KIF 353 ⇝ KIF 259

FECE

	JULY	AUG
ϕ II	80	82

	AUG	SEP
ϕ III	32	29

FECE

	JUL	AUG	SEP	OCT	NOV
ϕ II	70	70	70	~~40~~ 55	55
ϕ III	70	70	70	~~40~~ 55	55

PARSONS CIVICS

	JUL
ϕ II	300

~~ϕ II~~

	AUG
ϕ III	~~40~~ 50

Fossil Engineering *Services*

CHERIE:

YOU MAY NEED THIS INFORMATION AGAIN LATER.

STEVE MADE A COPY & IS INPUTTING IT INTO HIS PROJECT.

LYNN

PIPE SPECIFICATIONS

Attachment C

	CARRIER PIPE	CASING PIPE (1)	CASING PIPE (2)
CONTENTS TO BE HANDLED	Stormwater	N/A	N/A
OUTSIDE DIAMETER	10.75"	20"	18"
PIPE MATERIAL	HDPE	Carbon Steel	Carbon Steel
SPECIFICATIONS AND GRADE	ASTM D3350	ASTM A53	ASTM A53
	PE3408	Type S Grade B	Type E or S; Grade B
WALL THICKNESS	.632"	.594"	.313" min.
ACTUAL WORKING PRESSURE	100 psi	N/A	N/A
TYPE OF JOINT	Butt Heat Fusion	Welded	Welded
COATING	N/A	Asphalt	None
METHOD OF INSTALLATION	Jack and Bore	Trench	Jack and Bore
VENTS	No	No	No
SEAL	No	No	No
BURY: BASE OF RAIL TO T/CASING	N/A	4.5' min.	4.5' min.
BURY: (NOT BENEATH TRACKS)	N/A	4' min.	4' min.
BURY: (ROADWAY DITCHES)	N/A	3' min.	3' min.
CATHODIC PROTECTION	N/A	No	No

TVA 488 (EN DES-3-77)

SHEET ____ OF ____

COMPUTED ____ DATE ____

CHECKED ____ DATE ____

Preliminary Discussion w/ HLP & Mike Smith prior to EQEP package

Phase I

PDE	$4000
EE	5000
PE	4000
PARSONS	29000
EST	6500
	49000

} 42000

Phase II

EE	$9,500
Parsons	15,000 ?
PE	15,000
Est	6,500

Phase III A

HED	$162000
Parsons	$ 5
PE	$ 15
Cont.	$ 80

Phase 3B

EE	$3200
PE	$5000

Rest of construction

75,000 Elec
100,000 Dredge
5,000 Pump Controls
60,000 total conting.

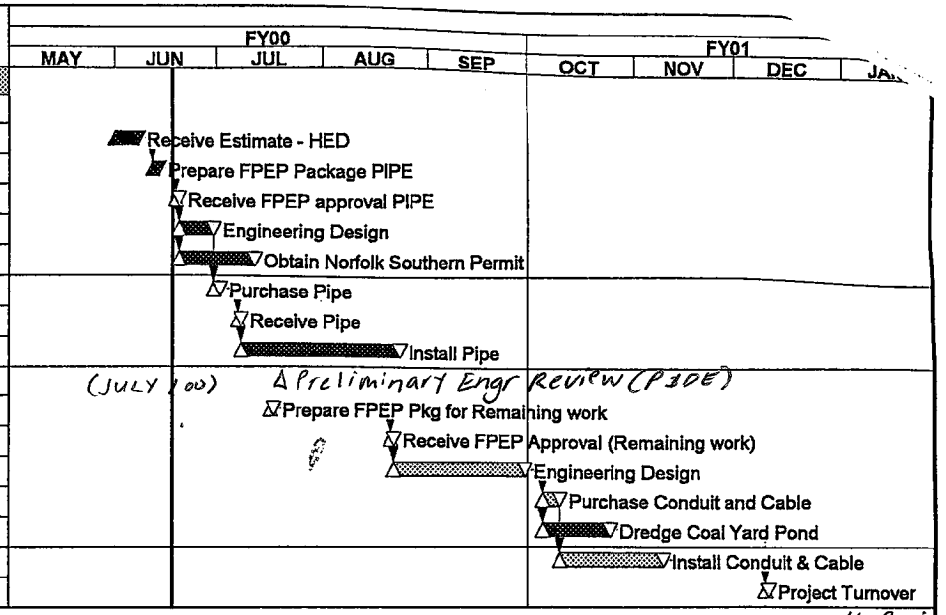
Pay back → $7812

2100 FT
300 K cm
switchgear
to main bldg.

EST
40,000 trench
9,000
8,000
10 +
$67,000
SAY $68K

1200' trench @ $7.64 => $9000
more than 5' deep
one sleeve @ crossing
float switches = $10,000

SEC	Activity ID	Forecast Start	Forecast Finish	Target Finish	Rem Dur	Resource ID	Budget Quantity	Cost Acct	PSTA	OM
KIF353 COAL YARD PUMP DISCHARGING PIPING										
Piping										
	CXK20	01JUN00A	07JUN00A		0		0.00			PIP
	CXK	12JUN00A	13JUN00A		0		0.00			PIP
	CXK10	19JUN00*	19JUN00		1		0.00			PIP
	CXK30	20JUN00	29JUN00		10		0.00			PIP
	CXK60	20JUN00	11JUL00		22		0.00			PIP
	CXK40	30JUN00	01JUL00		2		0.00			PIP
	CXK50	07JUL00	07JUL00		1		0.00			PIP
	CXK70	08JUL00	23AUG00		47		0.00			PIP
Electrical Supply & Other										
	CXK80	17JUL00*	17JUL00		1		0.00			OTH
	CXK90	21AUG00*	21AUG00		1		0.00			OTH
	CX	22AUG00	29SEP00		39		0.00			OTH
	CXK110	05OCT00	09OCT00		5		0.00			OTH
	CXK130	05OCT00	24OCT00		20		0.00			OTH
	CXK120	10OCT00	08NOV00		30		0.00			OTH
	CX10	09DEC00	09DEC00		1		0.00			OTH



20JUN 07JUL00

Prepare & Obtain App for EDR

13 APRIL00

9MAY00 30JUN00

JPT Phase I Kick off Mtg

Preliminary Engr Design

Project Start	01JAN88
Project Finish	09DEC00
Data Date	18JUN00
Run Date	13JUN00

Early Bar
Progress Bar
Critical Activity

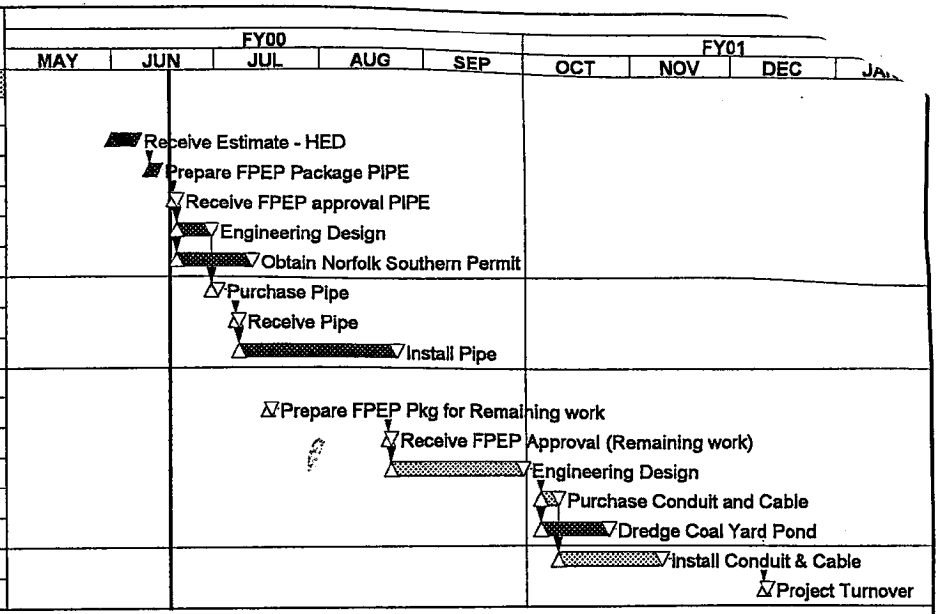
FHEM:KIFY

Sheet 1 of 1

Tennessee Valley Authority

Fossil E[illegible]ineering Schedule

SEC	Activity ID	Forecast Start	Forecast Finish	Target Finish	Rem Dur	Resource ID	Budget Quantity	Cost Acct	PSTA	OM
KIF353 COAL YARD PUMP DISCHARGING PIPING										
Piping										
	CXK20	01JUN00A	07JUN00A		0		0.00			PIP
	CXK	12JUN00A	13JUN00A		0		0.00			PIP
	CXK10	19JUN00*	19JUN00		1		0.00			PIP
	CXK30	20JUN00	29JUN00		10		0.00			PIP
	CXK60	20JUN00	11JUL00		22		0.00			PIP
	CXK40	30JUN00	01JUL00		2		0.00			PIP
	CXK50	07JUL00	07JUL00		1		0.00			PIP
	CXK70	08JUL00	23AUG00		47		0.00			PIP
Electrical Supply & Other										
	CXK80	17JUL00*	17JUL00		1		0.00			OTH
	CXK90	21AUG00*	21AUG00		1		0.00			OTH
	CX	22AUG00	29SEP00		39		0.00			OTH
	CXK110	05OCT00	09OCT00		5		0.00			OTH
	CXK130	05OCT00	24OCT00		20		0.00			OTH
	CXK120	10OCT00	08NOV00		30		0.00			OTH
	CX10	09DEC00	09DEC00		1		0.00			OTH



Project Start 01JAN89
Project Finish 09DEC00
Data Date 18JUN00
Run Date 13JUN00

Early Bar
Progress Bar
Critical Activity

FHEM:KIFY

Sheet 1 of 1

Tennessee Valley Authority

Fossil E[illegible]ineering Schedule

Waterfall Target Guidelines

Milestone	Code	Initial Target Date		Final Target Date		Basis for Change	Requirement for Change	Who
		Basis	Established When	Basis	Established When			
Receive/Approve IA Summary	J	NA	NA	Established need date for meeting ORI Commitment based upon Outage/Implementation	Original schedule loaded into P3	Outage/Implementation/Spend Plan shift	FPEP Approval of PAB/Budget Adjustment	PCS coordinates with PE
Preliminary Engineering Approval	1	Established need date for meeting ORI Commitment based upon existing knowledge level of Project	Original schedule loaded into P3	JPT agreement	Upon Approval of IA Summary	Outage/Implementation/Spend Plan shift	FPEP Approval of PAB/Budget Adjustment	PCS coordinates with PE
Preliminary Engineering Complete	A					All other changes	Properly completed PCR signed by appropriate FE Mgr* and Plant Mgr or designee	PE
Award *Long Lead Material* Contract	H	Established need date for meeting ORI Commitment based upon existing knowledge level of Project	Original schedule loaded into P3	Approved Spend Plan	FPEP Approval	Outage/Implementation/Spend Plan shift	FPEP Approval of PAB/Budget Adjustment	PCS coordinates with PE
PDL Issued	N					All other changes	Properly completed PCR signed by appropriate FE Mgr* and Plant Mgr or designee	PE
Receive *Long Lead Material*	C							
Complete As-Built Drawings	F							
Verify Benefits Acheived	E							
Project Turnover	D	Established need date for meeting ORI Commitment based upon existing knowledge level of Project	Original schedule loaded into P3	Approved Spend Plan	FPEP Approval	Outage/Implementation/Spend Plan shift	FPEP Approval of PAB/Budget Adjustment	PCS coordinates with PE
						Another project extends the outage duration	Properly completed PCR signed by appropriate FE Mgr*	PE
						All other changes	Properly completed PCR signed by appropriate FE Mgr* and Plant Mgr or designee	PE

* Appropriate Manager is Project & Discipline Engineering Manager, Steam Cycle Manager, or Electrical Systems Manager

Project Title _____

PCN _____

Project Engineer _____

ACT	Activity or Milestone		Cal	Dur	RESP	Predessors Tie	Type	Lag	Tie	Type	Lag	Tie	Type	Lag	Tie	Type	Lag	Tie	Type	Lag	Tie	Type	Lag
SPFAXXXXIA	Prepare and Submit I/A Summary	1	5 day	60																			
SPFAXXXX04	Org JPT, Review & Approve IA Summary	3	5 day	10		SPFAXXXXIA	FS	0															
SPFAXXXX06	Prepare Estimate to Perform Prel Engg	1	5 day	4		SPFAXXXX04	FF	5															
SPFAXXXXFA	Prelim Engr Approval	2	5 day			SPFAXXXX06	FS	10															
SPFAXXXXHM	Prelim Engr (Hammock)		5 day			SPFAXXXX18	SS																
SPFAXXXX02	Create Master Document List	1	5 day	20		SPFAXXXFA	FS	0															
SPFAXXXX08	Design Baseline Walkdown	1	5 day	10		SPFAXXXXFA	FS	0															
SPFAXXXX10	Prepare Design Criteria	1	5 day	15		SPFAXXXXFA	FS	0															
SPFAXXXX12	Prepare System Description	1	5 day	15		SPFAXXXXFA	FS	0	SPFAXXXX10	FS	-5												
SPFAXXXX14	Prepare Prel Flow & Logic Diagrams	1	5 day	20		SPFAXXXXFA	FS	0	SPFAXXXX12	FS	-10												
SPFAXXXX16	Prelim Sizing & Calculations	1	5 day	20		SPFAXXXXFA	FS	0	SPFAXXXX10	FS	-5												
SPFAXXXX18	Prepare Sketches & Design Scope	1	5 day	40		SPFAXXXXFA	FS	0															
SPFAXXXX20	Evaluate Proj Benefits	1	5 day	20		SPFAXXXX18	FF	5	SPFAXXXX16	FF	5	SPFAXXXX14	FF	5	SPFAXXXX12	FF	5	SPFAXXXX10	FF	5	SPFAXXXX08	FF	5
SPFAXXXXED	Prep & Obtain Appr for EDR (Page 1)	3	5 day	30		SPFAXXXX18	FF	10	SPFAXXXX10	FS	0	SPFAXXXX20	FF	5									
SPFAXXXX22	Prelim Engr Review (P&DE)	3	5 day	5		SPFAXXXX20	FS	5															
SPFAXXXX24	JPT Review & Approve Best Option	3	5 day	5		SPFAXXXX22	FS	0															
SPFCXXXX30	Discuss & Document Lessons Learned	4	5 day	10		SPFCXXXXTO	FF	28															
SPFCXXXX40	Engineering Implementation & Testing	4	7 day	35		SPFCXXXXTO	FS	-7															
SPFCXXXXBV	Project Benefits Verified	3	5 day			SPFCXXXX40	FS	5	SPFCXXXXTO	FS	90												
SPFCXXXXRR	Receive Red-Line Dwgs		5 day			SPFCXXXXOT	FF	10															
SPFCXXXX50	Prep As-Built Dwgs for Issue	1	5 day	30		SPFCXXXXRR	FS	5															
SPFCXXXXAB	Issue As-Built Dwgs	1	5 day			SPFCXXXX50	FF	0	SPFCXXXXHM	FF	0												
SPFCXXXXR3	3 Month Project Review	3	7 day	1		SPFCXXXXTO	FS	90	SPFCXXXXBV	FS	5	SPFCXXXXAB	FS	5	SPFCXXXX30	FS	5						
SPFCXXXXPC	Project Closure	3	7 day			SPFCXXXXTO	FS	90															

Indicates a date/duration that must be reviewed and revised to match outage and/or construction.

Indicates a default duration/lag. These are to be revised as appropriate.

Indicates ORI Requirment

Indicates an Activity that will appear on Pipeline Summary Schedule

(1) Engineering Calc/Design/Drafting (includes JPT Mtg & Emergent Work Activities)

(2) Procurement / Contract Administration

(3) Administrative (Mgt / Supervisoring Functions / Leave)

(4) Field Support

(5) Assessments

FPC
04/17/2000

Material List
Coal Yard Runoff Pond Piping Upgrade

Material Description	Manufacturer Part No.	Delivery time	Quantity	Units	Cost/Unit	Total
Mercury Float Switch-normally open: cord length - 20 feet; amps - 10; contacts: normally open; weight attached	Conery 2900-B1S1C1	1-2 days	4	ea.	$35.50	$142.00
Float Switch Bracket: Capacity - Holds up to 4 floats and 2 chains or cables; Material - 304 Stainless	Conery 4FBH	1-2 days	1	ea.	$51.00	$51.00
Duplex Junction Box: Size - 8" x 8" x 4"; Nema 4X; Grips - 4 - 3/8", 2 - 3/4"; Hub size - 2" conduit	Conery 8JBD	1-2 days	1	ea.	$141.00	$141.00
Lugs - 4/0, Uninsulated copper compression terminal long barrel	Burndy YA28-2N		3	ea.	$8.85	$26.55
Lugs - 300 kcmil, Uninsulated copper compression terminal long barrel	Burndy YA30-2N		3	ea.	$12.60	$37.80
Shrink tubing - precoated with thermoplastic adhesive-sealant	Raychem WCSM 38/12		3	ea.	$14.00	$42.00
Flashing warning light, red	Whelen IF1120RS		1	ea.		$0.00
Cable - Aluminum sheath, 3/C, 4/0, 19X X-OLENE 330, AL - CLX 055-060, 600v W/GRD, MC-HL, P/N 571-31-3224	ElectroWire	3-4 days	1200	ft.	$7.74	$9,288.00
					Total	**$9,728.35**

DRAFT

Tuesday, May 23, 2000

Cherie M. Minghini, Project Engineer

CAME FROM CHARLES DESK 6/8/2K

KINGSTON FOSSIL PLANT - COAL YARD RUNOFF POND PIPING UPGRADE - FOSSIL POWER GROUP PRELIMINARY ENGINEERING ESTIMATE

Attached is the Electrical & Controls Group Preliminary Engineering Estimate for the subject project. The following items are included:

FE's Phases II (detailed) and III conceptual scope of work

FE's cost estimate and schedule for Phases II and III

If you have any questions or require additional information, please contact Charles Rice at extension 7789.

David B. Murray
Supervisor, Electrical & Controls Group B
LP 2G-C

DBM:CWR
Attachment

KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND PIPING UPGRADE
ELECTRICAL AND CONTROLS PRELIMINARY ENGINEERING ESTIMATE

GENERAL SCOPE:

The purpose of this preliminary engineering estimate is to determine Phase 2 and 3 engineering hours for the design of the new power feed to the Coal Yard Runoff Pond pumps at Paradise Fossil Plant.

DESIGN SCOPE OF WORK (Phase II):

Design a new power feed for the Coal Yard Runoff Pond Pumps from the new Rail Unloading and Coal Blending Facility Electrical Building Motor Control Center No. 2 to the local control panel for Coal Yard Runoff Pumps. Attend construction meetings at the site to discuss with the plant electrical representative and construction partner so they may develop a Phase 3 cost estimate. Coordinate this construction estimate with the plant.

Identify and reserve existing/new drawings required for new power feed installation including conduit and cable schedules. Convert existing drawings to ACAD where needed. Create new drawings and conduit cable schedules as required.

IMPLEMENTATION SCOPE OF WORK (Phase III):

Support construction through site visits and telephone consultations.

Review and issue as-built drawings for installation of project.

FE ASSUMPTIONS:

Power source from the new Rail Unloading and Coal Blending Facility Electrical Building Motor Control Center Number 2 is available. Drawings will be issued during Phase 2.
No Input to DCS for High water level

DRAWING LIST:

Drawing number	Description
25W705-03	Outline & General Arrangement MCC #2
25W748-03	MCC #2 Single Line
25W749-32	MCC #2 Connection Diagram Local panel
25W7XX	Coal Yard Runoff Pumps ~~field~~ connection drawing
25W7XX	Coal Yard Runoff Pumps Schematic

KINGSTON FOSSIL PLANT
COAL YARD RUNOFF POND PIPING UPGRADE
ELECTRICAL AND CONTROLS PRELIMINARY ENGINEERING ESTIMATE

Drawing number	Description
25W840-24	Underground Conduit Electrical Duct Detail 'D' Sections
25W840-39	Underground Conduit Electrical Duct Detail 'C1' Sections
25W8XX	Coal Yard Runoff Pond Conduit & Grounding Drawing
45C800 PLC - XX	Existing Conduit & Cable Schedule
45C800 PLC - XX	Existing Conduit & Cable Schedule
45C800 PLC - XX	New Conduit & Cable Schedule

FOSSIL ENGINEERING MANHOUR INPUT SHEET

PROJECT: Kingston Fossil Plant

FISCAL YEAR: 2000

FEATURE: Kingston Coal Yard Runoff Piping Upgrade

PHASE: 2

PCN: KIF353

PREPARED BY: Charles Rice
Electrical & Controls Group B

MANHOURS AND RATES:

TOTAL PDE MHS: 0

FY00 Dollars

SECTION NAME	AVG RATE *	PDE MHS	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
CIVIL - SITE & ENVIRONMENTAL															0
															0
CIVIL - STRUCTURAL															0
															0
ELECTRICAL & CONTROLS	$34.25											80	82		162
															0
MECHANICAL															0
															0
TOTAL MANHOURS		0	0	0	0	0	0	0	0	0	0	80	82	0	162

* Section average rate based on 2080 hours with no benefits added

TRAVEL: NO. OF PERSON TRIPS:

Default Travel Cost per Trip: $125

TOTAL PDE TRIPS: 0

SECTION NAME	COST/TRIP	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
CIVIL - SITE & ENVIRONMENTAL															0
															0
CIVIL - STRUCTURAL															0
															0
ELECTRICAL & CONTROLS	$125											1	1		2
															0
MECHANICAL															0
															0
TOTAL TRIPS		0	0	0	0	0	0	0	0	0	0	1	1	0	2

OTHER DOLLARS (A/E Engineering Work, Est'd M-H's, Quote, Other Basis)

PERSONAL SERVICES CONTRACTS	RATE	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
															0
															0
															0
															0
															0
															0
															0
															0
															0

OTHER CONTRACTS	RATE	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Scanned Drawings															0
Reprographics (3FS, 3HS)	$2												11		11

NOTES:

FOSSIL ENGINEERING COST INPUT SHEET

PROJECT: Kingston Fossil Plant

FISCAL YEAR: 2000

FEATURE: Kingston Coal Yard Runoff Piping Upgrade

PHASE: 2

PCN: KIF353

PREPARED BY: Charles Rice
Electrical & Controls Group B

ENGINEERING LABOR COSTS: Leave Distribution Factor 0.190

SECTION NAME	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
CIVIL - SITE & ENVIRONMENTAL														$0
CIVIL - STRUCTURAL														$0
														$0
ELECTRICAL & CONTROLS											$3,261	$3,342		$6,603
														$0
MECHANICAL														$0
														$0
TOTAL ENGINEERING LABOR	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,261	$3,342	$0	$6,603

FY00 Dollars

TRAVEL COSTS:

SECTION NAME	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
CIVIL - SITE & ENVIRONMENTAL														$0
CIVIL - STRUCTURAL														$0
														$0
ELECTRICAL & CONTROLS											$125	$125		$250
														$0
MECHANICAL														$0
														$0
TOTAL TRAVEL COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$125	$125	$0	$250

FY00 Dollars

OTHER COSTS (A/E Engineering Work, Est'd M-H's, Quote, Other Basis):

PERSONAL SERVICES CONTRACTS	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
														$0
														$0
														$0
														$0
														$0
														$0
														$0
														$0
														$0
														$0
PERSONAL SERVICE CONTRACTS TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

FY00 Dollars

OTHER CONTRACTS	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Scanned Drawings														$0
Reprographics (3FS, 3HS)												$26		$26
OTHER CONTRACTS TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$26	$0	$26

FY00 Dollars

FOSSIL ENGINEERING
COST SUMMARY

PROJECT: Kingston Fossil Plant

FISCAL YEAR: 2000

FEATURE: Kingston Coal Yard Runoff Piping Upgrade

PHASE: 2

PCN: KIF353

PREPARED BY: Charles Rice
Electrical & Controls Group B

Benefits Rate 0.3956

FOSSIL ENGINEERING	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
ENGINEERING - LABOR (OBJ. 11A)											$3,261	$3,342		$6,603
ENGINEERING - BENEFITS (OBJ. 12A)											$1,290	$1,322		$2,612
TRAVEL (OBJ. 21A)											$125	$125		$250
PERSONAL SERVICES CONTRACTS (OBJ. 27F)														$0
OTHER CONTRACTS (OBJ. 25)												$26		$26
TOTAL FOSSIL ENGINEERING COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,675	$4,815	$0	$9,490

FOSSIL ENGINEERING MANHOUR INPUT SHEET

PROJECT: Kingston Coal Yard Runoff Pond Piping Upgrade

FISCAL YEAR: 2000

FEATURE: Kingston Coal Yard Runoff Pond

PHASE: 3

PCN: KIF353

PREPARED BY: Charles Rice
Electrical & Controls

TOTAL PDE MHS: 0

MANHOURS AND RATES:

FY00 Dollars

SECTION NAME	AVG RATE *	PDE MHS	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
CIVIL - SITE & ENVIRONMENTAL															0
CIVIL - STRUCTURAL															0
															0
ELECTRICAL & CONTROLS	$34.25												32	24	56
															0
MECHANICAL															0
															0
TOTAL MANHOURS		0	0	0	0	0	0	0	0	0	0	0	32	24	56

* Section average rate based on 2080 hours with no benefits added

TRAVEL: NO. OF PERSON TRIPS:

Default Travel Cost per Trip: $125

TOTAL PDE TRIPS: 0

SECTION NAME	COST/TRIP	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
CIVIL - SITE & ENVIRONMENTAL															0
															0
CIVIL - STRUCTURAL															0
															0
ELECTRICAL & CONTROLS	$125														0
															0
MECHANICAL															0
TOTAL TRIPS		0	0	0	0	0	0	0	0	0	0	0	0	0	0

OTHER DOLLARS (A/E Engineering Work, Est'd M-H's, Quote, Other Basis)

PERSONAL SERVICES CONTRACTS	RATE	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
															0
															0
															0
															0
															0
															0
															0
															0
															0
															0

OTHER CONTRACTS	RATE	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reprographics (3FS, 3HS)	$2													11	11
															0

NOTES:

FOSSIL ENGINEERING COST INPUT SHEET

PROJECT: Kingston Coal Yard Runoff Pond Piping Upgrade

FISCAL YEAR: 2000

FEATURE: Kingston Coal Yard Runoff Pond

PHASE: 3

PCN: KIF353

PREPARED BY: Charles Rice
Electrical & Controls

ENGINEERING LABOR COSTS: Leave Distribution Factor 0.190

SECTION NAME	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
CIVIL - SITE & ENVIRONMENTAL														$0
CIVIL - STRUCTURAL														$0
														$0
ELECTRICAL & CONTROLS												$1,304	$978	$2,282
														$0
MECHANICAL														$0
														$0
TOTAL ENGINEERING LABOR	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,304	$978	$2,282

FY00 Dollars

TRAVEL COSTS:

SECTION NAME	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
CIVIL - SITE & ENVIRONMENTAL														$0
CIVIL - STRUCTURAL														$0
														$0
ELECTRICAL & CONTROLS														$0
														$0
MECHANICAL														$0
														$0
TOTAL TRAVEL COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

FY00 Dollars

OTHER COSTS (A/E Engineering Work, Est'd M-H's, Quote, Other Basis):

PERSONAL SERVICES CONTRACTS	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
0														$0
														$0
														$0
														$0
														$0
														$0
														$0
														$0
														$0
														$0
PERSONAL SERVICE CONTRACTS TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

FY00 Dollars

OTHER CONTRACTS	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Reprographics (3FS, 3HS)													$26	$26
OTHER CONTRACTS TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$26	$26

FY00 Dollars

FOSSIL ENGINEERING
COST SUMMARY

PROJECT: Kingston Coal Yard Runoff Pond Piping Upgrade

FISCAL YEAR: 2000

FEATURE: Kingston Coal Yard Runoff Pond

PHASE: 3

PCN: KIF353

PREPARED BY: Charles Rice
Electrical & Controls

Benefits Rate 0.3956

FOSSIL ENGINEERING	PDE	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
ENGINEERING - LABOR (OBJ. 11A)												$1,304	$978	$2,282
ENGINEERING - BENEFITS (OBJ. 12A)												$516	$387	$903
TRAVEL (OBJ. 21A)														$0
PERSONAL SERVICES CONTRACTS (OBJ. 27F)														$0
OTHER CONTRACTS (OBJ. 25)													$26	$26
TOTAL FOSSIL ENGINEERING COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,820	$1,391	$3,211

SUBJECT KIF - COAL YD RUNOFF PIPING PROJECT

Reduce Piping

COMPUTED BY DATE CHECKED BY DATE

ALF - pipe cost $83/ft

Reduce KIF costs from ALF by ô

Pipe costs

493,000
- 74,088 (ALF 12")
418,912
+ 29,904 (KIF 10")
448,816

Air tests (10 bar) $861 + 646 + 646 + 646 + 2583 + 646 + 5166 + 646 + 646 + 646 + 1076 + 646 + 1291 + 861

Road Signs $1200 (material) + $347 (install)

Tracer Wire $1375 (material) + $4305 (install)

Collar Restraint ($269 + 87 + 32) x 2

Pipe Bollards $404 + $368 + 479 + 650 + 479
Vent Lines $1722 + 2583 + 575
Branch Saddle $702
Lockable Vault $2096
Branch Saddle T $378
41' Series $66
Flange Kits $150
Valve $314

Extra 1000 ft of pipe: $192 + 290 + 189 + 65 + 1776 + 137 + 384 + 92 + 1273 + 829

$13,000 sleeves (1/2) = ? ≈ $400K ($95/FT)

SUBJECT _____ PROJECT _____

COMPUTED BY DATE CHECKED BY DATE

Per AL Mock

4,200 x $85/FT = $357 K

+ Sleeves, Boring, etc

≈ $ 400 K

SUBJECT KIF COOL YD RUNOFF POND PIPING PROJECT

DIFF OF 10" PIPE & 14" PIPE (EXISTING)

COMPUTED BY DATE CHECKED BY DATE

COST OF WELDING PIPE
(FROM ALF BIOGAS ESTIMATE)

1722+1722+1291+1076+484+4036+807+7587
+807+646+1076+1130+1776+3390

= 27,550
+ 15,000 Rent Machine

≈ 45,000
+ 5,500 offload pipe

≈ $50K

COST OF PIPE Material Difference

4200 x $7.10 = 29820 (10")
4200 x $11.33 = 47,586 (Replace 14")

DIFF = $18K

Total Diff = $30K

Consolidated
PIPE & SUPPLY COMPANY
4130 Clinton Hwy. • Knoxville, TN 37912
Phone (423) 688-2325 Fax (423) 281-0175 Watts 1-800-608-2325

QUOTATION

TVA

QUOTE #:

PAGE 1 OF 1

Date: 5-11-00 Terms: Std

ENG:

FRT: F.O.B. Kingston, TN

Phone No.: 423-751-6375 Fax No.: 423-751-7094

DELV: see note below

ATTENTION: Sheri

SUBJECT:

ITEM	QUANTITY	DESCRIPTION	UNIT PRICE	EXTENSION
	4200'	10" Drisco series 1000 SDR 17	6.76 PF	28,476.00
		100 psi max. pressure		
		3240' currently available at factory. Production startup date to run the balance is scheduled for 6-20.		

- Checked on supply on 6/21 (18,000 LF Available)

Plenty available

3-4 days at most turnaround

-per Brian Henderson

TOTAL

Brian Henderson
SALES REPRESENTATIVE

PO BOX 1547
WASHINGTON, NC 27889

Phone: 252-946-3071
Fax: 252-946-4209

FRISCHKORN, INC.

Plexco 630-350-3810 per shirley

Distributor Apco 704-545-7500 Charlotte, NC

Quote: $ 7.10/ft delivered 100psi

Fax

To: Sherry McGinnis **From:** DEIRDRE LEWIS

COMPANY: TVA **Date:** 5-8-00

Phone: **Pages:**

Re: 423-751-7094 **CC:**

•Comments:

4200' 14" SDR17 $13.12 per ft.

3-4 wk delivery

14.91 lbs per ft.

42 pcs per load = 100 loads

Thanks

TVA 489H (EN DES-2-78) **TENNESSEE VALLEY AUTHORITY** SHEET OF

SUBJECT _____ PROJECT _____

COMPUTED BY DATE CHECKED BY DATE

CONSOLIDATED PIPE FOR DRISCOPIPE

865-688-2325 BRYAN

10" DR 17 Phillips 1000 PE Pipe

Pressure rating

W/fax INFO

5.8.00

To: Sherie Minghini

From: Ricky Lynn

Sherie if you have any questions just call or page me.

Phone 931-535-2222

Pager 800-283-0028 /2522

PE 3408 Industrial Piping System
Pipe Data and Pressure Ratings — Bulletin No. 301

Chevron Plexco

(Pipe weights are calculated in accordance with PPI TR-7)
Average inside diameter calculated on minimum wall plus 6%.

Pressure Ratings are for water at 73°F. For other fluids and service temperatures ratings may differ, refer to Application Note No. 6 Chemical and Environmental Considerations.

Pressure Rating		100 psi DR 17.0			80 psi DR 21.0			65 psi DR 26.0			50 psi DR 32.5			40 psi DR 41.0			
IPS* Pipe Size	Nominal OD (in.)	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	IPS* Pipe Size
1¼"																	1¼"
1½"																	1½"
2"	2.375	0.140	2.078	0.43													2"
3"	3.500	0.206	3.063	0.93													3"
4"	4.500	0.265	3.938	1.54	0.214	4.046	1.26										4"
5⅝"	5.375	0.316	4.705	2.20	0.256	4.832	1.80	0.207	4.936	1.47							5⅝"
5"	5.563	0.327	4.870	2.35	0.265	5.001	1.93	0.214	5.109	1.58							5"
6"	6.625	0.390	5.798	3.34	0.315	5.957	2.73	0.255	6.084	2.23	0.204	6.193	1.80				6"
7⅛"	7.125	0.419	6.237	3.86	0.339	6.406	3.16	0.274	6.544	2.58	0.219	6.661	2.08				7⅛"
8"	8.625	0.507	7.550	5.65	0.411	7.754	4.64	0.332	7.921	3.79	0.265	8.063	3.05				8"
10"	10.750	0.632	9.410	8.78	0.512	9.665	7.21	0.413	9.874	5.87	0.331	10.048	4.75				10"
12"	12.750	0.750	11.160	12.36	0.607	11.463	10.13	0.490	11.711	8.26	0.392	11.919	6.67				12"
13⅜"	13.375	0.787	11.707	13.60	0.637	12.025	11.15	0.514	12.285	9.09	0.412	12.502	7.35				13⅜"
14"	14.000	0.824	12.253	14.91	0.667	12.586	12.22	0.538	12.859	9.96	0.431	13.086	8.05				14"
16"	16.000	0.941	14.005	19.46	0.762	14.385	15.97	0.615	14.696	13.02	0.492	14.957	10.51				16"
18"	18.000	1.059	15.755	24.65	0.857	16.183	20.19	0.692	16.533	16.48	0.554	16.826	13.29				18"
20"	20.000	1.176	17.507	30.42	0.952	17.982	24.92	0.769	18.370	20.34	0.615	18.696	16.41				20"
22"	22.000	1.294	19.257	36.81	1.048	19.778	30.19	0.846	20.206	24.62	0.677	20.565	19.87				22"
24"	24.000	1.412	21.007	43.82	1.143	21.577	35.92	0.923	22.043	29.29	0.738	22.435	23.62				24"
†26"	26.000	1.529	22.759	51.40	1.238	23.375	42.13	1.000	23.880	34.39	0.800	24.304	27.74				†26"
†28"	28.000	1.647	24.508	59.62	1.333	25.174	48.86	1.077	25.717	39.89	0.862	26.173	32.20				†28"
†30"	30.000	1.765	26.258	68.45	1.429	26.971	56.13	1.154	27.554	45.78	0.923	28.043	36.92	0.732	28.448	29.50	†30"
†32"	32.000	1.882	28.010	77.86	1.524	28.769	63.83	1.231	29.390	52.10	0.985	29.912	42.04	0.780	30.346	33.53	†32"
†34"	34.000	2.000	29.760	87.91	1.619	30.568	72.06	1.308	31.227	58.79	1.046	31.782	47.44	0.829	32.243	37.87	†34"
†36"	36.000	2.118	31.510	98.56	1.714	32.366	80.79	1.385	33.064	65.93	1.108	33.651	53.18	0.878	34.139	42.47	†36"
†42"	42.000				2.000	37.760	109.97	1.615	38.576	89.71	1.292	39.261	72.40	1.024	39.829	57.74	†42"
†48"	48.000				2.286	43.154	143.64	1.846	44.086	117.20	1.477	44.869	94.58	1.171	45.517	75.48	†48"
†54"	54.000				2.571	48.549	181.74	2.077	49.597	148.35	1.662	50.477	119.72	1.317	51.208	95.52	†54"

* Industrial PE (polyethylene) pipe sizes are identified by IPS (iron pipe size) diameters which designate the nominal diameter for 12" IPS AND SMALLER PIPE, AND O.D. (outside diameter) for 14" IPS and larger pipe.

PLEXCO can produce to specialized pipe dimensions. Check with your PLEXCO sales office for availability of dimensions not listed.

† **SUBJECT TO MINIMUM ORDER QUANTITIES, AND AVAILABILITY OF TOOLING.**

Rev. 3/93

PE 3408 Industrial Piping System
Pipe Data and Pressure Ratings Bulletin No. 301

Chevron Plexco

TVA-00009491

(Pipe weights are calculated in accordance with PPI TR-7)
Average inside diameter calculated on minimum wall plus 6%.

Pressure Ratings are for water at 73°F. For other fluids and service temperatures ratings may differ, refer to Application Note No. 6 Chemical and Environmental Considerations.

Pressure Rating		255 psi DR 7.3			200 psi DR 9.0			160 psi DR 11.0			130 psi DR 13.5			110 psi DR 15.5			
IPS* Pipe Size	Nominal OD (in.)	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT	IPS* Pipe Size
1¼"	1.660	0.227	1.179	0.44	0.184	1.270	0.37	0.151	1.340	0.31	0.123	1.399	0.26	0.107	1.433	0.23	1¼"
1½"	1.900	0.260	1.349	0.58	0.211	1.453	0.49	0.173	1.533	0.41	0.141	1.601	0.34	0.123	1.639	0.30	1½"
2"	2.375	0.325	1.686	0.91	0.264	1.815	0.76	0.216	1.917	0.64	0.176	2.002	0.53	0.153	2.051	0.47	2"
3"	3.500	0.479	2.485	1.98	0.389	2.675	1.65	0.318	2.826	1.39	0.259	2.951	1.15	0.226	3.021	1.02	3"
4"	4.500	0.616	3.194	3.27	0.500	3.440	2.74	0.409	3.633	2.30	0.333	3.794	1.90	0.290	3.885	1.67	4"
5⅝"	5.375	0.736	3.815	4.66	0.597	4.109	3.90	0.489	4.338	3.27	0.398	4.531	2.72	0.347	4.639	2.40	5⅝"
5"	5.563	0.762	3.948	5.00	0.618	4.253	4.18	0.506	4.490	3.50	0.412	4.690	2.91	0.359	4.802	2.57	5"
6"	6.625	0.908	4.700	7.09	0.736	5.065	5.93	0.602	5.349	4.97	0.491	5.584	4.13	0.427	5.720	3.64	6"
7⅛"	7.125	0.976	5.056	8.20	0.792	5.446	6.87	0.648	5.751	5.75	0.528	6.006	4.78	0.460	6.150	4.21	7⅛"
8"	8.625	1.182	6.119	12.01	0.958	6.594	10.05	0.784	6.963	8.42	0.639	7.270	7.00	0.556	7.446	6.16	8"
10"	10.750	1.473	7.627	18.66	1.194	8.219	15.62	0.977	8.679	13.09	0.796	9.062	10.87	0.694	9.279	9.59	10"
12"	12.750	1.747	9.046	26.25	1.417	9.746	21.97	1.159	10.293	18.42	0.944	10.749	15.30	0.823	11.005	13.47	12"
13⅜"	13.375	1.832	9.491	28.88	1.486	10.225	24.17	1.216	10.797	20.26	0.991	11.274	16.83	0.863	11.545	14.83	13⅜"
14"	14.000	1.918	9.934	31.64	1.556	10.701	26.49	1.273	11.301	22.20	1.037	11.802	18.44	0.903	12.086	16.24	14"
16"	16.000	2.192	11.353	41.34	1.778	12.231	34.61	1.455	12.915	29.00	1.185	13.488	24.09	1.032	13.812	21.21	16"
18"	18.000	2.466	12.772	52.31	2.000	13.760	43.79	1.636	14.532	36.69	1.333	15.174	30.48	1.161	15.539	26.85	18"
20"	20.000	2.740	14.191	64.57	2.222	15.289	54.05	1.818	16.146	45.30	1.481	16.860	37.64	1.290	17.265	33.13	20"
22"	22.000	3.014	15.610	78.15	2.444	16.819	65.41	2.000	17.760	54.82	1.630	18.544	45.56	1.419	18.992	40.09	22"
24"	24.000	3.288	17.029	92.99	2.667	18.346	77.85	2.182	19.374	65.24	1.778	20.231	54.22	1.548	20.718	47.72	24"
†26"	26.000	3.562	18.449	109.15	2.889	19.875	91.35	2.364	20.988	76.58	1.926	21.917	63.63	1.677	22.445	56.02	†26"
†28"	28.000				3.111	21.405	105.96	2.545	22.605	88.79	2.074	23.603	73.76	1.806	24.171	64.94	†28"
†30"	30.000				3.333	22.934	121.62	2.727	24.219	101.94	2.222	25.289	84.68	1.935	25.898	74.56	†30"
†32"	32.000							2.909	25.833	115.99	2.370	26.976	96.35	2.065	27.622	84.88	†32"
†34"	34.000							3.091	27.447	130.92	2.519	28.660	108.80	2.194	29.349	95.83	†34"
†36"	36.000													2.323	31.075	107.40	†36"
†42"	42.000																†42"
†48"	48.000																†48"
†54"	54.000																†54"

* Industrial PE (polyethylene) pipe sizes are identified by IPS (iron pipe size) diameters which designate the nominal diameter for 12" IPS AND SMALLER PIPE, AND O.D. (outside diameter) for 14" IPS and larger pipe.

PLEXCO can produce to specialized pipe dimensions. Check with your PLEXCO sales office for availability of dimensions not listed.

† **SUBJECT TO MINIMUM ORDER QUANTITIES, AND AVAILABILITY OF TOOLING.**

Rev. 3/93

5.8.00

To: Sherie Minghini

From: Ricky Lynn

Sherie if you have any questions just call or page me.

Phone 931-535-2222

Pager 800-283-0028 /2522

QUOTATION

Consolidated

PIPE & SUPPLY COMPANY, Inc.

615-242-4286 / 000-264-8215

1500 COUNTY HOSPITAL ROAD
P.O. BOX 90776
NASHVILLE, TENNESSEE 37208

TO: TVA
Attn: Ricky Lynn

DATE 4-27-00

QUANTITY	UNIT	DESCRIPTION	PRICE	EXTENSION
3000'		14" DR17 Phillips 1000 P.E pipe 7/8	11.33	
AH		14" DR32.5 " " " " .431	6.76	
		PLANT RUN DATE Approx. 7/25/00		
		Check on Delivery		
		Thanks For the opportunity To Quote		

BY David Langley

- used for estimate comparison

PROJECT AUTHORIZATION AND COST SUMMARY ESTIMATE

				P.A. NO	
				REV #	0
CONTRACT NO.	0	LOCATION CODE (4digit)		PMMA YES	DATE: 13-Apr-00
LOCATION:	ALLEN	UNIT NO:	N/A	CPA	CER/RFP#: 9849-0284
SHORT CODES:	0011PBO			OC	MPAC W.O. 00-002877-000

PROJECT DESCRIPTION: INSTALL 12" HDPE FROM MEMPHIS SEWAGE TREATMENT PLANT TO SOUTHEAST CORNER OF ALLEN BOILER HOUSE

WORKSCOPE: EXCAVATE AND INSTALL 12" HDPE PIPELINE AND ASSOCIATED PARTS ON THE PIPELINE FROM THE MEMPHIS SEWAGE TREATMENT PLANT TO THE SOUTHEAST CORNER OF THE ALLEN BOILER HOUSE. THIS INCLUDES BORING UNDER EXISTING ROADS AND RAILROAD TRACKS TO INSTALL THE PIPE. THIS ALSO INCLUDES RESTORING THE LAND TO ORIGINAL FOUND CONDITION BEFORE THE EXCAVATION COMMENCED.

PWD#		TYPE OF FUNDING			OUTAGE
PHASE	3	CAPITAL < 100K	CAPITAL > 100K	YES	OUTAGE # N/A
STAFF AUG?		O&M	RESOURCE		
PREPARED BY:	YUTA / ARNETTE		APPROVED BY:	NJMangiamele	

SCHEDULE:	START: 22-May-00		PT BKDN	ORIG\PREV ESTIMATE	REVISION (+/-)	TOTAL	COMMENTS
	FINISH: 31-Oct-00						
1. PARTNER PROJECT LABOR COSTS							
Craft Labor		MANHOURS	01	7638	0	7638	
		COST	01	$176,022	$0	$176,022	
Non-Manual Labor		MANHOURS	06	480	0	480	
		COST	06	$16,844	$0	$16,844	
Contingency	0.00%	MANHOURS	CL	0	0	0	
		COST	CL	$0	$0	$0	
SUBTOTAL PARTNER LABOR		MANHOURS		**8,118**	**0**	**8,118**	
		COST		**$192,866**	**$0**	**$192,866**	
2. PARTNER OTHER COSTS							
Subcontracts			05	$44,500	$0	$44,500	
Subcontract fee			08	$0	$0	$0	
Travel & Living Expenses			04	$630	$0	$630	
Partner Material Purchases			02	$0	$0	$0	
Partner Other Costs			04	$0	$0	$0	
Contingency	0%		CO	$0	$0	$0	
SUBTOTAL PARTNER OTHER				**$45,130**	**$0**	**$45,130**	
TOTAL PARTNER COSTS				**$237,996**	**$0**	**$237,996**	
3. ITEMS MANAGED BY PARTNER							
Permanent Materials			MT	$135,927	$0	$135,927	
Heavy Equipment			EQ	$51,400	$0	$51,400	
Tagged & 3rd Party Rental Equipment			TE	$25,600	$0	$25,600	
Small Tools			ST	$2,291	$0	$2,291	
Supplies, Consumables & Expendable Tools			ET	$11,075	$0	$11,075	
Office Supplies & Expenses			OS	$0	$0	$0	
Other Partner Costs			PC	$0	$0	$0	
TVA subcontracts (NDE, etc.)			RT	$12,500	$0	$12,500	
Other TVA Costs			TV	$0	$0	$0	
Partner or OCIP Insurance	3.50%		OH	$6,750	$0	$6,750	
Partner Award Fee Allow.	5.00%		OH	$9,643	$0	$9,643	
Contingency	0%		CT	$0	$0	$0	
SUBTOTAL PARTNER MANAGED				**$255,186**	**$0**	**$255,186**	
TOTAL PARTNER COSTS				**$493,182**	**$0**	**$493,182**	
FOR ITEMS EXCLUDED SEE ATTACHED SHEETS							

APPROVALS:

PARTNER _____ DATE _____

TVA _____ DATE _____

69 E REV #

Unit COM
Outage No. N/A

SCHEDULE **START:** **05/22/00**
FINISH **10/31/00**

ESTIMATOR: YUTA / ARNETTE

Pre-outage	1000		
	0.0%		
Outage	**1.000**	1	
Post-outage	1000		
	0.0%		
	1.000	1	
Non-outage		1	
		1	
		1	
		1	

ALLEN
CUMBERLAND
GALLATIN
SHAWNEE
JOHNSONVILLE

INSTRUCTIONS FOR USE

Step 1 Choose the site for the estimate by selecting from the drop down list.

Step 2 Establish the hourly work week for each phase of the project from the drop down shift boxes. or set-up as non-outage estimate

Step 3 Enter the project scheduled start and finish dates

Step 4 Enter the estimators name

Step 5 Click on approriate boxes in estimate detail,escalation and phase

Step 6 Click on Prep Estimate tab and begin estimate

1

WORK	**BIO GAS UNDERGROUND TO SITE**
PLANT	**ALLEN**
UNIT	**N/A**
PCN #	**9849-0284**
WO #	**00-002877-000**
OUT #	**N/A**

65

66 FALSE

67

48

40 HR
50 HR
60 HR
70 HR

WORK PACKAGE
STEP TEXT

WORK	**BIO GAS UNDERGROUND TO SITE**
PLANT	ALLEN
UNIT	N/A
PCN #	9849-0284
WO #	00-002877-000
OUT #	N/A
PA #	**0**
	OPERATOR REQUIRED TO UNLOAD THE PIPE AT SPECIFIED UNLOADING AREAS
	PIPEFITTERS REQUIRED TO UNLOAD THE HDPE PIPING AT SPECIFIED AREAS. THE INTENT IS
	TO STORE SECTIONS OF PIPING ALONG THE EXCAVATION ROUTE OF THE PIPING TO
	MINIMIZE MOVING SECTIONS OF PIPING.
	PIPEFITTERS MOBILIZE TOOLS AND ITEMS TO JOBSITE
	LABORERS MOBILIZE TOOLS AND ITEMS TO JOBSITE
	NOTE:!!!!! EXCAVATION ROUTE WILL BE SURVEYED AND UTILITIES LOCATED AND MARKED
	BEFORE ANY EXCAVATION CAN COMMENCE. NO EXCEPTIONS!!!! ANY UTILITIES THAT
	ARE ENCOUNTERED DURING EXCAVATION MUST BE REPORTED TO SUPERVISOR
	IMMEDIATELY FOR DISPOSITION .
	PIPE ROUTE WILL BE MARKED BY SURVEY CREW AND ROUTE MUST BE FOLLOWED. ANY
	DEVIATION FROM SURVEYED ROUTE MUST BE APPROVED BEFORE WORK CAN CONTINUE
	PLEASE REVIEW NOTES ON TVA PRINT NUMBER 10W252-5
NOTE	**SEE NOTE ON #6 BARE COPPER TRACER WIRE TO BE INSTALLED IN THE TRENCH AFTER**
NOTE	**PIPING IN INSTALLED. THIS MUST BE INSTALLED DURING PIPING INSTALLATION ACTIVITY.**
NOTE	**IT CAN'T BE INSTALLED AFTER PIPING EXCAVATION IS BACKFILLED.**
	AREA ONE
	AREA ONE IS FROM SEWAGE PLANT FENCING TO THE SOUTH SIDE OF RIVERPORT RD.
	THEIR IS APPROXIMATELY 300 LF OF HDPE PIPING TO INSTALL IN THIS RUN . (SEE PICTURES)
	ESTABLISH EXCAVATION AREA AND ERECT EROSION FENCING AS REQUIRED TO STOP
	SOIL EROSION WHILE WORK IS BEING PERFORMED. MAINTAIN FENCE WHILE WORK IS
	BEING PERFORMED .
	OPERATOR TO EXCAVATE SOIL AS REQUIRED

	LABORERS TO SUPPORT OPERATOR WHILE TRENCH IS BEING EXCAVATED.
	OPERATOR TO LOAD SPOIL MATERIAL THAT IS TO BE REMOVED FROM AREA
	TEAMSTER TO DRIVE DUMP TRUCK WITH SPOIL MATERIAL TO ASSIGNED DUMPING AREA
	AFTER TRENCH IS EXCAVATED TO PROPER DEPTH(APPROX. 6 FEET DEEP), A LAYER OF
	BEDDING SAND APPROX. 6" DEEP IS REQUIRED TO BE PLACED IN THE TRENCH BEFORE
	THE HDPE IS TO BE INSTALLED. OPERATOR TO PLACE SAND AND SPREAD SAND WITH HOE
	AND COMPACT WITH HOE REQUIRING **NO PERSON REQUIRED IN TRENCH**
	OPERATOR TO ASSIST PIPEFITTERS WHEN PIPE IS READY TO BE PLACED IN THE TRENCH
	PIPEFITTERS TO ASSEMBLE SECTIONS OF HDPE PIPING OUT OF GROUND. WELDS TO BE
	MADE WITH DRISCO PIPE WELDING MACHINE. FLANGE MUST BE INSTALLED ON ENDS OF
	PIPE FOR AIR TEST
	PERFORMED IN SECTIONS . FLANGES MUST BE SAVED FOR REUSE ON PIPE
	AIR TEST
	CHECK JOINTS FOR LEAKS USING SOAP SOLUTION. REPAIR ANY LEAKS FOUND DURING
	AIR TEST
	TRENCH(HAUNCHING MATERIAL IS SAND AROUND AND APPROX. 6" ABOVE THE HDPE
	PIPING AND SPREAD SAND AND COMPACT AS REQUIRED WITH HOE
	NO PERSON REQUIRED IN TRENCH
	CARPENTERS TO BUILD & REMOVE FORM FOR COLLAR RESTRAINT.
	LABORERS TO OUR COLLAR RESTRAINT.
	OPERATOR TO PLACE BACKFILL IN TRENCH. BACKFILL TO BE PLACED IN APPROX. 6 " LIFTS
	OPERATOR TO PLACE BACKFILL AND SPREAD BACKFILL WITH HOE
	NO PERSON REQUIRED IN TRENCH UNTIL YOU REACH POINT 3 FOOT
	BELOW FINISH GRADE
	LABORERS TO COMPACT BACKFILL AS REQUIRED
	AFTER REACHING A POINT 3 FOOT BELOW FINISH GRADE
	AREA TWO
	AREA TWO IS UNDER RIVERPORT ROAD. THIS SECTION WILL BE DONE AFTER UNDER ROAD
	BORING IS COMPLETED AND 18" CASING PIPE IS INSTALLED.

	EXCAVATE SOIL AS REQUIRED IN AREA TWO.
	OPERATOR TO LOAD SPOIL MATERIAL THAT IS TO BE REMOVED FROM AREA
	TEAMSTER TO DRIVE DUMP TRUCK WITH SPOIL MATERIAL TO ASSIGNED DUMPING AREA
	AFTER TRENCH IS EXCAVATED TO PROPER DEPTH(APPROX. 6 FEET DEEP), A LAYER OF
	BEDDING SAND APPROX. 6" DEEP IS REQUIRED TO BE PLACED IN THE TRENCH BEFORE
	THE HDPE IS TO BE INSTALLED. OPERATOR TO PLACE SAND AND SPREAD SAND WITH HOE
	AND COMPACT WITH HOE REQUIRING **NO PERSON REQUIRED IN TRENCH**
	WELD CASING
	INSTALL CASING
	OPERATOR TO ASSIST PIPEFITTERS WHEN PIPE IS READY TO BE PLACED IN THE TRENCH
	PIPEFITTERS TO ASSEMBLE SECTIONS OF HDPE PIPING OUT OF GROUND. WELDS TO BE
	MADE WITH DRISCO PIPE WELDING MACHINE. FLANGE MUST BE INSTALLED ON ENDS OF
	PIPE FOR AIR TEST
	PERFORMED IN SECTIONS . FLANGES MUST BE SAVED FOR REUSE ON PIPE
	AIR TEST
	CHECK JOINTS FOR LEAKS USING SOAP SOLUTION. REPAIR ANY LEAKS FOUND DURING

	1	2	3	4	5	6	7	8	9	10	11	12
1										CRAFT LABOR		
2	MAT.	CODE	CODE	ACT	CODE				UNIT	MAN	WAGE	TOTAL
3	CODE	WORK ORDER		SCH	CRFT	DESCRIPTION	QTY	UNIT	MH	HOURS	RATE	LABOR
4	1		1									$1
5						**DIRECT CRAFT**						Note: Total Labor
6												includes escalatio
7												
8						**DIRECT CRAFT**	DIRECT CRAFT					
9												
10						**BIO GAS UNDERGROUND TO SITE**						
11												
12					OEA	OFF LOAD PIPE	1	LS	40	40	$24.52	$981
13					PFJ	OFF LOAD PIPE	1	LS	160.00	160	$26.91	$4,305
14												
15												
16					PFJ	MOBILIZATION	1	LS	40.00	40	$26.91	$1,076
17					LBJ	MOBILIZATION	1	LS	40	40	$15.97	$639
18						**AREA ONE(Sewage plant to road)**						
19					LBJ	ERECT AND MAINTAIN EROSION FENCING	600	LF	0.0125	7.5	$15.97	$120
20					OEA	EXCAVATE AREA ONE	675	CY	0.0125	8.44	$24.52	$207
21					LBJ	SUPPORT TRENCH EXCAVATION	675	CY	0.0125	8.44	$15.97	$135
22					OEA	PLACE BEDDING SAND	23	CY	0.08333	1.92	$24.52	$47
23					PFJ	WELD HDPE PIPE	8	EA	8.00	64	$26.91	$1,722
24					OEA	PLACE PIPING IN TRENCH	300	LF	0.01333	4	$24.52	$98
25					PFJ	PLACE PIPING IN TRENCH	300	LF	0.034	10.2	$26.91	$274
26					PFJ	INSTALL RESTRANT	1	EA	10.00	10	$26.91	$269
27					CAJ	FORM COLLAR RESTRAINT	1	LS	4.00	4	$21.66	$87
28					LBJ	POUR COLLAR RESTRAINT	1	LS	2.00	2	$15.97	$32
29					OEA	PLACE HAUNCH MATERIAL IN TRENCH	67	CY	0.08333	5.58	$24.52	$137
30					OEA	PLACE BACKFILL IN TRENCH	444	CY	0.08333	37	$24.52	$907
31					LBJ	PLACE BACKFILL IN TRENCH & TAMP	444	CY	0.08333	37	$15.97	$591
32					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	32.00	32	$26.91	$861
33												
34						**AREA TWO- UNDER ROAD**						
35					OEA	EXCAVATE AREA TWO	337.5	CY	0.0125	4.22	$24.52	$103
36					LBJ	SUPPORT TRENCH EXCAVATION	337.5	CY	0.0125	4.22	$15.97	$67
37					PFJ	WELD CASING	12	EA	16.00	192	$26.91	$5,166
38					PFJ	INSTALL CASING	191	LF	0.10	20.00	$26.91	$538
39					OEA	INSTALL CASING	1	EA	8.00	8	$24.52	$196
40					OEA	PLACE BEDDING	13	CY	0.0833	1.08	$24.52	$27
41					PFJ	WELD HDPE PIPE	8	EA	8.00	64	$26.91	$1,722
42					OEA	PLACE HAUNCH MATERIAL IN TRENCH	26	CY	0.0833	2.17	$24.52	$53
43					OEA	PLACE BACKFILL IN TRENCH	222	CY	0.0833	18.5	$24.52	$454
44					LBJ	PLACE BACKFILL IN TRENCH & TAMP	222	CY	0.0833	18.5	$15.97	$295
45					OEA	PLACE PIPING IN HORIZONTAL BORE CASING	300	LF	0.0267	8	$24.52	$196
46					PFJ	PLACE PIPING IN HORIZONTAL BORE CASING	300	LF	0.0800	24	$26.91	$646
47					PFJ	INSTALL END CAPS ON PIPING	2	EA	8.00	16	$26.91	$430

	1	2	3	4	5	6	7	8	9	10	11	12
1										CRAFT LABOR		
2	MAT	CODE	CODE	ACT	CODE				UNIT	MAN	WAGE	TOTAL
3	CODE	WORK ORDER		SCH	CRFT	DESCRIPTION	QTY	UNIT	MH	HOURS	RATE	LABOR
48					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	32.00	32	$26.91	$861
49												
50						**AREA THREE - NORTH FROM ROAD TO FIRST 45 ELL**						
51												
52					LBJ	ERECT AND MAINTAIN EROSION FENCING	200	LF	0.0125	2.5	$15.97	$40
53					OEA	EXCAVATE AREA THREE	225	CY	0.0125	2.81	$24.52	$69
54					LBJ	SUPPORT TRENCH EXCAVATION	225	CY	0.0125	2.81	$15.97	$45
55					OEA	PLACE BEDDING	8	CY	0.08333	0.67	$24.52	$16
56					PFJ	WELD HDPE PIPE	8	EA	6.00	48.00	$26.91	$1,291
57					OEA	PLACE PIPING IN TRENCH	100	LF	0.01	1.33	$24.52	$33
58					PFJ	PLACE PIPING IN TRENCH	100	LF	0.03	3.40	$26.91	$91
59					OEA	PLACE HAUNCH MATERIAL IN TRENCH	24	CY	0.08	2.00	$24.52	$49
60					OEA	PLACE BACKFILL IN TRENCH	150	CY	0.08	12.5	$24.52	$306
61					LBJ	PLACE BACKFILL IN TRENCH & TAMP	150	CY	0.08333	12.5	$15.97	$200
62					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	24.00	24	$26.91	$646
63												
64						**AREA FOUR- FROM 45 ELL TO 2ND 45 ELL**						
65					LBJ	ERECT AND MAINTAIN EROSION FENCING	400	LF	0.0125	5	$15.97	$80
66					OEA	EXCAVATE AREA FOUR	450	CY	0.0125	5.63	$24.52	$138
67					LBJ	SUPPORT TRENCH EXCAVATION	450	CY	0.0125	5.63	$15.97	$90
68					OEA	PLACE BEDDING	37	CY	0.08333	3.08	$24.52	$76
69					PFJ	WELD HDPE PIPE	5	EA	8.00	40	$26.91	$1,076
70					OEA	PLACE PIPING IN TRENCH	200	LF	0.01333	2.67	$24.52	$65
71					PFJ	PLACE PIPING IN TRENCH	200	LF	0.034	6.80	$26.91	$183
72					OEA	PLACE HAUNCH MATERIAL IN TRENCH	111	CY	0.08333	9.25	$24.52	$227
73					OEA	PLACE BACKFILL IN TRENCH	297	CY	0.08333	24.75	$24.52	$607
74					LBJ	PLACE BACKFILL IN TRENCH & TAMP	297	CY	0.08333	24.75	$15.97	$395
75					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	24	24	$26.91	$646
76												
77						**AREA FIVE- 2nd 45 ELL PAST RADIUS TO STRAIGHT RUN**						
78					LBJ	ERECT AND MAINTAIN EROSION FENCING	200	LF	0.0125	2.5	$15.97	$40
79					OEA	EXCAVATE AREA FIVE	225	CY	0.0125	2.81	$24.52	$69
80					LBJ	SUPPORT TRENCH EXCAVATION	225	CY	0.0125	2.81	$15.97	$45
81					OEA	PLACE BEDDING	8	CY	0.08333	0.67	$24.52	$16
82					PFJ	WELD HDPE PIPE	3	EA	6.00	18	$26.91	$484
83					OEA	PLACE PIPING IN TRENCH	100	LF	0.01333	1.33	$24.52	$33
84					PFJ	PLACE PIPING IN TRENCH	100	LF	0.034	3.40	$26.91	$91
85					OEA	PLACE HAUNCH MATERIAL IN TRENCH	23	CY	0.08333	1.92	$24.52	$47
86					OEA	PLACE BACKFILL IN TRENCH	149	CY	0.08333	12.42	$24.52	$304
87					LBJ	PLACE BACKFILL IN TRENCH & TAMP	149	CY	0.08333	12.42	$15.97	$198
88					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	24	24	$26.91	$646
89												
90						**AREA SIX- STRAIGHT RUN FROM RADIUS TO ROAD**						
91					LBJ	ERECT AND MAINTAIN EROSION FENCING	2000	LF	0.0125	25	$15.97	$399
92					OEA	EXCAVATE AREA SIX	2250	CY	0.0125	28.13	$24.52	$690

	1	[redacted]	3	4	5	6	[redacted]	7	8	9	10	11	[redacted]	12
1											CRAFT LABOR			
2	MAT	CODE	CODE	ACT	CODE					UNIT	MAN	WAGE		TOTAL
3	CODE	WORK ORDER		SCH	CRFT	DESCRIPTION		QTY	UNIT	MH	HOURS	RATE		LABOR
93					LBJ	SUPPORT TRENCH EXCAVATION		2250	CY	0.0125	28.13	$15.97		$449
94					OEA	PLACE BEDDING		75	CY	0.08333	6.25	$24.52		$153
95					PFJ	WELD HDPE PIPE		25	EA	6.00	150	$26.91		$4,036
96					OEA	PLACE PIPING IN TRENCH		1000	LF	0.01333	13.33	$24.52		$327
97					PFJ	PLACE PIPING IN TRENCH		1000	LF	0.034	34.00	$26.91		$915
98					OEA	PLACE HAUNCH MATERIAL IN TRENCH		223	CY	0.08333	18.58	$24.52		$456
99					OEA	PLACE BACKFILL IN TRENCH		1482	CY	0.08333	123.5	$24.52		$3,028
100					LBJ	PLACE BACKFILL IN TRENCH & TAMP		1482	CY	0.08333	123.5	$15.97		$1,973
101					**PFJ**	**PERFORM AIR TEST ON PIPING**		1	LS	96	96	$26.91		$2,583
102														
103						**AREA SEVEN- PIPE UNDER PLANT ROAD AT CURVE**									
104					LBJ	ERECT AND MAINTAIN EROSION FENCING		400	LF	0.0125	5	$15.97		$80
105					OEA	EXCAVATE AREA		337.5	CY	0.0125	4.22	$24.52		$103
106					LBJ	SUPPORT TRENCH EXCAVATION		337.5	CY	0.0125	4.22	$15.97		$67
107					OEA	PLACE BEDDING SAND		20	CY	0.08333	1.67	$24.52		$41
108					PFJ	WELD HDPE PIPE		5	EA	6.00	30	$26.91		$807
109					OEA	PLACE PIPING IN TRENCH		140	LF	0.01333	1.87	$24.52		$46
110					PFJ	PLACE PIPING IN TRENCH		140	LF	0.034	4.76	$26.91		$128
111					OEA	PLACE HAUNCH MATERIAL IN TRENCH		40	CY	0.08333	3.33	$24.52		$82
112					OEA	PLACE BACKFILL IN TRENCH		330	CY	0.08333	27.5	$24.52		$674
113					LBJ	PLACE BACKFILL IN TRENCH & TAMP		330	CY	0.08333	27.5	$15.97		$439
114					OEA	PLACE PIPING IN HORIZONTAL BORE CASING		60	LF	0.08333	5	$24.52		$123
115					PFJ	PLACE PIPING IN HORIZONTAL BORE CASING		60	LF	0.16667	10	$26.91		$269
116					PFJ	INSTALL END CAPS ON PIPING		2	EA	8.00	16	$26.91		$430
117					**PFJ**	**PERFORM AIR TEST ON PIPING**		1	LS	24	24	$26.91		$648
118														
119						**AREA EIGHT- PIPE FROM ROAD TO 45 ELL STR. RUN**									
120					LBJ	ERECT AND MAINTAIN EROSION FENCING		3734	LF	0.0125	46.68	$15.97		$745
121					OEA	EXCAVATE AREA EIGHT		4200	CY	0.0125	52.50	$24.52		$1,287
122					LBJ	SUPPORT TRENCH EXCAVATION		4200	CY	0.0125	52.50	$15.97		$839
123					OEA	PLACE BEDDING		139	CY	0.08333	11.58	$24.52		$284
124					PFJ	WELD HDPE PIPE		47	EA	6.00	282	$26.91		$7,587
125					OEA	PLACE PIPING IN TRENCH		1867	LF	0.01333	24.89	$24.52		$610
126					PFJ	PLACE PIPING IN TRENCH		1867	LF	0.034	63.48	$26.91		$1,708
127					OEA	PLACE HAUNCH MATERIAL IN TRENCH		415	CY	0.08333	34.58	$24.52		$848
128					OEA	PLACE BACKFILL IN TRENCH		2800	CY	0.08333	233.33	$24.52		$5,721
129					LBJ	PLACE BACKFILL IN TRENCH & TAMP		2800	CY	0.08333	233.33	$15.97		$3,727
130					**PFJ**	**PERFORM AIR TEST ON PIPING**		1	LS	192	192	$26.91		$5,166
131														
132														
133						**AREA NINE- FROM 1st 45 @ RD TO 2nd 45 @ RD**									
134					LBJ	ERECT AND MAINTAIN EROSION FENCING		370	LF	0.0125	4.63	$15.97		$74
135					OEA	EXCAVATE AREA NINE		417	CY	0.0125	5.21	$24.52		$128
136					LBJ	SUPPORT TRENCH EXCAVATION		417	CY	0.0125	5.21	$15.97		$83
137					OEA	PLACE BEDDING		14	CY	0.08333	1.17	$24.52		$29

	1	[redacted]	3	4	5	6	7	8	9	10	11	12
1										CRAFT LABOR		
2	MAT	CODE	CODE	ACT	CODE				UNIT	MAN	WAGE	TOTAL
3	CODE	WORK ORDER		SCH	CRFT	DESCRIPTION	QTY	UNIT	MH	HOURS	RATE	LABOR
138					PFJ	WELD HDPE PIPE	5	EA	6.00	30	$26.91	$807
139					OEA	PLACE PIPING IN TRENCH	185	LF	0.01333	2.47	$24.52	$60
140					PFJ	PLACE PIPING IN TRENCH	185	LF	0.034	6.29	$26.91	$169
141					OEA	PLACE HAUNCH MATERIAL IN TRENCH	42	CY	0.08333	3.5	$24.52	$86
142					OEA	PLACE BACKFILL IN TRENCH	275	CY	0.08333	22.92	$24.52	$562
143					LBJ	PLACE BACKFILL IN TRENCH & TAMP	275	CY	0.08333	22.92	$15.97	$366
144					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	24	24	$26.91	$646
145												
146												
147												
148						**AREA 10- FROM 45 ELL TO ROAD**							
149					LBJ	ERECT AND MAINTAIN EROSION FENCING	296	LF	0.0125	3.7	$15.97	$59
150					OEA	EXCAVATE AREA TEN	333	CY	0.0125	4.16	$24.52	$102
151					LBJ	SUPPORT TRENCH EXCAVATION	333	CY	0.0125	4.16	$15.97	$66
152					OEA	PLACE BEDDING SAND	11	CY	0.08333	0.92	$24.52	$22
153					PFJ	WELD HDPE PIPE	4	EA	6.00	24	$26.91	$646
154					OEA	PLACE PIPING IN TRENCH	148	LF	0.01333	1.97	$24.52	$48
155					PFJ	PLACE PIPING IN TRENCH	148	LF	0.034	5.03	$26.91	$135
156					OEA	PLACE HAUNCH MATERIAL(SAND) IN TRENCH	33	CY	0.08333	2.75	$24.52	$67
157					OEA	PLACE BACKFILL IN TRENCH	220	CY	0.08333	18.33	$24.52	$449
158					LBJ	PLACE BACKFILL IN TRENCH & TAMP	220	CY	0.08333	18.33	$15.97	$293
159					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	24	24	$26.91	$646
160												
161												
162						**AREA 11- PIPING UNDER PLANT ROAD**							
163					LBJ	ERECT AND MAINTAIN EROSION FENCING	200	LF	0.0125	2.5	$15.97	$40
164					OEA	EXCAVATE AREA	40	CY	0.0125	0.5	$24.52	$12
165					LBJ	SUPPORT TRENCH EXCAVATION	40	CY	0.0125	0.5	$15.97	$8
166					OEA	PLACE BEDDING	8	CY	0.08333	0.67	$24.52	$16
167					PFJ	WELD HDPE PIPE	5	EA	8.00	40	$26.91	$1,076
168					OEA	PLACE PIPING IN TRENCH	100	LF	0.01333	1.33	$24.52	$33
169					PFJ	PLACE PIPING IN TRENCH	100	LF	0.034	3.40	$26.91	$91
170					OEA	PLACE HAUNCH MATERIALIN TRENCH	16	CY	0.08333	1.33	$24.52	$33
171					OEA	PLACE BACKFILL IN TRENCH	20	CY	0.08333	1.67	$24.52	$41
172					LBJ	PLACE BACKFILL IN TRENCH & TAMP	20	CY	0.08333	1.67	$15.97	$27
173					OEA	PLACE PIPING IN HORIZONTAL BORE CASING	100	LF	0.08333	8.33	$24.52	$204
174					PFJ	PLACE PIPING IN HORIZONTAL BORE CASING	100	LF	0.16667	16.67	$26.91	$448
175					PFJ	INSTALL END CAPS ON PIPING	2	EA	8.00	16	$26.91	$430
176					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	24	24	$26.91	$646
177												
178						**AREA 12- FROM ROAD TO 45 ELL**							
179					LBJ	ERECT AND MAINTAIN EROSION FENCING	960	LF	0.0125	12	$15.97	$192
180					OEA	EXCAVATE AREA TWELVE	945	CY	0.0125	11.81	$24.52	$290

	1	2	3	4	5	6	7	8	9	10	11	12
1										CRAFT LABOR		
2	MAT	CODE	CODE	ACT	CODE				UNIT	MAN	WAGE	TOTAL
3	CODE	WORK ORDER		SCH	CRFT	DESCRIPTION	QTY	UNIT	MH	HOURS	RATE	LABOR
181					LBJ	SUPPORT TRENCH EXCAVATION	945	CY	0.0125	11.81	$15.97	$189
182					OEA	PLACE BEDDING	32	CY	0.08333	2.67	$24.52	$65
183					PFJ	WELD HDPE PIPE	11	EA	6.00	66	$26.91	$1,776
184					OEA	PLACE PIPING IN TRENCH	420	LF	0.01333	5.6	$24.52	$137
185					PFJ	PLACE PIPING IN TRENCH	420	LF	0.034	14.28	$26.91	$384
186					OEA	PLACE HAUNCH MATERIAL IN TRENCH	94	CY	0.08333	7.83	$24.52	$192
187					OEA	PLACE BACKFILL IN TRENCH	623	CY	0.08333	51.92	$24.52	$1,273
188					LBJ	PLACE BACKFILL IN TRENCH & TAMP	623	CY	0.08333	51.92	$15.97	$829
189					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	40	40	$26.91	$1,076
190												
191												
192												
193						**AREA 13-FROM 45 TO RD CROSSING**							
194					LBJ	ERECT AND MAINTAIN EROSION FENCING	540	LF	0.0125	6.75	$15.97	$108
195					OEA	EXCAVATE AREA TWELVE	600	CY	0.01	7.50	$24.52	$184
196					LBJ	SUPPORT TRENCH EXCAVATION	600	CY	0.0125	7.50	$15.97	$120
197					OEA	PLACE BEDDING SAND	20	CY	0.08333	1.67	$24.52	$41
198					PFJ	WELD HDPE PIPE	7	EA	6.00	42	$26.91	$1,130
199					OEA	PLACE PIPING IN TRENCH	267	LF	0.01333	3.56	$24.52	$87
200					PFJ	PLACE PIPING IN TRENCH	267	LF	0.034	9.078	$26.91	$244
201					OEA	PLACE HAUNCH MATERIAL(SAND) IN TRENCH	60	CY	0.08333	5	$24.52	$123
202					OEA	PLACE BACKFILL IN TRENCH	400	CY	0.08333	33.33	$24.52	$817
203					LBJ	PLACE BACKFILL IN TRENCH & TAMP	400	CY	0.08333	33.33	$15.97	$532
204					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	24	24	$26.91	$646
205												
206												
207												
208						**AREA 14- FROM ROAD TO OLD XFRMR**							
209					LBJ	ERECT AND MAINTAIN BARRICADES IN PARKING LOT	540	LF	0.11111	60	$15.97	$958
210					CAJ	LAYOUT ROAD CUTS	1	LS	16.00	16	$21.66	$347
211					LBJ	SAW CUT PARKING LOT FOR EXCAVATION	1	LS	65.00	65	$15.97	$1,038
212					OEA	LOAD UP ASPHALT FOR DISPOSAL	25	CY	0.29	7.14	$24.52	$175
213					TM3	LOAD UP ASPHALT FOR DISPOSAL AND HAUL OFF SITE	25	CY	0.57	14.29	$19.86	$284
214					IWJ	REMOVE FENCING FOR EXCAVATION WORK	1	LS	16.00	16	$24.96	$399
215					IWJ	CUT RAILROAD TRACKS FOR EXCAVATION WORK	1	LS	6.00	6	$24.96	$150
216					OEA	EXCAVATE PARKING LOT AND ROAD	912	CY	0.0125	11.4	$24.52	$280
217					OEA	LOAD SPOIL MATERIAL	912	CY	0.01389	12.67	$24.52	$311
218					TM3	LOAD SPOIL MATERIAL	912	CY	0.01389	12.67	$19.86	$252
219					TM3	HAUL OFF SPOIL MATERIAL	912	CY	0.08333	76.00	$19.86	$1,509
220					LBJ	SUPPORT ROAD AND LOT EXCAVATION	912	CY	0.0125	11.40	$15.97	$182
221					OEA	PLACE BEDDING	31	CY	0.08	2.58	$24.52	$63
222					OEA	PLACE PIPING IN TRENCH	410	LF	0.08	34.17	$24.52	$838
223					PFJ	PLACE PIPING IN TRENCH	410	EA	0.03	13.94	$26.91	$375

	1	2	3	4	5	6	7	8	9	10	11	12
1										CRAFT LABOR		
2	MAT	CODE	CODE	ACT	CODE				UNIT	MAN	WAGE	TOTAL
3	CODE	WORK ORDER		SCH	CRFT	DESCRIPTION	QTY	UNIT	MH	HOURS	RATE	LABOR
224					PFJ	WELD HDPE PIPE	11	EA	6.00	66.00	$26.91	$1,776
225					OEA	PLACE HAUNCH MATERIAL IN TRENCH	92	CY	0.08333	7.67	$24.52	$188
226					OEA	PLACE BACKFILL IN TRENCH CRUSHED STONE	608	CY	0.08333	50.67	$24.52	$1,242
227					LBJ	PLACE BACKFILL IN TRENCH & TAMP	608	CY	0.08333	50.67	$15.97	$809
228					IWJ	REINSTALL FENCING	1	LS	16	16.00	$24.96	$399
229					IWJ	REINSTALL RAILROAD TRACKS	1	LS	16	16.00	$24.96	$399
230					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	48	48.00	$26.91	$1,291
231												
232												
233												
234						**FROM XFRMR TO PLANT TERMINATION POINT**							
235					LBJ	ERECT AND MAINTAIN EROSION FENCING	540	LF	0.0125	6.75	$15.97	$108
236					OEA	EXCAVATE AREA FOURTEEN	600	CY	0.01250	7.50	$24.52	$184
237					LBJ	SUPPORT TRENCH EXCAVATION	600	CY	0.0125	7.50	$15.97	$120
238					**OEA**	**LOAD SPOIL MATERIAL**	**300**	**CY**	0.01389	4.17	$24.52	$102
239					**TM3**	**LOAD SPOIL MATERIAL**	**300**	**CY**	0.01389	4.17	$19.86	$83
240					**TM3**	**HAUL OFF SPOIL MATERIAL**	**300**	**CY**	0.08333	25.00	$19.86	$496
241					OEA	PLACE BEDDING	30	CY	0.0833	2.50	$24.52	$61
242					OEA	PLACE PIPING IN TRENCH	410	LF	0.01333	5.47	$24.52	$134
243					PFJ	PLACE PIPING IN TRENCH	410	EA	0.034	13.94	$26.91	$375
244					PFJ	WELD HDPE PIPE	21	EA	6.00	126	$26.91	$3,390
245					PFJ	INSTALL COLLAR RESTRAINT	1	EA	10.00	10	$26.91	$269
246					CAJ	FORM COLLAR RESTRAINT	1	LS	4.00	4	$21.66	$87
247					LBJ	POUR COLLAR RESTRAINT	1	LS	2.00	2	$15.97	$32
248					PFJ	INSTALL TEMP TERM CAP ON 12" PIPE	1	LS	6.00	6	$26.91	$161
249					**PFJ**	**PERFORM AIR TEST ON PIPING**	1	LS	32.00	32	$26.91	$861
250					OEA	PLACE HAUNCH MATERIAL IN TRENCH	92	CY	0.0833	7.67	$24.52	$188
251					OEA	PLACE BACKFILL IN TRENCH CRUSHED STONE	607	CY	0.08333	50.58	$24.52	$1,240
252					LBJ	PLACE BACKFILL IN TRENCH & TAMP	607	CY	0.08333	50.58	$15.97	$808
253												
254												
255					PFJ	FAB PIPE BOLLARDS	15	EA	1.00	15	$26.91	$404
256					OEA	EXCAVATE FOR PIPE BOLLARDS	15	EA	1.00	15	$24.52	$368
257					LBJ	EXCAVATE FOR PIPE BOLLARDS	15	EA	2.00	30	$15.97	$479
258					CAJ	INSTALL PIPE BOLLARDS	15	EA	2.00	30	$21.66	$650
259					LBJ	POUR CONCRETE AT BOLLARDS(4.5 CY TOTAL)	15	EA	2.00	30	$15.97	$479
260					PFJ	FAB & INSTALL 2.5 " VENT LINES W/ RELIEF VALVES	8	EA	8.00	64	$26.91	$1,722
261					PFJ	INSTALL 6 DRIP LEGS	6	EA	16.00	96	$26.91	$2,583
262					LBJ	INSTALL LOCK BOXES AT DRIP LEGS	6	EA	6.00	36	$15.97	$575
263												
264					CAJ	INSTALL WARNING SIGNS AT VARIOUS LOCATIONS	8	EA	2.00	16	$21.66	$347
265												
266												
267					PFJ	INSTALL TRACER WIRE(#6 BARE COPPER)	5500	LF	0.02909	160	$26.91	$4,305
268												

	1	2	3	4	5	6	7	8	9	10	11	12
1									CRAFT LABOR			
2	MAT	CODE	CODE	ACT	CODE				UNIT	MAN	WAGE	TOTAL
3	CODE	WORK ORDER		SCH	CRFT	DESCRIPTION	QTY	UNIT	MH	HOURS	RATE	LABOR
269					LBJ	MAINTAIN BARRICADES	5500	LF	0.07273	400	$15.97	$6,389
270												
271					LBJ	FINE GRADE AND RESEED	66000	SF	0.00455	300	$15.97	$4,792
272					OEA	FINE GRADE	66000	SF	0.005	330	$24.52	$8,091
273												
274												
275						ADD ABOVE THIS LINE IF NECESSARY	DIRECT					
276						DO NOT DELETE THIS LINE UNLESS DELETING PRE-OUTAGE SECTION OF ESTIMATE	SUBTOTALS :			6615		$151,286
277												
278						**TOTALS - DIRECT CRAFT**				6615		$151,286
279												
280						**SUPPORT CRAFT**						
281						(QTY & UNITS MUST BE INCLUDED FOR EA LINE ITEM)						
282												
283						**SUPPORT CRAFT**						
284												
285												
286						**JOURNEYMAN SUPPORT**						
287					TMW	TEAMSTER WAREHOUSE	1	MEN	130	130	$19.30	$2,508
288					OEA	OPERATORS	1	MEN	100	100	$24.52	$2,452
289					LBJ	LABORERS	2	MEN	130	260	$15.97	$4,153
290												
291												
292						**FOREMAN SUPPORT**						
293					PFF	PIPEFITTER FOREMAN	1	MEN	480	480	$29.61	$14,210
294												
295						ADD ABOVE THIS LINE IF NECESSARY	PRE-OUTAGE SUPPORT					
296						DO NOT DELETE THIS LINE UNLESS DELETING PRE-OUTAGE SECTION OF ESTIMATE	SUBTOTALS :			970		$23,323
297						**MOBILIZATION OF CRAFT**						
298												
299					PFJ	ADMINISTRATIVE TIME	15	MEN	1.50	23	$26.91	$605
300					PFJ	SAFETY MEETING	15	MEN	1.50	23	$26.91	$605
301					PFJ	DRUG TEST	15	MEN	0.50	8	$26.91	$202
302												
303						ADD ABOVE THIS LINE IF NECESSARY	CONSTR FAC & MOB					
304						DO NOT DELETE THIS LINE UNLESS DELETING PRE-OUTAGE SECTION OF ESTIMATE	SUBTOTALS :			53		$1,413
305						**MISCELLANEOUS CONSTRUCTION FACILITIES**						
306												
307												
308						ADD ABOVE THIS LINE IF NECESSARY	MISC CONSTR FAC					
309						DO NOT DELETE THIS LINE UNLESS DELETING PRE-OUTAGE SECTION OF ESTIMATE	SUBTOTALS :					
310												
311												

	1	2	3	4	5	6	7	8	9	10	11	12
1										CRAFT LABOR		
2	MAT	CODE	CODE	ACT	CODE				UNIT	MAN	WAGE	TOTAL
3	CODE	WORK ORDER		SCH	CRFT	DESCRIPTION	QTY	UNIT	MH	HOURS	RATE	LABOR
312						TOTAL SUPPORT CRAFT LABOR				1023		$24,736
313	LABOR SUMMARY					TOTAL DIRECT CRAFT LABOR				6615		$151,286
314						GRAND TOTAL CRAFT LABOR				7638		$176,022
315												
316						SUBCONTRACTS - PARTNER						
317												
318			PSUB1		HCOST	SURVEY CREW						$4,500
319			PSUB2		HCOST	CORE BORE ROADS THREE BORES						$40,000
320												
321												
322										TOTAL - SUBCONTRACTS - PARTNER		$44,500
323						SUBCONTRACTS - TVA						
324												
325			TSUB1		HCOST	BYERS LOCATE SERVICE						$4,500
326			TSUB2		HCOST	PARKING LOT /ROAD PAVING WORK						$6,500
327			TSUB3		HCOST	PORTA-JON						$1,500
328										TOTAL - SUBCONTRACTS - TVA		$12,500
329						MATERIALS - TVA PURCHASE						
330												
331			TMTL		HCOST	SEE MATERIALS SHEET						
332			TMTL		HCOST							
333			TMTL		HCOST							
334					HCOST							
335												
336												
337										TOTAL - MATERIALS - TVA PURCHASE		$135,927
338						MATERIALS - PARTNER PURCHASE						
339												
340			PMTL		HCOST							
341			PMTL		HCOST							
342			PMTL		HCOST							
343												
344										TOTAL - MATERIALS - PARTNER PURCHASE		
345						NON-MANUAL LABOR						
346						STAFFING (See Staff Plan for Details)						
347												
348												
349			950		STF	NON PROJECT SPECIFIC STAFF				480		$16,844
350			950X		HCOST	TRAVEL & LIVING EXPENSES						$630
351						TOTAL - NON MANUAL LABOR						
352										TOTAL - NON-MANUAL (ex. trvl & living)		$16,844
353						OTHER COSTS - MANAGED BY PARTNER						

	1	2	3	4	5	6	7	8	9	10	11	12
1										CRAFT LABOR		
2	MAT	CODE	CODE	ACT	CODE				UNIT	MAN	WAGE	TOTAL
3	CODE	WORK ORDER		SCH	CRFT	DESCRIPTION	QTY	UNIT	MH	HOURS	RATE	LABOR
354												
355												
356			STLS	STLS	HCOST	SMALL TOOLS	7638	MHRS			$0.30	$2,291
357			CONS	CONS	HCOST	CONSUMABLE	7638	MHRS			$1.45	$11,075
358			OSUP	OSUP	HCOST	OFFICE SUPPLIES AND EXPENSES						
359			OTH		HCOST	OTHER PARTNER COSTS						
360						OTHER TVA COSTS						
361												
362										TOTAL - OTH COST - MANAGED BY PRTNER		$13,366
363						**TVA HEAVY EQUIPMENT**						
364						Note: 1st shift rate shown - 2nd shift rate is a lookup	EQUIPMENT				1ST SHFT	RENTAL
365							SHIFTS OR WEEKS OF USE				RATE	DOLLARS
366			HED	HED	HCOST	YARD CRANE 35 TON	5	1ST	2ND		205	$1,025
367			HED	HED	HCOST	AIR COMPRESSOR 750 CFM	50	1ST	2ND		95	$4,750
368			HED	HED	HCOST	SKYLIFT	25	1ST	2ND		165	$4,125
369			HED	HED	HCOST	DUMP TRUCK	5	1ST	2ND		120	$600
370			HED	HED	HCOST	TRACK HOE SMALL	50	1ST	2ND		280	$14,000
371			HED	HED	HCOST	TRUCK	50	1ST	2ND		85	$4,250
372			HED	HED	HCOST	COMPACTOR	50	1ST	2ND		125	$6,250
373			HED	HED	HCOST	MOTOR GRADER	10	1ST	2ND		215	$2,150
374			HED	HED	HCOST	CRAWLER FRONT END LOADER	50	1ST	2ND		220	$11,000
375			HED	HED	HCOST	TRAILERS	50	1ST	2ND		65	$3,250
376												
377												
378										TOTAL - HEAVY EQUIPMENT		$51,400
379						**TAGGED TOOLS**						
380							QTY	NO. - WEEKS			EQUP	RENTAL
381							EQUIP	RENTAL			RATE	DOLLARS
382												
383			TTLS	TTLS	HCOST	DRISCO WELDING MACHINE	2	WKS	10		$750.00	$15,000
384			TTLS	TTLS	HCOST	GAS STOMPER	4	WKS	10		$50.00	$2,000
385			TTLS	TTLS	HCOST	GENERATOR	2	WKS	10		$350.00	$7,000
386			TTLS	TTLS	HCOST	RADIO	4	WKS	10		$40.00	$1,600
387												
388												
389						ADD ABOVE THIS LINE IF NECESSARY						
390						DO NOT DELETE THIS LINE UNLESS DELETING PRE-OUTAGE SECTION OF ESTIMATE				TOTAL - TAGGED TOOLS		$25,600
391						**TAGGED TOOLS**						
392	END		END	END	END	END	END	END	END	END	END	END

TVA-00009510

ALLEN					****SUMMARY****				RUN DATE:	13-Apr-00
0										
00-002877-000			TRAVEL & LIVING EXPENSES (Relocation, Per Diem, Expenses,			$630				
BIO GAS UNDERGROUND TO SITE			TOTAL STAFF DOLLARS			$16,844				
			TOTAL STAFF MANHOURS			480				

STAFFING	RATE	RELOCATE/ PER DIEM EXPENSES	MONTHLY TRIPS HOME	OUTAGE DOLLARS	NON-OUTAGE DOLLARS	TOTAL STAFF DOLLARS	PRE-OUTAGE DUR (WKS) 40	OUTAGE DUR (WKS) 40	POST-OUT DUR (WKS) 40	TOTAL MANHOURS
GENERAL SUPT.	$49.70	$0	$0	$0	$0	$0				0
BOILER SUPT	$44.02	$0	$0	$0	$0	$0				0
ELECT SUPT	$44.02	$0	$0	$0	$0	$0				0
MECHANICAL SUPT	$44.02	$0	$0	$0	$0	$0				0
CIVIL SUPT	$44.02	$0		$10,565	$0	$10,565		6		240
INSULATION SUPT	$44.02	$0	$0	$0	$0	$0				0
QUALITY CONTROL	$41.18	$0	$0	$0	$0	$0				0
SAFETY SUPERVISOR	$35.50	$0	$0	$0	$0	$0				0
FIELD ENG.	$42.60	$315	$0	$1,704	$0	$1,704		1		40
MATERIAL / TOOL SUPERVISOR	$18.46	$315	$0	$738	$0	$738		1		40
COST CONTROL ENG.	$33.12	$0	$0	$2,649	$0	$2,649		2		80
PROJECT CONTROLS ENG	$41.18	$0	$0	$0	$0	$0				0
CLERK	$13.70	$0	$0	$0	$0	$0				0
TIMEKEEPER	$14.85	$0	$0	$1,188	$0	$1,188		2		80
FIELD ADM MAG.	$26.98	$0	$0	$0	$0	$0				0
ESTIMATOR	$43.68	$0	$0	$0	$0	$0				0
	$0.00	$0	$0	$0	$0	$0				0
	$0.00	$0	$0	$0	$0	$0				0
	$0.00	$0	$0	$0	$0	$0				0
	$0.00	$0	$0	$0	$0	$0				0
TOTALS		$630	$0	$16,844	$0	$16,844				480

BIO GAS UNDERGROUND TO SITE
ALLEN
N/A
00-002877-000
0

CRAFT		#'S OF MH	# OF CRAFT FOR 12 WEEKS	
				0
CARPENTER FOREMAN	caf	0.00		0
CARPENTERS	caj	70.00		8.4
LABOR FOREMAN	lbf	0.00	0.00	0
LABOR	lbj	2231.25	4.65	267.7505
OPERATOR	oea	1670.31	3.48	200.437
IRONWORKER	IWJ	54.00		6.48
PAINTER	paj	0.00		0
PIPEFITTER GENERAL FOREMAN	pfg	0.00	0.00	0
PIPE FOREMAN	pff	480.00	1.00	57.6
PIPEFITTER	pfj	2870.16	5.98	344.4198
TRUCK DRIVER	tm3	132.12	0.28	15.85445
TEAMISTER	tmw	130.00	0.27	15.6
				0
TOTAL		7637.85		916.5417

BIO GAS UNDERGROUND TO SITE

ALLEN

0

00-002877-000

1	ALL JOURNEYMEN RATES ARE PER THE APPR. UTILIZATION FACTOR OF 10% APPR. FOR 90% JOURNEYMEN
2	WAGE RATES ARE PER FY2000 AND NO ESCALATION IS INCLUDED FOR WAGES
3	ALL MATERIALS ARE INCLUDED EXCEPT AS NOTED
4	NO CONTINGENCIES ARE INCLUDED HOWEVER IT IS RECOMMENDED THAT TVA HOLD $35,000 FOR RAIN OUT DAYS
5	ESTIMATE IS BASED ON 40 HOURS PER WEEK WITH NO OVERTIME INCLUDED
6	NO ASBESTOS REMOVAL IS INCLUDED
7	NO LEAD ABATEMENT IS INCLUDED
8	ESTIMATE IS A PHASE (3)
9	UNDERGROUND OBSTRUCTION IDENDIFICATION BY THE CITY/STATE COST IS NOT INCLUDED
10	REMOVED SPOILED SOIL IS TO BE DUMPED ON SITE ONLY IF REMOVE FROM SITE
11	CORE BORE OF ROAD CROSSING IS SUB-CONTRACTED OUTSIDE OF NPS DIRECT
12	SOIL COMPACTION TESTING IS NOT INCLUDED
13	ANY UNDERGROUND OBSTRUCTION WHICH CAUSING REROUTING WILL REQUIRE A CHANGE REQUEST FOR ADDITIONAL $
14	ANY CHANGE IN ELEVATION NEAR PLANT ROAD THAT WILL REQUIRE EXTRA FITTINGS WILL REQUIRE CHANGE CONTROL TO BE SUBMITTED.
15	NO $ ARE BUDGETED FOR SAND IF REQUIRED WILL BE PURCHASED AT $8.00 PER CY BY CHANGE REQUEST
16	NO $ ARE BUDGETED FOR BACKFILL IF REQUIRED WILL BE PURCHASED AT $5.00 PER CY BY CHANGE REQUEST
17	

BIO GAS UNDERGROUND TO SITE
ALLEN

W.O.# **00-002877-000**
PA # **0**

#	QT	DESCRIPTION	COST	TOTAL
1	LOT	GRASS SEED	$3,500.00	$3,500.00
	CY	SAND		$0.00
	CY	BACKFILL		$0.00
1	LOT	SILT FENCING	$1,000.00	$1,000.00
1	LOT	BARRICADE FENCING	$1,000.00	$1,000.00
8	EA	ROAD SIGNS	$150.00	$1,200.00
5500	FT	#6 BARE COPPER WIRING(TRACER WIRE)	$0.25	$1,375.00
5	CY	CONCRETE	$60.00	$300.00
1	LOT	SAND BAGS	$150.00	$150.00
8	EA	PIPE END CAPS FOR 18" PIPE	$60.00	$480.00
1215	CY	CRUSHED STONE	$8.05	$9,780.75
1	LS	MISC	$1,500.00	$1,500.00
		HDPE PIPING		
6	EA	12" X 4" BRANCH SADDLE REDUCER	$117.99	$707.94
12	EA	4" 90 DEG ELL	$149.97	$1,799.64
6	EA	4" X 2" REDUCER	$8.83	$52.98
6	EA	2" FLANGE ADAPTEER	$9.17	$55.02
2	EA	12" FLANGE ADAPTER	$86.42	$172.84
24	EA	12" X 2" BRANCH SADDLE TEE	$15.75	$378.00
3	EA	12" 90 DEG ELL	$230.45	$691.35
5	EA	12" 45 DEG ELL	$127.80	$639.00
5880	FT	12" SERIES 6400 HDPE PIPE SDR11	$12.60	$74,088.00
40	FT	4" SERIES 6400 HDPE PIPE SDR11	$1.65	$66.00
6	EA	2" FLANGE KIT	$5.75	$34.50
6	EA	2" S/S BACKUP RING FOR HDPE	$20.74	$124.44
2	EA	12" S/S BACKUP RING FOR HDPE PIPE	$113.52	$227.04
6	EA	JMBRY 4B-3600MT1	$921.00	$5,526.00
6	EA	18" X 18" X 56" LOCKABLE VAULT	$349.35	$2,096.10
6	EA	2" X 1" XH CONC SWAGE NIPPLE	$11.92	$71.52
6	EA	1" VOGT 12141 FS GL VALVE	$52.42	$314.52
6	EA	1" FS ROUND HEAD PLUG	$0.86	$5.16
18	FT	2" SCH 40 304L A312 WLD PIPE	$3.94	$70.92
3	EA	12" FLANGE KIT	$41.33	$123.99
3	EA	12" 150 LB BLIND FLANGE	$82.32	$246.96
1	EA	12" C/S SLIP ON FLANGE	$41.34	$41.34
1	EA	12" VICTAULKIC #997 HDPE TRANSITION COUPLING	$215.06	$215.06
2	FT	12" C/S STEEL PIPE	$23.28	$46.56
663	FT	18" SCH 40	$42.00	$27,846.00
				$0.00
0				$0.00
0				$0.00
		TOTAL		**$135,926.63**

DRAFT

KIF 353

KIF - Coal Yard Runoff Pond Piping Upgrade

Project	Resource	MH
KIF - Coal Yard Runoff Pond Piping Upgrade (Phase I)	FECE FECE	100 60
	PARC	~~due today~~ 378
Phase II (expedited????)	FECE	150
	PARC	?
Phase III (expedited????)	FECE	100
	PARC	?

Template

→ Hiwassee 00HJ1Q

Minghini, Cherie M.

From: Petty, Harold L.
Sent: Tuesday, May 09, 2000 7:55 AM
To: Price, Dan
Cc: Minghini, Cherie M.
Subject: RE: KIF353 - Coal Yard Drainage Pipe Upgrade

Thanks Dan!

We agree that the cost shown in the "Projected Cost of Solution" shown in the handout are very preliminary. Similar buried pipe work at Allen also shows the pipe cost projected for KIF to be perilously low. Cherie Minghini will be taking over as the PE on this project. She is already looking into these costs. One of the goals of Phase 1 is to refine the cost in the I/A summary into something realistic.

Thanks,

Lynn

From: Price, Dan
Sent: Tuesday, May 09, 2000 7:38 AM
To: Petty, Harold L.
Cc: Mock, Alvin G.; Mounts, Jerry W.
Subject: RE: KIF353 - Coal Yard Drainage Pipe Upgrade

In case you didn't get my phone message. I talked with Al Mock in Singleton regarding the cost to develop the estimate for this project. We came up with $6,510 which would cover 120 hours of estimator and scheduler time to develop the estimate and preliminary schedule.

Just another note for your consideration. I was looking at the "Projected Cost of Solution" in the handout we got at the kick off meeting and was concerned about the cost projection for installing the 4,200 lf of HDPE pipe. I have discussed this with Al Mock who got me some actual costs for similar work at Paradise. It appears that the $35 per foot in the cost projection will cover material cost but will not be sufficient to cover labor and equipment cost of installation. It could take an additional $45 to $50 per installed foot of pipe to cover Labor and equipment costs depending on depth of bury and number of rail/road crossings.

If you have questions you can call me or Al Mock (632-1078)

Dan Price
GUBMK
KIF / BRF Site Manager
Kingston: 423-717-2080
Bull Run: 423-945-7273
Cell: 423-617-3202

From: Petty, Harold L.
Sent: Monday, May 08, 2000 9:40 AM
To: Mounts, Jerry W.; Price, Dan
Cc: Minghini, Cherie M.
Subject: KIF353 - Coal Yard Drainage Pipe Upgrade

Jerry & Dan:

Did you guys ever come up with the cost estimate to do the cost estimate? (i.e.. cost for your

participation in Phase 1)

This information was really due a couple of weeks ago and we really need it ASAP.

Thanks,

Lynn Petty

TVA 489H (EN DES-2-78) **TENNESSEE VALLEY AUTHORITY** SHEET OF

SUBJECT _____ PROJECT _____

5-8-00

COMPUTED BY DATE CHECKED BY DATE

Mike Smith will go to FPEP for Phase I approval money.

POE	$ 4,000
EE (60 hrs)	$ 5,000
PE (120 hrs)	$ 4000
Parsons	$ 29,000
EST	$ 6,500
	≈ $ 49,000

Minghini, Cherie M.

From: Petty, Harold L.
Sent: Monday, May 08, 2000 1:50 PM
To: Minghini, Cherie M.
Subject: RE: KIF353

HED does not charge for their estimates. The approach that I understand right now is for the Partner to include HED's cost within the G*UB*MK estimate to do the work.

Thanks,

Lynn

From: Minghini, Cherie M.
Sent: Monday, May 08, 2000 1:36 PM
To: Petty, Harold L.
Subject: RE: KIF353

If HED installs the pipe and dredges, will I need a separate estimate for that?

From: Petty, Harold L.
Sent: Monday, May 08, 2000 1:33 PM
To: Minghini, Cherie M.
Subject: KIF353

Cherie:

Dan Price returned my phone call and said he had talked with Al Mock of G*UB*MK.

They need 120 Hours ($6500) to do the estimate once we get scope and sketches completed.

Thanks,

Lynn

Minghini, Cherie M.

From: Morris, Benton C.
Sent: Monday, May 08, 2000 2:31 PM
To: Minghini, Cherie M.
Cc: Smith, H. Michael; Petty, Harold L.
Subject: KIF - Coal Yard Drainage Project

Please initiate study immediately using short code 0014P7V. This is a temporary account for use until project is appproved by FPEP and accounts assigned.

Clark Morris

KIF353
COAL YARD RUNOFF POND UPGRADE

Scope of Final Design (Phase 2)

- Revise Single Line drawing for Rail unloader MCC to show feed to Coal Yard Runoff Pond Control Panel.
- Revise Connection Diagram for Rail unloader MCC to show feed to Coal Yard Runoff Pond Control Panel.
- Prepare Schematic Diagram for Coal Yard Runoff Pond dewatering pumps.
- Prepare Connection Diagram for Coal Yard Runoff Pond dewatering pumps control panel.
- Prepare Conduit & Grounding drawings for conduit from Plow Feeder Maintenance building near truck unloading area to control panel for Coal Yard Runoff Pond pumps.
- Prepare Conduit/Cable schedule for new power and control cables for Coal Yard Runoff Pond pumps.

Scope of Implementation (Phase 3)

- Install additional junction box at Plow Feeder Maintenance building near truck unloading area.
- Excavate for armor cable from Plow Feeder Maintenance building to control panel for Coal Yard Runoff Pumps.
- Install over size mechanical sleeve for armor cable from Plow Feeder Maintenance building to south side of truck turn around area.
- Install armor cable from Plow Feeder Maintenance building to control panel for Coal Yard Runoff Pumps.
- Install 300MCM cable from Rail Unloader MCC to junction box at Plow Feeder Maintenance building.
- Terminate power cables at MCC, junction box, and Coal Yard Runoff Pond Control Panel.
- Install new float switches in Coal Yard Runoff Pond.
- Install cable from new float switches in Coal Yard Runoff Pond to Control Panel.
- Terminate cable from new float switches in Coal Yard Runoff Pond to Control Panel.
- Set level switches at determined levels.
- Functional test power and control circuits.

Estimate 60 manhours in Phase 1 to prepare detailed Phase 2/Phase 3 estimate.

Estimated early start date May 16, 2000; early finish date May 31, 2000.

[redacted]

Petty, Harold L.

From: Hickey, Vanessa I.
Sent: Thursday, April 06, 2000 1:31 PM
To: Petty, Harold L.
Cc: Blair, Stanley
Subject: PDE - KIF Coal Yard Runoff

Lynn,

The following PDE account for the KIF Coal Yard Runoff has been setup at your request:

X1FN003510 shortcode 0014LZ0

Vanessa

4K

KIF 353

COAL YARD PUMP DISCHARGE PIPING

Petty, Harold L.

From: Dueker, Douglas L.
Sent: Tuesday, April 11, 2000 1:50 PM
To: Petty, Harold L.
Subject: FW: KIF- Coal Yard Runoff Pond - Piping Upgrade

FYI

From: DeRieux, John W.
Sent: Tuesday, March 21, 2000 9:38 AM
To: Dueker, Douglas L.
Subject: FW: KIF- Coal Yard Runoff Pond - Piping Upgrade

more

John DeRieux
423/751-3789

From: Purkey, Ronald E.
Sent: Tuesday, March 21, 2000 8:33 AM
To: Nash, Lee A.
Cc: Davis, Victor W.; Dueker, Douglas L.; DeRieux, John W.
Subject: KIF- Coal Yard Runoff Pond - Piping Upgrade

John Derieux will assign a PE and we will put together a package for Phase 1 funding from James. The project will be submitted as a capital project by Clark Morris to spend plan for $380K.
Ron

From: Nash, Lee A.
Sent: Monday, March 20, 2000 6:57 AM
To: Purkey, Ronald E.
Subject: FW: KIF- Coal Yard Runoff Pond - Piping Upgrade

Ron please coordinate with Victor and Derieux and kick off with PE's.

Lee

From: Weaver, Steve C.
Sent: Friday, March 17, 2000 11:01 AM
To: Nash, Lee A.
Cc: Davis, Victor W.; Morris, Benton C.
Subject: KIF- Coal Yard Runoff Pond - Piping Upgrade

<<File: IAS-Coal Yard Pond.doc>><<File: KIFCPROPOND-1.xls>><<File: KIF Coal Yard Piping-CPJ.doc>>

LEE,
Attached are the IA Summary, econoval, and CPJ for a worthwhile and much needed project for KIF. HED (Clark Morris) has money in the FY2001 spend plan for subject project. The CPJ is not totally complete. As I understand our respective roles, the IAS is my responsibility and the CPJ is yours, but I had already started on them and decided to send to you, as most importantly we are a team.

Clark has requested we proceed ASAP to issue a Phase 1 Package.

Please note: A previous decision by HED was to make this a stand alone project rather than provide additional funding to Steve Brewster's Coal Reclaim Facility for the subject work.

Also, the cost estimates in the attachments were derived as follows:

- Piping estimate by Estimating (Frank Johnson)
- Electric est. by Terry Hipp
- Dredging est. myself & John Albright
- Controls est. myself & Gordon
- Engineering est. educated guess

Let me know if you want copies of these estimates, and we also have some digital pictures if anybody wants them. Thanks

THANK YOU

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

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.

BY FRI's

Projected Cost of Solution

1. Replace the pump discharge piping from the floating platform to the ash pond with HDPE piping	$150,000	~~$350,000~~
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
TOTAL	$379,000	10,000
		1,000,000

Partial Estimate

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.

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.