly calibration of air monitor	04-21-04
04-30-04	Placed vehicle barricade around electrical transformer	04-30-04
05-04-04	Received pH buffer and pH meter triode (small parts)	05-04-04
05-12-04	R&R Polishing Pond pump impeller (remove vibration)	05-12-04
05-13-04	Performed yearly fire extinguisher charging	05-13-04
	F.C. replaced two outdated fire extinguishers	05-13-04
05-20-04	Replaced D.F.L. pig catcher lid with aluminum (T.O. 7 spare parts)	05-13-04
05-28-04	CTP Process engineer performed a monthly site visit and CTP operations review.	05-13-04
06-01-04	Increased floc dosage to 5 ppm to aid in turbidity reduction	06-01-04
06-03-04	Increased pH set point to 8.5 to aid in turbidity reduction	06-01-04
06-03-04	Reduced the CTP recycle sludge specific gravity average from 1.055 to 1.045.	06-03-04
06-04-04	Parsons' Electrical performed work on the lime silo Lightning protection system	06-08-04
06-11-04	Removed all salvageable pumps, motors, and piping from the old lime silo, lime slurry tank, and lime injection pump house	06-11-04
06-14-04	Worked on excavation and construction of new sludge line	06-30-04
06-28-04	Performed quarterly pump and motor analysis for July No significant changes were noted on any pump or motor	06-28-04
06-29-04	Performed the quarterly direct feed line branch and semi-annual Mainline/lined pond branch pigging events, 5 pigs each line	07-01-04
07-04-04	Monthly fire extinguisher inspections--all in good condition	07-04-04
07-12-04	The CTP floc dosage was reduced 5 ppm to 3 ppm	07-12-04
07-27-04	The CTP new 4" water main was put into service	07-27-04
07-28-04	Lime slaker A was removed from service and slaker B started	07-28-04
08-02-04	Monthly fire extinguisher inspections--all in good condition	08-02-04
08-25-04	Six-month oil changes	09-01-04
09-06-04	Monthly fire extinguisher inspection--all in good condition	09-06-04
09-13-04	Made connections for the new 3" polishing pond line in floc room and polishing pond pump house #2 Pump	09-15-04

01-11/12/13-05	Performed Main Line & Direct Feed Line Pigging	01-03-05
01-28-05	Increased the CTP operation pH set point from 8.2 to 8.5	01-28-05
02-02-05	Completed Main Line pig launcher modification	02-02-05
02-02-05	Installed a new Viking drive motor on #1 floc system	02-03-05
02-02-05	Rebuild the #1 floc pump –new bushings, gears	02-03-05

Technical Exhibit 5

Pipeline Cleaning and Inspection Services
Bunker Hill Central Treatment Plant O&M

1. Description of Work and Services.

Contractor shall provide all labor, equipment, materials, and supplies to perform periodic pipeline cleaning and closed circuit television (CCTV) inspection of the minewater pipelines shown in Figure 1 attached at end of this exhibit. The purpose of the work is to remove accumulations of sediment, sludge, and precipitates from the pipe interiors and two pigging/camera vaults; removal and disposal of recoverable solids from the vaults; and CCTV inspection and identification of potential defects or damage in the pipelines. The work includes quarterly, semi-annual, and annual cleaning events.

2. Background.

The Central Treatment Plant (CTP) receives minewater from the Bunker Hill Mine Complex. The work involves the three pipeline segments shown in Figure 1:

(1) Direct Feed Line: 20-inch diameter high-density polyethylene (HDPE), 1,100 linear feet, extending from pigging/camera vault #2 to the CTP's Central Impounding Area/Decant Pond.

(2) Lined Pond Branch: 20-inch diameter HDPE, 1,650 linear feet, extending from pigging/camera vault #2 to the lined storage pond.

(3) Main Line: 20-inch diameter HDPE, 1,040 linear feet, extending from the Kellogg Tunnel inlet to pigging/camera vault #2 (includes cleaning of vaults #1 and #2).

3. Specific Tasks:

3.1 Quarterly Cleaning of Direct Feed Line.

The Contractor shall perform quarterly cleaning of the Direct Feed Line by pigging (i.e., launching and recovery of foam or solid cast plugs [pigs] into a pipeline to mechanically remove solid or semi-solid deposits from the pipe interior). The work includes all labor, equipment, materials, and supplies to perform each pigging event, including mobilization/demobilization, site preparation, health and safety, pigging, solids recovery and disposal from vault #2 and discharge point, and spill prevention and countermeasures. Payment under the fixed price work includes 4 events per contract period (year).

3.2 Semi-annual Cleaning of Main Line and Lined Pond Branch.

The Contractor shall perform semi-annual cleaning of the Main Line and Lined Pond Branch by pigging. The work includes all labor, equipment, materials, and supplies to perform each pigging event, including mobilization/demobilization, site preparation, health and safety, pigging, solids recovery and disposal from vaults #1 and #2 and discharge point, and spill prevention and countermeasures. Payment under the fixed price work includes 2 events per contract year.

3.3 Annual Hydrojetting/Hydroblasting of Direct Feed Line, Lined Pond Branch, and Main Line.

The Contractor shall perform annual pre-cleaning of the Direct Feed Line, Lined Pond Line, and Main Line by hydrojetting of the pipe interior (i.e., use of high-pressure water to hydraulically remove solid or semi-solid deposits from the pipe interior). This work shall be completed before proceeding with pigging of the lines (see paragraphs 3.1 & 3.2). The work includes all labor, equipment, materials, and supplies to perform each hydrojetting event. A total of 3,790 linear feet of 20-inch HDPE pipe shall be cleaned under this task (all three lines).

This work shall be performed coincident with CCTV inspection (see paragraph 3.4) and line pigging (see paragraphs 3.1 & 3.2).

3.4 Annual CCTV Inspection of Direct Feed Line, Lined Pond Branch, and Main Line.

The Contractor shall perform an annual CCTV inspection of the Direct Feed Line, Lined Pond Branch, and Main Line (i.e., remote visual inspection of the pipe interior). The CCTV inspections will be performed prior to annual hydrojetting of the pipelines (see paragraph 3.3). and after the completion of pigging (see paragraphs 3.1 & 3.2). The work includes all labor, equipment, materials, and supplies to perform the annual CCTV inspection, including subcontractor mobilization/demobilization, site preparation, line inspection by CCTV, and reporting. A total of 3,790 linear feet of 20-inch HDPE pipe shall be inspected under this task (all three lines).

This work shall be performed coincident with pigging (see paragraphs 3.1 & 3.2) and hydrojetting (see paragraph 3.3) of the pipelines.

Television inspection equipment shall have an accurate footage counter that displays on a remote monitor the exact distance of the camera from the centerline of the starting point. The camera shall be of the remotely operated pan and tilt type. The rotating camera and lighthead configuration shall provide a pan and tilt angle sufficient to inspect the entire pipe interior. The camera shall be color.

Experienced personnel trained in locating breaks, obstacles, and defects by closed-circuit television inspection techniques shall perform the inspection of the pipelines. The interior of the pipeline shall be carefully inspected to determine the location and extent of all pipeline defects. The location of any conditions which may result in a limitation of pipeline operation, cleaning,

or inspection shall be noted so that these conditions can be considered and, if necessary, corrected prior to actual rehabilitation.

At all defects and connections, the camera shall be stopped and the pan and tilt features shall be used to obtain a clear picture. Record the inspections on high quality VHS color videotape (or other media acceptable to USACE) and on a suitable written log. Tapes shall be recorded at SP speed. Videotape shall include a visual and audio narrative noting:

(1) Date, time of day
(2) Pipeline designation
(3) Upstream launch point for CCTV camera.
(4) Downstream receiving point for CCTV camera
(5) Type of pipe (material)
(6) Size of pipe
(7) Pipe materials of construction
(8) Beginning and ending tape counter numbers for each run (launch point to receiving point) of pipe inspected
(9) Direction of movement of camera, heading, depth of flow, and direction of flow
(10) Location (start and end counter distances in feet from the beginning centerline) and description of obstructions, structural defects, missing pieces of pipe, longitudinal and/or circumferential cracking, joint deterioration including open and/or offset joints, ovality, leakage or evidence thereof, corrosion, erosion, deposits, roots, previous repairs, sags, and other abnormalities with respect to the pipeline's condition with counter distance in feet from the beginning centerline.

4. Scheduling of Work.

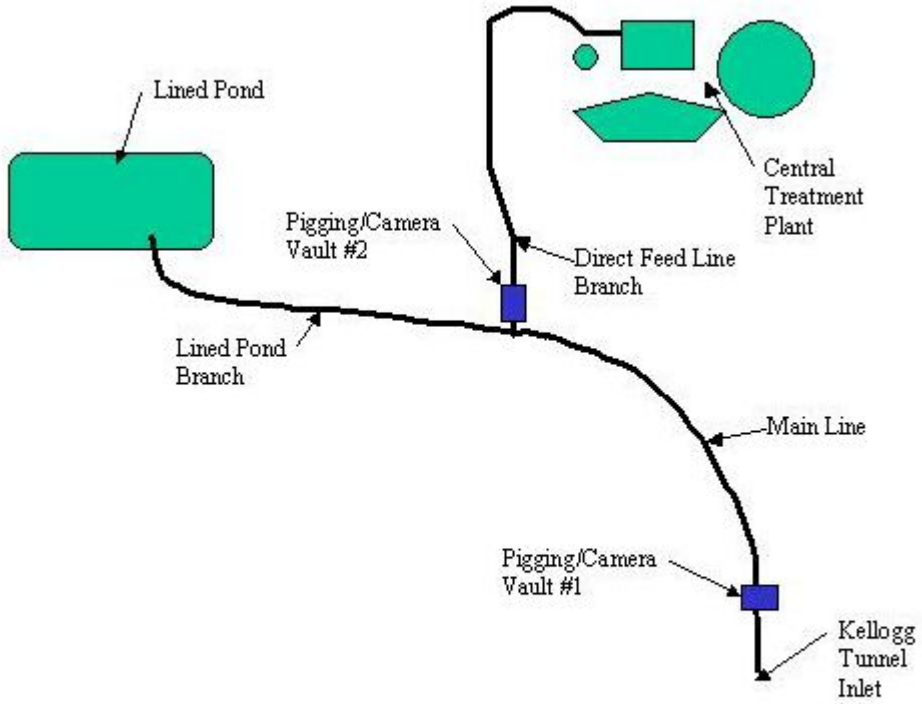
The schedule for this work is presented in Table 1.

TABLE 1

SCHEDULE OF SERVICES FOR PIPELINE CLEANING AND INSPECTION

WORK ITEM/ DESCRIPTION	JANUARY	APRIL	JULY	OCTOBER
Quarterly Cleaning of Direct Feed Line.	X	X	X	X
Semi-annual Cleaning of Main Line and Lined Pond Branch.	X		X	
Annual Hydrojetting of Direct Feed Line, Lined Pond Branch, and Main Line.			X	
Annual CCTV Inspection of Direct Feed Line, Lined Pond Branch, and Main Line.			X	

FIGURE 1
LOCATION MAP, PIPELINE CLEANING AND INSPECTION



Minewater Pipe Lines

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TECHNICAL EXHIBIT 6

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

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Permit No.: ID-000007-8
Application No.: ID-000007-8

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. §1251 et seq; the "Act"),

Bunker Limited Partnership

is authorized to discharge from a facility located near Kellogg, Idaho to receiving waters named South Fork Coeur d'Alene River, Bunker Creek, and Government Creek,

in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective October 30, 1986.

This permit and the authorization to discharge shall expire at *midnight,* October 29, 1991.

Signed this 30th day of September 1986.

Director, Water Division, Region 10
U.S. Environmental Protection Agency

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TABLE OF CONTENTS

Cover Sheet--Issuance and Expiration Dates

I. Effluent Limitations and Monitoring Requirements
A. Central Treatment Plant--Outfall Number 006
B. Booster Station Overflow--Outfall Number 008
C. Number 96 Tunnel--Outfall Number 009
D. Bunker Creek and Government Creek Monitoring Requirements
E. Other Requirements
F. Biomonitoring Program
G. Definitions

II. Monitoring, Recording and Reporting Requirements
A. Representative Sampling
B. Monitoring Procedures
C. Penalties for Tampering
D. Reporting of Monitoring Results
E. Compliance Schedules
F. Additional Monitoring by the Permittee
G. Records Contents
H. Retention of Records
I. Twenty-four Hour Notice of Noncompliance Reporting
J. Other Noncompliance Reporting
K. Inspection and Entry

III. Compliance Responsibilities
A. Duty to Comply
B. Penalties for Violations of Permit Conditions
C. Need to Halt or Reduce Activity not a Defense
D. Duty to Mitigate
E. Proper Operation and Maintenance
F. Removed Substances
G. Bypass of Treatment Facilities
H. Upset Conditions
I. Toxic Pollutants

IV. General Requirements
A. Changes in Discharge of Toxic Substances
B. Planned Changes
C. Anticipated Noncompliance
D. Permit Actions
E. Duty to Reapply
F. Duty to Provide Information
G. Other Information
H. Signatory Requirements
I. Penalties for Falsification of Reports
J. Availability of Reports
K. Oil and Hazardous Substance Liability
L. Property Rights
M. Severability
N. Transfers
0. State Laws

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1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Central Treatment Plant--Outfall Number 006.

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 006, subject to the following conditions:

1. Discharges from outfall number 006 shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC REQUIREMENTS		DISCHARGE LIMITATIONS		MONITORING	
Parameter	Units	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow	mgd	N/A	N/A	Continuous	Recording
Total Suspended Solids	mg/l lb/day	20 985	30 1907	Daily	Grab
Total Copper	mg/l lb/day	0.15 7.4	0.30 18.6	Daily	24-hour composite
Total Zinc	mg/l lb/day	0.73 36.2	1.48 91.3	Daily	.24-hour composite
Total Lead	mg/l lb/day	0.3 14.8	0.6 37.0	Daily	24-hour composite
Total Mercury	mg/l lb/day	0.001 0.05	0.002 0.12	Daily	24-hour composite
Total Cadmium	mg/l lb/day	0.05 2.4	0.1 6.1	Daily	24-hour composite
Total Antimony	mg/l	N/A	N/A	Monthly	24-hour composite
Total Manganese	mg/l	N/A	N/A	Monthly composite	24-hour
Total Phosphorus	mg/l	N/A	N/A	Weekly	24-hour composite
Total Cyanide	mg/l	N/A	N/A	Weekly	24-hour composite
Total Fluoride	mg/l	N/A	N/A	Weekly	24-hour composite

2. Effluent pH shall not be less than 6.0 standard units nor greater than 10 standard units. The pH shall be monitored continuously.

3. There shall be no discharge of floating solids, visible foam in other than trace amounts, or oily wastes which produce a sheen on the surface of the receiving water.

4. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: In the effluent stream after treatment and immediately prior to discharge to Bunker Creek.

B. Booster Station Overflow--Outfall Number 008.

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 008, subject to the following conditions:

1. Discharges from outfall number 008 shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTIC REQUIREMENTS		DISCHARGE LIMITATIONS		MONITORING	
Parameter	Units	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow	mgd	1.4	2.6	Daily	Measure/ Calculate
Total Copper	mg/l	0.01	0.07	Monthly	Grab
Total Zinc	mg/l	0.5	1.0	Monthly	Grab
Total Lead	mg/l	0.1	0.3	Monthly	Grab
Total Cadmium	mg/l	0.01	0.07	Monthly	Grab

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units. The pH shall be monitored monthly with a grab sample.

3. There shall be no discharge of floating solids, visible foam in other than trace amounts, or oily wastes which produce a sheen on the surface of the receiving water.

4. Samples taken in compliance with the monitoring requirements specified above shall be taken in the effluent stream immediately prior to discharge to the receiving water.

C. Number 96 Tunnel–Outfall Number 009.

During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from the Number 96 Tunnel, subject to the following monitoring requirements:

EFFLUENT CHARACTERISTIC		MONITORING REQUIREMENTS	
Parameter	Units	Measurement Frequency	Sample Type
Flow mgd	quarterly	estimate	
Specific Conductance	µmhos/cm^2	quarterly	grab
pH	pH units	quarterly	grab
Total Copper	mg/l	quarterly	grab
Total Zinc	mg/l	quarterly	grab
Total Lead	mg/l	quarterly	grab
Total Mercury	mg/l	quarterly	grab
Total Cadmium	mg/l	quarterly	grab
Total Manganese	mg/l	quarterly	grab
Total Fluoride	mg/l	quarterly	grab

1. Quarterly grab sampling shall be on a day that coincides with the monthly 24-hour composite sampling on Government Creek.

2. Samples taken in compliance with the monitoring requirements specified above shall be taken in the discharge stream just before the discharge enters Government Creek.

3. After a period of one year, the monitoring results from the Number 96 Tunnel will be reviewed and adjusted if necessary.

D. Bunker Creek and Government Creek Monitoring Requirements.

During the period beginning on the effective date and lasting through the expiration date, the permittee shall monitor Government Creek and Bunker Creek at the following locations as specified below:

1. Bunker Creek just upstream of the culvert under the I-90 freeway.

2. Government Creek below Sweeney Pond near the I-90 freeway.

3. Government Creek above the zinc plant, approximately 100 feet upstream of the discharge of the Number 96 Tunnel into Government Creek.

EFFLUENT CHARACTERISTIC		MONITORING REQUIREMENTS			
Parameter	Units	(1) Bunker Creek	(2) Government Creek	(3) Government Creek	Sample Type
Flow	mgd	weekly	5 days/week	5 days/week	measure/ calculate
Specific Conductance	umboss/cm2	weekly	continuous	weekly	grab (for 1 and 3)
pH	pH units	weekly	continuous	weekly	grab (for 1 and 3)
Total Copper	mg/l	monthly	monthly	monthly	grab
Total Zinc	mg/l	monthly	monthly	monthly	grab
Total Lead	mg/l	monthly	monthly	monthly	grab
Total Mercury	mg/l	monthly	monthly	monthly	grab
Total Cadmium	mg/l	monthly	monthly	monthly	grab
Total Manganese	mg/l	monthly	monthly	monthly	grab
Total Fluoride	mg/l	monthly	monthly	monthly	grab

E. Other Requirements

1. The pond area of the Central Impoundment Area (CIA) shall not exceed 50 acres. The water level in the CIA shall not overtop the upper edge of the sloped beach of mill tailings surrounding the CIA. Distribution of the tailings shall be effectively managed to avoid ponded water contact with the dike. Where mill tailings cannot be effectively beached along the perimeter, external dike sealing may be necessary. Should seepage control through mill tailings deposition and clay sealing be inadequate, further measures such as seepage collection and pumping back to the CIA may be required.

2. In addition to the Discharge Monitoring Reports (DMRs), a supplemental monthly report shall be submitted in accordance with Part II.D. of this permit which shall contain the following information:

   a. Daily mine wastewater flow from the Kellogg Tunnel. This flow shall be monitored continuously and recorded on a daily basis.

   b. Daily mill effluent flow. This flow shall be measured directly or calculated based on pump timers and pump capacity and recorded on a daily basis.

   c. Daily flow of makeup water to the mill. All makeup water, including the underground wells and collected runoff sources, shall be monitored, recorded, and reported on a daily basis.

   d. Daily precipitation on the CIA. The permittee shall maintain and operate the precipitation gage which shall be located so as to yield representative values of precipitation on the CIA. Total monthly precipitation shall also be reported.

   e. The dates and times of Central Treatment Plant shutdown.

3. The permittee shall implement best management practices, including the recommendations in the approved Seepage Control Plan, to prevent discharges from the CIA. The permittee shall conduct the following monitoring program, at a minimum, to evaluate the effectiveness of the seepage control system. Sampling dates shall be recorded and reported on each report:

   a. Drill holes Nos. 8, 9, and 25 as identified in the Hawks Report shall be monitored for water level, specific conductance, zinc, cadmium, antimony, phosphorus, and fluoride.

   b. South Fork Coeur d'Alene River at both the Bunker Avenue Bridge and Airport Bridge shall be monitored. Three samples shall be taken, one from each side and from the center of the river at each location, and composited. Each composite sample shall be analyzed for specific conductance, total zinc, cadmium, antimony, phosphorus, and fluoride. At the time of sampling at the Airport and Bunker Avenue bridges,. the corresponding stream flows shall be determined and recorded. A stream gage shall be operated at the Bunker Avenue bridge. This gage shall be calibrated annually. The flow at the Airport bridge shall be estimated from measured flows at Bunker Bridge, Bunker Creek, and Government Creek. The difference in parameter loads between the Bunker Avenue bridge and the Airport bridges shall be calculated and included on each report.

   c. Bunker Creek and Government Creek shall be sampled at existing monitoring locations for flow, specific conductance, total zinc, cadmium, antimony, phosphorus, and fluoride.

   d. The pond area of the CIA shall be estimated. A photograph of the pond area shall be taken on the Monday morning closest to the sampling date, dated, and submitted.

   e. The water quality of the CIA effluent to the CTP shall be monitored. A grab sample shall be taken at the point where the CIA effluent flow is monitored. This sample shall be analyzed for flow, specific conductance, pH, total copper, zinc, lead, mercury, cadmium, antimony, manganese, phosphorus, cyanide, and fluoride.

f. All samples and monitoring data shall be taken on the same day. Samples will be taken in February, April, June, August, September, October, November, and December. Raw data and all other monitoring data required above shall be reported by the fourteenth day of the month following sampling, i.e., March 14th, May 14th, July 14th, September 14th, October 14th, November 14th, December 14th, and January]4th. EPA shall have access, on request, to all additional data and sample analysis obtained by the Company pertinent to the effectiveness of the seepage control system.

Summary of Seepage Control Monitoring

Parameter	Wells	Bunker Bridge	Airport Bridge	Bunker Creek	Government Creek	CIA
Flow	x	x	x	x	x	x
Specific Conductance	x	x	x	x	x	x
pH						x
Total Copper						x
Total Zinc	x	x	x	x	x	x
Total Lead						x
Total Mercury						x
Total Cadmium	x	x	x	x	x	x
Total Antimony	x	x	x	x	x	x
Total Manganese						x
Total Phosphorus	x	x	x	x	x	x
Total Cyanide						x
Total Fluoride	x	x	x	x	x	x

water level

4. Beginning February 1, 1987, the permittee shall submit an annual report detailing seepage control measures for the upcoming year. The following items, at a minimum, shall be reported:

   a. The existing elevation of the extent of the clay seal and beached mill tailings on the CIA dike;

   b. A specific plan and schedule for raising the seal on the dike in response to the loss in volume of the CIA from the tailings deposition;

   c. Any plans to raise the dike.

5. Spills and other non-scope discharges are not authorized.

F. Biomonitoring Program.

The permittee shall provide existing toxicity data and perform toxicity tests that provide information on the possible toxic effect of the discharge from outfall 006.

1. Within 30 days of the effective date of this permit, the permittee shall submit any existing effluent toxicity data to EPA for review.

2. The permittee shall conduct a 7-day Ceriodaphn a sp. life cycle test to evaluate the possible toxic effect of the permittee's effluent using protocols provided by the EPA Environmental Services Division (ESD). The test shall include a series of dilutions of the effluent ranging from control water to 100% effluent. The permittee shall determine the no effect concentration of the effluent in the control water. In addition, the permittee shall report the percent survival of Ceriodaphnia sp. after 48 hours and again after 96 hours. Such testing will be conducted on a composite sample of effluent. The no effect concentration is that concentration of effluent at which:

   (1) There is less than a 20% decrease in survival of the test organisms compared to appropriate control water; or (2) There is not a statistically significant decrease at the 95% confidence level in reproduction of the test organisms compared to organisms raised in appropriate control water.

3. The life cycle test shall be performed in August of each year during a period of active mine and mill processing. Test results shall be submitted to EPA within 2 months after completion of the test.

4, If the 7-day Ceriodaphnia sp. life cycle test proves inadequate or inappropriate for evaluating the permittee's effluent, EPA may, at the request of the permittee or at its own initiative, establish additional or alternative testing through the permit modification process. This provision does not in any way limit EPA's information gathering authority under Section 308 of the Clean Water Act.

5. All quality assurance criteria used shall be in accordance with Methods for Measuring the Acute Toxicity of Effluent to Aquatic Organisms, EPA-600/4-78-012 and Quality Assurance Manual for Performing Acute Toxicity Tests, FDER Biological Section, 1983. All test organisms and procedures used shall be in accordance with the protocols for the 7-day Ceriodaphnia sp. life cycle test as provided and approved by EPA ESD. The selection of an appropriate control water for the chronic toxicity test shall be submitted to the EPA for review and approval prior to use.

G. Definitions

1. -'Daily Average" ("Daily Avg.") shall mean the total units discharged during a monitoring month divided by the number of days in that period that the production or commercial facility was operating. Where less than daily sampling is required by this permit, this average shall be determined by the summation of the measured daily discharges divided by the number of days during the monitoring month when the measurements were made.

2. "Daily Maximum" ("Daily Max.") shall mean the maximum value attained on any day in a given monitoring month.

3. "Monitoring Month" shall mean the period consisting of the calendar weeks which end in a given calendar month.

4. A "24-hour composite" sample shall mean a flow-proportioned mixture of not less than 8 discrete aliquots. Each aliquot shall be a grab sample of not less than 100 ml and shall be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.

5. A "Grab" sample is a single sample or measurement taken at a specific time or over as short a period of time as is feasible.

6. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

7. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

8. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sam . Samples taken in compliance with the monitoring requirements established under Part I shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

C. Penalties for Tampering. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Reporting of Monitoring Results. Monitoring results shall be summarized each month on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1). The reports shall be submitted monthly and are to be postmarked by the 10th day of the following month. Legible copies of these, and all other reports, shall be signed and certified in accordance with the requirements of Part IV.H @ Signatory Requirements, and submitted to the Director, Water Division and the State agency at the following addresses:

original to: United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101
Attn: Water Compliance Section, Mail Stop 513

copy to: Idaho Department of Health and Welfare Division of Environment
Statehouse
Boise, Idaho 83720

E. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit (Part I.A.) shall be submitted no later than 10 days following each schedule date.

F. Additional Monitoring by the Permittee. If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.

G. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individuals) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The individuals) who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

H. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time. Data collected on-site, copies of Discharge Monitoring Reports, and a copy of this NPDES permit must be maintained on-site during the duration of activity at the permitted locations

I. Twenty-four Hour Notice of Noncompliance Reporting.

1. The following occurrences of noncompliance shall be reported by telephone within 24 hours from the time the permittee becomes aware of the circumstances:

   a. Any noncompliance which may endanger health or the environment;

   b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G., Bypass of Treatment Facilities.);

   c. Any upset which exceeds any effluent limitation in the permit (See Part III.H., Upset Conditions.); or

d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit to be reported within 24 hours.

2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

a. A description of the noncompliance and its cause;

b. The period of noncompliance, including exact dates and times;

c. The estimated time noncompliance is expected to continue if it has not been corrected; and

d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.,

3. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Compliance Section in Seattle, Washington, by phone, (206) 442-1213.

4. Reports shall be submitted to the addresses in Part II.D., Reporting of Monitoring Results.

J. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.D. are submitted. The reports shall contain the information listed in Part II.I.2.

K. Inspection and Entry. The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3.. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Di ' rector of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions. The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, or 308 of the Act is subject to a fine of not less than $2,500, nor more than $25,000 per day of violation, or by imprisonment for not more than 1-year, or both. Except as provided in permit conditions on Part III.G., Bypass of Treatment Facilities and Part III.H., Upset Conditions, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance.. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

G. Bypass of Treatment Facilities:

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this section.

2. Notice:

   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.

   b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part III., Twenty-four Hour Reporting.

3. Prohibition of bypass.

a. Bypass is prohibited and the Director may take enforcement action against a permittee for a bypass, unless:

(1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The permittee submitted notices as required under paragraph 2 of this section.

b. The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 3.a. of this section.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An upset occurred and that the permittee can identify the cause(s) of the upset;

b. The permitted facility was at the time being properly operated;

c. The permittee submitted notice of the upset as required under Part III, Twenty-four Hour Notice of Noncompliance Reporting; and

d. The permittee complied with any remedial measures required under Part III.D., Duty to Mitigate.

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

IV. GENERAL REQUIREMENTS

A. Changes in Discharge of Toxic Substances. Notification shall be provided to the Director as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. One hundred micrograms per liter (100 up/1);

   b. Two hundred micrograms per liter (200 up/1) for acrolein and acrylonitrile; five hundred micrograms per liter (500 up/1) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (I mg/1) for antimony;

   c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Director in accordance with 40 CFR 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. Five hundred micrograms per liter (500 up/1);

   b. One milligram per liter (1 mg/1) for antimony;

   c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Director in accordance with 40 CFR 122.44(f).

B. Planned Changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. ,This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part IV.A.l.

C. Anticipated Noncompliance. The permittee shall also give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

D. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

E. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.

F. Duty to Provide Information. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

G. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

H. Signatory Requirements. All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed as follows:

   a. For a corporation: by a responsible corporate officer;

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

   C. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director.

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to authorization. If an authorization under paragraph IV.H.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph IV.H.2. must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Penalties for Falsification of Reports. The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

J. Availability of Reports. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the Act, permit applications, permits and effluent data shall not be considered confidential .

K. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

L. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

M. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

N. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

0. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

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TECHNICAL EXHIBIT 7

ELECTRONIC O & M MANUAL (DRAFT)

BUNKER HILL MINE WATER COLLECTION & TREATMENT SYSTEM

*** NOTICE TO CONTRACTOR ***

1. The Government provided final electronic O&M manual will be provided for Contractor use and implementation during the Base Period.

2. The current O&M plan and an example annual Preventative Maintenance Report is enclosed for Contractor's information under Section J, Attachment J5.

Draft Document

MAR 2005

Logo here

Bunker Hill Mine Water Collection & Treatment System O&M Manual Storyboard

Bunker Hill Facility Information Manager

Bunker Hill System Map

(Home Page)

MAIN MENU (Start.htm)

100	Bunker Hill Overview
200	Kellogg Tunnel Portal
300	Mine Water Pipelines
400	Lined Pond
500	Sweeney Area Pipeline
600	Sludge Pond
700	Central Treatment Plant
800	Health & Safety Plan
900	Vendor Manuals(900.htm)
910	Emergency Numbers (910.htm)
920	Maintenance System (920.htm)

100 Bunker Hill Overview (100.htm)

100.1	Introduction
100.2	Unit Process Areas
100.3	Reference Information

200 Kellogg Tunnel Portal (200.htm)

200.1	Overview
200.2	Design Criteria
200.3	Components
200.4	Controls
200.5	O&M Procedures
200.6	Troubleshooting
200.7	Reference Information

300 Mine Water Pipelines (300.htm)

300.1	Overview
300.2	Design Criteria
300.3	Components
300.4	Controls
300.5	O&M Procedures
300.6	Troubleshooting
300.7	Reference Information

400 Lined Pond (400.htm)

400.1	Overview
400.2	Design Criteria
400.3	Components
400.4	Controls
400.5	O&M Procedures
400.6	Troubleshooting
400.7	Reference Information

500 Sweeney Area Pipeline (500.htm)

500.1	Overview
500.2	Design Criteria
500.3	Components
500.4	Controls
500.5	O&M Procedures
500.6	Troubleshooting
500.7	Reference Information

600 Sludge Pond (600.htm)

600.1	Overview
600.2	Design Criteria
600.3	Components
600.4	Controls
600.5	O&M Procedures
600.6	Troubleshooting
600.7	Reference Information

x.1 thru .7 represent sections in the document.

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Bunker Hill Mine Water Collection & Treatment System O&M Manual Storyboard

Bunker Hill System Map

(Home Page)

Central Treatment Plant System Map

(Home Page)

MAIN MENU (Start.htm)

700 Facility Overview
710 CTP Influent
720 Aeration & Floc basins
730 Clarifier/Thickener
740 Filter System (Future)
745 Sludge System
750 Rapid Mix Tank
760 Lime System
765 Flocculant System
770 Effluent System
775 SCADA Manual
780 Support Systems
790 Lab Sampling & Testing (793.htm)

700 Facility Overview (700.htm)

700.1 Introduction
700.2 Operating Goals
700.3 Discharge Permits
700.4 Hydraulic Profile
700.5 Design Criteria

710 CTP Influent (710.htm)

710.1 Overview
710.2 Design Criteria
710.3 Components
710.4 Controls
710.5 O&M Procedures
710.6 Troubleshooting
710.7 Reference Information

720 Aeration & Floc Basins (720.htm)

720.1 Overview
720.2 Design Criteria
720.3 Components
720.4 Controls
720.5 O&M Procedures
720.6 Troubleshooting
720.7 Reference Information

730 Clarifier/Thickener (730.htm)

730.1 Overview
730.2 Design Criteria
730.3 Components
730.4 Controls
730.5 O&M Procedures
730.6 Troubleshooting
730.7 Reference Information

740 Filter System (Future) (740.htm)

740.1 Overview
740.2 Design Criteria
740.3 Components
740.4 Controls
740.5 O&M Procedures
740.6 Troubleshooting
740.7 Reference Information

745 Sludge System (745.htm)

745.1 Overview
745.2 Design Criteria
745.3 Components
745.4 Controls
745.5 O&M Procedures
745.6 Troubleshooting
745.7 Reference Information

750 Rapid Mix Tank (750.htm)

750.1 Overview
750.2 Design Criteria
750.3 Components
750.4 Controls
750.5 O&M Procedures
750.6 Troubleshooting
750.7 Reference Information

760 Lime System (760.htm)

760.1 Overview
760.2 Design Criteria
760.3 Components
760.4 Controls
760.5 O&M Procedures
760.6 Troubleshooting
760.7 Reference Information

765 Flocculant System (765.htm)

765.1 Overview
765.2 Design Criteria
765.3 Components
765.4 Controls
765.5 O&M Procedures
765.6 Troubleshooting
765.7 Reference Information

770 Effluent System (770.htm)

770.1 Overview
770.2 Design Criteria
770.3 Components
770.4 Controls
770.5 O&M Procedures
770.6 Troubleshooting
770.7 Reference Information

780 Support Systems (780.htm)

780.1 Electrical System
780.2 Water Service
780.3 Fire System

CH2MHILL

Bunker HillFacility Information System - Microsoft Internet Explorer provided by CH2M HILL

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://nimitz/bhefim/

Bunker Hill
Mine Water Collection
& Treatment System

O & M Manual

- Overview
- Kellogg Tunnel Portal
- Mine Water Pipelines
- Lined Pond
- Sweeney Area Pipeline
- Sludge Pond
- Central Treatment Plant
- Administration

MAIN

Search: GO Advanced

Bunker Hill Facility Information Manager (FIM) Description

Purpose

The Bunker Hill O&M manual is a web-based system that is designed to be easy for the user to find and select any number of documents associated with any unit process area of the Bunker Hill Mine Water Collection and Treatment System. The facility Information Manager is true document management system using Microsoft SQL Server as it's backend.

Navigation

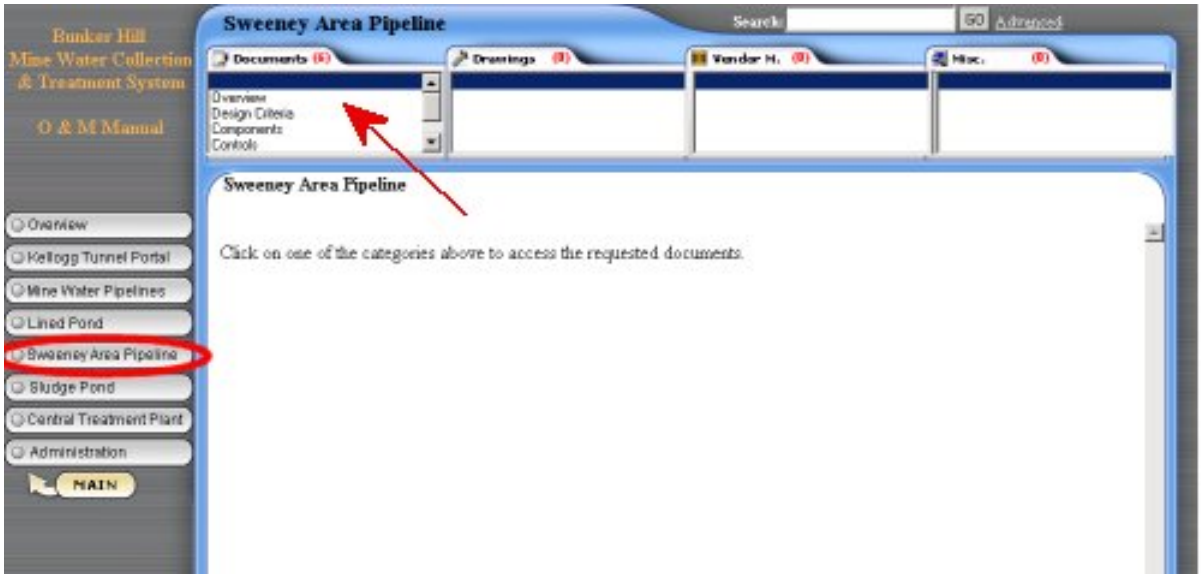
There are three ways to select information as seen below on this screen capture of the O&M Manual:

1. Menu system: Click on one of the buttons on the left side of the screen. These represent the different unit process areas of the collection and treatment system. Sub-menus take you to lists of standard documents and equipment.
2. Graphic System: Click on one of the areas on the graphic. This will either take you to the overview document for the area or a series of sub-graphics.
3. Search Engine: Enter a keyword into the search entry box and click GO. This provides you a Google type list of all the documents containing your keyword.

Once you have selected an area, sub area, or graphic, a list of documents associated with that area will appear on the top of your screen. The list of documents will be categorized by:

- Documents – standard documents loaded for most areas.
- Drawings – drawings associated with the area chosen
- Vender Manuals – list of equipment vendor manuals
- Misc. – photos, graphics, and links to other applications

After clicking on one of the documents listed in one of the four windows, it will appear in the larger or main portion of your screen below.



Maintenance

CH2MHILL will pre-populate the eFIM system with documents produced by CH2M HILL. Other authorized staff (e.g., operators, USACE) will be able to add documents to the system using the administrative – add documents form, similar to the exhibit below.

Administration > Add Document

Upload a file to the File Library. Fill in the form fields below and click the "Upload" button. For the **"*"** Fields (Author, Client, and Keywords), use the combo box to select from existing values or enter a new value in the text box to the right of the combo box.

Bold fields are required. Back to Search Page

Title:
Process:
SubProcess:
SubSubProcess:
Equipment:
Category:
Document Type:
Author's Name/Office*: (Enter new value here)
Document Date: 3/17/2005 (mm/dd/yyyy)
Keywords*: (Enter new value here)
(Enter new value here)
(Enter new value here)
Select File: Browse...
Optional:
NamedDest:
Upload Clear

Staff can assign searchable information to each document. By choosing a process, sub-process, and/or equipment the document is assigned to those areas and will be available to the user as they navigate in those areas via the menu system or graphics system. Documents are copied to the server document folder and the information above is stored in a SQL server database record. Basic and advanced searches can be used to against the database to bring up like items.

100. Bunker Hill Overview

100.1 Introduction

The Bunker Hill mine water collection and treatment system is located just west of Kellogg, Idaho. The system is designed to collect and treat acid mine drainage (AMD) from the Bunker Hill Mine. AMD that discharges from the Kellogg Tunnel (KT) Portal is collected and conveyed to the Central Treatment Plant (CTP) for treatment by alkaline precipitation of metals. Relatively minor flows of water from the Sweeney Area are also treated at the CTP. Treated effluent from the CTP is discharged to Bunker Creek, a tributary to the South Fork Coeur d'Alene River. The Bunker Hill mine water collection and treatment system consists of the unit process areas listed below.

100.1.1 Bunker Hill History

The Bunker Hill Mine consists of a complex network of roughly 150 miles of underground tunnels and 6 miles of shafts that extend to more than 1 mile below ground surface. Mining began in 1885 and continued actively into the 1980s. Only small-scale mining operations continue at present. At its peak, the Bunker Hill Mine was one of the largest lead/zinc mines in the world.

About 20 years after initial development of the mine, the Kellogg Tunnel was constructed on the 9 Level to provide easy access to the upper workings, plus access for developing deeper levels of the mine. Mining continued downward, culminating in development of the 31 Level. As mining activities slowed in the 1980s and nearly stopped in the early 1990s, the

lower portion of the mine was allowed to flood. Pumping was re-started in 1994 to maintain the water level at or below the 11 Level. The submerged lower workings are referred to as the "mine pool".

AMD is produced as a result of acid-forming reactions involving water, sulfide minerals (principally pyrite), oxygen, and bacteria. AMD is acidic and contains elevated levels of toxic metals. The constituents of primary concern are cadmium, lead, and zinc. Water from the upper portion of the mine drains by gravity to the 9 Level or the lower workings. Water from the lower portion of the mine is pumped to the 9 Level. AMD converging at the 9 Level is drained through the Kellogg Tunnel and discharges at the KT Portal. AMD discharge at the KT Portal is collected and conveyed to the CTP for treatment.

Dates of construction of major elements of the Bunker Hill mine water collection and treatment system include:

- Original Bunker Hill Central Treatment Plant – built by the Bunker Hill Company and started operation in May 1974.
- Lined Pond – designed by CH2M HILL and Black & Veatch and constructed by Wilder ? in 1994.
- KT Portal System (facilities outside the portal) – designed by CH2M HILL and constructed by Morrison-Knudsen in 1999.
- Mine Water Pipeline (Main Line and Lined Pond Branch) – designed by CH2M HILL and constructed by Morrison-Knudsen in 1999.
- Direct Feed Pipeline (Direct Feed Branch) – designed by CH2M HILL and constructed by Hydrometrics in 2001/2002.
- Clarifier/Thickener repairs – performed by Ferguson Contracting in 2003. These included centerwell modifications, replacement of the flat weir with a v-notch weir, launder repair, rake leveling, replacement of missing/broken scrapers, re-coating, and installation of a cathodic protection system.
- New Clarifier/Thickener effluent drop box and replacement effluent pipeline to the Polishing Pond – designed by and constructed by Ferguson Contracting in 2003 (design drawings by Morrison Maierle).
- New sludge wasting pipeline from CTP to Sludge Pond at the Central Impoundment Area (CIA) – designed and constructed by Ferguson Contracting in 2004 (design drawings by Morrison Maierle).
- New Lime System (lime storage, make-up, and delivery facilities) – designed and constructed by CH2M HILL/CCI in 2003-2004 to replace the original lime system.
- New PTM Cell and Smelter Closure Gravity Drain Pipeline (Sweeney Area Pipeline) – designed by CH2M HILL and built by Ferguson Contracting in 2005, to replace the old Sweeney Pump Station and Pipeline.
- New CTP Control System – designed by CH2M HILL in 2004 and planned for construction by Ferguson Contracting in 2005, to replace the original control system.

100.1.2 Operating Goals

- Collection of mine water discharging from the Kellogg Tunnel Portal, plus minor flows from the Sweeney Area [drainage from the Principal Threat Material (PTM) Cell and Smelter Closure Landfill], and conveyance of this water to the CTP for treatment.
- Treatment of collected water in the CTP to effluent water quality in compliance with current discharge permit limitations.
- Effective, safe, and cost-efficient operation of the mine water collection and treatment system.

100.2 Unit Process Areas

This O&M manual is organized by these divisions listed below. Most of these sections are associated with unit process areas of the Bunker Hill mine water collection and treatment system. The process flow diagrams (PFDs) included in this section show the unit process areas in schematic form.

- 100 – Bunker Hill Overview*
- 200 – Kellogg Tunnel (KT) Portal
- 300 – Mine Water Pipelines
- 400 – Lined Pond
- 500 – Sweeney Area Pipeline
- 600 – Sludge Pond
- 700 – Central Treatment Plant (CTP)
  - 710 – CTP Influent
  - 720 – Aeration & Floc Basins
  - 730 – Clarifier/Thickener
  - 740 – Filter System (future, does not currently exist)
  - 745 – Sludge System
  - 750 – Rapid Mix Tank
  - 760 – Lime System
  - 765 – Flocculant System
  - 770 – Effluent System
  - 775 – SKADA Manual*
  - 780 – Support Systems
  - 790 – Lab Sampling & Testing*
- 800 – Health & Safety Plan*
- 900 – Vendor Manuals*
- 910 – Emergency Numbers*
- 920 – Maintenance System*

* - Indicates sections of O&M manual that are not associated with a specific unit process area.

100.3 Reference Information

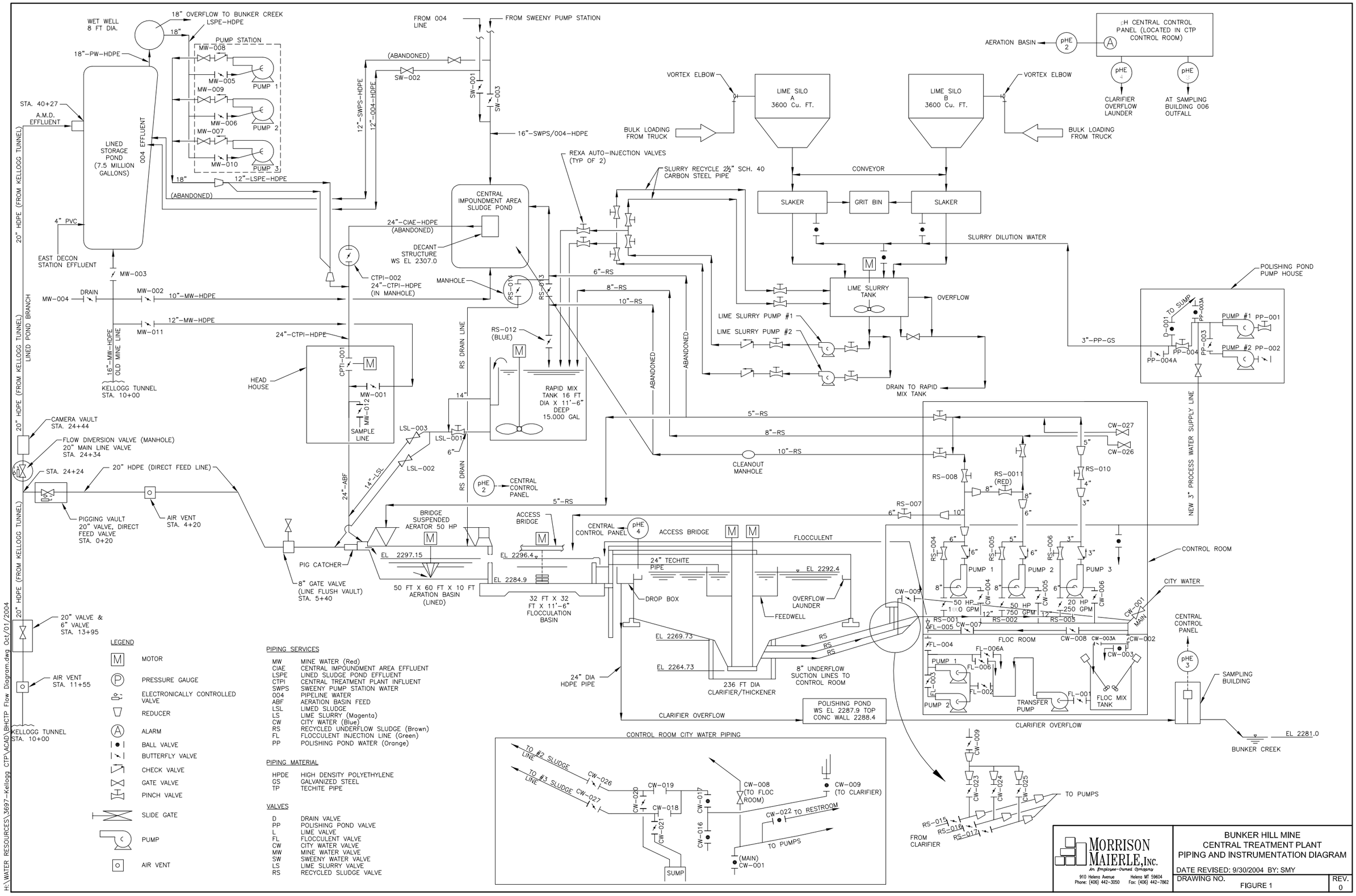
100.3.1 Drawings

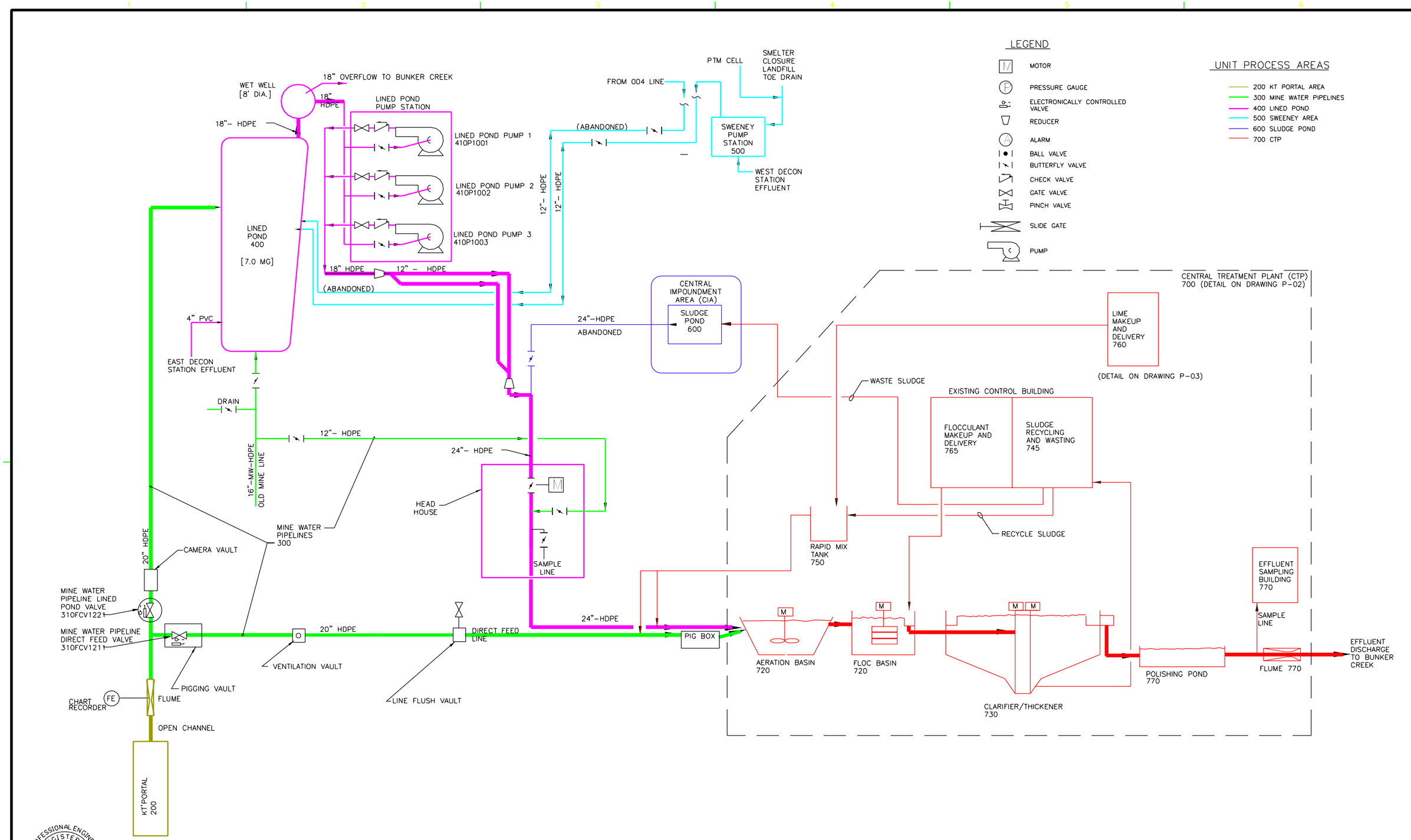
D-100-1 Bunker Hill Mine CTP P&ID (Morrison Maierle)

D-100-2 Overall Process Flow Diagram (CH2M HILL)

D-100-3 CTP Process Flow Diagram (CH2M HILL)

D-100-4 Lime System Process Flow Diagram (CH2M HILL)


WET WELL 8 FT DIA.
18" OVERFLOW TO BUNKER CREEK
LSPE-HDPE
18"
PUMP STATION
MW-008
MW-005
PUMP 1
MW-009
MW-006
PUMP 2
MW-007
MW-010
PUMP 3
18"-PW-HDPE
STA. 40+27
A.M.D. EFFLUENT
LINED STORAGE POND (7.5 MILLION GALLONS)
004 EFFLUENT
18"
12"-LSPE-HDPE
(ABANDONED)
4" PVC
EAST DECON STATION EFFLUENT
20" HDPE (FROM KELLOGG TUNNEL)
LINED POND BRANCH
MW-003
MW-004
DRAIN
MW-002
10"-MW-HDPE
12"-MW-HDPE
MW-011
16"-MW-HDPE OLD MINE LINE
KELLOGG TUNNEL STA. 10+00
24"-CTPI-HDPE
HEAD HOUSE
CPTI-001
MW-001
MW-012
SAMPLE LINE
CAMERA VAULT STA. 24+44
FLOW DIVERSION VALVE (MANHOLE) 20" MAIN LINE VALVE STA. 24+34
STA. 24+24
20" HDPE (DIRECT FEED LINE)
PIGGING VAULT 20" VALVE, DIRECT FEED VALVE STA. 0+20
AIR VENT STA. 4+20
20" VALVE & 6" VALVE STA. 13+95
AIR VENT STA. 11+55
KELLOGG TUNNEL STA. 10+00
FROM 004 LINE
FROM SWEENY PUMP STATION
(ABANDONED)
SW-002
SW-001
SW-003
12"-SWPS-HDPE
12"-004-HDPE
16"-SWPS/004-HDPE
CENTRAL IMPOUNDMENT AREA SLUDGE POND
24"-CIAE-HDPE (ABANDONED)
DECANT STRUCTURE WS EL 2307.0
CTPI-002 24"-CTPI-HDPE (IN MANHOLE)
MANHOLE
RS-014
RS-013
RS-012 (BLUE)
RS DRAIN LINE
RS DRAIN
14"
6"
LSL-003
LSL-001
LSL-002
24"-ABF
14"-LSL
RAPID MIX TANK 16 FT DIA X 11'-6" DEEP 15,000 GAL
REXA AUTO-INJECTION VALVES (TYP OF 2)
SLURRY RECYCLE 2½" SCH. 40 CARBON STEEL PIPE
6"-RS
8"-RS
10"-RS
ABANDONED
VORTEX ELBOW
BULK LOADING FROM TRUCK
LIME SILO A 3600 Cu. FT.
LIME SILO B 3600 Cu. FT.
CONVEYOR
SLAKER
GRIT BIN
SLAKER
SLURRY DILUTION WATER
LIME SLURRY TANK
OVERFLOW
LIME SLURRY PUMP #1
LIME SLURRY PUMP #2
DRAIN TO RAPID MIX TANK
AERATION BASIN
pH CENTRAL CONTROL PANEL (LOCATED IN CTP CONTROL ROOM)
pHE 2
pHE 4
pHE 3
CLARIFIER OVERFLOW LAUNDER
AT SAMPLING BUILDING 006 OUTFALL
POLISHING POND PUMP HOUSE
3"-PP-GS
P-001
TO SUMP
PP-003A
PUMP #1 PP-001
PP-003
PUMP #2 PP-002
PP-004
PP-004A
NEW 3" PROCESS WATER SUPPLY LINE
5"-RS
8"-RS
10"-RS
CLEANOUT MANHOLE
CW-027
CW-026
RS-008
RS-011 (RED)
RS-010
RS-007
RS-004
RS-005
RS-006
PUMP 1
PUMP 2
PUMP 3
50 HP 1000 GPM
50 HP 750 GPM
20 HP 250 GPM
CW-004
CW-005
CW-006
CW-009
CW-001 MAIN
CONTROL ROOM
CITY WATER
CENTRAL CONTROL PANEL
RS-001
RS-002
RS-003
FL-005
CW-007
FLOC ROOM
CW-008
CW-003A
CW-002
CW-003
FL-004
FL-006A
FL-006
FL-003
FL-002
FL-001
TRANSFER PUMP
FLOC MIX TANK
SAMPLING BUILDING
CLARIFIER OVERFLOW
POLISHING POND WS EL 2287.9 TOP CONC WALL 2288.4
EL 2281.0
BUNKER CREEK
BRIDGE SUSPENDED AERATOR 50 HP
ACCESS BRIDGE
CENTRAL CONTROL PANEL
FLOCCULENT
EL 2297.15
EL 2296.4
EL 2284.9
EL 2292.4
24" TECHITE PIPE
PIG CATCHER
8" GATE VALVE (LINE FLUSH VAULT) STA. 5+40
50 FT X 60 FT X 10 FT AERATION BASIN (LINED)
32 FT X 32 FT X 11'-6" FLOCCULATION BASIN
DROP BOX
OVERFLOW LAUNDER
FEEDWELL
EL 2269.73
EL 2264.73
24" DIA HDPE PIPE
236 FT DIA CLARIFIER/THICKENER
8" UNDERFLOW SUCTION LINES TO CONTROL ROOM
CLARIFIER OVERFLOW
CONTROL ROOM CITY WATER PIPING
TO #2 SLUDGE LINE
TO #3 SLUDGE LINE
CW-026
CW-027
CW-020
CW-019
CW-018
CW-021
CW-017
CW-016
SUMP
CW-008 (TO FLOC ROOM)
CW-009 (TO CLARIFIER)
CW-022 TO RESTROOM
TO PUMPS
(MAIN) CW-001
CW-023
CW-024
CW-025
TO PUMPS
FROM CLARIFIER
RS-015
RS-016
RS-017
LEGEND
MOTOR
PRESSURE GAUGE
ELECTRONICALLY CONTROLLED VALVE
REDUCER
ALARM
BALL VALVE
BUTTERFLY VALVE
CHECK VALVE
GATE VALVE
PINCH VALVE
SLIDE GATE
PUMP
AIR VENT
PIPING SERVICES
MW MINE WATER (Red)
CIAE CENTRAL IMPOUNDMENT AREA EFFLUENT
LSPE LINED SLUDGE POND EFFLUENT
CTPI CENTRAL TREATMENT PLANT INFLUENT
SWPS SWEENY PUMP STATION WATER
004 PIPELINE WATER
ABF AERATION BASIN FEED
LSL LIMED SLUDGE
LS LIME SLURRY (Magenta)
CW CITY WATER (Blue)
RS RECYCLED UNDERFLOW SLUDGE (Brown)
FL FLOCCULENT INJECTION LINE (Green)
PP POLISHING POND WATER (Orange)
PIPING MATERIAL
HPDE HIGH DENSITY POLYETHYLENE
GS GALVANIZED STEEL
TP TECHITE PIPE
VALVES
D DRAIN VALVE
PP POLISHING POND VALVE
L LIME VALVE
FL FLOCCULENT VALVE
CW CITY WATER VALVE
MW MINE WATER VALVE
SW SWEENY WATER VALVE
LS LIME SLURRY VALVE
RS RECYCLED SLUDGE VALVE
MORRISON MAIERLE, INC.
An Employee-Owned Company
910 Helena Avenue Helena MT 59604
Phone: (406) 442-3050 Fax: (406) 442-7862
BUNKER HILL MINE
CENTRAL TREATMENT PLANT
PIPING AND INSTRUMENTATION DIAGRAM
DATE REVISED: 9/30/2004 BY: SMY
DRAWING NO.
FIGURE 1
REV. 0
H:\WATER RESOURCES\3697-Kellogg CTP\ACAD\BHCTP Flow Diagram.dwg Oct/01/2004



PROFESSIONAL ENGINEER REGISTERED 10923 STATE OF IDAHO JAMES G. STEFANOFF
EXPIRES: 09/30/05

DSGN	GT HICKMAN
DR	DL KING
CHK	KL ANDERSON
APVD	JG STEFANOFF

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

TASK ORDER EC01
CTP ELECTRICAL AND BUILDING UPGRADES

BUNKER HILL SUPERFUND SITE

PROCESS

OVERALL PROCESS FLOW DIAGRAM

SHEET	12
DWG	P-01
DATE	FEBRUARY 2004
PROJ	182859

FILENAME: 182859p01.dgn PLOT DATE: 23 MAR 2004 PLOT TIME: 10:27:52

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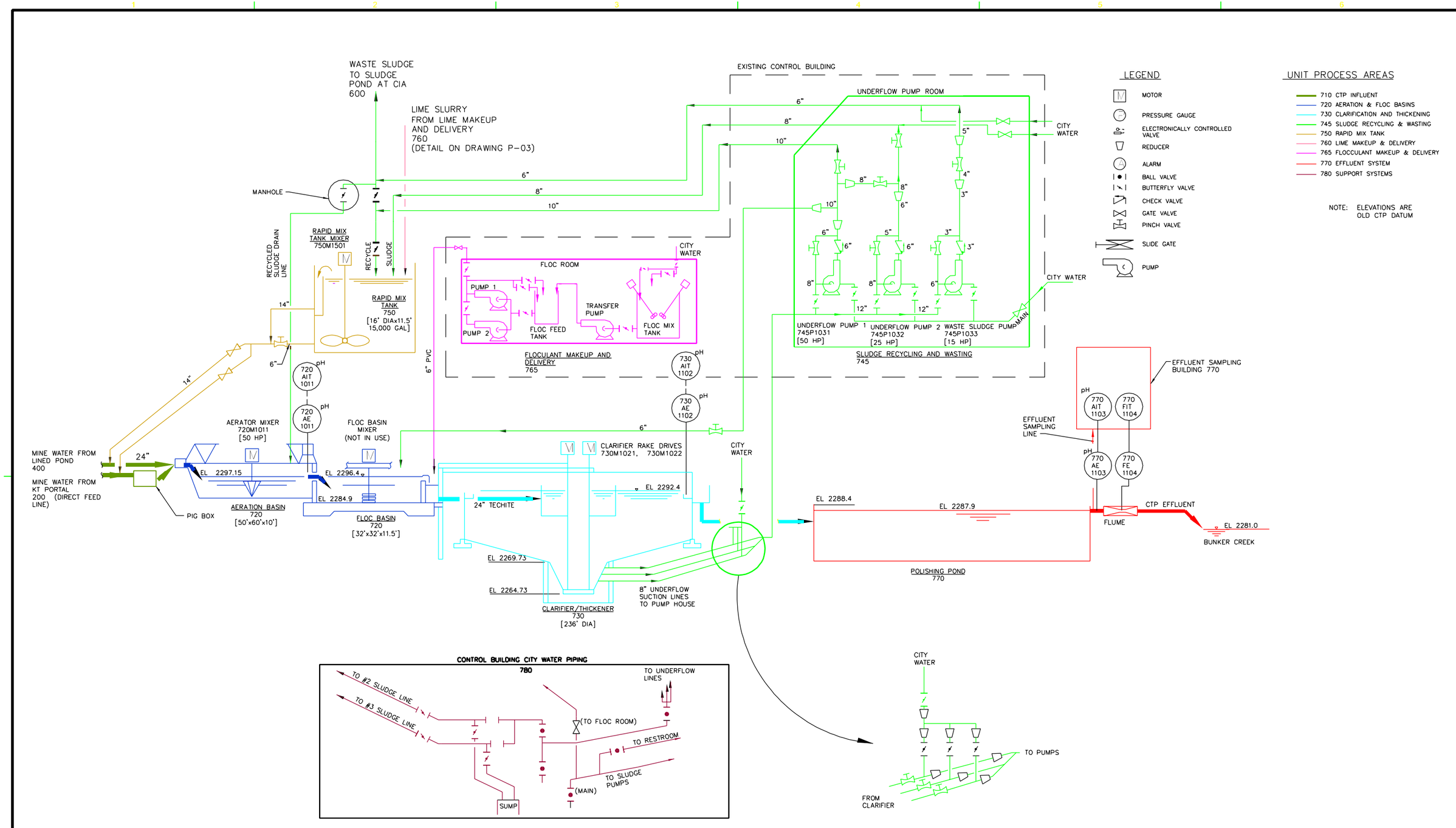

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APVD JG STEFANOFF	NO.	DATE	REVISION	BY	APVD	

CH2MHILL

TASK ORDER EC01
CTP ELECTRICAL AND BUILDING UPGRADES

BUNKER HILL SUPERFUND SITE

PROCESS

CTP PROCESS FLOW DIAGRAM

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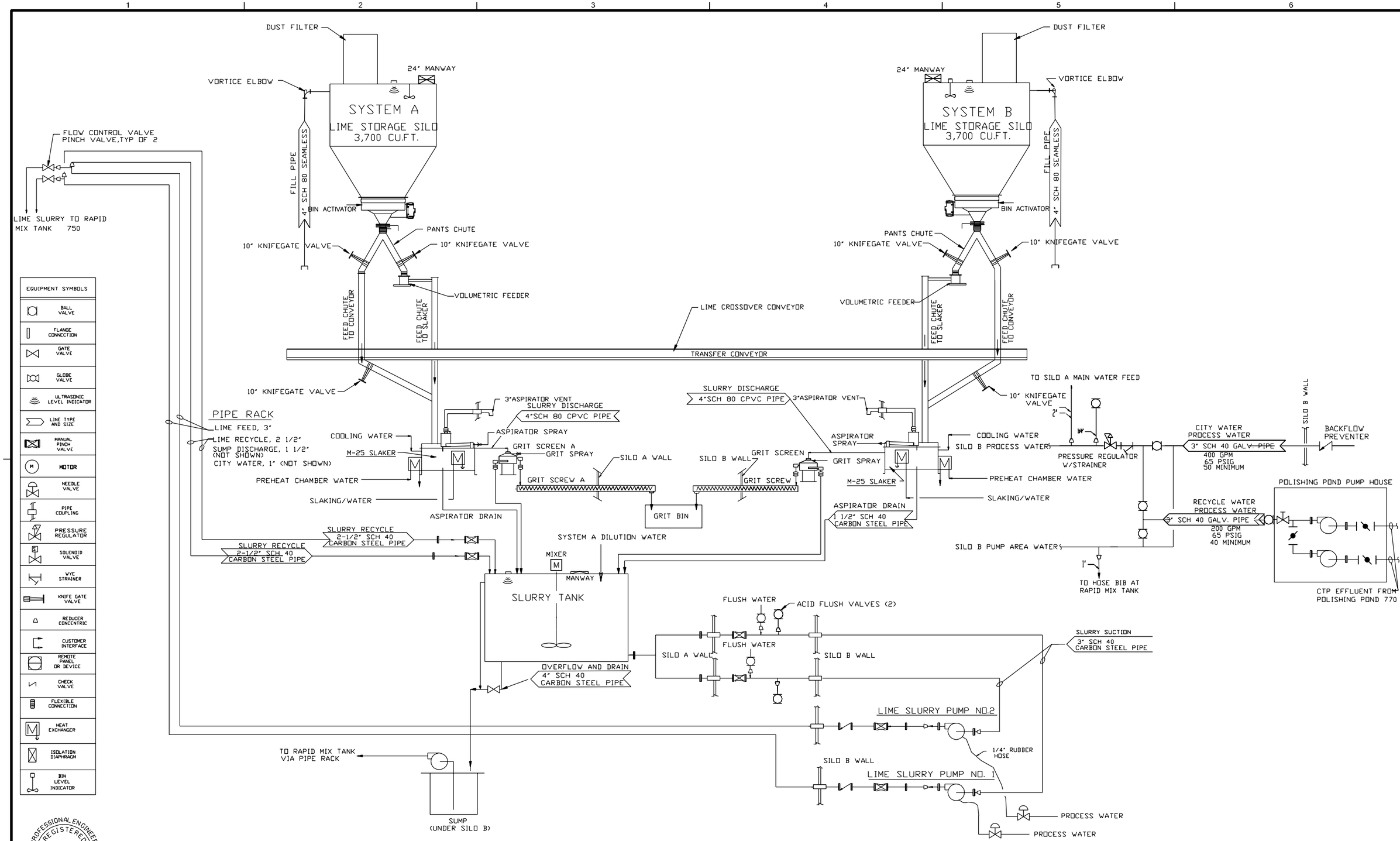
DATE	FEBRUARY 2004
PROJ	182859

FILENAME: 182859p02.dgn PLOT DATE: 17 MAR 2005 PLOT TIME: 11:13:47



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EXPIRES: 09/30/05

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DR	DL KING					
CHK	JG STEFANOFF					
APVD	JG STEFANOFF	NO.	DATE	REVISION	BY	APVD

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0 1"
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TASK ORDER EC01
CTP ELECTRICAL AND BUILDING UPGRADES

BUNKER HILL SUPERFUND SITE

PROCESS

LIME SYSTEM PROCESS FLOW DIAGRAM

SHEET	14
DWG	P-03
DATE	FEBRUARY 2004
PROJ	182859

FILENAME: LIMEPFD.DWG PLOT DATE: 13 MAR 2004 PLOT TIME: 10:25:52

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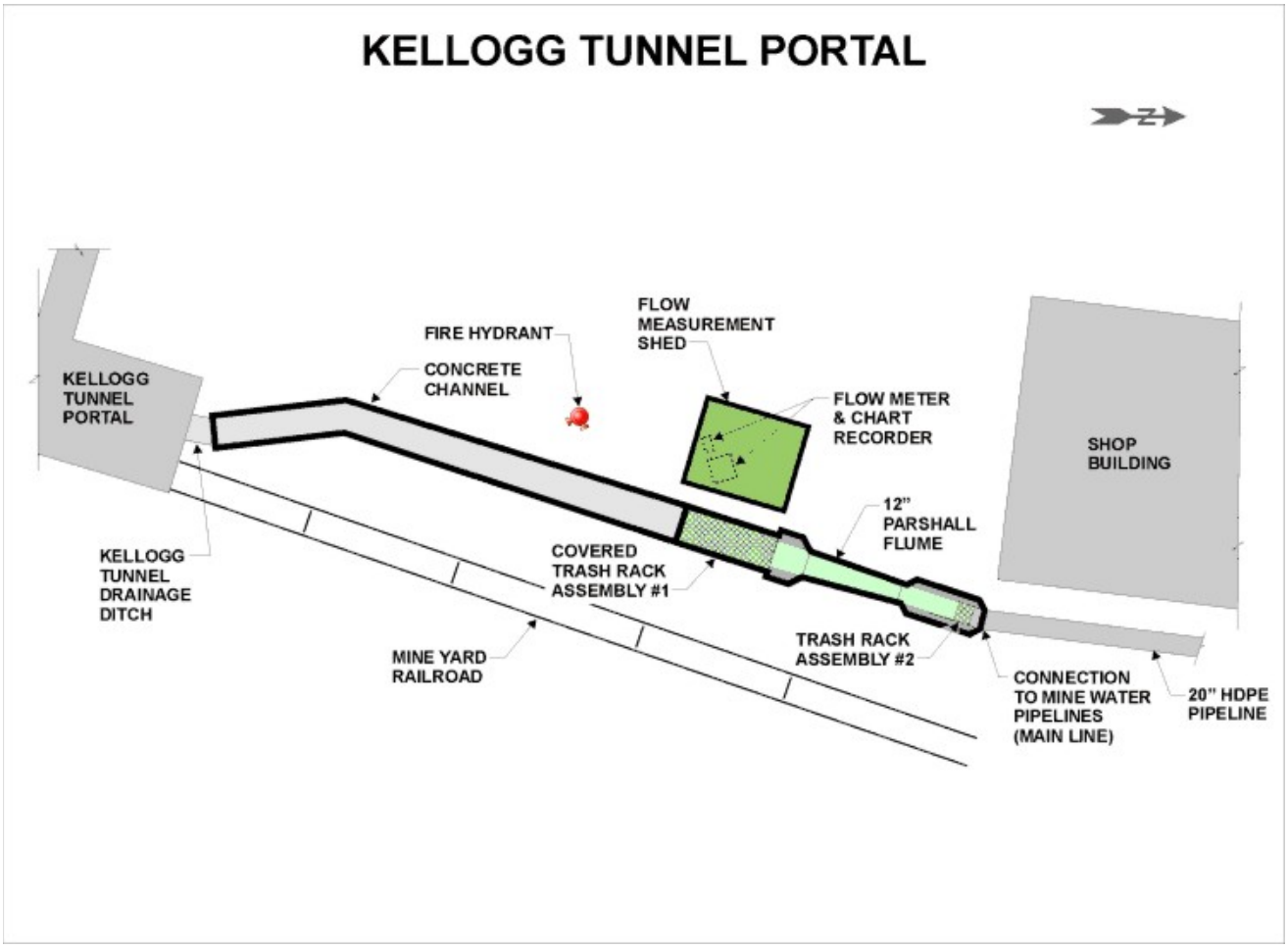
200. Kellogg Tunnel Portal



200.1 Overview

200.1.1 Purpose

This Kellogg Tunnel (KT) Portal system conveys mine water, via gravity flow, from the KT Portal to the Mine Water Pipelines. It also removes large debris and trash from the mine water stream and measures mine water flow rate discharging from the mine.

The KT Portal system was designed by CH2M HILL and built by Morrison Knudsen in 1999, as shown in the project record drawings (CH2M HILL, 2000).

200.1.2 General Description

The KT Portal system conveys mine water from the KT Portal to the Mine Water Pipeline. Mine water is conveyed out of the mine via the mine water ditch located on the west side of the Kellogg Tunnel. At the portal, the ditch merges into the new concrete channel, which conveys the mine water approximately 80 feet through two trash rack assemblies and a 12-inch Parshall flume, before the mine water discharges to the Mine Water Pipelines (Main Line, a buried, 20-inch diameter, high-density polyethylene (HDPE) pipe).

200.2 Design Criteria

Following are the design criteria for the mine water conveyance system (including the KT Portal and Mine Water Pipelines):

- pH: 2 to 5
- Total suspended solids (TSS), "yellow boy": > 300 mg/L
- Dissolved and suspended metals: zinc, lead, iron, cadmium, magnesium, manganese, aluminum, calcium and others
- Sulfate: 500 mg/L to 4,000 mg/L
- Debris: wood, trash, plastic, and miscellaneous mining debris
- Maximum flow rate: 7,000 gpm
- Annual average flow rate: 1,500 gpm
- Sustained minimum flow rate: 1,000 gpm

200.1 Components

Component list:

- Mine water channel
- Trash rack assemblies (2)
- Parshall flume
- Flow meter

200.3.1 Mine Water Channel

The concrete Mine Water Channel (34 inches wide by 30 inches deep) connects to the mine water drainage ditch at the KT Portal, and conveys mine water approximately 80 feet north where it connects to the Mine Water Pipeline. The channel is constructed of prefabricated concrete units with 6-inch-thick walls and bottoms. The length of each unit varies. The joints are tab-welded together and consist of tongue-and-groove connections. The annular joint spaces between each unit are sealed with a grout and a high-strength epoxy (Sikakur 31 Hi-Mod Gel, manufactured by Sika Corporation) and then coated with coal tar epoxy (manufactured by Rust-O-leum).

200.3.2 Trash Racks

There are two trash racks: one upstream and one downstream of the Parshall flume. Both trash racks are supported by stainless-steel rails and bolts, and are constructed of acid-resistant MVICORR fiberglass (manufactured by Nichols). Both trash racks have cutout openings that provide 2-inch by 4-inch clear openings. Trash Rack #1 is located upstream of the flume in front of the concrete channel cover, which provides a place to stand during trash rack removal and cleaning. Trash Rack #2 is located downstream of the flume and is covered with an 18-foot-long 2-inch-thick grated steel lid cover. The steel grates are cut into 3-foot lengths for ease of removal.

200.3.3 Parshall Flume and Flow Meter

The 12-inch (throat width) fiberglass Parshall flume (manufactured by Tracom) is attached to the concrete channel sections on both sides. The flow in the flume is measured by a ISCO model 4230 bubbler flow meter. The air bubbler line in connected to the Parshall flume and the flow meter is housed in a shed adjacent to the flume, where flow is measured continuously and recorded on a chart recorder. A staff gauge is attached to the flume for visual level measurements and flow meter calibration checks.

200.4 Controls

There are no controls associated with the KT Portal system.

Substantial seasonal variations in AMD flow occur. Some control of AMD flow rate is possible by utilizing in-mine storage in the mine pool. Short-term emergency in-mine storage for repairs by diverting mine water to the mine pool is also possible. In-mine storage requires coordination with the mine owner.

200.5 O&M Procedures

Procedures list:

- Mine water channel clean-out procedure
- Mine water channel inspection guidelines
- Flow meter data collection, calibration, and maintenance

Note: sampling and analysis associated with the KT Portal is described under Section 790.

200.5.1 Mine Water Channel Clean-out Procedure

1. The bottom of the concrete channel accumulates sediment, which reduces the channel hydraulic capacity and possibly distorts continuous flow measurements and visual staff gauge observations. As a result, the sediment shall be carefully removed at a minimum frequency of once per week using appropriate removal methods. Because of variable solids content of the KT effluent, more frequent cleaning may be necessary to ensure accurate flow readings. The frequency of cleaning may be re-evaluated based on experience and observations and as directed by the U.S. Army Corps of Engineers (USACE).

2. The sediment should be carefully removed around each channel joint so that the seal and coating are not damaged. Flat-bladed steel shovels used in conjunction with field-modified spades can be used for effective cleaning. The cleaning utensils should be moved only in the downstream direction to avoid damaging the channel joints. Personnel performing this task shall visually check the joints as well as the concrete channel infrastructure during the cleaning operation and report any suspected damage, cracking, or deteriorated areas.

3. Significant quantities of removed sediment shall be collected in 5-gallon containers and disposed of at the Central Impoundment Area (CIA) Sludge Pond. Minor quantities of sediment can be flushed down the mine water conveyance system.

4. The concrete walkway on the east side of the channel shall be kept clean and the storm water inlets (holes in the tops of the channel walls) shall be cleaned to allow drainage through the holes.

5. The trash rack assemblies shall be cleaned a minimum of twice per week. One cleaning per week will be performed during the scheduled cleaning of the channel (generally on Thursdays). The second cleaning will be performed during normal KT water sample collection (generally on Mondays).

6. The sequence of trash rack cleaning shall start at the upstream section (at the KT Portal) and move downstream toward the pipeline inlet. Trash Rack Assembly #1 shall be cleaned before the downstream Trash Rack Assembly #2. Objects collected on the rack should be manually raked off and disposed of with the sediment at the CIA Sludge Pond. Floating objects (e.g., wood debris) caught by the rack should be removed prior to lifting the rack to avoid having it fall off into the water stream. To clean the first trash rack, slide the fiberglass rack up the stainless steel rails and onto the concrete lid. Once the trash rack is cleaned, slide the rack back down the rails until it reaches the channel bottom.

7. The second trash rack assembly shall be cleaned in the same manner; however, the rack should be lifted and placed to the side before cleaning so that material does not fall back into the channel. Note: to help prevent debris from entering the pipeline, only one trash rack shall be removed at a time during cleaning operations.

200.5.2 Mine Water Channel Inspection Guidelines

1. During Mine Water Channel cleaning, the condition of the channel sections and joints, the condition of the channel inlet connection at the KT Portal, and the condition of the channel outlet/pipeline inlet connection structure, shall be noted. All connections should be free of cracks. If cracks are observed, they shall be immediately brought to the attention of the USACE for approval of repairs. Cracks should be sealed using a combination of grout and high-strength epoxy, and coated with coal tar epoxy.

2. When flows through the channel are minimal (such as during pipeline hydro-jetting), the bottom of the channel and bottom joints shall be inspected.

3. The trash rack assembly rail units shall also be inspected for excessive corrosion and the bolts routinely tightened. The clear spacing and the overall condition of the fiberglass racks shall be noted.
4. The condition of the fiberglass in the flume and its joint connections with the channel sections shall also be noted.
5. All inspection results shall be recorded on the Channel Inspection Form (Section 920) and included with the corresponding Monthly Discharge Monitoring Report.

200.5.3 Flow Meter Data Collection, Calibration, and Maintenance

Flow data are collected from the flow meter twice per week (instantaneous flow rate) and monthly (total monthly flow). During the twice weekly visits, flow meter calibration shall be checked by comparing the level read-out on the meter to the water level on the staff gauge in the flume. Annual flow meter maintenance and calibration shall be performed by an instrumentation technical representative.

200.6 Troubleshooting

Problem/Symptom	Possible Cause	Solution
Anomalous or unexpectedly high flow reading on chart	Water backup in flume due to flow restriction in channel	Cleaning of trash racks and/or channel
	ISCO meter out of calibration	Check/re-calibrate meter
	ISCO meter malfunction	Check/repair meter

200.7 Reference Information

200.7.1 Documents

CH2M HILL, 2000. *Bunker Hill Mine Water Pipeline 100 Percent Design and Record Drawings*. CH2M HILL, Spokane, Washington. February 2000.

200.7.2 Vendor Information

ISCO, 1995. Model 4230 Bubbler Flow Meter Instruction Manual (3-ring binder on file at CTP).

200.7.3 Drawings

D-200-1 Concrete Channel From portal, Trash Racks, and Parshall Flume

D-200-2 Flume Trench Line Assembly

200.7.4 Photos

P-200-1 KT Portal (Tunnel entrance)

P-200-2 Mine water concrete channel

P-200-3 Trash rack #1 (flow measurement shed and flume in background)

P-200-4 Parshall flume with staff gauge

P-200-5 Trash rack #2 with outlet to Mine Water Pipelines (Main Line)

P-200-6 Flow meter and chart recorder (inside shed)

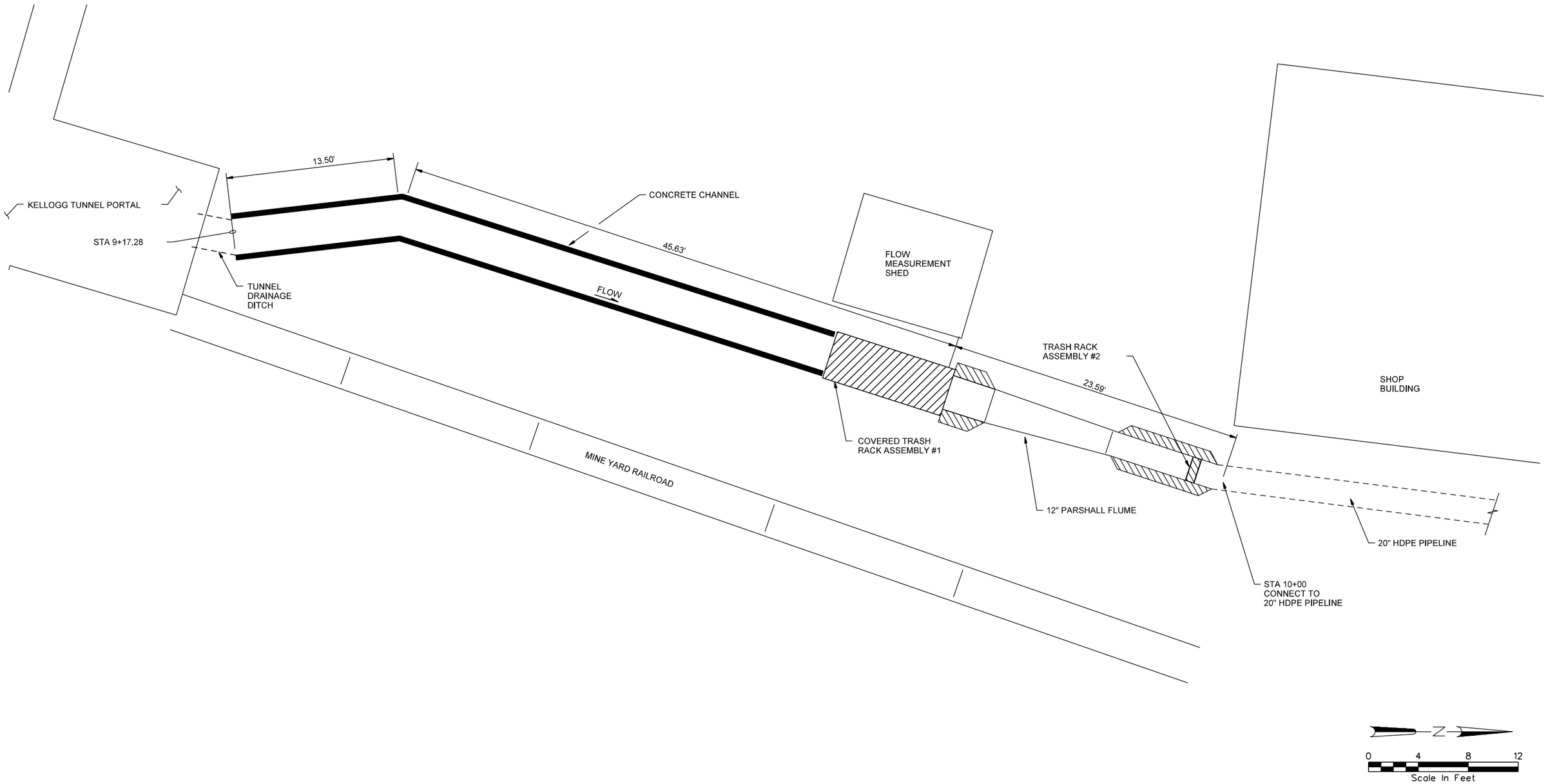


FIGURE 2-1
CONCRETE CHANNEL FROM PORTAL, TRASH RACKS AND PARSHALL FLUME

CH2M HILL

11

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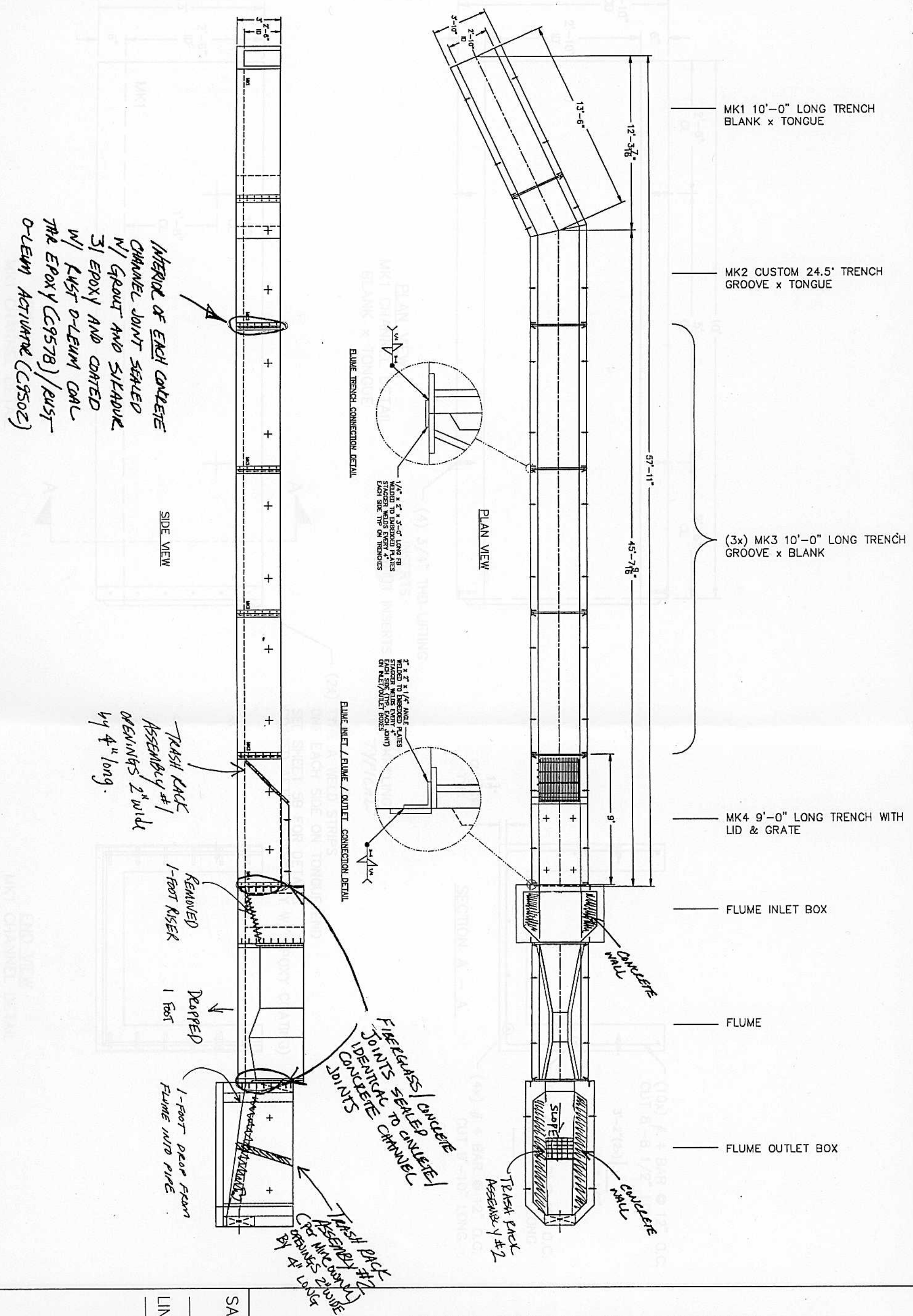

SALES ORDER#

LINE#

FLUME TRENCH LINE ASSEMBLY

PROJECT CONTRACTOR:	MK
PROJECT:	BUNKERHILL PROJECT
DRAWN BY: WRL	
APPROVED BY:	
DATE: YES NO	

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SCALE:	N.T.S.
DATE:	9/15/99
QUOTE NO.:	
S.O. NO.:	
REV.:	B
SHEET	1C OF 10

KELLOGG TUNNEL
1893 — 1902

ULTRASONIC FLOW MONITOR UFM-200
MODEL 913 HIGH CAPACITY POWER PACK 120V
ISCO 4230
Bubbler Flow Meter
ISCO
4230
Bubbler
Flow Meter

SECTION J

ATTACHMENT J2

LIST OF DRAWINGS

TABLE OF CONTENTS

DOCUMENT No.	DESCRIPTION
J2-A	Facility Drawings, CTP
J2-B	(Future) Control Building, CTP
J2-C	(Future) CTP Electrical and Building Upgrades – Control System and Electrical, CTP

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ATTACHMENT J2-A

DRAWING INDEX

Facility Drawings, Central Treatment Plant Facility,
Bunker Hill Superfund Site, Kellogg, Idaho

SHEET NUMBER	TITLE	REVISION NUMBER	DATE
13	CTP Process Flow Diagram		FEB 2004
14	Lime System Process Flow Diagram		9/30/2004
Figure 1	Piping and Instrumentation Diagram		FEB 2004
--	Kellogg Tunnel Portal		--

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ATTACHMENT J2-B

DRAWING INDEX

(Future) Control Building
Bunker Hill Superfund Site, Kellogg, Idaho

REFERENCE DRAWINGS

This facility is not constructed at time of bidding. Drawings provided are for reference of future conditions. These drawings are furnished for information only and the Government does not warrant that as-built conditions will be exactly as shown. Deviations can be anticipated.

SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
1	C-1	Cover Sheet		4/2/04
2	C-2	Standard Area Details		6/04
3	C-3	First and Second Floor Code Plans		6/04
4	C-4	Overall Site Plan and Utilities Plan		6/04
5	C-5	Building Site and Grading Plan		6/04
6	C-6	Pump Station and General Site Details		6/04
7	C-7	General Site Details		6/04
8	C-8	General Site Details		6/04
9	A-1	First Floor Plan		6/04
10	A-2	Second Floor Plan		6/04
11	A-3	Building Sections		6/04
12	A-4	Building Sections		6/04
13	A-5	Building Sections		6/04
14	A-6	Building Sections		6/04
15	A-7	East and North Elevations		6/04
16	A-8	West and South Elevations		6/04
17	A-9	Door and Finish Schedule		6/04
18	S-1	General Structural Notes		6/04
19	S-2	Control Building Foundation Plan		6/04
20	S-3	Control Building Second Floor Framing Plan		6/04

SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
21	S-4	Control Building Roofing Plan		6/04
22	S-5	Structural Details		6/04
23	S-6	Structural Details		6/04
24	S-7	Structural Details		6/04
25	S-8	Typical Truss Elevations		6/04
26	P-1	First Floor Waste & Vent Piping Plan		6/04
27	P-2	First Floor Water & Natural Gas piping Plan		6/04
28	P-3	Second Floor Plumbing Plan		6/04
29	P-4	Plumbing Legend, Schedule & Details		6/04
30	M-1	First Floor HVAC Plan		6/04
31	M-2	Second Floor HVAC Plan		6/04
32	M-3	Legend, Schedules & Details		6/04
33	E-1	Electrical Site Plan		6/04
34	E-2	Control Building First Floor Power Plan		6/04
35	E-3	Control Building First Floor Lighting Plan		6/04
36	E-4	Control Building Second Floor Power Plan		6/04
37	E-5	Control Building Second Floor Lighting Plan		6/04
38	E-6	Electrical Legend and Schedules		6/04
39	E-7	Instrumentation		6/04

ATTACHMENT J2-C

DRAWING INDEX

(Future) CTP Electrical and Building Upgrades –
Control System and Electrical,
Bunker Hill Superfund Site, Kellogg, Idaho

REFERENCE DRAWINGS

This work/facility is not constructed at time of bidding. Drawings provided are for reference of future conditions. These drawings are furnished for information only and the Government does not warrant that as-built conditions will be exactly as shown. Deviations can be anticipated.

SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
-	G-01	Title Sheet, Location Map, And Index Of Drawings		FEB 04
-	G-02	Electrical Legend And Abbreviations		FEB 04
-	I-01	Network Block Diagram		FEB 04
-	I-02	Typical Plc I/O Panel Wiring Diagram		FEB 04
-	I-03	Typical Analog Loop Diagram		FEB 04
-	I-04	Typical Control Panel Elevation And Power		FEB 04
-	E-01	Electrical Site Diagram		FEB 04
-	E-02	One-Line Diagram		FEB 04
-	E-03	Control Diagrams		FEB 04
-	E-04	Control Diagrams		FEB 04
-	E-05	Trench Details And Panelboard Schedule		FEB 04
-	P-01	Overall Process Flow Diagram		FEB 04
-	P-02	Ctp Process Flow Diagram		FEB 04
-	P-03	Lime System Process Flow Diagram		FEB 04

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SECTION J

Attachment J3

DISCHARGE MONITORING REPORT (DMR) SAMPLE FORMAT.

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PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME:

ADDRESS:

CITY:

FACILITY CENTRAL WATER TREATMENT PLANT

LOCATION: BUNKER HILL SUPERFUND SITE

National Pollutant Discharge Elimination System (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(2-16)	(17-19)
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) Quanitity or Loading (46-53)		(54-61)	(4 Card Only) Quality or Concentration (38-45)	(46-53)	(54-61)		No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										

PREPARED BY: _____

REVIEWED BY: _____

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MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2004	12	1	2004	12	31

PARAMETER		Quantity or Loading			Quality or Concentration				FREQUENCY	SAMPLE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS	OF ANALYSIS	TYPE
pH	Sample Measurement				7.4		8.0		Continuous	Meter
	Permit Required				6.0		10.0			
Flow Thru Treatment Plant	Sample Measurement	1.79	2.56	mgd						
	Permit Required	Daily	Daily							
Lead Total - Pb Effluent	Sample Measurement	0.75	1.07	Lbs/Day		0.05	0.05	mg/L	Daily	Comp 24
	Permit Required	14.8 Daily	37.0 Daily	Lbs/Day		0.30 Daily	0.60 Daily	mg/L		
Zinc Total - Zn Effluent	Sample Measurement	4.67	10.44	Lbs/Day		0.32	0.53	mg/L	Daily	Comp 24
	Permit Required	36.2 Daliy	91.3 Daily	Lbs/Day		0.73 Daily	1.48 Daily	mg/L		
Cadmium - Cd Effluent	Sample Measurement	0.150	0.23	Lbs/Day		0.010	0.016	mg/L	Daily	Comp 24
	Permit Required	2.40 Daily	6.10 Daily	Lbs/Day		0.050 Daily	0.100 Daily	mg/L		
Manganese - Mn Effluent	Sample Measurement	502.5	850	Lbs/Day		33.13	50.90	mg/L	Daily	Comp 24
	No Permit Required	Daily	Daily	Lbs/Day		Daily	Daily	mg/L		
Total Suspended Solids - TSS	Sample Measurement	6.2	67	Lbs/Day		0.4	3	mg/L	Daily	Comp 24
	Permit Required	985 Daily	1907 Daily	Lbs/Day		20 Daily	30 Daily	mg/L		

PREPARED BY: GARY FULTON

REVIEWED BY: DON FERGUSON

MONTH: December, 2004

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		LOADING
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day		(mgd)	mg/L	lbs/day	kg/day
1	0.050	0.722	0.299	4.24	0.016	0.227	21.5	305.0	7.50	1.70	0.2	2.837	1.29
2	0.050	0.709	0.420	5.96	0.015	0.213	17.2	244.0	7.40	1.70	0.2	2.837	1.29
3	0.050	0.830	0.351	5.83	0.012	0.199	23.9	396.9	7.60	1.99	0.2	3.321	1.51
4	0.050	0.751	0.274	4.12	0.010	0.150	30.2	453.6	7.60	1.80	0.2	3.004	1.36
5	0.050	0.889	0.344	6.11	0.010	0.178	42.0	746.5	7.70	2.13	0.2	3.55	1.61
6	0.050	0.797	0.385	6.14	0.010	0.159	49.3	785.8	7.70	1.91	0.2	3.188	1.45
7	0.050	0.835	0.349	5.82	0.010	0.167	50.9	849.5	7.70	2.00	0.2	3.338	1.51
8	0.050	0.805	0.284	4.57	0.010	0.161	48.4	779.5	7.60	1.93	0.2	3.221	1.46
9	0.050	0.797	0.301	4.80	0.010	0.159	48.5	773.0	7.70	1.91	0.2	3.188	1.45
10	0.050	0.839	0.310	5.20	0.010	0.168	50.5	847.1	7.60	2.01	0.2	3.355	1.52
11	0.050	0.843	0.306	5.16	0.010	0.169	46.6	785.5	7.80	2.02	0.2	3.371	1.53
12	0.050	0.751	0.279	4.19	0.010	0.150	45.0	675.9	7.70	1.80	0.2	3.004	1.36
13	0.050	0.876	0.309	5.42	0.010	0.175	46.4	813.1	7.70	2.10	0.2	3.505	1.59
14	0.050	0.559	0.343	3.84	0.010	0.112	44.5	497.6	7.70	1.34	0.2	2.236	1.01
15	0.050	0.494	0.525	5.19	0.010	0.099	34.3	339.2	7.60	1.19	0.2	1.978	0.90
16	0.050	0.467	0.488	4.56	0.010	0.093	23.0	215.0	7.50	1.12	0.2	1.869	0.85
17	0.050	0.455	0.403	3.67	0.010	0.091	14.2	129.2	7.50	1.09	0.2	1.819	0.83
18	0.050	0.726	0.432	6.27	0.010	0.145	9.4	137	7.50	1.74	0.2	2.904	1.32
19	0.050	0.880	0.362	6.37	0.010	0.176	17.5	308.1	7.60	2.11	0.2	3.522	1.60
20	0.050	0.839	0.267	4.48	0.010	0.168	26.3	441.1	7.70	2.01	0.2	3.355	1.52
21	0.050	0.843	0.210	0.02	0.010	0.169	31.9	537.7	7.70	2.02	0.2	3.371	1.53
22	0.050	0.809	0.237	3.84	0.010	0.162	37.4	605.5	7.80	1.94	0.2	3.238	1.47
23	0.050	0.822	0.267	4.39	0.010	0.164	41.7	685.5	7.50	1.97	2.4	39.46	17.9
24	0.050	0.860	0.334	5.74	0.010	0.172	47.4	814.8	7.60	2.06	0.2	3.438	1.56
25	0.050	0.751	0.284	4.27	0.010	0.150	46.7	701.5	7.60	1.80	0.2	3.004	1.36
26	0.050	0.517	0.289	2.99	0.010	0.011	40.9	423	7.50	1.24	0.2	2.070	0.94
27	0.050	0.401	0.371	2.97	0.010	0.011	31.1	249	7.50	0.96	0.2	1.602	0.73
28	0.052	1.024	0.530	10.4	0.010	0.197	17.9	352.5	7.60	2.36	3.4	66.96	30.4
29	0.050	1.066	0.250	5.33	0.010	0.213	17.5	373.1	8.00	2.56	0.2	4.264	1.93
30	0.050	0.797	0.120	1.91	0.010	0.159	12.5	199.2	7.90	1.91	0.2	3.188	1.45
31	0.050	0.455	0.111	1.01	0.010	0.091	12.5	113.7	8.00	1.09	0.2	1.819	0.83
TOTAL	1.552	23.209	10.034	144.847	0.323	4.659	1027.1	15,578.7	237.10	55.50	11.600	191.82	87.00
Sample Events	31	31	31	31	31	31	31	31	31	31	31	31	31
Daily Average	0.050	0.749	0.324	4.672	0.010	0.150	33.1	502.5	7.65	1.79	0.37	6.19	2.8
Lab Detection Limit	0.050		0.020		0.010		0.020		0.01		0.1		

MIN	0.050	0.401	0.111	0.024	0.010	0.011	9.420	113.701	7.400	0.960	0.200	1.602	0.727
MAX	0.052	1.066	0.530	10.438	0.016	0.227	50.90	849.52	8.00	2.56	3.40	66.96	30.371

SECTION J

ATTACHMENT J4

CONTRACTOR SAMPLING & ANALYSIS PLAN (EXAMPLE)

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OPERATIONS & MAINTENANCE SERVICES
CENTRAL TREATMENT PLANT
BUNKER HILL SUPERFUND SITE

SAMPLING & ANALYSIS PLAN

Prepared for:

Department of the Army
Corps of Engineers
Eastern Environmental Resident Office
7600 Mineral Drive, Suite 100
Coeur d'Alene, ID 83815

Prepared by:

Ferguson Contracting, Inc.
110 Wildcat Way
Kellogg, ID 83837

June 2003

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TABLE OF CONTENTS

LIST OF TABLES iii
LIST OF APPENDICES iii
1.0 PURPOSE 1
2.0 QUALITY ASSURANCE PROJECT PLAN 1
2.1 QUALITY ASSURANCE ORGANIZATION 1
2.2 DATA QUALITY OBJECTIVES AND CRITERIA 2
2.3 DATA CHARACTERIZATION AND VALIDATION 3
2.3.1 Data Use 3
2.3.2 Data Type 3
2.3.3 Quality Review/Validation Levels 3
2.3.3.1 Level I – Visual Validation 4
2.3.3.2 Level II – Standard Validation 4
2.3.3.3 Level III – Contract Laboratory Program (CLP) Validation 4
2.4 LABORATORY ANALYSIS PROCEDURES 4
2.4.1 Metals Analysis 5
2.4.2 Total Suspended Solids Analysis 5
2.4.3 pH Analysis 6
2.4.4 Performance Evaluation Samples 6
2.4.5 Analytical Requirements 6
2.5 QUALITY CONTROL INSPECTION PROGRAM 7
2.6 QUALITY DEFICIENCIES 7
2.7 QUALITY CONTROL REPORTING 7
2.8 DOCUMENTATION AND RECORDS 7
2.9 TRAINING 8
3.0 FIELD SAMPLING PLAN 8
3.1 SAMPLING LOCATIONS AND SCHEDULE 8
3.2 DAILY CHEMICAL QUALITY CONTROL REPORT 10

3.3 FIELD SAMPLING REQUIREMENTS 10
3.4 FIELD SAMPLING PROTOCOL 10
3.4.1 Outfall 006 11
3.4.2 Kellogg Tunnel 11
3.4.3 004/Sweeny Pump Station Sump 11
3.4.4 Lined Pond Pump Station Discharge 11

LIST OF TABLES

TABLE 2-1. ANALYTICAL REQUIREMENTS 6
TABLE 3-1. CTP LABORATORY SAMPLING SCHEDULE 9

LIST OF APPENDICES

APPENDIX A REQUIRED OPERATIONS FORM

APPENDIX B WEEKLY QUALITY CONTROL INSPECTION LOG

APPENDIX C DAILY CHEMICAL QUALITY CONTROL REPORT

APPENDIX D CONTRACTOR QUALITY CONTROL DAILY DISCREPANCY REPORT

APPENDIX E WATER QUALITY SAMPLING PROCEDURE (WS-SOP-01)

APPENDIX F PRESERVATION AND STORAGE OF INORGANIC WATER SAMPLES (WS-SOP-02)

APPENDIX G LABELING AND DOCUMENTATION OF SAMPLES (WS-SOP-03)

APPENDIX H CHAIN-OF-CUSTODY FORM (WS-SOP-04)

APPENDIX I PACKING AND SHIPPING SAMPLES (WS-SOP-05)

OPERATIONS & MAINTENANCE SERVICES
CENTRAL TREATMENT PLANT
BUNKER HILL SUPERFUND SITE

SAMPLING & ANALYSIS PLAN

1.0 PURPOSE

The purpose of this document is to provide quality assurance/quality control guidance for the personnel associated with this project for operations, field sampling and sample analysis. This submittal is being made to fulfill the requirements of Section 1450 for the Central Treatment Plant O&M Contract (Contract DACW67-02-D-1014). This Sampling and Analysis Plan includes the Quality Assurance Project Plan and the Field Sampling Plan.

2.0 QUALITY ASSURANCE PROJECT PLAN

2.1 QUALITY ASSURANCE ORGANIZATION

Mr. Don Ferguson has been designated as the Contractor Quality Control (CQC) system manager for this project. Mr. Ferguson has over 12 years of experience in quality control, quality assurance, construction engineering and project management for environmental remediation, construction projects and water treatment plant work. Mr. Ferguson's responsibilities as the CQC system manager will be to:

- Perform 100 percent review/validation of all analytical data collected for this project;
- Reject any data/materials that do not meet contract requirements;
- Supervise the CQC program to ensure that all requirements are met;
- Prepare, certify and transmit submittals for the project;
- Ensure that submittals are approved prior to ordering materials or starting that portion's work;
- Develop and maintain the Submittal Register;
- Monitor deficiencies to ensure that they are corrected in a timely manner;
- Review the daily quality control report for accuracy;
- Conduct, in conjunction with the Government representative, the preparatory, initial and follow-up inspections;
- Initiate corrective action for any items that do not meet contract requirements; and
- Stop work activities on the project site which are not in compliance with the contract.

Mr. Gary Fulton has been appointed as the alternate CQC system manager for the project. Mr. Fulton has over five years experience in wastewater treatment plant operations and has obtained his Idaho Water and Wastewater Operators Certification. Mr. Fulton will assume the CQC system manager position in Mr. Ferguson's absence, and will have the same authority and responsibilities.

2.2 DATA QUALITY OBJECTIVES AND CRITERIA

In order to consistently assess data quality, data quality objectives (DQOs) have been developed for this project. The DQO process is designed to ensure that the type, quantity and quality of data used in decision-making are appropriate for the intended application. The objective is to tailor the quality assurance/quality control and data management program to meet the needs of the specific project. It is designed to:

1. Ensure that a sufficient amount of data is collected (not too much and not too little);
2. Ensure that data are of sufficient quality to support the objectives of the program; and
3. Allow the user to understand the end use of the data before it is acquired.

Through the DQO process, data needs are established as well as any other requirements. The DQO process sets the stage for development and implementation of the specific project work plan.

This Quality Assurance Project Plan (QAPP) describes procedures for ensuring that chemical data generated from water samples collected are of known and acceptable quality, and to verify whether performance standards identified have been met. The QAPP and its associated field sampling and analysis plans are intended to provide a framework for sampling and analytical protocol for water samples taken at the site. This QAPP also summarizes procedures for expressing the quality of the results generated: quantitatively in terms of accuracy, precision and completeness, and qualitatively in terms of representativeness and comparability.

The DQOs for this project are:

1. **Accuracy.** The target accuracy is for at least 90 percent of all matrix spikes to be within control limits (75 to 125 percent).

2. **Precision.** The target precision is for at least 90 percent of all field and laboratory duplicates to be within control limits. This means that relative percent differences (RPDs) will be 20 percent or less.

3. **Completeness.** The target completeness is assessment of at least 90 percent of the sample analyses as "valid" (not rejected). This means that at least 90 percent of the results may be used without qualification.

Quality assurance in field investigation activities will be ensured through the use of standard field operating procedures, sample chain-of-custody documentation and submission of field quality control samples. Standard Operating Procedures (SOPs) for all field activities included in the collection, documentation and shipment of samples, decontamination of sampling equipment and all other applicable activities have been included in the appendices of this document.

Quality assurance in laboratory analyses is ensured through the use of approved methods of analysis, and through the laboratory's quality control program, which includes regular analysis of laboratory control samples.

2.3 DATA CHARACTERIZATION AND VALIDATION

Data characterization is the process by which the importance and usefulness of the data is determined in regards to the project objectives. In order to ensure that the data is of sufficient quality for the intended purpose(s) as described in the QAPP, it is critical to correctly characterize data. Different aspects of data characterization are classification of the data use, data type and level. The net effect of the data characterization process is the generation of data of a sufficient quantity and quality to support the project objectives.

2.3.1 Data Use

Activities on this project may include remedial design, remedial action, performance tests and compliance. Chemical and/or physical data from different media may be associated with any primary activity for the project. All data should be clearly designated for the matrix (such as water or soils) with which they are associated. In identifying what media will be used for any given purpose, it can be seen that data may be used for any or all purposes.

2.3.2 Data Type

Once the data uses have been defined, any media for any use can be further refined as to the specific type of testing that is necessary. EPA's *Data Quality Objectives for Remedial Response Activities* illustrates the way in which data types may be specified in broad groups initially, and then further refined according to the needs of the project.

2.3.3 Quality Review/Validation Levels

After defining the data type, the data are further classified (categorized) into three validation levels depending on sampling techniques, the types of measurements or analysis, and the type of documentation that is required. Therefore, the level assigned to the data will depend on a comprehensive consideration of not only the intended end use and project objectives, but also of project documentation requirements, Quality Assurance/Quality Control (QA/QC) procedures, and inherent limitations in various sampling techniques and analytical methods.

2.3.3.1 Level I – Visual Validation

At this level, the completeness and accuracy of all sampling information is verified. This includes the following: confirming all results (both field and lab), confirming all parameters (units and measurement basis) as being correct; cross checking of field notes and forms; and verification of flow calculations. The results of validation at this level are typically documented in a data review report memo.

For this project, Level I validation will be performed for the monthly Discharge Monitoring Report (DMR).

2.3.3.2 Level II – Standard Validation

This level of validation encompasses visual validation plus a more comprehensive review of all the sampling information. The additional review typically includes: an examination of both field and laboratory QC (any laboratory QC that is included within the analytical package) using validation criteria limits as specific in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic/Organic Data Review;* a survey of the achievement of the project data quality objectives; qualification of the data per project requirements; data evaluation; historic trend comparison and/or graphs; ion balance and statistical comparisons. The results of this validation are documented in a comprehensive data review report.

For this project, Level II validation will be performed in a quarterly Data Validation Report. Ten days of water sample analyses (as described in Section 2.4) will be validated each quarter.

2.3.3.3 Level III – Contract Laboratory Program (CLP) Validation

At this level of review, both visual and standard validation tasks are performed. Analytical data is characterized by rigorous QA/QC protocols and documentation. Validation procedures utilize such documentation as necessary to support project needs. Additional review requirements are: verification of the laboratory's raw data and quality control for frequency, accuracy, completeness and procedures, as required by the criteria limits specified in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic/Organic Data Review*.

CLP validation will not be performed for this project.

2.4 LABORATORY ANALYSIS PROCEDURES

American Analytical Services (AAS) in Osburn, Idaho, has been designated as the project laboratory to perform analysis on the project water samples. AAS is owned and operated by Mr. Dave Swenson, and was established in 1996 to provide analysis for the operation of Silver Valley Resources mining operations and to fulfill the environmental analysis need in

the Silver Valley. Mr. Swenson has a B.S. in chemistry from the University of Montana, has been operating and setting up laboratories for the past 18 years, and participated in EPA water pollution studies from 1988 through 1998.

The laboratory Quality Assurance Plan (QAP) and analytical Standard Operating Procedures (SOPs) pertaining to this project will be forwarded to the USACE project chemist as part of the USACE approval process of the laboratory. AAS will follow the applicable sections of this plan.

AAS will analyze water samples following these simplified procedures.

2.4.1 Metals Analysis

Metals of interest for this project are cadmium (Cd), lead (Pb), zinc (Zn) and manganese (Mn). These parameters will all be analyzed using EPA Method 200.7, per this procedure:

1. Acid-wash all glassware.
2. Add 100 ml of sample to a 150-ml beaker.
3. Add 5 ml of HNO_3 (reagent grade).
4. Heat with watch top to reduce volume to approximately 90 ml.
5. Bulk sample back to 100 ml.
6. Duplicate one sample out of ten and spike upon request or as required by the contract.
7. Metals analysis is performed in accordance to EPA Method 200.7 with a continuous calibration verification/continuous calibration blank (CCV/CCB) performed every ten samples. The CCVs have a ten percent allowable deviation from the accepted true value and the CCBs shall meet instrument detection limits. All standards are traceable to the National Bureau of Standards.

2.4.2 Total Suspended Solids Analysis

Total Suspended Solids (TSS) will be analyzed using EPA Method 160.2, per the following procedure:

1. The sample volume is dependent on turbidity. A larger sample will be required for low-turbidity samples.
2. Heat, desiccate and pre-weigh a GF/C filter.
3. Filter sample through the GF/C filter by means of applied vacuum.
4. Wash graduated cylinder, filter and Millipore vacuum apparatus three times each.
5. Dry filter on watch top at $105^{o}C$.
6. Calculation: $\frac{\text{TSS weight (mg)}}{\text{Sample volume (L)}} = \text{TSS (mg/L)}$

2.4.3 pH Analysis

Sample pH will be measured using EPA Method 150.1, as follows:

1. The pH meter is calibrated with standards at pH values of 4.01 and 7.00. The meter is then checked with a standard at pH 10.02.

2. The probe is washed between all samples, and standard 7.00 is checked after each 10 samples or at the end of each run. The acceptable deviation is 0.05 pH units.

2.4.4 Performance Evaluation Samples

Certified water Performance Evaluation (PE) samples shall be submitted. The PE samples shall have total concentrations of cadmium within 50 percent of 0.05 mg/l, lead within 50 percent of 0.30 mg/l, and zinc within 50 percent of 0.73 mg/l. These values were chosen because they are the discharge limits (30-day averages) per the expired NPDES permit.

One PE sample per heavy metal analysis shall be submitted for analysis once a week. If the laboratory does not meet the certified PE sample limits**,** the project sample analysis shall be terminated until corrective actions have been implemented. PE sample results and the vendor's acceptance limit documentation shall be submitted to the CO as part of the monthly DMR.

2.4.5 Analytical Requirements

Table 2-1 provides the minimum requirements as set forth in the contract specifications for quantitation limits, accuracy, precision and completeness for the laboratory analytical procedures.

TABLE 2-1. ANALYTICAL REQUIREMENTS

Analyte	Quantitation Limit	Accuracy	Precision	Completeness
Cadmium	≤ 0.025 mg/L	75 - 125 %	≤ 20 %	90 %
Lead	≤ 0.15 mg/L	75 - 125 %	≤ 20 %	90 %
Manganese	≤ 0.025 mg/L	75 - 125 %	≤ 20 %	90 %
Zinc	< 0.30 mg/L	75 - 125 %	< 20 %	90 %
pH	≤ 0.1 standard unit (s.u.)	Meter Calibrated to 90 - 110 %	N/A	N/A
TSS	≤ 5 mg/L	75 - 125 %	< 20 %	90 %

The quantitation limits and analytical methods utilized shall be included with each analysis report submitted from the laboratory.

2.5 QUALITY CONTROL INSPECTION PROGRAM

A quality control inspection program covering all required tasks for the CTP operations and maintenance requirements has been implemented for this project. The Required Operations Form covers all of the required operation, maintenance, servicing and calibration items for inspection, and is attached as Appendix A.

2.6 QUALITY DEFICIENCIES

Any work items found to be deficient in quality will be noted in the Weekly Quality Control Inspection Log (attached as Appendix B) for tracking and resolution. This will also highlight any trends for corrective action. Uncorrected items will also be noted on the Daily Chemical Quality Control Report (Appendix C).

2.7 QUALITY CONTROL REPORTING

Quality surveillances will be performed on ongoing Contractor and subcontractor work. Any items not immediately corrected (by the end of the business day) will be identified on the Contractor Quality Control Daily Discrepancy Report (attached as Appendix D) for resolution. This report will be sequentially numbered with the number being entered onto the Weekly Quality Control Inspection Log (Appendix B) for tracking and closure. Uncorrected items will also be noted on the Contractor Daily Quality Control Report.

2.8 DOCUMENTATION AND RECORDS

All samples collected and sent to the laboratory for analysis will follow standard documentation and chain-of-custody procedures. Field data shall be recorded in field notebooks and will contain results of all measurements made in the field. Documentation includes:

- Chain-of-custody forms;
- Field notebooks and forms;
- Shipping records (where applicable);
- Transmittal records (where applicable); and
- Corrective action reports.

The task of recording laboratory data begins once the samples arrive at the lab and continues until the final laboratory report is submitted. The laboratory manager must perform a final review to determine whether the report meets project requirements.

The laboratory selected to perform water analysis (American Analytical Services) will deliver thorough documentation including test results, the testing method employed and any relevant method-specific quality control information. All sample results will be provided in paper and in computer diskette format if requested. Laboratories performing analyses for

this project are generally required to retain project documentation for a period of at least three years. However, no records should be destroyed without verification that Ferguson Contracting has copies of the records in the project files. This documentation can be kept in electronic and/or hardcopy form(s).

2.9 TRAINING

At this time, techniques and procedures used for sampling activities are routine and in keeping with EPA guidelines. If it becomes necessary to adopt non-routine techniques to accomplish sampling and analysis activities, training programs will be developed, and personnel will be trained and/or certified.

Verification of training and/or certifications will be completed as part of normal employee/Contractor documentation review. Ongoing training and certification requirements will be subject to inspection and verification of individual personnel maintenance of their qualifications for the tasks being conducted. The project safety manager will be responsible for conducting these reviews.

3.0 FIELD SAMPLING PLAN

3.1 SAMPLING LOCATIONS AND SCHEDULE

CTP operators shall perform routine pH monitoring and testing of the CTP system, which includes pH measurements and turbidity readings. pH will be measured daily at the Clarifier and 006 Outfall, and twice per week at the Kellogg Tunnel and Aeration Basin. Turbidity will be measured daily at the Clarifier and 006 Outfall. All information will be recorded in the field sample log and daily log.

Samples will be collected at the following locations (listed in order of the treatment process):

- Kellogg Tunnel (KT). This is acid mine drainage (AMD) from the Bunker Hill Mine, and is the primary influent to the CTP. Monitoring quality of the KT discharge helps operators to know when the quality changes, and when more lime and flocculent may possibly be required. Quality feedback is immediate for pH (performed by the operators) but may take one to two weeks for metals concentrations (performed by AAS). Typical parameters for the KT discharge are: pH of 3.0, zinc concentration of 100 mg/L, manganese concentration of 100 mg/L, lead concentration of 0.6 mg/L and cadmium concentration of 0.2 mg/L.

- 004/Sweeny pump station sump. This is a smaller source of influent to the CTP. This wastewater is automatically pumped to the Lined Pond and then periodically pumped to the CTP. This water is not acid mine drainage. Typical parameters for the 004/Sweeny water are: pH of 7.0, zinc concentration of 15 mg/L, lead concentration of 0.1 mg/L and cadmium concentration of 2 mg/L.

- Lined Pond pump station discharge. This water is a composite of KT discharge (when it is not directly fed to the CTP), 004/Sweeny water, rain water and smaller sources.

- Aeration Basin. This is the first step of the treatment process. Operators measure pH in the Aeration Basin twice per week to verify that this pH is close to the value recorded by the Aeration Basin pH probe. The pH at this point is important because it controls the concentrations of dissolved metals. Dissolved metals significantly affect the concentrations of total metals, which are regulated in the NPDES permit. Laboratory samples are not collected at this location.

- Clarifier. Operators measure pH and turbidity at this location. The pH controls the dissolved metals concentrations and turbidity affects the suspended metals concentrations. The sum of these concentrations is the total metals concentration. When an upset occurs in the CTP, it will affect the Clarifier overflow quality before it affects the 006 Outfall quality, and thus can be corrected sooner. Laboratory samples are not collected at this location.

- 006 Outfall. The 006 Outfall (CTP effluent) is the most critical sampling location because this is where the NPDES permit limits apply.

Table 3-1 shows the laboratory sampling schedule for the Central Treatment Plant, identifying sample location, analytes/parameters and sampling frequency. In addition, QC samples will be collected at a rate of five percent of all project samples (total influent and effluent samples) or one sample per month, whichever is greater. The QC samples shall be collected as blind duplicates of the corresponding project sample, with the project and QC samples going to American Analytical Services in Osburn, Idaho.

TABLE 3-1. CTP LABORATORY SAMPLING SCHEDULE

Sample Location	Analytes	Sampling Frequency
006 Outfall (a.k.a. CTP Effluent)	Cadmium (Cd), Lead (Pb), Manganese (Mn), Zinc (Zn), Total Suspended Solids (TSS), pH	Collect a composite sample each day of CTP operation.
Kellogg Tunnel	Cd, Pb, Mn, Zn, TSS, pH	Collect a grab sample on two days per week.
004/Sweeny Pump Station Sump	Cd, Pb, Zn, TSS, pH	Collect a grab sample once each week.
Lined Pond Pump Station Discharge	Cd, Pb, Zn, TSS, pH	Collect a grab sample once each week during a pumping event.

Samples shall be collected at a regularly scheduled time--generally between 6 and 8 a.m. daily. CTP operators will assist Government personnel during the collection of unscheduled QA samples, which will be collected at the discretion of the Government during the Contractor's normal working hours.

3.2 DAILY CHEMICAL QUALITY CONTROL REPORT

The purpose of the Daily Chemical Quality Control Report (Appendix C) is to provide sufficient data and observations to enable project participants to reconstruct events that occurred during the project. This daily report is to be used in conjunction with and in addition to other documentation requirements listed in this plan.

3.3 FIELD SAMPLING REQUIREMENTS

Field sampling methods will comply with the applicable Standard Operating Procedures (SOPs) listed below:

- Water Quality Sampling Procedure for Bunker Hill Mine. WS-SOP-01 is attached as Appendix E.
- Preservation and Storage of Inorganic Water Samples. WS-SOP-02 is attached as Appendix F.
- Labeling and Documentation of Samples. WS-SOP-03 is attached as Appendix G.
- Chain-of-Custody Form. WS-SOP-04 is attached as Appendix H.
- Packing and Shipping Samples. WS-SOP-05 is attached as Appendix I.

3.4 FIELD SAMPLING PROTOCOL

Water samples for metals analysis will be collected in preserved one-liter bottles. Water samples for TSS and pH analysis will be collected in non-preserved one-liter bottles. All sample bottles will be stored in the refrigerator located outside the CTP control room for storage until shipment to the laboratory for analysis. The refrigerator temperature for sample preservation is to be kept at $4^{o}C \pm 2^{o}C$. Samples will be transported twice per week to the laboratory for analysis.

Table 3-1 identifies the laboratory sampling locations and the sampling frequency required. The following lists the sampling locations and appropriate sampling protocol required for each location. Field samples required for the day will generally be collected between 6 and 8 a.m.

3.4.1 Outfall 006

The CTP Effluent sampling location is the 006 Outfall, where treated water is discharged from the Polishing Pond to Bunker Creek. This sample is a daily composite sample collected in the 006 building, and is continuously collected in a five-gallon composite sample container. The operator will use approximately one-fourth of the contents as a pre-rinse of the sample containers, will fill the containers (one with acid preservative for metals, and one without preservative for pH and TSS), and dump the remaining water out of the composite sample container into the sump. The continuous feed hose to the composite sample container will then be reset for the next day's sample.

3.4.2 Kellogg Tunnel

The Kellogg Tunnel sampling location is located at the Bunker Hill mine portal. This sample is a grab sample collected twice per week (generally Mondays and Thursdays). A "sample grabber" is utilized to place the sample container into the mine waste stream for the sample collection. Two sample containers are used--one container with acid preservative for metals, and one without preservative for pH and TSS.

3.4.3 004/Sweeny Pump Station Sump

The 004/Sweeny sampling location is west of the equipment decon at the west end of the site in a concrete-lined trench. This sample is a grab sample collected once each week (generally Thursdays). A "sample grabber" is utilized to place the sample container into the waste stream for the sample collection. Two sample containers are used--one container with acid preservative for metals, and one without preservative for pH and TSS.

3.4.4 Lined Pond Pump Station Discharge

The CTP Influent (a.k.a. lined pond pump station discharge) sampling location is in the CTP Head House. This sample is a grab sample collected once each week during a pumping event. A discharge hose (tapped into the main CTP influent pipe) is used for sample collection. The valve to the discharge hose is turned on for several seconds to clear the hose prior to filling the sample containers.

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APPENDIX A

REQUIRED OPERATIONS FORM

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REQUIRED OPERATIONS

Treatment Plant operations scheduled tasks shall include, but not be limited, to the following items:

1. DAILY OPERATIONS ACTIVITIES

ACTIVITY	DATE	REMARKS
Influent Treatment -Operate Plant to treat influent and discharge consistent with "permit requirements" - Maintain operations log, indicating operations parameters (consistent with substantive NPDES permit) such as volume of water treated, pH meter readings, amount of chemicals used, deviations from approved O&M manual, and details of compliance Monitoring - Evaluate amounts of hydrated lime and flocculent on hand and order as appropriate		
Lined Pond - Maintain volume of water in pond between 0.2 million and 1.0 million gallons (MG) during spring, summer, and fall months -Maintain volume of 1.0 MG to 2.0 MG during winter months		
Respond to Trouble/Emergency Alarms within 60 minutes		
Compliance Monitoring Consistent with Contract - CTP outfall at 006 (for Zn, Pb, Cd, Mn, TSS, pH)		

REQUIRED OPERATIONS

2. TWICE-WEEKLY OPERATIONS ACTIVITIES

ACTIVITY	DATE	REMARKS
Compliance Monitoring Consistent with - Kellogg Tunnel (for Zn, Pb, Cd, Mn, TSS, pH)		

3. WEEKLY OPERATIONS ACTIVITIES

ACTIVITY	DATE	REMARKS
Compliance Monitoring Consistent with Contract - 004/Sweeney (Zn, Pb, Cd, TSS, pH) - Lined Pond Pump Station Discharge (Inlet) (Cd, Pb, Zn, Tss, pH) **Submit Previous Week's Daily Chemical Quality Control Reports Consistent with Contract**		During Pumping Events Only

4. MONTHLY OPERATIONS ACTIVITIES

ACTIVITY	DATE	REMARKS
O&M Report to COR		

APPENDIX B

WEEKLY QUALITY CONTROL INSPECTION LOG

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WEEKLY QUALITY CONTROL INSPECTION LOG			
DATE	LOCATION	ITEMS INSPECTED	RESULTS

On behalf of Ferguson Contracting, Inc., I certify that this report is complete and correct, and equipment and materials used and work performed during this reporting period are in compliance with the contract requirements to the best of my knowledge, except as may be noted in this report.

CQC Representative

Date

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APPENDIX C

DAILY CHEMICAL QUALITY CONTROL REPORT

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FERGUSON CONTRACTING, INC.

DAILY CHEMICAL QUALITY CONTROL REPORT

DATE	S	M	T	W	TH	F	S

USACE REPRESENTATIVE: Richard Fink

PROJECT: CTP Operations & Maintenance Services Contract

CONTRACT NO: DACW67-02-D-1014

WEATHER	Bright Sun	Partly Cloudy	Overcast	Rain	Snow
TEMP	To 32	32-50	50-70	70-85	85 & up
WIND	Still	Moderate	High	Report No.	
HUMIDITY	Low	Moderate	High		

1. Contractor/Subcontractor Personnel and Areas of Responsibility:

NAME	TRADE	HOURS	EMPLOYER	LOCATION & DESCRIPTION OF WORK

2. Work Performed Today:

3. Quality Control Activities Performed:

4. Tests Performed and Results

Turbidity Tests	Time		006		Clarifier	
	Time		006		Clarifier	

	Time		006		Clarifier	
Specific Gravity	Time		Reading			
	Time		Reading			

5. Sampling Performed: NOTE: Daily sampling is recorded in the Field Sampling Log.
This section is only for unscheduled sampling events.

Sample #	Location	Type	Taken By	Notes

6. Off-Site Surveillance Activities, Including Action Taken:

7. Laboratory Results Received:

8. Remarks:

9. List of Attachments:

Contractor's Verification: On behalf of Ferguson Contracting, Inc., I certify this report is complete and correct, and all materials and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as may be noted above.

CQC Representative

Date

FERGUSON CONTRACTING, INC.

Central Treatment Plant

PERSONNEL: _____ **DATE:** _____

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Plant Observation
Walk Through Check-Off List

AM

Floc Room

* Check the Floc Mixing tank level, mix required amount of floc. LBS of floc used in the AM
* Record Floc usage in pounds. LBS of floc used in the pm
* Check that the floc pump is **ON** (normal pump setting is 0.5 - 1.0 when the pond is **OFF** and 1.5 - 2.0 when the pond is **ON**).

Control Room

* Check pH - **006 Outfall pH**, (pH will vary dependant upon aeration basin pH set point)
* Check the Aeration Basin pH.
* Pump #2 Thickener Underflow Pump running. (recycle pump #2)
* Lined pond drawdown pump ON or OFF.
* **Direct Feed pig vault valve open or closed.**
* **Main Line, lined pond line valve open or closed.**
* Control panel (rapid mix, lime slurry , lime injection, underflow pump, thickener drives, aerator are all on)

Tank Area

* Walk out to the thickener drives to see that they are operating.
* Check to see that flow is entering into the clarifier from the flocculent overflow.
* Check the flow of floc into the clarifier.
* Check flow of water into the aeration basin from Direct Feed Line or Lined Storage Pond.
* Check flow of water from clarifier into the polishing pond.
* Look into the rapid mix tank - check the recirculation flow from clarifier underflow pump.
* Check lime flow or water flow from lime slurry tank to the rapid mix tank.
* Check that the rapid mix drive is in operation.
* Check the level of lime slurry holding tank.
* Check for Ice on the Aerator shaft and mixing disc.
* Check for lime leakage or water leakage.
* Check to see that the auto/manual switch on the slurry pump breaker is in auto position.

Polishing Pond Pump House

* Check the floor sump and pump as needed. Also check pump operation.

Lime Slurry Pump House

* Check the floor sump and pump as needed. Also check pump packing on both pumps.
* Check the valves and piping for leaks, make repairs as needed.
* Check pump operation for smoothness and leaks.
* Check pump house heaters and exhaust fan.

Off Site Inspections

* Check the inlet flow. High -Low-Average (from Kellogg Tunnel Effluent).
* Check the pond depth.

Central Treatment Plant

PERSONNEL: _____ **DATE:** _____

Plant Observation
Walk Through Check-Off List

PM

Control Room

* Lined Pond pumps on or off, if ON indicate the pump number.
* **Direct Feed line valve: open or closed.**
* **Main Line, Lined Pond line valve: open or closed.**
* Aeration Basin (Aerator) ON - Check AMP meter between 20 - 60 (always ON when plant is running)
* Clarifier/Thickener Drives #1 & #2 ON (Normal) - Check AMP meter on the south wall, #31 normally at 71 amps and #32 normally at 70 amps.
* Underflow sludge pump or recycle pump ON (Normal) - Normally Pump #2, 12 to 16 RPM. Check AMP meter (Always ON when plant is running)
* Rapid mix tank mixer (Blue Tank) ON - No AMP meter to check. (always ON when plant is running)
* Lime Slurry holding tank mixer AMP meter normally at 2.5 amps. (always ON when plant is running)
* Aeration Basin- pH meter between 6-10 (Located in the control room on the control panel)
* 006 - pH meter between 6-10 (Located in the control room on the control panel)
* **Alarm indicator switch in the ON position.**

Floc Room

* Check the floc tank to see that it is full before leaving and the pump is ON (Normal pump
* setting is 0.5 -1.5 when pond is OFF and 1.0 - 2.0 when pond is ON)

Other Inspections

* Drain Sludge Line and close valve after draining.(November to March only)
* Check the level of lime slurry holding tank.
* Lime Silo exhaust fan #8 breaker off
* Slurry pump control switch on auto
* Control room door locked.
* All tank area gates closed and locked.
* **Check Alarm Indicator switch in the ON position.**

APPENDIX D

CONTRACTOR QUALITY CONTROL DAILY DISCREPANCY REPORT

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CONTRACTOR QUALITY CONTROL DAILY DISCREPANCY REPORT

Date:_____

Report No._____

1. Description and location of work:

2. Type of deficiency:

3. Corrective action required and schedule for corrections:

_____ _____

CQC Representative Date

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APPENDIX E

WATER QUALITY SAMPLING PROCEDURE (WS-SOP-01)

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STANDARD OPERATING PROCEDURE

WATER QUALITY SAMPLING PROCEDURE
WS-SOP-01

1.0 PURPOSE

The purpose of this procedure is to assure complete and accurate identification, proper preservation, and suitable transport to a laboratory, of water quality samples.

2.0 BOTTLING

Only indelible ink pens should be used for making labels, sample containers, etc. Water samples for metals analysis will be collected in pre-preserved one-liter bottles. Water samples for solids and pH analysis will be collected in non-preserved one-liter bottles. Information recorded on each bottle should include:

Project Name:	Bunker Hill Central Treatment Plant (BHCTP)
Sample Number:	Code number other than the site designation so laboratory is unaware of the source of the sample.
Date:	A six-digit number indicating the year, month and day of collection.
Time:	A four-digit number indicating the 24-hour clock time of collection (for example, 1424 for 2:24 p.m.).
Type of Sample:	Common ion, metal or nutrient
Preservative:	Indicate preservative used and whether the sample is filtered or unfiltered.

Sampling data (including site identification, sample number, date and time collected, filtered or unfiltered, and preservative used) will be recorded in the field sampler's notebook or on the sampling form to ensure positive identification of each sample.

Metals Samples - Use 1-liter bottles or size recommended by laboratory [1].

TDS, TSS and pH Samples - Use 1-liter nonpreserved bottle or size recommended by laboratory.

[1] Smaller bottles with proportionately less preservative may be used depending on laboratory requirements.

Grab sampling will be performed for the CTP Influent (Lined Pond), Kellogg Tunnel and the 004/Sweeny line, and composite sampling for the 006 Outfall. Sampling frequency will be as stated in Table 3-1 and field sampling activities will primarily be conducted as stated in Section 3.0.

3.0 FIELD SAMPLING PROTOCOL

Water samples for metals analysis will be collected in pre-preserved one-liter bottles. Water samples for solids and pH analysis will be collected in nonpreserved one-liter bottles. All sample bottles will be stored in the refrigerator located outside of the CTP control room for storage until shipment to the laboratory for analysis. Refrigerator temperature for sample preservation is to be kept at 4°C±2°C. Samples will be transported periodically to the laboratory (typically twice per week) for analysis.

Table 3-1 identifies the sample locations and the sampling frequency required. Field samples required for the day will generally be collected at the beginning of each shift.

The Outfall sampling location is the 006 Outfall located at the effluent of the CTP Polishing Pond, where treated water is discharged to Bunker Creek. This sample is a daily composite sample collected in the 006 building from the composite sample container. Water is continuously collected in the five-gallon composite sample container. The operator dumps approximately one-fourth of the contents into the pH/solids sample container as a pre-rinse, fills the containers (one with preservative for metals, and one for pH and solids), and dumps the remaining water out of the composite sample container into the sump. The continuous feed hose to the container is then reset for the next day's sampling event.

The Lined Pond Pump Station Discharge (a.k.a. CTP Influent) sample location is in the CTP head house. Samples are collected here once per week when pumping from the Lined Pond. A discharge hose (tapped into the main CTP influent pipe) is utilized for the sample collection. The valve to the discharge hose is turned on for several seconds to clear the hose prior to filling the sample containers.

Kellogg Tunnel samples are collected at the Bunker Hill mine portal. This is a grab sample collected two days per week (typically Mondays and Thursdays). A "sample grabber" is used to place the sample container into the mine waste stream for the sample collection. Two sample containers are used: one container (with preservative) for metals, and one for pH and solids.

The 004/Sweeny sample location is west of the equipment decon at the west end of the site. This sample is a grab sample collected once each week (generally Thursdays). A concrete-lined trench funnels the 004 and Sweeny effluents together prior to being fed into the pipe that runs to the Lined Pond. A "sample grabber" is usedto place the sample container into the waste stream for the sample collection. Two sample containers are used: one container (with preservative) for metals, and one for pH and solids.

Table 3-1 CTP Sampling Schedule

Sample Location	Analytes	Sampling Frequency
Outfall (a.k.a. CTP Effluent)	Cadmium (Cd), Lead (Pb), Manganese (Mn), Zinc (Zn), Total Suspended Solids (TSS), pH	Composite sample collected each day of CTP operation
Kellogg Tunnel	Cd, Pb, Mn, Zn, TSS, pH	Collect a grab sample two days per week
004/Sweeny Pump Station Sump	Cd, Pb, Zn, TSS, pH	Collect a grab sample once each week
Lined Pond Pump Station Discharge	Cd, Pb, Zn, TSS, pH	Collect a grab sample once each week during a pumping event

4.0 QUALITY CONTROL

Five percent of all samples submitted will be blanks, quality control samples or quality assurance samples for quality control/quality assurance purposes. A blank is a sample of the deionized water taken to the field for decontamination purposes. A quality control sample consists of two sets of bottles from the same sampling source (well, stream or spring) submitted to the same laboratory. A quality assurance sample is two sets of bottles from the same sampling source submitted to separate laboratories. It is required that quality control samples be submitted for quality control purposes at a rate of five percent of all project samples or one sample per month, whichever is greater. In addition, performance evaluation samples (known concentrations) will be submitted to the laboratory at a frequency of once per week.

All quality control samples should be treated the same as actual samples; they should be filtered and preserved as appropriate to the analyses to be performed.

5.0 PACKING AND SHIPPING SAMPLES

This procedure is to be followed when packing and shipping samples to the laboratory by commercial carrier.

A. PROCEDURE

1) All samples must be labeled with labels filled out in waterproof ink. Each label should indicate the project name, sample number, sampling date and time, the type of sample (metal, common ion or nutrient) and the preservative used, if any.

2) All samples are placed in the shipping container-- normally a metal or plastic cooler.

3) Packing:

a) Place bottles in cooler to ensure that their temperature remains 4°C until they are analyzed at the laboratory.

b) Place ice pack in cooler or cooler lid as needed. Fill space with bubble mat wrap or packing material. If necessary, place bubble wrap on top of samples.

c) Inform laboratory specifically which parameters to run by properly labeling bottles and enclosing the analytical schedule in a waterproof container (such as a zip-lock bag) in the cooler.

d) Wrap coolers with packing tape (nylon strapping tape). Place two full rotations of tape in at least two places on the cooler. Make sure coolers are properly addressed.

B. SHIPPING

The allowable holding time and often the ability to keep samples cold are important considerations. Copies of all shipment records, including analysis instructions and receipt from shipper, must be kept on file at the CTP office. Quality Assurance samples will be stored as stated previously and shipped to the USACE-designated laboratory on a monthly basis. All other samples will hand-delivered to the project laboratory on a twice-weekly basis.

Each sample container (cooler) will be marked with:

- Sampling organization name, address and telephone number
- Laboratory name, address and telephone number

APPENDIX F

PRESERVATION AND STORAGE OF INORGANIC WATER SAMPLES (WS-SOP-02)

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STANDARD OPERATING PROCEDURE

PRESERVATION AND STORAGE OF INORGANIC WATER SAMPLES
WS- SOP-02

1.0 PURPOSE

An important factor in obtaining representative water quality data is the preservation and storage of samples. Preservation is designed to:

1. Retard biological activity;
2. Retard chemical reactions; and
3. Reduce volatility of constituents.

Preservation generally includes chemical additives, pH control, refrigeration, proper container materials, and immediate field filtration for dissolved constituents.

2.0 EQUIPMENT

Table 1 (attached) lists recommended preservatives, containers and holding times for various parameters. Be sure to assemble all the required containers, preservatives and filters before leaving for the field.

3.0 PROCEDURE

In all cases where dissolved constituents are to be measured, the sample will be field-filtered through a 0.45-micron filter prior to addition of a preservative. Samples will be preserved according to guidelines presented in Table 1, and will be kept at 4°C ± 2°C by placing in a refrigerator or in coolers with ice until analysis.

4.0 REFERENCES

U.S. EPA, 1983. Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 3rd Edition.

TABLE 1. REQUIRED CONTAINERS, PRESERVATION TECHNIQUES AND HOLDING TIMES

Parameters	Container[1]	Preservative	Maximum Holding Time
Specific Electrical Conductivity	T, P, G	Field-determined	None
Total Dissolved Solids (TDS)	P, G	Cool, 4°C	7 Days
Total Suspended Solids (TSS)	P, G	Cool, 4°C	7 Days
pH	T, P, G	Field-determined	None
Dissolved Oxygen (DO)	G bottle and top	None required	Analyze immediately
Temperature kept at 4°C ± 2°C	P, G	None required	Analyze immediately
Eh	P, G	None required	Analyze immediately
Alkalinity	P, G	Cool, 4°C	14 days
Calcium (Ca)	P, G	HNO_3 to pH <2	6 months
Magnesium (Mg)	P, G	HNO_3 to pH <2	6 months
Sodium (Na)	P, G	HNO_3 to pH <2	6 months
Potassium (K)	P, G	HNO_3 to pH <2	6 months
Bicarbonate (HCO_3)	P, G	Cool, 4°C	14 days
Carbonate (CO_3)	P, G	Cool, 4°C	14 days

[1] T = Teflon; P = Polyethylene; G = Glass

TABLE 1 (Continued). REQUIRED CONTAINERS, PRESERVATION TECHNIQUES AND HOLDING TIMES

Parameters	Container[1]	Preservative	Maximum Holding Time
Sulfate (SO_4)	T, P, G	Cool, 4°C	28 days
Chloride (Cl)	T, P, G	Cool, 4°C	28 days
Silica (SiO_2)	P	Cool, 4°C	28 days
Fluoride (F)	T, P	HNO_3 to pH <2	28 days
METALS*			
Aluminum (Al)	T, P	HNO_3 to pH <2	6 months
Antimony (Sb)	T, P	HNO_3 to pH <2	6 months
Arsenic (As)	T, P	HNO_3 to pH <2	6 months
Barium (Ba)	T, P	HNO_3 to pH <2	6 months
Beryllium (Be)	T, P	HNO_3 to pH <2	6 months
Cadmium (Cd)	T, P	HNO_3 to pH <2	6 months
Chromium (Cr)	T, P	HNO_3 to pH <2	6 months
Cobalt (Co)	T, P	HNO_3 to pH <2	6 months
Copper (Cu)	T, P	HNO_3 to pH <2	6 months
Iron (Fe)	T, P	HNO_3 to pH <2	6 months
Lead (Pb)	T, P	HNO_3 to pH <2	6 months
Manganese (Mn)	T, P	HNO_3 to pH <2	6 months

[1] T = Teflon; P = Polyethylene; G = Glass

* Dissolved metals are filtered on-site with a 0.45-micron filter. Total metals are not filtered.

TABLE 1 (Continued). REQUIRED CONTAINERS, PRESERVATION TECHNIQUES AND HOLDING TIMES

Parameters	Container[1]	Preservative	Maximum Holding Time
Mercury (Hg)	T, P	HNO_3 to pH <2	28 days
Nickel (Ni)	T, P	HNO_3 to pH <2	6 months
Selenium (Se)	T, P	HNO_3 to pH <2	6 months
Silver (Ag)	T, P	HNO_3 to pH <2	6 months (in dark place)
Tin (Sn)	T, P	HNO_3 to pH <2	6 months
Thallium (Tl)	T, P	HNO_3 to pH <2	6 months
Vanadium (V)	T, P	HNO_3 to pH <2	6 months
Zinc (Zn)	T, P	HNO_3 to pH <2	6 months
PHOSPHORUS (P)			
Orthophosphate (PO_4), Dissolved	P, G	Filter on-site, Cool, 4°C	48 hours
Orthophosphate, Total	P, G	Cool, 4°C	48 hours
Hydrolyzable	P, G	Cool, 4°C H_2SO_4 to pH <2	28 days
Total	P, G	Cool, 4°C H_2SO_4 to pH <2	28 days
Total, Dissolved	P, G	Filter on-site Cool, 4°C H_2SO_4 to pH <2	24 hours

[1] T = Teflon; P = Polyethylene; G = Glass

TABLE 1 (Continued). REQUIRED CONTAINERS, PRESERVATION TECHNIQUES AND HOLDING TIMES

Parameters	Container[1]	Preservative	Maximum Holding Time
NUTRIENTS			
Ammonia	P, G	Cool, 4°C H_2SO_4 to pH <2	28 days
Kjeldahl, Total	P, G	Cool, 4°C H_2SO_4 to pH <2	28 days
Nitrate plus Nitrite	P, G	Cool, 4°C H_2SO_4 to pH <2	28 days
Nitrate (NO_3)	T, P, G	Cool, 4°C or Cool, 4°C H_2SO_4 to pH <2	48 hours 14 days
Nitrite (NO_2)	P, G	Cool, 4°C	48 hours

[1] T = Teflon; P = Polyethylene; G = Glass

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APPENDIX G

LABELING AND DOCUMENTATION OF SAMPLES (WS-SOP-03)

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STANDARD OPERATING PROCEDURE

LABELING AND DOCUMENTATION OF SAMPLES
WS-SOP-03

1.0 PURPOSE

Documentation of all samples is an important aspect of the project quality assurance program. This SOP specifically describes sample labeling procedure, but also addresses related aspects of sample documentation, all or some of which may be required by the project Quality Assurance Project Plan (QAPP) and ER 1110-1-263 for labeling and documentation.

2.0 EQUIPMENT

Sample documentation will involve use of some or all of the following:

1. Sample Identification Tag or Labels;
2. Chain-of-Custody Records;
3. Custody Seals;
4. Sample Analysis Form, or cover letter and parameter list; and
5. Field Notebooks.

These documents are sequentially numbered or sequentially paged.

All forms are completed using waterproof ink. Where necessary, the sample labels are protected with label protection tape.

3.0 SAMPLE IDENTIFICATION TAGS OR LABELS

Projects which may be the subject of litigation or are mandated by the EPA typically require serially numbered Sample Identification Tags. Sample labels (generally self-adhesive) are used in lieu of Sample Identification Tags for many projects and provide the same information, but are not serially numbered. The following discussion pertains specifically to use of Sample Identification Tags but, except for the next two paragraphs, is applicable to sample labeling in general.

Sample Identification Tags are distributed to field investigators and the serial numbers are recorded in project files and the field notebook. Individuals are accountable for each tag assigned to them. A tag is considered in that individual's possession until it has been filled out,

attached to a sample and transferred to another individual with the corresponding Chain-of-Custody Record.

At no time are any Sample Identification Tags to be discarded. If any tags are lost, voided or damaged, the circumstances are noted in the appropriate field notebook immediately upon discovery and the Quality Assurance officer notified. At the completion of the field investigation activities, all unused Sample Identification Tags are returned and are checked against the list of assigned serial numbers.

Samples are removed from the sample location and transferred to a laboratory or other location for analysis. Before removal, however, a sample is often separated into fractions depending on the analysis to be performed. Each portion is preserved in accordance with prescribed procedures and each is identified with a separate Sample Identification Tag. In this case, each tag should indicate in the "Remarks" section that it is a split sample.

The information recorded on the tag or label includes:

- **Project Code**. An assigned Ferguson Contracting number (optional);
- **Station Number**. A code assigned by the Plant Manager (optional), which identifies the station location;
- **Date**. An eight-digit number indicating the year, month and day of collection (e.g., 08-10-2000);
- **Time**. A four-digit number indicating the 24-hour clock time of collection (for example, 1345 for 1:45 p.m.);
- **Sample Number**. The sample code number assigned to that sample and recorded in the field notebook;
- **Samplers**. Each sampler's name;
- **Preservative**. The tag should indicate whether a preservative is used, the type of preservative, and whether the sample has been field-filtered;
- **Analysis**. The general type of analysis requested;
- **Tag Number**. A unique serial number, stamped on each tag (optional); and
- **Remarks**. The sampler's record of pertinent information (sample matrix, dissolved vs. total, highly contaminated, etc.).

The tags used for water, soil and sediment samples contain an appropriate place for designating the sample as a grab or a composite, identifying the type of sample collected for analysis, and

indicating preservation, if any. The Sample Identification Tags are attached to or folded around each sample and are taped in place.

After collection, separation, identification and preservation, the sample is handled using chain-of-custody procedures as discussed in the Chain-of-Custody Standard Operating Procedure (WS-SOP-04).

If the composite or grab sample is to be split, aliquoted portions are placed into similar sample containers. Sample Identification Tags are completed and attached to each container. Tags on quality control samples (e.g., blank, duplicate, blind field standards) are NOT marked to identify samples as such.

4.0 SAMPLE CODE NUMBERING OF DUPLICATE SAMPLES FOR XRF ANALYSES

When collecting duplicate soil samples to be analyzed by XRF techniques, the duplicate sample number is the same as the original sample number with the exception of a suffix "D" designation.

For example:	XYZ-9710-100	Original Sample Number
	XYZ-9710-100D	Duplicate Sample Number

5.0 CHAIN-OF-CUSTODY

Samples collected during any investigation may be used as evidence, and their possession must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. To document sample possession, chain-of-custody procedures are followed. These procedures are described in the Chain-of-Custody Standard Operating Procedure (WS-SOP-04).

6.0 SAMPLE SHIPMENT

Samples are packaged properly for shipment as described in the Packing and Shipping Samples Standard Operating Procedure (WS-SOP-05) and dispatched to the appropriate laboratory for analysis.

If sent by mail, the package is registered with return receipt requested. If sent by overnight express courier or common carrier, a Bill of Lading is used. Air freight shipments are sent collect. Freight bills, Postal Service receipts and Bills of Lading are retained as part of the permanent documentation.

When a chain-of-custody is required, a separate custody record must accompany each shipment. When transferring samples, the individuals relinquishing and receiving samples will sign, date

and note the time on the record. This record documents sample custody transfer from the sampler, often through another person, to the analyst at the laboratory.

7.0 SAMPLE ANALYSIS REQUEST

Samples sent to a laboratory for testing will be accompanied by a Request for Analytical Services or cover letter that describe the samples, specifies the testing required, and who is to receive the analytical report. Commonly, a standard analytical schedule is used for a project and this schedule should be attached to the Request for Analytical Services or cover letter.

8.0 FIELD NOTEBOOKS

A bound field notebook must be maintained by the Plant Manager to provide a daily record of significant events, observations and measurements during field investigations. All entries should be signed and dated. All members of the field investigation should use this notebook. It should be kept as a permanent record.

These notebooks are intended to provide sufficient data and observations to enable participants to reconstruct events that occurred during the project and to refresh the memory of the field personnel if called upon to give testimony during legal proceedings. In a legal proceeding, notes, if referred to, are subject to cross-examination and are admissible as evidence.

9.0 CORRECTIONS TO DOCUMENTATION

Unless prohibited by weather conditions, all original data should be recorded in field notebooks, Sample Identification Tags and Chain-of-Custody Records are written with waterproof ink. None of these accountable serialized documents are to be destroyed or thrown away, even if they are illegible or contain inaccuracies that require a replacement document.

If an error is made on an accountable document assigned to one individual, that individual may make corrections simply by crossing a single line through the error and entering the correct information. The erroneous information should not be obliterated. Any subsequent error discovered on an accountable document should be corrected by the person who made the entry. <u>All subsequent corrections must be initialed and dated</u>.

10.0 SAMPLE NUMBERING

All samples of water and earth materials will be assigned a number by Ferguson Contracting. The numbers assigned for water samples will all use the project prefix and will be followed by a sequential number. The first sequential number will be 1 and a total of 5000 numbers are available for project water samples. A water sample may consist of several bottles if the sample is to be analyzed for several parameters, each requiring a different preservation technique. All

bottles for a sample will have the same sample number. Sampling data, including site identification and sample numbers, will be recorded in the field sampler's notebook to allow positive identification of the sample.

All samples of earth materials such as drilling cores from test wells and stream bottom sediment will be assigned a number by Ferguson Contracting. The numbers assigned for earth material samples will use the project prefix and will be followed by a sequential number. The first sequential number will be 5001 and a total of 4999 numbers are available for these samples. Sampling data and sample numbers for earth materials will be recorded and handled in the same manner as for water samples.

The laboratory will not be aware of the specific sample source. All quality control samples will use the same sample numbering method.

11.0 ASSOCIATED REFERENCES

National Water Well Association, 1986. RCRA Groundwater Monitoring Technical Enforcement Document. September.

U.S. EPA, 1986. Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, Vol. II: Field Manual Physical/Chemical Methods. November.

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APPENDIX H

CHAIN-OF-CUSTODY FORM (WS-SOP-04)

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STANDARD OPERATING PROCEDURE

CHAIN-OF CUSTODY
WS-SOP-04

1.0 PURPOSE

The purpose of this procedure is to maintain a chain-of-custody for samples. All soil and water samples collected and sent to the laboratory for analysis will be documented using standard chain-of-custody procedures.

2.0 CUSTODY PROCEDURE

Samples will be collected at established project sampling sites using Standard Operating Procedures (SOP). Sampling activities will be recorded in the sampler's daily log book and the appropriate collection form(s) completed (see appropriate sampling SOP). Each sample container will be identified by labeling. Labels are attached to sample bottles and are protected with clear label tape to prevent abrasion of labeling information and to guard against failure of label adhesive.

2.1 Sample Identification

Each sample bottle will be labeled with the following information:

- Site;
- Sample number;
- Person taking the sample;
- Date and time of collection;
- Sample matrix (water, soil, oil, etc.);
- Basis (total or dissolved);
- Preservation; and
- Analyses to be performed.

Labels will be written in waterproof ink.

Use of pre-printed, self-adhesive labels, if available, is preferred.

All samples must be traceable from the time the samples are collected until they are received by the analytical laboratory. The laboratory is then responsible for custody during processing and analysis.

A sample is under custody if:

- It is in your possession;
- It is in your view, after being in your possession;
- It was in your possession and then you locked it up to prevent tampering; or
- It was in your possession and then you placed it in a designated secure area.

2.2 Custody Records

Each sample is identified on a Chain-of-Custody Form(s) (Form-001) by its sample number, date and time of collection, and analysis requested.

Documents will consist of:

- Sample collection records;
- Chain-of-Custody form(s) (Form-001);
- Analytical Parameter List(s), including analytical methods and detection limits, if not on the Chain-of-Custody form;
- Shipping receipt(s); and
- Purchase order(s).

3.0 CUSTODY TRANSFER AND SHIPMENT

All samples will be accompanied by a Chain-of-Custody record (Form-001). The following procedures will be followed:

- When transferring possession of samples, the individual(s) relinquishing and receiving will sign, date and note the time on the record. This record documents sample custody transfer from the sampler to the laboratory.

- Samples will be packaged properly for shipment and dispatched to the appropriate laboratory for analysis, with a separate custody record accompanying each shipment. Shipping containers will be sealed for shipment to the laboratory. The method of shipment, courier name(s) and other pertinent information are entered in the "Remarks" box.

- All shipments will be accompanied by the Chain-of-Custody Record (Form-001) identifying its contents. The original record will accompany the shipment and a copy will be retained in the project file.

- Analytical parameters requested must be noted on the Chain-of-Custody Record, or an attached analytical parameters list accompanying the Chain-of-Custody Record.

If not attached to the Chain-of-Custody, an Analytical Parameter List, including analytical methods and detection limits, must be included with each shipment and should specify methods of analysis required for each parameter.

- All shipping receipts (next-day air bills, freight bills, post office receipts, bills of lading, etc.), purchase orders, and sample collection records will be retained in the project file.

4.0 CUSTODY SEALS

When samples are shipped to the laboratory, they must be placed in containers sealed with custody seals. A typical custody seal is shown in Figure 1. Some custody seals are serially numbered. Other custody seals are unnumbered seals or evidence tape.

Two seals must be placed on each shipping container (cooler), one at the front and one on the side as shown in Figure 1. Clear tape should be placed over seals to ensure that seals are not accidentally broken during shipment.

5.0 RELATED REFERENCES

FORM-001 Chain-of-Custody Record

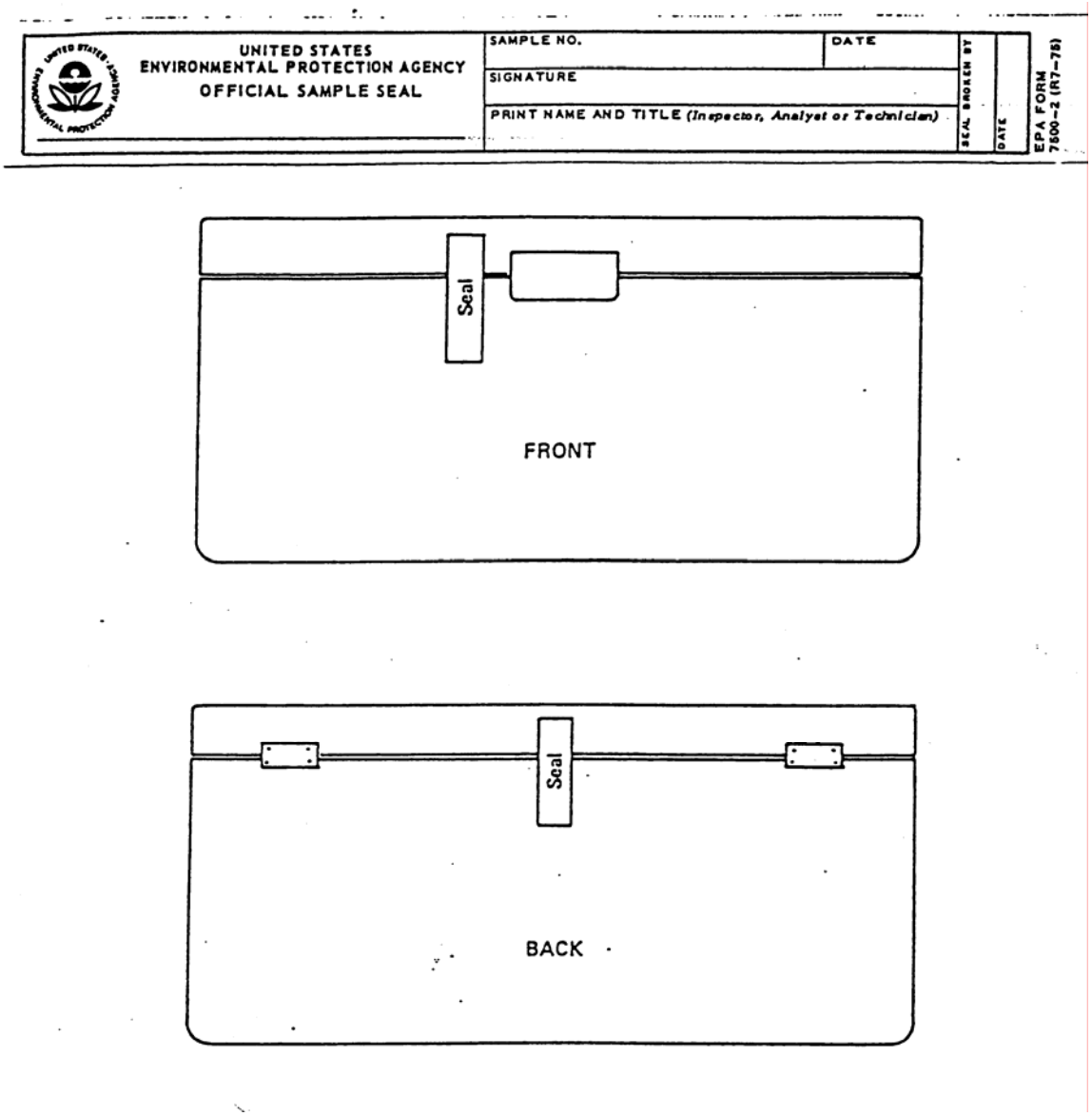

Figure 1. Proper Placement of Custody Seals

APPENDIX I

PACKING AND SHIPPING SAMPLES (WS-SOP-05)

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STANDARD OPERATING PROCEDURE

PACKING AND SHIPPING SAMPLES
WS-SOP-05

1.0 PURPOSE

This procedure is to be followed when packing and shipping water or soil samples to the laboratory by commercial carrier. The Chain-of-Custody standard operating procedure (WS-SOP-04) also must be followed if required in the project plan.

2.0 PROCEDURE

2.1 All samples must be labeled and labels filled out in waterproof ink. The label can be Ferguson Contracting's standard shipping label or may be a project-specific label. Sample labeling procedures are detailed in WS-SOP-03 (Labeling and Documentation of Samples).

2.2 All samples are placed in the shipping container - normally a metal or plastic cooler.

2.3 When packing, all sample bottles will be placed in individual resealable plastic bags prior to placement in the cooler.

2.4 Sample containers are typically placed in a cooler. Other commercially available insulated containers may be used. The project manager should determine that the containers are appropriate for the type of sample being shipped.

2.5 If trip blanks are required (typical for organics sampling), be sure one is present for each shipping container.

2.6 If an ice pack is used, place the ice pack in the cooler or cooler lid as needed. Fill space with bubble mat wrap or packing material. If necessary, place bubble wrap on top of samples. Sufficient packing material should be used to prevent sample containers from contacting each other during transport.

2.7 If custody seals are required, they will be placed on at least two places connecting the cooler container lid to the cooler.

2.8 Coolers are then wrapped with nylon strapping tape. Two full rotations of tape will be placed at least two places on the cooler.

2.9 Packing and shipping procedures for Superfund facilities should follow guidelines outlined in the EPA document "A Compendium of Superfund Field Operating Methods."

3.0 SHIPPING

Samples can be sent by commercial air carrier, overnight express, Federal Express or other means. The allowable holding time and often the ability to keep samples cold are important considerations. Copies of all shipment records must be kept in the project files.

Each sample container will be marked with:

- Sampling organization name, address and telephone number; and
- Laboratory name, address and telephone number.

Ship samples via courier following any applicable DOT requirements. The project manager should determine if there are any special shipping considerations.

Each shipping container will contain a description of samples enclosed, date of collection and date of shipment, either a cover letter or a Request for Analytical Services, and/or a Chain-of-Custody form. See Labeling and Documentation of Samples (WS-SOP-03).

For Chain-of-Custody shipments, complete a Chain-of-Custody form (see Chain-of-Custody Standard Operating Procedure WS-SOP-04):

- Sign the form.
- Place two copies in zip-lock bag in sample container.
- Keep one signed copy in project file.

Signing of the Chain-of-Custody form (record) relinquishes custody of the samples. Relinquishing custody should only occur when directly shipping to the analytical laboratory.

4.0 RELATED REFERENCES

WS-SOP-04 Chain-of Custody Procedure

WS-SOP-03 Labeling and Documentation of Samples

U.S. EPA, 1982. Handbook for Sampling and Sample Preservation of Water and Wastewater. EPA-600/4-82-029.

U.S. EPA, 1987. A Compendium of Superfund Field Operating Methods PB88-181557.

SECTION J

ATTACHMENT J5

OPERATIONS AND MAINTENANCE PLAN

*** NOTICE TO CONTRACTOR ***

1. The current O&M plan is enclosed for Contractor's information.

2. An example annual Preventative Maintenance Report is enclosed for Contractor's information (See Technical Exhibit TE-4).

3. The Government provided electronic O&M manual (See Technical Exhibit TE-7) will be provided for Contractor use and implementation during the Base Period.

OPERATIONS AND MAINTENANCE PLAN

CENTRAL TREATMENT PLANT

BUNKER HILL SUPERFUND SITE

Prepared for:

Department of the Army
Corps of Engineers
Eastern Environmental Resident Office
7600 Mineral Drive, Suite 100
Coeur d'Alene, ID 83815

Prepared by:

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September 2004

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TABLE OF CONTENTS

LIST OF APPENDICES iii
1.0 INTRODUCTION 1
1.1 OBJECTIVES 1
1.2 FACILITIES DESCRIPTION 2
1.3 WATER STORAGE AND CONVEYANCE 2
1.4 REGULATORY CONSIDERATIONS 3
2.0 STAFFING 4
2.1 SUPERVISION 4
2.2 OPERATIONS 4
2.3 TECHNICAL SUPPORT 5
2.4 MAINTENANCE 6
3.0 OPERATIONS SUMMARY 6
4.0 PROCEDURES FOR EMERGENCY RESPONSE TO PLANT SHUTDOWN OR MALFUNCTION 6
4.1 ALARM CONDITIONS 6
4.2 ALARM RESPONSES 8
5.0 ROUTINE MAINTENANCE AND REPAIR 8
5.1 MAINTENANCE 8
5.2 REPAIRS 8
5.3 SPARE PARTS 9
6.0 CHEMICAL SUPPLIES 9
6.1 LIME 9
6.2 POLYMER FLOCCULENT 9
7.0 ANALYTICAL LABORATORY 9
8.0 OUTSIDE PROVIDERS 10

LIST OF APPENDICES

APPENDIX A	OPERATIONS MANUAL
APPENDIX B	LIME SYSTEM OPERATIONS AND MAINTENANCE PROCEDURES
APPENDIX C	PREVENTATIVE MAINTENANCE PLAN
APPENDIX D	CTP PIPING AND INSTRUMENTATION DIAGRAM
APPENDIX E	BUNKER HILL MINE WATER CONVEYANCE SYSTEM OPERATIONS AND MAINTENANCE PLAN
APPENDIX F	DISCHARGE MONITORING REPORT
APPENDIX G	LIME AND FLOCCULENT MSDSs

OPERATIONS AND MAINTENANCE PLAN

CENTRAL TREATMENT PLANT

BUNKER HILL SUPERFUND SITE

1.0 INTRODUCTION

1.1 OBJECTIVES

This Operations and Maintenance Plan (O&M Plan) is designed to fulfill Section C0178, Specification 1.2 of the operating contract (Contract # DACW67-02-D-1014). Ferguson Contracting, Inc. will be responsible for operation and maintenance of the Central Treatment Plant (CTP) in an economical, safe and environmentally sound manner. Ferguson Contracting's O&M Plan will adhere to the following basic rules:

1. Keep a clean, neat and orderly plant.

2. Establish systematic procedures for start-up, daily operation, shutdown and failure mode conditions.

3. Establish inspection, maintenance, repair, and lubrication schedules and procedures.

4. Maintain a log of scheduled and unscheduled repairs, maintenance tasks performed and observations.

5. Follow safety procedures and monitor adherence to the project safety program.

6. Closely manage parts and tools inventories.

7. Operate equipment only in a manner that does not jeopardize its warranty or exceed design limits.

8. Perform compliance monitoring as required by the expired NPDES Permit Number IL-000007-8.

The details of operating the CTP are discussed in the Operations Manual (Appendix A), while operating procedures for the new lime system are in Appendix B. Maintenance procedures are shown in the Preventive Maintenance Plan (Appendix C). This O&M Plan is an expanded and updated version of the O&M Plan included in the contract documents.

1.2 FACILITIES DESCRIPTION

The CTP was placed into service in May 1974 to treat effluent water from the Bunker Hill Company mine, mill, phosphoric acid plant, lead plant and zinc plant. Currently, the CTP treats acid mine drainage (AMD) and runoff from the industrial complex and other areas as directed by the U.S. Army Corps of Engineers (USACE). The CTP process consists of:

- Lime treatment to neutralize and precipitate heavy metals from the wastewater;
- Aeration of the neutralized wastewater for oxidation and enhanced precipitation;
- Recirculation of precipitated solids to provide precipitation seed and reduce the required lime dosage;
- Flocculation of precipitated solids;
- Inorganic polymer addition and subsequent liquid-solids separation by gravity sedimentation in a clarifier;
- Treated water storage in a polishing pond; and
- Discharge at Outfall 006 to Bunker Creek.

Excess lime sludge from the Clarifier is pumped to an unlined sludge disposal pond in the Central Impoundment Area (CIA). The CTP Piping and Instrumentation Diagram is attached as Appendix D.

1.3 WATER STORAGE AND CONVEYANCE

The mine water system conveys water from the Kellogg Tunnel (KT) Portal to either the Lined Pond or directly to the CTP. The Bunker Hill Mine Water Conveyance System Operations and Maintenance Plan, which is attached as Appendix E, discusses the details of this system.

The Lined Pond, with a capacity of approximately 7.5 million gallons, was constructed in 1994 to equalize wastewater flows and provide a more consistent flow rate and influent quality to the CTP. The Lined Pond also receives intermittent flow from the 004/Sweeny pump station, which will be replaced by the PTM Cell and Smelter Closure Gravity Drain Pipeline in late 2004/early 2005. This flow consists of drainage water from the old Bunker Hill complex area and water from the west decontamination station. The Lined Pond is currently utilized only for short-term mine water storage as needed for CTP shutdown and maintenance needs.

Approximately three million gallons of sediment were removed from the Lined Pond in April 2003. Based on these findings, sediment should be periodically removed from the Lined Pond if it is extensively used in the future.

Two 1,800-gallons-per-minute (gpm) pumps and one 1,400-gpm pump are used to transfer wastewater from the Lined Pond to the CTP Head House. The smallest pump has been modified to provide a reduced flow during low-flow periods. This provides more flexibility and a more steady-state operation of the plant.

The design flow capacity of the CTP is 5,000 gpm. Actual flows vary depending on the season and areas requiring treatment. CTP influent flow rates typically range from 700 gpm up to 3,000 gpm. A new Clarifier effluent drop box and 24-inch HDPE discharge pipe were installed in October 2003 to increase possible effluent flow to the design flow capacity. Previously, effluent flow between the Clarifier and Polishing Pond was restricted to about 3500 gpm by the old gravity-flow pipeline.

1.4 REGULATORY CONSIDERATIONS

Regulatory compliance is performed as follows:

1. As directed by the USACE, Ferguson Contracting, Inc. will be responsible for completing a monthly Discharge Monitoring Report (DMR). The completed form will be submitted to the USACE by the 7th day of each month. A USACE representative will have signatory responsibility and will forward the DMR to the appropriate state and federal regulatory offices. An example of a DMR form is included in Appendix F. Historical NPDES permit information is located in the contract documents.

2. Ferguson Contracting, Inc. will keep organized records containing all information required for regulatory compliance. These records will be made available to the Government for review at any time. All records relating to this project shall be retained for a minimum of three years after completion of the project.

3. Ferguson Contracting, Inc. will notify the USACE immediately upon becoming aware of any occurrences of noncompliance as identified in the DMR. Ferguson Contracting, Inc. will provide a written account of the noncompliance within three days to the USACE. The written account will include the following:

    a. A description of the noncompliance and its cause;

    b. The period of noncompliance, including exact dates and times;

    c. The estimated time that the noncompliance is expected to continue if it has not been corrected; and

d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

4. Ferguson Contracting, Inc. will notify the USACE of anticipated and unanticipated bypass or violations to the expired NPDES-permitted parameters in writing within 24 hours of occurrence.

2.0 STAFFING

2.1 SUPERVISION

Ferguson Contracting staff will carry out the day-to-day supervision and administration of the CTP. Duties will include:

- Supervising and scheduling the operating personnel;
- Administering the operating and safety procedures;
- Monitoring the operating and maintenance budget;
- Preparing and submitting the required environmental compliance reports;
- Purchasing operating supplies and maintenance materials; and
- Preparing and submitting a monthly report with operating costs and water quantities treated.

2.2 OPERATIONS

Plant operators are at the plant, as required, during the day shift. They are called in during off hours by an Auto Dial telephone summoning service. This Auto Dialer is activated by any power outage at the plant and by the following four conditions in the control room: high control room temperature, low control room temperature, low city water pressure and high noise. The major pumps and motors at the plant are connected to the audible alarm system. If a major pump or motor fails, the audible alarm will sound, activating the Auto Dialer high-noise alarm. In compliance with the contract, the operators will respond within 60 minutes of any alarm condition. The operators will notify the Ferguson Contracting project manager as soon as practicable after each plant alarm condition or unscheduled shutdown.

Duties of the plant operators include:

- Assuring that plant equipment is running properly in accordance with the Operations Manual (Appendix A).
- Maintaining an adequate supply of treatment chemicals. Chemicals will be reordered when approximately 50 tons of lime remain in the Lime Silo and when the flocculent supply on-hand is approximately 1,000 pounds.
- Collecting and preserving samples for shipment in accordance with the NPDES permit and the approved site Sampling and Analysis Plan.

- Recording daily plant operating data in accordance with the Operations Manual (Appendix A), and the Daily Chemical Quality Control Report located in the Sampling and Analysis Plan.
- Performing minor maintenance tasks.

The plant operators shall be trained in accordance with the requirements of 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response.

Operators shall have had previous experience operating plants similar to the CTP or they shall be trained on-site under the direction and supervision of the Ferguson Contracting project manager. Training may be done by a senior operator currently on staff and supported as necessary by Ferguson Contracting management. The training program shall consist of studying the Operations Manual, Accident Prevention Plan, Activity Hazard Analyses, Sampling and Analysis Plan, and 24 hours of hands-on training at the CTP.

2.3 TECHNICAL SUPPORT

Technical support for CTP operations will be provided by Mark Reinsel (Apex Engineering), who serves as process engineer for the CTP. Apex Engineering's off-site office is located in Helena, Montana. The process engineer's duties will include:

- Performing surveillance visits to review plant operations, maintenance and regulatory compliance at the request of the Ferguson Contracting project manager or his designee;
- Providing trouble-shooting services in the event of a plant upset; and
- Providing design or design oversight of major maintenance work and plant improvements.

2.4 MAINTENANCE

Minor maintenance work such as equipment lubrication, instrument standardization and basic troubleshooting will be performed by the plant operators. Preventative maintenance items will be performed in accordance with the Preventative Maintenance Plan (Appendix B). Specialized maintenance such as inspection of electrical equipment, instrument calibration, and setting and alignment of equipment, will be performed by subcontractors.

3.0 OPERATIONS SUMMARY

Recent practice has been to operate the plant continuously 24 hours per day, 7 days per week. Since installation of the Direct Feed Line in 2001, direct feed from the mine to the CTP has been the desired conveyance. All Bunker Hill mine discharge water is preferentially diverted to the CTP for treatment through the Direct Feed Line 24 hours a day. Operating 24 hours per day creates a more steady-state condition and minimizes potential problems normally associated with shutdown, such as plugged sludge and lime slurry pipes.

The Lined Pond storage capacity of 7.5 million gallons is approximately three-and-a-half days of Kellogg Tunnel discharge. The operating water level in the Lined Pond varies from elevation 2268 to the overflow elevation of 2279. The water level in the Lined Pond is controlled by the CTP operators on an as-needed basis. For example, in an emergency CTP shutdown, Kellogg Tunnel flow will be directed to the Lined Pond and pumped to the CTP for treatment as scheduled by the operators. In the winter, the pond level is kept at a higher elevation to minimize potential freezing, and to provide an adequate volume of water for continuous CTP operation.

Detailed operating procedures for the CTP and its associated facilities are reviewed in the Operations Manual (Appendix A).

4.0 PROCEDURES FOR EMERGENCY RESPONSE TO PLANT SHUTDOWN OR MALFUNCTION

4.1 ALARM CONDITIONS

Because of both operational changes and the plant's age, not all of the alarms in the CTP are still functional. Inoperable alarms include high and low influent flow rate, and effluent pH. However, these inoperable alarms do not prevent the plant from operating properly. Since these alarms do not work, more monitoring is required by plant operators to ensure that Lime Silo and Lime Slurry Tank levels are properly maintained. The effluent discharge pH is observed twice daily for compliance with effluent requirements.

Several new alarm conditions were added with construction of a new lime system in late 2003. However, these alarms are only visual alarms located on the lime system operations computer screen. The new alarms will be connected to the autodialer upon construction of the new control room, which is planned for late 2004.

The following alarms are operative at the CTP control room annunciator panel:

1. Aeration Basin effluent pH high (PHE-2, setpoint 10.5).
2. Aeration Basin effluent pH low (PHE-2, setpoint 6.0).
3. Clarifier rake shutdown – this signifies a loss of power to the CTP or torque overload.
4. Clarifier underflow pump #2 shutdown - this signifies a loss of power to the CTP or pump failure.
5. Aerator drive motor shutdown – this signifies a loss of power to the CTP or motor failure.
6. Loss of power to the CTP control room.

4.2 ALARM RESPONSES

CTP operators are required by the contract to respond to all alarm conditions within 60 minutes. In the event of a CTP power loss, acid mine drainage (AMD) water will be automatically diverted to the Lined Pond through an electrically operated Lined Pond gate valve. This will prevent AMD from being discharged to Bunker Creek. The responding operator will divert AMD water back to the CTP for treatment as soon as the alarm condition is corrected, and all pumps and motors are in good operating condition.

5.0 ROUTINE MAINTENANCE AND REPAIR

5.1 MAINTENANCE

Operators will continue to perform routine maintenance duties. Specific maintenance is detailed in the Preventive Maintenance Plan (Appendix C). In general, routine maintenance included in the Preventive Maintenance Plan consists of the following:

- Daily visual inspection of all pumps and motors;
- Daily pH probe check for fouling;
- Weekly calibration of pH probes;
- Weekly check of lubricants and oil levels;
- Monthly lubrication;
- Monthly check of fire extinguishers;
- Quarterly lubrication;
- Quarterly pump analysis;
- Quarterly Direct Feed Line cleaning;
- Six-month Main Line cleaning;
- Yearly camera inspection of the Main Line and Direct Feed Line;
- Yearly hydro-blasting of the upper 150 feet of the Main Line;
- Six-month lubricant change-out;
- Yearly refurbishing of fire extinguishers;
- Yearly calibration of instruments;
- Yearly inspection and cleaning of electrical panels in the Lime Silo Building;
- Yearly cleaning of the Lime Slurry injection pump screen; and
- Winterization.

5.2 REPAIRS

Operators will continue to make minor repairs such as replacing motor belts and repacking pump seals. Local contractors will perform major repairs to pumps and motors, electrical work, and plumbing repairs and modifications.

Routine repairs shall be implemented within the approximately three-and-a-half days' time allowed by the Lined Pond capacity. Major repairs may require plant downtime in excess of Lined Pond capacity. This will be addressed through the USACE prior to any scheduled major repairs.

5.3 SPARE PARTS

A spare parts inventory will be maintained at the CTP. Spare parts shall be stocked as approved by the USACE based on their delivery times, costs and priority level. Spare motor belts and pulleys are currently stocked at the plant. Some spare parts can be purchased at the local hardware store or ordered for overnight delivery, and therefore need not be stocked at the plant.

6.0 CHEMICAL SUPPLIES

6.1 LIME

Approximately 60 tons of pebble lime (quicklime) are delivered monthly. During high-flow periods, additional deliveries are ordered based on the level in the two lime silos, as monitored by the operators. Lead time for unscheduled delivery is usually one day. The lime supplier is Graymont Western U.S., Inc. from Townsend, Montana. A material safety data sheet (MSDS) and product data for lime are in Appendix G.

6.2 POLYMER FLOCCULENT

The polymer currently used at the CTP is Z Flocc 571, which is an anionic polyacrylamide. Two pallets, each containing 40 50-pound bags, are ordered approximately every two months. The supplier is Zeroday Enterprises, LLC from Tualatin, Oregon. Lead time for ordering is two weeks. Because of space limitations, no more than two pallets are ordered at one time. An MSDS for the polymer is in Appendix G. Other polymer manufacturers will not be recommended unless their product's efficiency can be confirmed with jar tests using CTP water.

7.0 ANALYTICAL LABORATORY

Compliance monitoring samples are currently collected, preserved and shipped by CTP operators. Analysis of these daily samples is performed by American Analytical Services (AAS) in Osburn, Idaho. Analytical results from AAS are normally available within one week of sample receipt.

All sampling analysis will be performed as required in the project specifications and the approved project Sampling and Analysis Plan (SAP). Quality assurance analysis will also be

performed as stated in the project specifications and SAP. Spike analysis may be performed in lieu of quality assurance analysis at the direction of the USACE.

Effluent water quality data will be distributed to the USACE via the monthly DMR. Water sampling will be performed as stated in the SAP. QA samples will continue to be completed as directed by the USACE.

8.0 OUTSIDE PROVIDERS

Power:	Avista Corporation 120 N. Hill Street Kellogg, ID 83837 Contact: Allen Fulton Telephone: (208) 783-1161 Lined Pond A/C: 170005926 CTP A/C: 370005131 Direct Feed Vault A/C:
Domestic Water:	Central Shoshone County Water District 409 Main Street Kellogg, ID 83837 Contact: Dennis Noris Telephone: (208) 786-9141 A/C: 65-0537-2
Telephone:	Verizon 2115 Government Way P.O. Box 6000 Coeur d'Alene, ID 83816-1924 Contact: Bob Cardinel Telephone: (208) 765-7916
Motor Evaluation:	Balancing Service Company 1701 Howell Missoula, MT 59802 Contact: Jim Cash Telephone: (406) 543-7753
Lime:	Graymont Western P.O. Box 40 Coleman, Alberta CANADA TOK 0MO Contact: Vivian Telephone: (403) 563-3374

Flocculent:	Cascade Columbia Zeroday Enterprises, LLC 9835 SW Lumbee Lane Tualatin, OR 97062 Contact: Greg Switzer Telephone: (707) 865- 2550
Equipment Repair:	Mine Fabrication & Machine, Inc. Highway 10E Kellogg, ID 83837 Contact: Ron Forsberg Telephone: (208) 784-0381
Lubricants:	Carousel Gas 402 N. Division Pinehurst, ID 83850 Contact: Rick Stewart Telephone: (208) 682-2376
Electrical:	Parsons' Electrical Contracting Box 40 Kingston, ID 83839 Contact: Dan Parsons Telephone: (208) 682-4814
Plumbing:	Silver Valley Mechanical John Spoor Wear Gulch Pinehurst, ID 83850 Telephone: (208) 682-2223

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APPENDIX A

OPERATIONS MANUAL

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OPERATIONS MANUAL

CENTRAL TREATMENT PLANT AND ASSOCIATED FACILITIES

BUNKER HILL SUPERFUND SITE

Appendix A of Operations and Maintenance Plan

Prepared for:

Department of the Army
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September 2004

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TABLE OF CONTENTS

LIST OF ATTACHMENTS v
1.0 INTRODUCTION 1
2.0 DAILY PLANT INSPECTIONS 2
2.1 MORNING PLANT INSPECTION 2
2.2 AFTERNOON PLANT INSPECTION 2
3.0 DAILY OPERATIONS DOCUMENTATION 2
3.1 pH SETPOINT AND READINGS 2
3.2 TURBIDITY TESTING 2
3.3 RECYCLED SLUDGE SPECIFIC GRAVITY TESTING 2
3.4 SLUDGE WASTING 2
4.0 DAILY CHEMICAL MIXING AND INVENTORY 3
4.1 FLOCCULENT 3
4.2 LIME SLURRY 3
5.0 SAMPLE COLLECTION 3
5.1 006 OUTFALL 3
5.2 KELLOGG TUNNEL 3
5.3 004/SWEENY 4
6.0 LINED POND ELEVATION AND PUMP HOUSE INSPECTION 4
6.1 LINED STORAGE POND 4
6.2 LINED STORAGE POND PUMP HOUSE 4
7.0 PLANT FAILURE RESPONSE 4
7.1 EMERGENCY REPAIRS 4
7.2 EMERGENCY RESPONSE 4
8.0 DIRECT FEED LINE 4
9.0 LINED STORAGE POND 5
9.1 VALVES 5
9.2 PUMPS 6
9.3 SCREEN 8

10.0 CENTRAL IMPOUNDMENT AREA 8
11.0 CENTRAL TREATMENT PLANT 8
11.1 INFLUENT 8
11.1.1 Flow Control 8
11.1.2 Flow Meter 8
11.1.3 Sampling 8
11.1.4 Emergency Shutdown 9
11.2 HEAD HOUSE 9
11.2.1 Sample Sump Pump 9
11.2.2 Cold Weather Precautions 9
11.3 PROCESS PUMP HOUSE 9
11.3.1 Process Water Pump 9
11.3.2 Sump Pump 10
11.3.3 Cold Weather Precautions 10
11.4 LIME STORAGE, SLURRY ROOM AND SLURRY STORAGE 10
11.4.1 Lime Receiving and Storage 10
11.4.2 Lime Slaking and Slurry Preparation 10
11.4.3 Slurry Percent Solids 10
11.4.4 Slurry Holding Tank 11
11.4.5 Cold Weather Precautions 11
11.5 LIME INJECTION SYSTEM 11
11.5.1 Lime Slurry Feed Pump(s) 11
11.5.2 Lime Feed Control 11
11.5.3 Lime Silo Building Sump Pump 11
11.5.4 Cold Weather Precautions 12
11.6 RAPID MIX TANK, AERATION BASIN AND FLOCCULATION BASIN 12
11.6.1 Rapid Mix Tank 12
11.6.2 Aeration Basin 12
11.6.3 11.6.3 Flocculation Basin 12

11.6.4 Cold Weather Precautions....13
11.7 CLARIFIER....13
11.7.1 Clarifier Function....13
11.7.2 Rake Drive....13
11.7.3 Sludge Density Control....14
11.7.4 Clarifier Feed Density Control....14
11.7.5 Flocculent Dosage....14
11.7.6 Clarifier Overflow....15
11.7.7 Clarifier Operational Precautions....15
11.8 SLUDGE TRANSFER LINE....15
11.9 PUMP AND CONTROL ROOM....15
11.9.1 Underflow Manifold....15
11.9.2 #1 Underflow Pump....16
11.9.3 #2 Underflow Pump....16
11.9.4 #3 Underflow Pump....16
11.9.5 Sump Pump....16
11.9.6 Auxiliary Water Supply....16
11.9.7 Main Control Panel....16
11.9.8 Autodial System....18
11.10 POLISHING POND....18
12.0 CTP START-UP....19
13.0 CTP SHUTDOWN....21
14.0 SAMPLING PROCEDURES....22
15.0 pH METER CALIBRATION....24
15.1 ORION PH PROBE CALIBRATION....24
15.2 UNILOC PH PROBE CALIBRATION (PROCESS PH METERS)....25
16.0 PLANT SYSTEMS TROUBLESHOOTING GUIDE....26
16.1 AERATION BASIN (INFLUENT)....26
16.2 LIME SYSTEM....26
16.3 LIME DOSAGE SYSTEM....27

16.4 CLARIFIER 27
16.5 RAPID MIX TANK 28
16.6 CTP ALARM SYSTEM 28
17.0 MORNING PLANT INSPECTION FORM 30
18.0 AFTERNOON PLANT INSPECTION FORM 30
19.0 FLOCCULENT MIXING PROCEDURE 32
20.0 LIME MIXING AND MAINTENANCE PROCEDURES 33

LIST OF ATTACHMENTS

ATTACHMENT A RELATIONSHIP BETWEEN SPECIFIC GRAVITY AND PERCENT SOLIDS

ATTACHMENT B FLOCCULENT DOSAGE CHART

OPERATIONS MANUAL

CENTRAL TREATMENT PLANT AND ASSOCIATED FACILITIES

BUNKER HILL SUPERFUND SITE

1.0 INTRODUCTION

The purpose of the Bunker Hill Central Treatment Plant (CTP) is to receive and treat wastewater from the Bunker Hill Mining Complex and the Lined Storage Pond (Lined Pond). This wastewater consists of acid mine drainage (AMD) from the mine, and seepage and run-off from the former smelter and zinc plant areas.

Wastewater treatment is necessary to remove heavy metals and neutralize acidity before the water can be discharged into Bunker Creek. The treatment steps include neutralization, oxidation, flocculation and sedimentation.

The plant is operated at pH levels and throughput rates appropriate to meet the limitations on discharge parameters imposed by NPDES Permit Number 10-000007-8 as issued in October 1986, and subsequent revisions as reflected in the current Discharge Monitoring Report (DMR).

Experience and trials have shown that the critical element discharging under this permit is zinc. The pH levels high enough to adequately control zinc will also control all the other metals, as long as the discharged water is clear and essentially free of suspended sediments.

The capacity of the CTP depends somewhat on the influent characteristics. The normal design capacity is 5,000 gallons per minute (gpm). A maximum capacity of 6,000 gpm is theoretically possible based on unit process holding times; however, there is no current operating experience at this flow rate.

The plant discharge rate and pH levels are recorded daily. Daily composite samples of the CTP discharge water are taken to demonstrate compliance with regulatory requirements.

2.0 DAILY PLANT INSPECTIONS

2.1 MORNING PLANT INSPECTION

Early each morning, the plant operator will inspect all systems of the treatment plant. An inspection form is completed and submitted to the USACE in the Daily Chemical Quality Control Report. The Morning Plant Inspection Form is attached at the end of the Operations Manual (Section 17.0).

2.2 AFTERNOON PLANT INSPECTION

The plant operator will inspect all systems of the treatment plant prior to leaving the CTP at the end of each day. The daily Afternoon Plant Inspection Form, which can be found in Section 18.0, is submitted to the USACE in the Daily Chemical Quality Control Report.

3.0 DAILY OPERATIONS DOCUMENTATION

3.1 pH SETPOINT AND READINGS

The pH setpoint, along with pH readings from the three working pH meters, is recorded in the daily log. pH grab samples are taken each day from the Clarifier and the 006 Outfall. These samples verify the accuracy of the process pH meter readings (PHR-4, PHR-3). A weekly pH grab sample from the Aeration Basin is used to verify the accuracy of the Aeration Basin pH meter (PHR-2).

3.2 TURBIDITY TESTING

The Clarifier overflow and 006 Outfall turbidity readings are tested twice daily and recorded in the daily log, as well as in the daily field log book.

3.3 RECYCLED SLUDGE SPECIFIC GRAVITY TESTING

Specific gravity of the Clarifier underflow recycled sludge is measured at least twice per day. Test results are recorded in the daily log and field log. Testing is performed before and after sludge wasting. The specific gravity reading is used to determine the amount of sludge wasting needed to maintain the desired specific gravity. The specific gravity is directly related to the percent solids of the sludge. A table showing the correlation between these two parameters is in Attachment A.

3.4 SLUDGE WASTING

Settled sludge in the bottom of the Clarifier is pumped to the sludge disposal pond in the Central Impoundment Area (CIA) as needed to maintain the desired specific gravity. The sludge is pumped through the new 10-inch HDPE sludge line constructed by Ferguson

Contracting in June 2004. The estimated volume of sludge wasted is recorded in the daily log and field log.

4.0 DAILY CHEMICAL MIXING AND INVENTORY

4.1 FLOCCULENT

The flocculent solution supply is inventoried twice daily to ensure ample supply. Flocculent solution is mixed twice-daily by the on-shift operators. The Flocculent Mixing Procedure is shown in Section 19.0. The dry flocculent supply is checked and an order placed if the supply is less than an estimated 30 days (1000 lbs). A chart showing the flocculent dosage at various floc pump settings and CTP flow rates is in Attachment B.

4.2 LIME SLURRY

Lime slurry stored in the Lime Slurry Holding Tank is inventoried twice daily. The slurry tank level is viewed on the HMI computer screen, currently located in the pump room of Silo B. Slurry is mixed on an as-needed basis to maintain an adequate supply for CTP operations. Slurry is automatically mixed in the slaker room as the slurry tank level decreases. During normal-flow conditions (generally 2.1 million gallons per day [mgd] or less), automatic daily mixing has been found to provide enough slurry to treat the influent. However, during some high-flow spring runoff conditions, automatic twice-daily mixing of slurry is needed. The automatic slurry mixing is performed as the slurry holding tank level decreases to a level of 2.5 feet.

Pebble lime slaking and dilution water addition are also automatic. Pebble lime is stored in two 100-ton silos with level indicators located on the north side of silo B. The pebble quick lime level indicators are checked weekly and lime is ordered as needed.

5.0 SAMPLE COLLECTION

5.1 006 OUTFALL

Samples for metals and suspended solids are taken from the 006 Outfall composite sample container. Flow readings for the past 24 hours are recorded from the Vantage 2200 flowmeter. Monthly flow totals are also retrieved from this location.

5.2 KELLOGG TUNNEL

Samples for metals and suspended solids are taken twice weekly from the flume area at the Bunker Hill Mine (Kellogg Tunnel) portal. Twice-weekly and monthly total flow readings are taken from the ISCO model 4230 flowmeter.

5.3 004/SWEENY

Weekly samples for metals and suspended solids are taken from the 004 discharge pipe (the 004/Sweeny sample location) next to the west vehicle decontamination station. The flowmeter at this location is also checked monthly.

6.0 LINED POND ELEVATION AND PUMP HOUSE INSPECTION

6.1 LINED STORAGE POND

The Lined Storage Pond is checked daily to record the water elevation. This daily reading is noted on the Daily Chemical Quality Control Report as well as in the daily field log. Daily observation is critical, as no depth indication exists at the treatment plant.

6.2 LINED STORAGE POND PUMP HOUSE

The pump house is inspected daily to prevent any pump or pipe leaks from going undetected. With the newly opened bike path next to the pump house, daily security checks are also performed on the pump house.

7.0 PLANT FAILURE RESPONSE

7.1 EMERGENCY REPAIRS

Emergency repairs to failed pumps or motors are performed by CTP personnel as needed. If a repair cannot be made by CTP personnel, outside contractors will be called in. The USACE will be immediately notified of any needed emergency repairs.

7.2 EMERGENCY RESPONSE

The CTP is equipped with an off-hours auto dialer system that will call at least two of the CTP operators during an emergency. As required by the contract, CTP operators must respond to any alarm condition within 60 minutes. This prevents the possible discharge of metals in the plant discharge.

8.0 DIRECT FEED LINE

The Direct Feed Line to the CTP is used as the primary acid mine drainage (AMD) water conveyance. The Direct Feed Line, which was installed during the winter of 2001, branches from the main pipeline at a tee located at the bottom of the mine yard access road. From this tee in the main line, the mine water flow discharge passes through the direct feed valve (DF-

001) and the direct feed pipeline cleaning vault (pig launching and camera accessing), and sweeps to the northwest before diagonally crossing under McKinley Avenue. From McKinley Avenue, the pipeline sweeps to the north, descends down the hill crossing below the bike path and Bunker Creek, then sweeps to the east around the CTP Polishing Pond.

A continuous vacuum/air release valve is located at the top of the hill in a concrete valve box (Direct Feed Branch Station 4+20), and a pipeline drain is located at the bottom of the hill in a concrete valve box (Direct Feed Branch Station 5+40). Near the CTP the pipeline briefly sweeps under the gravel road, around the lime silos trending to the southeast, then up the side of the CTP Aeration Basin embankment where it terminates in a pig capture box attached to the Aeration Basin feed launder. Mine water flow is measured by a flowmeter located at the mine portal.

Two electric gate valves, located in a fenced area at the bottom of the mine access road, control the directional flow of the mine discharge water. The main line valve (ML-001) in the open position, with the direct feed valve closed, directs AMD to the Lined Pond for storage. The direct feed valve (DF-001) in the open position, with the main line valve closed, allows AMD to flow directly to the CTP for treatment.

9.0 LINED STORAGE POND

The Lined Storage Pond can receive streams from the Kellogg Tunnel and the 004/Sweeny area, as well as water from the east and west decontamination facilities. The Lined Pond receives 004/Sweeny water intermittently. Mine water will only be directed to the Lined Pond as needed for CTP maintenance or emergency shutdown. Decontamination water from the west facility currently discharges into the 004/Sweeny sump and is pumped along with the 004/Sweeny water to the Lined Pond. The east decontamination station is inoperable at this time and is scheduled to be removed from service.

Thirteen valves and three pumps control the operation of the Lined Storage Pond. Their operation is summarized below.

9.1 VALVES

A total of 13 gate, check or butterfly valves are associated with the Lined Storage Pond. Four gate valves are located northwest of the Lined Pond. These valves control flow of water from the 004 line and the abandoned Sweeny line. Two valves with "wheel" type handles, located in the same manhole, allow water to flow to the sludge disposal pond in the Central Impoundment Area (CIA). Two valves with "T" type handles, located in individual manholes, allow water to flow to the Lined Pond.

Therefore, to direct water to the CIA pond, the two T-handle valves would be closed and the two wheel-handle valves would be opened. However, per the EPA, only sludge is allowed to go into the CIA decant pond. Conversely, to direct water to the Lined Pond (which is the

standard operation), the two T-handle valves are open and the two wheel-handle valves are closed. These four valves do not require maintenance. The Sweeny line leading to the Lined Storage Pond has been abandoned.

Nine valves are located at the pump control station adjacent to the northwest corner of the Lined Pond. All nine valves are contained in the pump house. The pump house contains three check valves (which currently have no manual operation features), three gate valves and three butterfly valves, which correspond to each of the three pumps in the pump control station. All three gate valves have wheel-type handles with arrows indicating open and close on the handle. The three butterfly valves also have wheel-type handles with open and close arrows on the valve. Each valve position, opened or closed, is dependent upon which pump is operating. The valves should be greased twice per year or more frequently if repaired.

The last valve associated with the Lined Storage Pond is a 24-inch butterfly valve located northeast of the pond. This valve is located in a concrete manhole and controls flow of water to the CTP from either the Lined Pond or the CIA decant pond. The valve contains a "T" handle. To direct water from the CIA decant pond to the CTP, open the 24-inch valve and close the three gate valves at the Lined Storage Pond. To allow water to be pumped from the Lined Pond to the CTP, close the 24-inch valve (open to the corresponding gate valve for the operating pump). No maintenance is required for this 24-inch valve. This valve is no longer used as the decant station and is no longer operable. The decant effluent piping has been permanently capped to prevent pumping to and decanting from the CIA decant pond.

No piping modifications have been made to the 004/Sweeny discharge line. This line continues to discharge into the Lined Pond. The 004/Sweeny wastewater is pumped to the Lined Pond by float control pumps located in the Sweeny pump house just west of the west decontamination station. A new gravity-flow Principal Threat Material line has been proposed to transfer the 004/Sweeny runoff to the Lined Pond. This line will be constructed and placed into service by Ferguson Contracting during the winter of 2004.

9.2 PUMPS

Three pumps are installed in a concrete pump station at the northwest corner of the pond. These pumps draw water from an 8-foot-diameter concrete wet well. The pumps are placed in parallel at the bottom of the pump station. Pump 1 is the west pump, pump 2 is the middle pump and pump 3 is the east pump. To operate the pumps, the following steps should be performed.

1. Turn the main breaker to the "on" or "closed" position. This breaker is located beneath the meter on the pole next to the gate entrance to the Lined Pond.

2. Place the desired pump in the Manual or Hand position by turning the knob on the bottom of the control panel.

3. Close the circuit breaker for the appropriate pump.

4. Ensure that the suction and discharge gate valves corresponding to the operating pump are open.

5. Start the pump by pushing the "Start" button.

One set of floats controls the automatic operation of all three pumps. Each pump has a selector switch for selecting Manual or Auto operation. The operator selects the number of pumps to run by turning the selector switch on each desired pump to Auto. When the pond level rises to the high level float, the selected pump(s) turns on and a red flashing beacon on top of the pump house roof should turn on. However, the beacon is currently not operational.

When the pond level falls to the low float position, the pump(s) shuts off and the red flashing beacon also shuts off. However, if the operator stops the pump(s) manually, as is often the case to clean the inlet screen or to manage the pond water level, the red flashing beacon remains lighted. Needed additions to the control system include high- and low-level alarms at the pump house and CTP control room, and connection of the alarms to the autodial system. Pump running lights and pump emergency stop buttons are located in the CTP control room.

To take a pump out of service from the CTP control room, place the desired pump remote on/off control switch to the desired position.

To manually take a pump out of service from the pump house, perform the following steps:

1. Push the "Stop" button.

2. Close the circuit breaker for the pump.

The pump manufacturer recommends performing annual preventative maintenance in accordance with the Preventative Maintenance Plan (Appendix B of the Operation and Maintenance Plan).

Flow rates to the CTP from the Lined Pond are controlled by the number of pumps operating and by the position of the Head House valve. With the #1 pump operating, the maximum pumped flow is 1,400 gallons per minute (gpm). With the #2 or #3 pump running, the maximum flow for each is 1,800 gpm. With two pumps operating, the maximum pumped flow is 3,600 gpm. The CTP influent flow could be reduced below these figures by partially closing the Head House valve.

In winter months, AMD water stored in the Lined Pond can be pumped through the plant to minimize freezing problems. The high-level point at which the pumps start automatically allows approximately 2 feet of reserve storage capacity below the overflow.

9.3 SCREEN

A removable screen has been installed in the wet well at the inlet to the 18-inch pipe connecting the wet well to the pump suction manifold. The screen is built from stainless steel wire mesh with 0.5-inch openings. The screen is removed monthly for inspection and cleaning if necessary. Removal is done by hoisting up with a dedicated davit crane: the screen assembly travels up within a set of screen guides. The screen is then swung away from the access opening and placed on top of the wet well cover for inspection and cleaning. After cleaning, the screen is replaced in the wet well.

10.0 CENTRAL IMPOUNDMENT AREA

The Central Impoundment Area, commonly known as the CIA, houses one sludge settling pond. This sludge pond remains the only sludge disposal area associated with the Central Treatment Plant. The sludge effluent line is located in the southeast corner of the sludge settling pond. It is no longer possible to pump from the Lined Pond pump station to the CIA. Decanting through a decant tower located in the center of the CIA is also no longer possible, as the decant riser is no longer operable.

11.0 CENTRAL TREATMENT PLANT

11.1 INFLUENT

11.1.1 Flow Control

The desired influent conveyance to the CTP is directly from the Kellogg Tunnel through an underground 20-inch HDPE pipeline. This ensures 24-hour operations at the treatment plant. AMD flow can be diverted to the CTP or to the Lined Pond through valves located at the bottom of the mine yard road. AMD flow will only be diverted to the Lined Pond for periodic maintenance or emergency plant shutdowns. In the event that AMD flow is diverted to the Lined Pond for storage, plant operators will pump the stored water back to the CTP for treatment as soon as scheduling permits. The Lined Pond pumps can be used for CTP influent flow after AMD has been directed to the Lined Pond.

11.1.2 Flow Meter

Currently no influent flow meters have been installed. The Kellogg Tunnel effluent flow meter reading is used as a CTP influent flow reading. The Kellogg Tunnel effluent flow is tracked by a continuously running ISCO flowmeter.

11.1.3 Sampling

With AMD water being directly conveyed to the CTP, daily influent sampling is not needed. Twice-weekly grab samples from the Kellogg Tunnel flume area are utilized as influent samples. Inlet samples are taken daily during Lined Pond pumping events. These samples are tested for pH at the CTP immediately upon returning to the CTP control room. In the Head House, a sample line leads to a pH meter which is not currently operable.

11.1.4 Emergency Shutdown

The main AMD control valves are located in the fenced area at the bottom of the mine yard road, located directly south of the CTP. In the event of a power outage at the CTP, the Main Line valve will open and the Direct Feed Line valve will close. This will transfer AMD flow to the Lined Pond for temporary storage, preventing discharge of untreated water from the CTP. However, if both the CTP and upper McKinley Avenue areas experience a power outage, CTP operators will need to transport the USACE-supplied generator to the valve control area. The generator can be used to operate the main line and direct feed valves through the installed hookups located in the valve control box. This will divert all AMD flow from the Kellogg Tunnel to the Lined Pond for the duration of the power outage, allowing for complete emergency shutdown of the CTP. The generator procedure can be found in the Bunker Hill Mine Water Conveyance System Operations and Maintenance Plan (Appendix D of the overall Operations and Maintenance Plan).

11.2 HEAD HOUSE

During pumping events from the Lined Pond, influent flow to the CTP is pumped through the Head House valve located in the Head House building. This valve can be used to restrict the flow from the Lined Pond. However, this is not typically required. A sample line in the Head House can be used as a daily sample point if water is continuously pumped from the Lined Pond.

11.2.1 Sample Sump Pump

An automatic sump pump is installed in a sump box to handle sample waste. This pump is controlled by a ball float switch and discharges to the Polishing Pond. The discharge line is self-draining to avoid freezing in cold temperatures.

11.2.2 Cold Weather Precautions

A heater is provided in the Head House. It should be serviced and its performance verified each autumn prior to the onset of freezing weather. The Head House roof is insulated to prevent freezing.

11.3 PROCESS PUMP HOUSE

11.3.1 Process Water Pump

The east pump located in this building supplies water for mixing lime. The west pump located in this building is an emergency back-up pump that can be utilized at any time. This pump also can be manually operated to supply mixing water for flocculent solution. The Polishing Pond next to the pump house supplies water to the pumps.

11.3.2 Sump Pump

An automatic sump pump is located in the pit at the southeast corner of the building. This pump is designed to discharge into the Polishing Pond; however, the lines are broken.

11.3.3 Cold Weather Precautions

A heater is installed in the pump house. It should be serviced and its operation verified prior to the onset of freezing weather. The water lines leading out of the pump house should be shut off and drained after each use during freezing weather.

11.4 LIME STORAGE, SLURRY ROOM AND SLURRY STORAGE

11.4.1 Lime Receiving and Storage

Pebble lime (quicklime) is stored in two 100-ton silos and used to make lime slurry. Independent trucking companies transport lime to the plant from the manufacturer. Lime is unloaded into the silos by a pneumatic truck. The operator connects a 4-inch hose from the truck to the 4-inch fill pipe running to the top of the silo. The truck operator then turns on the blower in the truck and lime is conveyed into the silo by the air flow. Conveying air is discharged through the bag house dust collector located on the top of the silo. The total capacity of the each silo is approximately 100 tons of pebble lime when filled within 4 feet of the top.

A silo depth chart for each storage silo is located on the north side of silo A. The depth reading is in feet. The depth reading is converted to tons according to a chart in the control room, or calculated at 5.4 tons per foot. This information is required for ordering additional lime. It is recommended that when the quantity of lime remaining is less than 50 tons, another order of lime should be placed.

11.4.2 Lime Slaking and Slurry Preparation

Lime slaking operations are performed automatically as the slurry tank level decreases below 2.5 feet. The lime slaking system is equipped with an automated pebble lime feeder, slaker, slurry mixing water, grit screen, grit disposal screw and slurry holding tank. The lime slurry mixing is fully automated with slurry dilution water provided from the Polishing Pond.

11.4.3 Slurry Percent Solids

Lime slurry is weighed each day by the operators to determine the percent solids. Daily testing is performed to ensure that the lime slurry solids remain at or near the desired 10 percent.

11.4.4 Slurry Holding Tank

The Lime Slurry Holding Tank is located in the bottom of Silo A. The Slurry Tank access hatch is located in slaker room A. The Lime Slurry Holding Tank is agitated with a Baldor mixer to prevent segregation of solids and blocking of the pump intakes. Loss of this mixer will quickly result in system failure unless alternate means of agitation, such as portable mixers or air lances, are provided. Portable mixers or air compressors are not available. Periodically, the Slurry Holding Tank must be emptied to clean the injection pump inlet screen and supply line.

11.4.5 Cold Weather Precautions

Overhead electric heaters located in each slaker room should be tested each autumn and activated at the onset of winter. These heaters will heat the cone areas of the lime storage silos to prevent lime clumping and also heat the slaker piping to prevent line freezing.

11.5 LIME INJECTION SYSTEM

11.5.1 Lime Slurry Feed Pump(s)

The injection pumps, located in the lime silo control room, transfer lime slurry to the Rapid Mix Tank under automatic control. The desired injection pump operates full-time providing continuous recirculation of lime slurry. Each injection pump has a complete slurry loop pipeline returning to the slurry holding tank. Operators activate the redundant slurry loop system on a quarterly basis to ensure all components of these systems remain in good working condition. The pumps are fitted with gland-flushing water. This flush water must be on any time the pump is running to give reasonable seal and shaft life. Both pumps have equal pumping capacity.

11.5.2 Lime Feed Control

Lime feed to the Rapid Mix Tank varies in response to the automated lime injection system. A computer controlled program continuously adjusts the lime injection valve closed time, in seconds, to maintain the desired pH at the Aeration Basin discharge. The lime injection valve open time is always 15 seconds. The computer program receives a pH signal from the Aeration Basin pH meter (PHE-2) currently located in the CTP pump room. Combined with an operator-programmed setpoint, the computer adjusts the lime injection valve closed period to inject the needed lime slurry to maintain the desired pH setpoint.

11.5.3 Lime Silo Building Sump Pump

An automatic sump pump is located in a floor sump. This pump collects spills, leakage and washdown water from both slaker rooms and the pump control room, and pumps it up to the Rapid Mix Tank. The discharge line is heat-traced and insulated to prevent freezing. The sump must be flushed periodically to prevent buildup of solids blocking the pump.

11.5.4 Cold Weather Precautions

The pump room is heated. The pump lines to the Rapid Mix Tank and Slurry Holding Tank are heat-traced and insulated to avoid freezing during cold weather. The heat trace system should be inspected and operation verified each autumn prior to the onset of freezing weather.

11.6 RAPID MIX TANK, AERATION BASIN AND FLOCCULATION BASIN

11.6.1 Rapid Mix Tank

The Rapid Mix Tank mixes lime slurry with an estimated 750 gpm of recycled Clarifier underflow sludge from the #2 sludge pump to neutralize the CTP influent and begin precipitating metals. An agitator provides thorough mixing of these two streams. The mixture then gravity-flows into piping that may be directed through valves into either Direct Feed influent water or pump-supplied Lined Pond water. This influent water mixes with the sludge prior to entering the Aeration Basin feed launder. The Rapid Mix Tank agitator drive motor controls are currently located in the lime silo control room. The drive motor is also controlled by the HMI computer through the PLC in the lime silo control room.

11.6.2 Aeration Basin

The two streams entering the Aeration Basin are mixed thoroughly by the Aerator. This device provides air to oxidize metallic ions to promote formation of settlable solids, and to eliminate BOD and COD in the effluent. The suspended mixture flows by gravity to the Thickener/Clarifier. The pH probe is located in the discharge of this basin to provide the signal for the pH control system. The Aeration Basin is lined with 60-mil HDPE and contains a 4-foot-diameter sump in the northeast corner of the floor. The basin has no means of removing sediment buildup at this time. The drain line leading to the #2 pump in the control room has not been used in the past six years and is plugged at this time.

11.6.3 Flocculation Basin

The mixture leaving the Aeration Basin flows through a concrete tank called the Flocculation Basin. Anionic polyelectrolyte (flocculent) is added prior to entering the Clarifier feed pipe, to promote flocculation and rapid settling of the solids in the Clarifier which follows.

The Flocculation Basin is used as a "pass-through" basin only. The mixing unit located in this basin is not currently being used.

The Flocculation Basin contains a drain in the bottom, which is connected to the #1 sludge pump. This drain line, along with a high-pressure water lance, may be used to drain this basin. This was evaluated several times in 2003 before planned shutdown of the Clarifier

11.6.4 Cold Weather Precautions

In extremely cold weather, ice must be periodically removed from the Aerator rotor and support structure. This is done by manual chipping as needed.

A drain valve on the Rapid Mix Tank allows draining this tank during cold weather shutdowns. If this drain line is frozen, then agitated flow must be maintained in the tank or the tank may freeze.

11.7 CLARIFIER

11.7.1 Clarifier Function

The purpose of the Clarifier is to provide residence time for the settling of solids. This process is aided by the use of flocculent, whose properties cause suspended solids to coagulate and settle at an accelerated rate. Other Clarifier aids are the rake mechanism, the center feedwell and the overflow weirs. All of these components were refurbished or replaced in September 2003 by Ferguson Contacting.

Wastewater from the Flocculation Basin flows to the feedwell and is directed outward into the Clarifier basin. The feedwell serves to disperse solids into the Clarifier under the water surface, thereby aiding solid-liquid separation.

The Clarifier was equipped with a new discharge drop box, drain valve and effluent line during the September 2003 upgrades. The new 8-inch drain valve provides a means of draining the Clarifier through the new 24-inch HDPE Clarifier effluent line. To prevent discharge exceedances, sludge must be removed from the Clarifier through the sludge discharge line prior to draining the Clarifier to the Polishing Pond or Bunker Creek.

11.7.2 Rake Drive

The rake moves solids from outlying areas of the Clarifier to the center, where a sludge layer is built up. This sludge is drawn down through any of three underflow pipelines under the center of the Clarifier tank to the underflow pump system.

The rake is driven by two electric motors through two worm gear stages. During periods of abnormal operation, sludge levels in the center area may cause drag on the rake rotation. This torque drag is monitored both at the rake torque gauge at the feedwell and on amp meters located in the CTP control room. High torque on the gauge (5 percent or more), or amperage readings on the #1 amp meter greater than 70 to 80 and #2 amp meter greater than 70 to 80, may indicate excessive sludge build-up in the Clarifier.

11.7.3 Sludge Density Control

High-torque situations can be avoided by closely controlling the density of the Clarifier underflow sludge. The density is determined with a flask and a balance. Desired sludge density corresponds to a specific gravity range of 1.03 to 1.08. When entering a planned shutdown period, the specific gravity may be reduced to 1.01 to 1.02. The specific gravity is directly related to the percent solids of the sludge. A table showing the correlation between these two parameters is in Attachment A.

Density checks are performed at the beginning and end of each day shift. Results are recorded in the CTP field log book and daily log of the Discharge Monitoring Report (DMR). The operator stops and starts the #3 sludge pump to maintain the desired underflow density by discharging solids to the CIA sludge pond. An underflow density sample is taken at the sample port on the discharge line of the #2 underflow pump. If solids buildup is rising rapidly and the #3 pump is not able to control density, the #1 underflow pump is started. The #1 pump has a greater capacity; therefore, its operation is necessary for only a short time. During winter months, the sludge line must be drained to prevent freezing. This 5-inch drain valve (RS-014) is located in flocculent mixing room on the west wall. Discharge from this drain line is directed into the Aeration Basin.

11.7.4 Clarifier Feed Density Control

Density of the Clarifier influent (Flocculation Basin overflow) can also be controlled by periodic sampling and valve adjustments. Samples are collected from the west end of the Flocculation Basin. The operator may be required to adjust valves to achieve the desired density.

Adjustment is made on the discharge valve of the #2 underflow pump. Closing the valve produces a lower density underflow, while opening the valve produces a higher density overflow. The desired density corresponds to a specific gravity range of 1.005 to 1.010. This can usually be attained with an underflow recycle rate of 10 to 15 percent of the influent flow.

11.7.5 Flocculent Dosage

Flocculent is mixed and stored in tanks in the control room. A probe-controlled pump transfers flocculent solution from the mixing tank to the floc injection tank. A steady rate of flocculent solution is constantly pumped to the Clarifier inlet. A variable-speed pump is used, and the operator must adjust the drive speed ratio to achieve the desired floc dosage for a particular influent water flow. The desired floc dosage varies with changing CTP influent flows. Flocculent must be fed uniformly as there is no means of "catching up" or "getting ahead" with floc dosage.

Polymer flocculent is made up in an 8-foot-diameter mixing tank. This tank has an approximate volume of 3,000 gallons. The Flocculent Mixing Procedure is located in Section 19.0. A chart showing the flocculent dosage at various floc pump settings and CTP flow rates is in Attachment B.

11.7.6 Clarifier Overflow

The Clarifier overflow, coming from the weir launder, is transferred to the Polishing Pond. The overflow is directed into the drop box by the sloping launder. Overflow water collects in the launder, then gravity flows through the drop box into the 24-inch HDPE discharge pipe to the Polishing Pond. This new drop box and effluent line were installed in September 2003 by Ferguson Contracting.

11.7.7 Clarifier Operational Precautions

Extended shutdown of the Clarifier rakes may result in mud caking in the cone discharge. Backflushing through the underflow lines will clear this. Excessive oil added to the gear boxes will result in overflow and an oil sheen in the Clarifier, with a possible discharge violation.

11.8 SLUDGE TRANSFER LINE

The 1600-foot-long, 10-inch-diameter sludge transfer line allows for sludge transfer from the CTP control room to the CIA sludge pond. This newly constructed HDPE sludge line was placed in service in July 2004. The sludge transfer line includes one 10-inch supply valve and one 5-inch drain valve, both located in the flocculent mixing room. The sludge line also has a 3-inch drain valve located in a manhole northwest of the control building. The sludge line drain manhole and valve are for emergency draining of the sludge line. A 3-inch drain hose stored in the storage building can be used if needed to drain the sludge line.

The first step in draining the sludge line is to open the 5-inch drain valve leading to the Aeration Basin. This must be done prior to connecting to the 3-inch drain valve in the drain manhole. The remainder of the sludge can only be drained into a water truck or water storage tank. This manhole as well as all others is considered a confined space. Follow the proper safety procedures when entering these manholes.

11.9 PUMP AND CONTROL ROOM

11.9.1 Underflow Manifold

The center cone of the Clarifier is drained by three underflow lines, each 8 inches in diameter, which enter the pump room through the floor near the northeast corner. They converge into a 12-inch manifold that feeds the underflow pumps. These lines can be isolated and backflushed with city water or process water (Polishing Pond effluent).

11.9.2 #1 Underflow Pump

The #1 underflow pump is a 6 x 8-inch rubber-lined pump of approximately 1,000-gpm capacity. Its discharge may be directed through valves to recycle into the discharge side of the Flocculation Basin, to the Rapid Mix Tank, to the Aeration Basin, or to the CIA via the underground sludge line.

11.9.3 #2 Underflow Pump

The #2 underflow pump is a duplicate of the #1 pump, running at a slower speed and having approximately 800-gpm capacity. This pump is normally used as the recycle pump to the Rapid Mix Tank; however, it may be valved into the other recycle locations. This pump can also be utilized as a sludge wasting pump.

11.9.4 #3 Underflow Pump

The #3 underflow pump is a 4 x 5-inch rubber-lined pump of approximately 250-gpm capacity that is piped and utilized to pump sludge from the underflow manifold to the sludge line running to the CIA.

11.9.5 Sump Pump

A small float-controlled sump pump is located at the west end of the pump room to gather gland leakage and cleanup water, and pump them to the Aeration Basin.

11.9.6 Auxiliary Water Supply

A 3-inch HDPE auxiliary water supply line is connected to the #2 Polishing Pond pump. The supply valve is located at the connection on the west end of the underflow manifold. This process water can be used for the underflow line and manifold backflushing. The process water can also be used to provide water to the floc mix tank. A 2-inch water supply valve located at the top of the flocculent mixing tank controls the flow of process water to the mixing tank. Currently the process water supply pump must be operated manually, as there is no remote switch connected to this pump.

11.9.7 Main Control Panel

A. Amperage gauges near the top of the panel are properly labeled. Black indicator needles reflect operating amp load. Red indicator needles show maximum operating amperage.

B. Start-stop buttons are properly labeled. The underflow sludge pumps do not have local start-stop buttons.

The following pumps and motors do not have control panel start-stop buttons:

- Head House pump;
- #1, #2 Polishing Pond pumps;
- #1, #2 lime injection pump;
- Lime injection building sump pump; and
- Flocculent pumps.

C. FR-1 and PHR-1 chart indicators (currently inoperable) reflect the influent volume flow and pH. Flow changes are made in the Head House.

D. System alarm lights and a buzzer are located above the test and acknowledge buttons. High- and low-limit operating conditions are monitored here. The buzzer may be silenced by pushing the red acknowledge button. These alarms are currently inoperable.

E. FR-2 and PHR-5 chart indicators (currently inoperable) reflect the effluent volume flow and pH at the flume discharge. PHT-5A is available as a standby indicator. Indicators PHR-5 and PHR-5A are interchangeable by using the interchanging switch under PHT-5A on the main control panel. This also is currently inoperable.

The water level and discharge in the 006 Outfall Parshall flume are measured continuously by a Vantage 2200 flow meter installed in the fall of 2002.

F. FR-3 and DR-1 chart indicators (currently inoperable) reflect flow and density of the Clarifier underflow.

G. PHR-2 (Aeration Basin). This pH probe transmits pH limit changes to the PHE-2 meter and to the digital sending unit, which in turn sends this signal to the lime silo PLC. The paper recorder unit is not currently used due to discontinued manufacturing of the paper rolls. An operator-determined pH setpoint on the lime silo HMI controls the pH in the Aeration Basin discharge. The controller features automatic and manual control on the laptop computer currently located in the lime silo control room.

The desired Aeration Basin discharge pH controls the automated lime injection system by controlling the amount of time, in seconds, that the lime injection valve remains in the closed position. The automated system always opens the lime injection valve for a period of 15 seconds. The amount of time the lime injection valve remains closed is based on current Aeration Basin pH and the desired pH setpoint.

H. PHR-4 (Clarifier overflow pH probe) sends a pH signal to the meter in the control room. The HMI setpoint controls this pH. The operator regulates the pH desired in the Clarifier overflow by adjusting the setpoint on the lime silo laptop computer (HMI).

I. PHR-3 (006 Outfall discharge probe) records the pH of the water leaving the Polishing Pond through the flume and sends the pH signal to the PHE-3 meter.

J. PHT-1 pH meter (currently inoperable) reflects the plant influent pH. All PHT meters feature "Calibrate-Operate-Standby" control switches. If a meter is malfunctioning, the switch should be turned to standby. PHT-1 output is adjusted to give the same reading on the PHR-1 recorder chart.

K. PHE-4 meter displays the Aeration Basin discharge pH. This output is connected to the digital display meter which transmits the pH signal to the lime silo PLC.

L. PHE-4 pH meter displays the pH of the Clarifier overflow. The output of this meter is adjusted to give the same reading on the PHR-4 recorder chart (currently inoperable).

M. PHE-3 pH meter shows the pH of the 006 Outfall discharge. The output of this meter is adjusted to give the same reading on the PHR-3 recorder chart (currently inoperable).

N. PHT-5 and PHT-5A pH meters (currently inoperable) show the pH of the 006 flume discharge. The output of these meters is selectively recorded on PHR-5 (currently inoperable) and becomes the official record of discharge pH, which is reported to the EPA in the DMR.

11.9.8 Autodial System

The control room is equipped with an autodial telephone summoning system that will call the operators under certain alarm conditions. Currently, the autodial system is activated by a power outage at the plant, and by the following four conditions in the control room: high temperature, low temperature, low city water pressure and high noise. The major pumps and motors at the plant are connected to the audible alarm system. If a major pump or motor fails, the audible alarm will sound, thus activating the Auto Dialer high noise alarm.

11.10 POLISHING POND

The Polishing Pond receives effluent water from the Clarifier drop box and 24-inch HDPE discharge pipeline. This basin serves as a surge area for effluent water on its way to Bunker Creek. This surge area acts as a final sedimentation tank, while also serving as an emergency buffer zone for upset plant conditions. Stored treated water is also used as Lime Slurry dilution and flocculent mixing water. A pump house, located on the north side of the basin, automatically supplies water to the lime silo for slurry dilution water through the #1 pump. This pump house also supplies water to the pump room for manifold back flushing and flocculent mixing. The #2 pump must currently be operated manually for back flushing and flocculent mixing.

At the west end of the Polishing Pond, the water flows through a flume. In this flume, the discharge flow is recorded and sampled. Water leaving the basin through the flume enters

Bunker Creek. Water depth in the flume box is measured in tenths of feet. The discharge flow is continuously monitored by the Vantage 2200 flowmeter installed in the fall of 2002. The Outfall flow and pH are noted in the daily field log and on the DMR daily log.

12.0 CTP START-UP

If the Aeration Basin and Floc Basin are empty, start this procedure at Step A. If the Aeration Basin and Floc Basin are full, start at Step F.

A. Pump Water from Clarifier to Aeration Basin:

1. Close 5-inch sludge line drain valve LSL-001 located in the flocculent mixing room.
2. Open valve LSL-002 on Rapid Mix Tank discharge.
3. Close valve RS-012 on north side of Rapid Mix Tank.
4. Open valve RS-013 on east side of Rapid Mix Tank.
5. Open valves RS-015, RS-016, RS-017 (Clarifier underflow manifold supply).
6. Open valves RS-001, RS-002, RS-003 (underflow pump supply).
7. Close valves RS-007, RS-011 (#1 pump discharge).
8. Open valve RS-009 (#2 pump discharge to Rapid Mix Tank).
9. Open City water supply valve CW-001.
10. Close flush valves entering Aeration Basin.

B. Start Pump #2:

1. Close Clarifier underflow pump #2 (06D01 breaker on motor control panel located in the control CTP control room).
2. Open City water supply valves (CW-004, CW-005, CW-006) to supply packing water to all three underflow pumps.
3. Start pump #2 by pushing start on control panel.

C. Note: Rapid Mix Tank should fill in approximately 10 minutes.

1. Close Rapid Mix drive unit breaker located in the lime silo.
2. Start the Rapid Mix drive unit by pushing start on the control panel.

D. When Aeration Basin is full:

1. Close F.L.35F01 Aerator breaker on motor control panel.
2. Start Aerator by pushing start on control panel.

E. When Floc Basin is full:

1. Place #2 pH probe in the Aeration Basin effluent.
2. Close both Clarifier drive breakers at motor control center in control room.

3. Start Clarifier rakes by pushing start on control panel.

F. Start Floc Addition:

1. Turn on floc transfer pump by remote switch in floc room (south wall).
2. Turn on one of the floc injection pumps (#1 or #2).

G. Start Lime Addition:

Note 1: Please see the Lime System O&M Manual if a complete system startup is needed.

Note 2: The Lime Slurry mixer will always be running if slurry is stored in the Slurry Tank. If no slurry is present, refer to the Lime Slurry Mixing and Maintenance Procedures prior to starting lime addition.

Note 3: The lime injection pump should always be in operation to continuously recycle lime slurry stored in the Slurry Tank. To restart the lime injection pump:

1. Turn on lime injection pump packing water city water supply.
2. Open valves LS-001 to provide slurry to #1 or LS-002 to provide slurry to #2 pump.
3. Turn the automatic lime injection valve indicator switch to the auto position.
4. Turn on the desired Lime Injection pump by placing the desired system in "LEAD" on the HMI laptop.

H. Set desired pH setpoint and Direct Feed Water (See Lime System O&M Manual):

1. Set the desired pH set point on the HMI laptop computer.
2. Place the desired lime injection system (#1or #2) to auto.
3. Open the Direct Feed valve and close the Lined Pond branch valve.
4. Turn on pH meters PHE-2 on control panel (Aeration Basin pH probe).
5. When discharge overflow from Clarifier is achieved, place pH probe 4 in the Clarifier overflow.

Note: Clarifier effluent water will now be flowing to Polishing Pond.

I. Set up 006 Outfall flow meter and sample collection container:

1. When flow starts at sample shed, set up bottle for composite sample.
2. Place #3 pH probe in the sample collection flow.
3. Turn on the flowmeter.

J. Turn on the CTP alarm and timer located on the control panel in the control room.

13.0 CTP SHUTDOWN

A. Turn off CTP alarm and the alarm timer. The alarm switch and timer are both located on the control panel.

C. Ensure that the Lined Pond has ample storage capacity for the desired shutdown period. Open the Lined Pond main line valve located on the control panel.

D. Close the Direct Feed valve located on the control panel. This will direct mine water flow to the Lined Pond for short-term storage.

E. At the lime silo, set the lime injection valve auto switch to manual. Depress the closed button to fully close the injection valve, which will ensure the lime slurry pump remains in the recycle mode as long as slurry is stored in the Slurry Tank.

Note: For short-term CTP shutdown (continued Clarifier recycle), proceed to step I.
For long-term CTP shutdown (recycle and Clarifier rake) proceed to step F.

F. Close valves LS-001 and LS-002 from Lime Slurry Tank and:

1. Open two water flush valves (CW-011 and CW-012).
2. Pull out black knob on back of controller and manually open valve to flush lines.
3. When valve closes, turn off flush water valves (CW-011 and CW-012).
4. Turn off pump #2.
5. Turn off packing water valve (CW-013).
6. Open valves LS-006 and LS-007, and let line drain into floor sump.
7. Operate the sump pump. If needed, controls are on the east wall of the pump house.

G. Go to control room and turn off #2 underflow pump and #3 if it is running. Turn off packing water to each pump.

H. Go to northwest corner and flush system. Open drain valves CW-027 and CW-026 to drain #2 and #1 sludge lines (close valves in control room when finished).

I. Turn off floc injection pump and backflush with City water.

J. Turn all pH meters to standby (turn off alarm switch).

K. Put #2 probe in bucket.

L. Put #3 probe in bucket.

M. When flow stops at the 006 Outfall, take samples and record flow in field log book.

N. Turn off the Clarifier rakes. Aerator motor and #2 underflow pump on the control panel in the pump room. Turn off the Rapid Mix drive on the HMI computer in the lime silo (long-term shutdown only)

O. Open valve LS-001 to drain the Rapid Mix Tank.

P. If the Clarifier is to be drained, all sludge must be removed from the Clarifier prior to opening the drain valve to prevent a discharge exceedance. The sludge can be removed by wasting sludge to the CIA sludge disposal pond until the specific gravity is approximately 1.00. The drain valve can then be opened to discharge water to the Polishing Pond and Bunker Creek.

14.0 SAMPLING PROCEDURES

Control of the underflow and overflow specific gravities is necessary to maintain efficient Clarifier operation.

The underflow recycled sludge sample is taken as follows:

- Open valve on sample port on discharge side of operating underflow pump.
- Allow line to flush for ten seconds so representative sample can be taken.
- Fill the sample flask to the top and insert glass stopper, forcing out excess sludge (CAUTION: excessive force will burst the flask).
- Rinse off flask exterior and dry with paper towel.
- Weigh flask with sample on scale.
- Use the calculation formula at the control room desk to calculate the sludge specific gravity.

The specific gravity is calculated from these weights as follows:

- Subtract weight of flask from weight of sample plus flask, to get weight of sample (A).
- Divide answer from (A) by the weight of the same volume of water.

The result is the specific gravity of the sample. If the same flask is always used, flask and water weights remain the same for all samples. New weights would be needed for a new flask.

The Clarifier overflow pH sample is taken as follows:

- Fill sample from overflow at the Clarifier weir.
- Place on the stirrer table with a small magnet in the bottom.
- Place the Orion pH probe in the sample and turn on the pH meter.
- The meter will automatically be set to read pH; when ready, the meter will beep.

15.0 pH METER CALIBRATION

All CTP pH meters, probes and related instrumentation are periodically cleaned and maintained by the operator. An Orion model 42-A reference pH meter, located in the control room, allows the operator to check the accuracy of the other in-plant pH meters. The operator collects water samples from specific locations in the plant corresponding to pH stations being monitored in the control room. The pH of each sample is checked as follows:

A. Remove the Orion pH probe from beaker of water and clean; rinse the probe with part of sample.
B. Place probe into sample. Start magnetic stirrer. Press the power button to begin the sample testing. The pH meter will automatically read the pH of the sample.
C. When pH stabilizes, record reading. This may require one to two minutes.
D. Turn off the Orion pH meter by pressing the power button again.
E. Remove probes from sample, rinse probes with water and wipe clean.

Never leave the probes out of water or remove probes from any solution while machine is on.

pH meter accuracy may be affected by cleaning, buildup on the probes or aging of the circuitry. Probes periodically require recalibrations. If a process pH meter appears inconsistent with the daily grab sample pH, then it should be recalibrated as described below.

15.1 ORION PH PROBE CALIBRATION

A. Rinse and fill clean beaker with pH 4 buffer solution.
B. Clean probe with distilled water.
C. The Orion pH meter will automatically record the temperature of pH 4 solution and set internal temperature settings.
D. Insert probe into pH 4 solution.
E. Turn machine on by pressing the power button. As the meter begins to automatically read the pH, press the green second command button, then press the calibration button. The meter will begin calibration mode p-1.
F. At the completion of this calibration mode, the meter will flash a pH value to be accepted. Press the "accept" button and advance to the next pH mode, p-2.
G. Rinse the probe and place it in pH 7 buffer solution.
H. At the completion of this calibration mode, the meter will flash a pH value to be accepted. Press the "accept" button and advance to the next pH mode, p-3.
I. Rinse the probe and place it in pH 10 buffer solution. Turn control to standby.
J. At the completion of this calibration mode, the meter will flash a pH value to be accepted. Press the "accept" button. At this point, the Orion pH meter will self-calculate a calibration slope percent. This calibration slope reading identifies the percent difference between the meter's stored values and the pH buffer values. If the slope value is less than 90 percent, repeat this calibration procedure.
K. Store the pH probe in the storage buffer container. The probe must be stored in water.

15.2 UNILOC PH PROBE CALIBRATION (PROCESS PH METERS)

Probes pH2 (Aeration Basin) and pH3 (006 Outfall) are critical to successful operation of the treatment plant. pH4 (Clarifier) is informational but not critical. pH5 or pH5A may be recorded on the chart recorder, which is currently inactive.

When the plant is in stable operation with no changes made to the setpoint for the previous 12 hours, the pH reading should form the following pattern:

- pH2 (Aeration Basin) cycling between 0.1 standard units (s.u.) below and above setpoint.
- pH 4 (Clarifier) showing 0 to -0.5 s.u. from pH2 setpoint.
- pH4 (006 discharge) showing 0.5 to -1.0 s.u. from pH2 setpoint.

Any instrument outside these limits should be checked for calibration as follows:

- To calibrate any probe, take three 500-ml samples of the process stream as near as possible to the probe.

- Test the pH of the two remaining samples as in 15.1 above. The Orion 42-A will automatically adjust the pH meter temperature setting to match that of the samples taken.

- Use one sample to rinse and flush the instrument probe.

- If the results agree within ± 0.05, reset the process pH meter in question to the results found. If they do not agree, take additional samples until at least three are in agreement.

- Refer to the manual for the Uniloc Transmitter 1002 for proper adjustment controls for calibration. Use standardizing control and adjust bias control with a thin screwdriver to achieve calibration. Match controller or recorder reading to the transmitter and adjust the zero offset knob or achieve agreement.

- Whenever the bias control is adjusted, the high and low alarm settings may need to be adjusted. To do this, refer to the Service Manual for the Uniloc 1002 meter.

16.0 PLANT SYSTEMS TROUBLESHOOTING GUIDE

Problem	Possible Solution
16.1 AERATION BASIN (INFLUENT)	
No influent flow or low flow from the Kellogg Tunnel	A. AMD flow may be diverted to the Lined Pond due to a power outage. Check the Lined Pond valve indicator lights. B. Kellogg Tunnel discharge flow may have been reduced by mine personnel. C. Check the overflow manhole in the mine yard for possible Main Line plugging (KT flow will be diverted into the old mine line to the Lined Storage Pond).
No flow or low flow from the Lined Pond when using pumps	A. Lined Pond pump breaker may have tripped. B. Water elevation may be below pump controls. This will automatically shut off the pumps. C. Inspect pump inlet screen, clean if needed. D. Back flow valve may be stuck closed.
16.2 LIME SYSTEM	
No pebble lime feed to slaker	A. Check that all controls are in the auto position. B. Check lime quantity in the silo. C. Check sliding gate valve. D. Lime may be caked in cone: use the bin vibrator manually to aid in unplugging. E. Lime feed tube may be plugged
Slurry tank low/slaker not running.	A. Ensure all controls are in the auto position (grit screw, bin activator, screen shaker, slaker drive). B. Check the local remote switch in control room. Switch must be in remote position. C. Drive belt may be broken.
Excessive lime dust during Truck delivery	A. Dust bags may be plugged. B. Vent cover may be off on top of Lime Silo. C. Check for leaks in the loading tube. D. Lime Silo may be full.

Problem	Possible Solution
16.3 LIME DOSAGE SYSTEM	
Injection pump running but not injecting lime	A. Lime Slurry tank may be empty. B. Flush suction and discharge lines with city water. C. Drive belt may be broken. D. Pipe to the tank may be plugged or frozen. E. Switch pumps. F. If both pumps are out, shut down entire plant.
Loss of pH signal on PHR-2 (CTP pH control probe)	A. See actions for 16.3.A above. B. If pH meter is malfunctioning, install standby meter. C. If Aeration Basin pH probe has failed, replace or rebuild.
16.4 CLARIFIER	
High torque on rake	A. Check drive belts. B. Check overflow density. Pump sludge if necessary.
Plugged underflow line	A. Use city water as high-pressure backflush for underflow lines. Valves must be positioned correctly.
Drop in overflow launder level	A. Check plant flow rate as in 16.1.A.
Loss of flocculent flow to Clarifier	A. Check operation of floc injection pumps; switch pumps if necessary. B. Check supply in injection tank. C. Flush floc lines with high-pressure city water.
Gland leak on one of the underflow pumps.	A. Tighten pump gland, replace packing material. B. Check packing seal water supply.
#3 underflow pump inadequate to remove and transfer solids	A. Start #1 pump to CIA and turn off #3 pump.

Problem	Possible Solution
Floc being used too quickly	A. Check dosage requirements and adjust pump to correct flow. B. Mix heavier-than-normal floc batch (more than 4 pounds per foot of tank).
Excessive cloudiness in Clarifier	A. Check floc addition and dosage. B. Check underflow density. C. Check HMI pH setpoint for desired pH setting. D. Check Lime Injection System (see Section 11.5). E. Divert AMD to the Lined Pond if needed.

16.5 RAPID MIX TANK

No recycle flow	A. See Section 16.4.A for plugged underflow line. B. #2 recycle pump not running; check pump.
No lime injection visible	A. See Section 16.3.A for injection pump not running.
Mixing unit not running	A. Check breaker located in Lime Silo.
Tank level increasing or liquid overflowing	A. Check valves LSL-002, LSL-003; one of the two valves must be open at all times. B. Discharge pipe may be plugged; shut down recycle flow and lime injection system, unplug the line with a water lance. C. Open tank drain valve until piping is unplugged.

16.6 CTP ALARM SYSTEM

Auto Dialer condition 1 alert	A. Power loss or power surge to the control room. Reset all pumps and motors, divert AMD flow back to the CTP through the Direct Feed Line valve. AMD will automatically be directed to the Lined Storage pond during a power outage.
Auto Dialer condition 2 alert	A. City water supply pressure loss or reduced below 50 psi. B. Divert AMD to the Lined Pond; shut down all pumps that are cooled by city water until corrected.

Problem	Possible Solution
Auto Dialer high/low temp alert	A. Control room heater settings may be too high or too low. Reset heaters if needed. B. Control room door or window may be open.
Auto Dialer high noise alert	A. Alarm siren will sound in the event of any pump or motor failure, setting off the high-noise alert. Check all pumps and motors; reset or restart. B. Aeration Basin high and low pH alarm will sound the siren, setting off the high-noise alert. Check the pH probe for failure: rebuild or replace if needed. C. Check lime injection; low or high pH may be caused by no lime or excessive amount of lime. D. Divert AMD to the Lined Pond until problem is corrected.

17.0 MORNING PLANT INSPECTION FORM

PERSONNEL: **DATE:**

Floc Room

* Check the Floc Mixing tank level, mix required amount. LBS of floc used in AM
* Record Floc usage in pounds (4 lbs per foot) LBS of floc used in PM
* Check that the floc injection pump is **ON** (normal pump setting is 0.5 - 1.0 during K.T. low flow, 1.0 - 1.5 during K.T. normal flow).

Control Room

* Check pH - **006 Outfall pH**. (pH will vary with Aeration Basin pH setpoint)
* Check the Aeration Basin pH
* Pump #2 Thickener Underflow Pump running (recycle pump #2)
* Lined pond drawdown pump ON or OFF.
* **Direct Feed pig vault valve open or closed.**
* **Main Line, lined pond line valve open or closed.**
* Control panel (Rapid Mix Tank mixer, Clarifier drives, Aerator are all on)

Tank Area

* Walk out to the Clarifier drives to check operating condition.
* Check to see that flow is entering into the Clarifier center well from the Floc Basin effluent.
* Check the flow of floc into the Floc Basin effluent trough.
* Check flow of water into the Aeration Basin from Direct Feed Line or Lined Storage Pond.
* Check flow of water from Clarifier outfall drop box into the Polishing Pond.
* Look into the Rapid Mix Tank - check the recirculation flow from Clarifier underflow pump.
* Check for ice on the Aerator shaft and mixing disc

Lime System Control Room & Slaker

* Check the HMI Laptop Portable-A for system or pump failures.
* Check the HMI Laptop for slurry holding tank levels.
* Check the HMI Laptop for system Aeration pH.
* Check the HMI Laptop for lime injection valve closed times.
* Check to see that the rapid mix drive and lime slurry pump are in operation.
* Check the main control panel for alarms or system failures.
* Empty lime slaker grit bin
* Check for lime leakage or water leakage in both slaker rooms.
* Check lime slurry concentration %, and slurry holding tank depth.

Polishing Pond Pump House & Head House

* Check the floor sump and pump as needed. Also check pump operation.
* Check the floor sump and pump as needed. Also check transfer pump operation.

Head House Building

* Check the floor sump and transfer pump operation. Also check for excess water in building.

Off-Site Inspections

* Check the inlet flow from Kellogg Tunnel: High-Low-Average
* Check the Lined Pond depth.

18.0 AFTERNOON PLANT INSPECTION FORM

PERSONNEL: **DATE:**

Control Room

* Lined Pond pumps on or off; if ON, indicate the pump number.
* **Direct Feed line valve: open or closed.**
* **Main Line, Lined Pond line valve: open or closed.**
* Aeration Basin (Aerator) ON - Check AMP meter between 20 - 60 (always ON when plant is running).
* Clarifier Thickener Drives #1 & #2 ON (Normal) - Check AMP meter on the south wall, #31 normally at 70 amps and #32 normally at 70 amps.
* Underflow sludge pump or recycle pump ON (Normal) - Normally Pump #2, 12 to 16 rpm.
* Check AMP meter (always ON when plant is running).
* Rapid Mix Tank mixer (Blue Tank) ON - No AMP meter to check, indicator light only (always ON when plant is running).
* Aeration Basin- pH meter between 6-10 (Located in the control room on the control panel).
* 006 - pH meter between 6-10 (Located in the control room on the control panel).
* **Alarm indicator switch in the ON position.**

Floc Room

* Check the floc tank to see that it is full before leaving and the pump is ON (Normal pump setting is 0.5 - 1.0 at K.T. low flow and 1.0 - 1.5 at K.T. normal flow)

Lime System Control Room & Slaker Rooms

* Check the HMI Laptop Portable-A for system or pump failures.
* Check the HMI Laptop for slurry holding tank levels.
* Check the HMI Laptop for system aeration pH.
* Check the HMI Laptop for lime injection valve closed times.
* Check to see that the rapid mix drive and lime slurry pump are in operation.
* Check the main control panel for alarms or system failures.

Other Inspections

* Drain sludge line and close valve after draining (November to March only).

Make sure all lime silo doors are locked.

Control room door locked.

All tank area gates closed and locked.

Check that Alarm Indicator switch is in the ON position.

19.0 FLOCCULENT MIXING PROCEDURE

1. Measure the depth (inches) of water to add to the mixing tank.

2. Multiply the number of inches by 0.33 to obtain the number of pounds of dry polymer to be used (e.g., 60 inches * 0.33 = 19.8 or 20 lbs. of floc). This assumes that 4 lbs of floc are used per foot of tank.

3. Weigh out this amount, after subtracting one pound for 3 inches from top of tank.

4. Turn on city water supply (valve number CW-003) to fill tank to above the upper agitator blades.

5. Press clear on the Radio Shack auto alarm keypad (to prevent auto dialer from calling other operators' homes) each time valve # CW-003 is opened.

6. When the water has filled above the agitator blades, turn on both #1 and #2 agitators with ON/OFF switches located on the north wall.

7. Turn off City water supply (valve CW-003) when water is over the agitator blades.

8. Secure the floc funnel to the plate and turn on funnel city water (valve CW-003A) to mix floc solution.

9. Pour floc into the funnel with the water running. This creates a vacuum, mixing the water and floc consistently (minimizes "fish eyes").

10. Dump up to 8 pounds of floc into funnel each time.

11. When all floc is mixed, turn off funnel water (valve CW-003A).

12. Turn on City water supply to fill tank to about 3 inches from the top of the tank (press the clear button on the Radio Shack auto alarm keypad each time valve CW-003 is opened).

13. Turn off City water (valve CW-003) and turn off agitator #1. Agitator #2 is on a timer to agitate for one hour before automatically turning off.

14. Radio Shack alarm will reset automatically each time it is cleared.

15. Check floc tank and pump twice per day (morning and afternoon).

16. Floc pump should be set at 0.8 to inject 1.5 ppm of polymer if the Kellogg Tunnel flow is approximately 2.2 mgd.

20.0 LIME MIXING AND MAINTENANCE PROCEDURES

Please see the Lime System O&M Procedures (Appendix B of the O&M Plan) for a complete description of the lime system.

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ATTACHMENT A

RELATIONSHIP BETWEEN SPECIFIC GRAVITY AND PERCENT SOLIDS

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RELATIONSHIP BETWEEN SLUDGE SPECIFIC GRAVITY AND PERCENT SOLIDS

Bunker Hill CTP

Assumed specific gravity of dry solids = 3.9

Sludge Specific Gravity	Estimated Percent Solids	Sludge Specific Gravity	Estimated Percent Solids	Sludge Specific Gravity	Estimated Percent Solids
1.010	1.3	1.250	26.9	1.490	44.2
1.015	2.0	1.255	27.3	1.495	44.5
1.020	2.6	1.260	27.8	1.500	44.8
1.025	3.3	1.265	28.2	1.505	45.1
1.030	3.9	1.270	28.6	1.510	45.4
1.035	4.5	1.275	29.0	1.515	45.7
1.040	5.2	1.280	29.4	1.520	46.0
1.045	5.8	1.285	29.8	1.525	46.3
1.050	6.4	1.290	30.2	1.530	46.6
1.055	7.0	1.295	30.6	1.535	46.9
1.060	7.6	1.300	31.0	1.540	47.2
1.065	8.2	1.305	31.4	1.545	47.4
1.070	8.8	1.310	31.8	1.550	47.7
1.075	9.4	1.315	32.2	1.555	48.0
1.080	10.0	1.320	32.6	1.560	48.3
1.085	10.5	1.325	33.0	1.565	48.6
1.090	11.1	1.330	33.4	1.570	48.8
1.095	11.7	1.335	33.7	1.575	49.1
1.100	12.2	1.340	34.1	1.580	49.4
1.105	12.6	1.345	34.5	1.585	49.6
1.110	13.3	1.350	34.9	1.590	49.9
1.115	13.9	1.355	35.2	1.595	50.2
1.120	14.4	1.360	35.6	1.600	50.4
1.125	14.9	1.365	36.0	1.605	50.7
1.130	15.5	1.370	36.3	1.610	51.0
1.135	16.0	1.375	36.7	1.615	51.2
1.140	16.5	1.380	37.0	1.620	51.5
1.145	17.0	1.385	37.4	1.625	51.7
1.150	17.5	1.390	37.7	1.630	52.0
1.155	18.0	1.395	38.1	1.635	52.2
1.160	18.5	1.400	38.4	1.640	52.5
1.165	19.0	1.405	38.8	1.645	52.7
1.170	19.5	1.410	39.1	1.650	53.0
1.175	20.0	1.415	39.4	1.655	53.2
1.180	20.5	1.420	39.8	1.660	53.5
1.185	21.0	1.425	40.1	1.665	53.7
1.190	21.5	1.430	40.4	1.670	54.0
1.195	21.9	1.435	40.8	1.675	54.2
1.200	22.4	1.440	41.1	1.680	54.4
1.205	22.9	1.445	41.4	1.685	54.7
1.210	23.3	1.450	41.7	1.690	54.9
1.215	23.8	1.455	42.1	1.695	55.1
1.220	24.3	1.460	42.4	1.700	55.4
1.225	24.7	1.465	42.7	1.705	55.6
1.230	25.1	1.470	43.0	1.710	55.8
1.235	25.6	1.475	43.3	1.715	56.1
1.240	26.0	1.480	43.6	1.720	56.3
1.245	26.5	1.485	43.9	1.725	56.5

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ATTACHMENT B

FLOCCULENT DOSAGE CHART

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FLOCCULENT DOSAGE CHART

Pump Setting	Floc Dosage (ppm) at Various Flow Rates (mgd)											Flow in 24 hr (gal)	Tank Life (hr)
	1	1.5	2	2.2	2.4	2.6	2.8	3	3.5	4	4.5		
0.5	2.9	1.9	1.4	1.3	1.2	1.1	1.0	1.0	0.8	0.7	0.6	2,326	31.0
0.8	3.6	2.4	1.8	1.7	1.5	1.4	1.3	1.2	1.0	0.9	0.8	3,004	24.0
1	4.2	2.8	2.1	1.9	1.7	1.6	1.5	1.4	1.2	1.0	0.9	3,456	20.9
1.5	5.5	3.6	2.7	2.5	2.3	2.1	1.9	1.8	1.6	1.4	1.2	4,586	15.7
2	6.8	4.5	3.4	3.1	2.8	2.6	2.4	2.3	1.9	1.7	1.5	5,717	12.6
2.5	8.1	5.4	4.0	3.7	3.4	3.1	2.9	2.7	2.3	2.0	1.8	6,847	10.5
3	9.4	6.2	4.7	4.3	3.9	3.6	3.3	3.1	2.7	2.3	2.1	7,978	9.0

This chart is for the #1 pump
Chart is based on floc flow readings made on 4/18/03 floc flow (gpm) = 1.39 * pump setting + 0.83
Floc solution concentration = 0.0013 lb floc/lb soln
(4 lb floc/ft water)
Available tank depth = 8 ft
Tank volume = 3,008 gal

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APPENDIX B

LIME SYSTEM OPERATIONS AND MAINTENANCE PROCEDURES

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LIME SYSTEM OPERATIONS AND MAINTENANCE PROCEDURES

CENTRAL TREATMENT PLANT
BUNKER HILL SUPERFUND SITE

Appendix B of Operations and Maintenance Plan

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September 2004

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TABLE OF CONTENTS

LIST OF APPENDICES iii
1.0 INTRODUCTION 1
1.1 OBJECTIVES 1
1.2 LIME SYSTEM DESCRIPTION 2
1.2.1 Pebble Lime Storage Silos 2
1.2.2 Lime Slakers 2
1.2.3 Lime Slurry Holding Tank 2
1.2.4 Lime Slurry Feed Loops 2
2.0 OPERATIONS PROCEDURES 3
2.1 LOADING PEBBLE LIME INTO STORAGE SILOS 3
2.2 OPERATING SLAKERS 3
2.3 SLAKER SETTINGS 4
2.4 OPERATING LIME SLURRY HOLDING TANK 5
2.5 OPERATING LIME SLURRY FEED LOOP SYSTEM 5
2.6 OPERATING THE HMI (DELL LAPTOP COMPUTER) 6
2.7 SETTING DESIRED SETPOINTS AND LIME INJECTION PARAMETERS 7
2.8 OPERATING THE POLISHING POND PUMP FOR LIME SLURRY DILUTION WATER 11
2.9 MANUAL OPERATION OF THE CROSS-SILO SCREW FEEDER 11
2.10 MEETING HIGH LIME DEMAND 12
2.11 TRANSPORTING, DUMPING AND CLEANING THE GRIT BIN 13
2.12 POWER OUTAGE TROUBLE-SHOOTING CHECKLIST 13
3.0 MAINTENANCE PROCEDURES 14
3.1 REMOVING AND CLEANING GRIT SCREENS 14
3.2 CLEANING GRIT SHAKERS AND GRIT SCREWS 15
3.3 REMOVING SLAKERS FROM SERVICE FOR INSPECTION AND CLEANING 15

3.4 REMOVING LIME SLURRY FEED LOOPS FROM SERVICE 16
3.5 YEARLY INSPECTION OF LIME SLURRY FEED LOOP PIPING.....16
3.6 YEARLY LIME SLURRY FEED LOOP ORIFICE PLATE INSPECTION AND REPLACEMENT.....17
3.7 YEARLY LIME SLURRY HOLDING TANK DRAINING AND INSPECTION 17
3.8 QUARTERLY CLEANING AND INSPECTION OF SILO BAG HOUSES.....18
3.9 CLEANING THE SLAKER ROOMS AND BUILDING SUMP 19

LIST OF ATTACHMENTS

ATTACHMENT A SILO CAPACITY CHART FOR PEBBLE LIME

ATTACHMENT B ACTIVITY HAZARD ANALYSIS

LIME SYSTEM OPERATIONS AND MAINTENANCE PROCEDURES

CENTRAL TREATMENT PLANT

BUNKER HILL SUPERFUND SITE

1.0 INTRODUCTION

1.1 OBJECTIVES

The purpose of the following procedures is to provide guidelines ensuring the safety of personnel and equipment during daily operations and maintenance of the Bunker Hill Central Treatment Plant (CTP) Lime System. Minor maintenance work such as equipment lubrication, instrument standardization and basic trouble-shooting will be performed by the plant operators. Preventative maintenance items will be performed in accordance with the Preventative Maintenance Plan. Specialized maintenance such as inspection of electrical equipment, instrument calibration, and setting and alignment of equipment, will be performed by subcontractors.

The Lime System O&M Procedures are an appendix to the CTP O&M Plan, which is designed to fulfill Section C0178, Specification 1.2 of the operating contract (Contract # DACW67-02-D-1014). Ferguson Contracting, Inc. will be responsible for operation and maintenance of the CTP Lime System in an economical, safe and environmentally sound manner. As with the rest of the plant, Ferguson Contracting's Lime System O&M Procedures will adhere to the following basic rules:

1. Keep a clean, neat and orderly plant.
2. Establish systematic procedures for start-up, daily operation, and shutdown and failure mode conditions.
3. Establish inspection, maintenance, repair, and lubrication schedules and procedures.
4. Maintain a log of scheduled and unscheduled repairs, maintenance tasks performed and observations.
5. Follow safety procedures and monitor adherence to the project safety program.
6. Closely manage parts and tools inventories.
7. Operate equipment only in a manner that does not jeopardize its warranty or exceed design limits.
8. Perform compliance monitoring as required by the expired NPDES Permit Number IL-000007-8.

1.2 LIME SYSTEM DESCRIPTION

The CTP lime system provides a means to make and feed slurry of pebble lime or quicklime (calcium oxide) to the Rapid Mix Tank for the purpose of CTP process pH control. The system consists of the following major components.

1.2.1 Pebble Lime Storage Silos

There are two pebble lime storage silos, each with a volumetric capacity of 3,600 cubic feet. The density of the pebble lime currently purchased is 63-69 pounds per cubic foot according to the supplier, while operator tests show a density closer to 80 pounds per cubic foot. The weight capacity of each silo is approximately 126 tons at a density of 70 pounds per cubic foot, or 144 tons at a density of 80 pounds per cubic foot.

1.2.2 Lime Slakers

Each silo contains a ZMI/Portec M-25 lime slaker. Each slaker has a capacity of 5,500 pounds per hour of pebble lime. The slakers combine the pebble lime with water to make a slurry of calcium hydroxide. A cross-silo screw feeder connected to both slakers can be used to cross-feed from silo A to silo B and vice-versa. City water is typically used for slurry mixing. City water or process water (Polishing Pond effluent) can be used for slurry dilution water.

1.2.3 Lime Slurry Holding Tank

The 8,000-gallon lime slurry holding tank is located in the bottom of silo A. The tank is continuously mixed by a down-thrust impeller mounted on the floor of slaker room A. Dilution water is automatically added directly to the slurry holding tank during the slaking process. Lime slurry percent solids can be modified by adjusting the amount of dilution water added to the slurry holding tank.

1.2.4 Lime Slurry Feed Loops

Two lime slurry loops allow delivery of lime slurry to the treatment process. Either one or two loops can be operated simultaneously. Slurry injection pumps are located in the silo control room. The pumps are supplied from the bottom of the slurry holding tank, and their discharge forces lime slurry through the rack-mounted slurry pipe to the Rapid Mix Tank, where a portion is automatically pulse-fed through an actuated pinch valve based on Aeration Basin pH. The remaining lime slurry is continuously recycled back to the top of the lime slurry holding tank.

2.0 OPERATIONS PROCEDURES

2.1 LOADING PEBBLE LIME INTO STORAGE SILOS

1. Note the quantity of lime in each silo by reviewing the individual silo level indicator displays located under the walkway of silo B.

2. Refer to the pebble lime capacity chart (Appendix A) for lime availability and remaining capacity.

3. Place needed pebble lime orders with the lime supply company (Graymont Lime Company, 1-800-367-4174).

4. Indicate to Graymont the silo to be filled. This information will be noted on the bill of lading for the trucking company.

5. Place an identification tag on the desired silo fill pipe for the trucking company.

6. If the designated silo is completely empty, the manual slide gate located in the slaker room at the bottom of the silo cone must be in the closed position prior to filling the silo.

7. Remove the electronically connected cap from the desired silo fill pipe. Connect the tanker discharge hose to the silo fill pipe. This connection will automatically activate the dust collection system on top of each silo.

8. Continuously monitor the fill station control panels at each fill station. Overflow indicators and alarms are located on each panel. If an overflow alarm is activated, discontinue filling immediately and transfer the remainder of the load into the other silo.

9. Disconnect all hoses and reconnect the fill pipe cap. Immediately clean up any spilled lime and place in the grit bin for disposal.

2.2 OPERATING SLAKERS

1. The control power switch, located on the main panel in the silo control room, must be in the "On" position.

2. System A (slaker A) and system B (slaker B) local-remote switches, also located on the main panel in the silo control room, must be in the "Remote" position to operate slakers from the slaker control rooms. Placing this switch in the "Local" position will allow for slaker operation from the main control room only.

3. The control power switch located in each silo on the remote operations panel must be in the "On" position to operate the desired slaker. Under normal operating conditions, only one slaker will need to be operated to maintain an adequate lime slurry supply. The control power switch for the backup slaker should remain in the "Off" position.

4. Also located on the slaker room operations panel are hand-off-auto (HOA) controls for the following items: dilution water controls, slaker controls, bin activator controls, grit screen controls, feeder controls, grit screw controls, water feed controls and feeder speed controls.

5. The manual slide gate located at the bottom of each silo cone must be in the full "Open" position to allow pebble lime to enter the feeder.

6. The chain-operated feeder supply valve must be in the "Open" position to allow pebble lime to enter the slaker feed screw.

7. All control switches must be in the same position to operate the slaker. To automatically operate the slaker, place all control switches in the "Auto" position. The slaker will automatically begin mixing slurry when the slurry holding tank level falls to 40 inches remaining in the slurry holding tank. The slaker will automatically shut down after the slurry holding tank fills to 6.6 feet.

   To operate the slaker manually, place all controls in the "Manual" position. Slakers operated in manual mode do not have automatic shutdown. Manual shutdown is needed in this mode. A red emergency system stop button is also located on the operations panel. The green auto start button on each control panel can be used to start the slaking system at any time, provided the slurry holding tank level is below the slaker shutdown level of 6.6 feet.

2.3 SLAKER SETTINGS

1. The lime feeder control rate, typically set at 40 percent, can be operator-adjusted from 0 to 100 percent as needed to maintain the desired slurry percent solids. Lime slurry is weighed in a 500-ml beaker to determine its specific gravity. The specific gravity is then identified on the lime suspension strength chart, located in Section 4 -- page 1 of the ZMI lime feed system manual, to determine the slurry concentration percentage. Manual changes can be made to the feeder control rate, makeup water quantity and slurry dilution water amount to achieve the desired lime slurry concentration.

2. The slurry makeup water, typically set at 40 gpm, can be adjusted from 0 to 60 gpm as needed to maintain the desired slurry concentration. This setting, along with 40 percent lime feed rate and 15 gpm of dilution water, produces average slurry of 9 to 10 percent solids.

3. Slaker high temperature emergency cooling water settings are typically set at 200°F. The slaker cooling water settings, located on the top of each slaker, can be manually adjusted from 0 to 280°F.

4. Slaker bearing cooling water supply valves are located on the front of the slaker. These valves have pressure gauges adjacent to them, with a desired operating pressure of 6 to 10 psi. Grit screen wash water supply valves are also located on the front of the slaker. Adjustments can be made to the grit screen wash water pressure to aid in screen washing performance.

2.4 OPERATING LIME SLURRY HOLDING TANK

1. Prior to placing the slurry holding tank in operation, ensure the tank exterior access door is secured in place.

2. The slurry tank mixer unit is located on the top of the slurry tank in silo A. The drive motor on/off control switch is located at the base of the gear box. The mixer unit is designed to operate continuously 24 hours a day. The only expected shutdown period for this unit is during yearly draining and inspection of the slurry holding tank.

3. The slurry tank ultrasonic level indicator is mounted in the southwest corner of the floor in silo A. This level indicator's signal aids in many functions through programming in the human-machine interface (HMI) laptop. The first function is to display slurry tank level on the HMI screen for operator verification. The second is to provide a continuous depth reading to control the slaker run and shutdown function. The slaker will currently start at a slurry tank depth of 40 inches. The slaker will shut down at a tank level of 6.6 feet. The third function is complete lime system shutdown. This function is activated if the slurry tank level falls to a depth of 25 inches.

2.5 OPERATING LIME SLURRY FEED LOOP SYSTEM

1. Ensure the lime slurry holding tank level is above the slaker operation level of 40 inches prior to starting lime loop #1, #2 or both systems.

2. Open the desired lime loop feed valve (#1, #2 or both) to the full open position. These valves are located outside, directly between the two silos.

3. Open the corresponding lime loop discharge valves to the full open position. These valves are located in the southeast corner inside of silo A. This is the discharge point of the continuous lime loop system. Unused lime slurry is continuously returned to the slurry holding tank for remixing.

4. Open the corresponding lime slurry injection pump discharge valve to the full open position. This valve is located on the discharge line of each slurry injection pump.

5. Select the auto/manual position on the corresponding lime slurry injection valve control box. This control is located on the south wall in the silo B control room. The lime feed loops can be operated in either "Auto" or "Manual" mode. Operating the complete lime system in "Manual" mode will continuously inject lime into the CTP treatment system or will require manual operation of the injection valve. It is recommended that the "Auto" mode be used unless manual operation is urgently needed.

6. Select the auto/manual position on the corresponding lime feed loop injection pump control. The control switches for both lime injection pumps are located on the main control panel in silo B.

7. On the laptop computer (HMI), one lime loop system must be designated as the "LEAD" loop. The lead loop selection must correspond with the desired lime system valves and pump placed in operation in Step 6. The HMI will automatically designate the alternate system as the "LAG" loop. The lag loop will become the secondary loop should lime demand exceed the lead loop capacity--see Section 2.10, "Meeting High Lime Demand".

8. On the HMI, select the lead system auto/manual position button to start the slurry pump and lime feed loop operation. The slurry pump will be operating at this time.

2.6 OPERATING THE HMI (DELL LAPTOP COMPUTER)

1. Before starting the laptop, ensure the Ethernet connection has been made between the laptop and the PLC RJ45 port located inside the main control panel. If this connection is made after laptop start-up, the laptop will need to be restarted to recognize the PLC connection.

2. Start the laptop by pressing the power button. Start-up will take approximately one minute.

3. A Windows XP sign-on screen will appear. The only sign-on name assigned to this laptop at this time is Administrator. Use this default name as the user name.

4. The default password of Engineer is the only password assigned to this laptop at this time. Use this password to access the laptop controls.

5. From the desktop, double click the RSView32 Runtime icon.

6. Maximize the RSView32 window with the small square icon in the upper right corner. This page must be maximized to continue.

7. With the mouse cursor, go to "File," left-click on "Bunker Hill," then left-click on "Run Project."

8. The project will open in the view-only mode. To log in to the controls of the project, left-click on the login button located in the upper right corner of the screen. Enter your assigned user name and password. CTP operators will use their name as a user name and a common password of "Operator." Once signed in, operators can monitor and control the lime injection systems, lime slurry tank level, building sump control and level, Rapid Mix Tank mixer control, Polishing Pond pump control and city/process water valve locations. The operator can also monitor and adjust lime system setpoints and lime injection parameters.

9. The laptop should be left with the Bunker Hill program running at all times.

2.7 SETTING DESIRED SETPOINTS AND LIME INJECTION PARAMETERS

1. Individual lime system program screens are identified in the lower left corner of the Bunker Hill program. The first from the left is the Overview screen. This screen is currently a description screen with the name "Bunker Hill Mine Water Treatment Plant" posted on it.

2. The lime feed page button is the second button from the left. This page is used to identify the lead and lag lime feed systems, start and stop the lime slurry pumps, set slurry concentration settings, set automatic feed control inputs, adjust the lime feed loop tuning, verify automatic lime feed setpoints and verify lime feed status. The "loop tuning" button located in the second column of this page allows the operator to adjust the automatic lime feed tuning parameters. To change any of the input settings for the automatic lime feed controls, place the cursor over the desired input box and left-click the mouse. The box will illuminate, allowing the operator to enter any desired setting. The operator must then strike the "Enter" key to update any setting changes to the program.

    a. A desired lime feed loop must be identified as discussed in "Operating Lime Slurry Feed Loop System," Section 2.5.

    b. The slurry pumps can be placed in "Auto" or "Manual" from this page, allowing operators the ability to start and stop pumps as needed.

    c. The lime slurry concentration can be identified as either 10 percent or 25 percent from this page. The 10 percent slurry automatically sets the lime injection valve open time period to 15 seconds. The 25 percent slurry automatically sets the lime injection valve open time to 20 seconds.

d. Setting and adjusting the automatic lime feed control inputs are performed by placing the cursor on the desired input box and left-clicking the mouse. Following are the automatic lime feed control default input settings:

- Step Period. Identified in minutes, this is the frequency at which the automated lime system reviews the pH of treatment plant flow and compares this reading to the lime injection valve close period. The typical value is 10.

- Setpoint. This is the pH reading of the treatment plant flow. The treatment plant pH reading is continuously fed to the HMI laptop. The typical value of the setpoint is 8.0.

e. High alarm setpoint. This pH setting is used to shut down the automatic lime feed system. If the treatment plant flow reaches this pH setting, the lime feed system will be automatically placed in the "Stop" mode. The lime slurry loop will remain in operation and the lime injection valve will be placed in a fully closed position. The system will have to be restarted by an operator by placing the cursor over the Lime Feed restart button and left-clicking once. The typical high alarm setpoint is 9.0.

f. Low pH alarm setpoint. This setpoint, as well as the high pH alarm, will display a red alarm mode in the alarm section of this page. A documented alarm will also be noted in the summary section of this page. The typical value is 7.0.

g. Aeration Basin pH display. The Aeration Basin pH is displayed in two sections of this page. The first is in the upper left corner and the second is directly below the alarm setpoint.

h. Slurry tank level indicator. The lime slurry level is continuously displayed on this page directly above the loop tuning button.

i. Loop tuning button. The loop tuning button allows access to the automatic lime feed tuning parameter. The current loop tuning setpoints are displayed in the automatic lime feed setpoint feedback screen. To change any of the current settings, the loop tuning page must be accessed. The loop tuning default settings and descriptions are as follows:

- No change setpoint. This indicates that if the pH is within this set value of the lime feed system setpoint, no automatic changes will be made to the lime injection valve closed period. The typical value is 0.05.

- Large-change setpoint. This indicates that if the pH differs from the lime system operating pH setpoint by more than this setting, the lime injection valve closed period will be adjusted by the large-change multiplier. The typical value is 0.20.

- Large-change multiplier. This is the multiplier to be used to make large changes to the lime injection valve closed period. All changes within the large change setpoint will be multiplied by this value (typically 10), allowing for faster changes to the lime injection closed period.

- Total valve period. This is the default setting of the lime injection time settings. A default of 85 seconds closed time and 15 seconds open time was programmed into the loop tuning, for a total of 100 seconds.

- 10 percent slurry open period. This is the time in seconds that the lime injection valve will remain open if this setting is selected in the lime slurry concentration screen. The typical value is 15.

- 25 percent slurry. This is the time in seconds that the lime injection valve will remain open if this setting is selected in the lime slurry concentration screen. The typical value is 20.

- Feed valve closed period. This is the actual lime injection valve closed time in seconds. This setting automatically changes depending on lime demand. The default setting is 80 seconds. Currently with the CTP at normal flows, this closed period remains between 150 and 250 seconds. With the CTP at low flow, this closed period remains between 250 and 400 seconds. This closed period may need to be manually reset each time it reaches 400 seconds. The lime feed system will continue to inject lime every 400 seconds; therefore, if lime injection is not needed (i.e., the pH is too high), the lime system must be placed in the "Off" position on the lime feed screen lime feed controls. This is done by placing the cursor over the lime feed stop button and left-clicking once.

3. The lime sump button is the third page button from the left in the lower left corner of the screen. This page allows the operator to adjust building sump setpoints, review building sump control status, control lime slurry water supply valve positions, control the Polishing Pond pumps, control the Rapid Mix Tank mixer and monitor slaker run time indicators.

   a. The building sump pump default settings are as follows:

High alarm setpoint. This indicates the depth in feet the sump level will reach prior to sounding a control building audible alarm. A red alarm will also be noted in the alarm screen of the HMI. The typical value is 3.8.

Pump-on setpoint. This indicates the depth in feet the sump level will reach prior to automatically operating the sump pump. The sump discharges directly into the Rapid Mix Tank. The typical value is 3.0.

Pump-off setpoint. This indicates the depth in feet the sump level will decrease to during automatic pumping. At this depth (typically 0.8 feet), the sump pump will automatically shut off.

The building sump level is continuously displayed at the top of the lime system sump page. The lime system sump controls located at the bottom of the lime system sump page must be in the "Auto" position unless manual operation is required.

b. The lime slurry water supply column of this page has indicators for city water supply and recycle water supply valves, as well as Polishing Pond recycle pump controls. The lime system can be operated with either city water or process water (Polishing Pond effluent). However, the lime system manufacturer suggests not operating the entire lime system on CTP process water due to its high sulfate content and resulting detrimental effect on slaking.

c. The rapid mixer motor controls are located in the third column of this page, allowing CTP operators to control the mixer motor from the HMI.

d. Total hour runtime indicators for each pump and motor, as well as slaker run time indicators, are also located on this page.

4. The rapid mix page button, located fourth from the left, currently provides the same information as the lime sump page button. This page was created for future expansion of the program.

5. The alarm page button, located fifth from the left, provides operators a visual screen indicating and tracking current system alarms. To acknowledge an alarm, place the cursor over the desired alarm and left-click. Once the alarm situation has been corrected, the alarm screen can only be removed by using the "Close" button in the lower left of the alarm screen.

6. The trends page button, located sixth from the left, allows operators to view pH and lime injection valve close period trend screens. From each individual screen, operators can view historical trend data versus time periods for both pH and lime injection valve closed periods.

2.8 OPERATING THE POLISHING POND PUMP FOR LIME SLURRY DILUTION WATER

1. Close the PP-05 valve located outside the Polishing Pond pump house on the old lime system pipeline.

2. Open the PP-01 pump supply valve located on the influent side of the Polishing Pond pump.

3. Open the PP-03 valve located on the discharge side of the Polishing Pond pump.

4. Open the process water slurry dilution valve DW-02 located on the west wall of the lime system control room.

5. Close the city water slurry dilution valve DW-01, also located on the west wall of the lime system control room.

6. The Polishing Pond pump starts and stops with the slaker runtime to provide dilution water. The program now turns this pump on or off based on the lime feed screw run status for either slaker A or slaker B, so the pump runs only when there is a demand for dilution water.

2.9 MANUAL OPERATION OF THE CROSS-SILO SCREW FEEDER

1. Open the desired crossover auger lime feed valve located at the bottom of the cone on the desired feed silo. The crossover screw will not operate unless this valve is in the fully open position.

2. Open the desired lime feed auger discharge valve located above the desired slaker. The crossover screw will not operate unless this valve is in the fully open position.

3. Place slaker A and slaker B controls on "Remote." These controls are located on the main control panel in the lime system control room.

4. Set the auger feed rate speed to a low setting of 40 percent to begin slaking. This setting is also located on the main control panel.

5. Place the lime makeup water feed control on the main control panel in the "Manual" position.

6. Place the dilution water feed control on the main control panel in the "Manual" position.

7. Manually operate the lime feed rate by setting the desired lime silo feeder to the "Hand" setting. Lime will begin filling the crossover screw at this time.

8. Place the desired grit screen control in the "Hand" position. This control is also located on the main control panel.

9. Place the corresponding grit screw control in the "Hand" position. This control is also located on the main control panel.

10. Operator monitoring of the slaker temperature and slurry holding tank level is mandatory, as no automatic shutdown controls are operable in manual mode. Slaker temperatures should remain between 150 and 180°F. To reduce slaker temperature, reduce the crossover auger feed rate and lime feeder rate. To increase or decrease the slurry makeup water, adjust the manual makeup water valve at the slaker. To increase or decrease dilution water flow, adjust the dilution water valve located on the west wall of the lime system control room.

2.10 MEETING HIGH LIME DEMAND

1. Under normal conditions, one slaker will always be in operation, as discussed in Section 2.2 of this document. If lime demand exceeds the 10 percent slurry concentration normally produced by the slaker, a higher concentration is needed. The lime makeup dilution water must be shut off in the building control room on the west wall to produce a 25 percent slurry. Change the lime system slurry concentration button on the HMI screen from 10 percent to 25 percent. This setting will automatically adjust the lime injection valve open period to allow a higher amount of lime to be injected into the system. To place the backup slaker in operation during extremely high lime demand periods, begin by following steps 1-6 in Section 2.2. Apply these six steps to the backup slaker. By placing the backup system in automatic mode, both slakers will be operated by the HMI.

2. It may become necessary to place the "Lag" lime feed system in operation to maintain the desired CTP pH setpoint. This condition could occur during the spring of the year with heavy rain and snowmelt, resulting in a low-pH, high-volume discharge from the Bunker Hill Mine. The HMI will indicate a visual alarm if the lead system injection valve close period drops below 15 seconds. Review Section 2.5 of this manual, "Operating Lime Slurry Feed Loop System," to place the lag lime feed loop system in operation.

3. At this time, the lag system can only be operated as a manual backup system. The settings on the HMI screen lag system should be placed in "Auto."

4. Place the designated lag loop lime injection valve controls in the manual mode. This will allow for manual valve open position between 0 and 100 percent.

5. Select the desired open position between 0 and 100 by manually pressing the "Open" button. This system will continuously feed lime into the CTP treatment system. The lead

lime loop system will continue to automatically adjust the lime injection close period as programmed.

6. Remove the lag system from operation once the lead system valve closed period increases to 300 seconds and maintains the desired pH. It may become necessary to manually restart the lag system anytime the lead system injection valve close period decreases below 15 seconds.

2.11 TRANSPORTING, DUMPING AND CLEANING THE GRIT BIN

1. Visually inspect the volume of lime slaking grit contained in the grit bin. It is recommended that the grit bin be dumped at ½ to ¾ full. Under normal CTP operating conditions, the grit bin hopper is being dumped three times per week.

2. Check the lime slurry holding tank level to ensure the slakers will not operate while the bin is being removed for dumping.

3. Roll the grit bin out of the grit bin housing for easy access with a forklift or bobcat.

4. Close and attach the grit bin lid to prevent splashing while transporting to the CIA.

5. Position the forklift/bobcat under the fork receiver channels located on the bottom of the grit bin.

6. Once the forks are in place, set the vehicle parking brake and turn off the vehicle. Leaving the forks and grit bin on the ground, exit the vehicle and attach the supplied safety chain from the grit bin to the vehicle.

7. Dump the hopper in a designated dump site only. Currently the CIA sludge pond is the only designated dump site for lime slaking waste. Set the hopper and forks on the ground. Set the parking brake and turn off the vehicle. Exit the vehicle and unlatch the dumping handle on the back of the hopper.

8. Dump the hopper by lifting the hopper slightly above the ground and tilting the forks downward. The hopper will safely dump at a tilt of 10 percent or less. Never exceed a 10 percent tilt to dump the hopper.

9. Replace the grit bin hopper in the bin container to continue to collect lime slaking waste. Continue to monitor the hopper volume daily, as the slaker run time may increase.

2.12 POWER OUTAGE TROUBLE-SHOOTING CHECKLIST

1. Upon responding to a power outage alarm, inspect the main control board in the lime system control room for alarm indicators.

2. Review the HMI screen for displayed alarms.

3. Inspect all pumps and motors for visible damage prior to restarting.

4. Reset all alarms and pump controls on the main control board and the HMI screen.

5. If any pumps or motors fail to start, inspect the pump and motor breakers in the breaker panels located on the north wall of the lime system control room.

6. If any of the HMI controls are not functioning, open the main control panel to inspect the PLC indicator lights.

7. If any of the PLC indicator lights are red rather than green (normal operation), it may be necessary to reset the PLC. The reset button located at the top of the light indicator panel is a three-position switch normally in the run position. To reset the PLC, move the position switch to the left, then back to the far right "Run" position. This will reset all PLC settings back to the default settings.

8. Reset the HMI by closing the Bunker Hill RSView program. This is done from the keyboard by simultaneously pressing the control, alt and P keys. A question screen will appear, asking if the programmed is to be stopped. Press the "Yes, stop program" key.

9. Restart the HMI laptop as described in Section 2.6 of this document.

10. Reset desired set points and lime injection parameters as described in Section 2.7 of this document.

11. Restart the lime feed loop if needed as described in Section 2.5 of this document.

3.0 MAINTENANCE PROCEDURES

3.1 REMOVING AND CLEANING GRIT SCREENS

1. Shut off power to the slaker and grit components by turning off the main slaker control power on the slaker room control power panel.

2. While wearing the proper personal protective equipment (PPE), remove the grit screen cover, the ring bolt and slurry feed pipe connection.

3. Remove the grit screen housing ring bolt and lift off the upper screen housing, exposing the grit screen.

4. Use the wash hose to perform an initial screen cleaning prior to removing the screen. This will remove any heavy buildup of slurry prior to handling the screen.

5. Remove the screen and place it in the provided screen bath located in each slaker room. Allow the screen to remain in the screen bath for approximately 24 hours for thorough cleaning. Remove the screen from the bath and perform a final rinse with the supplied cleaning hose.

6. Replace the screen with one of the clean screens from the screen inventory. Replacement screens are available for each grit shaker.

3.2 CLEANING GRIT SHAKERS AND GRIT SCREWS

1. Each slaker room has a supplied cleaning hose. Use the cleaning hose to rinse the grit shaker and grit screw of all excess slurry and grit.

2. Remove the upper clamp from the grit screw feeder tube and rinse the tube into the grit screw trough. Replace the feeder tube and reassemble the grit screen components.

3. Rinse the grit screw and screw housing in the direction of the grit bin to capture all water and grit waste in the grit bin container.

4. Rinse the silo floor and screen components. Each slaker room has a drain trough around the outside of each room. The slaker room drain troughs will drain into the lower building sump for removal by the building sump pump.

3.3 REMOVING SLAKERS FROM SERVICE FOR INSPECTION AND CLEANING

1. In the lime system building control room, place the slaker control switch in the "Local" position.

2. In the corresponding slaker room, place the main control switch in the "Off" position, which removes all power from the slaker to be cleaned.

3. Slowly open the slaker drain valve located at the drive motor end of the slaker. This will drain all slaker and water directly into the building sump.

4. Remove the two rubber covers on top of the slaker to allow cleaning access at each end.

5. Use the provided cleaning hose to clean and rinse the slaker through the cleaning ports.

6. Remove the slurry effluent line cleaning plug from the slaker discharge. Inspect, clean and rinse the discharge pipe with the cleaning hose.

7. Replace all cleaning covers and plugs, and close the drain valve after cleaning.

8. Place the slaker room main control switch to the "On" position, which provides power to all slaker components. The slaker is now ready for use if needed.

3.4 REMOVING LIME SLURRY FEED LOOPS FROM SERVICE

1. On the HMI screen, place the lead slurry feed loop in manual mode.

2. On the HMI screen, turn off the lime feed loop system by turning off the designated pump.

3. On the main control panel, place the designated lime slurry pump HOA switch in the "Off" position.

4. Close the lime slurry pump supply valve located outside between the two silos.

5. Open the city water supply flush valve located next to the slurry pump supply valve. Allow the water to flush the line for three to four minutes while performing the next step.

6. Place the lime injection valve control switch to "Auto" and manually cycle the slurry injection valve fully open and then fully closed. This will ensure complete line flushing.

7. Close the city water supply flush valve. The slurry lines will drain into the slurry tank through the open end of the return line. Allow the system to remain clean and empty if not needed.

8. To place the slurry feed loops in service, refer to Section 2.5 of this document.

3.5 YEARLY INSPECTION OF LIME SLURRY FEED LOOP PIPING

1. To perform required yearly inspections of the slurry loop piping, follow the directions in Section 3.4 to remove the desired slurry feed loop from service.

2. Remove the pipe couplers from a section of lime slurry piping in the silo control room. A small amount of flush water will remain in this lower section of the pipe.

3. Remove a section of the slurry piping and visually inspect for lime buildup or pipe scarring.

4. Designate a section of the same feed loop piping to be removed.

5. Remove the weather covering and pipe insulation from the designated section of pipe.

6. Position the heat wire where it will not be damaged.

7. Remove the pipe couplers and section of slurry pipe for inspection. Inspect the pipe for lime buildup and pipe scarring. Note the pipe condition on the yearly preventative maintenance report.

8. Reassemble all piping and weather coverings.

9. Place the desired lime feed slurry loop system in operation by following the procedure in Section 2.5 of this document.

3.6 YEARLY LIME SLURRY FEED LOOP ORIFICE PLATE INSPECTION AND REPLACEMENT

1. To perform the required yearly inspections of the slurry loop orifice plates, follow the directions in Section 3.4 to remove the desired slurry feed loop from service.

2. Close the desired slurry loop return valve located in silo A on the east wall.

3. Unbolt the lime feed pipe flange connection located on the discharge end of the slurry loop line. This discharge is located in silo A on the east wall.

4. Remove the orifice plate and inspect for excessive wear. Install the provided backup stainless steel orifice plate if excessive wear is visible.

5. Reassemble the lime slurry feed loop piping and opens the slurry loop return valve.

6. Repeat this procedure for the second lime feed loop orifice inspection.

3.7 YEARLY LIME SLURRY HOLDING TANK DRAINING AND INSPECTION

1. Remove the both slakers from service by following the procedures in Section 3.3 of this document.

2. Remove the both lime slurry feed loop systems from service by following the procedures in Section 3.4 of this document. The slurry feed system can use up the slurry stored in the slurry tank under normal operating conditions prior to removing the slurry feed loops from service. During average mine discharge flow, the slurry tank will be emptied in 12 to 16 hours.

3. Drain the remaining slurry into the building sump by opening the slurry tank drain valve located outside of silo A on the west side. Drain the slurry holding tank slowly, as the building sump pump only transfers 7 to 10 gpm to the Rapid Mix Tank. Continuous monitoring of the building sump is required while draining the slurry tank. Closely monitor the slurry mixer impellers while draining the slurry tank. Remove the slurry tank

mixer from service before the slurry level reaches the mixer blades. Lock out the mixer drive motor at this time.

4. As the slurry tank is emptied, mine water flow must be diverted to the Lined Pond while the slurry tank is out of service for inspection.

5. Open the top access hatch and remove the side tank access cover.

6. Following appropriate health and safety procedures (confined space evaluations, personal protective equipment and required safety equipment), enter the tank from the slaker room. A cleaning hose is available to wash excess lime from the walls and piping.

7. Set up a small sump pump to remove the remaining lime in the holding tank. Approximately five inches of slurry will remain below the drain line level. Discharge of the sump pump can be directed into the slurry tank drain, discharging into the building sump.

8. Inspect the tank walls, floors, inlet pipes, slurry loop return lines, mixer impeller and effluent piping for buildup, damage or excessive wear.

9. Remove any sediment buildup, grit or debris by using buckets or similar containers. Dump all sediment, grit and debris into the grit bin hopper for disposal.

10. Perform any needed repairs and remove all tools used.

11. Close all access ways and slurry tank drain valve.

12. Place the desired lime slaker in service and begin filling the lime slurry holding tank.

13. Place the slurry tank mixer unit in operation only after the slurry level has increased several inches above the mixer blades.

3.8 QUARTERLY CLEANING AND INSPECTION OF SILO BAG HOUSES

1. A personal safety harness must be worn to access the lime silo ladder.

2. Access the top of the lime silos by climbing the manway ladder located on the south side of the silos.

3. Open the bag house doors by freeing the door from the door cradle mounts.

4. Inspect the bag house for lime spillage. Inspect all dust collection bags for tears or misalignment. Remove any lime spillage by placing into a bucket with lid or placing into the lime silo through the bottom bag mounting hole.

5. Inspect the bag shaker drive motor and bag connections.

6. Perform all needed repairs or bag replacement. Extra bags are in inventory for replacement if needed.

7. Replace the bag house doors on the cradle mounts.

8. The silo lids can be removed at this time to verify lime depth in each silo. Compare the actual depth of lime with the lime silo level indicator located under the walkway of silo B for indicator accuracy.

3.9 CLEANING THE SLAKER ROOMS AND BUILDING SUMP

1. Cleaning the slaker rooms can be done by first removing any debris, then sweeping and washing the room down with the cleaning hose connected to the slaker. All wash water will be collected in the silo room sump and drain into the building sump.

2. Cleaning the building sump can be done by manually operating the building sump pump to remove all liquid.

3. Remove the sump pump from service by placing the sump pump HOA control to the "Off" position.

4. Remove the sump grating and remove any debris or sediment. All lime sediment must be placed in the grit hopper for proper disposal. Always ware proper PPE while handling any lime or lime slurry.

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ATTACHMENT A

SILO CAPACITY CHART FOR PEBBLE LIME

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Silo Capacity Chart for Pebble Lime

Lime Depth (ft)	Tons Available	Tons to Add
0	0	129.0
1	5.4	123.6
2	10.8	118.2
3	16.2	112.8
4	21.6	107.4
5	27 0	102.1
6	32.3	96.7
7	37 7	91.3
8	43 1	85.9
9	48 5	80 5
10	53.9	75.1
11	59.3	69.7
12	64 7	64.3
13	70 1	58.9
14	75.5	53.5
15	80.9	48.2
16	86.2	42.8
17	91.6	37.4
18	97.0	32.0
19	102.4	26.6
20	107.8	21 2
21	113.2	15.8
22	118.6	10.4
23	124.0	5 0
24	129 4	-0.4

Assumptions:
- Pebble lime in ZMI Portec silo
- Density = 70 lb/ft3
- Capacity in cone is not included
- Total capacity is 129 tons per silo

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ATTACHMENT B

ACTIVITY HAZARD ANALYSIS

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Ferguson Contracting

CENTRAL TREATMENT PLANT

ACTIVITY HAZARD ANALYSIS

ACTIVITY: Lime System Operation **ANALYZED BY/DATE: Paul Brox/3-04**

PRINCIPAL STEPS	POTENTIAL SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
1. Loading Pebble Lime into Storage Silos.	1. Hazards to Lime Supplier.	1. Supplier will develop and provide to Ferguson Contracting AHA for this Operation.
2. Operating Slakers a. Open/close manual slide gate at bottom of silo cone.	2. a. Fall Hazards; potential exposure to pebble lime (eye and hand).	2. a. Fall Protection Equipment; chemical goggles; eyewash; leather gloves.
3. Slaker Settings a. Measuring Specific Gravity.	3. a. Eye and hand contact with Lime Slurry.	3. a. Chemical goggles; eyewash; Butyl Rubber, Neoprene or Nitrile gloves; emergency eyewash.
4. Emptying Grit Bin a. Visually inspect volume of grit in bin. b. Roll grit bin out of housing	4. a. Eye and hand exposure to lime slaking grit. b. Eye and hand exposure to lime slaking grit; equipment operation hazards.	4. a. Safety glasses; Butyl Rubber, Neoprene or Nitrile gloves. b. Safety glasses; Butyl Rubber, Neoprene or Nitrile gloves; backup alarm; equipment operation training.

c. Close and attach grit bin lid.	c. Eye and hand exposure to lime slaking grit.	c. Safety glasses; Butyl Rubber, Neoprene or Nitrile gloves.
d. Position forklift/bobcat under fork receiver channels.	d. Equipment operation hazards.	d. Equipment operation training; back up alarm.
e. Attach safety chain from grit bin to forklift/bobcat.	e. Hand exposure to lime slaking grit.	e. Safety glasses; Butyl Rubber, Neoprene or Nitrile gloves if hand exposure to grit material.
f. Transport grit bin to dump location.	f. Equipment operation hazards.	f. Equipment operation training; backup alarm; keep elevation of bin as low as possible (vision and lower center of gravity)
g. Dump grit bin.	g. Equipment operation hazards; eye and hand exposure to lime slaking grit.	g. Equipment operation training; backup alarm; when operator leaves equipment, hydraulics released, parking brakes set, and equipment turned off; chemical airtight goggles; Butyl Rubber, Neoprene or Nitrile gloves if hand exposure to grit material.
h. Replace grit bin to housing.	h. Hazards mentioned in b. through g. above.	h. Controls mentioned in b. through g. above.
i. Spills	i. Exposure to eyes, whole body and feet.	i. Chemical airtight goggles; eyewash; rubber raingear; rubber boots.
5. Power Outage	5.	5.
a. If HMI controls not functioning, activate re-set switch.	a. Electrical hazards	a. Electrical Hazard Training

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS

• Body Harness and Lanyard (body belt if use positioning lanyard with free fall limited to 2-feet)
• Chemical airtight goggles
• Eyewash
• Eyewash bottle
• Leather Gloves
• Butyl Rubber, Neoprene or Nitrile Gloves
• MSDS Hydrated Lime
• MSDS Pebble Lime
• Standard PPE:
  o Hard Hat
  o Safety Glasses
  o Cloth Coveralls
  o Traffic Vest
  o Steel toed Boots
	• Fire Extinguishers monthly
	• First Aid Kit once per week
	• Eyewash once per week
	• Forklift/Bobcat prior to operation
	• Fall protection equipment prior to use
		• Hazwoper Training
		• Central Treatment Plant Task Order 0008 SHP/SSHP/APP
		• Lime System Operation AHA
		• Hazard Communication Program
		• PPE Training (29 CFR 1910.132(f))
		• Electrical Hazard Training (29 CFR 1910.332)
		• Equipment Operation Training

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APPENDIX C

PREVENTATIVE MAINTENANCE PLAN

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PREVENTATIVE MAINTENANCE PLAN

CENTRAL TREATMENT PLANT
BUNKER HILL SUPERFUND SITE

Appendix C to Operations and Maintenance Plan

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September 2004

TABLE OF CONTENTS

1.0 INTRODUCTION....1
2.0 PREVENTATIVE MAINTENANCE PROGRAM AND RECORDS....1
3.0 ROUTINE MAINTENANCE AND REPAIRS....2
3.1 MAINTENANCE....2
3.2 REPAIRS....2
3.3 SPARE PARTS....2
4.0 SPECIAL MAINTENANCE AND OPERATIONAL PROBLEMS....3
5.0 WINTERIZATION....3
5.1 HEAD HOUSE....3
5.2 PROCESS PUMP HOUSE (POLISHING POND PUMP)....3
5.3 LIME STORAGE, SLURRY ROOM AND SLURRY STORAGE....3
5.4 LIME SILO PUMP/CONTROL ROOM....4
5.5 RAPID MIX TANK AND AERATION BASIN....4
5.6 SLUDGE TRANSFER LINE....4
6.0 WEEKLY MAINTENANCE INSPECTION AND CALIBRATION FORM....5
7.0 MONTHLY PUMP MOTOR INSPECTION AND MAINTENANCE FORM....8
8.0 QUARTERLY PUMP AND MOTOR INSPECTION FORM....9
9.0 SIX-MONTH OIL CHANGE AND SERVICE POINT FORM....9
10.0 GENERAL PLANT MAINTENANCE AND INSPECTION FORM....10
11.0 MONTHLY FIRE EXTINGUISHER INSPECTION FORM....11
12.0 MINE WATER LINE OPEN CHANNEL INSPECTION FORM....12
13.0 MINE WATER LINE PIPELINE INSPECTION FORM....13

PREVENTATIVE MAINTENANCE PLAN

CENTRAL TREATMENT PLANT

BUNKER HILL SUPERFUND SITE

1.0 INTRODUCTION

The purpose of the Central Treatment Plant (CTP) is to receive and treat acid mine drainage (AMD) from the Bunker Hill Mine Complex and the lined storage pond (Lined Pond). Lined Pond wastewater consists of effluent waters from the mine, and from the former smelter and zinc plant areas. The CTP annualized average flow is 2.1 million gallons per day (mgd). AMD can be discharged from the mine complex to the Lined Pond through a buried 20-inch high-density polyethylene (HDPE) pipe. This Lined Pond branch is approximately 2,840 feet in length. AMD may also be discharged directly to the CTP through the Direct Feed branch. This branch is approximately 2,550 feet from the Mine Complex to the CTP Aeration Basin.

Treatment of this wastewater is necessary to remove heavy metals and neutralize acidity before the water can be discharged into Bunker Creek. The plant is operated at pH levels and throughput rates appropriate to meet the limitations on heavy metals content imposed by expired NPDES Permit Number IL-000007-8.

The capacity of the CTP depends upon the influent characteristics. As designed, the maximum capacity is 5,000 gallons per minute (gpm). The plant discharge rate and pH level are recorded daily and continuous effluent samples are taken.

Logs for regularly scheduled maintenance are provided in this manual (Sections 5 through 12). These should be filled out by the operators for each maintenance interval.

2.0 PREVENTATIVE MAINTENANCE PROGRAM AND RECORDS

The purpose of Ferguson Contracting's preventative maintenance program is to ensure that all pumps, motors, and equipment are properly maintained to prevent failures that may cause unscheduled CTP shutdowns. Preventative maintenance is a high priority for Ferguson Contracting, Inc. to not only protect the environment, but also ensure the safety of all personnel involved with operation and maintenance of the CTP.

Ferguson Contracting operators perform twice-daily plant inspections of all pumps and motors. These inspections, along with daily pH probe monitoring, help to ensure the efficiency of the treatment process. Daily inspections are identified as AM and PM plant walkthroughs on the Daily Chemical Report. Weekly, monthly, quarterly and six-month pump and motor maintenance and inspections, along with quarterly, six-month and yearly plant inspections, will be compiled and submitted to the USACE Contracting Officer in the Annual Maintenance Report.

Long-term preventive maintenance is provided by Balancing Service Company, which inspects motors on a quarterly basis and recommends which ones should be repaired.

3.0 ROUTINE MAINTENANCE AND REPAIRS

3.1 MAINTENANCE

Plant operators will continue to perform routine maintenance duties. Specific maintenance is detailed in the maintenance and inspection records. In general, routine maintenance included in the Preventive Maintenance Plan consists of the following:

- Daily morning and afternoon visual inspection of all pumps and motors;
- Daily pH probe check for fouling;
- Weekly checks of lubricants and oil levels;
- Weekly pH meter and turbidity meter calibrations;
- Monthly lubrication;
- Monthly check of fire extinguishers;
- Quarterly lubrication;
- Quarterly pump analysis;
- Six-month lubricant change-out;
- Yearly refurbishing of fire extinguishers;
- Yearly calibration of instruments;
- Yearly inspection and cleaning of electrical panels in the limo silos; and
- Winterization.

3.2 REPAIRS

Operators will continue to make minor repairs such as replacing motor belts and replacing pump seals. Major repairs to pumps and motors, electrical work, plumbing repairs and modifications will be performed by local contractors.

3.3 SPARE PARTS

A spare parts inventory will be maintained at the CTP. Spare parts shall be stocked as approved by the USACE based on delivery times, costs and priority level. All spare parts

currently in inventory will be listed on the Government-furnished Equipment and Material Reports.

4.0 SPECIAL MAINTENANCE AND OPERATIONAL PROBLEMS

Any areas that are deemed to be special maintenance and operational problems shall be brought to the attention of the USACE. Ferguson Contracting, Inc. shall provide the USACE with the problem's description, critical nature, corrective actions required and estimated cost. Implementation of these corrective actions will only be done at the direction of the USACE. All special maintenance and operational tasks performed will be reported in the Annual Maintenance Report.

5.0 WINTERIZATION

5.1 HEAD HOUSE

An automatic sump pump is installed in a sump box to handle cellar pump discharge and sample waste. This pump is controlled by a ball float switch and discharges into the Polishing Pond. The discharge line is self-draining to avoid freezing in cold temperatures.

A heater is provided in the head house. It should be serviced and its operation verified each autumn prior to the onset of freezing weather.

5.2 PROCESS PUMP HOUSE (POLISHING POND PUMP)

An automatic sump pump is located in the pit at the southeast corner of the building. This pump discharges into the Polishing Pond, and is self-draining to avoid freezing in cold temperatures.

A heater is installed in the pump house. It should be serviced and its operation verified each autumn prior to the onset of freezing weather. The water line leading out of the pump house should be shut off and drained after each use in freezing weather.

5.3 LIME STORAGE, SLURRY ROOM AND SLURRY STORAGE

Pebble lime (quicklime) is stored in the two lime silos and is used to make lime slurry. Independent trucking companies transport the lime to the plant from the manufacturer. Lime is unloaded into the silos by a pneumatic conveyor. The conveying air is discharged through a small bag collector on top of the silo. Periodic bag cleaning and replacement is necessary. The total capacity of the each silo is at least 100 tons when filled within 4 feet of the top of the silo.

The Lime Slurry Tank, located in the bottom of silo A, is agitated with a Baldor/Sharpe mixer to prevent segregation of solids and blocking of the pump intakes. Loss of this mixer will quickly result in system failure. A backup mixing unit has been provided and is currently located in the storage building for emergency use. The slurry tank must be emptied and cleaned of scale yearly to avoid pump blockage and lime feed failure.

Heaters are provided in the lime silo slaker rooms and lime silo pump room. These should be serviced and their operation verified each autumn prior to the onset of freezing weather. The lime silo slaker room heaters should be maintained at a minimum setting of 60°F during the winter to prevent lime from clumping up and plugging the feeder line during the mixing process. The slurry injection lines are equipped with an electric freeze-protection system. This system has a separate control unit mounted on the south side of silo B. Each piping system has an indicator light for each freeze-protection line.

5.4 LIME SILO PUMP/CONTROL ROOM

The floor sump contains an automatic sump pump. This pump collects spills, leakage and wash down water, and pumps it up into the Rapid Mix Tank. The discharge line is equipped with an electrical freeze-protection line to prevent freezing. The sump should be flushed periodically to prevent solids buildup.

The pump room is heated. The pump lines to the Rapid Mix Tank are heat-traced and insulated to prevent freezing. These systems should be inspected and their operation verified each autumn prior to the onset of freezing weather.

5.5 RAPID MIX TANK AND AERATION BASIN

In extremely cold weather, ice must be periodically removed from the Aerator rotor and support structure. This is done by manual chipping as needed. A directional heater has been purchased that may also be used to minimize ice buildup on the rotor. The amperage gauge (located in the control room) is used as a check for the operators and will show increased draw during ice buildup on the rotor.

A drain valve on the Rapid Mix Tank allows draining this tank during cold weather shutdowns. If this drain line is frozen, then agitated flow must be maintained through the tank or the tank may freeze.

5.6 SLUDGE TRANSFER LINE

The sludge transfer line drain will be utilized during the winter (November–February) to prevent the line from potentially freezing. The 5-inch drain valve (RS-014) is located in the Floc Mixing Room, and will discharge sludge into the Aeration Basin.

6.0 WEEKLY MAINTENANCE INSPECTION AND CALIBRATION FORM

EQUIPMENT	ITEM	DATE	REMARKS
Clarifier Rake:			
Worm gear case level gauges	ISO 220		
Worm gear viewpoints	ISO 220		
Drive transfer cases	ISO 220		
Drive torque indicator less than ten	inspect		
Condition of motor and drive units	Inspect		
Aerator:			
Gear case	SAE 90		
Condition of motor and drive unit			
Lime Silo B Control Room:			
Lime injection pumps #1 & #2	Inspect		
Building sump and sump pump	Inspect		
All valves and piping	Inspect		
Rexa lime injection valve controls, check for errors	Inspect		
Lime Silo A Slaker Room:			
Grit screen and grit screw	Clean, Inspect		
Operate and observe slaker operation	Inspect		
Observe slurry tank mixer operation	Inspect		
Lime Silo B Slaker Room:			
Grit screen and grit screw	Clean, Inspect		
Operate and observe slaker operation	Inspect		
#1 Clarifier Underflow Pump:			
Shaft bearing	OIL 100		
Condition of pump and motor			
#2 Clarifier Underflow Pump:			
Shaft bearing	OIL 100		
Condition of pump and motor			
#3 Clarifier Underflow Pump (Waste Pump):			
Shaft bearing	OIL 100		
Condition of pump and motor			
Rapid Mix Tank:			
Gear case	SAE 90		
Condition of motor and drive unit			
Floc Mix Tank Agitators:	Gear Oil		
Condition of mixing agitators	90 - Oil		
Condition of pump control probes (clean if needed)	Inspect		
Condition of transfer pump	Inspect		
Injection pump bearing	Grease		
CTP pH Probes: (clean and inspect)			
Clarifier pH probe (calibrate with pH 4 & 7 buffers)	Clean, Inspect		
006 Outfall pH probe (calibrate with pH 4 & 7 buffers)	Clean, Inspect		
Aeration Basin pH probe (calibrate with pH 7 buffer)	Clean, Inspect		
Calibration of CTP Sample Equipment:			
Orion pH meter 4.0, 7.0, 10.0 buffer (clean probe)			
HI Scientific Turbidity meter 10.02 standards			
006 Outfall:			
Replace composite collection container (twice weekly)			
Clean sample supply line and container (twice weekly)			
Rexa Lime Injection Valves (Rapid Mix Tank)			
Valve operation	Inspect		
Valve shaft condition	Inspect		
Oil reservoir	Inspect		
Eye Wash Station Maintenance:			
CTP Control Room portable eye wash station	Inspect		Recharge & refill if needed, drain & recharge monthly
Silo exterior eye wash station	Inspect		Flush weekly
Silo A eye wash station	Inspect		Flush weekly
Silo B eye wash station	Inspect		Flush weekly
Silo B control room eye wash station	Inspect		Flush weekly

7.0 MONTHLY PUMP MOTOR INSPECTION AND MAINTENANCE FORM

EQUIPMENT	LUBE	DATE	REMARKS
Clarifier Drive Motors:			
Document torque reading	Inspect		
Inspect drive belt condition	Inspect		
Head House Pumps:			
Shaft bearing	Grease Gun		
Operating condition of transfer pump and motor	Inspect		
Condition of sump pump	Inspect		
Flocculent Injection Pump Room:			
Condition of transfer pump	Inspect		
Coupler bearing #1 injection pump	Grease Gun		
Coupler bearing #2 injection pump	Grease Gun		
Inspect transfer pump control probes	Inspect		
Aeration Basin gear drive unit:			
Lower Bearing Unit	Grease Gun		
Inspect drive shaft for ice during winter months	Inspect		
Polishing Pond Pump House:			
Pump #1	Inspect		
Pump #2	Inspect		
Sump Pump	Inspect		
Water Truck Fill Station Pump:			
Ensure the winter drain valve is open, winter time	Inspect		
Rapid Mix Tank:			
Coupler bearing	Grease Gun		
Drive gear top bearing	Grease Gun		
Operating condition of motor and gear unit	Inspect		
Lime Slurry injection valves	Inspect		
#1 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect		
Operating condition of pump and motor	Inspect		
Condition of drive belts	Inspect		
#2 Clarifier Underflow Pump:			
All bearings are sealed--no lube required	Inspect		
Operating condition of pump and motor	Inspect		
Condition of drive belts	Inspect		
#3 Clarifier Waste Pump:			
All bearings are sealed--no lube required	Inspect		
Operating condition of pump and motor	Inspect		
Condition of drive belts	Inspect		
Silo A Slaker Room:			
Grit screw drive gear box (2 grease points)	Grease Gun		
Grit screen motor (2 grease points)	Grease Gun		
Slaker drive gear bearings (2 grease points)	Grease Gun		
Volumetric feed drive bearings (2 grease points)	Grease Gun		
Slurry tank mixer gear drive	Grease Gun		
Silo B Slaker Room:			
Grit screw drive gear box (2 grease points)	Grease Gun		
Grit screen motor (2 grease points)	Grease Gun		
Slaker drive gear bearings (2 grease points)	Grease Gun		
Volumetric feed drive bearings (2 grease points	Grease Gun		
Silo B Control Room:			
Lime injection pump #1 and #2 operation	Inspect		
Building sump pump and motor	Grease Gun		
Punch valve bearings	Grease Gun		
Operate and flush back up slaker	Inspect		
Rexa Lime Slurry Injection Actuators:			
Inspect oil reservoir level indicator	Inspect		SAE 5W-50
Inspect valve operation	Inspect		
Inspect shaft condition	Inspect		

NOTE: Oil levels must be checked and oil added if needed.

8.0 QUARTERLY PUMP AND MOTOR INSPECTION FORM

STATION NUMBER AND EQUIPMENT	PM Check	DATE	REMARKS
1. No. 1 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection		
2. No. 2 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection		
3. No. 3 Allis Chalmers Motor and Pump (Clarifier underflow pump)	Cash Balancing Service Inspection		
4. Flocculent Transfer Pump and Motor	Cash Balancing Service Inspection		
5. No. 1 Viking Motor and Pump (Floc Injection pump #1) (A)	Cash Balancing Service Inspection		
6. No. 2 Viking Motor and Pump (Floc Injection pump #2) (B)	Cash Balancing Service Inspection		
7. North EIMCO Thickener Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection		
8. South EIMCO Thickener Motor and Drive unit (Toshiba motor)	Cash Balancing Service Inspection		
9. Floc Basin Agitator Motor and Gearbox	Cash Balancing Service Inspection		This unit is out of service as of 9-06-03.
10. Rapid Mix Tank Motor and Gear Box	Cash Balancing Service Inspection		
11. No. 1 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection		
12. No. 2 Water Pump Motor and Pump (Polishing Pond Pump)	Cash Balancing Service Inspection		
13. No. 1 Gould Motor and Pump (Lined Pond Pump #1)	Cash Balancing Service Inspection		
14. No. 2 Gould Motor and Pump (Lined Pond Pump #2)	Cash Balancing Service Inspection		
15. No. 3 Gould Motor and Pump (Lined Pond Pump #3)	Cash Balancing Service Inspection		
16. No. 1 Loop Lime Injection Motor and Pump	Cash Balancing Service Inspection		
17. No. 2 Loop Lime Injection Motor and Pump	Cash Balancing Service Inspection		
18. Silo Sump Pump to Rapid Mix Tank	Cash Balancing Service Inspection		
19. Slaker A Drive Motor	Cash Balancing Service Inspection		

21. Silo A Lime Slurry Mixer	Cash Balancing Service Inspection		
22. Silo A Lime Feeder	Cash Balancing Service Inspection		
23. Silo A Grit Screen Shaker	Cash Balancing Service Inspection		
24. Silo A Bin Activator	Cash Balancing Service Inspection		
25. Lime Crossover Transfer Screw	Cash Balancing Service Inspection		
26. Slaker B Drive Motor	Cash Balancing Service Inspection		
27. Slaker B Grit Screw	Cash Balancing Service Inspection		
28. Silo B Lime Feeder	Cash Balancing Service Inspection		
29. Silo B Grit Screen Shaker	Cash Balancing Service Inspection		
30. Slaker B Bin Activator	Cash Balancing Service Inspection		

Additional Notes:

9.0 SIX-MONTH OIL CHANGE AND SERVICE POINT FORM

EQUIPMENT	Lube	DATE	REMARKS
Silo B Lime Loop Pumps, #1 & #2: #1 Pump sealed gear case--no oil change #2 Pump sealed gear case--no oil change Operating condition of pump and motor	 Grease Grease Inspect		
Clarifier: Torque arm gear cases #3 (yearly only) Worm gear case #2 (every six months) Secondary gear case #4 (yearly only) Main gear case #1 (behind the drive belts) Operating condition, all Clarifier components	 EP ISO 220 EP ISO 220 EP ISO 220 30 wt oil		 20 gallons yearly, 2 units 5 gallons (total) every 6 months 50 gallons yearly, 1 unit only 3 quarts every 6 months X2
Silo A Lime Slurry Tank Mixer: Gear case Operating condition of motor and gear drive	 EP ISO 220		First oil change @ 800 hrs Yearly after first oil change
Rapid Mix Tank: Gear case Operating condition of motor and gear unit	 EP 100		 5 gallons
Clarifier Underflow Pumps #1 & #2: #1 underflow pump #2 underflow pump Operating condition of pumps and motors Condition of drive belts Pump packing (inspect and replace)	 ISO 100 ISO 100		 2 quarts 2 quarts
#3 Clarifier Underflow Waste Pump: Pump Operating condition of pump and motor Condition of drive belts Pump packing (inspect and replace)	 ISO 100		 1 quart
Aerator: Gear case Operating condition of motor and gear case	 EP 100		 10 gallons
Lined Pond Pump House Pumps: #1 Pump #2 Pump #3 Pump--operating condition of pumps and motors	 GST ISO 68 GST ISO 68 GST ISO 68		 2 quarts 2 quarts 2 quarts
Valve Service Points: Control room pinch valves (9 valves) Polishing Pond valves (2 valves) Rapid Mix Tank effluent valves	 Gun Gun Grease		
AMD Line Valve Service Points: Direct feed line actuator Main line actuator	 Grease Grease		

10.0 GENERAL PLANT MAINTENANCE AND INSPECTION FORM

EQUIPMENT	DATE				REMARKS
Three-Month Plant Maintenance & Inspection: Perform a Direct Feed Line Pigging Event Lined Pond Branch Camera Vault (inspect for leaks) Direct Feed Branch Camera Vault (inspect for leaks) AMD Line Valves (inspect for leaks and condition) *Lined Storage Pond:* Remove, inspect, clean and replace wet well screen Replace elevation markings if needed Operate pump house pumps and motors Operating condition of all pumps and motors Polishing Pond pump house (operate backup pump) Floc injection room (operate backup pump) Floc injection room (flush all floc lines with city water) F.I. room (back flush floc pumps with city water) CTP Control Room (operate backup underflow pumps) C.Room (clean control room sump and sump pump) Silo A Bag House Bags & Shaker Motor (inspect & grease) Silo B Bag House Bags & Shaker Motor (inspect & grease) Silo B building sump inspection and cleaning					*Two operators required
Six-Month Plant Maintenance & Inspection: Perform a Main Line & Lined Pond branch pigging event Lined Storage Pond (check sediment level) *Lined Storage Pond wet well:* Remove, clean, inspect and replace pump control rods Place pump house heaters in operation as needed Place all outbuilding heaters in service as needed					
Yearly Plant Maintenance & Inspection: Video inspection of D.F. & Main Line AMD pipe system Hydo-jetting D.F. & Main Line sections of the AMD pipe Yearly fire extinguishers (check charge status and refill) Yearly pH meter calibration (Clarifier, 006, Aeration Basin) 3 Amp meter calibration (8 meters) Torque meters (2 Clarifier, 1 Aeration Basin, 1 Rapid Mix) Lined Pond wet well pump control probes (remove, clean) Lime Slurry loop pipe inspection (open section of pipe & inspect) Lime Slurry feed loop orifice plate inspection (remove & inspect)					
Sludge Discharge Line: Drain sludge line if temperature is below 30°F					

11.0 MONTHLY FIRE EXTINGUISHER INSPECTION FORM

Month: _____ **Inspected By:** _____

Location	Condition		Pressure Reading/PSI
Floc Room (#35)	Good / Poor	OK to use/ Do not use	
Floc Room (#36)	Good / Poor	OK to use/ Do not use	
Control Room (#24)	Good / Poor	OK to use/ Do not use	
Office (#527)	Good / Poor	OK to use/ Do not use	
Lime Slurry Pump House (#27)	Good / Poor	OK to use/ Do not use	
Polishing Pond Pump Room (#25)	Good / Poor	OK to use/ Do not use	
Head House Valve Room (#26)	Good / Poor	OK to use/ Do not use	
Well House (#16)	Good / Poor	OK to use/ Do not use	
Lime Silo (#23)	Good / Poor	OK to use/ Do not use	
006 Outfall Sampling Building (#501)	Good / Poor	OK to use/ Do not use	
USACE Storage Building (#778)	Good / Poor	OK to use/ Do not use	
Lined Pond Pump House (#777)	Good / Poor	OK to use/ Do not use	
White Ford Truck (#PU 31)	Good / Poor	OK to use/ Do not use	

12.0 MINE WATER LINE OPEN CHANNEL INSPECTION FORM

Note: This form should be utilized weekly during the regular channel clean-out.
Results will be included with the Daily Quality Control Report and monthly DMR.

Date: _____ Inspected By: _____

Item Inspected	Condition	Comments
Channel Sections and Joints	***Good*** / Poor	Check for cracks
Channel Inlet Connection @ KT	***Good*** / Poor	Check for cracks
Channel Outlet/Pipeline Inlet	***Good*** / Poor	Check for cracks
Channel Bottom (during low flows)	***Good*** / Poor	
Bottom Joints (during low flows)	***Good*** / Poor	
Trash Rack Assembly Rail Units	***Good*** / Poor	Check for corrosion and bolt tightness
Trash Racks	***Good*** / Poor	Check spacings and overall condition
Parshall Flume	***Good*** / Poor	Check fiberglass and joint connections

General Comments: _____

13.0 MINE WATER LINE PIPELINE INSPECTION FORM

Note: This form should be utilized quarterly or as directed by the USACE.
Results will be included in the Daily Quality Control Report and monthly DMR.

Date: _____ Inspected By: _____

Item Inspected	Condition	Comments
Pipe	Good / Poor	

Inspect visible pipe sections and pipe joints for any gouges or sharp cuts on the outside surface which are greater than 10 percent of the wall thickness; minor scuffing or scratching will not affect the pipe and pipe fittings service life per the pipe manufacturer.

Manhole/Vaults

Sta 0+20 Direct Feed Branch Vault	Good / Poor	
Sta 10+00 Pipeline Inlet	Good / Poor	
Sta 11+55 Overflow Manhole	Good / Poor	
Sta 13+95 Upper Pigging Vault	Good / Poor	
Sta 24+44 Lower Camera Vault	Good / Poor	

Inspect the ring, covers, lids, interior walls and floors (floor drains), seals around the pipe sections and joints (Link-Seals).

Overflow Pipe	Good / Poor	

Inspect the seal around the 24-inch diameter overflow pipe inside the overflow manhole (sta 11+55) and the interior condition of the pipe, looking for obstructions and damage.

Knife Gate Valves

Main Line Valve 20-inch electric valve	Good / Poor	
Direct Feed Line Valve 20-inch electric valve	Good / Poor	
Sta 5+40 8-inch Valve D.F. drain	Good / Poor	
Sta 13+95 20-inch Valve	Good / Poor	
Sta 13+95 6-inch Valve	Good / Poor	
Sta 24+34 20-inch Valve	Good / Poor	

Inspect for leaks in the interior sealing surfaces of gate valves by closing the valve and observing possible downstream through the Y fittings of discharge at the Lined Pond. Inspect the exterior of the valve and operator and the flanges for signs of corrosion (rusting) and damage.

Thrust Block, Lined Pond Influent	Good / Poor	

Inspect the exterior condition of the thrust block, steel straps, and bolts for damage, and extensive corrosion.

General Comments: _____

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APPENDIX D

CTP PIPING AND INSTRUMENTATION DIAGRAM

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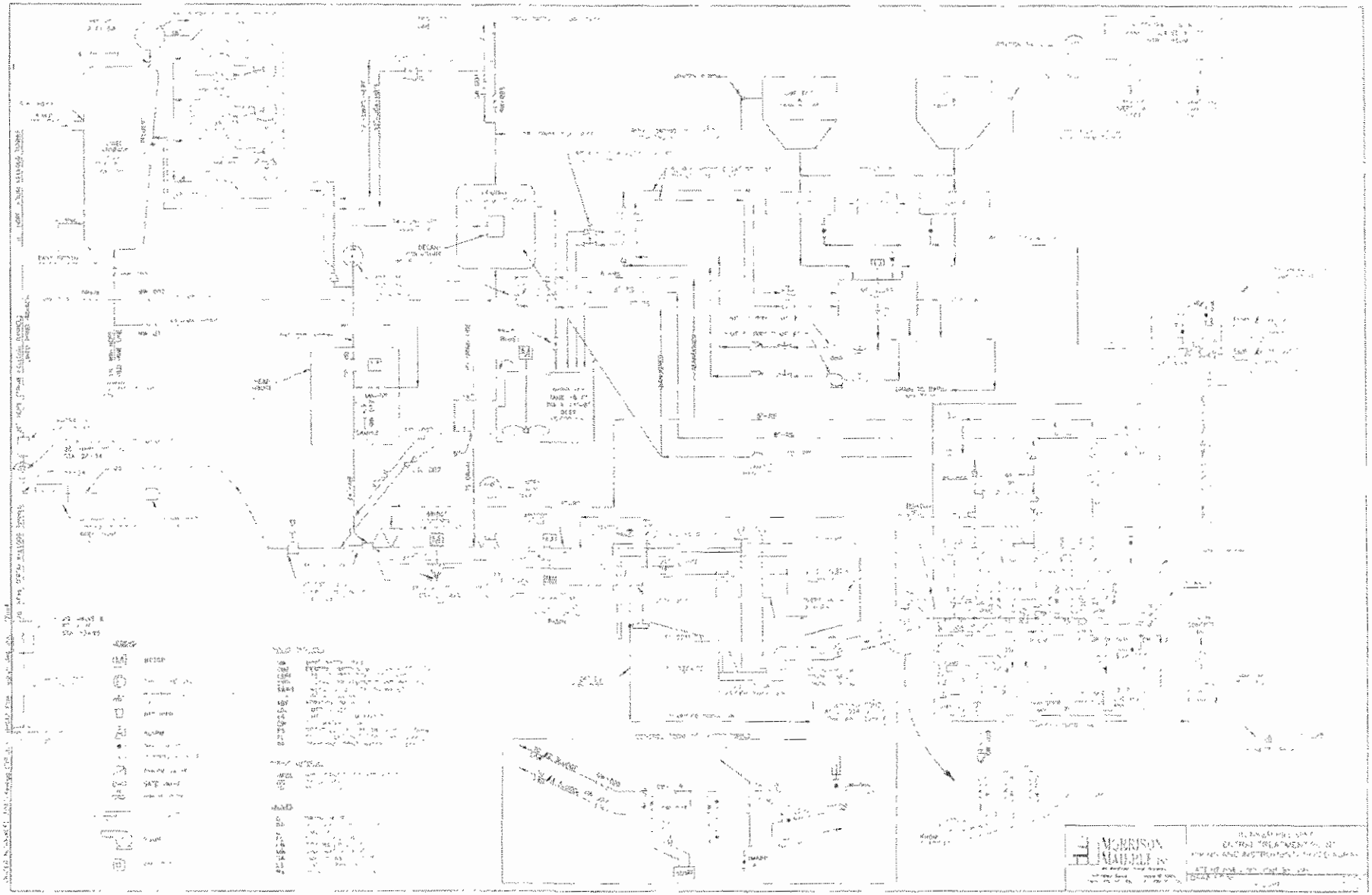

APPENDIX E

BUNKER HILL MINE WATER CONVEYANCE SYSTEM

OPERATIONS AND MAINTENANCE PLAN

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BUNKER HILL MINE WATER CONVEYANCE SYSTEM
OPERATIONS AND MAINTENANCE PLAN

CENTRAL TREATMENT PLANT
BUNKER HILL SUPERFUND SITE

Appendix E to Operations and Maintenance Plan

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TABLE OF CONTENTS

LIST OF ATTACHMENTS iii

1.0 INTRODUCTION 1

1.1 PURPOSE 1

1.2 DESIGN CRITERIA 1

1.3 GENERAL SYSTEM DESCRIPTION 2

1.4 HEALTH AND SAFETY 3

2.0 MINE WATER CHANNEL O&M 3

2.1 CHANNEL SECTION DESCRIPTION 3

2.2 CHANNEL CLEANOUT PROCEDURE 3

2.3 CHANNEL INSPECTION GUIDELINES 4

3.0 MINE WATER PIPELINE O&M 5

3.1 PIPELINE DESCRIPTION 5

3.1.1 Direct Feed Branch 6

3.1.2 Main Line/Lined Pond Branch 6

3.2 PIPELINE CLEANOUT PROCEDURE 7

3.2.1 Pipeline Cleaning by Pigging 7

3.2.1.1 Direct Feed Branch 7

3.2.1.2 Main Line/Lined Pond Branch 11

3.2.2 Pipeline Hydro-Jetting 13

3.2.2.1 Direct Feed Branch 14

3.2.2.2 Main Line 14

3.3 CAMERA ACCESSING 15

3.3.1 Direct Feed Branch 15

3.3.2 Main Line/Line Pond Branch 16

3.4 PIPELINE INSPECTION PROCEDURE 17

3.5 DIRECT FEED BRANCH AND LINED POND BRANCH ACTUATOR POWER OUTAGE 18

4.0 REFERENCES 19

LIST OF ATTACHMENTS

ATTACHMENT A FIGURE 1-1: MINE WATER CONVEYANCE SYSTEM

ATTACHMENT B FIGURE 1-2: DIRECT FEED BRANCH TO CTP

ATTACHMENT C FIGURE 2-1: CONCRETE CHANNEL FROM PORTAL, TRASH RACKS AND PARSHALL FLUME

BUNKER HILL MINE WATER CONVEYANCE SYSTEM
OPERATIONS AND MAINTENANCE PLAN

CENTRAL TREATMENT PLANT
BUNKER HILL SUPERFUND SITE

1.0 INTRODUCTION

1.1 PURPOSE

This Bunker Hill Mine Water Conveyance System Operations and Maintenance (O&M) Plan updates the June 2002 plan prepared by CH2M Hill. The system conveys mine water from the Kellogg Tunnel (KT) Portal to either the Central Treatment Plant (CTP) or the Lined Pond.

The conveyance system was constructed in two phases. The first phase occurred in 1999 and included installation of a concrete channel and conveyance pipeline directing flow from the KT Portal to the Lined Pond as shown in the project record drawings (CH2M HILL, 2000). Hydrometrics, Inc. installed the second phase during the winter of 2001/2002. This phase included construction of a pipeline segment directly to the CTP Aeration Basin (known as the Direct Feed Line) as shown in the project record drawings (CH2M HILL, 2002).

1.2 DESIGN CRITERIA

Following are the design criteria for the mine water conveyance system:

- Total suspended solids (TSS) as "yellow boy": > 300 milligrams per liter (mg/L);
- pH: 2 to 5 as a result of sulfuric acid;
- Dissolved and suspended metals: zinc, lead, iron, cadmium, magnesium, manganese, aluminum, calcium and others;
- Sulfate: 500 mg/L to 4,000 mg/L;
- Debris: wood, trash and miscellaneous mining debris;
- Maximum flow rate: 7,000 gallons per minute (gpm);
- Annual average flow rate: 1,500 gpm; and
- Sustained minimum flow rate: 1,000 gpm.

1.3 GENERAL SYSTEM DESCRIPTION

This system conveys mine water from the KT Portal to either the Lined Pond or directly to the CTP (Figures 1-1 and 1-2). Mine water is conveyed out of the mine via the mine water ditch located on the west side of the KT. At the portal, the ditch merges into the new concrete channel, which conveys the mine water approximately 80 feet through two trash rack assemblies and a 12-inch Parshall flume, before the mine water discharges into a buried 20-inch diameter high-density polyethylene (HDPE) pipe. This pipeline proceeds about 150 feet north to a manhole that provides overflow capability to the old mine water pipeline, then continues 240 feet to a mine water cleaning vault (pig launching and camera accessing). From the vault, the pipeline turns westward through the mine yard and drops down the mine yard access road. At the bottom of the hill, which is about 1,000 feet from the cleaning vault in the mine yard, there is a tee at station 24+24 (see Figure 1-1) where the mine water can be routed directly to the CTP (via the Direct Feed branch) or to the Lined Pond via the Lined Pond branch.

Note: In this O&M plan, the section of pipeline from the mine yard to the tee is referred to as the "Main Line." The section from the tee to the Lined Pond is referred to as the "Lined Pond branch." The section from the tee to the CTP is referred to as the "Direct Feed branch."

Routing mine water to either the CTP or the Lined Pond is accomplished by opening or closing electrically actuator driven knife-gate valves on either side of the tee (either the Lined Pond branch valve or the Direct Feed branch valve). A camera station vault for camera inspection of the Lined Pond branch is located just downstream from the Lined Pond branch valve. From the camera station vault, the Lined Pond branch continues westward, approaching and generally paralleling McKinley Avenue for about 1,450 feet, where it sweeps to the north under McKinley Avenue and discharges into the south side of the Lined Pond via a concrete-anchored discharge located at the top of the pond liner.

The Direct Feed branch begins at the tee, passes through the Direct Feed valve and the Direct Feed pipeline cleaning vault (pig launching and camera accessing), and sweeps to the northwest before diagonally crossing under McKinley Avenue (see Figure 1-2). From McKinley Avenue the pipeline sweeps to the north, descends down the hill crossing below the bike path and Bunker Creek, then sweeps to the east around the CTP Polishing Pond. A continuous vacuum/air release valve is located at the top of the hill in a concrete valve box (Direct Feed branch Station 4+20), and a pipeline drain is located at the bottom of the hill in a concrete valve box (Direct Feed branch Station 5+40). Near the CTP the pipeline briefly sweeps under the gravel road, around the Lime Silo trending to the southeast, then up the side of the CTP Aeration Basin embankment where it terminates in a pig capture box attached to the Aeration Basin feed launder.

1.4 HEALTH AND SAFETY

Proper health and safety precautions, meeting United States Army Corps of Engineer's (USACE's), local, state, and federal requirements, shall be taken during all O&M activities.

2.0 MINE WATER CHANNEL O&M

This section provides a detailed description, cleanout procedure and inspection guidelines for the mine water concrete channel outside the KT Portal, the trash racks and the Parshall flume.

2.1 CHANNEL SECTION DESCRIPTION

As shown on Figure 2-1, the concrete channel (34 inches wide by 30 inches deep) connects to the mine water drainage ditch at the KT Portal and conveys mine water approximately 80 feet north where it connects to the pipeline. The channel is constructed of prefabricated concrete units with 6-inch-thick walls and bottoms. The length of each unit varies. The joints are tab-welded together and consist of tongue-and-groove attachments. The annular joint spaces between each unit are sealed with a grout and a high-strength epoxy (Sikakur 31 Hi-Mod Gel manufactured by Sika Corporation) and then coated with coal tar epoxy (manufactured by Rust O-leum).

There are two trash racks. The first is located upstream of the flume and the second is downstream. Both trash racks are supported by stainless-steel rails and bolts, and constructed of acid-resistant MVICORR fiberglass, manufactured by Nichols. Both trash racks have cutout openings that provide 2-inch by 4-inch clear openings. Trash Rack #1 is located upstream of the flume in front of the concrete channel cover, which provides a place to stand during trash rack removal and cleaning. Trash Rack #2 is located downstream of the flume and is covered with an 18-foot-long 2-inch-thick grated steel lid cover. The steel grates are cut into 3-foot lengths for ease of removal.

The 12-inch (throat width) fiberglass Parshall flume (manufactured by Tracom) is attached to the concrete channel sections on both sides. The flow depth in the flume is measured by a ISCO model 4230 pressure transducer unit, providing continuous data collection (the flow meter unit is housed in the adjacent shed). A visual staff gauge is attached to the flume for manual flow measurements and calibration.

2.2 CHANNEL CLEANOUT PROCEDURE

The following steps should be taken to ensure adequate flow in the channel:

1. The bottom of the concrete channel will collect a buildup of sediment, which will reduce the channel hydraulic capacity and possibly distort the continuous flow data

collection readings as well as the visual staff gauge observation. As a result, the sediment should be carefully removed at a minimum frequency of once a week with appropriate removal methods. Because of variable solids content of the KT effluent, weekly or more frequent cleaning may be necessary to ensure accurate flow readings. Flat-bladed steel shovels used in conjunction with field-modified spades tend to produce an effective cleaning.

2. The sediment should be carefully removed around each channel joint so that the seal and coating are not damaged. The cleaning utensils should be moved only downstream to avoid damaging the channel joints. Personnel performing this task will visually check the joints as well as the concrete channel infrastructure during the operation and report any suspected damage, cracking or deteriorated areas.

3. Significant quantities of removed sediment will be collected in 5-gallon containers and disposed of at the Central Impoundment Area (CIA) sludge pond. Minor quantities of sediment will be flushed down the mine water conveyance system.

4. The concrete walkway on the east side of the channel will be kept clean and the storm water inlets (holes in the tops of the channel walls) should be cleaned to allow drainage through the holes.

5. The trash rack assemblies should be cleaned a minimum of twice per week. One cleaning will be performed during the scheduled cleaning of the open channel (generally on Thursdays). The second cleaning will be performed during normal KT water sample collection (generally on Mondays). The sequence of operation should start at the upstream section (at the KT Portal) and successively move downstream toward the pipeline inlet. Trash Rack Assembly #1 (see Figure 2-1) should be cleaned before the downstream second unit. Objects collected on the rack should be manually raked and disposed of with the sediment at the CIA sludge pond. Floating objects (e.g., wood debris) caught by the rack should be removed prior to lifting the rack. To clean the first trash rack, slide the fiberglass rack up the stainless steel rails and onto the concrete lid. Once the trash rack is cleaned, slide the rack back down the rails until it reaches the channel bottom.

6. The second trash rack assembly should be cleaned in the same manner; however, the rack should be lifted and placed to the side before cleaning so that material does not fall back into the channel. Note: to help prevent debris from entering the pipeline, only one trash rack will be removed at a time during cleaning operations.

The frequency of cleaning may be reevaluated based on experience and observations gained during the channel cleanout program and as directed by the U.S. Army Corps of Engineers (USACE).

2.3 CHANNEL INSPECTION GUIDELINES

During the cleaning procedure, the condition of the channel sections and joints, the condition of the channel inlet connection at the KT Portal, and the condition of the channel outlet/pipeline inlet connection structure will be noted. Both connections should be free of cracks. If cracks are observed, they will be immediately brought to the attention of the USACE for approval of repairs. Cracks should be sealed using a combination of grout and high-strength epoxy, and coated with coal tar epoxy. When flows through the channel are minimal (such as during pipeline hydro-jetting, see Section 3.2.2), the bottom of the channel and bottom joints should be inspected. The trash rack assembly rail units should also be inspected for excessive corrosion and the bolts routinely tightened. The clear spacing and the overall condition of the fiberglass racks should be noted. The condition of the fiberglass in the flume and its joint connections with the channel sections should also be noted. All inspection results should be noted on the Channel Inspection Form (see Preventative Maintenance Plan) and included with the corresponding Monthly Discharge Monitoring Report.

3.0 MINE WATER PIPELINE O&M

This section provides descriptions of the pipeline, pipeline accessories, cleanout procedure, camera accessing and inspection guidelines.

3.1 PIPELINE DESCRIPTION

At the end of the 80-foot-long concrete channel, a 20-inch-diameter Standard Dimension Ratio (SDR) 17 HDPE pipeline carries the mine water 150 feet to an overflow manhole that is equipped with a 24-inch-diameter HDPE overflow pipe. This overflow pipe is connected to the old mine water pipeline manhole. The location is shown on Figure 1-1. This overflow manhole serves the following two purposes: 1) as a discharge route for mine water during pipeline cleanout (if needed); and 2) as an emergency conveyance system to either the Lined Pond or directly to the CTP.

During normal operations, the mine water continues through the overflow manhole, the mine yard pipeline cleaning vault, and down the hill from the mine yard to a tee/valves assembly that allows the mine water to be routed to either the CTP via the Direct Feed branch, or to the Lined Pond via the Lined Pond branch.

> *Note. During normal operation, the Lined Pond branch valve will be closed and the Direct Feed branch valve will be open to direct flow to the CTP, bypassing the Lined Pond. At no time should both of these valves, or the valve located in the mine yard pipeline cleaning vault, be closed unless it is verified that the flow rate is low enough to prevent backup in the old*

mine water pipeline. The actual capacity of the old mine water pipeline is unknown but is less than 1,400 gpm. The integrity of the old mine water pipeline is also unknown. As such, discharge into the old mine water pipeline requires full-time attention and visual monitoring of the cross-connect to the stormwater system in the mine yard (located at the top of the eastern access road under the two metal plates), regardless of the flow rate. The old pipeline has limited and unknown carrying capacity as a result of progressive buildup of "yellow boy" scale on the pipe walls. Overflow to the stormwater system results in direct discharge to Bunker Creek.

The Lined Pond and Direct Feed branch valves are both electrically actuated and have manual handwheels. The valves can be electrically operated locally at the control panel located adjacent to the tee, or remotely from the CTP control panel. At both locations, open-stop-close pushbutton switches along with red (open) and green (closed) indicating lights are installed. In the event that the CTP has been shut down because of a power outage, the following will occur: 1) if there is a **regional** power outage that affects both the CTP and the automatic valves, the automatic valves will not be actuated and will require energizing by a mobile generator to operate the valves electrically, or manual operation using the handwheels; or 2) if there is a **local** power outage only at the CTP (electric valve motors are powered), the valves would automatically be actuated, diverting the Kellogg Tunnel discharge to the Lined Pond. Any time power is lost to the CTP, the operators are called by the autodialer system. An operator will redirect the KT flow to the CTP as soon as power is restored to the plant.

3.1.1 Direct Feed Branch

Using the Direct Feed branch, the mine water can be routed directly to the CTP. This is the preferred routing to reduce sediment buildup in the Lined Pond and to reduce electricity usage and operation of the Lined Pond pump station. With the Lined Pond branch valve closed and the Direct Feed branch valve open, mine water will flow through the tee, through the Direct Feed valve and Direct Feed branch cleaning vault, and through the pig catcher box attached to the CTP Aeration Basin influent launder. The alignment is shown on Figure 1-2. The length of the Direct Feed branch from the tee to the CTP Aeration Basin is approximately 1,115 feet. The overall pipeline length from the KT Parshall flume to the CTP Aeration Basin via the Direct Feed branch is approximately 2,550 feet.

The Direct Feed branch pipeline cleanout vault consists of an open-port knife-gate valve and a 20-inch-diameter 22.5-degree stainless steel wye with a 20-inch hinged blind flange (150-pound bolt pattern), which can be opened for insertion of cleaning pigs.

*Note: The drain valve along the Direct Feed Line at station 5+40 is under pressure and should **not be opened** until the Direct Feed branch valve is*

closed and the Lined Pond branch valve is open. A valve-controlled discharge line is connected to the vertical drain pipe and directed into water storage truck. The proper health and safety arrangements have been instituted.

3.1.2 Main Line/Lined Pond Branch

When the Direct Feed branch valve is closed and the Lined Pond branch valve is open, the mine water will be conveyed through the Lined Pond branch camera access vault and to the Lined Pond. The camera access vault contains a 45-degree HDPE wye with a blind flange (150-pound bolt pattern). A concrete thrust block with four steel straps vertically restrains the pipe outlet, but allows longitudinal movement for pipe expansion and contraction. A two-piece 60-mil HDPE splash mat (approximately 20 feet wide by 30 feet long) is secured by the concrete thrust block and extends from the pipe discharge point down into the pond. The overall length of the mine water conveyance pipeline from the KT Parshall flume to the Lined Pond is approximately 3,080 feet. The alignment is shown on Figure 1-1.

3.2 PIPELINE CLEANOUT PROCEDURE

This section provides the cleaning procedures for both the pipeline pigging and hydro-jetting operations. For the Main Line and the Lined Pond branches, the pipeline can be cleaned from the cleaning vault in the mine yard to the pipeline outlet at the Lined Pond by pigging. However, the first pipe section from the concrete channel outside the KT to the cleaning vault in the mine yard requires hydro-jetting. For the Direct Feed branch, only an approximate 20-foot section between the tee and the cleaning vault requires hydro-jetting.

3.2.1 Pipeline Cleaning by Pigging

Regular pipeline cleaning is needed to prevent scale from forming on the interior pipe walls, which reduces hydraulic capacity. The scale consists primarily of iron oxy-hydroxides (yellow boy) and calcium sulfate di-hydrate (gypsum). Cleaning is accomplished by pigging and hydro-jetting.

Based on experience to-date, the Main Line and the Lined Pond branch pipeline sections have required a minimum cleaning frequency of twice per year. Pipeline cleaning should be conducted prior to high springtime flows (late January or early February) and during the summer (July or August). The Direct Feed branch requires quarterly cleaning. The section between the hillside (station 4+50) and the discharge at the CTP Aeration Basin operates in full pipe flow, and when it is not in operation, water will sit stagnant in this section.

Cleaning should be conducted when mine water flows are less than about 1,000 gpm, to reduce the potential for a discharge to Bunker Creek if mine water is diverted into the old

mine water line. However, the flow rate should be greater than 500 gpm to have sufficient water velocities for timely pig transport.

3.2.1.1 Direct Feed Branch

The Direct Feed pipeline can be pigged from the cleaning vault located adjacent to the tee (Direct Feed branch station 0+20). This vault also may be used to access the pipe for camera inspection or to access the approximately 20 feet of pipeline between the tee and the pig launcher assembly for hydro-jetting. The only available pressure for pigging the Direct Feed Line is the hydraulic pressure supplied from the Main Line once the Lined Pond branch valve is closed.

The following steps are required for Direct Feed pipeline cleaning via pigging:

1. Notify the CTP operators and mine owner to schedule the cleanout and to reduce the mine water flows to less than 1,000 gpm. Switch the mine water flow to the Lined Pond. Cleaning the Direct Feed branch uses the hydraulic head from the difference in elevation between the mine yard and the Direct Feed pipeline pig launcher.

   Place the 2-inch stainless steel pump in the north sump, located in the Direct Feel line vault, to remove any mine water spillage. Any spilled mine water can be pumped back into the Direct Feed Line pig launching unit or pumped into the Lined Pond branch via the camera vault (this requires removal of the blind flange on the camera vault wye). Follow all health and safety protocols when accessing and working in the concrete vault. Note that at about 1,000 gpm or less, the pipeline to the Lined Pond should be operating as open channel flow and should not be under pressure. However, if flow is constricted downstream from the wye for any reason, the wye could be under pressure. If any signs of pressure are apparent when removing the wye blind flange bolts, such as water spraying through the seal, reseal the wye and determine the cause of the back pressure, and dispose of the vault water elsewhere. It is recommended that the Main Line/Lined Pond Branch be pigged and/or camera-inspected prior to the Direct Feed branch. This would identify any blockages that may result in the wye being under pressure.

   Perform pre-cleaning (followed by post-pigging) camera inspection once per year or more frequently as directed by USACE. Camera inspection requires that the lower section of the Direct Feed pipeline be drained (see Section 3.3 for pipeline drainage procedures). To inspect the section between the Direct Feed branch valve and the tee, mine water needs to be diverted into the old mine water line via the overflow manhole by closing the manually operated mine yard pigging vault valve (ML-001).

2. After verification that the Lined Pond branch valve (LP-001) is open and the Direct Feed branch valve (DF-001) is shut, remove the 20-inch blind flange (equipped with a handle and hinge) on the stainless steel pig launching wye and insert an 18-inch Bare Swab (G-1 or Yellow Bare model) with transmitter into the launch chamber, and push it firmly into the reducer at the nose of the wye. It is recommended to use a packer device (e.g., an aluminum smooth-edge brace attached to an 8-foot aluminum rod) to aid in ramming the pig into the nose of the wye to create a seal. Close the cover and secure with the gasket and bolts. This initial "soft" pig is run to check for obstructions. Inspection of this pig for damage once it exits will be the best indication of any potential problems/obstructions in the pipeline.

3. The cleaning pigs referenced are purchased with a cavity in the body of the pig, which allows for the installation of a transmitter device used to track the pig location in the pipeline (Spy Pig Tracker as available from Ferguson Contracting, Inc. 208-784-

7604). The transmitter sends out a signal that is received by a hand-held wand that emits an audio or visual output. Install the transmitter unit inside the Bare Swab and seal the cavity with the wing nuts provided. Follow the detailed use instructions provided with the tracking device. This tracker will help determine when a successful launch of the pig has occurred and will be invaluable if a pig becomes jammed.

4. Place personnel at the mine yard overflow manhole (shown on Figure 1-1) to track mine water backup levels and a person at the CTP Aeration Basin pig catcher box to announce when the pig arrives (shown on Figure 1-2), both with radio communication. Check the effectiveness of the communication link prior to the start of activities.

5. Simultaneously open the Direct Feed branch valve and close the Lined Pond branch valve to build pressure in the Direct Feed Line. Monitor the pressure on the launcher pressure gauge, and check the pig location with the pig tracker equipment.

6. Based on experience with the Main Line pigging, the vacuum relief valve on the Direct Feed Line at the top of the hillside (Direct Feed branch Station 4+20) and also possibly the valve in the pig launching vault, will open once the pig rushes down the steep incline toward Bunker Creek.

7. Once the pig arrives at the Aeration Basin pig catcher box, the personnel will radio to the staff positioned at the launcher that the pig has arrived and to re-divert the flow back to the Lined Pond by simultaneously opening the Lined Pond branch valve while closing the Direct Feed branch valve. Once the flow subsides, the pig catcher box lid can be taken off and the pig removed. Note that the pig will be waterlogged and heavy.

8. Once the swab pig has been removed from the pig catcher box, re-secure the lid and inspect the pig for damage. If significant damage is found, the line should be inspected with the camera for blockage (see Section 3.3). Otherwise, proceed to load the next cleaning pig and salvage the swab pig for future use.

9. Repeat Steps 4 through 8 with successive cleaning pigs. Past cleaning efforts for the Main Line/Lined Pond branch have successfully used 18-inch-diameter by 36-inch-long utility cleaning pigs molded with polyurethane foam and with a series of polyurethane strips (criss-crosses). This type of pig is relatively smooth-walled. In addition, plastic brushing pigs [high-pile, Flowmore Product Code (CPB)] have also been used and provide a more aggressive cleaning. These pigs are stiffer and therefore will require increased pressure to move through the line. Pressure spikes of 5 to 10 pounds per square inch (psi) should be expected. All pigs can be reused if they are not excessively damaged. ***Note: In no circumstance should a pig with wire***

brushes or aggressive coatings be used, because it will scratch the interior walls of the HDPE pipe.

10. After the last pig is sent through the pipeline, place all pigs to be reused inside the vault for future use. For the annual camera inspection (or more frequently as directed by USACE), initiate post-cleaning camera inspection (see Section 3.3). Once this is done, notify the mine office and the CTP operators that the pigging is complete and that normal flow can be resumed in the pipeline.

3.2.1.2 Main Line/Lined Pond Branch

The Main Line/Lined Pond branch is also equipped with a cleanout vault, which is located in the mine yard. The pig launching unit was fabricated by Flowmore, Inc. and braced by Mine Fab, Inc.

The pig launching unit is constructed of HDPE with a 24-inch-diameter steel blind flange cover. The main body of the pig launcher is 24 inches in diameter (SDR11) with a reducer to 20 inches in diameter (SDR17), which connects to the 20-inch pipeline wye. The connection is a 150-pound bolt pattern flange. The overall length of the unit is 5 feet. A 6-inch HDPE stem extends from the top of the launcher with a 6-inch stainless steel vacuum relief valve. A 3-inch HDPE stem extends from the bottom of the unit, supporting a 75 psi pressure relief stainless steel valve. A 6-inch stem extends from the side of the HDPE launcher with a 90-degree bend and 6-inch gate valve to connect with the incoming flexible pump hose used during cleaning operations. A ½-inch threaded nipple extends from the top of the launcher with a 0 to 100 psi pressure gauge. A steel beam extending across the vault with saddles attached to the launcher supports the entire unit. Additional steel supports are in place to securely hold the vacuum relief, pressure gauge and pump hose connection/valve. A grate platform with stairs is installed inside the vault to aid in pig launching operations. The steel blind flange cover is supported during removal by an electric hoist that is temporarily attached to the ceiling of the vault so that when the flange is removed for pig insertion, it can be swung to the side out of the way.

The following steps are required for the Main Line/Lined Pond branch cleaning via pigging:

1. Notify the CTP operators and the mine owner to schedule the cleanout and reduce mine water flow to less than 1,000 gpm. Generally, cleaning of the Main Line/Lined Pond branch and the Direct Feed branch will occur sequentially.

2. Follow all health and safety protocols when accessing and working in the concrete vault. A 2-inch stainless steel submersible pump is to be placed in the sump area to pump any spilled mine water back into the pipeline (either the concrete channel, the overflow manhole or the pig launcher assembly).

3. Perform pre-cleaning camera inspection once a year, or more frequently as directed by the USACE. Most of the line can be viewed by accessing the mine yard cleaning vault, the lower camera vault and the pipeline outlet (see Section 3.3).

4. Install the pig catching unit at the outlet at the Lined Pond.

5. Set up the pig launching pump (the pump should be capable of supplying at least 500 gpm at 30 psi) to pump from either a 4,000 gallon-capacity water truck, or the concrete channel outside the KT into the pig launching assembly via 6-inch flexible hose. Using the water truck is the preferred method as any spilled water would be noncontaminated water, thus eliminating any possible cleanup requirements. Testing and priming the pump prior to installing the pigs is advised (this also reduces the amount of air in the hose).

6. Close the manually operated Main Line valve (ML-001) located in the mine line pig launch vault. It is recommended the two operators are present to operate this valve.

7. Install an 18-inch Bare Swab (G-1 or Yellow Bare model) with transmitter into the launch chamber and push it forward firmly beyond the 6-inch inlet port, to aid in creating a seal to launch the Swab. Close the cover and secure. This initial "soft" pig is run to check for obstructions. Inspection for damage to the swab once it exits will be the best indication of any potential problems/obstructions in the pipeline. The cleaning pigs referenced are purchased with a cavity in the unit that allows for the installation of a transmitter device used to track the pig location in the pipeline (Spy Pig Tracker as available from Ferguson Contracting, Inc. 208-784-7604). The transmitter sends out a signal that is received by a hand-held wand that emits an audio or visual output. Install the transmitter unit inside the Bare Swab and seal the cavity with the wing nuts provided. Follow the detailed use instructions provided with the tracking device. This tracker will help to determine when a successful launch of the pig has occurred and will be invaluable if a pig becomes jammed. ***Note: In no circumstance should a pig with wire brushes or aggressive coatings be used, because it will scratch the interior walls of the HDPE pipe.***

8. Confirm that the Lined Pond branch valve (LP-001) is fully open and the Direct Feed branch valve (DF-001) is fully closed.

9. Open the 6-inch valve attached to the flexible discharge hose on the pig launcher assembly.

10. Place a water dam (plywood sheet with pull rope) on the lower trash rack to build stored water volume in the flume area to provide a surge flow that will aid in pig launching. The volume in the flume area is greater than the volume in the overflow manhole. This aids in preventing any flow from being diverted into the old mine line.

11. Position personnel with radio communications at the pump, at the K.T. flume dam, at the storm water cross-connect overflow manhole in the mine yard, at the pig launching vault, and at the pipe outlet at the Lined Pond prior to starting the pig launch. Check the effectiveness of the communication link prior to the start of activities.

12. Initiate aggressive pumping to launch the pig. Monitor the pressure gauge to give an indication of a launch, even if previous launches have shown no visible pressure reading prior to launch. Without a tracking device, it is difficult to determine if the pig was in fact launched or if the water is only going around the pig. The pig tracker is used to determine a successful launch. Another indication of a moving pig has been a loud hissing noise of the vacuum relief valve opening once the pig drops off the steep grade of the hillside. This will take roughly three to five minutes, depending on the amount of water being pumped.

13. Continue aggressive pumping until it is confirmed that the pig has left the pig launch vault area, then shut down the supply pump while the operators in the vault are opening the Main Line valve (ML-001).

14. Once the pig leaves the launch area and the Main Line valve is being opened, the flume dam can be removed, sending the stored water volume to the pig launch vault.

15. Once the Bare Swab pig exits the mine line (estimated to take ten minutes), inspect the pig for damage. If significant damage is found, the pipeline should be inspected with the camera for blockage. Otherwise, proceed to load the next cleaning pig and salvage the Swab for future use.

16. Repeat steps 6 through 15 with a cleaning pig rather than a Swab. Past cleaning efforts have successfully used 18-inch-diameter by 36-inch-long utility cleaning pigs molded with polyurethane foam and a series of polyurethane strips (criss-crosses), and plastic brushing pigs (high-pile CPB). The cleaning pigs are stiffer and therefore will require increased pressure to move through the line. Pressures spikes of 5 to 10 psi should be expected. During the cleaning operation, the pigs can be reused if they are not excessively damaged. ***Note: In no circumstance should a pig with wire brushes or aggressive coatings be used, because it will scratch the interior walls of the HDPE pipe.***

17. After the last pig is sent through the pipeline, flush out the pump and hose with clean water if mine water has been used rather than a water truck. The hose fittings can then be removed without spilling mine water on the surface. Place all pigs to be reused inside the mine yard vault for future use. Remove the pig catcher from the outlet. Initiate the yearly post-cleaning camera inspection as directed by the USACE.

Notify the mine office and the CTP operators that the pigging is complete and that normal flow can be resumed in the pipeline.

3.2.2 Pipeline Hydro-Jetting

This section describes the details for pipe cleaning along the Main Line and the Direct Feed pipeline in areas that is not accessible by pigging. Special precautions should be taken to not use pressure levels that could scour the interior of the pipe, and reduce its structural integrity and its resistance to scaling.

Big Sky Industrial of Spokane (509-624-4949) has successfully performed the hydro-jetting and camera inspection operations in the past. Prior to hydro-jetting, the pipeline will be inspected via camera for those yearly events that are prescribed for camera inspection (or more frequently as directed by USACE). See Section 3.3 for details on camera accessing.

3.2.2.1 Direct Feed Branch

There is an approximate 20-foot section of HDPE pipe between the tee and the pig launching assembly that will require hydro-jetting. To perform this cleaning, mine water will need to be diverted into the old mine water line in the mine yard.

The following steps should be taken for hydro-jetting this section of Direct Feed pipe:

1. Notify the mine owner of the cleanout schedule and coordinate to reduce as much of the mine water as possible. The most effective video inspection or cleaning occurs when the pipeline is empty. Divert the mine water into the old mine water line by closing the knife-gate valve (ML-001) in the pigging vault in the mine yard. Carefully and continuously monitor for overflow to the stormwater system, as described for a pigging operation.

2. Access into the 20-foot pipeline section is through the pig launcher in the Direct Feed vault. Follow all health and safety protocols when accessing and working in the concrete vault.

3. Suitable water for hydro-blasting should be used. In the past, water from the hydro-jetting truck has been used for cleaning the Main Line. This procedure is recommended for this section of pipe. If additional water is required, a water supply truck will need to be utilized, as there is no longer water available from the East decon station.

4. After hydro-jetting is completed, post-cleaning camera inspection will be done during the annual event, or more frequently as directed by USACE. The mine owner is to be

notified once cleaning/camera operations are completed so that mine water flow can be returned to normal.

3.2.2.2 Main Line

Along the Main Line, the approximately 395-foot section of HDPE pipe between the concrete channel at the KT Portal (Main Line Station 10+00) and the pig launcher (Main Line Station 13+95) requires hydro-jetting for cleaning. The steps for hydro-jetting this section of pipeline consist of the following:

1. Notify the mine owner of the cleanout schedule and coordinate to remove as much of the mine water as possible. The most effective video inspection or cleaning occurs when the pipeline is empty.

2. Access into the pipeline can be obtained at the pipeline inlet and at the overflow manhole (see Figure 1-1). Follow all health and safety protocols when accessing the manhole.

3. Suitable water for hydro-jetting should be used. In the past, water has been supplied by the hydro-jetting service truck. If another supply is needed, possible sources are refilling at the well located next to the CTP, or a standby water truck. The water supply from the hydrant next to the concrete channel is no longer usable.

4. After hydro-jetting is completed, post-cleaning camera inspection will be done during the annual event or more frequently as directed by USACE. The mine owner is to be notified once cleaning/camera operations are completed so that the mine water flow can be returned to normal.

3.3 CAMERA ACCESSING

This section provides direction for camera accessing. Big Sky Industrial of Spokane (509-624-4949) has successfully performed the video camera operation in the past. Annual camera inspection will generally occur prior to and after pipeline cleaning by either pigging or hydro-jetting. Therefore, the same procedures for notifying the CTP operators and the mine owner are required as listed above for pigging and hydro-jetting. The most effective video inspection occurs when the pipeline is empty. A camera can be inserted at the following locations along the pipeline:

3.3.1 Direct Feed Branch

1. Pig Launching Vault (Direct Feed branch Station 0+20). Remove the wye blind flange and run the camera assembly through the wye fitting down into the pipeline. Note that

this pipeline requires drainage for camera inspection. The following steps are required for drainage of the Direct Feed pipeline:

a) Verify that the Direct Feed branch valve is completely closed and water is directed to the Lined Pond.

b) Follow all health and safety protocols when accessing and working in the concrete vault.

c) Place the 2-inch stainless steel pump in the north sump, located in the Direct Feed line vault, to remove any mine water spillage. Any spilled mine water can be pumped back into the Direct Feed Line pig launching unit or pumped into the Lined Pond branch via the camera vault (this requires removal of the blind flange on the camera vault wye).

d) Attach a valve-controlled drain line to the 8-inch-diameter vertical riser pipe located in the drain vault via a Victaulic quick-disconnect and route the discharge to a collection tanker, or pump the mine water to the CTP Aeration Basin influent launder. Utilizing a valve-controlled line to the collection tanker will greatly reduce the possibility of contaminating the newly constructed rails-to-trail area. A tanker can be filled and transported to the Aeration Basin to unload. The estimated volume to handle is approximately 9,000 gallons.

e) Slowly open the drain valve to release water into the temporary discharge line. Open the valve at the end of the discharge line to drain into the tanker. Note that initially the water will be under about 16 feet (7 psi) of water pressure. The pressure will decrease as the pipe drains. Once the water level is equal to the drain valve elevation, water will need to be pumped out using a pump with a small influent pipe that will fit inside the 8-inch-diameter riser pipe.

2. Pig Catcher Box at the CTP Aeration Basin. After the pipeline is drained, open the access hatch to insert the camera and run the camera down the line back toward the drain vault to inspect this section of the Direct Feed Line.

3.3.2 Main Line/Line Pond Branch

1. Pipeline Inlet (station 10+00): Access here may require that the mine water be diverted upstream of the concrete channel inlet at the KT Portal. This can be accomplished by creating a sandbag dam near the portal and pumping mine water into the old mine water pipeline. However, in the past, low KT discharge flow has been sufficient to obtain visible video of the pipeline.

2. Overflow Manhole (station 11+55): Access here also may require that the mine water be diverted from the pipeline system, as described above. However, in the past, low KT discharge flow has been sufficient to obtain visible video of the pipeline.

3. Cleaning Vault in the Mine Yard (Station 13+95): This is a designated camera access location as well as a pig launching station. Camera access requires mine water to be bypassed into the old mine water discharge pipeline by closing the knife-gate valve inside this vault. The camera has been successfully placed 1,018 feet down towards the Lined Pond from this point. Note that the wye connection in the vault creates a sharp intersection of pipes, making camera retrieval difficult. A portable ramp with ropes is needed to create a retrieval platform for the camera. The ropes will aid in adjusting and retrieving the ramp. The ramp should be constructed of a half-pipe from 16-inch-diameter plastic pipe approximately 5 feet long. This will adequately transition the wye connection down to the bottom of the 22-inch-diameter HDPE pipe.

4. Lower Camera Access Vault (Main Line/Lined Pond Branch Station 24+44): This is a designated camera access location. For access, the mine water should be bypassed into the Direct Feed branch by opening the Direct Feed branch valve (DF-001) and closing the Lined Pond branch valve (LP-001). The camera has been successfully negotiated to the 623-foot mark from this vault toward the pond. At this distance, the sweeping bend in the mine line tends to tip the camera over.

5. Pipeline Outlet at the Lined Pond (Main Line/Lined Pond Branch Station 40+77): Access here requires the mine water to be bypassed into the Direct Feed branch by opening the Direct Feed branch valve and by closing the Lined Pond branch valve. The camera has been negotiated to the 242-foot mark from the outlet toward the lower vault. At this mark, excessive buildup and backed-up water from a flat pipe grade caused the camera to lose traction.

3.4 PIPELINE INSPECTION PROCEDURE

During pipeline cleaning, the inside condition of the pipe should be inspected by camera. Other items that should be inspected at least twice a year (frequency to be determined with experience and as directed by the USACE) include:

- Pipe: Inspect visible pipe sections and pipe joints for any gouges or sharp cuts on the outside surface that are greater than 10 percent of the wall thickness; minor scuffing or scratching will not affect the pipe and pipe fittings service life per the pipe manufacturer.

- Manholes/Vaults: Inspect the ring, covers, lids, interior walls and floors (floor sumps), and seals around the pipe sections and joints (Link-Seals), including the pipeline inlet at the channel station 10+00, for damage.

- Mine Yard Overflow Pipe: Inspect the seal around the 24-inch-diameter overflow pipe inside the overflow manhole (station 11+55) and the interior condition of the pipe, looking for obstructions and damage.

- Valves: Inspect for leaks in the interior sealing surfaces of valves by closing the valve and observing possible downstream leaks through the wye fittings or discharge at the Lined Pond. Inspect the exterior of the valve and operator, and the flanges for signs of corrosion (rusting) and damage, and report any damage requiring repairs. All valves should be exercised quarterly at a minimum.

- Fittings: Inspect the wyes and other fittings (electrofusion couplers) for damage (see pipe inspection above) and connections to the pipe.

- Lined Pond Thrust Block: Inspect the exterior condition of the concrete thrust block, steel straps, and bolts for damage and corrosion.

- Direct Feed Line Pig Launcher/Catcher: Inspect the connection with the pipeline and the connection to the Aeration Basin influent launder for leaks and corrosion.

All inspection results should be noted on the Pipeline Inspection Form (see Preventative Maintenance Plan) and included with the corresponding monthly Discharge Monitoring Report.

3.5 DIRECT FEED BRANCH AND LINED POND BRANCH ACTUATOR POWER OUTAGE

Generator Operation Procedure

***Note: This procedure should only be used in the event of a utility supply power loss.** By following this procedure, the CTP operators can control the destination of AMD from the Kellogg Tunnel. The flow can be diverted to the Lined Pond during a utility supply power loss.

USACE Storage Building

- Transport the generator from the storage building to the Direct Feed Line electrical control panel located next to the Direct Feed Line pig launch vault.

Direct Feed branch Station Containment Area (Station 0+20)

- Check the generator fuel and oil levels to ensure proper amounts of each are present.

- Check the generator fuel supply valve. The fuel supply valve must be open.
- Start the generator and allow it to operate for two or three minutes.
- With the generator off, connect the power supply cord to the 240V outlet located on the right side of the generator control panel.
- Connect the outlet side of the generator supply cord to the bottom of the electrical panel located on the power pole. The generator connection receptacle is clearly identified on the electrical panel.
- Slide the breaker control plate to disconnect the utility supply power to the valve actuator control panel.
- Activate the generator supply breaker to allow the generator to supply power to the actuator control panel.
- Place the Remote-Local switch in the Local position. This switch is located in the actuator control panel.
- Start the generator.
- The Direct Feed Line and the Lined Pond line valves can now be operated from the actuator control panel.

To operate the valves using utility-supplied power to the Actuator Control Panel:

- Turn off the generator.
- Remove the power supply cord from the electrical control panel.
- Slide the breaker control plate to disconnect the generator supply power.
- Activate the utility supply power breaker.

The Valve Actuators can now be operated from this location.

- To operate the valve actuators from the CTP control room, the Remote-Local switch must be placed in the Remote position.
- Lock all electrical and valve actuator control panels when leaving this area.

4.0 REFERENCES

CH2M HILL, 2000. *Bunker Hill Mine Water Pipeline 100 Percent Design and Record Drawings*. CH2M HILL, Spokane, Washington. February.

CH2M HILL, 2002. *Bunker Hill Superfund Site CTP Direct Feed Line Record Drawings*. CH2M HILL, Spokane, Washington. April.

ATTACHMENT A

FIGURE 1-1: MINE WATER CONVEYANCE SYSTEM

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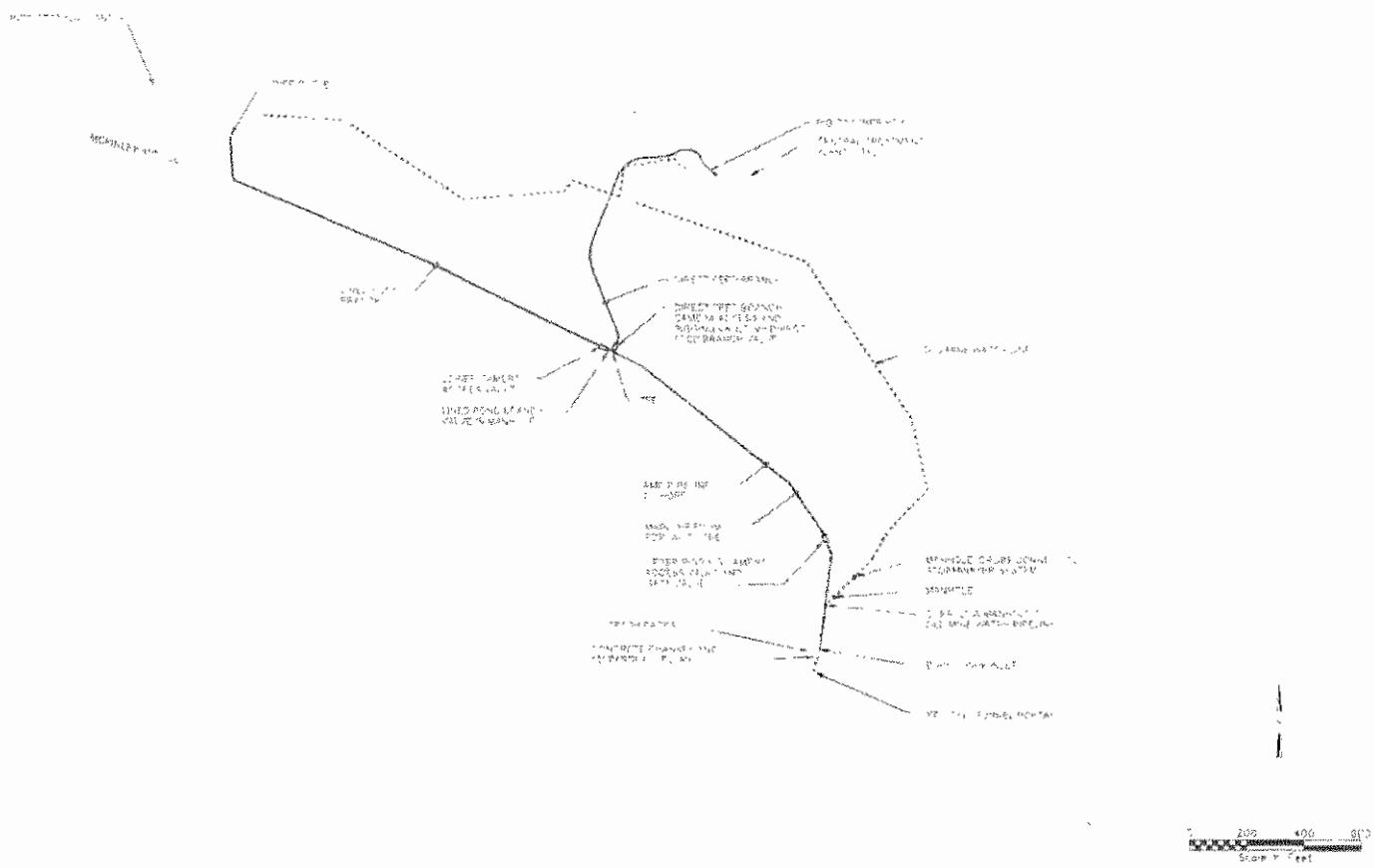

NOTES

FIGURE 1.1
MINE WATER
CONVEYANCE SYSTEM

CH2M HILL

ATTACHMENT B

FIGURE 1-2: DIRECT FEED BRANCH TO CTP

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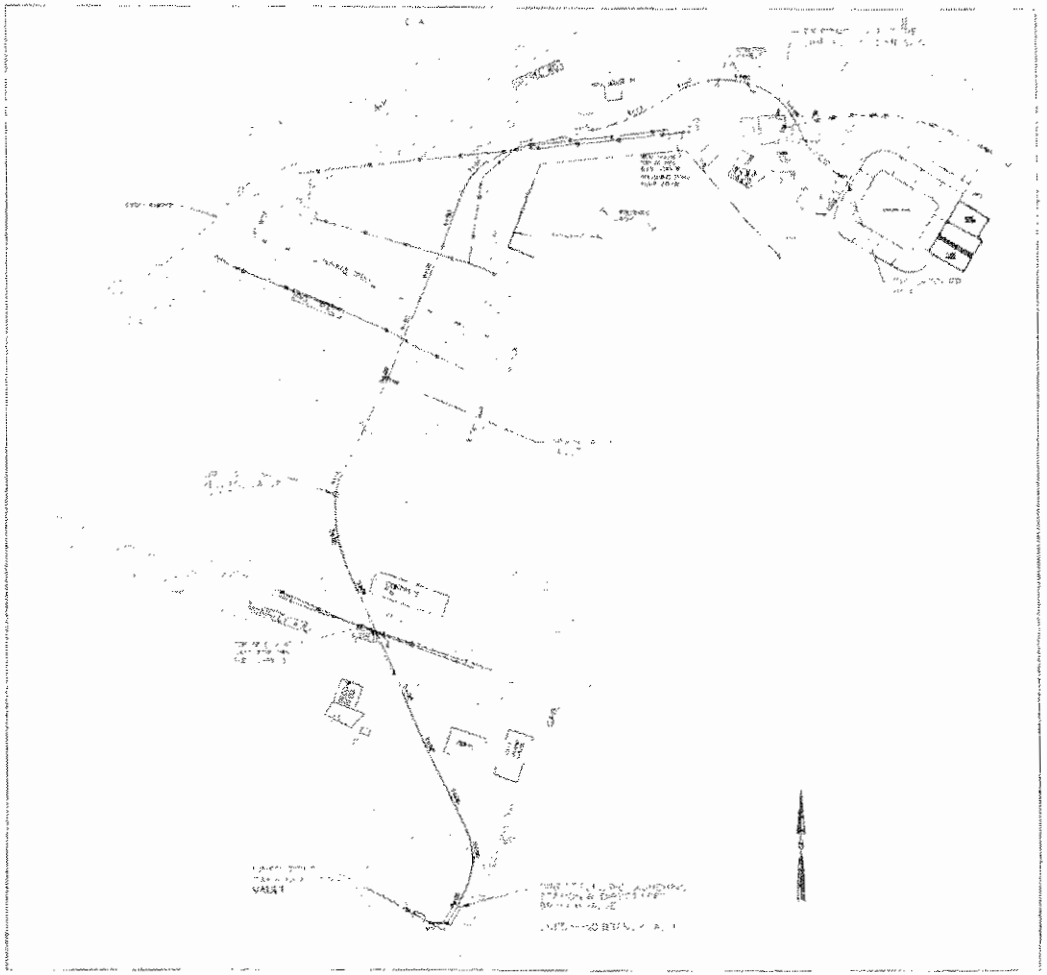

PLAN

CH2MHILL

BUNKER HILL
SUPERFUND SITE

FIGURE 1-2
DIRECT FEED BRANCH TO CTP

ATTACHMENT C

FIGURE 2-1: CONCRETE CHANNEL FROM PORTAL, TRASH RACKS AND PARSHALL FLUME

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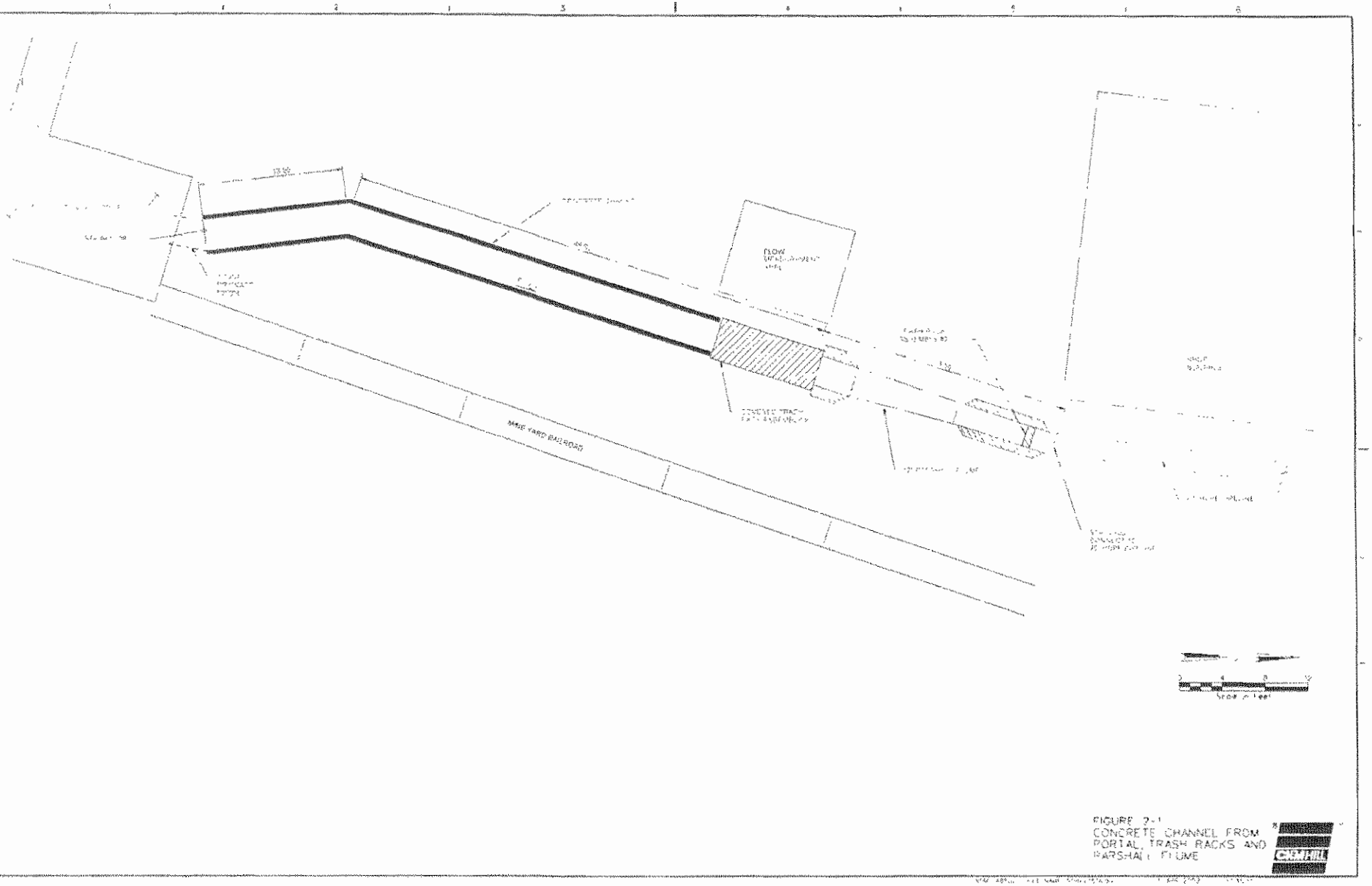

FIGURE 2-1
CONCRETE CHANNEL FROM
PORTAL, TRASH RACKS AND
PARSHALL FLUME

CH2M HILL

APPENDIX F

DISCHARGE MONITORING REPORT

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PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME:

ADDRESS:

CITY:

FACILITY: CENTRAL WATER TREATMENT PLANT

LOCATION: BUNKER HILL SUPERFUND SITE

National Pollutant Discharge Elimination System (NPDES)

DISCHARGE MONITORING REPORT (DMR)

(8-16)	(17-19)
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
(20-21)	(22-23)	(24-25)	(26-27)	(28-29)	(30-31)

PARAMETER (32-37)		(3 Card Only) Quantity or Loading (46-53)		(54-61)	(4 Card Only) Quality or Concentration (38-45)	(46-53)	(54-61)		No. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
	SAMPLE MEASUREMENT										
	PERMIT REQUIREMENT										
	SAMPLE MEASUREMENT										
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PREPARED BY: _____

REVIEWED BY: _____

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APPENDIX G

LIME AND FLOCCULENT MSDSs

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MATERIAL SAFETY DATA SHEET

GRAYMONT

SECTION I - CHEMICAL PRODUCT AND COMPANY INFORMATION

Material Name / Identifier: **QUICKLIME**	**WHMIS CLASS E : CORROSIVE MATERIAL**

MANUFACTURER'S AND SUPPLIER'S NAME:		EMERGENCY TEL No
GRAYMONT (NB) INC	4634 Route 880, Havelock, New Brunswick, E4Z 5K8	(506) 534-2311
GRAYMONT (QC) INC.	25, rue De Lauzon, Boucherville (Québec), J4B 1E7	(450) 759-8361
GRAYMONT (PA) INC.	P.O. Box 448 North Thomas St., Bellefonte, PA 16823	(888) 472-9086
GRAYMONT (WESTERN CANADA) INC.	190 – 3025 12 Street N.E., Calgary, Alberta, T2E 7J2	(800) 424-9300 Chemtrec
GRAYMONT (WESTERN US) INC.	3950 South 700 East, Suite 301, Salt Lake City, Utah 84107	(800) 424-9300 Chemtrec

Chemical Name	Chemical Family	Chemical Formula
Calcium oxide	**Alkaline earth oxide**	**Complex mixture - mostly CaO**
Molecular Weight	**Trade Name and Synonyms**	**Material Use**
CaO = 56.08	**High Calcium Quicklime, Lime, Quicklime, Calcium Oxide, Burnt Lime, Fluxing Lime.**	**Neutralization, Flocculation, Flux (met.), Caustic agent, absorption**

SECTION II - COMPOSITION AND INFORMATION ON INGREDIENTS

Hazardous Ingredients	Approximate Concentration (% by weight)	C.A.S Number	Exposure limits (mg/m^3)				
			OSHA PEL	ACGIH TLV	RQMT OEL	NIOSH REL	NIOSH IDLH
(Complex Mixture)			**(TWA) 8/40h**	**(TWA) 8/40h**	**(TWA) 8/40h**	**(TWA) 10/40h**	
Calcium Oxide	**90 to 100**	**1305-78-8**	**5**	**2**	**2**	**2**	**25**
Crystalline Silica, Quartz	**0.1 to 1**	**14808-60-7**	**10/(%SiO_2)+2 (respirable silica dust)**	**0.1 (respirable silica dust)**	**0.1 (respirable silica dust)**	**0.05 (respirable free silica**	**50**
Crystalline Silica, Quartz	**0 to 0.1 (note 1)**	**14808-60-7**	**10/(%SiO2)+2 (respirable silica dust)**	**0.1 (respirable silica dust)**	**0.1 (respirable silica dust)**	**0.05 (respirable free silica**	**50**

(note 1): Concentration of crystalline silica in a series of quicklime products will vary from source to source. It was not detected on some samples (< 0.1% w/w). Therefore two ranges are being disclosed

SECTION III - PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Odor and Appearance		Odor Threshold (p.p.m.)	Specific Gravity
Gas ☐ Liquid ☐ Solid ☑	**No odor - White crystalline substance**		**Not applicable**	**3.2 - 3.4**
Vapor Pressure (mm)	Vapor Density (Air = 1)	Evaporation Rate	Boiling Point (°C)	Freezing Point (°C)
Not applicable	**Not applicable**	**Not applicable**	**2850**	**2580**
Solubility in Water (20°C)	Volatiles (% by volume)	pH (25 °C)	Density (kg/m^3)	Coefficient of water/oil distribution
0.125g/100g Sat.soln	**Not applicable**	**Sat. soln CaO 12.45**	**720 - 1130**	**Not applicable**

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammability If yes, under

Yes ☐ No ☑ which conditions:

Extinguishing Media

Quicklime does not burn. Use extinguisher appropriate for material burning.

Special Fire Fighting Procedures

Avoid using water unless necessary for other materials, in which case, flood to absorb heat generated. (Contact with water will evolve heat and could cause ignition of paper, cardboard, etc.) Wear self-contained breathing equipment approved by NIOSH/MSHA.

Flash point (°C) and Method	Upper flammable limit (% by volume)	Lower flammable limit (% by volume)
Not applicable	**Not applicable**	**Not applicable**
Auto Ignition Temperature (°C)	TDG Flammability Classification	Hazardous Combustion Products
Not applicable	**Non-flammable**	**None**

Dangerous Combustion Products **None**

EXPLOSION DATA

Sensitivity to Chemical Impact	Rate of Burning	Explosive Power	Sensitivity to Static Discharge
Not applicable	**Not applicable**	**Not applicable**	**Not applicable**

SECTION V - REACTIVITY DATA

Chemical Stability Yes ☐ No ☑	If no, under which conditions?	**Absorbs moisture and carbon dioxide in the air to form calcium hydroxide and calcium carbonate.**
Incompatibility to other substances Yes ☑ No ☐	If so, which ones?	**Boron tri-fluoride, chlorine tri-fluoride, ethanol, fluorine, hydrogen fluoride, phosphorus pentoxide; water and acids (violent reaction with generating heat and possible explosion in confined area).**
Reactivity Yes ☑ No ☐	If so, under which conditions?	**Reacts violently with strong acids. Reacts with water to form calcium hydroxide. The heat generated when mixed with water or moist air is sufficient enough to ignite surrounding materials such as paper, wood or cloth.**
Hazardous Decomposition Products		**None.**
Hazardous Polymerization Products		**Will not occur.**

SECTION VI - TOXICOLOGICAL INFORMATION

Route of Entry

☑ Skin Contact ☐ Skin Absorption ☑ Eye Contact ☑ Acute Inhalation ☐ Chronic Inhalation ☑ Ingestion

Effects of Acute Exposure to Product

Skin	**Irritation, burning and corrosion of mucous and skin. Dehydration of tissues.**
Eyes	**Severe eye irritation, intense watering of the eyes, possible lesions, possible blindness when exposed for prolonged period.**
Inhalation	**If inhaled in form of dust: nose and throat irritation, cough, sneezing, inflammation of breathing passages, ulceration and perforation of nasal septum, bronchitis, possible pneumonia.**
Ingestion	**If ingested, burning and edema of digestive tracts, abundant salivation, difficulties in swallowing and breathing, vomiting blood, drop in blood pressure (indicates perforation of esophagus or stomach).**

Effects of Chronic Exposure to Product **Contact dermatitis**

LD_{50} of Product (Specify Species and Route) **Unavailable**	Irritancy of Product **Severe to moist tissues**	Exposure limits of Product **Unavailable**
LC_{50} of Product (Specify Species) **Unavailable**	Sensitization to Product **None**	Synergistic materials **None reported**

☑ Carcinogenicity ☐ Reproductive effects ☐ Teratogenicity ☐ Mutagenicity

Quicklime is not listed on the MSHA, OSHA or IARC lists of carcinogens. However, quicklime could contain crystalline silica, which inhaled in the form of quartz or crystobalite from occupational sources, is classified by IARC as (Group 1) carcinogenic to humans.

SECTION VII - PREVENTIVE MEASURES

Personal Protective Equipment (PPE)	**Wear clean, dry gloves, full length pants over boots, long sleeved shirt buttoned at the neck, head protection and approved eye protection selected for the working conditions.**

Gloves (Specify)	Respiratory (Specify))	Eyes (Specify)	Footwear (Specify)
Gauntlets Cuff style	**NIOSH approved filtering anti-dust mask**	**Tight fitting goggles with side shields. Do not wear contact lenses when handling this chemical**	**Resistant to caustics**

Clothing (Specify)	Other (Specify)
Fully covering skin	**Evaluate degree of exposure and use PPE if necessary. After handling lime, employees must shower. If exposed daily, use oil Vaseline, silicone base creme etc. to protect exposed skin, particularly neck, face and wrists.**

Engineering Controls (e g. ventilation. enclosed process, specify)

Enclose dust sources; use exhaust ventilation (dust collector) at handling points, keep levels below Max. Concentration Permitted.

Leak and Spill Procedure

Limit access to trained personnel. Use industrial vacuums for large spills. Ventilate area.

Waste Disposal

Transport to disposal area or bury. Review Federal, Provincial and local Environmental regulations.

Handling Procedures and Equipment

Avoid skin and eye contact. Minimize dust generation. Wear protective goggles and in cases of insufficient ventilation, use anti-dust mask. An eye wash station and safety shower should be readily available where this material or its water dispersions are used. Contact lenses should not be worn when working with this chemical.

Storage Requirements

Keep tightly closed containers in a cool, dry and well ventilated area, away from acids. Keep out of reach of children.

Special Shipment Information

Quicklime is not regulated by the Transportation of Dangerous Goods (TDG) Regulations (Canada) nor the Hazardous Materials Regulations (USA) unless this material is offered or intended for transportation by aircraft.

SECTION VIII - FIRST AID MEASURES

Skin

Carefully and gently brush the contaminated body surfaces in order to remove all traces of lime. Use a brush, cloth or gloves. Remove all lime-contaminated clothing. Rinse contaminated area with lukewarm water for 15 to 20 minutes. Consult a physician if exposed area is large or if irritation persists.

Eyes

Immediately rinse contaminated eye(s) with gently running lukewarm water for 15 to 20 minutes. In all cases, immediately contact a physician.

Inhalation

Move source of dust or move victim to fresh air. Obtain medical attention immediately. If victim does not breathe, give artificial respiration.

Ingestion

If victim is conscious, give 300 ml (10 oz) of water, followed by diluted vinegar (1 part vinegar, 2 parts water) or fruit juice to neutralize the alkali. Do not induce vomiting. Contact a physician immediately.

General Advise

Consult a physician for all exposures except minor instances of inhalation.

SECTION IX - REGULATORY INFORMATION

Regulatory Listings Reviewed:

Each component/ingredient of this product has been reviewed against the following regulatory listings:

- CERCLA / SARA section 302 - Extremely Hazardous Substance List.
- CERCLA / SARA Title III section 304- Hazardous Substance and RQ List.
- SARA Title III section 313 - Toxic Chemical List.

Component Calcium Oxide does not appear on any of the above regulatory listings.

SARA Title III Section 311/312 - Hazard Categories.

This product is regulated under CFR 1910.1200 (OSHA Hazard Communication) as Immediate (Acute) Health Hazards - Corrosive.

California Proposition 65

Component Calcium Oxide does not appear on the above regulatory listing. This product may contain small amounts of crystalline silica. Silica, crystalline (Airborne particles of respirable size) is regulated under California's Safe Drinking Water and Toxic Enforcement Act of 1986, (Proposition 65)

Transportation - Hazardous Materials Regulations (USA) & Transportation of Dangerous Goods (TDG) Regulations (Can).

Calcium Oxide is listed in both table 172.101 of Title 49 CFR 172 and in schedule 18 D.G. List (Chapter 34 TDG ACT, SOR/DORS 93-525). Application of requirements are restricted to material offered or intended for transportation by aircraft. - Calcium oxide, by aircraft only. Class 8 - Corrosives. PIN UN1910. Packing group III. Maximum net quantity per package - passenger vehicles, 25kg.

Canadian Environmental Protection Act (CEPA) – Domestic Substances List (DSL).

Calcium Oxide appears on the above regulatory listing.

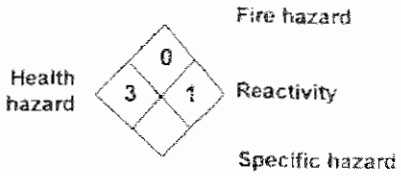
ANSI/NSF 60 - Drinking Water Treatment Additives.

This product has been investigated with respect to elements identified by EPA as toxic and it has been classified for use in direct contact with drinking water. (in accordance with Standard ANSI/NSF 60).

SECTION X - OTHER INFORMATION

Hazardous materials Identification System (U.S.)		
	Health Risks	3
	Flammability	0
	Reactivity	1
	Personal Protection	E

National Fire Protection Association (U.S.)



WHMIS Classification: **"E" Corrosive Materials.**

Symbol:

WHMIS Classification: **"D2A" Materials causing other toxic effects.**

Symbol:

Additional Information/Comments

The technical data contained herein is given as information only and is believed to be reliable.

GRAYMONT makes no guarantee of results and assumes no obligation or liability in connection therewith.

Sources Used:

NFPA, NLA, TDG, CSST, (LSRO-FASEB), Hazardous Products Act, Environment Canada, Enviroguide, OSHA, ACGIH, IARC, NIOSH, CFR, NTP.

Prepared by:	Telephone number	Date
GRAYMONT (QC) INC. **Technical Services**	(450) 449-2262	October 2003

Material Safety Data Sheet

Zeroday Enterprises, LLC
June 10, 2002

I. PRODUCT IDENTIFICATION AND COMPANY

Product Name: **Z Floce 571**

Supplier: Zeroday Enterprises, LLC
9835 SW Lumbee LN
Tualatin, OR 97062

Emergency telephone number: (800) 535-5053

II. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name: Anionic water soluble polymer.

Appearance: White granular dry product.

III. HAZARDS IDENTIFICATION

Aqueous solutions or powders that become wet render surfaces extremely slippery.

VI. FIRST AID MEASURES

Inhalation: Move to fresh air.

Skin contact: Wash with soap and water as a precaution. In case of persistent skin irritation, consult a physician.

Eye contact: Rinse thoroughly with plenty of water, also under the eyelids. In case of persistent eye irritation, consult a physician.

Ingestion: The product is not considered toxic based on studies on laboratory animals.

V. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water, water spray, foam, dry powder and carbon dioxide (CO_2).

Special fire-fighting precautions: Aqueous solutions or powders that become wet render surfaces extremely slippery.

Protective equipment for fire fighters: No special protective equipment required.

VI. ACCIDENTAL RELEASE MEASURES

Personal precautions:	No special precautions required.
Environmental precautions:	Do not contaminate water.
Methods for cleaning up:	Do not flush with water. Clean up promptly by sweeping or vacuum. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

VII. HANDLING AND STORAGE

Handling:	Avoid contact with skin and eyes. Avoid dust formation. Don not breathe dust. Wash hands before breaks and at the end of the workday.
Storage:	Keep in a dry, cool place (0-35° C, 32-95° F).

VIII. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls:	Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dusts.

Personal protection equipment:

- Respiratory protection:	Dust safety masks are recommended where concentration of total dust is more than 10 mg/m^3.
- Hand protection:	Rubber gloves.
- Eye protection:	Safety glasses with side-shields. Do not wear contact lenses.
- Skin protection:	No special protective clothing required.
Hygiene measures:	Wash hands before breaks and at end of workday. Handle in accordance with good industrial hygiene and safety practice.

IX. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Granular solid.
Color:	White.
Odor:	none.
pH @ 5 gm/l:	4-9 @ 5 gm/l.
Melting point (°C/°F):	Not applicable.
Flash point (°C/°F):	Not applicable.
Autoignition temperature (°C/°F):	Not applicable
Bulk density:	See technical bulletin.
Water solubility:	See technical bulletin.
Viscosity (mPa/s):	See technical bulletin.

X. STABILITY AND REACTIVITY

Stability:	Product is stable. No hazardous polymerization will occur.
Conditions to avoid:	Oxidizing agents may cause exothermic reactions.
Hazardous decomposition products:	Thermal decomposition may produce: carbon oxides, nitrogen oxides (NO_x)

XI. TOXICOLOGICAL INFORMATION

Acute toxicity:

- Oral:	LD_{50}/oral/rat > 5000 mg/kg.
- Dermal:	The results of testing on rabbits showed this material to be non-toxic even at high dose levels.
- Inhalation:	The product is not expected to be toxic by inhalation.

Irritation:

- Skin:	The results of testing on rabbits showed this material to be non-irritating to the skin.
- Eyes:	Testing conducted according to the Draize technique showed the material produces no corneal or iridial effects and only slight transitory conjuctival effects similar to those which all granular materials have on conjunctivae.
- Sensitization:	The results of testing on guinea pigs showed this material to be non-sensitizing.
- Chronic toxicity:	A two year feeding study on rats did not reveal adverse health effects. A two year feeding study on dogs did not reveal adverse health effects.

XII. ECOLOGICAL INFORMATION

Fish:	LC_{50}/Fathead minnows/96hr > 1000 mg/l.
Algae:	EC_{50}/Phaeodactylum tricornamtum/72hr > 500 mg/l.
Daphnia:	LC_{50}/Chaetogammarus marinus/48hr = 15 mg/l.
Bioaccumulation:	The product is not expected to bioaccumulate.

Persistence/degradability: Not readily biodegradable.

XIII. DISPOSAL CONSIDERATIONS

Waste from residues/ unused products:	In accordance with federal, state and local regulations.
Contaminated packaging:	Rinse empty containers with water and use the rinse water to prepare the working solution. Can be landfilled or incinerated, when in compliance with local regulations.

XIV. TRANSPORT INFORMATION

Not regulated by DOT

XV. REGULATORY INFORMATION

RCRA status:	Not a hazardous waste.
Hazardous waste number:	Not applicable.
Reportable quantity (40 CFR 302):	Not applicable.
Threshold planning quantity (40 CFR 335):	Not applicable.
California Proposition 65 Information:	*The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986:* This product contains a chemical(s) known to the State of California to cause cancer: acrylamide.

HMIS and NFPA Ratings:

	HMIS	NFPA
- Health:	1	1
- Flammability:	1	1
- Reactivity:	0	0

X. CONTACT

Persons to contact:	Manager of Regulatory Affairs Tel: (503) 799-7507

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text.

ATTACHMENT J6

CONTRACTOR SUBMISSIONS LIST

DESCRIPTION	SPEC REFERENCE	CLASS*	WHEN REQUIRED
Quality Control Program	C.25	G	Initial draft after award and final NLT 21 CD after changeover
Licenses and Permits	C.5.4	I	Prior to starting or performance of off-site actions
Preventive Maintenance Schedule	C.9.1.2.10	I	30 days after award
Control Inspection Schedule Plan	C.9.1.2.11	G	60 days after award
Control Inspection Report	C.9.1.2.11	I	By 240th contract day of each contract period.
Service incident report (over $1,000 in material cost)	C.9.1.2.4	I	Within 24 hours of incident identification
Utility Outage Request	C.6.10	G	7 CD prior to event.
Preventive Maintenance Inspection Report	C.9.1.2.10 (2)	I	Each Monday for the preceding week
Operating Reports	C.9.3.2	I	By 5th of each month
Equipment-In-Place Inventory	C.7.3.8.1		Initially after changeover and every six months
Spare IBE & Critical Reserve Inventory	C.7.3.8.2	G	ASREQ
Installed Building Equipment Inventory	C.7.3.8.3	G	ASREQ
Scheduled shutdown work clearance	C.14.1	G	NLT 4 CD prior to event
Notice of unscheduled shutdown	C.14.2	I	Within 24 hours of initial event
Equipment recommendations	C.17	G	30 CD notice unless urgent justification approved by COR. See H.9.

ATTACHMENT J6

CONTRACTOR SUBMISSIONS LIST

DESCRIPTION	SPEC REFERENCE	CLASS*	WHEN REQUIRED
Disposition of removed parts	C.18.2	I	W
Special circumstances reports	C.19.1	I	ASREQ
Final report	C.19.2	G	30 CD after end of contract period w/RASR
Temporary power connections	C.22.3.2	G	ASREQ
QC reports	C.25.6.1	I	W
Environmental Protection Plan	C.35.1	G	14 DAC
Staffing plan	01310-1.8.1	G	7 DAC
Organization charts	01310-1.8.2	G	7 DAC
Key personnel & qualifications	01310-1.4	G	7 DAC
Normal work schedule	01310-1.8.3	G	7 DAC
APP/SSHP	01351-1.6	G	14 DAC
Posted Instructions	01351-1.6	G	30 DAC
Health and Safety Phase-out Report	01351-1.6	G	30 CD after end of contract period w/RASR
Sampling and Analysis Plan	01450-3.1	G	30 DAC
PE Sample Concentrations and Acceptance Ranges	01450-1.6	G	ASREQ
Analytical Data Package	01450-1.7	G	W or ASREQ
Discharge Monitoring Reports	01450-1.7	G	M
Data Review Worksheets	01450-1.6	I	W
Quality Control Summary Report	01450-1.6.3	G	Biannual

*See list of codes at end of table.

Note: Submittals required by the Contract Clauses and other non-technical parts of the contract are not necessarily included in this listing.

2. The codes, if used, are defined as follows:

Code	Definition
DAC	Days after receipt of contract award.
ONE/R	One time plus revisions.
I	For information only
G	Requires specific approval.
ASREQ	As required.
M	Monthly.
W	Weekly.
O	Submit on last day of the month.
CD	Calendar days.
NTP	Notice to proceed.
RASR	Revisions as required.
NLT	Not later than

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ATTACHMENT

J6-1

ENG FORM 4025 (TRANSMITTAL FORM)

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TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE	TRANSMITTAL NO.

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: ☐ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SEC. NO. *(Cover only one section with each transmittal)*	PROJECT TITLE AND LOCATION		CHECK ONE: THIS TRANSMITTAL IS FOR GOV'T. APPROVAL ☐ FIO

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED ***(Type size, model number/etc.)*** *b.*	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. ***(See instruction no. 8)*** *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE *g.*	VARIATION ***(See instruction No. 6)*** *h.*	FOR CE USE CODE *i.*
				SPEC. PARA. NO. *e.*	DRAWING SHEET NO. *f.*			

REMARKS	I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated. _____ NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED *(List by Item No.)*	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.

2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.

3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.

4. Submittals requiring expeditious handling will be submitted on a separate form.

5. Separate transmittal form will be used for submittals under separate sections of the specifications.

6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".

7. Form is self-transmittal, letter of transmittal is not required.

8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.

9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A	--	Approved as submitted.	E	--	Disapproved (See attached).
B	--	Approved, except as noted on drawings.	F	--	Receipt acknowledged.
C	--	Approved, except as noted on drawings. Refer to attached sheet resubmission required.	FX	--	Receipt acknowledged, does not comply as noted with contract requirements.
D	--	Will be returned by separate correspondence.	G	--	Other *(Specify)*

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG Form 4025-R)

Attachment J7

QUALITY ASSURANCE SURVEILLANCE PLAN (QASP)
O&M Existing Treatment Plant, Bunker Hill Superfund Site
Contract No. _____

This plan is provided for information purposes only. This QUALITY ASSURANCE SURVEILLANCE PLAN is not part of the Request for Proposal nor will it be made part of any resulting contract. The Government has the right to change or modify inspection methods at its discretion.

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CONTENTS

Paragraph	Title
1.	PURPOSE
2.	AUTHORITY
3.	SCOPE
4.	DEFINITIONS AND TERMS
5.	RESPONSIBILITIES
6.	METHODS OF QA SURVEILLANCE
7.	LEVEL OF SURVEILLANCE
8.	CONTENTS OF PRS
9.	DOCUMENTATION
10.	IMPLEMENTATION
11.	ATTACHMENTS

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1. PURPOSE

This Quality Assurance Surveillance Plan (QASP) is a Government developed and applied document used to make sure that systematic quality assurance methods are used in the administration of the Performance Based Service Contract (PBSC) standards included in this contract issued hereunder. The intent is to ensure that the Contractor performs in accordance with performance metrics set forth in the contract documents, that the Government receives the quality of services called for in the contract and that the Government only pays for the acceptable level of services received. The QASP shall focus on the level of performance required by the statement of work, rather than the methodology used by the Contractor to achieve that level of performance. The QASP will be used by the Government to enforce the inspection and acceptance clauses of the contract

2. AUTHORITY

The Inspection of Services Clause under Section E INSPECTION AND ACCEPTANCE, give the Government the authority for inspections and acceptance to be accomplished by the Contracting Officer or his/her duly authorized representative of the contract work including maintenance and repair services, and documentation thereto.

3. SCOPE

To fully understand the roles and the responsibilities of the parties, it is important to first define the distinction in terminology between the Quality Control Plan and the Quality Assurance Surveillance Plan. The Contractor, and not the Government, is responsible for management and quality control actions necessary to meet the quality standards set forth by the contract. The Contractor develops and submits its Quality Control Plan (QCP) for Government approval in compliance with his contract deliverables. Once accepted, the Contractor then uses the QCP to guide and to rigorously document the implementation of the required management and quality control actions to achieve the specified results. The QASP on the other hand, is put in place to provide Government surveillance oversight of the Contractor's quality control efforts to assure that they are timely, effective and are delivering the results specified in the contract. The QASP is not a part of the contract nor is it intended to duplicate the Contractor's QCP. The Government has provided the Contractor an informational copy of the QASP as an Attachment to the solicitation to support the Contractor's efforts in developing a QCP and for providing the contractor an opportunity to comment and propose innovative solutions for the Government's QASP.

4. DEFINITIONS AND TERMS

The following definitions and terms are applicable to this QASP:

Acceptable Quality Level (AQL): The maximum percentage of products or services that

may be defective (do not meet performance standards) in a lot of SP deliverables for that lot to be considered satisfactory. Specification of an AQL does not allow the SP to knowingly provide defective service; instead, it is recognition of the fact that defective performance may sometimes occur unintentionally. As long as the percentage of defective performance does not exceed the specified AQL, the Government will not deduct for poor performance. However, the SP shall be required to re-perform or correct the defective service or product at no additional cost to the Government.

> Defect: A defect results for any process or procedure that is likely to reduce materially the usability or the unit of service for its intended purpose. A defect occurs when judgment and experience would indicate that the outcome or result would cause a hazardous or unsafe conditions for individuals using, maintaining or depending upon the service delivery, or a defect that judgment and experience indicate requires corrective action to achieve substantial compliance with contract requirements. A defect is also classified as a collection of 10 or more minor defects in the same general area, all close to each other. For certain performance requirements the criteria for a defect is defined on the Surveillance Activity Checklist.
>
> Minor Defect: A minor defect is a defect that is not likely to reduce materially the usability of the unit of service for its intended purpose, or is a departure from established standards having little bearing on the effectiveness of the unit of service. A minor defect is a defect that judgment and experience indicates that is not a substantial deviation from requirements and generally does not require reperformance for overall performance to be considered as satisfactory.

Contract Discrepancy Report (CDR): This report is the official form for documenting a nonconformance or unsatisfactory performance for resolution by the SP. A CDR, when issued by the Government, requires a formal response by the SP.

Quality Assurance (QA): The functions and associated actions performed by the Government to ensure that award requirements are performed in accordance with specified standards, and that an appropriate level of SP quality control activities are in place.

Quality Assurance Surveillance Plan (QASP): A written document that specifies the techniques and procedures the Government will utilize to perform quality assurance inspection and acceptance of SP products and/or services.

Quality Control (QC): Those internal SP management functions that include, but are not limited to, training, documented procedures, inspections, and tests (taken at the point of performance) necessary to ensure that SP products and/or services conform to PWS requirements, specifications, and standards.

Government Surveillance Resources: The Government will utilize the following

positions to perform award management and surveillance:

• **Contracting Officer (CO)** The CO will have ultimate authority to enter into, **administer**, or terminate contracts and make related determinations and findings on behalf of the Government in accordance with the FAR.

• **Administrative Contracting Officer (ACO)** Upon award, the CO is referred to as ACO. This term is used throughout this QASP. The ACO has the rights and responsibilities under the FAR assigned to the CO.

• **Contracting Officer's Technical Representative/Project Officer (COTR/PO)** The primary technically oriented representative assigned to monitor total SP performance and interact with the contractor personnel and provide technical coordination, as required, with other organizations. The source and authority for a COR is the Contracting Officer. COR limitations are contained in the written letter of designation. The COTR/PO may also be designated as the QAE.

• **Quality Assurance Evaluator (QAE)** The specific on-site Government representative(s) delegated authority for the day-to-day managerial and technical interaction with the SP personnel. The assignment may be made on an office or functional basis.

Service Provider (SP): The contractor and the employees of the contractor who are performing services under the contract.

Performance Requirements Summary (PRS): This is a tabular outline of contract services required, the performance objectives and the performance threshold to be achieved for the service to be satisfactory. The Government may use a variety of surveillance methods to evaluate the contractor's performance to determine if it meets the contract standards. Regardless of the surveillance method used the Government may vary the extent of oversight and level of surveillance as warranted by the contractor's performance.

5. RESPONSIBILITIES

The Contractor (the service provider activity) is responsible for QC (inspection at time of performance). The Government (the receiving activity) is responsible for QA inspection of the delivered product and/or service. The Contract Clauses require the Contractor to implement a quality control plan and allows the Government to implement quality assurance procedures. The Government will perform inspections and tests in a manner that will not unduly interfere or delay the service provider activity.

The Government will provide a program to assist in providing assurance of the quantity and quality of products and services received comply with contract requirements with resources that have responsibilities for the implementation of this QASP as follows:

Contracting Officer – The Contracting Officer ensures performance of all necessary actions for effective contracting, ensures compliance with the terms of the contract and safeguards the interests of the United States in the contractual relationship. It is the Contracting Officer that assures the Contractor receives impartial, fair, and equitable treatment under the contract. The Contracting Officer is ultimately responsible for the final determination of the adequacy of the Contractor's performance.

Contracting Officer Representative - The COR is responsible for technical administration of the project and assures proper Government surveillance of the Contractor's performance. The COR is not empowered to make any contractual commitments or to authorize any contractual changes on the Government's behalf. Any changes that the Contractor deems may affect contract, price, terms, or conditions shall be referred to the Contracting Officer for action.

QAE – The Quality Assurance Evaluator provides detailed technical oversight of the Contractor's performance and reports his or her findings to the COR in a timely, complete and impartial fashion to support the COR's technical administration activities. While the QAE may serve as a direct conduit to provide Government guidance and feedback to the Contractor on technical matters, he or she is not empowered to make any contractual commitments or to authorize any contractual changes on the Government's behalf. Any changes that the Contractor deems may affect contract, price, terms, or conditions shall be referred to the Contracting Officer for action.

6. METHODS OF QA SURVEILLANCE

The below listed methods of surveillance shall be used in the administration of this QASP. In addition to specific instructions that may be mentioned, the appropriate and standardized form that is to be used for documentation of QA surveillance is the Surveillance Activity Checklist, included as an Attachment to this plan.

100% Inspection - This level of inspection shall be accomplished by monitoring and documentation of all outputs of the performance requirement. This is most applicable to small quantity but important products and services. Each month, the COR, or if so designated the appropriate QAE, shall review the generated documentation and enter summary results into the Surveillance Activity Checklist.

Periodic Inspection - Periodic inspections may be conducted at any time for the tasks that have been identified and included in this QASP. Periodic Inspection shall be performed by the COR or by the QAE. The inspections may be scheduled (Daily, Weekly, Monthly, Quarterly, or Annually) or unscheduled (as required).

Unscheduled Inspection - Unscheduled inspections may be conducted at any time when the QAE determines there may be a need to inspect a service requirement or notices deficiency(ies) in route to or from scheduled inspections. Unscheduled inspections may also be used to monitor incidental services and conditions that are not included in the PRS; such as contractor conducted safety training meetings; compliance with health,

safety and sanitation requirements, compliance with security requirements and compliance with utility and energy conservation requirements.

Management Information Systems (MIS): The Government may evaluate outputs of a contract requirement through the use of management Information reports using 100% Inspection or Periodic Inspection. This method is best for general surveillance, can assist all other methods and may need to be supplemented by other surveillance methods. The QAE can accept the reports at face value, but use other methods to investigate problem areas. MIS analysis should be documented in surveillance logs or reports. A standard surveillance checklist log notation is appropriate to document the result of MIS analysis. In addition, the unscheduled inspection report should be used when additional surveillance efforts are required based on MIS data.

Validated Customer Complaints (VCC) – For this contract Customers will be defined as external stakeholders such as other government agencies with safety, inspection and monitoring roles such as but not limited to U.S. Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA) and State of Idaho, local city or county offices, and local property owners. Any deficiency identified by a customer will be investigated and validated by the QAE. These complaints will generate unscheduled periodic inspections. Customer complaints may be submitted by any form of communication, including FAX and e-mail.

7. LEVEL OF SURVEILLANCE

The level of surveillance identifies the intensity or degree of QA evaluation required for each performance indicator that is inspected. The Government will determine the level of surveillance throughout the contract period, initially adopting a “normal” level of surveillance. Variation from a normal level should occur only when the contractor’s past performance shows a clear improvement or deterioration in the control of quality. For this contract a weekly evaluation/ inspection of all the listed PRS items will be considered the normal requirement. Remember that the QA’s role is to ensure quality assurance and not to perform quality control for the service provider. Partnering with the service provider to achieve the performance objectives stated within the PRS is the primary objective for mission success.

8. CONTENTS OF PRS

The PRS attachment [**A-1**] displays four basic criteria to be established for each specified Contract Task as follows:

- Performance Requirement
- SOW reference
- Performance Standard /Method of Measurement (if applicable)

- Method of Surveillance (note the method of Surveillance is not a binding provision and is subject to modification at the discretion of the Government)

In this QASP, periodic inspection and 100 percent inspection have been chosen as the primary methods of surveillance to be used.

9. DOCUMENTATION

Accurate and thorough surveillance documentation is required for an effective and auditable QASP. Easy to use and complete documents are required, and the management and surveillance team must be disciplined in filling out the required documents. The inspection and acceptance of contractor provided products and services cannot be based upon opinion and anecdotal evidence. Completeness, currency and accuracy are required to document both satisfactory and unsatisfactory performance.

• It is equally important to document both satisfactory and unsatisfactory performance. Documentation of satisfactory performance assists in documenting that the award is properly implemented and executed.

• The documentation does not require complex writing. Simple and clear sentences are preferred. The key is to be complete. Some documents may be reviewed months later. The discussions should always allow for complete understanding based solely on the form.

9.1 QA Plan Attachments. The following are the primary general documents required by this QASP. The following discussion includes generic documents.

9.1.1 Surveillance Checklists for Planned Surveillance

The QAE should adopt a standard report format to record the result of observations made and comments about conditions found or about evaluations made of contractor metrics or quality data. Regardless of how the evaluation is conducted the Surveillance Checklist should be completed during or immediately after the inspection. The contractor representative should sign any Surveillance Checklist that list deficiencies and to record the date and time. This signature does not necessarily signify contractor agreement with the evaluation, but rather contractor receipt of the QAE's finding. Once the contractor has been informed of defective services, the contractor may be given the option to reperform them. The time of the contractor notification serves as the beginning of the reperformance period. If at the completion of reperformance the work is still unacceptable, the contractor representative should again be required to sign and date a Surveillance Checklist. A completed Surveillance Checklist becomes part of the formal QA files. Locally prepared Surveillance Checklists, as a minimum, should contain the following:

- The contract number or title
- A short description of the requirements being monitored

- The contract paragraph referencing the requirement or a description of the requirement.
- The method of surveillance, the observations made and a description of conditions found.
- The date, time and location of surveillance
- The name of the inspector

For simple requirements, a Tally Checklist, similar to Attachment **B-1**, can be used as the Surveillance Checklist. For routine requirements, Attachment **B-2** Surveillance Activity Checklist may be used. For services that occur infrequently or need t record a specific deficiency a form similar to Attachment **B-3** may be used.

9.1.2 Unscheduled Inspection Report

The Unscheduled Inspection method consists of impromptu evaluations of contract service requirements; that is, whenever the QAE determines there may be a need to inspect a service requirement or notices deficiencies in route to or from scheduled inspections. This method of surveillance may stand alone, although it is normally used to supplement a primary method as added documentation for contractor performance. An unscheduled Inspection may also be used for monitoring routine service requirements that require only periodic verification and are performed whenever time allows. There is no special procedure to be followed to initiate unscheduled inspections.

Whenever Unscheduled Inspection is conducted, regardless of the outcome, an Unscheduled Inspection Report is filled out, using a form similar to the sample shown in Attachment **B-4**. This form is the official documentation for that evaluation. When the QAE documents defects caused by unsatisfactory performance or nonperformance, the contractor must be notified and directed to take appropriate corrective action.

9.1.3 Validated Customer Complaints (VCC) – Upon receipt of a complaint, the QAE fills out a Customer Complaint Record (CCR) and then conducts an inspection to validate or invalidate the complaint. The complaint record should be of sufficient detail to allow a complete investigation that may be documented in a surveillance log. When appropriate, the record should be maintained with the log. A sample CCR is located in Attachment **B-5**. A customer complaint cannot be used to satisfy a QAE inspection requirement. However, it can be used as further evidence of unsatisfactory performance, if periodic or 100% inspection shows that the specific service is unsatisfactory. These complaints can be used to decide if action should be taken other than requiring rework. The re-performance period (if applicable) shall commence as though the deficiency was discovered through a scheduled inspection.

9.1.4 Contract Discrepancy Report (CDR) – A sample CDR can be found in Attachment **B-6**. For serious deficiencies, the QAE may issue a Contract Discrepancy Report (CDR) which the contractor must address by correcting both the defect and the root cause of the defect. Correcting the cause of the problem may involve making changes to the approved QC plan. In all cases when the contractor completes action on the CDR, the QAE must

confirm reperformance is satisfactory and that the action taken to correct the cause of the defect is acceptable. When confirmed, the completed CDR becomes part of the formal QA file.

9.2 QA Records

QAE will, in addition to providing documentation to the Contracting Officer, maintain a complete Quality Assurance file. The file will contain copies of all reports, evaluations, recommendations, and any actions related to the Government's performance of the quality assurance function, including the originals of all Surveillance Activity Checklists. All such records will be retained for the life of this contract. The QAE shall forward these records to the Contracting Officer at termination or completion of the contract.

10. IMPLEMENTATION

The QASP implementation is based upon careful planning and targeted use. These goals are met through scheduling, documenting, modifying, and implementing the QASP.

10.1 Surveillance Schedules –

The QAE develops a monthly schedule of surveillance activities based on the requirements of each QA Plan and the Contractor's performance schedule. Using the Surveillance Checklists for the service requirements to be monitored, the QAE schedules the inspections on a COR/QAE Surveillance Schedule form, as shown in the example of Attachment C-1. The schedule should show which activities the QAE will monitor each day and the inspection times, as appropriate. Surveillance should ideally cover all required hours of the Contractor's operations including nights, weekends, and holidays (however, time and budget restraints must also be considered). A partially completed schedule is shown in Attachment C-2 - Sample COR/QAE Schedule.

The monthly schedule should be completed by the last workday of the preceding month, with copies submitted to the COR as directed for review and approval. Changes in the schedule may be made when necessary to accommodate changes in the Contractor's schedule. Such changes must also be approved by the designated supervisory contract administration authority. The reason for the changes must be documented and made a part of the official QA files. Throughout the month, the QAE is responsible for preparing, as they occur, changes to the schedule.

The surveillance schedule allows the QAE to estimate time required to perform the required inspections and to plot where he or she should be on any given day of the week. By developing a balanced surveillance schedule, the QAE can be much more effective on the job. It also allows the QAE to plan the workday in advance to the best advantage, and it allows the QAE to eliminate some potentially wasted time.

Performance Requirement	SOW Paragraph	Performance Standard	Method of Surveillance
Operate plant to meet substantive requirements of the expired NPDES permit.	TE-6	0 defects per month - Met	VCC
		1 defect per month - Partially Met	Periodic Inspection
		2 defects per month - Not Met	
Provide qualified on-site staff personnel with necessary skills to perform the job.	01310	0 defects per month - Met	Periodic Inspection
		1 defect per month - Not Met	
Perform general operation of all plant functions	J1	0 defects per month - Met	Periodic Inspection
		1 defect per month - Not Met	

Performance Requirement	***SOW Paragraph***	***Performance Standard***	***Method of Surveillance***
Perform all recurring and preventive maintenance activities as required and scheduled	J1	0 defects per month - Met	Periodic Inspection
		1 defect per month - not Met	
Respond to all service/trouble calls including after hours within timely manner.	C1	+15 minutes 0 defects per month - Met	Periodic Inspection
		+15 minutes 1 defect per month - Partially Met	Direct Observation
		+ 15 minutes 2 defects per month - Not Met	
Prepare and submit all required reports and documents in timely manner	J1	0 defects per month - Met	100 % Inspection
A defect will be considered a failure to submit one or more separate submittal items		1 defect per month - Partially Met	
for any week of operation.		2 defects per month - Not Met	

Performance Requirement	*SOW Paragraph*	*Performance Standard*	*Method of Surveillance*
Maintain Health & Safety Program	C.35, C.38	100 % of time	Periodic Inspection
Maintain Environmental Protection Program	C.35	100 % of time	Periodic Inspection
Maintain Quality Control Program	C.25	100 % of time	Periodic Inspection
Perform all OMER work conforming to SOW as required and scheduled	H.10	100 % completion of work	Periodic Inspection
		90 % on schedule	Direct Observation

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ATTACHMENT B-1

TALLY CHECKLIST							MONTH OF
OBSERVATION NUMBER	TYPE OF ** SERVICE	DATE			S[1]	O[2*]	REMARKS
		REC'D	DEL'D	INSPT'D			

[1]S: Satisfactory
[2]O: Other than satisfactory
* Requires Contractor's Initial

ATTACHMENT B-2

SURVEILLANCE ACTIVITY CHECKLIST					DATE
CONTRACT REQUIREMENT	CONTRACT PARAGRAPH NUMBER	METHOD OF SURVEILLANCE	DATE ACCOMPLISHED	WHERE ACCOMPLISHED	COMPLIANCE

COMMENTS: Describe conditions found that rendered units of service unsatisfactory, classify each nonconformance as major or minor. (Attach continuation sheets as necessary)	
Inspected by:	Date:
Contractor Representative Comments if in Disagreement:	
Contractor Representative Signature:	Date:

Figure 6-8 Example Surveillance Checklist

ATTACHMENT B-4

UNSCHEDULED INSPECTION REPORT		
INSPECTED BY:		
TIME/DATE OF INSPECTION:		
LOCATION OF INSPECTION:		
SERVICE REQUIREMENT INSPECTED:		
PERFORMANCE STANDARDS: (1) (2) (3) (4)05		
QAE RESULTS/REMARKS:		
REPERFORM/REWORK		
CONT. SIGNATURE:	DATE ISSUED:	DATE RETURNED:
REMARKS:		

CUSTOMER COMPLAINT RECORD
Date and Time of Complaint:
Source of Complaint Organization: Individual:
Nature of Complaint:
Contract Reference:
Validation:
Date and Time Contractor Informed of Complaint:
Action Taken by Contractor:
Received and Validated by:

CONTRACT DISCREPANCY REPORT			
1. CONTRACT NUMBER			
2. TO: (Contractor and Manager's Name)		3. FROM: (Name of QAE)	
DATES			
PREPARED	ORAL NOTIFICATION	RETURNED BY CONTRACTOR	ACTION COMPLETE
4. DISCREPANCY OR PROBLEM: (Describe in Detail: include reference in SOW/Directive: Attach continuation sheet if necessary.)			
5. SIGNATURE OF CONTRACTING OFFICER			
6. TO: (Contracting Officer)		7. FROM: (Contractor)	
8. CONTRACTOR RESPONSE AS TO CLAUSE, CORRECTIVE ACTION, AND ACTIONS TO PREVENT RECURRENCE. ATTACH CONTINUATION SHEET IF NECESSARY. (Cite applicable QA program procedures or new QA procedures)			
9. SIGNATURE OF CONTRACTOR REPRESENTATIVE			10. DATE
11. GOVERNMENT EVALUATION: (Acceptance, partial acceptance, rejection: attach continuation sheet if necessary.)			
12. GOVERNMENT ACTIONS: (Payment deduction, cure notice, show cause, other.)			

CLOSE OUT			
	NAME AND TITLE	SIGNATURE	DATE
CONTRACTOR NOTIFIED			
QAE			
CONTRACTING OFFICER			

Exhibit 6-14 Contract Discrepancy Report

ATTACHMENT C-1

COR/QAE SURVEILLANCE SCHEDULE							DATE:
When completed, stamp "FOR OFFICIAL USE ONLY"							
DATE /SERVICE							

ATTACHMENT C-2

COR/QAE SURVEILLANCE SCHEDULE							DATE: 30 Sep 1996
When completed, stamp "FOR OFFICIAL USE ONLY"							
DATE \SERVICE	Mon	Tue	Wed	Thu	Fri	Sat	Sun
8/30 - 9/6 0800	GROUNDS PARCELS #7,#181, #43	GROUNDS PARCELS #4,#13, #201	UPDATE SAMPLING GUIDES	DUMPSTERS #5, #28, #76	BLDGS/ROOMS #3, #20, #31	SEMI-ANNUAL RESERVOIR TREATMENT	
0900	DUMPSTERS #5, #28, #76	MEETING	DUMPSTERS #2, #23, #80, #140, #153	BLDGS/ROOMS #14, #18, #88, #170	DUMPSTERS #23, #78, #96, #183, #197, #218		
1000	GROUNDS QC FILES	INSPECT SERVICE CALLS	DUMPSTERS #176, #210, #225, #287	WASH RACK	OFFICE WORK		
1300	BLDGS/ROOMS #4, #17, #23, #186, #249	DUMPSTERS #21, #97, #94, #167, #193, #236, #256	INSPECT SERVICE CALLS	INSPECT SERVICE CALLS	INSPECT SERVICE CALLS		
1500	OFFICE WORK	BLDGS/ROOMS #87, #98, #143, #213	GROUNDS PARCELS #23,#45, #106, #110, #158	GROUNDS PARCELS #27,#76, #187, #234, #278	GROUNDS PARCELS #29,#86, #193, #245, #307		
1600	OFFICE WORK	OFFICE WORK	BLDGS/ROOMS #56, #78, #93, #110, #135, #153, #215	MEETING	OFFICE WORK		
9/7 - 9/13	ETC						
9/14 - 9/20	ETC						
9/20 - 9/27	ETC						

Sheet 1 of 3

ATTACHMENT C-3

MONTHLY PERFORMANCE SUMMARY						
PERIOD COVERED:		TO:			INCLUSIVE:	
SERVICE REQUIREMENT	PERFORMANCE					
						REMARKS

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94-2159 ID,STATEWIDE

WAGE DETERMINATION NO: 94-2159 REV (26) AREA: ID,STATEWIDE

HEALTH AND WELFARE LEVEL - INSURANCE ONLY **OTHER WELFARE LEVEL WD:94-2160

****

REGISTER OF WAGE DETERMINATIONS UNDER THE SERVICE CONTRACT ACT By direction of the Secretary of Labor	U.S. DEPARTMENT OF LABOR EMPLOYMENT STANDARDS ADMINISTRATION WAGE AND HOUR DIVISION WASHINGTON D.C. 20210
William W.Gross Director Division of Wage Determinations	Wage Determination No.: 1994-2159 Revision No.: 26 Date Of Revision: 05/23/2005

State: Idaho
Area: Idaho Statewide

Fringe Benefits Required Follow the Occupational Listing

OCCUPATION CODE - TITLE	MINIMUM WAGE RATE
01000 - Administrative Support and Clerical Occupations	
01011 - Accounting Clerk I	9.28
01012 - Accounting Clerk II	10.72
01013 - Accounting Clerk III	12.07
01014 - Accounting Clerk IV	13.18
01030 - Court Reporter	18.73
01050 - Dispatcher, Motor Vehicle	15.94
01060 - Document Preparation Clerk	10.83
01070 - Messenger (Courier)	9.49
01090 - Duplicating Machine Operator	10.83
01110 - Film/Tape Librarian	11.00
01115 - General Clerk I	9.18
01116 - General Clerk II	10.38
01117 - General Clerk III	11.34
01118 - General Clerk IV	12.46
01120 - Housing Referral Assistant	12.98
01131 - Key Entry Operator I	10.43
01132 - Key Entry Operator II	11.43
01191 - Order Clerk I	10.12
01192 - Order Clerk II	11.11
01261 - Personnel Assistant (Employment) I	10.23
01262 - Personnel Assistant (Employment) II	11.36
01263 - Personnel Assistant (Employment) III	12.65
01264 - Personnel Assistant (Employment) IV	14.04
01270 - Production Control Clerk	17.04
01290 - Rental Clerk	10.03
01300 - Scheduler, Maintenance	10.54
01311 - Secretary I	10.54
01312 - Secretary II	12.18
01313 - Secretary III	12.98
01314 - Secretary IV	14.41
01315 - Secretary V	15.99
01320 - Service Order Dispatcher	14.71
01341 - Stenographer I	16.25
01342 - Stenographer II	18.06
01400 - Supply Technician	14.41
01420 - Survey Worker (Interviewer)	9.42
01460 - Switchboard Operator-Receptionist	9.75
01510 - Test Examiner	12.18
01520 - Test Proctor	12.18
01531 - Travel Clerk I	10.21
01532 - Travel Clerk II	10.72
01533 - Travel Clerk III	11.62
01611 - Word Processor I	11.67
01612 - Word Processor II	12.04
01613 - Word Processor III	13.28

03000 - Automatic Data Processing Occupations	
03010 - Computer Data Librarian	10.67
03041 - Computer Operator I	11.21
03042 - Computer Operator II	13.45
03043 - Computer Operator III	15.72
03044 - Computer Operator IV	18.32
03045 - Computer Operator V	19.37
03071 - Computer Programmer I (1)	16.02
03072 - Computer Programmer II (1)	20.80
03073 - Computer Programmer III (1)	25.84
03074 - Computer Programmer IV (1)	27.62
03101 - Computer Systems Analyst I (1)	24.04
03102 - Computer Systems Analyst II (1)	25.82
03103 - Computer Systems Analyst III (1)	27.62
03160 - Peripheral Equipment Operator	11.21
05000 - Automotive Service Occupations	
05005 - Automotive Body Repairer, Fiberglass	16.38
05010 - Automotive Glass Installer	13.21
05040 - Automotive Worker	13.06
05070 - Electrician, Automotive	13.39
05100 - Mobile Equipment Servicer	10.67
05130 - Motor Equipment Metal Mechanic	14.69
05160 - Motor Equipment Metal Worker	13.06
05190 - Motor Vehicle Mechanic	14.69
05220 - Motor Vehicle Mechanic Helper	10.67
05250 - Motor Vehicle Upholstery Worker	12.34
05280 - Motor Vehicle Wrecker	13.06
05310 - Painter, Automotive	13.95
05340 - Radiator Repair Specialist	14.17
05370 - Tire Repairer	10.02
05400 - Transmission Repair Specialist	14.69
07000 - Food Preparation and Service Occupations	
(not set) - Food Service Worker	8.29
07010 - Baker	10.33
07041 - Cook I	8.06
07042 - Cook II	9.35
07070 - Dishwasher	7.20
07130 - Meat Cutter	12.75
07250 - Waiter/Waitress	7.64
09000 - Furniture Maintenance and Repair Occupations	
09010 - Electrostatic Spray Painter	12.32
09040 - Furniture Handler	10.87
09070 - Furniture Refinisher	12.32
09100 - Furniture Refinisher Helper	10.87
09110 - Furniture Repairer, Minor	10.90
09130 - Upholsterer	12.32
11030 - General Services and Support Occupations	
11030 - Cleaner, Vehicles	7.89
11060 - Elevator Operator	8.46
11090 - Gardener	11.71
11121 - House Keeping Aid I	7.96
11122 - House Keeping Aid II	8.48
11150 - Janitor	8.89
11210 - Laborer, Grounds Maintenance	9.91
11240 - Maid or Houseman	7.46
11270 - Pest Controller	13.75
11300 - Refuse Collector	12.39
11330 - Tractor Operator	13.02
11360 - Window Cleaner	9.37
12000 - Health Occupations	
12020 - Dental Assistant	12.92
12040 - Emergency Medical Technician (EMT)/Paramedic/Ambulance Driver	13.13
12071 - Licensed Practical Nurse I	11.86
12072 - Licensed Practical Nurse II	13.29
12073 - Licensed Practical Nurse III	14.87
12100 - Medical Assistant	11.35
12130 - Medical Laboratory Technician	15.05
12160 - Medical Record Clerk	11.24
12190 - Medical Record Technician	13.54
12221 - Nursing Assistant I	8.73
12222 - Nursing Assistant II	9.82
12223 - Nursing Assistant III	10.71

12224 - Nursing Assistant IV	12.01
12250 - Pharmacy Technician	12.23
12280 - Phlebotomist	12.94
12311 - Registered Nurse I	19.66
12312 - Registered Nurse II	22.40
12313 - Registered Nurse II, Specialist	22.40
12314 - Registered Nurse III	26.68
12315 - Registered Nurse III, Anesthetist	26.68
12316 - Registered Nurse IV	29.88
13000 - Information and Arts Occupations	
13002 - Audiovisual Librarian	19.57
13011 - Exhibits Specialist I	13.15
13012 - Exhibits Specialist II	16.79
13013 - Exhibits Specialist III	19.93
13041 - Illustrator I	13.15
13042 - Illustrator II	16.30
13043 - Illustrator III	19.93
13047 - Librarian	18.04
13050 - Library Technician	11.00
13071 - Photographer I	12.36
13072 - Photographer II	15.84
13073 - Photographer III	17.75
13074 - Photographer IV	21.82
13075 - Photographer V	26.83
15000 - Laundry, Dry Cleaning, Pressing and Related Occupations	
15010 - Assembler	7.65
15030 - Counter Attendant	7.65
15040 - Dry Cleaner	9.10
15070 - Finisher, Flatwork, Machine	7.65
15090 - Presser, Hand	7.65
15100 - Presser, Machine, Drycleaning	7.65
15130 - Presser, Machine, Shirts	7.65
15160 - Presser, Machine, Wearing Apparel, Laundry	7.65
15190 - Sewing Machine Operator	9.67
15220 - Tailor	10.26
15250 - Washer, Machine	8.00
19000 - Machine Tool Operation and Repair Occupations	
19010 - Machine-Tool Operator (Toolroom)	12.32
19040 - Tool and Die Maker	18.45
21000 - Material Handling and Packing Occupations	
21010 - Fuel Distribution System Operator	15.51
21020 - Material Coordinator	17.06
21030 - Material Expediter	17.06
21040 - Material Handling Laborer	10.54
21050 - Order Filler	10.95
21071 - Forklift Operator	11.89
21080 - Production Line Worker (Food Processing)	11.89
21100 - Shipping/Receiving Clerk	11.09
21130 - Shipping Packer	11.55
21140 - Store Worker I	9.04
21150 - Stock Clerk (Shelf Stocker; Store Worker II)	12.55
21210 - Tools and Parts Attendant	11.89
21400 - Warehouse Specialist	11.89
23000 - Mechanics and Maintenance and Repair Occupations	
23010 - Aircraft Mechanic	19.18
23040 - Aircraft Mechanic Helper	12.95
23050 - Aircraft Quality Control Inspector	20.66
23060 - Aircraft Servicer	15.80
23070 - Aircraft Worker	16.72
23100 - Appliance Mechanic	13.79
23120 - Bicycle Repairer	9.30
23125 - Cable Splicer	21.82
23130 - Carpenter, Maintenance	15.14
23140 - Carpet Layer	15.99
23160 - Electrician, Maintenance	19.82
23181 - Electronics Technician, Maintenance I	17.56
23182 - Electronics Technician, Maintenance II	22.00
23183 - Electronics Technician, Maintenance III	26.06
23260 - Fabric Worker	15.05
23290 - Fire Alarm System Mechanic	17.27
23310 - Fire Extinguisher Repairer	13.93
23340 - Fuel Distribution System Mechanic	19.00

23370 - General Maintenance Worker	14.93
23400 - Heating, Refrigeration and Air Conditioning Mechanic	16.05
23430 - Heavy Equipment Mechanic	16.72
23440 - Heavy Equipment Operator	16.25
23460 - Instrument Mechanic	18.08
23470 - Laborer	10.54
23500 - Locksmith	15.90
23530 - Machinery Maintenance Mechanic	18.08
23550 - Machinist, Maintenance	14.92
23580 - Maintenance Trades Helper	10.91
23640 - Millwright	19.00
23700 - Office Appliance Repairer	17.02
23740 - Painter, Aircraft	14.91
23760 - Painter, Maintenance	14.60
23790 - Pipefitter, Maintenance	21.17
23800 - Plumber, Maintenance	19.04
23820 - Pneudraulic Systems Mechanic	18.08
23850 - Rigger	18.08
23870 - Scale Mechanic	16.04
23890 - Sheet-Metal Worker, Maintenance	15.85
23910 - Small Engine Mechanic	11.80
23930 - Telecommunication Mechanic I	18.59
23931 - Telecommunication Mechanic II	21.25
23950 - Telephone Lineman	18.59
23960 - Welder, Combination, Maintenance	14.27
23965 - Well Driller	18.05
23970 - Woodcraft Worker	18.08
23980 - Woodworker	12.48
24000 - Personal Needs Occupations	
24570 - Child Care Attendant	7.82
24580 - Child Care Center Clerk	12.22
24600 - Chore Aid	7.78
24630 - Homemaker	8.29
25000 - Plant and System Operation Occupations	
25010 - Boiler Tender	17.48
25040 - Sewage Plant Operator	15.17
25070 - Stationary Engineer	17.48
25190 - Ventilation Equipment Tender	12.76
25210 - Water Treatment Plant Operator	15.17
27000 - Protective Service Occupations	
(not set) - Police Officer	21.40
27004 - Alarm Monitor	13.63
27006 - Corrections Officer	18.00
27010 - Court Security Officer	19.14
27040 - Detention Officer	18.00
27070 - Firefighter	18.02
27101 - Guard I	10.82
27102 - Guard II	15.08
28000 - Stevedoring/Longshoremen Occupations	
28010 - Blocker and Bracer	16.04
28020 - Hatch Tender	16.04
28030 - Line Handler	16.04
28040 - Stevedore I	14.74
28050 - Stevedore II	17.73
29000 - Technical Occupations	
21150 - Graphic Artist	15.76
29010 - Air Traffic Control Specialist, Center (2)	31.49
29011 - Air Traffic Control Specialist, Station (2)	21.71
29012 - Air Traffic Control Specialist, Terminal (2)	23.92
29023 - Archeological Technician I	14.07
29024 - Archeological Technician II	15.74
29025 - Archeological Technician III	19.51
29030 - Cartographic Technician	17.92
29035 - Computer Based Training (CBT) Specialist/ Instructor	22.13
29040 - Civil Engineering Technician	17.02
29061 - Drafter I	14.94
29062 - Drafter II	16.26
29063 - Drafter III	20.76
29064 - Drafter IV	23.22
29081 - Engineering Technician I	13.25
29082 - Engineering Technician II	14.44
29083 - Engineering Technician III	18.43

29084 - Engineering Technician IV	20.66
29085 - Engineering Technician V	24.25
29086 - Engineering Technician VI	25.57
29090 - Environmental Technician	21.18
29100 - Flight Simulator/Instructor (Pilot)	25.30
29160 - Instructor	20.84
29210 - Laboratory Technician	17.38
29240 - Mathematical Technician	24.45
29361 - Paralegal/Legal Assistant I	14.63
29362 - Paralegal/Legal Assistant II	17.14
29363 - Paralegal/Legal Assistant III	19.90
29364 - Paralegal/Legal Assistant IV	25.36
29390 - Photooptics Technician	24.45
29480 - Technical Writer	22.32
29491 - Unexploded Ordnance (UXO) Technician I	20.02
29492 - Unexploded Ordnance (UXO) Technician II	24.22
29493 - Unexploded Ordnance (UXO) Technician III	29.03
29494 - Unexploded (UXO) Safety Escort	20.02
29495 - Unexploded (UXO) Sweep Personnel	20.02
29620 - Weather Observer, Senior (3)	19.81
29621 - Weather Observer, Combined Upper Air and Surface Programs (3)	16.21
29622 - Weather Observer, Upper Air (3)	16.21
31000 - Transportation/ Mobile Equipment Operation Occupations	
31030 - Bus Driver	11.22
31260 - Parking and Lot Attendant	8.38
31290 - Shuttle Bus Driver	10.96
31300 - Taxi Driver	8.54
31361 - Truckdriver, Light Truck	11.47
31362 - Truckdriver, Medium Truck	12.56
31363 - Truckdriver, Heavy Truck	14.87
31364 - Truckdriver, Tractor-Trailer	14.87
99000 - Miscellaneous Occupations	
99020 - Animal Caretaker	8.79
99030 - Cashier	7.97
99041 - Carnival Equipment Operator	9.28
99042 - Carnival Equipment Repairer	11.21
99043 - Carnival Worker	7.86
99050 - Desk Clerk	7.68
99095 - Embalmer	20.02
99300 - Lifeguard	10.52
99310 - Mortician	22.81
99350 - Park Attendant (Aide)	13.21
99400 - Photofinishing Worker (Photo Lab Tech., Darkroom Tech)	10.52
99500 - Recreation Specialist	11.95
99510 - Recycling Worker	12.58
99610 - Sales Clerk	10.06
99620 - School Crossing Guard (Crosswalk Attendant)	10.17
99630 - Sport Official	10.52
99658 - Survey Party Chief (Chief of Party)	16.62
99659 - Surveying Technician (Instr. Person/Surveyor Asst./Instr.)	15.11
99660 - Surveying Aide	11.26
99690 - Swimming Pool Operator	11.70
99720 - Vending Machine Attendant	10.47
99730 - Vending Machine Repairer	13.46
99740 - Vending Machine Repairer Helper	10.12

ALL OCCUPATIONS LISTED ABOVE RECEIVE THE FOLLOWING BENEFITS:

HEALTH & WELFARE: $2.87 an hour or $114.80 a week or $497.47 a month

VACATION: 2 weeks paid vacation after 1 year of service with a contractor or successor; 3 weeks after 5 years, and 4 weeks after 15 years. Length of service includes the whole span of continuous service with the present contractor or successor, wherever employed, and with the predecessor contractors in the performance of similar work at the same Federal facility. (Reg. 29 CFR 4.173)

HOLIDAYS: A minimum of ten paid holidays per year: New Year's Day, Martin Luther King Jr.'s Birthday, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day, and Christmas Day. (A

contractor may substitute for any of the named holidays another day off with pay in accordance with a plan communicated to the employees involved.) (See 29 CFR 4.174)

THE OCCUPATIONS WHICH HAVE PARENTHESES AFTER THEM RECEIVE THE FOLLOWING BENEFITS (as numbered):

1) Does not apply to employees employed in a bona fide executive, administrative, or professional capacity as defined and delineated in 29 CFR 541. (See CFR 4.156)

2) APPLICABLE TO AIR TRAFFIC CONTROLLERS ONLY - NIGHT DIFFERENTIAL: An employee is entitled to pay for all work performed between the hours of 6:00 P.M. and 6:00 A.M. at the rate of basic pay plus a night pay differential amounting to 10 percent of the rate of basic pay.

3) WEATHER OBSERVERS - NIGHT PAY & SUNDAY PAY: If you work at night as part of a regular tour of duty, you will earn a night differential and receive an additional 10% of basic pay for any hours worked between 6pm and 6am. If you are a full-time employed (40 hours a week) and Sunday is part of your regularly scheduled workweek, you are paid at your rate of basic pay plus a Sunday premium of 25% of your basic rate for each hour of Sunday work which is not overtime (i.e. occasional work on Sunday outside the normal tour of duty is considered overtime work).

HAZARDOUS PAY DIFFERENTIAL: An 8 percent differential is applicable to employees employed in a position that represents a high degree of hazard when working with or in close proximity to ordinance, explosives, and incendiary materials. This includes work such as screening, blending, dying, mixing, and pressing of sensitive ordance, explosives, and pyrotechnic compositions such as lead azide, black powder and photoflash powder. All dry-house activities involving propellants or explosives. Demilitarization, modification, renovation, demolition, and maintenance operations on sensitive ordnance, explosives and incendiary materials. All operations involving regrading and cleaning of artillery ranges.

A 4 percent differential is applicable to employees employed in a position that represents a low degree of hazard when working with, or in close proximity to ordance, (or employees possibly adjacent to) explosives and incendiary materials which involves potential injury such as laceration of hands, face, or arms of the employee engaged in the operation, irritation of the skin, minor burns and the like; minimal damage to immediate or adjacent work area or equipment being used. All operations involving, unloading, storage, and hauling of ordance, explosive, and incendiary ordnance material other than small arms ammunition. These differentials are only applicable to work that has been specifically designated by the agency for ordance, explosives, and incendiary material differential pay.

** UNIFORM ALLOWANCE **

If employees are required to wear uniforms in the performance of this contract (either by the terms of the Government contract, by the employer, by the state or local law, etc.), the cost of furnishing such uniforms and maintaining (by laundering or dry cleaning) such uniforms is an expense that may not be borne by an employee where such cost reduces the hourly rate below that required by the wage determination. The Department of Labor will accept payment in accordance with the following standards as compliance:

The contractor or subcontractor is required to furnish all employees with an adequate number of uniforms without cost or to reimburse employees for the actual cost of the uniforms. In addition, where uniform cleaning and maintenance is made the responsibility of the employee, all contractors and subcontractors subject to this wage determination shall (in the absence of a bona fide collective bargaining agreement providing for a different amount, or the furnishing of contrary affirmative proof as to the actual cost), reimburse all employees for such cleaning and maintenance at a rate of $3.35 per week (or $.67 cents per day). However, in those instances where the uniforms furnished are made of "wash and wear" materials, may be routinely washed and dried with other personal garments, and do not require any special treatment such as dry cleaning, daily washing, or commercial laundering in order to meet the cleanliness or appearance standards set by the terms of the Government contract, by the contractor, by law, or by the nature of the work, there is no requirement that employees be reimbursed for uniform maintenance costs.

** NOTES APPLYING TO THIS WAGE DETERMINATION **

Under the policy and guidance contained in All Agency Memorandum No. 159, the Wage and Hour Division does not recognize, for section 4(c) purposes, prospective wage rates and fringe benefit provisions that are effective only upon such contingencies as "approval of Wage and Hour, issuance of a wage determination, incorporation of the wage determination in the contract, adjusting the contract price, etc." (The relevant CBA section) in the collective bargaining agreement between (the parties) contains contingency language that Wage and Hour does not recognize as reflecting "arm's length negotiation" under section 4(c) of the Act and 29 C.F.R. 5.11(a) of the regulations. This wage determination therefore reflects the actual CBA wage rates and fringe benefits paid under the predecessor contract.

Source of Occupational Title and Descriptions:

The duties of employees under job titles listed are those described in the "Service Contract Act Directory of Occupations," Fourth Edition, January 1993, as amended by the Third Supplement, dated March 1997, unless otherwise indicated. This publication may be obtained from the Superintendent of Documents, at 202-783-3238, or by writing to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Copies of specific job descriptions may also be obtained from the appropriate contracting officer.

REQUEST FOR AUTHORIZATION OF ADDITIONAL CLASSIFICATION AND WAGE RATE {Standard Form 1444 (SF 1444)}

Conformance Process:

The contracting officer shall require that any class of service employee which is not listed herein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination), be classified by the contractor so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed classes of employees shall be paid the monetary wages and furnished the fringe benefits as are determined. Such conforming process shall be initiated by the contractor prior to the performance of contract work by such unlisted class(es) of employees. The conformed classification, wage rate, and/or fringe benefits shall be retroactive to the commencement date of the contract. {See Section 4.6 (C)(vi)} When multiple wage determinations are included in a contract, a separate SF 1444 should be prepared for each wage determination to which a class(es) is to be conformed.

The process for preparing a conformance request is as follows:

1) When preparing the bid, the contractor identifies the need for a conformed occupation(s) and computes a proposed rate(s).

2) After contract award, the contractor prepares a written report listing in order proposed classification title(s), a Federal grade equivalency (FGE) for each proposed classification(s), job description(s), and rationale for proposed wage rate(s), including information regarding the agreement or disagreement of the authorized representative of the employees involved, or where there is no authorized representative, the employees themselves. This report should be submitted to the contracting officer no later than 30 days after such unlisted class(es) of employees performs any contract work.

3) The contracting officer reviews the proposed action and promptly submits a report of the action, together with the agency's recommendations and pertinent information including the position of the contractor and the employees, to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, for review. (See section 4.6(b)(2) of Regulations 29 CFR Part 4).

4) Within 30 days of receipt, the Wage and Hour Division approves, modifies, or disapproves the action via transmittal to the agency contracting officer, or notifies the contracting officer that additional time will be required to process the request.

5) The contracting officer transmits the Wage and Hour decision to the contractor.

6) The contractor informs the affected employees.

Information required by the Regulations must be submitted on SF 1444 or bond paper.

When preparing a conformance request, the "Service Contract Act Directory of Occupations" (the Directory) should be used to compare job definitions to insure that duties requested are not performed by a classification already listed in the wage determination. Remember, it is not the job title, but the required tasks that determine whether a class is included in an established wage determination. Conformances may not be used to artificially split, combine, or subdivide classifications listed in the wage determination.

Section K - Representations, Certifications and Other Statements of Offerors

CLAUSES INCORPORATED BY FULL TEXT

52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (JAN 2005)

(a)(1) If the clause at 52.204-7, Central Contractor Registration, is included in this solicitation, paragraph (b) of this provision applies.

(2) If the clause at 52.204-7 is not included in this solicitation, and the offeror is currently registered in CCR, and has completed the ORCA electronically, the offeror may choose to use paragraph (b) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

(__) Paragraph (b) applies.

(__) Paragraph (b) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(b) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at http://orca.bpn.gov. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of Provision)

252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (SEP 2004)

(a) "Definitions."

As used in this provision --

(a) "Government of a terrorist country" includes the state and the government of a terrorist country, as well as any political subdivision, agency, or instrumentality thereof.

(2) "Terrorist country" means a country determined by the Secretary of State, under section 6(j)(1)(A) of the Export

Administration Act of 1979 (50 U.S.C. App. 2405(j)(i)(A)), to be a country the government of which has repeatedly provided support for such acts of international terrorism. As of the date of this provision, terrorist countries subject to this provision include: Cuba, Iran, Libya, North Korea, Sudan, and Syria.

(3) "Significant interest" means --

(i) Ownership of or beneficial interest in 5 percent or more of the firm's or subsidiary's securities. Beneficial interest includes holding 5 percent or more of any class of the firm's securities in "nominee shares," "street names," or some other method of holding securities that does not disclose the beneficial owner;

(ii) Holding a management position in the firm, such as a director or officer;

(iii) Ability to control or influence the election, appointment, or tenure of directors or officers in the firm;

(iv) Ownership of 10 percent or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm; or

(v) Holding 50 percent or more of the indebtness of a firm.

(b) "Prohibition on award."

In accordance with 10 U.S.C. 2327, no contract may be awarded to a firm or a subsidiary of a firm if the government of a terrorist country has a significant interest in the firm or subsidiary or, in the case of a subsidiary, the firm that owns the subsidiary, unless a waiver is granted by the Secretary of Defense.

(c) "Disclosure."

If the government of a terrorist country has a significant interest in the Offeror or a subsidiary of the Offeror, the Offeror shall disclosure such interest in an attachment to its offer. If the Offeror is a subsidiary, it shall also disclose any significant interest the government of a terrorist country has in any firm that owns or controls the subsidiary. The disclosure shall include --

(1) Identification of each government holding a significant interest; and

(2) A description of the significant interest held by each government.

(End of provision)

252.225-7031 SECONDARY ARAB BOYCOTT OF ISRAEL (JUN 2005)

(a) Definitions. As used in this provision--

(1) Foreign person means any person (including any individual, partnership, corporation, or other form of association) other than a United States person.

(2) United States means the 50 States, the District of Columbia, outlying areas, and the outer Continental Shelf as defined in 43 U.S.C. 1331.

(3) United States person is defined in 50 U.S.C. App. 2415(2) and means--

(i) Any United States resident or national (other than an individual resident outside the United States who is employed by other than a United States person);

(ii) Any domestic concern (including any permanent domestic establishment of any foreign concern); and

(iii) Any foreign subsidiary or affiliate (including any permanent foreign establishment) of any domestic concern that is controlled in fact by such domestic concern.

(b) Certification. If the offeror is a foreign person, the offeror certifies, by submission of an offer, that it--

(1) Does not comply with the Secondary Arab Boycott of Israel; and

(2) Is not taking or knowingly agreeing to take any action, with respect to the Secondary Boycott of Israel by Arab countries, which 50 U.S.C. App. 2407(a) prohibits a United States person from taking.

(End of provision)

252.247-7022 REPRESENTATION OF EXTENT OF TRANSPORTATION BY SEA (AUG 1992)

(a) The Offeror shall indicate by checking the appropriate blank in paragraph (b) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term supplies is defined in the Transportation of Supplies by Sea clause of this solicitation.

(b) Representation. The Offeror represents that it:

____ (1) Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

____ (2) Does not anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

(End of provision)

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SECTION L

L.1. PROPOSALS: Proposals for the work described herein will be received until 2:00 p.m., local time, 28 October 2005, at the following address:

U. S. Army Corps of Engineers
Seattle District Contracting Division
ATTN: CENWS-CT-CB-CU
4735 East Marginal Way South
PO Box 3755
Seattle, WA 98124-3755

The required format is specified in this section, paragraph L.6. "PROPOSAL FORMAT."

NOTE: HAND-CARRIED PROPOSALS SHALL BE DELIVERED TO Contracting Division, Second Floor, Column C-5.

L.2. TYPE OF CONTRACT: The contract awarded under this solicitation will be a Firm Fixed Price type contract.

L.3. GENERAL DESCRIPTION OF WORK:

The contractor shall provide all services necessary to conduct the activities detailed in this contract. Examples of work the contractor is expected to accomplish under this contract includes, but is not limited to:

a. General. The Contractor shall operate, inspect and maintain the Government owned treatment works, pipelines, support facilities, parts and equipment at the Bunker Hill Mine Central Treatment Plant (Kellogg, Idaho) and associated systems and appurtenances in strict accordance with the terms and conditions of the contract as defined in the Performance Work Statement. Operators shall be qualified in accordance with requirements shown herein and as required by the State of Idaho.

b. Work Located on a Superfund Site. The Contractor is advised that this work will be performed within the Bunker Hill Superfund Site, Kellogg, Idaho. Continuing remediation work, under other contracts, will occur during this contract period within the Superfund site boundaries, including adjacent to or within the limits of the treatment facilities. This contract is subject to certain procurement and construction management/oversight responsibilities by the United States Army Corps of Engineers (USACE) that are established under an Interagency Agreement with the United States Environmental Protection Agency (EPA). Furthermore, this "Agreement" does not preclude any other or additional agreements with the State of Idaho Department of Environmental Quality (DEQ) and the United States Environmental Protection Agency (EPA).

c. Record of Decision. Since 1982, two Records of Decision (RODs), that define the cleanup plan for the Bunker Hill Superfund Site have been written for the EPA, and agreed to by the

State of Idaho. The ROD includes the expired NPDES permit that the Contractor shall continue to follow when operating the plant to ensure contaminated water is treated to or below specified standards.

L.4. PROPOSAL CONTENT: The Government intends to make the award selection without discussions. The proposal must be complete and contain the offerers' most favorable terms. The proposal shall address and contain the information listed below. The information will be used by the Source Selection Board to evaluate each proposal. Additionally, should the proposal include any standard company terms and conditions that conflict with the terms and conditions of the solicitation, the proposal may be determined to be "unacceptable" and thus ineligible for award.

L.5. PROPOSAL FORMAT: In response to this RFP, the offerers shall submit an original and four (4) copies each of the technical proposal in 3-ring binders labeled technical proposal (no heat or spiral bound proposals). An original and one (1) copy of the price proposal shall be submitted under a separate cover, also in 3-ring-binders (no heat or spiral bound proposals). The technical proposal shall focus on the Performance Work Statement in Section C. The Standard Form 33 (Offer) and continuation sheets, acknowledgement of amendments (Standard Form 30), if applicable, and Section K, Representations and Certifications should be included in the Price Proposal. The original technical and price proposal copies shall be stamped "original" on the cover of each binder.

The total combined (technical and price proposals) page limit is 150 pages. Proposal shall be single-sided only, with a minimum binding edge margin of 0.75 inches, and with a font no less than 11 point. A smaller type may be used on charts graphs, figures, diagrams, and schematics to accommodate a "make it fit" software capability, however, all text must be legible and easily read. If it is not easily readable, then it will not be evaluated. The page size of the Offerer's proposal shall not exceed *8 1/2" x 11"*. When included, foldout pages shall fold entirely within the document and shall only be used for graphic presentation. Foldout pages will be counted as two (2) pages. Each page of the proposal shall be numbered sequentially.

The following are excluded from the 150-page proposal limit:

- Section K, "Representations and Certifications",
- SF33 and continuation sheets,
- SF 30 Amendment(s),
- table of contents and lists of: tables, figures, and acronyms.

Offerers will NOT be allowed to incorporate pages by reference (no additional appendixes, addenda, etc.). Experience or clients noted as "Confidential" will not be considered for evaluation. Full disclosure will be required to receive credit.

All proposals shall contain the requirements stated within this solicitation document. Proposal clarity, organization (as requested in this solicitation), and cross-referencing is mandatory.

L.6. COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA): The Contractor shall comply with OSHA standards as well as the Corps of Engineers General Safety Requirements Manual (EM 385-1-1). The OSHA standards are subject to change and such changes

may affect the Contractor in his performance under the contract. It is the Contractor's responsibility to know such changes and effective dates of changes.

L.7. TIME FOR ACCEPTANCE BY THE GOVERNMENT OF PROPOSALS: All offerers submitting proposals in response to this request agree that the Government shall have not less than 120 calendar days to accept any proposal, after the date indicated for receipt of proposals. In the event the Government cannot award a contract within this 120 calendar day period, any or all offerers may, at their option, extend the date for acceptance of their proposal or may resubmit their price proposals.

NOTE THE AFFIRMATIVE ACTION REQUIREMENT OF THE EQUAL OPPORTUNITY CLAUSE WHICH MAY APPLY TO THE CONTRACT RESULTING FROM THIS SOLICITATION FAR 52.222-26.

Section L - Instructions, Conditions and Notices to Bidders

CLAUSES INCORPORATED BY FULL TEXT

52.215-1 INSTRUCTIONS TO OFFERORS--COMPETITIVE ACQUISITION (JAN 2004)

(a) Definitions. As used in this provision--

“Discussions” are negotiations that occur after establishment of the competitive range that may, at the Contracting Officer's discretion, result in the offeror being allowed to revise its proposal.

“In writing or written” means any worded or numbered expression which can be read, reproduced, and later communicated, and includes electronically transmitted and stored information.

“Proposal modification” is a change made to a proposal before the solicitation's closing date and time, or made in response to an amendment, or made to correct a mistake at any time before award.

“Proposal revision” is a change to a proposal made after the solicitation closing date, at the request of or as allowed by a Contracting Officer as the result of negotiations.

“Time”, if stated as a number of days, is calculated using calendar days, unless otherwise specified, and will include Saturdays, Sundays, and legal holidays. However, if the last day falls on a Saturday, Sunday, or legal holiday, then the period shall include the next working day.

(b) Amendments to solicitations. If this solicitation is amended, all terms and conditions that are not amended remain unchanged. Offerors shall acknowledge receipt of any amendment to this solicitation by the date and time specified in the amendment(s).

(c) Submission, modification, revision, and withdrawal of proposals. (1) Unless other methods (e.g., electronic commerce or facsimile) are permitted in the solicitation, proposals and modifications to proposals shall be submitted in paper media in sealed envelopes or packages (i) addressed to the office specified in the solicitation, and (ii) showing the time and date specified for receipt, the solicitation number, and the name and address of the offeror. Offerors using commercial carriers should ensure that the proposal is marked on the outermost wrapper with the information in paragraphs (c)(1)(i) and (c)(1)(ii) of this provision.

(2) The first page of the proposal must show--

(i) The solicitation number;

(ii) The name, address, and telephone and facsimile numbers of the offeror (and electronic address if available);

(iii) A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item;

(iv) Names, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the offeror's behalf with the Government in connection with this solicitation; and

(v) Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.

(3) Submission, modification, or revision, of proposals.

(i) Offerors are responsible for submitting proposals, and any modifications, or revisions, so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that proposal or revision is due.

(ii)(A) Any proposal, modification, or revision received at the Government office designated in the solicitation after the exact time specified for receipt of offers is “late” and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and--

(1) If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of proposals; or

(2) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or

(3) It is the only proposal received.

(B) However, a late modification of an otherwise successful proposal that makes its terms more favorable to the Government, will be considered at any time it is received and may be accepted.

(iii) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

(iv) If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the office designated for receipt of proposals by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.

(v) Proposals may be withdrawn by written notice received at any time before award. Oral proposals in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile proposals, proposals may be withdrawn via facsimile received at any time before award, subject to the conditions specified in the provision at 52.215-5, Facsimile Proposals. Proposals may be withdrawn in person by an offeror or an authorized representative, if the identity of the person requesting withdrawal is established and the person signs a receipt for the proposal before award.

(4) Unless otherwise specified in the solicitation, the offeror may propose to provide any item or combination of items.

(5) Offerors shall submit proposals in response to this solicitation in English, unless otherwise permitted by the solicitation, and in U.S. dollars, unless the provision at FAR 52.225-17, Evaluation of Foreign Currency Offers, is included in the solicitation.

(6) Offerors may submit modifications to their proposals at any time before the solicitation closing date and time, and may submit modifications in response to an amendment, or to correct a mistake at any time before award.

(7) Offerors may submit revised proposals only if requested or allowed by the Contracting Officer.

(8) Proposals may be withdrawn at any time before award. Withdrawals are effective upon receipt of notice by the Contracting Officer.

(d) Offer expiration date. Proposals in response to this solicitation will be valid for the number of days specified on the solicitation cover sheet (unless a different period is proposed by the offeror).

(e) Restriction on disclosure and use of data. Offerors that include in their proposals data that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, shall--

(1) Mark the title page with the following legend: This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed--in whole or in part--for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of--or in connection with-- the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets]; and

(2) Mark each sheet of data it wishes to restrict with the following legend: Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.

(f) Contract award. (1) The Government intends to award a contract or contracts resulting from this solicitation to the responsible offeror(s) whose proposal(s) represents the best value after evaluation in accordance with the factors and subfactors in the solicitation.

(2) The Government may reject any or all proposals if such action is in the Government's interest.

(3) The Government may waive informalities and minor irregularities in proposals received.

(4) The Government intends to evaluate proposals and award a contract without discussions with offerors (except clarifications as described in FAR 15.306(a)). Therefore, the offeror's initial proposal should contain the offeror's best terms from a cost or price and technical standpoint. The Government reserves the right to conduct discussions if the Contracting Officer later determines them to be necessary. If the Contracting Officer determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.

(5) The Government reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit cost or prices offered, unless the offeror specifies otherwise in the proposal.

(6) The Government reserves the right to make multiple awards if, after considering the additional administrative costs, it is in the Government's best interest to do so.

(7) Exchanges with offerors after receipt of a proposal do not constitute a rejection or counteroffer by the Government.

(8) The Government may determine that a proposal is unacceptable if the prices proposed are materially unbalanced between line items or subline items. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly overstated or understated as indicated by the application of cost or price analysis techniques. A proposal may be rejected if the Contracting Officer determines that the lack of balance poses an unacceptable risk to the Government.

(9) If a cost realism analysis is performed, cost realism may be considered by the source selection authority in evaluating performance or schedule risk.

(10) A written award or acceptance of proposal mailed or otherwise furnished to the successful offeror within the time specified in the proposal shall result in a binding contract without further action by either party.

(11) If a post-award debriefing is given to requesting offerors, the Government shall disclose the following information, if applicable:

(i) The agency's evaluation of the significant weak or deficient factors in the debriefed offeror's offer.

(ii) The overall evaluated cost or price and technical rating of the successful and the debriefed offeror and past performance information on the debriefed offeror.

(iii) The overall ranking of all offerors, when any ranking was developed by the agency during source selection.

(iv) A summary of the rationale for award.

(v) For acquisitions of commercial items, the make and model of the item to be delivered by the successful offeror.

(vi) Reasonable responses to relevant questions posed by the debriefed offeror as to whether source-selection procedures set forth in the solicitation, applicable regulations, and other applicable authorities were followed by the agency.

(End of provision)

52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a firm fixed price contract contract resulting from this solicitation.

(End of clause)

52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
3.0%	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be

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based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

(1) Name, address, and telephone number of the subcontractor;

(2) Employer's identification number of the subcontractor;

(3) Estimated dollar amount of the subcontract;

(4) Estimated starting and completion dates of the subcontract; and

(5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is Shoshone County, Kellogg, Idaho.

(End of provision)

52.233-2 SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from

U.S. Army, Corps of Engineers
Seattle District
ATTN: Contracting Officer
P.O. Box 3755
4735 East Marginal Way South
Seattle, WA 98124-3755

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

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SECTION M

52.215-4001 EVALUATION FACTORS FOR AWARD

The following criteria will be utilized as evaluation factors for award

M.1. GENERAL: This section provides specific information regarding evaluation factors that will be considered during technical proposal review.

M.2. METHOD OF PROCUREMENT: The Seattle District Corps of Engineers intends to procure this requirement on a competitive basis in accordance with the provisions set forth in this RFP. Offerers are cautioned to read all sections of the RFP prior to assembling your proposal. The contract will be awarded on a lowest priced, technically acceptable basis. A proposal which does not demonstrate the required information or experience for any area of the technical evaluation criterion will be determined non-acceptable and provided no further consideration. If all technical proposals are determined non-acceptable the Contracting Officer may exercise discretion and conduct discussions.

M.3. BASIS OF THE SOURCE SELECTION EVALUATION - This Section establishes the method to be implemented with regard to the evaluation of the proposals. Evaluation is to be based exclusively on the merits and contents of the proposal and any subsequent discussions required. Offerors not meeting the minimum requirements of ***all*** technical evaluation criteria and subcriteria shall be determined to be **NON-ACCEPTABLE** and will not be considered for award. Technical Proposals will be evaluated on an **ACCEPTABLE** or **NON-ACCEPTABLE** basis only**.** Proposals must set forth full, accurate, and complete information as required by this RFP. Absence of information will be deemed as if no support for that factor was provided. Award will be made to the lowest priced technically acceptable offeror.

Technical Evaluation Ratings - Definitions

Acceptable: An acceptable rating indicates that the offeror has provided sufficient information to meet the **minimum** qualifications/standards described in the technical evaluation criteria.

Non-Acceptable: A non-acceptable rating indicates that the offeror has not provided sufficient information to meet the **minimum** qualifications/standards described in the technical evaluation criteria.

M.4. TECHICAL CRITERIA:

M.4.1. The Technical Proposal will be evaluated on the basis of the following technical criteria:

M**.**4.2**.** RELEVANT EXPERIENCE. The Offeror shall submit descriptions of at least four but no more than six projects; to include treatment works or pipeline maintenance that

demonstrates the offeror's relevant experience. Relevant experience is defined as experience similar in scope, cost and complexity as per Section J, Attachment J1, Performance Work Statement. Relevant experience referenced may be from any location.

As a minimum, for each project listed, provide:

a) Project Title and location
b) Dollar value
c) Project start and completion period
d) Description of the project scope of work
e) Brief description of how the project is relevant to the requirements of this RFP.
f) Cost growth/decrease over contract duration and explanation for increase or decrease.
g) Current primary point of contact for the customer (name, relationship to project, agency/firm affiliation, city and state, phone numbers)

Offerors who provide relevant experience with the minimum requirements of at least four but no more than six projects will be considered acceptable.

M.4.3. PERSONNEL EXPERIENCE AND QUALIFICATIONS. The Offeror shall submit the names and resumes for key personnel that will be assigned to this project. The following positions are defined and designated as key personnel and are further defined under Section 01310; Contract Manager, Chief Operator, Process Engineer, Safety and Health Manager, and CQC System Manager. It is expected that the key individuals in your proposal will be the individuals who perform work under this contract. The Contracting Officer must approve substitute personnel. Resumes should be no more than two (2) pages per individual, and submitted in a format similar to the one below. This section shall also include an organization chart identifying responsible points of contact from the prime contractor as well as any anticipated sub-contractors. Each key personnel must meet the minimum qualifications for an acceptable rating under the "Personnel Experience and Qualifications" criteria.

M.4.3.1 Contract Manager Qualifications

(a) A college degree in an engineering related field, industrial management, or other related field;

(b) A minimum of five (5) years experience in project management;

(c) The proven ability to effectively communicate and manage customer expectations; and

(d) The proven ability to locate, coordinate, and utilize resources within their own organization.

M.4.3.2 Chief Operator Qualifications

(a) The ability to supervise all site work activities involved in completing the daily O&M responsibilities;

(b) Technical knowledge in all portions of the site work involved in completing the daily O&M responsibilities;

(c) Trained in the 40-hour OSHA Hazardous Waste Operations course, and be current with 8-hour Refresher courses. In addition, the Chief Operator Manager shall be

trained in any specific OSHA-regulated activities, such as lockout/tagout or confined space entry;

(d) Knowledge of applicable Federal, state, and local laws and regulations;

(e) The ability to effectively communicate and manage customer expectations;

(f) The ability to locate, coordinate, and utilize resources within their own organization; and

(g) Work experience with the proven ability to effectively manage subcontracts.

M.4.3.3 Process Engineer Qualifications. The Contractor's process engineer(s) shall meet the following minimum qualifications:

(a) Have, at a minimum, a Bachelor of Science degree and hold current Professional Engineer registration in the United States in one of the following disciplines: Chemical Engineering, Environmental Engineering, or Mechanical Engineering (or equivalent), and have at least three years experience in process design, unit operation, and process optimization related to industrial wastewater treatment facilities;

(b) Trained in the 40-hour OSHA Hazardous Waste Operations course, and be current with 8-hour Refresher courses. In addition, the Chief Operator Manager shall be trained in any specific OSHA-regulated activities, such as lockout/tagout or confined space entry;

(c) Knowledge of applicable Federal, state, and local laws and regulations; and

(d) The ability to effectively communicate and manage customer expectations.

M.4.3.4 Safety and Health Manager Qualifications. The services of a Certified Industrial Hygienist certified by the American Board of Industrial Hygiene or a Safety Professional Certified by the Board of Certified Safety Professionals shall be utilized. The Safety and Health Manager shall have the following additional qualifications:

(a) A minimum of three years experience in developing and implementing safety and health programs at hazardous waste sites;

(b) Documented experience in surveying professional and technician level personnel;

(c) Documented experience in developing worker exposure assessment programs and air monitoring programs and techniques;

(d) Documented experience in the development of personal protective equipment programs, including programs for working in and around potentially toxic materials; and

(e) Working knowledge of state and Federal occupational safety and health regulations.

M.4.3.5 CQC System Manager Qualifications. The QCQ system manager shall have a minimum of three years experience working on similar type treatment facilities as the Bunker Hill Central Treatment Plant, Kellogg, Idaho.

RESUME FORMAT

Name and Title

1. Proposed Duties/Functions
2. Firm Affiliation and Years Affiliated
3. Education/Degrees Held, Year of Degree(s).
4. Professional Licenses/Certifications
5. Other Specialized Training.
6. Describe Specific Qualifications.
7. List Projects worked on to Include
   Project Title & Location
   Scope, Size and Complexity
   Duties/Functions
   Date of project
8. Explain How Each Experience & Knowledge is Met.

Offerors who provide resumes with the minimum requirements for all key personnel will be considered acceptable.

M.4.4. PAST PERFORMANCE: Past performance of the prime contractor will be evaluated using CCASS database. All performance ratings in CCASS for similar projects for the past three years shall be considered. If an offeror does not have past performance available in CCASS or wishes to augment the CCASS system ratings, the offerors may ask customers to submit the Customer Satisfaction Survey found at the end of this section. For each project constructed for Private Industry, provide a completed Customer Satisfaction Survey for each similar project within the last three years. All Customer Satisfaction Surveys must be submitted to the Government from the customer or agency that is providing the information. Further instructions are found at the top of the Customer Satisfaction Survey. It is requested that only similar projects be included. A similar project is considered to be one of similar size, cost, and complexity as defined in.L3. The Government reserves the right to contact the evaluator on previous Government or Private Sector work to verify the Offeror's experience. In the case of an offeror without a record of past performance or for whom information on past performance is not available, the offeror **may not be evaluated as favorable or unfavorable** on past performance (See FAR 15.305(a)(2)(iv)). An overall rating of satisfactory or above on all performance evaluations and an overall acceptable rating on all Customer Satisfaction Surveys will be given an acceptable rating.

Offeror Submitted Surveys. Surveys submitted directly by the offeror may not be considered. Please ensure envelopes containing surveys being submitted to this office do not contain the offeror's return address.

As a maximum, no more than five (5) customer satisfaction surveys will be considered for the prime firm (i.e., the firm signing the Standard Form 33, Solicitation, Offer and Award).

M.4.5. PRICE: Price will be reviewed for reasonableness only for those firms determined to be technically acceptable on the above evaluation criteria.

M.5. PROPOSAL EVALUATIONS AND AWARD. To be considered for award, proposals shall conform to the terms and conditions contained in the RFP. No proposal shall be accepted that does not address all factors specified in this solicitation or which includes stipulations or qualifying conditions. The contract will be awarded to the firm submitting the proposal that:

M.5.1 Conforms to this request for proposals (RFP),

M.5.2. Is the technically acceptable, lowest price offer, and

M.5.3. Is determined to be in the best interest of the Government.

M.6 AWARD. It is the intent of the Government to award this contract based upon the lowest price, technically acceptable initial offer, without further discussions or additional information. Therefore, proposals shall be submitted initially on the most favorable terms from a price and technical standpoint. Do not assume you will be afforded the opportunity to clarify, discuss or revise your proposal. If award is not made on initial offers, discussion will be conducted as described below.

M.6.1. Competitive Range. (FAR 15.306(c))

M.6.2. Competitive Range. After initial evaluation of proposals, if the Contracting Officer determines that discussions need to be conducted, the Contracting Officer will establish a competitive range comprised only of the technically acceptable proposals that have a reasonable chance of being selected. Discussions will be held only with firms in the competitive range.

M.6.3. Discussions. The Government may conduct written discussions with all offerors determined to be in the competitive range. In addition, if all proposals are determined to be non-acceptable, at the Contracting Officer's discretion, all firms will be requested to participate in discussions. As a result of discussions, offerors may make revisions to their initial offers. Discussions will culminate in a request for Final Proposal Revision, the date and time of which will be common to all offerors.

M.7. DEBRIEFINGS.

M.7.1 Pre-award. Offerors excluded from the competition before award will receive a notice and may request a debriefing before award by submitting a written request for a debriefing to the Contracting Officer within three (3) days after receipt of the notice of exclusion from the competition.

M.7.2 Post-award**.** Unsuccessful Offerors shall request a post-award debriefing within three (3) days after the date on which the offeror received notification of contract award. Point-by-point comparisons with other offerors' proposals will not be made, and debriefings will not reveal any information that is not releasable under the Freedom of Information Act.

M.8. PROPOSAL EXPENSES AND PRECONTRACT COSTS PROPOSAL EXPENSES AND PRECONTRACT COSTS: This RFP does not commit the Government to pay costs incurred in preparation and submission of the initial and any subsequent proposals or any other costs incurred prior to execution of a formal contract.

CUSTOMER SATISFACTION SURVEY

RFP W912DW-05-R-0032 – O&M Services, Central Treatment Plant, Bunker Hill Superfund Site, Kellogg, Idaho

SECTION 1 -- TO BE COMPLETED BY THE OFFEROR AND PROVIDED TO THE CUSTOMER REFERENCED

Name of Firm Being Evaluated:_____

Project Title & Location:_____

Project Dollar Value:_____

Year Completed: _____ **Project Manager:**_____
_____

SECTION 2 - TO BE COMPLETED BY THE CUSTOMER REFERENCED AND MAILED, HAND-DELIVERED,

e-MAILED OR FAXED DIRECTLY TO:

U.S. Army Corps of Engineers, Seattle District
Attn: CENWS-CT-CB-CU **(Bonnie Lackey)**
Seattle, WA 98124-3755
E- Mail: bonilie.l.lackey@usace.army.mil

FAX: (206) 764-6817
Street Address:
4735 E. Marginal Way S.
Seattle WA 98134-2329

OVERVIEW: The firm shown above is submitting a proposal on a Seattle District Corps of Engineers project and provided your name as a customer reference. Your input is important to this firm and responses are required no later than the time and date proposals are due for inclusion in our evaluation. Your assistance is greatly appreciated.
In the blocks below, please indicate your overall level of satisfaction with the work performed by the firm shown in Section 1. Please include additional comments on a separate sheet of paper, including project number found in heading.

ITEM	ITEMS TO EVALUATED FOR THIS PROJECT	ACCEPTABLE	NON - ACCEPTABLE
1	Quality of Service.	☐	☐
2	Quality Control	☐	☐
3	Demonstrated a Willingness to Cooperate	☐	☐
4	Adequacy of Submittals/Reporting	☐	☐
5	Identification/correction of deficient work in a timely manner	☐	☐
6	Displayed flexibility in responding to your needs	☐	☐
7	Organizational structure/functional relationships of the team including subcontractors	☐	☐
8	Response time to your requirements	☐	☐
9	Extent of participation of small business concerns as subcontractors under this contract	☐	☐
10	Overall rating for this project	☐	☐
11	How well did the contractor & subcontractors adhere to schedule	☐	☐
	Your OVERALL Level of Customer Satisfaction	**ACCEPTABLE**	**NON-ACCEPTABLE**

Your Name _____**Phone Number**_____

Firm Name_____

Relationship to this Project: _____

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Section M - Evaluation Factors for Award

CLAUSES INCORPORATED BY FULL TEXT

52.214-5000 APPARENT CLERICAL MISTAKES (MAR 1995)--EFARS

(a) For the purpose of initial evaluations of bids, the following will be utilized in the resolving arithmetic discrepancies found on the face of bidding schedule as submitted by the bidder:

(1) Obviously misplaced decimal points will be corrected;

(2) Discrepancy between unit price and extended price, the unit price will govern;

(3) Apparent errors in extension of unit prices will be corrected;

(4) Apparent errors in addition of lump-sum and extended prices will be corrected.

(b) For the purpose of bid evaluation, the government will proceed on the assumption that the bidder intends his bid to be evaluated on basis of the unit prices, the totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids.

(c) These correction procedures shall not be used to resolve any ambiguity concerning which bid is low.

(End of statement)

52.217-4 EVALUATION OF OPTIONS EXERCISED AT TIME OF CONTRACT AWARD (JUN 1988)

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate the total price for the basic requirement together with any option(s) exercised at the time of award.

(End of provision)

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