KINGSTON FOSSIL PLANT

KIF353
COAL YARD RUNOFF POND DISCHARGE PIPE UPGRADE

PRELIMINARY ENGINEERING KICK-OFF MEETING AGENDA
April 13, 2000 2:00 PM
Utility Building

1. Introductions and establishment of the JPT

2. History - (Handout) Preliminary I/A Summary

3. Where we are now

   (PDE/Preliminary Engineering)
   Preliminary Engineering FY00
   Probable Phase 2 and Phase 3 Funding for FY01
   Strong Possibility that Phase 2 could happen this summer.

4. Needs:

Scope, Schedule, and Budget for Preliminary Engineering

As a reminder here are the deliverables from the Preliminary Engineering Phase:

a. A preliminary engineering design of the project that includes:
   - detailed scope of the final design (phase 2) activities
   - conceptual scope of the implementation (phase 3) activities
   - identification of long-lead procurements
   - completion of an environmental review checklist
   - identification of required permitting
   - identification of the benefits expected from the proposed design
   - parameters to be measured or tested to verify the benefits
   - identification of the implementation resources (manpower by craft) estimated to perform the work

b. A summary level project schedule identifying major project activities and milestones.
c. A total project cost estimate.
d. A Project Justification (PJ) form.

5. Review of the I/A Summary (Accept, reject, or modify)

6. Handout of drawings

7. Questions:

   Identify the point where the upgraded pipe ends?
   Demolition of abandoned equipment; abandonment of existing pipe?
   Locate where spoil or excavated material should go.
   Other questions?

8. Assignments & Schedule

9. Walkdown

TVA 488 (EN DES-3-77)

SHEET ____ OF ____

COMPUTED ____ DATE ____

CHECKED ____ DATE ____

FOR PDL:

10N714 Ash & Wye Tracks

17W412-1, -2, -3 } Coal Yard Drainage Basin Pump system

17W500-100 series: Ash Sluice Line
17W9500: additions

21W227: Spare Sleeve

25W860: Coal Yard Lighting 25W861
25W415: Coal Yard Lighting

Petty, Harold L.

From: Weaver, Steve C.
Sent: Wednesday, April 12, 2000 11:26 AM
To: Petty, Harold L.
Subject: More KIF Pictures

These pictures were taken in March, 1999:


Pic00002.jpg


Pic00003.jpg


Pic00004.jpg


Pic00005.jpg


Pic00006.jpg


Pic00007.jpg


Pic00008.jpg


Pic00009.jpg


Pic00010.jpg


Pic00011.jpg


Pic00012.jpg


Pic00013.jpg


Pic00014.jpg


Pic00015.jpg


Pic00016.jpg


Pic00017.jpg


Pic00018.jpg


Pic00019.jpg


Pic00020.jpg


Pic00021.jpg


Pic00022.jpg

Lynn,
Of particular interests are pictures 15 through 18. These are of the existing underground piping under the main plant road. Initial discussions on this portion of new piping was to include a sleeve as the existing piping does not have a sleeve. Also, Scott replaced the elbows only on each end of this underground portion, but not the piping. At the interface on each end of this piping, a large of amount of concrete was poured to ensure they remain connected.

This picture was taken on March 21, 2000:


Pic00013.jpg

THANK YOU
Steve Weaver
Yard Systems Engineer
Fossil Engineering Services
(423) 751-3536
Fax (423) 751-6116

3513

KIF COAL YARD POND 6/2/99

A

BOTTOM OF POND TO TOP - LESS SLOPE and PART B

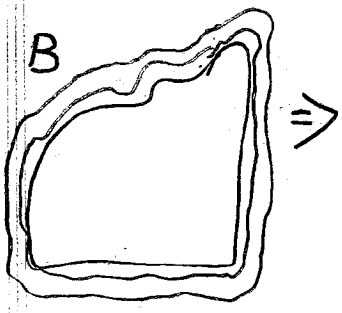
$250'_{L} \times 60'_{W} \times 15'_{H} = 225{,}000\ FT^3 \frac{1\,Yd}{3\,FT} \frac{1\,Yd}{3\,FT} \frac{1\,Yd}{3\,FT} = 8{,}333\ Yd^3$

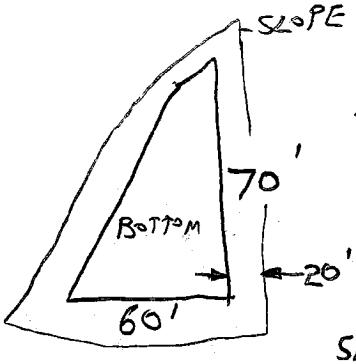
SLOPE PORTIONS OF A (2 SIDES)

$\frac{250' \times 30' \times 15'}{2} = 56{,}250\ FT^3 \frac{1\,Yd^3}{27\,FT^3} = 2{,}083\ Yd^3$

$+ 2{,}083\ Yd^3$

B





BOTTOM

$\frac{70' \times 60' \times 15' \times 1\,FT^3}{(2)(27)\,Yd^3} = 1{,}167\ Yd^3$

SLOPE

$\frac{70' \times 60' \times 20'}{(2)(27)} = 1{,}556\ Yd^3$

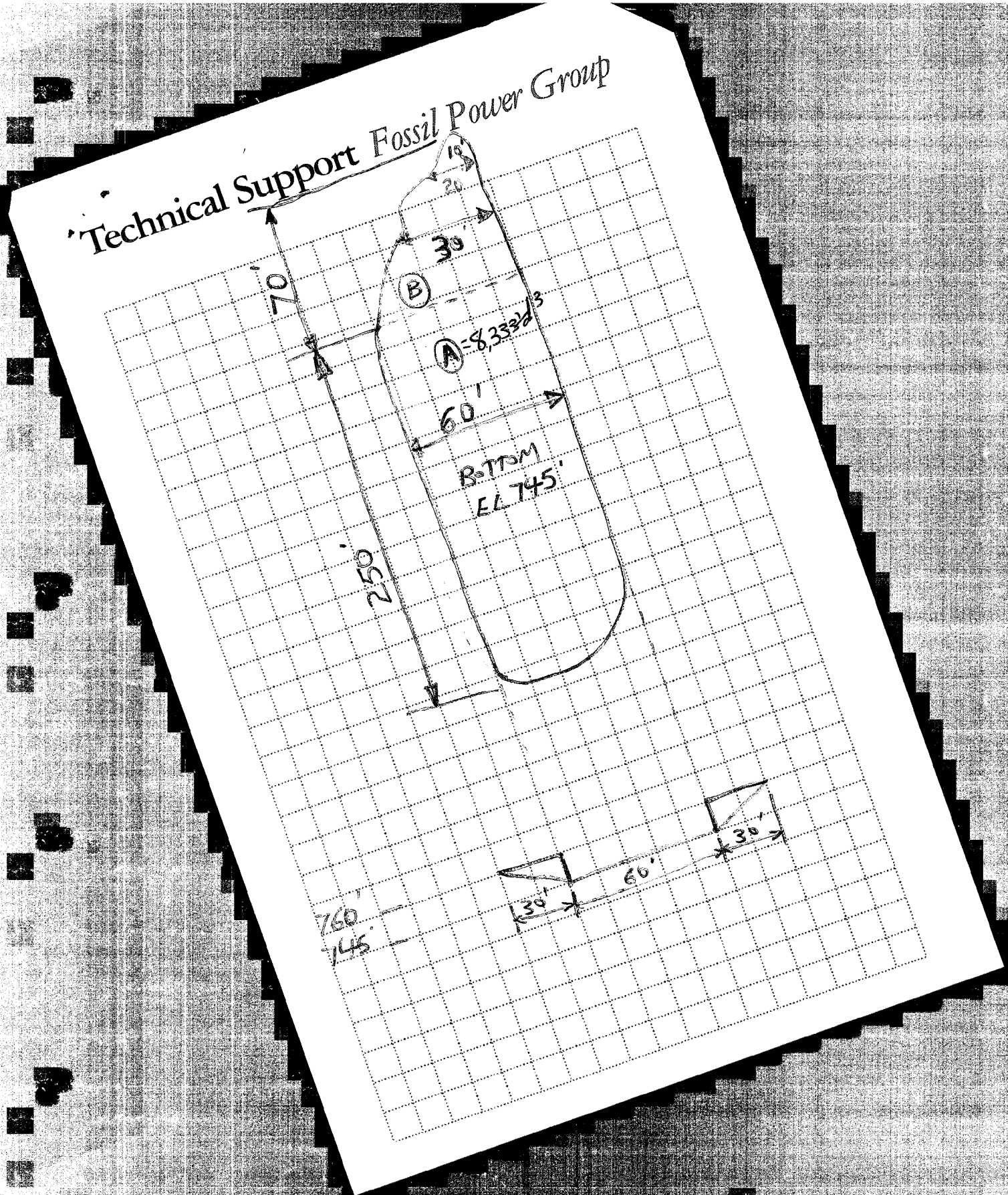
$+ 1{,}556\ Yd^3$

$16{,}778\ Yd^3$

USE $3/Yd^3 TO DREDGE OR TO CLAMSHELL

$50,334

Technical Support *Fossil Power Group*



May 16, 2000

Clark Morris, LP 5E-C

CAPITAL PROJECT - KINGSTON COAL-YARD DISCHARGE PIPING - REJECTED BY FPEP

The attached CPJ was reviewed by FPEP on May 15, 2000, and was rejected. The thoughts thrown out during the discussion were as follows:

1. If this is such a threat to the new unloading facility, it should be included under the scope of the unloading facility project.

2. Why did the estimate for the project increase so much (i.e., from $379,000 to $1,000,000)?

3. The $1,000,000 appears to be an awful even number. Do we really understand what really needs to be done? Is the real need only to perform the $48,000 to do an engineering study?

4. If the status quo annual cost is $42,000 and takes care of the issue, why would we want to spend $1,000,000? We could operate for almost 24 years using the status quo option before we would spend $1,000,000.

I think the real issue I could not address is item number 4.

Please take another look at this package and let's see what we really need to do.

Jacky Preslar
General Manager
Maintenance and Testing Services
LP 3K-C

JDP:BGH
Attachment
cc: Roy Galyon, LP 5E-C

FOSSIL POWER GROUP
PROJECT AUTHORIZATION SUMMARY

Capital Project (X) O&M Project ( ) Work Document Number: KIF353

Plant/Area: KINGSTON Unit: 00 Outage#: Record Number: 7830

Project Name: KIF-COAL YARD PUMP DISCHARGE PIPING

FPG Category: ENVIRONMENTAL COMPLIANCE

CPJ Category: New(X) Revised ( ) (for Requested Phase)

Approved Budget (Spend Plan)	0	0	0	0	0	0	0	0	

REQUESTED APPROVAL FOR PHASE 1 — COST SUMMARY ($000)

PROJECT PHASE ACTIVITY SCHEDULE		Prior Yrs Actuals	2000	2001	2002	2003	2004	2005	2006	Future Years	Total Project
1 - Study	Start 05/15/2000	0	48	0	0	0	0	0	0	0	48
	Complete 07/17/2000										
2 - Design and LL Procurement	Start / /	0	0	400	0	0	0	0	0	0	400
	Complete / /										
3 - Implementation (Incl. Retirement)	Start / /	0	0	0	552	0	0	0	0	0	552
	Complete / /										
Total Project (Requested Approval)		0	48	400	552	0	0	0	0	0	1000

Project Benefit Summary

Net Present Value 0 Profitability Index 0.000

Estimate of detail items included in costs above:
Estimate for Long Lead Procurement: 0
Estimate for Retirement/Removal: 0

Explanation of Changes (Cost, Schedule, or Benefit revision)

Study dollars needed in FY00 to determine adequate reconfiguration of drainage pond, pumps, platforms and pipe routing.

PREVIOUS APPROVAL FOR PHASE — COST SUMMARY ($000)

PROJECT PHASE ACTIVITY SCHEDULE		Prior Yrs Approval	2000	2001	2002	2003	2004	2005	2006	Future Years	Total Project
1 - Study	Start / /	0	0	0	0	0	0	0	0	0	0
	Complete / /										
2 - Design and LL Procurement	Start / /	0	0	0	0	0	0	0	0	0	0
	Complete / /										
3 - Implementation (Incl. Retirement)	Start / /	0	0	0	0	0	0	0	0	0	0
	Complete / /										
Total Project (Current Approval)		0	0	0	0	0	0	0	0	0	0

Project Benefit Summary

Net Present Value 0 Profitability Index 0.000

Estimate of detail items included in costs above:
Estimate of Long Lead procurement: 0
Estimate of Retirement/Removal: 0

RECOMMENDED FOR APPROVAL

Joint Project Team Leader — Date

HED at Kingston

Plant Approval

Plant Manager for Roy Gallyon — Date 5/9/00

FPEP Approval

FPEP Secretary — Date

pab.2 TVA 2440 [FH 1-93] Page 1 of 1

Printed 05/09/2000 Time 08:59:02

FOSSIL POWER GROUP
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CPJ Category: _____

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Approved Budget (Spend Plan)	0	0	0	0	0	0	0	0	

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	Complete 07/17/2000										
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	Complete / /										
3 - Implementation (Incl. Retirement)	Start / /	0	0	0	552	0	0	0	0	0	552
	Complete / /										
Total Project (Requested Approval)		0	48	400	552	0	0	0	0	0	1000

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PREVIOUS APPROVAL FOR PHASE

COST SUMMARY ($000)

PROJECT PHASE ACTIVITY SCHEDULE		Prior Yrs Approval	2000	2001	2002	2003	2004	2005	2006	Future Years	Total Project
1 - Study	Start / /	0	0	0	0	0	0	0	0	0	0
	Complete / /										
2 - Design and LL Procurement	Start / /	0	0	0	0	0	0	0	0	0	0
	Complete / /										
3 - Implementation (Incl. Retirement)	Start / /	0	0	0	0	0	0	0	0	0	0
	Complete / /										
Total Project (Current Approval)		0	0	0	0	0	0	0	0	0	0

Project Benefit Summary

Net Present Value 0 Profitability Index 0.000

Estimate of detail items included in costs above:

Estimate of Long Lead procurement: 0

Estimate of Retirement/Removal: 0

RECOMMENDED FOR APPROVAL

_____ _____

Joint Project Team Leader Date

Plant Approval

_____ _____

Plant Manager Date

FPEP Approval

_____ _____

FPEP Secretary Date

Printed 05/09/2000 Time 08:57:10

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL YARD PUMP DISCHARGING PIPING	KIF353 Rev#: 2

I. PROJECT DESCRIPTION

ORGANIZATION

OWNER: FPG

LEAD: Yard Operations

LOCATION

LOC: Kingston Fossil Plant

TECHNICAL CONTACT

NAME: Steve Weaver

PHONE: (423)751-3536

PROJECT CATEGORY

CATEGORY: ECONOMIC / REVENUE

PROGRAM CODE: No Program

START DATE:

IN-SERVICE DATE:

PROBLEM DEFINITION/REASON FOR IMPROVEMENT

Coal yard drainage basin overflows its banks during moderate rains of 1.75 inches/24 hrs. The water flows onto the coal starage area which will fill up the new underground coal live pile reclaim structure. The potential for this magnitude of rain is on the average 4.75 times per year, based on historical data. Settlement has reduced the capacity by at least 80%. Only one of the two pumps can be run at one time due to the deteriorated discharge piping. Power feeds are unreliable. Flooding in the new reclaim tunnels can occur shutting off the coal supply until dewatered. This flooding will damage the new motors, variable speed drive electronic circuitry, belt scales, and limit switches.

PROJECT SCOPE

Dredge pond to original storage capacity and enlarge pond to maximize capacity. Install a new 10 inch HDPE discharge pipe from pumps to ash pond (4200ft.), sleeve under railroad tracks and plant road. Install pump float switches for auto start/stop. Install a new power feed from new electrical equipment room through new reclaim tunnel, and a direct burial armored cable from end of tunnel to the pumps. Cable will be buried 5 feet deep and sleeved at road crossings.

IMPACT/CONSEQUENCES OF DELAY

Possible derating of all 9 units at Kingston and possible damage to coal handling equipment.

PROJECT PERFORMANCE MEASUREMENT

Will eliminate the possibility of flooding related damage to new coal handling equipment. Reduce/eliminate environmental impacts of pond overflow into river.

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL YARD PUMP DISCHARGING PIPING	KIF353 Rev#: 2

II. PROJECT ECONOMIC EVALUATION

COST

SUNK CAPITAL PROJECTS:	$0
SUNK O&M PROJECTS:	0
SUNK O&M BASE:	0
REMAINING COST:	$1,000
TOTAL COST:	$1,000
ESTIMATE TYPE:	Conceptual

ECONOMIC INDICATORS

NPV:	2,707.0
PI:	4.33
IRR:	510.0%
ORIGINAL PAYBACK:	0
SIMPLE PAYBACK:	1
BASE YEAR:	2000

	SUNK
Capital Projects:	0
O&M Projects:	0
Benefit:	0
O&M Base:	0

	OUT YEARS
Capital Projects:	0
O&M Projects:	0
Benefit:	0
O&M Base:	0

Year:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Capital Projects:	48	400	552	0	0	0	0	0	0	0
O&M Projects:	0	0	0	0	0	0	0	0	0	0
Benefit:	0	600	600	3,000	1,000	0	0	0	0	0
O&M Base:	0	0	0	0	0	0	0	0	0	0
Year:	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Capital Projects:	0	0	0	0	0	0	0	0	0	0
O&M Projects:	0	0	0	0	0	0	0	0	0	0
Benefit:	0	0	0	0	0	0	0	0	0	0
O&M Base:	0	0	0	0	0	0	0	0	0	0

CAPITAL PROJECT JUSTIFICATION FORM

PROJECT NAME	PROJECT ID
KIF--COAL YARD PUMP DISCHARGING PIPING	KIF353 Rev#: 2

II. PROJECT ECONOMIC EVALUATION (continued)

COST ASSUMPTIONS

COST ASSUMPTIONS	RISKS
1. HDPE Pipe Replacement. Cost based upon partner estimate at ALF Bio Gas plant. ($550k)	Based on similar installation at Allen Fossil Plant.
2. Install Electrical Feed. Route is still preliminary - protection from yard rolling equipment. ($200k)	Conceptual estimate from engineering
3. Dredge Pond. Best guess based on original contours. ($100k)	HED estimate
4. Controls and float switches ($2k)	Based on actual costs of similar equipment.
5. Engineering Costs ($85k)	Engineering estimate
6. Contingency ($63k)	

BENEFIT ASSUMPTIONS

BENEFIT ASSUMPTIONS	RISKS
1. Avoid impact due to conveyor tunnel flooding @ cost of $300k in FY02 and 03, $3m in FY04, and $1m in FY05 to implement permanent modification.	Based on weather pattern data and projected cost of damage due to flooding.

KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND
PIPING UPGRADE

March 17, 2000

Contacts:

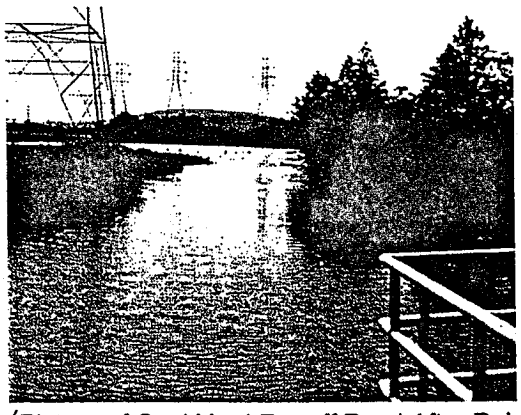
HED - Clark Morris	**(423) 751-3214**
Scott Sims	**(423) 717-2061**
Fossil Engineering Services	
Cherie Minghini	**(423) 751-6375**
Mike Smith	**(423) 751-6226**
Steve Weaver	**(423) 751-3536**

REASON FOR IMPROVEMENT

The new coal handling reclaim facility (under construction) flooded on April 29, 1999. The Coal Yard Runoff Pond is approximately 80% full of coal settlement, which leaves only 20% of storage capacity for rain runoff water. This excess drainage backs up onto the coal storage area

PROBLEM DEFINITION

The rain on 4/29/99, measured 1.75 inches in a 24 hour period. The potential for this magnitude of rain is on average 4.75 times per year, based on historical rain data.



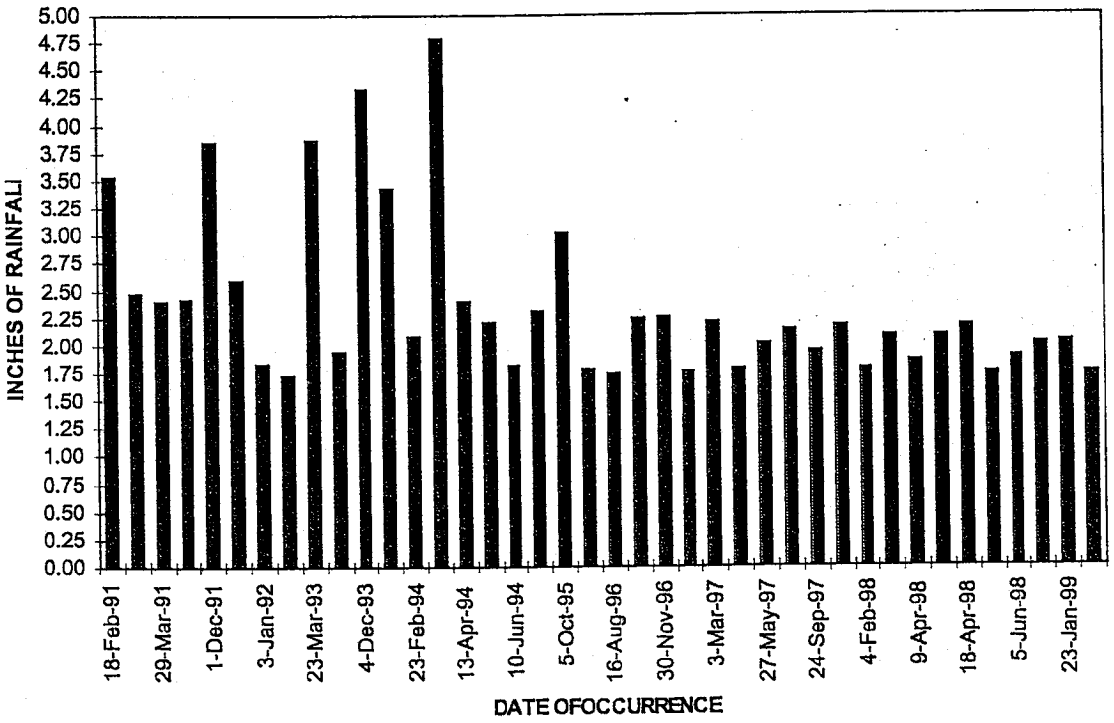
(Picture of Coal Yard Runoff Pond After Rain)

(Same Pond in Between Rain Events)

PROBLEM DEFINITION-CONTINUED

Kingston Significant Rain Data

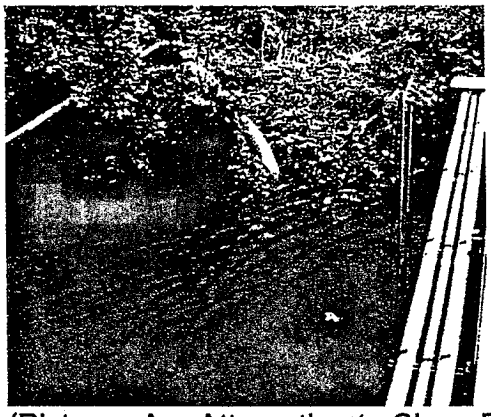
Date of Occurrence	Inches of Rain in 24 hrs	Date of Occurrence	Inches of Rain in 24 hrs
18-Feb-91	3.53	16-Aug-96	1.75
3-Mar-91	2.48	8-Nov-96	2.25
29-Mar-91	2.40	30-Nov-96	2.27
22-Nov-91	2.42	24-Jan-97	1.76
1-Dec-91	3.85	3-Mar-97	2.21
2-Dec-91	2.60	26-May-97	1.79
3-Jan-92	1.83	27-May-97	2.01
4-Oct-92	1.74	14-Jun-97	2.13
23-Mar-93	3.87	24-Sep-97	1.95
6-Aug-93	1.94	26-Oct-97	2.18
4-Dec-93	4.32	4-Feb-98	1.78
11-Feb-94	3.42	8-Mar-98	2.09
23-Feb-94	2.08	9-Apr-98	1.85
27-Mar-94	4.78	17-Apr-98	2.08
13-Apr-94	2.41	18-Apr-98	2.17
26-May-94	2.20	26-May-98	1.75
10-Jun-94	1.82	5-Jun-98	1.89
16-Jul-94	2.32	23-Jul-98	2.01
5-Oct-95	3.02	23-Jan-99	2.03
9-Jun-96	1.79	29-Apr-99	1.75

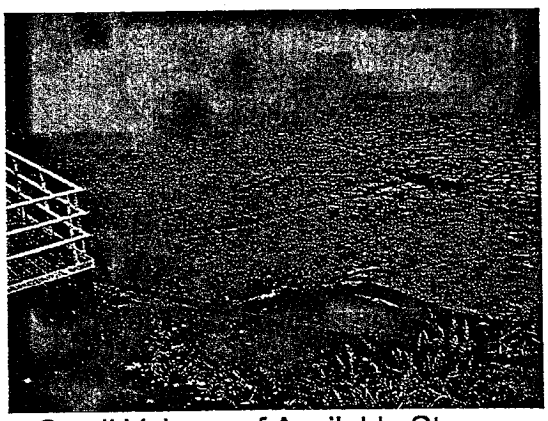


(Daily Rain Measurements by TVA, Sorted To Include Only 1.75" / 24 Hr. Rains)

ANALYSIS

1. Over the years heavy rain falls have washed fine particles of coal from the Coal Storage Yard into the Coal Yard Runoff Pond which has deceased the storage capacity of the pond to about 20% of the original volume.
2. In addition to the heavy rains, only one of the two existing pumps can be operated at a time, thus not allowing the pumps to keep up with the runoff. Only one pump can operate at a time due to the following reasons:
    - Deteriorated Fiberglass Discharge Piping can not handle the increased pressure of both pumps operating simultaneously:
        - Fiberglass Pipe has now been permanently severed for construction of new railroad loop track to the rail hopper, and is no longer usable.
        - Presently the existing Pumps are connected to the temporary diesel pump discharge piping. The purpose of the temporary pump is to assist in keeping the Reclaim Facility Construction Site dry.
        - The temporary diesel pump is scheduled to be removed once construction is complete. (Fall of calendar year 2000)
3. The Coal Yard Runoff Pump Controls no longer work and the pumps must be manually turned on and off.
4. Pumps' Electrical Power Feed is:
    - Deteriorated beyond repair,
    - Unreliable,
    - Only one pump can be operated at a time.





(Pictures Are Attempting to Show Relative Small Volume of Available Storage Capacity)

SOLUTIONS

1. Install a new 10" HDPE discharge pipe from pumps to ash pond (4200 ft.), sleeve under railroad tracks and main plant road.
2. Install a new power feed from new electrical equipment room through new reclaim tunnel, and a direct burial armored cable from end of tunnel to the pumps. Cable will be buried 5 feet deep and sleeved at road crossings.
3. Dredge pond to original storage capacity and enlarge if possible.
4. Install pump float switches for auto start/stop.

Projected Cost of Solution

1. Replace the pump discharge piping from the floating platform to the ash pond with HDPE piping	~~$150,000~~ **(550,000)**
2. Install a new electrical feed through the reclaim tunnel to the floating platform.	~~$125,000~~ **(200,000)**
3. Dredge pond to provide additional storage capacity, 16K cu. Yd	~~$50,000~~ **(100,000)**
4. Controls, float switches	~~$2,000~~ **(5,000)**
5. Engineering	~~$25,000~~ **(75,000)**
6. Contingency	~~$27,000~~ **(60,000)**
7. Partner Estimate	**$10,000**
TOTAL	~~$379,000~~ **(1,000,000)**

OTHER OPTIONS CONSIDERED

Do Nothing Option

The status quo should not be considered. Flooding of the new reclaim tunnels will shut off the supply of coal until the water and coal can be pumped out, and the new motors, variable speed drive electronic circuitry, belt scales, limit switches as well as damaged gear reducers, conveyor belt idlers, bearings, etc. are dried, cleaned inspected repaired and/or replaced, resulting in emergency hauling of coal, and possible derating of all 10 units.

OTHER OPTIONS CONSIDERED- CONTINUED

Projected Cost of Do Nothing Option

- Roberts & Schaefer (R&S) estimates damages at approximately $3,000,000 for the above worst case scenario. Also, this does not include additional costs associated with emergency coal handling operations while the reclaim facility is being restored.
- Downtime of the reclaim and unloader facilities is estimated to be from at least 8 to 12 weeks just to return to a limited operation. In order to keep the plant on line, an interim coal handling operation would be necessary during the downtime. We estimate additional coal handling costs would range from $330,000 to $500,000.

Status Quo Option

The rental of a portable diesel pump is an alternative considered in this evaluation. Based on the historical rain data, the diesel pump and discharge piping will need to be rented 5 times per year. The costs associated with this are as follows:

• Rent Portable Diesel Pump	$25,200
• Fuel Costs for Pump	$3,000
• Laborer to Fuel, Operate & Maintain Pump	$3,000
• Rent Discharge Pipe	$1,200
• Dredge Portion of Pond	$10,000
Total Annual Costs	$42,200

F353 COAL YARD PUMP DISCHARGING PIPING

erie M. Minghini (751-6375)

Cal ID	Activity ID	Forecast Start	Forecast Finish	RCN	Target	Rem Dur
5	CXFAK353IA	17MAR00A		KIF353		0
5	CXFAK35304	01MAY00	05MAY00	KIF353		5
5	CXFAK35306	09MAY00	12MAY00	KIF353		4
5	CXFAK353FA		26MAY00	KIF353		0
5	CXFAK35318	30MAY00	05JUN00	KIF353		5
5	CXFAK35316	01JUN00	05JUN00	KIF353		3
5	CXFAK35310	02JUN00	05JUN00	KIF353		2
5	CXFAK35312	02JUN00	05JUN00	KIF353		2
5	CXFAK35308	05JUN00	05JUN00	KIF353		1
5	CXFAK35314	05JUN00	05JUN00	KIF353		1
5	CXFAK35320	12JUN00	12JUN00	KIF353		1
5	CXFAK35302	19JUN00	19JUN00	KIF353		1
5	CXFAK35322	20JUN00	26JUN00	KIF353		5
5	CXFAK35324	27JUN00	03JUL00	KIF353		5
5	CXFAK35326	05JUL00	11JUL00	KIF353		5
5	CXFAK35328	12JUL00	12JUL00	KIF353		1
5	CXFAK353ED	17JUL00	21JUL00	KIF353		5
5	CXFAK35330	25JUL00	25JUL00	KIF353		1
5	CXFAK35332	28JUL00	01AUG00	KIF353		3
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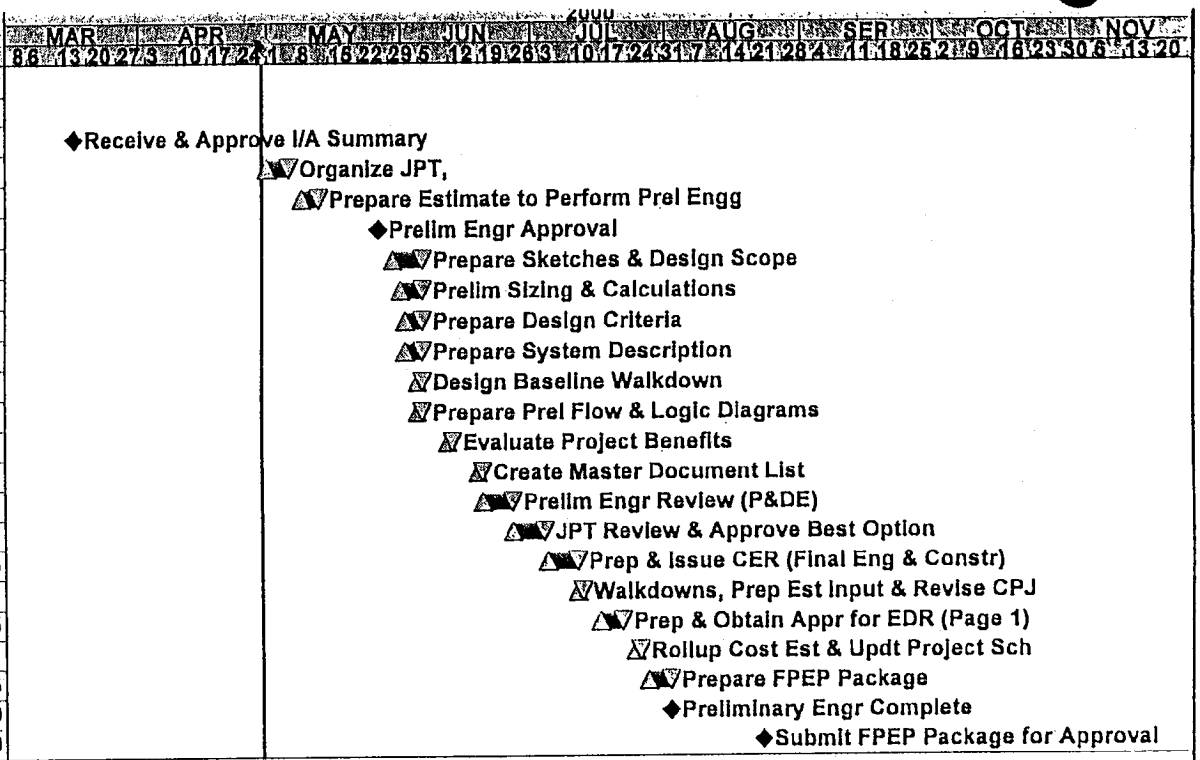

ject Start	01JAN89
ject Finish	24MAY04
a Date	30APR00
i Date	09MAY00

Early Bar
Progress Bar
Critical Activity

FHEM:KIFY

TENNESSEE VALLEY AUTHORITY

FOSSIL ENGINEERING SCHEDULES

Sheet 1 of 1

Layout-27

Date	Revision	Checked	Approved

Kingston Fossil Plant

PCN KIF353

Coal Yard Run-Off piping

Item	Cost
Replace pump discharge piping from the floating platform to ash pond with HDPE pipe.	$ 550,000
Install new electrical feed through the reclaim tunnel to the floating platform	$ 200,000
Engineering & Engineering Support	$ 85,000
Dredge Pond to provide additional storage capacity, 16,000 cu. yd. = 3,000,000 gallons	$ 100,000
Float Switches	$ 2,000
Contingency	$ 63,000
Total	$ 1,000,000

Project Checklist

KIF353
Coal Yard Pump Discharge Piping

- [x] Project Approval Summary
- [x] Project Justification Form
- [x] I/A Summary with options and economics
- [ ] Project Scope
- [x] Project Milestone Schedule
- [x] Cost Estimate

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