Volume 1

INDIANTOWN COGENERATION PROJECT

SITE CERTIFICATION APPLICATION SUFFICIENCY RESPONSES

April 1991

Submitted by Indiantown Cogeneration, L.P.

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

In Re: APPLICATION FOR POWER PLANT SITE CERTIFICATION OF INDIANTOWN COGENERATION PROJECT	)	DOAH CASE NO. 90-8072EPP DER CASE NO. PA 90-31

INDIANTOWN COGENERATION L.P.'S NOTICE OF FILING RESPONSES TO SUFFICIENCY QUESTIONS OF THE DEPARTMENT OF ENVIRONMENTAL REGULATION AND OTHER AGENCIES

Applicant, Indiantown Cogeneration, L.P. (ICL), by and through undersigned counsel, hereby gives notice of its filing of responses to the comments and questions of the Department of Environmental Regulation (DER) and of the other agencies contained in the DER sufficiency statement dated February 28, 1991 regarding the sufficiency of the Indiantown Cogeneration Project Site Certification Application. ICL's responses to the DER sufficiency letter and the Agency's comments are contained in a three-volume document including Appendices entitled "Site Certification Application Sufficiency Responses", dated April 10, 1991.

These responses are submitted in accordance with Section 403.5067(1)(a), Florida Statutes (Supp. 1990) and Rule 17-17.081(2), Florida Administrative Code. Additional responses will be submitted with respect to certain SFWMD comments concerning aquifer pump tests and surface water management system performance and DER coments regarding water quality measurements in the onsite drainage ditch in accordance with the schedule for such submittals as agreed to by SFWMD, DER and ICL. The dates for submittal of that information are identified in the responses.

Respectfully submitted this 10th day of April, 1991.

HOPPING BOYD GREEN & SAMS

Gary P. Sams
Florida Bar ID No. 134594
Douglas S. Roberts
Florida Bar ID No. 0559466
Post Office Box 6526
Tallahassee, Florida 32314
(904) 222-7500

Attorneys for Indiantown
Cogeneration, L.P.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing was sent by hand delivery or Federal Express to the following this 10th day of April, 1991.

Richard Donelan
Assistant General Counsel
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Kathryn Funchess
Senior Attorney
Department of Community Affairs
2740 Centerview Drive
Tallahassee, Florida 32399-2100

Vernon Whittier
Assistant General Counsel
Department of Transportation
Haydon Burns Building
605 Suwannee Street
Tallahassee, Florida 32399

John Fumero
South Florida Water Management District
Post Office Box 24680
3301 Gun Club Road
West Palm Beach, Florida 33416-4680

Robert G. Saberson
Attorney for Treasure Coast Regional Planning Council
70 S.E. 4th Avenue
Delray Beach, Florida 33482-4514

Dan Cary, Executive Director
Treasure Coast Regional Planning Council
Suite 205
3228 Southwest Martin Downs Boulevard
Palm City, Florida 33490

Eugene McClellan
Assistant General Counsel
Department of Natural Resources
3900 Commonwealth Boulevard
Tallahassee, Florida 32399

Fred W. Van Vonno
Assistant County Attorney
Martin County
2401 Southeast Monterey Road
Stuart, Florida 34996

Michael Palecki
Division of Legal Services
Florida Public Service Commission
101 East Gaines Street
Fletcher Building, Room 212
Tallahassee, Florida 32399-0850

Susan M. Coughanour
James Golden
South Florida Water Management District
Post Office Box 24680
3301 Gun Club Road
West Palm Beach, Florida 33416-4680

Brian Sodt
Central Florida Regional Planning Council
Post Office Box 2089
Bartow, Florida 33830-2089

Ralph Artigliere, Attorney
Central Florida Regional Planning Council
Post Office Box 551
Bradenton, Florida 34206

John D. Cassels, Jr.
Counsel for Okeechobee County
Post Office Box 968
400 Northwest Second Street
Okeechobee, Florida 34972

James Antista
General Counsel
Florida Game and Fresh Water Fish Commission
Bryant Building
620 South Meridian Street
Tallahassee, Florida 32399-1600

Hamilton S. Oven, Jr., P.E., Administrator
Office of Siting Coordination
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Sandra Whitmire
Policy Coordinator
Central Office Policy Planning
Department of Transportation
Mail Station #28
605 Suwannee Street
Tallahassee, FL 32399

Attorney

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INDIANTOWN COGENERATION PROJECT

SITE CERTIFICATION APPLICATION

RESPONSES TO

SUFFICIENCY COMMENTS BY

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

April 9, 1991

QUESTION 1

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

There were no construction specifications or drawings included with the application, e.g. no detail on liner construction for the cooling water storage pond, coal storage areas or run-off treatment basin.

RESPONSE

The liners to be used for the cooling water storage pond, coal storage area, coal pile area runoff collection basin, runoff collection basin No. 1, and wastewater collection basin will be 60-mil High Density Polyethylene (HDPE) liner material. This type of synthetic liners is manufactured and constructed by various vendors, and has been used widely. Some of the major manufacturers are Gundle Lining Systems Inc., Poly-America Inc., PolyNova Systems Inc., SLT North America Inc., S.T. Polymers Corp., and National Seal Co.

The typical specifications and properties of the Gundle Lining Systems Inc. for the HPDE lining material and the Quality Control Manual pertaining to the manufacture of the liners, placement, and field seams, as well as testing are given in Exhibits FDER1-1 through FDER1-3.

The typical details of the anchoring of the liner to the structure, connection of inlet/outlet flange sealing of steel and HD pipe system, anchor trench detail, side slope protection, concrete sump detail, attaching liner to concrete structure, liner blow-out prevention, V-anchor trench, and typical wedge weld detail are shown on the attached detail sheets of Gundle Lining system (Exhibit FDER1-4).

The liner procurement, placement, and quality assurance will incorporate the manufacturer's recommendations and procedures and the requirements of EPA Publication SW-870, March 1983 (Lining of Waste Impoundments and Disposal Facilities). The placement of the liner and construction of the lined basins will be performed by an approved contractor and will meet all of the requirements of the FAC 17.701 and EPA-SW-870.

Exhibit FDER1-1

TYPICAL SPECIFICATIONS AND PROPERTIES OF HDPE 60-MIL LINER

Gundle Lining Systems Inc

Gundle

GUNDLINE HD is a high quality formulation of High Density Polyethylene containing approximately 97.5% polymer and 2.5% of carbon black, anti-oxidants and heat stabilizers. The product was designed specifically for exposed conditions. It contains no additives or fillers which can leach out and cause deterioration over time.

GUNDLINE® HD SPECIFICATIONS

PROPERTY	TEST METHOD	GAUGE (NOMINAL)					
		20 mil (0.5 mm)	30 mil (0.75 mm)	40 mil (1.0 mm)	60 mil (1.5 mm)	80 mil (2.0 mm)	100 mil (2.5 mm)
Density (g/cc) (Minimum)	ASTM D1505	0.94	0.94	0.94	0.94	0.94	0.94
Melt Flow Index (g/10 min.)	ASTM D 1238 Condition E (190°C, 2.16 kg.)	0.3	0.3	0.3	0.3	0.3	0.3
Minimum Tensile Properties (Each direction)	ASTM D638 Type IV Dumb-bell at 2 ipm.						
1. Tensile Strength at Break (Pounds/inch width)		80	120	160	240	320	400
2. Tensile Strength at Yield (Pounds/inch width)		50	70	95	140	190	240
3. Elongation at Break (Percent)		700	700	700	700	700	700
4. Elongation at Yield (Percent)		13	13	13	13	13	13
5. Modulus of Elasticity (Pounds/square inch)	ASTM D882	110,000	110,000	110,000	110,000	110,000	110,000
Tear Resistance Initiation (lbs Min.)	ASTM D1004 Die C	15	22	30	45	60	75
Low Temperature/ Brittleness	ASTM D746 Procedure B	−112°F	−112°F	−112°F	−112°F	−112°F	−112°F
Dimensional Stability (Each direction, % change max.)	ASTM D1204 212°F 1 hr.	±2	±2	±2	±2	±2	±2
Volatile Loss (Max. %)	ASTM D1203 Method A	0.1	0.1	0.1	0.1	0.1	0.1
Resistance to Soil Burial (Maximum percent change in original value)	ASTM D3083 using ASTM D638 Type IV Dumb-bell at 2 ipm.						
Tensile Strength at Break and Yield	% Change	±5	±5	±5	±5	±5	±5
Elongation at Break and Yield	% Change	±10	±10	±10	±10	±10	±10
Ozone Resistance	ASTM D1149 7 days 100 pphm, 104°F Magnification	No cracks 7 ×	No cracks 7 ×	No cracks 7 ×	No cracks 7 ×	No cracks 7 ×	No cracks 7 ×
Environmental Stress Crack (Minimum hours)	ASTM D1693 Condition C (100°C)	1500	1500	1500	1500	1500	1500
Puncture Resistance (Pounds)	FTMS 101B Method 2031	85	135	175	270	350	440
Water Absorption (Max. % Wt. change)	ASTM D570	0.1	0.1	0.1	0.1	0.1	0.1
Hydrostatic Resistance (Pounds/square inch)	ASTM D751 Method A Procedure I	160	240	315	490	650	810
Coefficient of Linear Thermal Expansion ($\times 10^{-4} \frac{cm}{cm \cdot °C}$) Nominal	ASTM D696	1.2	1.2	1.2	1.2	1.2	1.2
Moisture Vapor Transmission ($g/m^2 \cdot day$)	ASTM E96	0.06	0.05	0.04	0.03	0.02	0.01

PRODUCT DESCRIPTION

JOINING SYSTEMS

Critical to the success of any flexible membrane liner is the joining system. Gundle's patented Extrusion Welding System is used to join individual panels of GUNDLINE HD. Request your copy of the Gundle Extrusion Welding bulletin for complete details.

CHEMICAL RESISTANCE

GUNDLINE HD is resistant to a wide range of chemicals including acids, alkalis, salts, alcohols, amines, oils, and hydrocarbons. Since combinations of chemicals of different concentrations and temperatures have different characteristics, consult Gundle for specific application details. Write for Gundle's chemical compatibility information.

SUPPLY SPECIFICATIONS

The following describes standard roll dimensions for GUNDLINE HD.

THICKNESS		WIDTH		LENGTH		AREA		ROLL WEIGHT	
mil	mm	ft	m	ft	m	ft^2	m^2	lb	kg
20	0.5	22.5	6.86	1250	381	28,125	2613	2800	1272
30	0.75	22.5	6.86	840	256	18,900	1756	2800	1272
40	1.0	22.5	6.86	650	198	14,625	1359	2800	1272
60	1.5	22.5	6.86	420	128	9,450	878	2800	1272
80	2.0	22.5	6.86	320	98	7,200	670	2800	1272
100	2.5	22.5	6.86	250	76	5,625	522	2800	1272

GUNDLINE HD is rolled on 6" I.D. hollow cores.
Each roll is provided with 2 slings to aid handling on site.
Dimensions and weights are approximate. Custom lengths available on request.

Gundle Lining Systems Inc

Gundle

Gundle Road
1340 E. Richey Road
Houston, Texas 77073
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 4620281 Gundle Hou
Fax: (713) 875-6010

Exhibit FDER1-2

TYPICAL STANDARD SPECIFICATIONS FOR HDPE LINING MATERIAL

STANDARD SPECIFICATIONS
FOR HDPE LINING MATERIAL

1.00 SCOPE

These specifications describe High Density Polyethylene (HDPE) Lining Membranes. The supply and installation of these materials shall be in strict accordance with the Engineer's specifications and engineering drawings and be subject to the terms and conditions of the contract.

2.00 MANUFACTURER'S EXPERIENCE

2.01 The manufacturer of the lining material described hereunder shall have previously demonstrated his ability to produce this membrane by having successfully manufactured a minimum of ten million square feet of similar liner material for hydraulic lining installations. The manufacturer must be listed by the NSF (National Sanitation Foundation) Standard 54 as meeting all the requirements for manufacturing HDPE.

2.02 Pre-Bid Submittals

In order to qualify as an approved material lining manufacturer, the manufacturer shall submit lining material samples and minimum specifications to the Engineer 60 days prior to the bid closing date for approval. The specification sheet shall give full details of minimum physical properties and test methods used, site seaming methods, and a certificate confirming compliance of the material with the minimum specifications. A list of similar projects completed in which the manufactured material has been successfully used shall be submitted to the Engineer.

3.00 LINING MATERIAL

3.01 The membrane liner shall comprise HDPE material manufactured of new, first-quality products designed and manufactured specifically for the purpose of liquid containment in hydraulic structures.

3.02 The Contractor shall, at the time of bidding, submit a certification from the manufacturer of the sheeting, stating that the sheeting meets physical property requirements for the intended application.

3.03 The liner material shall be so produced as to be free of holes, blisters, undispersed raw materials, or any sign of contamination by foreign matter. Any such defect shall be repaired using the extrusion fusion welding technique in accordance with the manufacturer's recommendations.

3.04 The lining material shall be manufactured a minimum of 22.0' seamless width. Labels on the roll shall identify the thickness, length, width, and manufacturer's mark number. There shall be no factory seams.

3.05 The liner material shall meet the specification values according to the specification sheet for HDPE.

4.00 FACTORY QUALITY CONTROL

4.01 Raw Material

All compound ingredients of the HDPE materials shall be randomly sampled on delivery to the HDPE manufacturing plant to ensure compliance with specifications. Tests to be carried out shall include Density ASTM D1505.68 and Melt Index ASTM D1238-79 Procedure A, Conditions E & P. The resin used to manufacture the HDPE must be Phillips TR400 or Chevron 9642.

4.02 Manufactured Roll Goods

Samples of the production run shall be taken and tested according to ASTM D638.82 to ensure that tensile strength at yield and break, elongation at yield and break meet the minimum specifications. A quality control certificate shall be issued with the material.

4.03 All welding material shall be of a type recommended and supplied by the manufacturer and shall be delivered in the original sealed containers - each with an indelible label bearing the brand name, manufacturer's mark number, and complete directions as to proper storage. The resin used to manufacture the HDPE welding rod must be Phillips TR400 or Chevron 9642.

5.00 INSTRUCTIONS AND DRAWINGS REQUIRED AFTER CONTRACT AWARD

5.01 The manufacturer shall furnish complete written instructions for the storage, handling, installation, and seaming of the liner in compliance with this specification and the condition of his warranty.

5.02 The material supplier shall furnish complete written instructions for the repair of HDPE material.

5.03 The manufacturer or his designated representative shall furnish panel layouts as required for the liner installation. Final lagoon configuration, attachment details, and survey information needed will be furnished by the end user or his designated representative.

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6.00 INSTALLATION

6.01 Area Subgrade Preparation

Surfaces to be lined shall be smooth and free of all rocks, stones, sticks, roots, sharp objects, or debris of any kind. The surface should provide a firm, unyielding foundation for the membrane with no sudden, sharp or abrupt changes or break in grade. No standing water or excessive moisture shall be allowed. The installation contractor shall certify in writing that the surface on which the membrane is to be installed is acceptable before commencing work.

6.02 Contractor Approval

The installation of the HDPE must be done by the manufacturer using the manufacturers extrusion welding equipment and installation methods.

6.03 Field Seams

Individual panels of liner material shall be laid out and overlapped by a maximum of 4 inches prior to welding. Extreme care shall be taken by the installer in the preparation of the areas to be welded. The area to be welded shall be cleaned and prepared according to the procedures laid down by the material manufacturer. All sheeting shall be welded together by means of integration of the extrudate bead with the lining material. The composition of the extrudate shall be identical to the lining material. Using either Phillips TR400 or Chevron 9642.

6.04 The welding equipment used shall be capable of continuously monitoring and controlling the temperatures in the zone of contact where the machine is actually fusing the lining material so as to ensure changes in environmental conditions will not affect the integrity of the weld. Only welding systems which utilize the extrusion fusion process shall be used for bonding these lining materials.

6.05 No "fish mouths" shall be allowed within the seam area. Where "fish mouths" occur, the material shall be cut, overlapped, and an overlap extrusion weld shall be applied. All welds on completion of the work shall be tightly bonded. Any membrane area showing injury due to excessive scuffing, puncture, or distress from any cause shall be replaced or repaired with an additional piece of HDPE membrane.

7.00 FIELD SEAM TESTING/QUALITY CONTROL

7.01 The installer shall employ on-site physical non-destructive testing on all welds to ensure watertight homogeneous seams.

7.02 A quality-control technician shall inspect each seam. Any area showing a defect shall be marked and repaired in accordance with HDPE repair procedures.

7.03 A test weld three (3) feet long from each welding machine shall be run each day prior to liner welding and under the same conditions as exist for the liner welding. The test weld shall be marked with date, ambient temperature, and welding machine number. Samples of weld 1/4" to 1/2" wide shall be cut from the test weld and tested in shear and peel. Seams should be stronger than the material. The weld sample shall be kept for subsequent testing on laboratory tensometer equipment in accordance with the applicable ASTM standards. Random weld samples may be removed from the installed welded sheeting at a frequency to be agreed (eg. 1/500' of weld).

7.04 The end user company, or his designated representative, reserves the right of access for inspection of any or all phases of this installation at their expense.

8.00 WARRANTY AND GUARANTEE

8.01 The manufacturer/installer shall provide a written warranty.

Exhibit FDER1-3

TYPICAL QUALITY CONTROL MEASURES FOR LINING MATERIAL MANUFACTURING, TESTING, AND SEAM TESTING

QUALITY CONTROL MANUAL

1. QUALITY CONTROL

1.1 Company Statement

This quality control manual is intended to satisfy the basic quality control needs of the company.

The procedures herein must be adhered to at all times. This supercedes all previous procedures relating to quality control. Personnel may only deviate from these procedures if instructed to by the President of the company.

These procedures apply to all production. They should be updated at least anually. Conformance to procedures will be monitored by an audit at least anually.

2. OBJECTIVE

2.1 The objective of this manual is to lay down procedures:

a. For achieving a structured approach towards attaining the high quality of the products demanded by customers, and,

b. To satisfy the Company's need for systematic procedures operated by an effective and efficient quality control department within the organization.

3. SAMPLING FREQUENCY

3.1 Raw Materials A sample from the top and bottom of each hopper compartment will be tested.

3.2 Finished Goods Products must be sampled at least twice per shift. Samples must be taken even if they cannot be tested until a later date. Sampling is done by production personnel.

4. TESTING PROCEDURE

4.1 Raw Material testing involves short term testing aimed at "fingerprinting" the material supplied. Every resin demonstrates its own individual characteristics that are determined by its chemical make-up and molecular weight. For reference purposes, density and melt index serve to identify the material as being acceptable or not. A visual inspection for contaminants is also performed.

4.1.1 The melt index (ASTM D1238) is a numerical qualification of the molecular weight of the material as demonstrated by flow through a .0825 inch diameter orifice at constant pressure and temperature. Lower molecular weight materials flow faster than higher molecular weight materials, thus giving an exact value particular to any grade of resin. Two melt conditions are used in the Gundle laboratory.

Condition	Temperature	Total Load (g)
E	190 deg. C	2160
P	190 deg. C	5000

4.1.2 The density of the material (ASTM D1504) is expressed as the weight per unit volume of the material at 23 degrees C. The density of the material serves as a reference to a range of properties including tensile strength, hardness, and chemical resistance.

4.1.3 A visual inspection of the sample is performed to identify any possible contaminants.

4.2 Finished goods testing involves short and long term testing aimed at confirming the physical properties of the material.

4.2.1 Tensile and elongation properties are determined according to ASTM D638. The tensile strength at yield and break is determined and must meet pre-defined specifications. Elongation at the yield point as well as the ultimate elongation of the material is determined and must meet pre-defined specifications.

Tensile testing is performed parallel and transverse to the production direction. A 2-inch per minute testing rate is used in conjunction with type IV tensile specimens.

4.2.2 The thickness of the material is tested according to ASTM D1593. A measurement of the sample thickness is taken at 5 foot intervals. One foot from each side of those points, another measurement is taken, making a

total of 15 readings.

4.2.3 The carbon black content is monitored according to ASTM D1603. Samples of the liner material are weighed and then pyrolyzed under nitrogen which vaporizes the polyethylene, leaving the carbon black as a residue. The weight of the carbon is taken and the percent carbon black content calculated. Maintaining a carbon black content between 2 - 2.5% ensures resistance to ultraviolet exposure.

4.2.4 A visual inspection is made of the liner material to ensure that it is free of pores, pinholes, or other detrimental defects.

4.2.5 Environmental stress crack testing is performed according to ASTM D1693. Notched specimens of sheeting are bent 180 degrees and tested at 50 degrees C in 100% Igepal CO-630 solution. No failures should occur.

4.2.6 From the daily production testing, a Quality Control Certificate* is issued by the laboratory.

4.3 Field Quality Control testing involves both non-destructive and destructive testing. The non-destructive testing is primarily centered on determining "watertightness", whereas the destructive testing is based on the ASTM D638 test method.

4.3.1 Shear testing is based on ASTM D638 test method. Dumb-bells cut with the weld centrally located are tested by stressing the weld in a "shear" configuration. That is, the top sheet is stressed in relation to the bottom sheet in a direction away from the weld. A pass result occurs when the upper or lower sheet fails. A fail result occurs when the weld fails.

4.3.2 Peel testing is based on ASTM D638 test method. Dumb-bells cut with the weld centrally located are tested by stressing the top sheet in relation to the overlapped edge of the lower sheet in an effort to peel the weld away. A pass result occurs when the sheeting fails. A fail result occurs when the weld peels.

4.3.3 A sample weld shall be made twice during each shift with each welding machine. Samples from the weld shall be tested in shear and peel, and no welder may start work until the sample weld has been approved.

* Reference Sample Form Attached.

4.3.4 A visual examination of the seam provides the most useful means of ensuring watertightness. As Gundle fusion welds are visible on the surface, any suspect areas, breaks, or holes in the weld are easily seen and marked for repair.

4.3.5 Destructive shear and peel tests shall be done by random selection of an actual field weld no less than the agreed frequency.

4.3.6 Vacuum testing follows no specific standard. A glass-faced suction box, typically 3 feet long and wide enough to cover the weld, is placed over a section of the seam which has been wet with a soap solution. Suction is applied to the seam and any leaks are demonstrated by the formation of bubbles. Holes are marked and repaired.

QUALITY CONTROL UPDATE

TECHNIQUE, QUALITY CONTROL & FIELD SEAM TESTING PROCEDURE

1.00 FIELD SEAMS

All Gundle HD sheeting shall be welded together by means of a homogeneous overlap extrusion fusion process which provides continuous dynamic integration of the extrudate bead with the lining material. The composition of the extrudate is identical to the lining material.

2.00 WELDING EQUIPMENT

The welding equipment used shall be capable of continuously monitoring and controlling the temperature of the extrudate and the zone of contact where the machine is actually fusing the lining material so as to ensure changes in environmental conditions will not affect the integrity of the weld. Only welding systems which utilize the extrusion process shall be used for bonding lining materials.

3.00 WELD QUALITY CONTROL AND TESTING

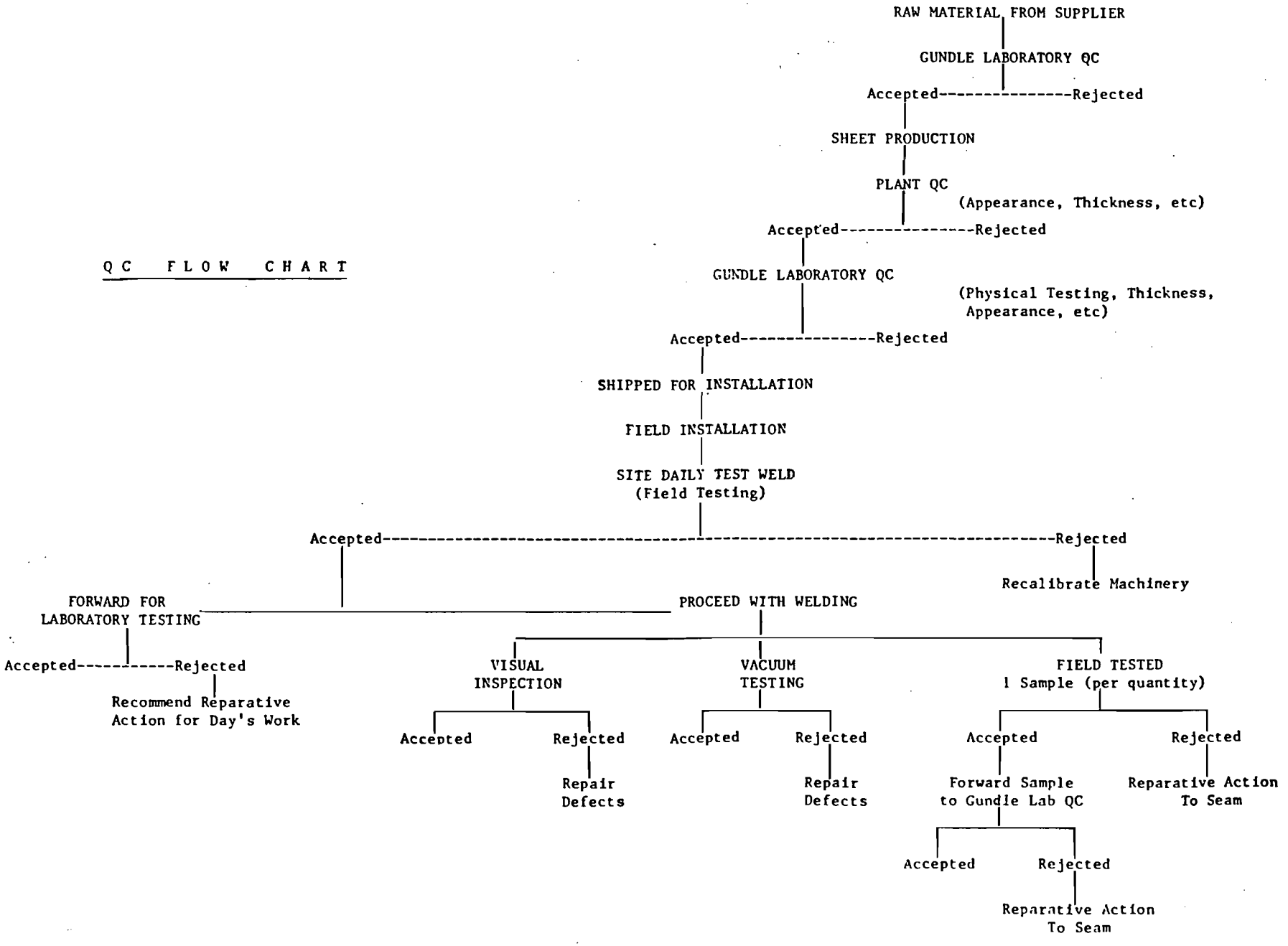
3.01 A test weld, three (3) feet long, from each welding machine shall be run twice each shift prior to liner welding and under the same conditions as exist for the liner welding. The test weld shall be marked with date, ambient temperature, and welding machine number. Samples of weld 1/4" or 1/2" wide shall be cut from the test weld and pulled by hand in peel. The welds should not peel. Seams should be stronger than the yield strength of the material. The weld sample shall be kept for subsequent testing on laboratory tensometer equipment in accordance with the applicable ASTM tests.

3.02 All welds, on completion of the work, shall be tightly bonded. Any membrane area showing injury due to excessive scuffing, puncture, or distress from any cause shall be replaced or repaired with an additional piece of GUNDLINE membrane.

3.03 A quality-control technician shall follow behind each seam crew and perform a visual inspection of the seamed area. Defective seams should be marked and repaired in accordance with Gundle's published repair procedure.

3.04 No "fish-mouths" shall be allowed within the seam area. Where "fish-mouths" occur, the material shall be cut, overlapped, and an overlap-extrusion weld shall be applied.

Q C F L O W C H A R T



QUALITY CONTROL CERTIFICATE

GUNDLINE HD

MATERIAL _____ DATE _____

BATCH # _____ PROJECT _____

ROLL # _____ _____

TEST PARAMETER	REQUIRED SPECIFICATIONS	TEST RESULTS	ASTM TEST METHOD
Thickness, mils			D 1593
Density, gms/cm^3			D 1505
Tensile Strength (psi) Yield			D 638 Type IV 2 ipm
Break			
% Elongation, Break			D 638

CERTIFIED BY:

_____

Lab Technician

_____ _____

Q.C. Manager

LABORATORY REPORT #_____

DATE:_____

SUBJECT:

Resin quality control_____Batch #_____

TEST METHOD:

Melt Index	ASTM D1238 E & P
Density	ASTM D1505

TEST RESULTS:

Melt Index, E	_____g/10 min.
P	_____g/10 min.
Density	_____g/cm3

CONCLUSION:

CERTIFIED BY:

_____

Lab Technician

_____

Q.C. Manager

SITE WELDING QUALITY CONTROL REPORT

PROJECT _____ CONTRACT # _____

SITE _____ DATE _____

MATERIAL _____ THICKNESS _____

Weld Reference _____

Weld Inspection _____ Observations _____

Weld Re-Inspection _____ Observations _____

Sample Weld Location _____

Sampled By _____

Sample Weld Test Results

Sample Weld #	Specimen	Peel Results
	1	
	2	
	1	
	2	
	1	
	2	

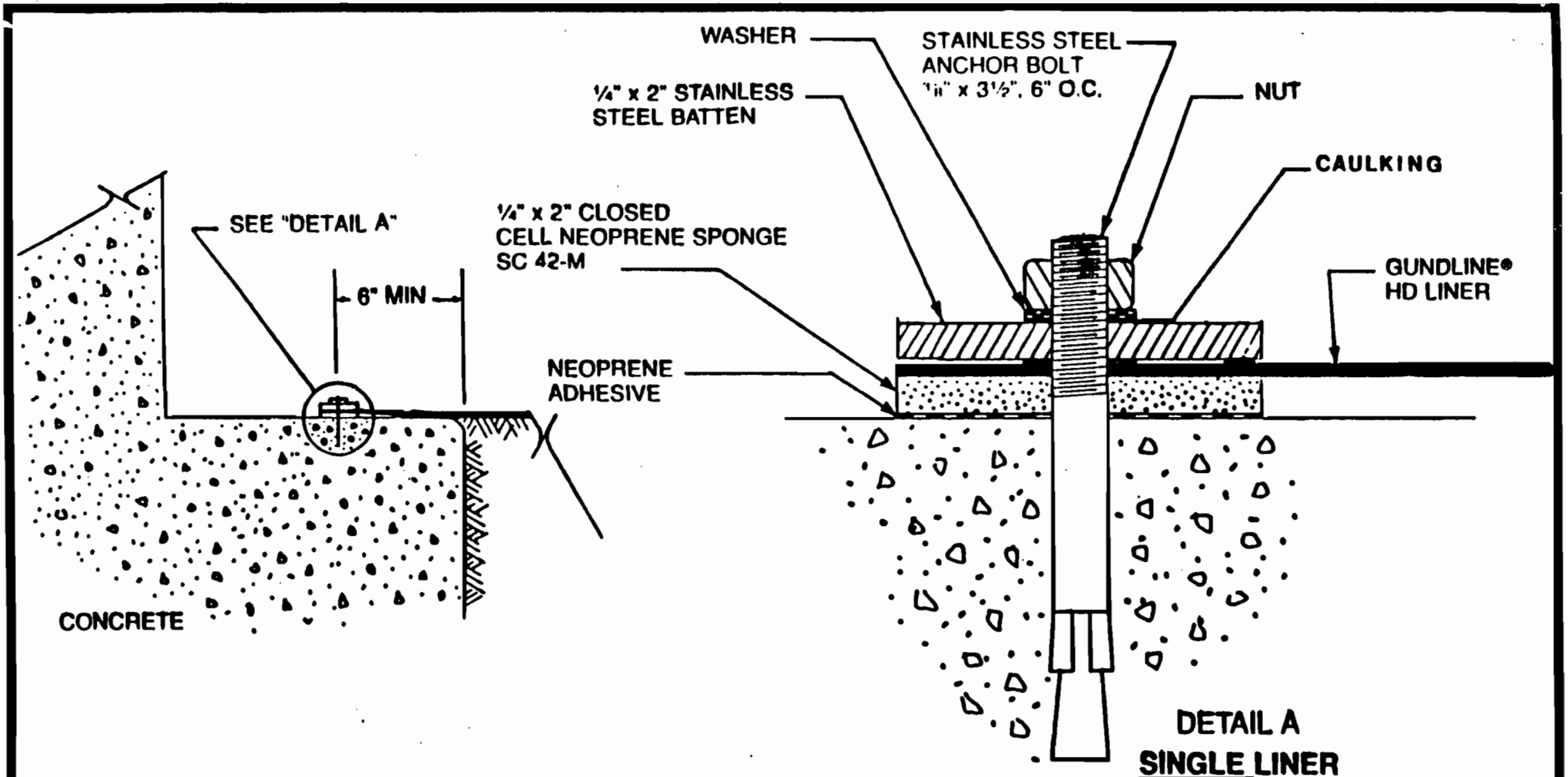
CERTIFIED BY:

_____

Lab Technician

Exhibit FDER1-4

TYPICAL DETAILS FOR LINING PENETRATIONS, JOINTS, AND SEAMS



DETAIL A
SINGLE LINER
ANCHORING TO STRUCTURE

NOT TO SCALE

Gundle®
Lining Construction Corp
1340 E. RICHEY RD. HOUSTON, TEXAS 77073

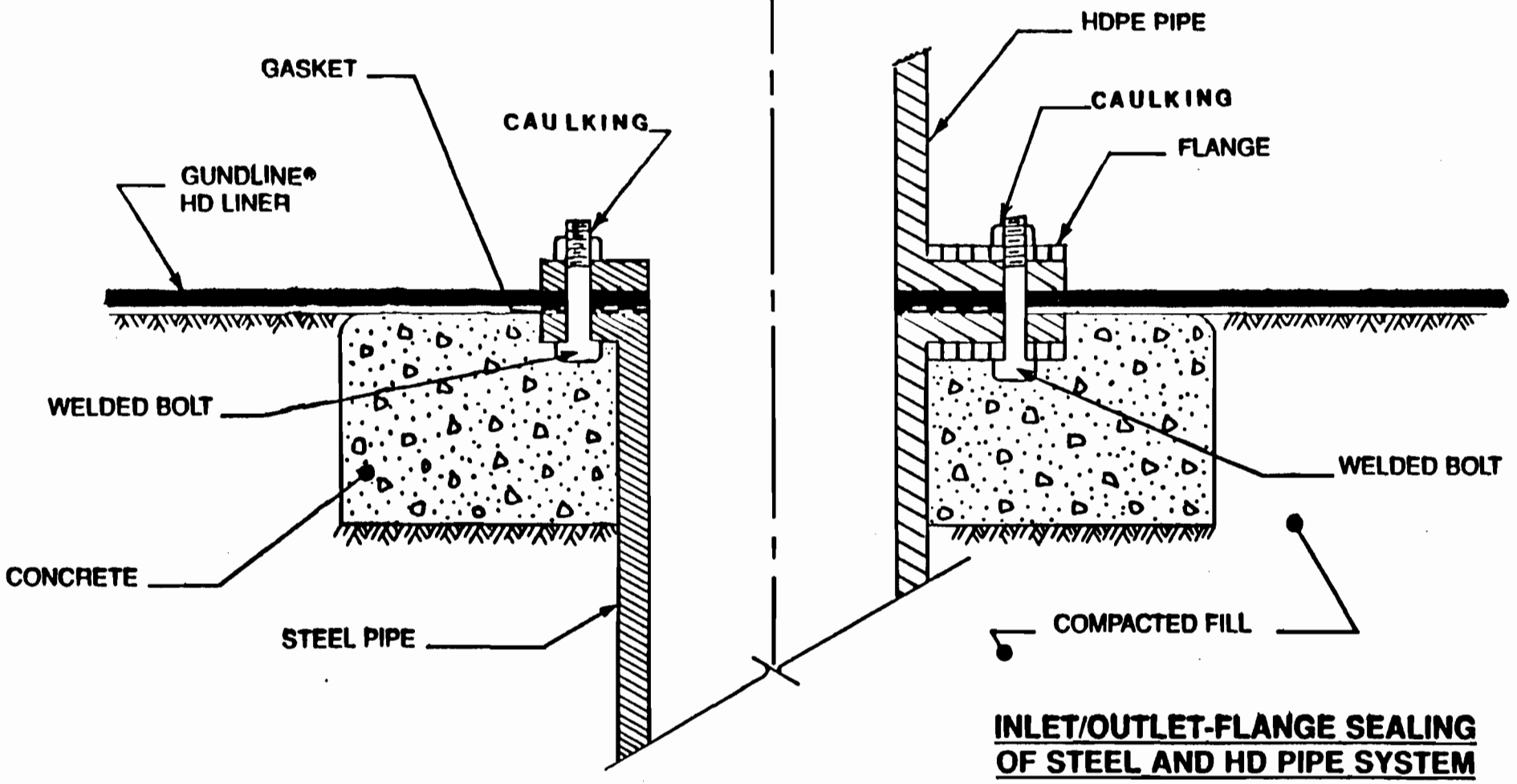
DATE: 11-15-84

DRAWING No. SD01

APPROVED BY:

TYPICAL DETAIL

BY:



INLET/OUTLET-FLANGE SEALING OF STEEL AND HD PIPE SYSTEM

NOT TO SCALE

Gundle®
Lining Construction Corp
1340 E. RICHEY RD. HOUSTON, TEXAS 77073

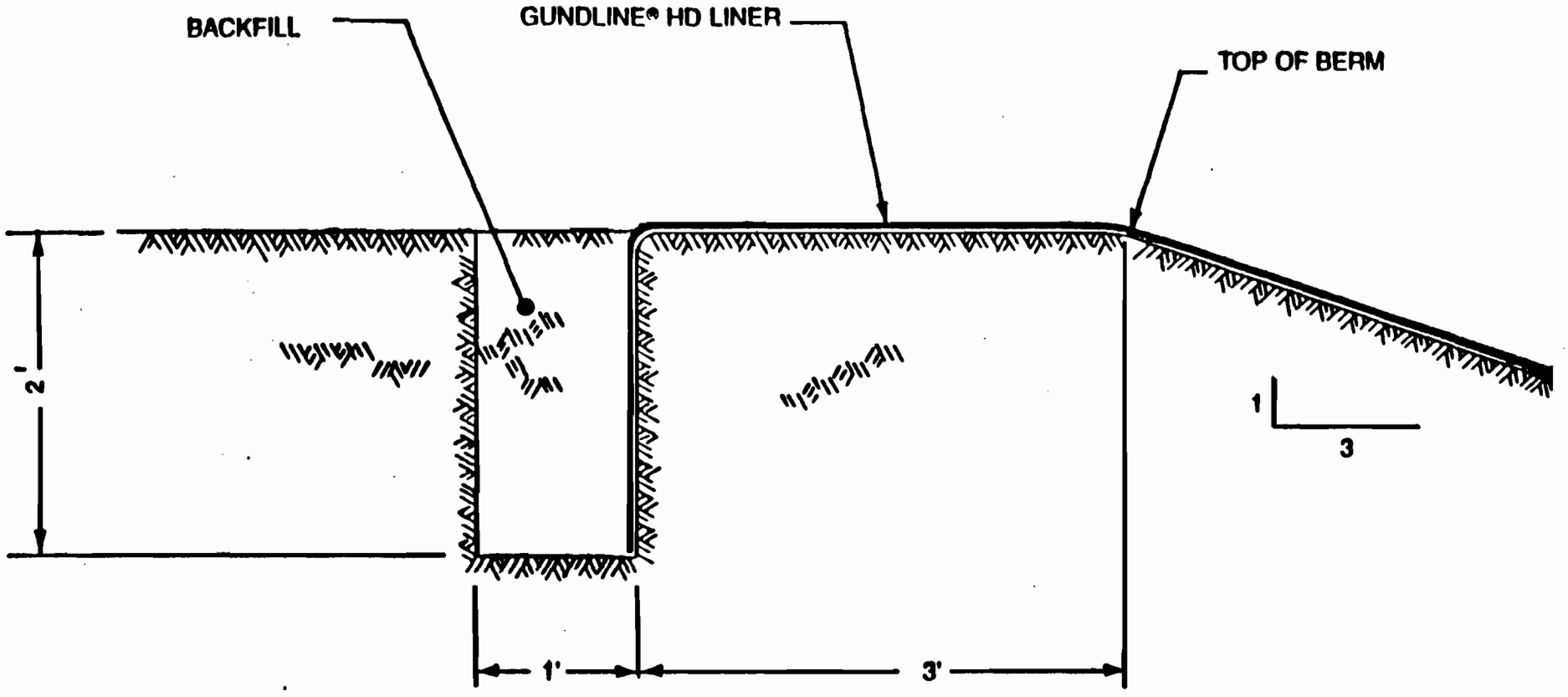
DATE: 11-16-84

DRAWING No. SD04

APPROVED BY:

TYPICAL DETAIL

BY:



ANCHOR TRENCH DETAIL

NOT TO SCALE

Gundle®
Lining Construction Corp
1340 E. RICHEY RD. HOUSTON, TEXAS 77073

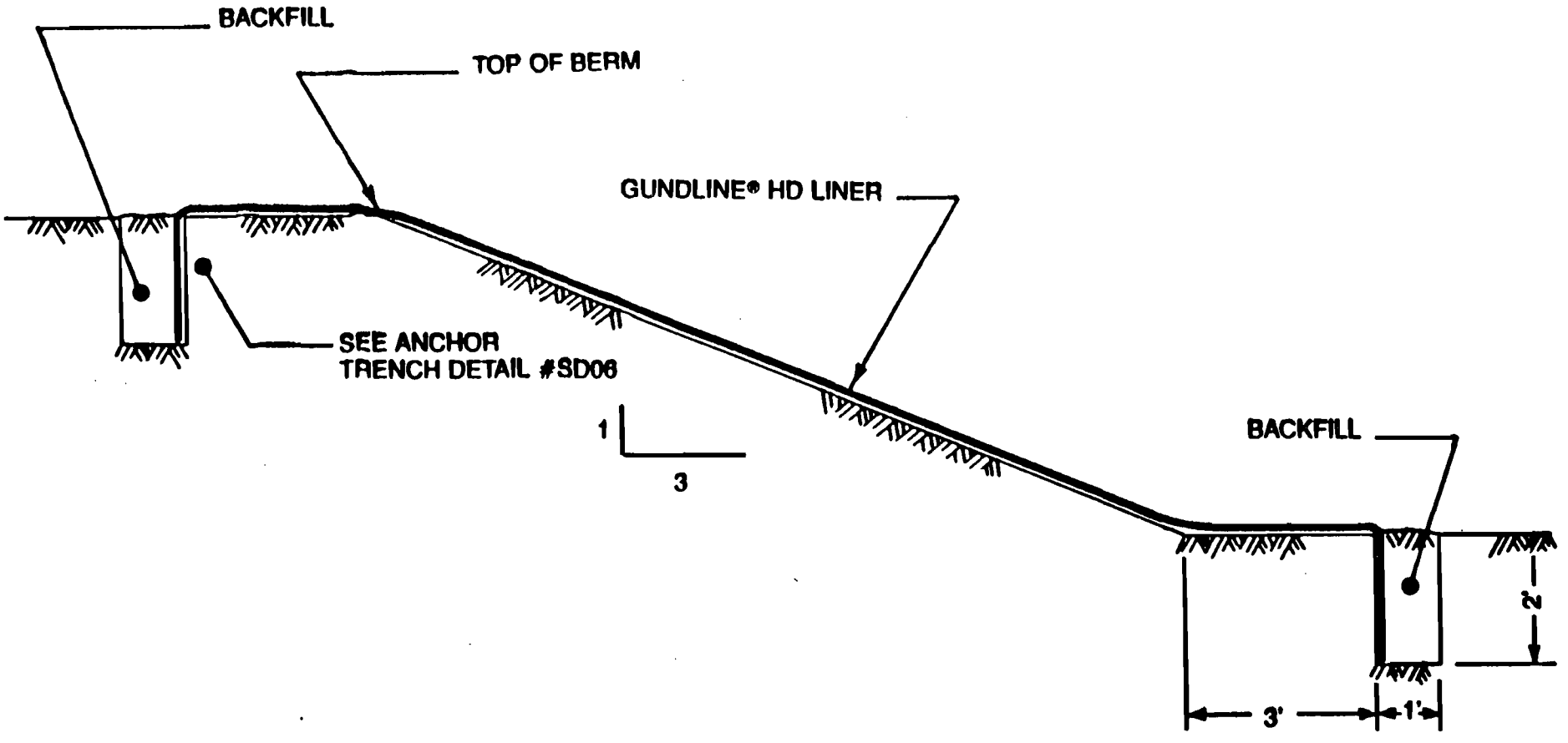
DATE: 11-16-84

DRAWING No. SD06

APPROVED BY:

TYPICAL DETAIL

BY:



SIDE SLOPE PROTECTION

NOT TO SCALE

Gundle®
Lining Construction Corp
1340 E. RICHEY RD. HOUSTON, TEXAS 77073

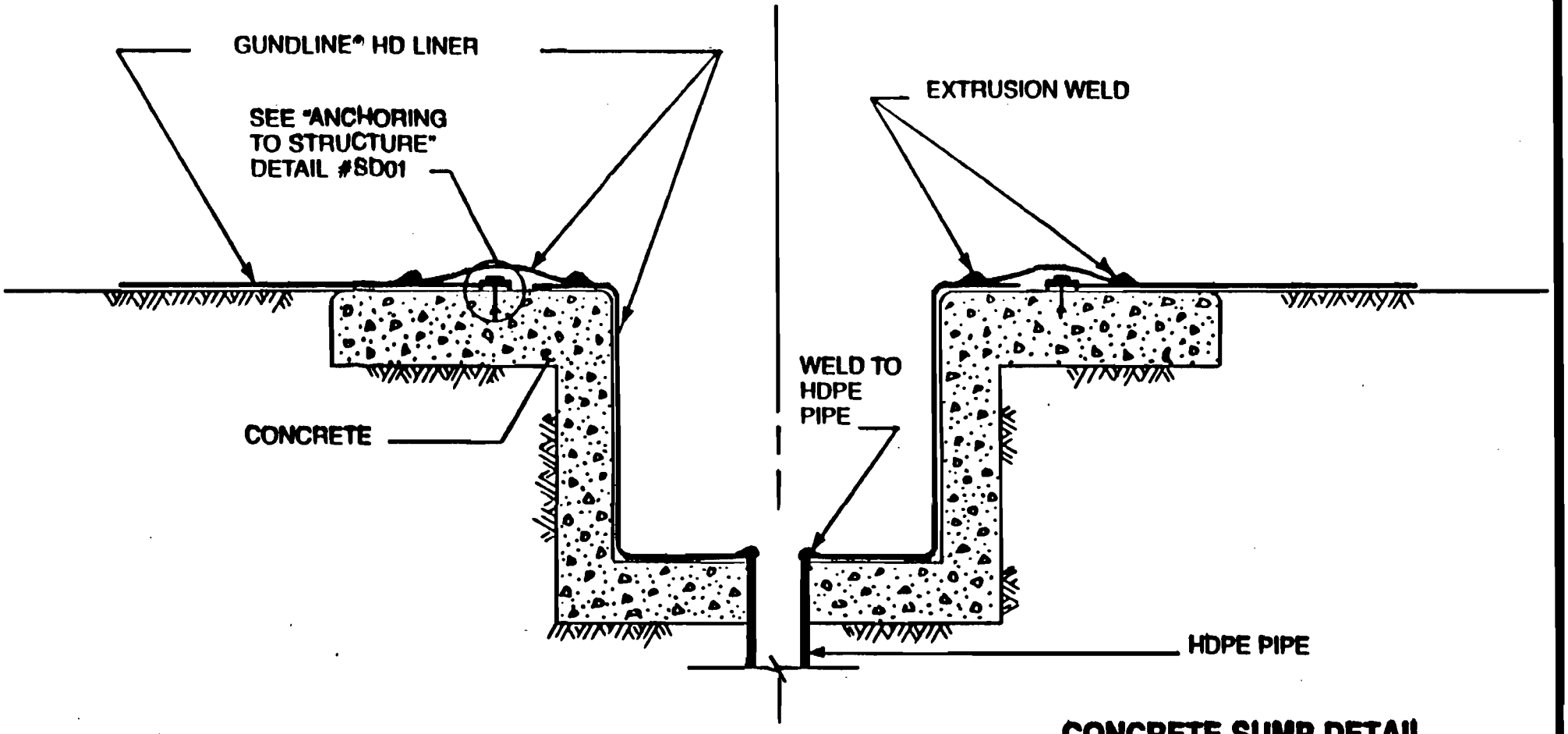
DATE: 11-19-84

DRAWING No. SD08

APPROVED BY:

TYPICAL DETAIL

BY:



CONCRETE SUMP DETAIL

NOT TO SCALE

Gundle®
Lining Construction Corp
1340 E. RICHEY RD. HOUSTON, TEXAS 77073

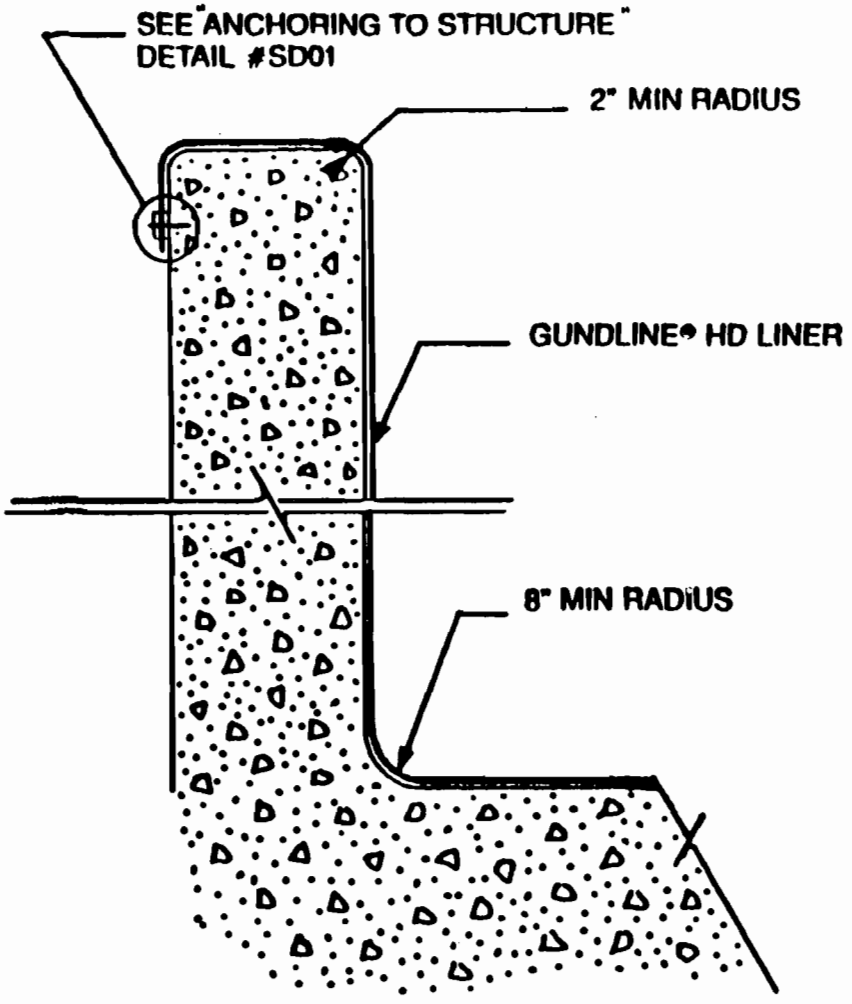
DATE: 11-24-84

DRAWING No. SD14

APPROVED BY:

TYPICAL DETAIL

BY:



ATTACHING LINER TO CONCRETE STRUCTURE

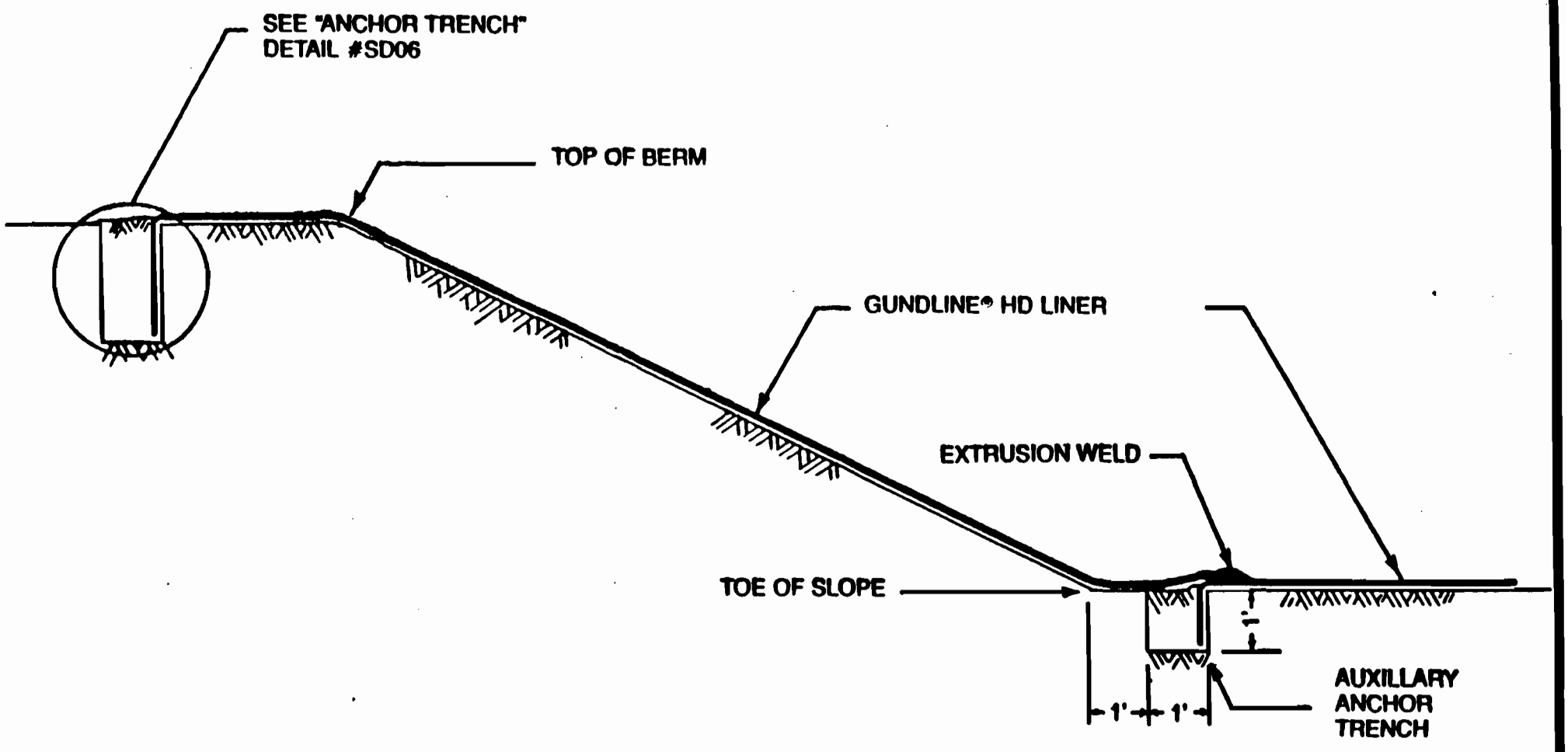
NOT TO SCALE

Gundle®
Lining Construction Corp
1340 E. RICHEY RD. HOUSTON, TEXAS 77073

DATE: 11-19-84
DRAWING No. SD22
APPROVED BY:

TYPICAL DETAIL

BY:



LINER BLOW OUT PREVENTION

NOT TO SCALE

Gundle®
Lining Construction Corp
1340 E. RICHEY RD. HOUSTON, TEXAS 77073

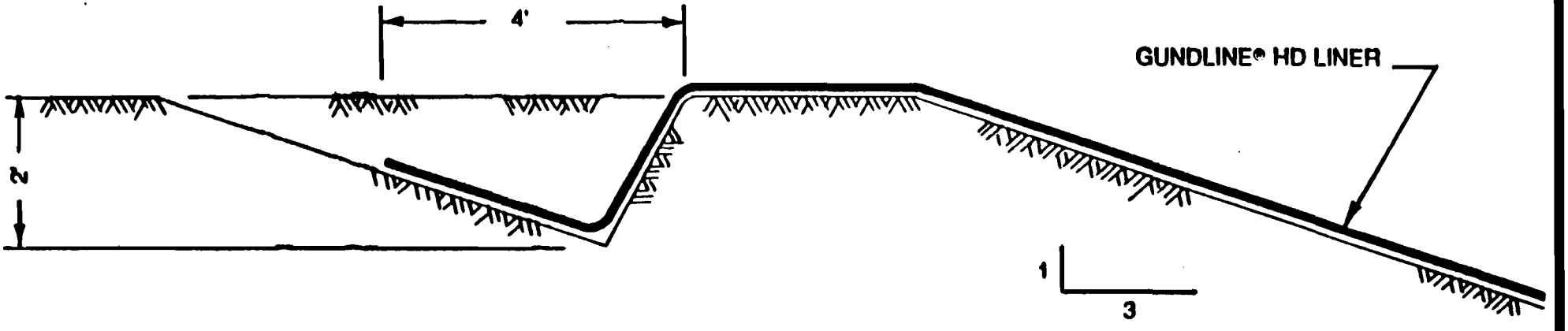
DATE: 11-30-84

DRAWING No. SD25

APPROVED BY:

TYPICAL DETAIL

BY:



V-ANCHOR TRENCH

NOT TO SCALE

Gundle®
Lining Construction Corp
1340 E. RICHEY RD. HOUSTON, TEXAS 77073

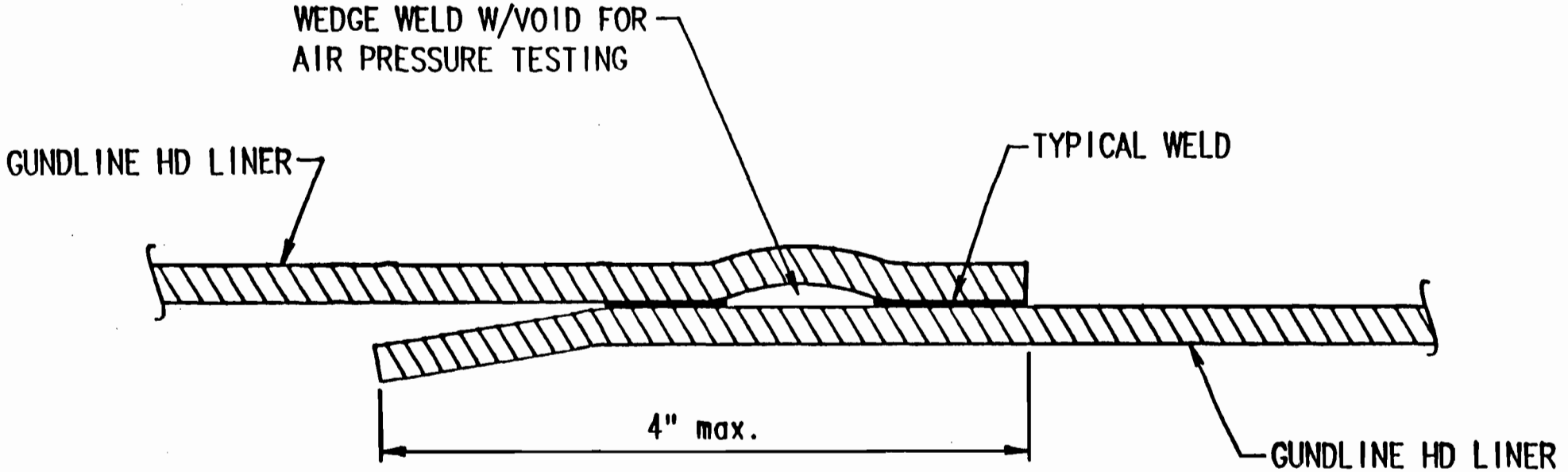
DATE: 1-7-85

DRAWING No. SD26

APPROVED BY:

TYPICAL DETAIL

BY:



TYPICAL WEDGE WELD DETAIL

(not to scale)

Gundle

DATE:

DRAWING No.

APPROVED BY:

project / owner

BY:

QUESTION 2

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

There is concern that the run-off from the power block, coal handling, "laydown and material handling areas" may need additional treatment over what is proposed. Since the run-off from these areas discharge to surface waters through the stormwater management system, there must be specific provision in the proposal addressing the potential for contamination of the run-off. Treated stormwater should also be monitored for water quality at the point of discharge.

RESPONSE

Please refer to the response to Question 29 from South Florida Water Management District (SFWMD). The final disposition of all the waste streams and runoffs is addressed in that response.

The storm water management discharges will be monitored. The details of monitoring will be developed as a condition of certification.

QUESTION 3

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

There was no foundation analysis included regarding the design of the coal storage pile liners. There would also seem to be some potential for damage of the liner with only one foot of soil over the liners.

RESPONSE

The typical flexible membrane 60-mil HDPE liner has a high tensile strength and can sustain storage piles without any damage. In addition, due to its flexibility, it allows for elongations due to settlement without affecting the liner integrity. The typical properties of the HDPE 60-mil liner are:

Min. Tensile Strength at Break	240 pounds/inch width
Min. Tensile Strength at Yield	140 pounds/inch width
Elongation at Break	700%
Elongation at Yield	13%
Modulus of Elasticity	110,000 pounds/square inch

At Indiantown, the potential settlement beneath the coal pile was analyzed using soil compression properties derived from the foundation investigation results. The computed settlement at the center of the pile is approximately 6 inches, with 3 inches at the edge. Most of the settlement will occur during or soon after coal placement. The liner elongation caused by this amount of settlement will be minimal (less than 0.1 percent compared to 13 percent at yield).

The 1-foot thick soil cover should provide adequate separation between the coal and the liner. As an added precaution, a layer of high-strength woven geotextile (such as Mirafi 600X) can be placed on top of the 1 foot of soil before coal placement begins.

QUESTION 4

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

There is no information included regarding whether or not the wastewater filter cake will be accepted by local landfills.

RESPONSE

We consider the wastewater filter cake to be a recyclable material with agricultural value. Discussions with Caulkins Citrus and others are continuing in this area. Discussions with Okeechobee County have also been initiated regarding backup disposal at their landfill.

The power plant water and wastewater treatment solid wastes are generally found to be non-hazardous in nature, and are accepted for disposal by local industrial landfills. Before the solid wastes are accepted by a landfill, a sample of the waste is tested by the EPA Toxicity Characteristics procedure to determine their hazardous or non-hazardous nature.

QUESTION 5

Source: February 28, 1991, Letter from S.L. Palmer to D.K. Kiesling

Although the application provides expected water quality characteristics of the wastewater, no details are given regarding how these estimates were determined. A more thorough treatment of the mass balance of waste constituents between the liquid and solid phases would be appropriate.

RESPONSE

Several streams of wastewaters are generated in the Indiantown Project. The largest quantity of wastewater is from the cooling tower blowdown. A portion of the circulating water is treated through a side stream softener to yield a steady-state quality of circulating water, and the cooling tower blowdown for a given evaporation rate is adjusted to maintain a fixed level of TDS.

Pretreatment of raw water for process applications will produce wastewater streams such as filter backwashes and brine reject whose qualities can be predicted for a selected treatment level.

Another important source of wastewater is the mixed bed demineralizers where sulfuric acid and sodium hydroxide are added for resin bed regeneration. The quality of the regeneration waste is calculated for a given service flow and raw water quality.

After the quantities and qualities of the individual waste streams are established and the waste treatment process schematics or configuration is selected, an overall plant water (flow) and material balance is prepared by performing calculations at applicable unit operations.

The plant has been redesigned to zero discharge. (See response to FDER Question 35 for details.) Exhibit SFWMD7-1 provides a water mass balance.

QUESTION 6

Source: February 28, 1991, Letter from S.L. Palmer to D.K. Kiesling

No information regarding the ultimate disposal of the boiler cleaning waste to be hauled offsite is given.

RESPONSE

The metal cleaning wastes from boiler fire and tubeside washing are infrequent (once in two years) in nature. The portion of this waste stream that can be handled by the plant waste treatment capability will be treated onsite, while potentially hazardous waste streams will be contracted out to a certified contractor for proper offsite treatment and proper disposal.

QUESTION 7

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

The cooling pond reservoir and any impoundments designed to hold four ft. or more water should meet the requirement for "major impoundments" pursuant to the SFWMD requirements.

RESPONSE

Refer to the response to SFWMD Question 19, which demonstrates that all impoundments meet criteria for minor impoundments.

QUESTION 8

Source: February 28, 1991, Letter from S.L. Palmer to D.K. Kiesling

The provision of Chapter 17-761 and 17-762, F.A.C. should be strictly adhered to. For example, secondary containment for all storage tanks, inventory records, etc.

RESPONSE

Provisions of Chapters 17-761 and 17-762, F.A.C. will be complied with. Several chemicals, as well as fuel oil and industrial gases, will be used at the plant. Proper receipt, handling, storage, and application of these potentially hazardous materials at the site will be part of the Best Management Practice. A Hazardous Waste Management Plan has been prepared to address the Water Quality Best Management Practice and for incorporation into the management of the surface water system. This document detailing the Best Management Practices is attached in response to SFWMD Question 11.

Some of the issues addressed in the Hazardous Waste Management Plan are:

- Use and management of containers; and preparedness for and prevention of fire, explosion, or any unplanned release of hazardous constituents to air, soil, or surface water.
- Personnel training plan for hazardous waste management.
- Hazardous Waste Contingency Plan and Emergency Procedures, including preparation of Spill Prevention, Control, and Countermeasures (SPCC) Plan

QUESTION 9

Source: February 28, 1991, Letter from S.L. Palmer to D.K. Kiesling

The provision of Chapter 17-160, F.A.C. regarding Quality assurance should be addressed. This is especially important for waste characterizations, ground water compliance monitoring, surface water monitoring etc. Also the specific analytical methods of sampling should be clearly spelled out and submitted to the appropriate Department sections for review.

RESPONSE

The applicable provisions of Chapter 17-160, F.A.C. for the Indiantown site will be complied with by ICL. The required Quality Assurance Program for topics such as waste characterizations, groundwater compliance monitoring, surface water monitoring, etc., will be developed as the project progresses.

QUESTION 10

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Our Southeast District personnel conducted a preliminary inspection of the site on February 8, 1991. Several very large ditches were found on the property other than the one indicated on Figure 2.3.5-1. We would like an updated figure of ditching on the property, which includes information on how the existing ditching is tied into the existing ditches on the adjacent Caulkins Citrus property and the Florida Steel property.

RESPONSE

An updated drawing showing the existing drainage ditches and their flow pathway is shown on COA-0001, the Site Plan, which is included in the Appendix.

As shown on this figure, the existing drainage ditch is the only ditch on the Project site property. However, a network of ditches exist within the Caulkins Plant property to the north of the ICP site. These ditches are all connected and ultimately discharge to the existing ditch at the southern border of the Caulkins property and upstream of the Project site property. Runoff from a portion of the Florida Steel property also discharges to the existing ditch just upstream of this junction through a 3-foot diameter CMP pipe.

QUESTION 11

Source: February 28, 1991, Letter from S.L. Palmer to D.K. Kiesling

Will groundwater wells be used to supply water needed in fire suppression at the site?

RESPONSE

Groundwater wells will not normally be used to supply the fire protection system. Firewater will be supplied from the cooling water storage pond.

QUESTION 12

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

A double liner system with monitoring should be considered beneath the inactive coal pile, emergency coal pile, bottom ash and fly ash storage and run-off ponds. This would provide a second measure of assurance that ground water contamination emanating from the coal pile would not occur, considering the close proximity to ground waters.

RESPONSE

The inactive coal pile, emergency coal pile, and coal pile area will be placed on a single synthetic liner as discussed in response to SFWMD Question 6. All runoff from this area and leachate from the coal pile will be conveyed to the lined runoff collection basin and pumped to the wastewater treatment facility. The placement of drainage layer below the pile, placement of coal pile and all basins above groundwater, and monitoring of the observation wells around the pile will provide assurance that groundwater contamination is precluded. In case of any damage to the liner, the coal pile will be removed and the portion of the liner will be replaced.

The bottom ash and fly ash will be conveyed to the enclosed silos. The ash from the silos will be loaded on the train for its final disposal at the mine source. The areas around silos and ash unloading will be lined or provided with a concrete floor. A localized sump in this area will be provided to collect the wastewater for its subsequent pumping to the wastewater treatment facility.

We believe this design provides adequate protection to the groundwater and a double liner system is not justified.

QUESTION 13

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

A monitoring program for surface water and ground water (other than just for the injection well) is recommended. The application claims that monitoring should not be necessary, however the potential for stormwater contamination, liner leakage, etc. needs to be addressed. Surface water sampling sites in the onsite drainage ditch and the St. Lucie Canal would be appropriate. There is also need for more information regarding the potential impact of cooling tower drift on the nearby wetlands.

RESPONSE

A program describing the proposed monitoring of groundwater levels and quality both upgradient and downgradient of those areas having a potential for the release of contaminants to the shallow groundwater system will be developed for submittal to the FDER and other affected agencies prior to the initiation of plant construction. The program will incorporate the use of the four existing site monitoring wells, one at each corner of the site, along with additional wells to be installed to monitor the inactive coal storage pile and coal storage pile runoff basin, wastewater storage pond, and stormwater management basin No. 1.

The proposed locations and depths of these wells will be submitted in the program description for approval prior to their installation. The wells will be installed to monitor the quality of water in both the shallow water table and in the productive zone of the Surficial aquifer at a depth of about 85 feet beneath the site. The selected water quality parameters to be monitored will be determined based on the results of the background monitoring conducted in the existing monitoring wells and on the potential contaminants that could be derived from the monitored sources.

The collection of surface water samples from the onsite drainage ditch for laboratory water quality analysis is addressed in the response to FDER Question No. 15. The collection of water samples from the St. Lucie Canal is not considered necessary because there is no direct drainage connection from the proposed plant site to the canal nor will there be any effluent discharge to the canal.

The potential impact of cooling tower drift on the nearby wetlands is discussed in the response to MC Question 3.

QUESTION 14

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Some type of ground water/surface water protection (i.e., liners) are needed in coal/ash loading areas at the railroad siding. Discharged materials will need to be cleaned up quickly and efficiently and our experience is that the railroad tracks cannot be easily moved or removed for cleanup.

RESPONSE

A synthetic liner or concrete containment at the coal unloading area and ash loading area will be provided to prevent the migration of the contaminated runoff to the wetland and groundwater system.

The railroad in the coal unloading area located east of the coal storage building will be drained to the lined ditches and conveyed to the coal pile area lined runoff collection basin.

The ash silo and discharge area will be lined or covered with a concrete surface. The contaminated runoff from this area will be conveyed to a sump within the ash loading area and pumped to the wastewater treatment facility for processing and plant use.

QUESTION 15

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

The application did not contain any water quality data on the surface water from the onsite ditch. The site has been and is being used as a pasture for cattle. The surface water management system from Caulkins Citrus, and possibly Florida Steel, are connected to the "existing" ditch running through the site. We would like the surface water in the ditch to be analyzed from at least two stations, one at the north side of the property and one at the south for the parameters listed below:

Nitrite (mg/l)	**Nitrate (mg/l)**
Total Kjeldahl Nitrogen (mg/l)	**Ammonia (mg/l)**
Total Phosphorus (mg/l)	**Total Dissolved Solids (mg/l)**
Total Suspended Solids (mg/l)	**Conductivity (mg/l)**
Temperature (C) surface and bottom	**Dissolved Oxygen (mg/l)**
Biochemical Oxygen Demand (mg/l)	**Chemical Oxygen Demand (mg/l)**
Turbidity (NTU)	**Oil and Grease (mg/l)**
Total Coliform (#/100 ml)	

RESPONSE

Water samples from the onsite drainage ditch are being collected and analyzed. Results are expected to be submitted to the DER within 30 days. The samples will be tested for the constituents indicated in the comment, and the results transmitted to the FDER as soon as they become available, probably within 1 month following the field sampling activity. One sample will be collected from the north end of the ditch where it enters the Indiantown Project property, and one sample will be collected from the south end of the ditch where it exits the property.

QUESTION 16

Source: February 28, 1991, Letter from S.L. Palmer to D.K. Kiesling

If additional pre-cast concrete piles are installed at the creek crossings, how will they be installed? During their installation, adequate measures should be taken to control turbidity.

RESPONSE

It is expected that any such pilings to support the pipeline can be installed from the bank with minimal water quality impacts.

Pursuant to Section 6.1.8.2(b) and (c) of the FDER SCA Instruction Guide, ICL proposes to provide details of the installation process as part of a post-certification review process.

QUESTION 17

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Provisions for the submittal and frequency of water quality and elevation data to affected agencies should be included.

RESPONSE

The monitoring program to be developed as discussed in the response to FDER Question 13 will include a proposed schedule for the submittal of all surface and groundwater monitoring results. It is currently anticipated that the monitoring will be performed on a quarterly basis that will coincide with the peaks of the wet and dry seasons. The results of all water level and quality data will be transmitted to the appropriate agencies.

QUESTION 18

Source: February 28, 1991, Letter from S.L. Palmer to D.K. Kiesling

Specific storm water assessments, dewatering plans and withdrawals should be addressed by the appropriate section of the South Florida Water Management District.

RESPONSE

We acknowledge the comment.

QUESTION 19

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Some dewatering plans or ground/surface water withdrawals may need to be modified or adjusted in order to account for the Florida Steel site cleanup.

RESPONSE (coordinate w/C. Carlton and D. Roberts)

See response to SFWMD Question 37, which addresses impacts on the Florida Steel plume. No impacts on the plume are expected as a result of dewatering.

QUESTION 20

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

The curves on Figure 2.3.4-3 need to be labeled.

RESPONSE

The arrows on curves of Exhibit DER20-1 are directed to the coordinate system used for each particular quantity. Each curve is also labeled.

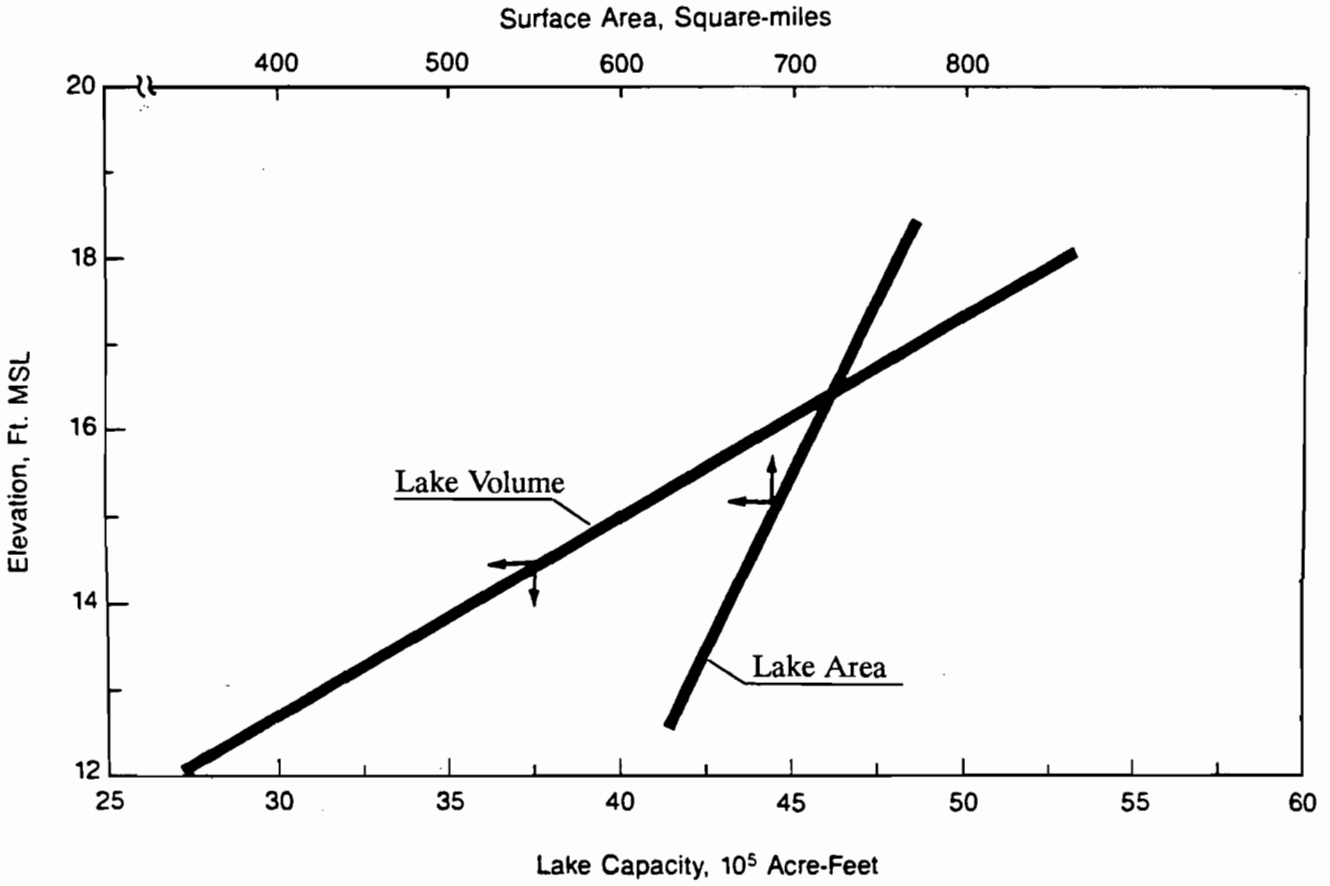


Exhibit FDER20-1

ELEVATION, AREA, AND CAPACITY CURVES OF LAKE OKEECHOBEE

Source: Developed by Bechtel from data in the USGS Water Supply Papers for Florida and SFWMD Studies

INDIANTOWN COGENERATION PROJECT

Indiantown Cogeneration, L.P.

QUESTION 21

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

In Table 2.3.4-4, there are errors associated with either the specification of the parameter and/or the associated water quality criterion for the following: Ammonia, chlorine, chromium, cyanide, fluoride, mercury, pH, phenols, phthalate esters, specific conductance, and turbidity.

RESPONSE

The water quality criteria for Lake Okeechobee (Class I) and St. Lucie Canal (Class III) are presented on Exhibit DER21-1 (Revised Table 2.3.4-4). The water quality criteria and the units of measurements for the above parameters are shown on the exhibits. The criteria for Surface Waters General Criteria, Class I Potable Water, and Class III Water Recreation are obtained from F.A.C. Sections 17-3.061, 17-3.091, and 17-3.121, respectively.

Exhibit DER21-1
(Revised Table 2.3.4-4)
Applicable Water Quality Criteria
(Units are mg/l unless otherwise noted)

Parameter	Lake Okeechobee (Class I)	St. Lucie Canal (Class III)
Alkalinity (mg/l as $CaC0_3$)	20 (minimum)	20 (minimum)
Ammonia	0.02	0.02
Arsenic	0.05	0.05
Bacteria (Fecal Col.)	various limits	various limits
Beryllium	0.011 or 1.10[2]	0.011 or 1.10[2]
Boron	--	--
Cadmium	0.0008 or 0.0012[2]	0.0008 or 0.0012[2]
Chlorine (total residual)	0.01	0.01
Chromium (hexavalent/total)	0.05/1.00	0.05/1.00
Copper	0.03	0.03 (FW)[3]
Cyanide	0.005	0.005
Detergent	0.5	0.5
D.O. (minimum)	5	5
Fluoride	1.5	5
Iron	0.3	1.0 (FW)[3]
Lead	0.3	0.03
Mercury	0.0002	0.002 (FW)[3]
Nickel	0.1	0.1
Nutrients	non-numeric limits	non-numeric limits
Oil and Grease		
Dissolved	5.0	5.0
Free	0	0
Pesticides	extensive list	extensive list
pH (standard units)	6-8.5	6.5-8.5
Phenols	0.001	0.001
Phthalate Esters	0.003	0.003
PCBs	0.000001	0.000001
Radioactive Substances		
Radium (pc/l)	5	5
Alpha (pc/l)	15	15
Selenium	0.01	0.025
Silver	0.00007	0.00007 (FW)[3]
Specific Conductance - Fresh Water (micromho/cm)	1275[1]	1275[1]
Total Dissolved Gases	110% Saturation	110% Saturation
Turbidity Above Natural Background (NTU)	29	29
Zinc	0.03	0.03

[1] Not to exceed 50 percent above background.
[2] Dependent on hardness.
[3] FW = Fresh water.

Source: F.A.C. Surface Water General Criteria 17-3.061, Class I Potable Water 17-3.091, Class III Water Recreation 17-3.121, Water Quality Criteria - Surface Water

QUESTION 22

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

In Table 2.3.4-8, alkalinity should be expressed in mg/l of $CaCO_3$. Alkalinity in this table shows a range of 0.34-4.22 meg/l as compared to the Table 2.3.4-9 value of 64 meg/l. If all the values are correct, what is the reason for such a dramatic change in the alkalinity at the same sample station? This same 64 value is reported with units of mg/l in Table 3.5.0-1. Please explain.

RESPONSE

Tables 2.3.4-8, 2.3.4-9, and 3.5.0-1 are revised to express the alkalinity in mg/l of $CaCO_3$ and are represented in Exhibits FDER22-1 through FDER22-3, respectively.

EXHIBIT DER22-1
(Revised Table 2.3.4-8)
Selected Water Quality Parameters at S-191
(April 1973 - March 1980)

Parameter	Concentration		Units
	Mean	Range	
TOC	20.50	8.9-35.9	mg/l
TSS	9.6	1.0-136.4	mg/l
Sp.Conductance	60.3	130-1300	μmhos/cm
pH	7.06	5.7-8.51	
Na	61.94	70.0-151.20	mg/l
K	7.66	2.17-13.46	mg/l
Ca	35.56	7.00-74.47	mg/l
Mg	11.72	2.80-25.00	mg/l
Total Fe	0.48	0.02-1.37	mg/l
SO_4	38.4	9.5-75.5	mg/l
Cl	111.1	15.6-355.8	mg/l
Silica	6.5	0.5-48.0	mg/l
Alkalinity (mg/l as $CaCO_3$)	69	17-211	mg/l
Hardness	137.0	29.0-276.1	mg/l
Ortho-Phosphate	0.749	0.577-0.992	mg/l
Total Phosphate	0.906	0.737-1.106	mg/l
Total Weighted Nitrogen	2.29*	1.95-2.74	mg/l

*Weighted mean annual average values 1973-1979.
Source: South Florida Water Management District (SFWMD, May 1981)

EXHIBIT DER22-2
(Revised Table 2.3.4-9)
Water Quality of Taylor Creek/Nubbin Slouth at S-191 (1980-1989)

Parameter	Concentration
pH	7.1
Alkalinity (mg/l as $CaCO_3$	64
Total Disolved Solids	380
Total Hardness (as $CaCO_3$)	130
Silica	7.8
Ammonia	-
Calcium	34
Magnesium	11
Sodium	61
Potassium	8.1
Iron	0.50
Copper	-
Manganese	-
Sulfate	33
Chloride	110
Fluoride	-
Total Nitrogen	2.01[1]
Total Phosphate	0.81

NOTES: Concentrations are in mg/l of the ion.

[1] Data Period 1983-1088, Source: SFWMD, June 1990, "Lake Okeechobee Water Quality Monitoring Program, Year Five, October 1987 - September 1988."

Source: South Florida Water Management District Water Quality Computer Printout Data Sheets

EXHIBIT DER 22-3
(Revised Table 3.5.0-1)
Water Qualities of the Plant Water Soruces

Parameter	Taylor Creek/ Nubbin Slough (mg/l)	Upper Floridan Aquifer: Upper Production Zone (mg/l)	Upper Floridan Aquifer: Lower Production Zone (mg/l)
pH	7.1	7.8	7.4
Alkalinity (as $CaCO_3$)	64	130	138
Total Dissolved Solids	380	2460	4750
Total Hardness (as $CaCO_3$)	130	735	1310
Silica	7.8	17	15.7
Calcium	34	130	233
Magnesium	11	100	177
Sodium	61	600	1198
Potassium	8.1	18	31
Iron	0.50	<0.1	<0.02
Copper	-	<0.01	<0.06
Manganese	-	-	0.24
Sulfate	33	260	423
Chloride	110	1200	2490
Fluoride	-	0.85	1.02
Total Nitrogen	2.01	0.57	-
Total Phosphate	0.81	0.05	<1.84

NOTES:

1. Concentrations are in mg/l of the ion.
2. Data for Taylor Creek/Nubbin Slough water quality are from the South Florida Water Management District testing from 1980 through 1989.
3. Data for the upper production zone of the upper Floridan aquifer are from test well #LMF-1 located on the adjacent Florida Power & Light, Martin site, July 6, 1990.
4. Data for the lower production zone of the upper Floridan aquifer are from test well #LMF-1 located on the adjacent Florida Power & Light, Martin site, March 1989.
5. Total nitrogen data for Taylor Creek/Nubbin Slough are from Exhibit DER22-2.
6. Total nitrogen for Upper Floridan aquifier does not include a value for Total Kjeldhal Nitrogen.

QUESTION 23

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Page 2.3.4-10 states "...lower concentration of nitrate and phosphate in the most recent years." Total weighted nitrogen ('73 - '80) is not the same as nitrate nitrogen ('80 - '89) and should be verified.

RESPONSE

The statement in SCA was incorrect. The correct statement should read "lower concentrations of total-nitrogen and total-phosphate in the most recent years." Exhibits FDER22-1 (Revised Table 2.3.4-8) and FDER22-2 (Revised Table 2.3.4-9) compare the total-nitrogen and total-phosphate for the periods 1973-1980 and 1980-1989. (Refer to the response to Question DER-22.)

QUESTION 24

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Are there any recent total nitrogen data for Taylor Creek/Nubbin Slough, and any historic data for nitrate concentrations?

RESPONSE

The recent total nitrogen data for Taylor Creek/Nubbin Slough (TC/NS) are presented on Exhibit FDER22-2. The historic data for nitrate concentrations of TC/NS are not available. However, the historic data of NO_2 and NO_X are available from SFWMD. The statistical summary of the data for the period of April 9, 1973 through June 6, 1989 is shown in the following table.

Description	NO_2 mg/l	NO_X mg/l
Number of Values	400	398
Average	0.049	0.467
Standard Deviation	0.058	0.421
Min Value	0.002	0.003
Max Value	0.662	2.508

QUESTION 25

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Has EPA (Region IV) been contacted to address the need for a stormwater permit to cover the estimated average annual 1 MGD discharge to an existing drainage ditch?

RESPONSE

EPA Region IV has been contacted to discuss whether the proposed project will require a stormwater permit. The estimated annual 1 mgd discharge is an error and should read 0.017 mgd.

QUESTION 26

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

On page 3.5.1-3, a discussion of the cooling pond design indicates the pond bottom and sides will be lined with a synthetic liner to prevent seepage. Based on the operational plan given on page 3.5.1-4 and the cited fact that there is a "slight" excess of annual average rainfall over evaporation at the ICL site, eventually either the pond will have a regular discharge or water will have to be withdrawn for use at the plant. Further, this water use or discharge could become a regular occurrence for those 50 percent of the years of above normal rainfall. If a regular discharge is anticipated, further questions will need to be answered regarding impacts on the receiving water bodies.

RESPONSE

The cooling water storage pond is designed to store water pumped from Taylor Creek/Nubbin Slough (TC/NS) for use in the plant as cooling and process water during short periods of time when TC/NS is unable to supply water to the plant. During normal operation, water is pumped via two pumps from TC/NS into the pond and then is pumped by an intake pump station to the plant. There will be no regular discharge from the pond; water levels will be maintained in the pond to avoid a regular discharge. A broad crest type emergency spillway with a crest elevation of 37.75 feet and a width of 12 feet is provided to discharge any excess water above El. 37.75 feet during periods of prolonged precipitation. The spillway is designed to pass a peak discharge of about 9 cfs during 25-year, 72-hour design storm.

The normal water level in the pond will be maintained at El. 37.5, which is 0.25 feet below the spillway crest, by controlling the pump operation at the TC/NS makeup water pump station. During the heavy precipitation season (May to August), the pond operating water level may be lowered to El. 37 feet to accommodate heavy rainfall and to prevent spill from the emergency spillway. With this mode of operation, the discharge during the 25-year, 72-hour design storm may be lower than the design basis for the spillway.

QUESTION 27

Source: February 28, 1991, Letter from S.L. Palmer to D.K. Kiesling

Has the EPA (Region IV) been contacted to discuss the need for a permit to cover any discharges to surface waters caused by construction dewatering during the placing of 19 miles of pipeline from Taylor Creek/Nubbin Slough to the plant site?

RESPONSE

We have contacted EPA Region IV to discuss permit requirements for the project.

QUESTION 28

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

The material submitted is insufficient to determine whether any of the wetlands on the proposed project site are within the Department's Wetland Resource jurisdiction. To enable us to evaluate the potential impacts of the proposed project, the applicant is requested to submit a set of recent 1:200 aerial photographs of the project site with the general site plant delineated.

RESPONSE

Wetlands on the ICP site are delineated on the attached 1:300 aerial photographs (see Exhibit SFWMD2-1). FDER staff has agreed that these photographs will be acceptable, pursuant to a conversation with Trudy Bell on March 14, 1991. Freshwater wetlands on the project site were delineated in the field on the basis of FDER, South Florida Water Management District (SFWMD), and U.S. Army Corps of Engineers (USACE) guidelines. These surveys showed that onsite wetlands consisted of small, isolated marshes not connected to any waters or wetlands of the state.

QUESTION 29

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

A preliminary identification of DER jurisdictional wetland areas has been made. The areas basically coincide with the list of pipeline crossings (Table 6.2.8-1), and the intake structure site at the junction of Taylor Creek/Nubbin Slough and the C-59 canal. Some of the wetland areas onsite (Figure 2.3.5-1) may also be jurisdictional. The actual landward extent of State waters at each of these sites has not been determined.

RESPONSE

Comment acknowledged. The applicant agrees that the jurisdictional wetland areas generally coincide with the list of pipeline crossings. All wetlands on the proposed ICP site are historically hydrologically isolated, perched closed systems occupying hydric soils surrounded by well-drained slash pine flatwoods.

FDER will be contacted to arrange a field verification of these findings and to perform a jurisdictional determination.

QUESTION 30

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Information in Table 6.2.6-1 (re: the pipeline crossings) implies that the construction method at the creeks and sloughs crossings has not been finalized. If the pipeline is buried, additional information concerning the acreage of wetlands to be impacted will be required.

RESPONSE

Comment acknowledged. Additional information will be provided to FDER following completion of pipeline engineering design and delineation of the pipeline right-of-way. As such, and consistent with FDER site certification application (SCA) guidelines (Section 6.1.8.2(b) and (c)), the applicant will determine the exact boundaries of FDER wetlands actually affected by the pipeline construction as a post-certification activity.

QUESTION 31

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

If any additional fill is required for the approaches to the crossings that are in jurisdictional wetlands, additional information concerning the acreage of wetlands to be impacted will be required.

RESPONSE

Effective jurisdictional wetlands will be identified and mapped during post-certification information submittals, consistent with the response to FDER Question 30.

QUESTION 32

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

During construction of the pipeline in areas in or adjacent to jurisdictional wetlands, measures should be taken to avoid violations of water quality standards (17-302) and to minimize impacts to the wetlands that are not included as part of this project. It is possible that contamination may be found in the railroad right-of-way in these areas (from locomotive diesel spills, etc.). Provisions should be made for containment and clean-up of the contaminant(s) should any be found.

RESPONSE

A Soil Erosion and Sedimentation Control Plan will be designed for pipeline construction, to avoid violations of water quality standards and impacts to downstream wetlands resulting from siltation or sedimentation. The applicant will also prepare a contingency plan addressing contamination responses. If soil contamination is located during the excavation of the pipeline trench, the applicant will notify the appropriate agencies and work with FDER to ensure containment of the contaminant(s).

QUESTION 33

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

How will the hydrological periods be maintained in the wetland areas to be preserved onsite?

RESPONSE

The wetlands on the site that are affected by the Plant layout are wetlands Nos. 2, 3, 4 and 6. The hydrological periods of the other three wetlands, Nos. 1, 5 and 7, will not be affected. Flow to the affected wetlands will be maintained from the stormwater management basins and from the natural drainage as described in the response to SFWMD Question 31.

QUESTION 34

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Any jurisdictional wetlands impacted directly (by filling) or indirectly should be mitigated in accordance with the Department policies found in Florida Administrative Code Rule 17-312 Part III. The SED recommends that the applicant contact their office as soon as possible for site evaluations for mitigation.

RESPONSE

All jurisdictional wetlands impacted either directly or indirectly on the plant site or along the proposed water pipeline corridor will be mitigated pursuant to FDER policies as per Rule 17-312, Part III, Florida Administrative Code (F.A.C.). FDER staff will be contacted to arrange a site evaluation of FDER jurisdictional wetlands. Wetland impacts associated with the pipeline construction will be addressed as part of the post-certification process.

QUESTION 35

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

UIC comments.

RESPONSE

In order to optimize water recycling opportunities, the ICL plant has been redesigned to achieve a zero process water discharge. Deep injection wells are not proposed for water disposal at this time. A description of the zero discharge water and wastewater treatment system follows.

The ICL plant water demand is met by three different external sources and by internal recycling of wastewater and stormwater, under two different operating conditions. During the normal operation mode, water is obtained from the Taylor Creek/Nubbin Slough (TC/NS). The TC/NS water is stored in an onsite pond. During drought conditions, water needs are met by a combination of groundwater from the lower and upper production zones of the Upper Floridan aquifer. The water supply quality from these sources is significantly lower than the TC/NS supply.

The ICL project is designed as a zero discharge plant, meaning that there will be no discharge of liquid effluent from the plant (with the exception of stormwater runoff and sanitary discharge). The design and operation of a zero discharge scheme requires that conventional "wastewater" be viewed as a water resource. This results in an integrated water treatment scheme addressing both treatment of makeup water source and optimizing the reuse of wastewater. The response to SFWMD Question 7 provides a water balance for the system.

The treatment scheme must accommodate both the primary and backup water sources, as well as the sources and disposal of dissolved solids (cations and anions such as calcium, magnesium, sodium, chloride, sulfate, and carbonate). Dissolved solids enter the system with the makeup water and through the addition of treatment chemicals. Dissolved solids leave the system by reacting to form suspended solids, escaping with the cooling tower drift, or by disposal with the spray dryer waste.

Suspended solids are formed in the cooling tower side stream softener and the reactor/clarifier, where hardness ions are precipitated to minimize scaling problems. The cooling tower drift contains the same total dissolved solids (TDS) level as the circulating water and cooling tower blowdown; these solids are emitted with the drift.

The spray dryer dilution water is capable of accommodating relatively high TDS levels. In the spray dryer the water evaporates, leaving behind the salts for disposal with the flue gas desulfurization product.

Cooling Water Treatment

The cooling tower is designed to operate at high cycles of concentration (COC) in order to minimize makeup water requirements. The high levels of iron, calcium and alkalinity in the TC/NS water would cause scaling and corrosion problems above 2 COC without substantial use of inhibitors. Similarly, high levels of hardness ions, alkalinity and total dissolved solids in the lower production zone of the Upper Floridan aquifer limit the COC when this source is utilized. Therefore, a sidestream softener is provided to treat a portion of the circulating water to remove iron and hardness ions, allowing a higher COC in the cooling tower. However, increasing the COC requires a larger sized sidestream softener. Due to the difference in qualities of the two water sources, the cooling tower will operate at different COC when using each source. At 10 COC for the TC/NS cooling water source and 4.3 COC for the lower production zone of the Upper Floridan aquifer, balances are reached between the makeup water demand, the size and chemical use in the sidestream softener, and the concentration of the dissolved solids in the blowdown.

The softener system consists of a flash mixing tank, a flocculation chamber and a clarifier. The circulating water flows into a flash mixing tank where lime, soda ash and polymer are added to the water. The water then flows into a flocculation chamber where the contents are gently stirred to induce contact between the precipitates and the suspended matter. Finally, the water flows to a large clarification zone that uses gravity to settle out the suspended solids. A long detention time is provided for settling of suspended solids. A rake circles the bottom of the clarifier to collect the settled sludge and remove it through a sump.

Several wastewater streams are recycled through the sidestream softener and the sludge produced is treated to become the solid waste filter cake byproduct (see below).

Process Water Treatment

Process water in the plant is needed to meet service water needs such as lime slaking, equipment washdown, etc. The raw process water supply is first chlorinated to remove color, organics, bacteria, etc. The iron level in the raw TC/NS water precludes direct use of the supply water as service water. Therefore, the chlorinated water is passed through a manganese greensand filter. It removes iron and manganese from the raw water and filters out suspended solids. Potassium permanganate solution is added continuously to the filter bed, which in turn oxidizes the iron and manganese. The iron and manganese precipitates are trapped in the filter along with other suspended solids. They are transferred to the wastewater equalization tank when the greensand filter is backwashed. The filtered water is stored in the filtered water storage tank.

The plant demineralized water supply for both modes of operation is met by recycle of the product water from the evaporator (brine concentrator). The demineralized system consists of two parallel trains of mixed beds. Each mixed

bed has anion and cation resin to remove residual ions. The return condensate from the Caulkins plant is treated in the mixed bed unit to remove ions picked up from the piping and leaks into the system. Primary ion-exchange beds are not necessary because the evaporator product water and return condensate from the Caulkins plant have very low levels of cations and anions.

Wastes from regeneration of the mixed bed resins are transferred to the neutralization tank for treatment.

Demineralized water is stored in the condensate storage tank. Water for boiler makeup, demineralized regeneration, etc. is withdrawn from this tank.

Plant Wastewater Treatment System

Waste streams in the zero discharge treatment scheme are either treated and recycled or reused without treatment in the plant. There will be no liquid discharge except stormwater and sanitary streams.

Cooling tower blowdown is treated in a reactor/clarifier to lower calcium, magnesium, and silica levels. Low levels of these scale-forming ions are necessary to minimize operational difficulties within the evaporator. A portion of the product water is used as dilution water for the spray dryer.

The use of the spray dryer as the flue gas desulfurization system provides an opportunity to dispose of wastewater in the spray dryer. The lime slurry dilution water can tolerate higher TDS levels than found in the service water. Therefore, wastewater is used to meet this demand.

During normal operation, brine from the evaporator is mixed with the dilution water going to the spray dryer. During backup operation, the high dissolved solids level in the makeup water from the Upper Floridan aquifer yields excess brine for use as spray dryer dilution water. Therefore, brine from the evaporator is stored onsite in a brine storage pond. After the drought period is over and the plant resumes using the TC/NS sources, brine from the storage pond will slowly be reclaimed and mixed with the spray dryer dilution water.

A small portion of the total steam flow is discharged from the boiler as a liquid blowdown to maintain a solids balance in the boiler water. This wastestream contains dispersant, phosphates, and trace amounts of iron and copper picked up from piping and equipment surfaces. Blowdown from the boiler is at an elevated temperature and pressure. A flash tank recovers a very pure vapor with a low TDS level, which can be recycled directly to the boiler water deaerator (after recondensation). The boiler water treatment chemicals remain with the blowdown. The blowdown stream is recycled to the cooling tower sidestream softener.

The acidic and alkaline wastestreams from demineralized regeneration are transferred to the neutralization tank. Other plant wastestreams with the potential of being acidic or basic, such as chemical lab drains, are also directed to the neutralization tank. In the tank, the acidic and caustic streams neutralize one another to a certain extent. Sodium hydroxide or sulfuric acid is used to adjust the final pH to between 6 and 9. The neutralized flows are then transferred to the wastewater equalization tank.

Equipment within the power block and the vicinity, such as transformers and motors, may contribute oil in small amounts during equipment washes. Potential oily wastes from floor drains are treated in an oil/water separator where the difference in specific gravity between oil and water effects the separation. The cleaned water is transferred to the wastewater equalization tank. The collected oil is held for disposal offsite by a licensed waste oil handler.

Periodically, the manganese greensand filter is backwashed to clean the filter media. The backwashes have a high suspended solids level and are transferred to the wastewater equalization tank.

Wastewater flows from the neutralization tank, oil/water separator, and filter backwashes are collected in the wastewater equalization tank to provide uniform flow and concentration. The wastewater is then transferred to the sidestream softener.

Underflow from the cooling tower blowdown treatment reactor/clarifier and the sidestream softener underflow are transferred to a sludge thickener. The sludge thickener further concentrates the suspended solids by gravity. The result is a very low volume of thickened sludge, which is next sent to a filter press for dewatering. The supernatant from the sludge thickener is recycled to the sidestream softener.

When the primary plant water source is being used, the filter press processes all of the sludge generated during the day during a single shift. However, a much larger quantity of sludge is generated when the backup plant water sources are used. Therefore, the filter press is operated two shifts per day. A sludge holding tank is used upstream of the filter press to store the sludge. The filter press processes the thickened sludge to yield a cake of 35 to 50 percent solids by dry weight. Conditioning chemicals are usually added for better cake yield. The filtrate from the filter press is returned to the sidestream softener, while the cake is taken offsite for potential land use or to a landfill for disposal.

Periodically, major equipment such as the air heater and the boiler tubes (fireside and tubeside) require cleaning to restore heat transfer areas. A large quantity of filtered water is used to flush the equipment, followed by use of chelant and acid cleaning to dislodge and remove scale and corrosion products accumulated while the component was in service. Proprietary chemicals used for cleaning and the final cleaning agent are usually alkaline solutions. This type of wastestream has a high pH and a large volume can be generated in a matter of hours. Such

equipment cleaning will be performed by an outside vendor during a plant outage. Initial flush and final rinse waters will be transferred to the neutralization tank, as these wastewater streams are not strongly acidic or basic and do not contain high levels of metals. The wastewater from the actual acid cleaning and first rinse will be transported offsite for disposal by the licensed contractor.

The inactive coal storage area is lined to prevent seepage of leachate into the groundwater. The storage area is grassed over to prevent fugitive particulate emissions and to minimize impacts on runoff quality. Runoff and leachate from the inactive coal storage area are collected in a lined drainage ditch and directed to the coal pile runoff basin. The coal pile runoff basin is also lined to prevent seepage. Runoff and leachate are treated with lime in a flash mixing tank at the entrance to the runoff basin. The lime is used to adjust the pH of the runoff and leachate. The runoff basin serves as a surge tank and settling pond. The pH adjustment in the flash mixing tank causes some heavy metals to precipitate out and settle in the basin with the suspended solids. The contents of the coal pile runoff basin are transferred to the cooling tower sidestream softener at a controlled flow rate. The relatively small peak flow rate at which the runoff stream is mixed into the circulating water minimizes the impact on the cooling tower operation. The lime and soda ash addition in the sidestream softener also ensures that the quality of the runoff stream is acceptable for incorporation with the circulating water.

QUESTION 36

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Tables 2.3.7-6, 3.4.4-1 and 1.1 (Section 10.1.5) appear to be incomplete. They exclude some of the regulated pollutants which require BACT review (fluoride and sulfuric acid mist). Please provide air emission information and discussion of controls utilized for all sources.

RESPONSE

Emissions rates for fluorides and sulfuric acid mist for the PC and auxiliary boiler are presented below:

Pollutant	PC Boiler		Auxiliary Boiler*	
	lb/hr	ton/yr	lb/hr	ton/yr
Total Fluorides	7.26	22.26	1.4×10^{-5}	7.3×10^{-6}
Sulfuric Acid Mist	1.45	6.35	0.26	0.65

*5,000 hours per year on natural gas

Since fluoride will be emitted as hydrofluoric acid, the evaluation of controls for this pollutant, as well as controls for sulfuric acid mist, was presented along with the review of the controls of other acid gases in Section 3.4.3.2 and in greater detail in the BACT analysis, Section 10.4. As demonstrated, the use of lime spray drying is concluded representative of BACT for acid gases (including HF and H_2SO_4) for the PC boiler, and the use of low sulfur fuel is concluded representative of BACT for acid gases for the auxiliary boiler.

QUESTION 37

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Also, in accordance with EPA policy developments all toxic non-regulated pollutants emitted by the proposed facility need to be addressed with respect to the proposed and alternative control technologies. The pollutants are identified in the publications entitled "Compiling Air Toxic Emission Inventories", EPA 450/4-96-010 and "Control Technologies for Hazardous Air Pollutants", EPA 625/6-86-014. In accordance with those publications and the fuel analyses presented in the application, the following pollutants need to be addressed: Antimony, barium, cadmium, chromium, cobalt, copper, vanadium, formaldehyde, manganese, nickel, zinc, polycyclic organic matter, phosphorus, phenol, chlorine (hydrogen chloride), pyridine, acetaldehyde, acetic acid, and dioxin.

RESPONSE

The table on the next page summarizes the information contained in the two cited references relative to the disposition in combustion device flue gas of the subject air toxic compounds.

To our knowledge, neither PC boilers nor No. 2 fuel oil-fired boilers are sources of acetaldehyde or acetic acid emissions. These compounds are not included on the lists of potential hazardous air pollutants in the cited references (EPA 625/6-86-014 "Control Technologies for Hazardous Air Pollutants" Table 2-11 and EPA 450/4-86-010 "Compiling Air Toxics Inventories" Table F-17). Additionally, no emission factors for these compounds from these sources are contained in the latest EPA publication on the subject (EPA 450/2-88-006a "Toxic Air Pollutant Emission Factors - A Compilation for Selected Air Toxic Compounds and Sources").

	PC Boiler		Auxiliary Boiler	
	Vapor	Particulate	Vapor	Particulate
ORGANIC COMPOUNDS				
Formaldehyde	X		X	
Phenol	X			
POM		X		X
Pyridine	X			
INORGANIC COMPOUNDS				
Antimony	X	X		X
Barium		X		X
Cadmium	X	X		X
Chromium	X	X		X
Cobalt		X		X
Copper		X		X
HCl	X		X	
Manganese		X		X
Nickel		X		X
Phosphorous		X		
Vanadium				X
Zinc		X		X

Sources: EPA 625/6-86-014 "Control Technologies for Hazardous Air Pollutants" Table 2-11
EPA 450/4-86-010 "Compiling Air Toxics Inventories" Table F-17

Control of emissions of acid gases, such as hydrogen chloride, has been addressed in the SCA application in Section 3.4.3.2 (Sulfur Dioxide and Acid Gases) and in greater detail in the BACT Analysis Section 10.6.4. Specific mention of HCl was inadvertently omitted from these discussions; however, the use of a lime spray dryer is considered representative of the most stringent control of all acid gases, including HCl.

As described in the two cited references, the majority of the metals (including Antimony, barium, cadmium, chromium, cobalt, copper, vanadium, manganese, nickel, phosphorus and zinc), as well as polycyclic organic matter (POM) will be

emitted from the proposed facility either as, or condensed on, particulate matter. In SCA Application Section 3.4.3.3 and BACT Analysis Section 10.8, control of particulate matter is considered by the EPA to be representative of control of trace metals and POM since these compounds are volatized in the combustion section of the boiler and tend to condense onto fine solid particles in the flue gas. Thus, as for the regulated trace metals arsenic and beryllium, stringent control of particulate matter is concluded to be sufficient for control of non-regulated trace metals and POM as well.

For the PC boiler, fabric filtration is considered more stringent that electrostatic precipitation for fine particles. Although the use of GORE-TEX bags may result in a decrease in annual PM emissions, and consequently lower emissions of trace metals and POM, the extremely small difference in emission reductions potential means that the emission level achieved using these bags is economically infeasible and thus unrepresentative of BACT.

For the auxiliary boiler, use of low ash fuel is concluded to be representative of BACT since the alternative, electrostatic precipitation, results in a cost effectiveness of over $130,000/ton removed. Additionally, trace metals and POM tend to condense onto the smaller particles, due to the greater surface-to-volume of small particles compared to large particles. Since an ESP is not as effective at collecting small particles as large particles, it would be inappropriate to use an ESP on the auxiliary boiler specifically to achieve lower non-regulated trace metals and POM emissions that using low ash fuel.

As mentioned, to our knowledge no data exist to characterize the magnitude of emissions of the non-regulated compounds cited (formaldehyde, phenol, pyridine, acetaldehyde, and acetic acid) from PC and No. 2 fuel oil-fired boilers. However, control of emissions of volatile organic compounds (VOCs) is discussed in Section 3.4.3.4 of the SCA Application and Section 10.6.5. No alternatives which are more stringent than the proposed combustion controls have been demonstrated to be technically feasible for control of VOCs, including non-regulated organic compounds. Therefore, although these non-regulated compounds are not specifically mentioned in the previously submitted SCA and PSD Applications, BACT for VOC is concluded to be representative of the most stringent control for these non-regulated compounds as well.

A great deal of attention has been focused in recent years on polychlorinated dibenzodioxin (PCDD) and polychlorinated dibenxzofuran (PCDF) emissions from a variety of combustion sources, particularly sources combusting materials containing known precursors to either PCDD or PCDF. Such precursors include chlorinated phenols and benzenes. Although these precursors are not known to exist naturally in coal, it is established that coal contains relatively high levels of inorganic chloride. However, there is no evidence to support that the integral precursors for PCDD or PCDF formation are emitted or that non-chlorinated PAH homologues provide a hydrocarbon foundation for such formations during the burning of coal.

Furthermore, the US EPA National Dioxin Strategy did not identify coal-fired power plants as likely combustion sources of PCDD or PCDF. In addition, these sources were eliminated as possible sources of 2,3,7,8-TCDD by a number of studies reported in the scientific literature (Kimble and Gross, 1980; Junk and Richard, 1981). Haile et al (1984) reported emission results from several utility coal plants where PCDD and PCDF homologues were not identified in any sample taken from flue gas outlet, fly ash emissions, and coal feed. Harless and Lewis (1982) and DeRoos and Bjorseth (1979) also tested fly ash emissions and found the samples to contain nondetectable levels of TCDD.

QUESTION 38

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Table 1.1 (Section 10.1.5) lists the cooling tower as an emission source. Please provide emission estimates and controls for the cooling towers.

RESPONSE

The stated Table 1.1 (Section 10.1.5) of the BACT document provides emissions from the main PC boiler and the auxiliary boiler only. The cooling tower is listed as an Indiantown Cogeneration emission source in Table 1 of the PSD Permit Application Forms (Application To Operate/Construct Air Pollution Sources). Cooling tower emissions are in the form of water vapor salt drifts. Drift emissions are minimized by using a state-of-the-art drift eliminator with a design drift loss rate of 0.002 percent of the total circulating water flow passing through the cooling tower. In addition, a side stream softener is employed to remove suspended solids within the circulating water; this in turn acts to minimize suspended solid emissions from the tower. For all practical purposes, all the precipitates and suspended solids settle to the bottom of the clarifier as sludge.

The estimated drift emission from the proposed ICP cooling tower is 5.3 gpm. The Total Dissolved Solids (TDS) concentration within the drift was estimated to be 2,830 mg/l with chloride constituting 38.2 percent of the TDS.

As the moist plume exits the cooling tower, it rises, expands, and cools by mixing with the cooler and drier ambient air. As the vapor plume cools, condensation occurs and the plume becomes visible. From the drift plume, droplets precipitate out and are deposited to the ground. These droplets evaporate during their fall and may eventually result in salt particles being deposited on the ground. It should be noted that large droplets in the plume will deposit closer to the tower than the small droplets. As shown on Table FDER38-1 for the ICP tower, the majority of these drifts fall within 100 meters of the cooling tower.

Environmental impacts due to operation of the proposed cooling tower were evaluated using the Seasonal/Annual Cooling Tower Plume Impact model (SACTI), which is sponsored by Electric Power Research Institute (EPRI, 1984). This numerical model is an extension of an earlier model evaluation study carried out by Argonne National Laboratory. The SACTI model uses cooling tower effluent release parameters to determine a series of atmospheric conditions affecting plume dispersion and deposition. The model calculates: salt deposition rate from the plume drift; visible plume length/height; and fogging/icing for the determined meteorological conditions. The impact assessment of the cooling tower emissions is presented in Section 7.3.3 of the PSD Permit Application in Section 10.1.5 of the SCA. Additional discussion of impacts from salt deposition is presented in response to Martin County Question 3.

PLUME CHLORIDE DEPOSITION TABLE (G./(M.**2-10 DAYS))

INDIANTOWN, 1982-86 WEST PALM BEACH MET. DATA (LMDCT, 10 CYCLES)

SEASON=ANNUAL

DISTANCE FROM TOWER (M)	WIND FROM N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	AVG
	PLUME HEADED S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	AVG
100	1.849	1.214	2.671	3.846	7.632	4.614	4.873	2.485	2.965	1.109	1.251	1.037	1.634	1.417	1.837	1.500	2.621
150	0.270	0.198	0.414	0.525	1.018	0.474	0.498	0.353	0.456	0.237	0.262	0.161	0.260	0.166	0.219	0.233	0.359
200	0.078	0.079	0.168	0.187	0.350	0.177	0.186	0.106	0.123	0.095	0.106	0.043	0.072	0.048	0.061	0.060	0.121
250	0.054	0.065	0.156	0.096	0.182	0.105	0.111	0.063	0.082	0.064	0.071	0.031	0.051	0.030	0.039	0.047	0.078
300	0.039	0.023	0.046	0.071	0.138	0.064	0.069	0.047	0.061	0.030	0.034	0.024	0.038	0.025	0.033	0.036	0.049
350	0.024	0.015	0.029	0.053	0.105	0.057	0.061	0.034	0.041	0.023	0.025	0.013	0.021	0.023	0.031	0.019	0.036
400	0.017	0.009	0.016	0.025	0.051	0.037	0.039	0.021	0.030	0.016	0.018	0.010	0.016	0.013	0.016	0.015	0.022
450	0.015	0.005	0.009	0.022	0.045	0.025	0.028	0.019	0.028	0.011	0.012	0.010	0.015	0.006	0.008	0.014	0.017
500	0.014	0.003	0.004	0.018	0.036	0.023	0.025	0.016	0.023	0.007	0.007	0.009	0.014	0.006	0.007	0.013	0.014
550	0.013	0.002	0.004	0.014	0.030	0.019	0.021	0.014	0.021	0.006	0.006	0.008	0.013	0.005	0.007	0.013	0.012
600	0.009	0.002	0.003	0.012	0.024	0.017	0.019	0.010	0.015	0.004	0.005	0.006	0.009	0.005	0.007	0.009	0.010
650	0.006	0.002	0.003	0.011	0.021	0.015	0.016	0.008	0.010	0.003	0.004	0.003	0.005	0.004	0.006	0.005	0.008
700	0.004	0.001	0.003	0.005	0.012	0.014	0.015	0.005	0.007	0.003	0.003	0.002	0.004	0.004	0.005	0.004	0.006
750	0.003	0.002	0.003	0.003	0.008	0.010	0.011	0.004	0.006	0.003	0.003	0.002	0.003	0.003	0.004	0.003	0.005
800	0.003	0.001	0.003	0.003	0.007	0.008	0.009	0.003	0.005	0.002	0.003	0.002	0.003	0.003	0.003	0.003	0.004
850	0.002	0.002	0.003	0.003	0.005	0.006	0.007	0.002	0.004	0.002	0.002	0.001	0.002	0.002	0.003	0.002	0.003
900	0.002	0.002	0.005	0.002	0.005	0.006	0.007	0.002	0.003	0.003	0.003	0.001	0.002	0.002	0.003	0.002	0.003
950	0.002	0.003	0.007	0.002	0.005	0.006	0.007	0.002	0.003	0.003	0.003	0.001	0.002	0.002	0.003	0.002	0.003
1000	0.002	0.003	0.008	0.002	0.004	0.006	0.006	0.002	0.003	0.003	0.003	0.001	0.002	0.002	0.003	0.002	0.003

PLUME CHLORIDE DEPOSITION TABLE (G./(M.**2-10 DAYS))

INDIANTOWN, 1982-86 WEST PALM BEACH MET. DATA (LMDCT, 10 CYCLES)

SEASON=SPRING

DISTANCE FROM TOWER (M)	WIND FROM N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	AVG
	PLUME HEADED S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	AVG
100	1.453	1.059	2.680	4.236	7.736	4.650	5.381	3.193	3.074	1.162	1.586	1.261	2.032	1.507	1.370	1.216	2.725
150	0.215	0.175	0.409	0.583	1.022	0.489	0.569	0.444	0.462	0.231	0.318	0.198	0.323	0.176	0.161	0.188	0.373
200	0.061	0.070	0.164	0.208	0.351	0.182	0.211	0.139	0.127	0.096	0.129	0.054	0.098	0.055	0.046	0.050	0.128
250	0.042	0.052	0.128	0.107	0.181	0.107	0.122	0.079	0.081	0.078	0.090	0.037	0.063	0.031	0.028	0.038	0.079
300	0.031	0.021	0.048	0.079	0.137	0.064	0.075	0.058	0.062	0.028	0.040	0.029	0.046	0.025	0.023	0.028	0.050
350	0.018	0.014	0.030	0.059	0.106	0.057	0.066	0.044	0.043	0.021	0.029	0.017	0.027	0.023	0.022	0.015	0.037
400	0.013	0.008	0.016	0.028	0.052	0.038	0.044	0.026	0.030	0.015	0.021	0.012	0.019	0.013	0.012	0.012	0.022
450	0.012	0.005	0.009	0.024	0.045	0.024	0.027	0.022	0.027	0.010	0.013	0.011	0.017	0.006	0.006	0.011	0.017
500	0.011	0.003	0.004	0.020	0.036	0.022	0.024	0.018	0.022	0.006	0.008	0.010	0.015	0.005	0.005	0.010	0.014
550	0.010	0.002	0.004	0.016	0.030	0.019	0.021	0.016	0.020	0.005	0.007	0.009	0.013	0.005	0.005	0.009	0.012
600	0.007	0.002	0.003	0.013	0.024	0.016	0.018	0.011	0.014	0.004	0.005	0.007	0.010	0.005	0.004	0.007	0.009
650	0.005	0.002	0.003	0.012	0.021	0.014	0.016	0.009	0.010	0.003	0.004	0.004	0.006	0.004	0.004	0.004	0.007
700	0.003	0.001	0.003	0.006	0.012	0.013	0.015	0.006	0.007	0.003	0.004	0.003	0.004	0.004	0.003	0.003	0.006
750	0.003	0.002	0.004	0.004	0.008	0.010	0.011	0.004	0.006	0.003	0.004	0.002	0.003	0.003	0.003	0.002	0.004
800	0.002	0.002	0.003	0.003	0.007	0.008	0.009	0.004	0.005	0.002	0.003	0.002	0.003	0.002	0.002	0.002	0.004
850	0.002	0.002	0.005	0.003	0.005	0.006	0.007	0.003	0.003	0.002	0.003	0.002	0.003	0.002	0.002	0.002	0.003
900	0.002	0.003	0.008	0.003	0.005	0.006	0.006	0.003	0.003	0.002	0.003	0.001	0.002	0.002	0.002	0.001	0.003
950	0.001	0.004	0.010	0.003	0.005	0.006	0.006	0.002	0.003	0.003	0.004	0.001	0.002	0.002	0.002	0.001	0.003
1000	0.001	0.005	0.012	0.002	0.004	0.005	0.006	0.002	0.002	0.003	0.004	0.001	0.002	0.002	0.002	0.001	0.003

PLUME CHLORIDE DEPOSITION TABLE (G./(M.**2-10 DAYS))

INDIANTOWN, 1982-86 WEST PALM BEACH MET. DATA (LMDCT, 10 CYCLES)
SEASON=SUMMER

DISTANCE FROM TOWER (M)	WIND FROM PLUME HEADED N	NNE S	NE SSW	ENE SW	E WSW	ESE W	SE WNW	SSE NW	S NNW	SSW N	SW NNE	WSW NE	W ENE	WNW E	NW ESE	NNW SE	AVG SSE	AVG AVG
100	1.129	0.588	1.527	2.056	5.759	7.019	7.566	2.801	3.947	1.404	1.452	1.084	1.447	0.928	0.901	0.621	2.514
150	0.183	0.106	0.246	0.267	0.728	0.700	0.726	0.409	0.627	0.316	0.318	0.168	0.231	0.097	0.094	0.104	0.332
200	0.048	0.042	0.099	0.090	0.240	0.260	0.269	0.115	0.163	0.120	0.124	0.042	0.058	0.028	0.029	0.024	0.109
250	0.037	0.026	0.065	0.048	0.130	0.152	0.162	0.075	0.113	0.074	0.076	0.032	0.045	0.019	0.020	0.020	0.068
300	0.025	0.013	0.030	0.036	0.099	0.097	0.107	0.054	0.082	0.041	0.041	0.024	0.032	0.016	0.016	0.015	0.046
350	0.015	0.010	0.021	0.027	0.075	0.084	0.092	0.038	0.056	0.031	0.032	0.014	0.019	0.014	0.015	0.008	0.034
400	0.013	0.006	0.012	0.014	0.038	0.051	0.054	0.026	0.043	0.021	0.023	0.011	0.016	0.007	0.008	0.008	0.022
450	0.012	0.004	0.007	0.012	0.032	0.038	0.044	0.024	0.041	0.014	0.014	0.010	0.015	0.005	0.006	0.007	0.018
500	0.011	0.002	0.004	0.010	0.028	0.034	0.039	0.020	0.033	0.009	0.009	0.009	0.013	0.004	0.005	0.006	0.015
550	0.010	0.002	0.004	0.008	0.023	0.029	0.033	0.018	0.031	0.007	0.008	0.009	0.012	0.004	0.005	0.006	0.013
600	0.007	0.001	0.003	0.007	0.019	0.026	0.029	0.013	0.021	0.006	0.006	0.006	0.009	0.004	0.004	0.004	0.010
650	0.004	0.001	0.002	0.006	0.016	0.022	0.024	0.009	0.014	0.004	0.004	0.004	0.005	0.003	0.004	0.002	0.008
700	0.003	0.001	0.002	0.003	0.009	0.020	0.023	0.006	0.010	0.004	0.004	0.003	0.004	0.003	0.003	0.002	0.006
750	0.003	0.001	0.003	0.002	0.006	0.015	0.018	0.005	0.009	0.004	0.004	0.002	0.003	0.002	0.003	0.002	0.005
800	0.002	0.001	0.003	0.002	0.006	0.012	0.015	0.004	0.007	0.003	0.003	0.002	0.003	0.002	0.002	0.002	0.004
850	0.002	0.001	0.004	0.002	0.005	0.009	0.011	0.003	0.004	0.003	0.003	0.001	0.002	0.002	0.002	0.001	0.003
900	0.001	0.002	0.005	0.002	0.004	0.009	0.011	0.002	0.004	0.004	0.004	0.001	0.002	0.002	0.002	0.001	0.003
950	0.001	0.002	0.007	0.001	0.004	0.009	0.011	0.002	0.004	0.004	0.004	0.001	0.002	0.002	0.002	0.001	0.004
1000	0.001	0.002	0.008	0.001	0.003	0.009	0.010	0.002	0.003	0.004	0.004	0.001	0.001	0.001	0.002	0.001	0.003

PLUME CHLORIDE DEPOSITION TABLE (G./(M.**2-10 DAYS))

INDIANTOWN, 1982-86 WEST PALM BEACH MET. DATA (LMDCT, 10 CYCLES)
SEASON=FALL

DISTANCE FROM TOWER (M)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	AVG
	WIND FROM / PLUME HEADED																
	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	AVG
100	2.1982	2.4291	5.0386	6.6696	10.820	4.2887	2.9680	1.4805	1.7963	0.6963	0.7100	0.6729	0.9893	0.9529	1.5571	1.4074	2.7922
150	0.3112	0.3795	0.7724	0.8964	1.4159	0.4449	0.3075	0.2134	0.2795	0.1576	0.1644	0.1034	0.1554	0.1067	0.1841	0.2152	0.3817
200	0.0950	0.1523	0.3155	0.3223	0.4888	0.1685	0.1140	0.0623	0.0730	0.0615	0.0644	0.0267	0.0380	0.0305	0.0546	0.0560	0.1326
250	0.0614	0.1376	0.3473	0.1632	0.2521	0.1028	0.0704	0.0371	0.0519	0.0385	0.0434	0.0214	0.0299	0.0204	0.0339	0.0428	0.0908
300	0.0444	0.0410	0.0807	0.1222	0.1931	0.0604	0.0443	0.0278	0.0377	0.0205	0.0213	0.0154	0.0233	0.0173	0.0278	0.0326	0.0506
350	0.0284	0.0254	0.0476	0.0920	0.1484	0.0532	0.0381	0.0205	0.0244	0.0159	0.0163	0.0083	0.0125	0.0159	0.0254	0.0177	0.0368
400	0.0181	0.0143	0.0261	0.0420	0.0697	0.0357	0.0247	0.0131	0.0189	0.0114	0.0122	0.0068	0.0104	0.0086	0.0141	0.0139	0.0213
450	0.0166	0.0079	0.0150	0.0367	0.0627	0.0245	0.0179	0.0118	0.0175	0.0074	0.0081	0.0064	0.0098	0.0054	0.0079	0.0132	0.0168
500	0.0147	0.0031	0.0056	0.0295	0.0500	0.0225	0.0161	0.0096	0.0149	0.0046	0.0049	0.0059	0.0089	0.0046	0.0068	0.0122	0.0134
550	0.0134	0.0027	0.0048	0.0234	0.0422	0.0190	0.0138	0.0086	0.0137	0.0038	0.0042	0.0056	0.0085	0.0043	0.0063	0.0115	0.0116
600	0.0098	0.0022	0.0038	0.0201	0.0346	0.0166	0.0121	0.0059	0.0096	0.0029	0.0032	0.0041	0.0063	0.0039	0.0058	0.0083	0.0093
650	0.0067	0.0020	0.0033	0.0183	0.0305	0.0140	0.0103	0.0045	0.0062	0.0022	0.0024	0.0022	0.0034	0.0034	0.0049	0.0047	0.0074
700	0.0045	0.0020	0.0033	0.0092	0.0170	0.0132	0.0096	0.0030	0.0046	0.0022	0.0024	0.0016	0.0026	0.0029	0.0044	0.0036	0.0054
750	0.0035	0.0022	0.0037	0.0054	0.0108	0.0104	0.0076	0.0025	0.0039	0.0021	0.0023	0.0015	0.0023	0.0023	0.0036	0.0032	0.0042
800	0.0033	0.0018	0.0032	0.0050	0.0094	0.0082	0.0062	0.0020	0.0034	0.0017	0.0019	0.0014	0.0022	0.0020	0.0030	0.0030	0.0036
850	0.0025	0.0023	0.0043	0.0042	0.0074	0.0062	0.0049	0.0013	0.0024	0.0015	0.0016	0.0010	0.0016	0.0019	0.0028	0.0022	0.0030
900	0.0021	0.0033	0.0062	0.0041	0.0070	0.0058	0.0046	0.0011	0.0019	0.0017	0.0019	0.0007	0.0012	0.0018	0.0027	0.0018	0.0030
950	0.0020	0.0044	0.0081	0.0039	0.0067	0.0057	0.0045	0.0011	0.0018	0.0018	0.0021	0.0007	0.0011	0.0018	0.0026	0.0017	0.0031
1000	0.0019	0.0053	0.0098	0.0035	0.0060	0.0057	0.0044	0.0009	0.0017	0.0018	0.0023	0.0006	0.0011	0.0016	0.0024	0.0016	0.0032

PLUME CHLORIDE DEPOSITION TABLE (G./(M.**2-10 DAYS))

INDIANTOWN, 1982-86 WEST PALM BEACH MET. DATA (LMDCT, 10 CYCLES)
SEASON=WINTER

DISTANCE FROM TOWER (M)	WIND FROM N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	AVG
	PLUME HEADED S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	AVG
100	2.635	0.773	1.426	2.412	6.219	2.420	3.574	2.475	3.038	1.184	1.228	1.149	2.066	2.281	3.538	2.795	2.451
150	0.373	0.129	0.227	0.353	0.907	0.254	0.389	0.349	0.453	0.247	0.241	0.180	0.331	0.287	0.440	0.432	0.349
200	0.111	0.053	0.091	0.125	0.323	0.092	0.152	0.108	0.128	0.103	0.105	0.048	0.094	0.080	0.117	0.112	0.115
250	0.075	0.043	0.083	0.065	0.167	0.057	0.091	0.063	0.083	0.065	0.071	0.034	0.067	0.051	0.074	0.087	0.074
300	0.056	0.015	0.026	0.048	0.122	0.034	0.052	0.047	0.063	0.032	0.031	0.027	0.051	0.042	0.065	0.068	0.049
350	0.033	0.011	0.016	0.034	0.089	0.031	0.046	0.034	0.041	0.023	0.021	0.015	0.027	0.039	0.061	0.034	0.035
400	0.023	0.007	0.009	0.017	0.044	0.022	0.034	0.020	0.028	0.018	0.016	0.011	0.020	0.022	0.033	0.028	0.022
450	0.021	0.004	0.005	0.015	0.039	0.013	0.022	0.018	0.026	0.012	0.012	0.011	0.019	0.009	0.014	0.026	0.017
500	0.019	0.002	0.002	0.012	0.031	0.012	0.020	0.015	0.022	0.007	0.007	0.010	0.017	0.008	0.012	0.024	0.014
550	0.017	0.002	0.002	0.009	0.025	0.010	0.017	0.013	0.020	0.006	0.006	0.009	0.016	0.008	0.012	0.023	0.012
600	0.013	0.001	0.001	0.008	0.020	0.009	0.015	0.010	0.015	0.005	0.004	0.007	0.012	0.008	0.011	0.017	0.010
650	0.008	0.001	0.001	0.007	0.018	0.008	0.013	0.007	0.009	0.003	0.003	0.004	0.007	0.007	0.010	0.009	0.007
700	0.006	0.001	0.001	0.003	0.009	0.007	0.012	0.005	0.007	0.003	0.003	0.003	0.005	0.006	0.009	0.007	0.005
750	0.005	0.001	0.001	0.002	0.006	0.006	0.010	0.003	0.006	0.003	0.003	0.002	0.004	0.005	0.007	0.006	0.004
800	0.005	0.001	0.001	0.002	0.005	0.004	0.007	0.003	0.005	0.003	0.003	0.002	0.004	0.004	0.006	0.006	0.004
850	0.004	0.001	0.001	0.002	0.004	0.003	0.006	0.002	0.004	0.002	0.002	0.002	0.003	0.004	0.006	0.005	0.003
900	0.003	0.001	0.001	0.001	0.004	0.003	0.005	0.002	0.003	0.003	0.002	0.001	0.002	0.004	0.006	0.003	0.003
950	0.003	0.001	0.002	0.001	0.003	0.003	0.005	0.002	0.003	0.003	0.002	0.001	0.002	0.004	0.006	0.003	0.003
1000	0.003	0.001	0.002	0.001	0.003	0.003	0.005	0.002	0.003	0.003	0.003	0.001	0.002	0.004	0.006	0.003	0.003

QUESTION 39

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

PM and PM_{10} should be viewed as separate pollutants and emissions and controls discussed separately.

RESPONSE

As discussed in Section 10.6 of the BACT analysis for the project, the conservative assumption has been made that all the particulate matter (PM) emitted from the project will be less than 10 microns in diameter. Thus for the purpose of the modeling and BACT analyses, all the TSP emitted is assumed to be PM_{10}. It is possible that this assumption is overconservative in that some fraction of the PM emitted will have a diameter greater than 10 microns; however, ICL feels that there is no reliable information that can be used to accurately assess what this fraction will be. This approach was discussed with Preston Lewis, FDER.

The PSD modeling analysis presented demonstrates that the facility will comply with the NAAQS and increments for PM_{10} even assuming all TSP has a diameter less than 10 microns.

Similarly, the BACT analysis for the PC boiler demonstrates that there is no technologically feasible control alternative which offers a greater degree of control of PM_{10} than the use of a fabric filter. As described in section 10.6.2 the fabric filter offers greater control of fine particulate than the alternative electrostatic precipitator (ESP), which is more effective at capturing larger particles than smaller particles. Therefore, a fabric filter would be concluded to represent BACT for this application for both TSP and PM_{10}, and since all the TSP is considered to be PM_{10}, the pollutants were considered together in this analysis.

For the natural gas- and oil-fired auxiliary boiler, control alternatives include electrostatic precipitators and firing a fuel with a low ash content. Fabric filters are not technologically feasible for oil-fired sources due to blinding of the bags by the sticky particulate produced when firing oil. The ESP, however, is prohibitively expensive in this case since the auxiliary boiler will produce extremely low levels of PM and only operate for 1000 hours per year.

The BACT analysis demonstrates that the annual cost of operating an ESP on this source would be $480,000 per year, and that the maximum reduction in TSP emissions would be 3.5 tons per year for a cost effectiveness of over $137,000 per ton TSP. Particle size data from oil-fired sources presented in Table 10.6-5 shows that approximately 95 percent of the PM emitted from these sources is less than 10 microns in diameter. Therefore, the maximum reduction in PM_{10} emissions would be 3.3 tons per year, for a cost effectiveness of over $144,000 per ton PM_{10}. In either case, an ESP is clearly not cost effective, and therefore unrepresentative of BACT.

As the next most stringent alternative, and in the absence of adverse energy, adverse environmental and economic impacts, the use of low ash fuels (natural gas and No. 2 fuel oil) is thus representative of BACT for both TSP and PM_{10} from the auxiliary boiler.

REFERENCES:

USEPA (1986). National Dioxin Strategy Tier 4 - Combustion Sources. Engineering Analysis Report. EPA 450/4-24-014h.

Kimble, B. J. and M. L. Gross (1980). "Tetrachlorodibenzo-p-dioxin Quantitation in Stack-Collected Coal Fly. Science. 207:59-61.

Junk, G. A. and J. J. Richard (1981). "Dioxins Not in Effluents From Coal/Refuse Combustion." Chemosphere 10:1237-1241.

Haile, C. L. et al (1984). Emissions of Organic Pollutants from Coal-Fired Utility Boiler Plants; Identification and Analysis of Organic Pollutants in Air. (L. H. Keith, Ed.) New York; Butterworth Publishers.

Harless, R. L. and R. G. Lewis (1982). "Quantitative Determination of 2,3,7,8-TCDD Residues by GC/MS. USEPA Health Effects Research Laboratory, Research Traingle Park, N.C.

DeRoos, F. L. and A. Bjorseth (1979). TCDD Analysis of Fly Ash Sample. U.S. EPA Research Triangle Park, NC. EPA Contract No. 68-02-2686.

QUESTION 40

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

On page 3.4.3-4 please estimate the minimum recirculation (below 25% expected) of flue gas recirculated and the impact on the emission control systems. Recalculate the emissions, if required and provide the necessary tables.

RESPONSE

Alternative control technologies for nitrogen oxides are discussed in Section 3.4.3.1 of the SCA. As stated on page 3.4.3-3, for fossil fuel auxiliary boilers with restricted operating hours, the use of flue gas recirculation or low NO_X burners is more common than the use of SCR or SNCR due to the high cost of add-on controls. Both of the lower cost control technologies were discussed in the text for the auxiliary boiler NO_X emissions. Based on the consideration of economic, energy, and environmental impacts it is concluded that the use of low NO_X burners represents BACT for control of NO_X emissions from the auxiliary boiler as presented on page 3.4.3-9 of the SCA. Since the flue gas recirculation method is not employed in the nitrogen oxides reduction control, no recalculation of the emissions is necessary.

QUESTION 41

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Table 3.4.3-1 provides a capital cost advantage for SNCR compared to SCR of about 5:1 with the same amount of control. What is the basis of the cost estimates (firm manufacture quotes, etc.). Considering reasonable maintenance practices what, if any, will be the degradation of air emissions control over the life of the project. Use probabilities to demonstrate uncertainty.

RESPONSE

As described in the BACT analysis presented as Appendix 10.1.5 to the SCA, cost estimates for both the SCR and SNCR NO_X control alternatives were prepared using the same methodology, so as to provide a common basis of comparison. Equipment capital cost estimates for both alternatives were obtained directly from vendor cost quotations, and total capital costs and annual operating costs were estimated based on methodology presented in the latest EPA guidance on the subject ("OAQPS Control Cost Manual," EPA 450/3-90-006; January 1990).

Since neither SCR nor SNCR has ever been applied on a commercial scale to a PC boiler firing domestic coals, the equipment design in either case must contain sufficient contingency to account for indeterminant process variables in order to assure that the emissions limit will be met. For the proposed BACT (SNCR), inclusion of this contingency in the design will result in the NO_X emission limit of 0.17 lb/MMBtu being met throughout the life of the project.

QUESTION 42

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Discuss fuel availability/long term contracts, prices and emissions at 8760 hours/yr and expected 1000 hours/year using natural gas and #2 fuel oil as a primary fuel on the auxiliary boiler and as a secondary fuel for the PC boiler.

RESPONSE

Natural Gas

Our steam customer, Caulkin Citrus, requires steam 24 hours per day during their processing season and the ICP is required to provide a backup source of steam should our main boiler be shut down. In the event the main boiler has to be shut down due to an extensive drought or other maintenance reasons during the processing season, the auxiliary boiler must be operated.

This requirement extends the amount of time that the auxiliary boiler may be operated from 1,000 to 5,000 hours. The 5,000 hours would cover the normal processing season for Caulkin Citrus.

A revised BACT analysis, included as Exhibit FDER42-1, discusses the revision in potential operating hours. Revised emission rates for the auxiliary boiler are included as Exhibit FDER42-2.

Therefore, the ICL is requesting approval to operate the auxiliary boiler for up to 5,000 hours, with up to 1,000 hours on oil and the balance on natural gas.

A Letter of Intent was executed on November 9, 1990, regarding supply of natural gas with Indiantown Gas Company. A detailed contract is scheduled for completion by early 1992. Under the agreement, Indiantown Cogeneration will assume the existing natural gas allocation currently being provided to the Caulkin Citrus plant. Currently, pricing of natural gas is in the $3.00/MMBtu range and is expected to escalate generally in accordance with Florida Power & Light's fuel price forecast.

No. 2 Fuel Oil

No. 2 fuel oil will be available to the project from terminal facilities located in Florida. Substantial storage facilities are located at both Port Everglades and Port Canaveral. Likely transportation will be by truck. Contracts are planned to be put in place by early 1992. Current pricing is in the $4.30/MMBtu range and is expected to escalate generally in accordance with the Florida Power & Light fuel forecast.

BACT ADDENDUM FOR AUXILIARY BOILER

INTRODUCTION

PG&E|Bechtel Generating Company is proposing to install and operate a coal-fired cogeneration facility near Indiantown FL. The Prevention of Significant Deterioration (PSD) Application for this project was submitted to the Florida DER for review in December 1990. The application included a Best Avaliable Control Technology (BACT) analysis of the various air pollution control alternatives for the emission units planned for the Indiantown facility.

In the previously sumbitted BACT analysis, the maximum annual operating hours of the natural gas- and #2 fuel oil-fired auxiliary boiler was specified as 1,000 hours/yr. PG&E|Bechtel now feels, however, that this annual operating hours limitation is not sufficient to allow for a "zero water discharge" facility while maintaining steam supply to Caulkins Citrus Processors, especially during periods of severe drought,

This addendum to the BACT analysis presents documentation to support BACT conclusions consistent with a revision to the maximum annual hours of auxiliary boiler operation to 5,000 hours/yr total, with a maximum of 1,000 hours/yr of #2 fuel oil firing.

BACT FOR NO_x

In Section 3.3 of the previously submitted BACT analysis, the alternative NO_x control methods for the auxiliary boiler were identified as selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), flue gas recirculation (FGR), low NO_x burners, and low excess air firing (listed in order of decreasing NO_x control effectiveness). All these control alternatives were concluded to be technically feasible for the proposed gas- and oil-fired boiler; Low NO_x Burners were concluded to be representative of BACT since the more stringent alternatives (SCR, SNCR and FGR) were concluded to be cost ineffective.

Changing the annual operating hours will in no way affect the technical feasibility of any of these alternatives. Similarly, the hourly emission rates associated with each technology will not change if the annual operating hours is increased.

For each alternative, however, both the annual operating cost and annual tons of NO_x controlled will be changed if the auxiliary boiler were to operate for 5,000 hours/yr. Thus the choice of which alternative represents BACT with an annual operating hour restriction of 5,000 hours is based on economic impacts, as was the case in the previously submitted BACT. Therefore, the estimated costs associated with each of these alternatives was revisited for this addendum. These costs are summarized on Tables 1 and 2.

The cost estimating methodology used in this addendum is identical to that outlined in Section 2.2 of the previously-submitted BACT analysis. This methodology is outlined in the most recent EPA Guidance Document on the subject, the OAQPS Control Cost Manual (EPA 1990).

SCR, SNCR and FGR capital costs are independent of annual operating hours. Therefore, the costs of the equipment for these alternatives, determined from vendor information and shown on Table 1, are the same as for the previously subitted BACT (Table 3-6).

Total capital costs for the SCR alternative on the auxiliary boiler are $1,500,000. Based on 5,000 hours/yr of annual operation, the annual cost of this alternative (Table 2) is estimated at $776,000/yr. Compared to the NSPS for this size unit, and SCR system designed for 80% control would reduce annual NO_x emissions by 138 ton/yr for a cost effectiveness of $5,623/ton, which is considered unreasonable and unrepresentative of BACT.

Total capital costs for the SNCR alternative are estimated at $1,222,000; annual costs are estimated at $637,500/yr. Based on a control efficiency of 60%, this alternative would control 103 ton/yr and have a cost effectiveness of $6,189/ton. This is also considered unrepresentative of BACT costs for similar sources.

Capital costs for the FGR alternative are estimated at $707,000. Annual costs are estimated at $344,600/yr, with 86 ton/yr controlled assuming a reduction efficiency of 50%. Cost effectiveness of FGR is thus $4,007/ton; similarly this is considered excessive and unrepresentative of BACT.

There are no adverse impacts, however, associated with the use of Low NO_x Burners. As the next-most stringent alternative, they are thus concluded to represent BACT for the auxiliary boiler operating at a maximum of 5,000 hours/yr.

BACT FOR SO_2

In the previously submitted BACT analysis for the auxiliary boiler, the alternatives for SO_2 control were identified as flue gas desulfurization (FGD) and limiting the fuel sulfur content (Section 4.3). The technical feasibility of these alternatives would not change if the total annual operating hours of the boiler were 5,000 hours/yr.

Tables 4-4 and 4-5 in the previous BACT analysis summarized the capital and annual operating costs of the wet scrubbing FGD process for the auxiliary boiler operating at a maximum of 1,000 hours/yr. These costs would not change as a result of this intended increase in operating hours, since the maximum annual hours the auxiliary boiler will fire #2 fuel oil will not change from 1,000 hours/yr and the natural gas that would be used in the boiler contains no sulfur.

Thus Tables 3 and 4, which summarize the costs of wet scrubbing SO_2 control for the auxiliary boiler, represent no change from the previously submitted cost estimate. As a result, the estimated costs of wet scrubbing FGD ($810,000 capital cost; $536,600/yr operating cost; $65,523/ton controlled) remain the same. These costs are not considered cost effective, and thus unrepresentative of BACT.

In addition, the use of wet scrubbing would result in the generation of approximately 34,000 lb/yr of dissolved sodium compounds, which would present a significant adverse environmental impact for the proposed facility. Adverse energy impacts would be encountered as well; aproximately 8,500 kwhr/yr (1,000 kwhr/ton controlled) would be required for the increased fan power and circulation pump power required by the wet scrubbing alternative.

There are no adverse economic, environmental, or energy impacts associated with firing low sulfur #2 fuel oil, however. This alternative is thus concluded to represent BACT for the auxiliary boiler operating a maxmimum of 1,000 hour/yr on fuel oil.

BACT FOR CO AND VOC

As described in the original BACT submittal, emission control alternatives for CO and VOC from fossil fuel-fired sources are catalytic oxidation and combustion controls. Catalytic controls were determined to be technically infeasible for oil-fired sources, such as the proposed auxiliary boiler, due to the presence of sulfur, ash and trace elements in the flue gas of these sources. Therefore, this alternative is unrepresentative of BACT.

Combustion controls, on the other hand, are the next most stringent control alternative and would result in no adverse economic, environmental or energy impacts in the proposed application. As such, they are considered to be representative of BACT for control of CO and VOC.

BACT FOR PM

In the previously submitted BACT analysis, the technically feasible control alternatives for PM emissions from oil-fired sources were concluded to be electrostatic precipitators (ESPs) and firing low sulfur fuel oil. The use of an ESP, however, was concluded to be economically infeasible at over $130,000/ton controlled. The capital and annual operating costs presented in the previous report are included in this analysis as Tables 5 and 6. Since the emissions of PM during periods of gas firing will be virtually negligible and the annual hours of operation on oil firing will remain at 1,000/yr (the same as in the previous submittal), the annual tons of PM emitted from the auxiliary boiler is not expected to increase. The estimated annual operating costs of, and annual tons of PM controlled by, an ESP would thus not change. Therefore, the use of an ESP is still concluded to be economically infeasible and unrepresentative of BACT.

The use of low sulfur fuel oil and natural gas for controlling PM from the auxiliary boiler is thus concluded to represent BACT for control of PM from the auxiliary boiler.

TABLE 1

Capital Costs of Auxiliary Boiler NO_x Control Alternatives

	SCR	SNCR	FGR
DIRECT CAPITAL COSTS			
(1) Purchased Equipment			
(a) Basic Equipment	675,000	470,000	318,000
(b) Auxiliaries	included	included	included
(c) Instrumentation and Controls	68,000	47,000	32,000
(d) Structural Support	68,000	47,000	32,000
(e) Freight & Taxes	65,000	45,000	31,000
(2) Direct Installation	263,000	183,000	124,000
TOTAL DIRECT COSTS (TDC)	$1,139,000	$792,000	$537,000
(3) Indirect Installation			
(a) Engineering & Supervision	114,000	79,000	54,000
(b) Construction & Field	114,000	79,000	54,000
Expense	57,000	40,000	27,000
(c) Construction Fee	34,000	24,000	16,000
(d) Contingencies			
(4) Other Indirect Costs			
(a) Startup & Performance Test	11,000	8,000	5,000
(b) Working Capital	33,000	27,000	15,000
(c) License Fee	-	175,000	-
TOTAL INDIRECT COSTS (TIC)	$363,000	$432,000	$171,000
TOTAL CAPITAL COST (TCC)	$1,502,000	$1,224,000	$708,000
(5) Annualized Capital Recovery	$244,000	$199,000	$115,000
Cost Factors: 1990 OAQPS Control Cost Manual			

TABLE 2

Annual Costs for Auxiliary Boiler NO_x Control Alternatives

	SCR	SNCR	FGR
DIRECT OPERATING COSTS			
(1) Labor			
(a) Operating	$87,600	$87,600	-
(b) Supervisory	13,000	13,000	-
(2) Maintenance			
(a) Labor	107,100	107,100	87,600
(b) Supplies (50% Maint. Labor)	54,000	54,000	44,000
(3) Replacement Parts			
(a) Catalyst (1)	41,000	-	-
(b) Equipment	68,000	47,000	32,000
(4) Utilities			
(a) Air	-	-	-
(b) Steam	-	20,000	-
(c) Electricity	35,500	3,000	22,000
(5) Raw Materials - Ammonia	14,500	8,800	-
(6) Catalyst Disposal	1,300	-	-
INDIRECT OPERATING COSTS			
(7) Overhead	50,000	50,000	16,000
(8) Taxes	15,000	12,000	7,000
(9) Insurance	15,000	12,000	7,000
(10) Administration	30,000	24,000	14,000
ANNUAL OPERATING COSTS	$532,000	$438,500	$229,600
ANNUAL CAPITAL AND OPERATING COSTS	$776,000	$637,500	$344,600
Annual Tons Removed (2)	138	103	86
Cost Effectiveness ($/ton)	$5,623	$6,189	$4,007

Notes:
(1) catalyst replacement at 50% in five years
(2) compared to NSPS 0.2 lb/MMBtu with 5,000 annual operating hours

TABLE 3

Capital Costs for Auxiliary Boiler SO_2 Control

DIRECT CAPITAL COSTS	
(1) Purchased Equpment	$360,000
(a) Basic Equipment	included
(b) Auxiliaries	36,000
(c) Instrumentation	36,000
(d) Structural Support	35,000
(e) Freight & Taxes	
(2) Direct Installation	140,000
TOTAL DIRECT COSTS (TDC)	$607,000
INDIRECT COSTS	
(3) Indirect Installation	
(a) Engineering & Supervision	61,000
(b) Construction & Field	61,000
Expenses	30,000
(c) Construction Fee	18,000
(d) Contingencies	
(4) Other Indirect Costs	
(a) Startup & Performance	6,000
Testing	27,000
(b) Working Capital	
TOTAL INDIRECT COSTS (TIC)	$203,000
TOTAL CAPITAL COST (TCC)	$810,000
(5) Annualized Capital Recovery	$131,000/yr

TABLE 4

Annual Costs for Auxiliary Boiler SO_2 Control

DIRECT OPERATING COSTS	
(1) Labor (a) Operating (b) Supervisory	 $87,600 13,000
(2) Maintenance (a) Labor (b) Supplies	 107,100 54,000
(3) Replacement Parts	36,000
(4) Utilities (a) Air (b) Steam (c) Electricity	 - 2,900 20,000
(5) Raw Materials - Sodium Hydroxide	2,300
(6) Waste Disposal	500
INDIRECT OPERATING COSTS	
(7) Overhead	50,000
(8) Taxes	8,000
(9) Insurance	8,000
(10) Administration	16,000
TOTAL ANNUAL OPERATING COSTS	$405,600
ANNUAL CAPITAL AND OPERATING COSTS	$536,600
Annual Tons SO_2 Removed (1)	8.4
Cost Effectiveness ($/ton)	$63,523

Note:
(1) compared to 0.052 lb/MMBtu with 1,000 maximum annual operating hours on #2 fuel oil

TABLE 5

Capital Cost Components for an Electrostatic Precipitator

DIRECT CAPITAL COSTS	
(1) Purchased Equipment	
(a) Basic Equipment	$292,000
(b) Auxiliaries	102,000
(c) Instrumentation	29,000
(d) Structural Support	29,000
(e) Freight & Taxes	36,000
TOTAL PURCHASED EQUIPMENT COSTS	$488,000
(2) Direct Installation	146,000
TOTAL DIRECT COSTS (TDC)	$634,000
(3) Indirect Installation	
(a) Engineering & Supervision	63,000
(b) Construction & Field Expenses	63,000
(c) Construction Fee	95,000
TOTAL INDIRECT INSTALLATION COST	$221,000
(4) Other Indirect Costs	
(a) Startup & Performance Testing	6,000
(b) Working Capital	8,000
(c) Interest During Construction	49,000
TOTAL INDIRECT COSTS (TIC)	$63,000
TOTAL CAPITAL COST (TCC)	$918,000
(5) Annualized Capital Recovery	$159,000/yr

TABLE 6

Annual Costs for an Electrostatic Precipitator

DIRECT OPERATING COSTS	
(1) Labor (a) Operating (b) Supervisory	 $55,000 8,000
(2) Maintenance	32,000
(3) Replacement Parts	36,000
(4) Utilities (a) Air (b) Steam (c) Electricity	 - - 131,000
(5) Raw Materials	-
INDIRECT OPERATING COSTS	
(7) Overhead	23,000
(8) Taxes	9,000
(9) Insurance	9,000
(10) Administration	18,000
(11) Capital Recovery	$159,000
ANNUAL CAPITAL AND OPERATING COSTS	$480,000
Annual Tons PM Removed	3.5
Cost Effectiveness ($/ton)	$137,000

QUESTION 42
EMISSION ESTIMATES FOR THE AUXILIARY BOILER

POLLUTANTS	EMISSION ESTIMATES			
		ton/yr		
	lb/hr	8760 hrs	5000 hrs	1000 hrs
#2 FUEL OIL FIRING				
Nitrogen Oxides	68.4	299.5	(1)	34.2
Sulfur Dioxide	17.8	78.0	(1)	8.9
Carbon Monoxide	47.3	207.1	(1)	23.7
VOC	0.63	2.7	(1)	0.3
PM	1.4	6.1	(1)	0.7
Lead	3.6×10^{-2}	0.2	(1)	1.8×10^{-2}
NATURAL GAS FIRING				
Nitrogen Oxides	68.4	299.5	171.0	(2)
Sulfur Dioxide	nil	nil	nil	(2)
Carbon Monoxide	47.3	207.1	118.3	(2)
VOC	0.63	2.7	1.6	(2)
PM	nil	nil	nil	(2)

Notes:
(1) Auxiliary boiler will operate a maximum of 1,000 hours/yr on #2 fuel oil
(2) Auxiliary boiler will operate for a maximum of 5,000 hours/yr total

QUESTION 43

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

What level of NO_X emissions are expected using low NO_X burners with natural gas as a fuel in the auxiliary boiler?

RESPONSE

Using low NO_X burners with natural gas as a fuel in the auxiliary boiler, the estimated level of NO_X emissions is 0.1 lb/MMBtu (35.8 lb/hr).

QUESTION 44

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

The analyses for using the alternative control technologies for the PC boiler (i.e. scrubbers and SNCR) should consider controlling emissions from the auxiliary boiler as well. Please provide feasibility and cost information.

RESPONSE

The auxiliary boiler will be operated (to a maximum of 5,000 hours as described in the response to FDER Question 42) only during periods when the PC boiler is not operating or is being heated up or cooled down, such as during maintenance outages, startup, and shutdown. The two units will be physically separate from each other and will have separate exhaust stacks.

If used on either the auxiliary boiler or PC boiler, SNCR would require injection of the reducing agent directly into each boiler's combustion chamber. It is not technically feasible for a common SNCR system to be used by both boilers. A revised BACT analysis for operating the auxiliary boiler for 5,000 hours is included in the response to FDER Question 42.

Additionally, the auxiliary boiler will have approximately one-tenth the flue gas flow rate of the PC boiler. The dry scrubbing SO_2 control system will be designed and sized to treat flue gas at the rate generated by the PC boiler. Because this type of SO_2 control device achieves emissions reduction through flue gas cooling and evaporation, the amount of flue gas to be treated is critical for sizing the spray dryer vessel. Due to the magnitude of difference between the flue gas rates of the two boilers, it is not technically feasible for both units to use a common scrubbing device.

QUESTION 45

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Please discuss the capability of using either conventional or Gore-Tex bags in the baghouse. Provide basis for all cost estimates (firm manufacture quotes, etc.) - Reference Page 3.4.3-17.

RESPONSE

The ICP will employ a fabric filter for control of particulate matter from the PC boiler. The baghouse would be capable of utilizing either conventional woven bags or Gore-Tex bags. However, based on current vendor cost information, Gore-Tex bags cost approximately $270 more per bag than the conventional bags, for a cost effectiveness of over $9,000 per ton of additional PM removed by going to Gore-Tex bags.

QUESTION 46

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Over the life of the facility please discuss the availability of "low sulfur coal" for this project (long term contracts, etc.). Provide contingency plans for continuing facility operation after the plant stockpile of "low sulfur coal" is used (supply interruption).

RESPONSE

The southern Appalachian coal supply region, which is the economic supply region due to transportation logistics, has vast reserves of high quality coal.

The project intends to finalize its coal supply/ash disposal agreement by early 1992. Enclosed are letters from several bidders (Exhibit FDER46-1) indicating their reserves of the specified coal, which greatly exceed the need for the life of the project.

The intent of the emergency coal storage pile is to maintain operation during most scenarios of supply interruption. Our analysis indicates a very low risk of exhausting this pile. In the unlikely event that the inactive pile were exhausted and ongoing delivery of coal remained curtailed, then the facility's main boiler would be shut down. In such an event the facility would continue to operate using its auxiliary boiler firing natural gas/oil.

Exhibit FDER46-1

LETTERS FROM BIDDERS

Exhibit FDER46-1

Coastal
The Energy People

March 19, 1991

Mr. Stephen A. Sorrentino
Project Development Manager
PG&E Bechtel Generating Company
7475 Wisconsin Avenue, Suite 1000
Bethesda, Maryland 20814-3422

Dear Steve:

As requested, attached is a chart showing a breakdown on Coastal Coal's resource base. We would be interested in pursuing a 20-year contract with your company and feel we easily have the capacity to ship up to 500,000 tons per year from our various eastern coal operations.

The specifications (as received basis) you discussed with me were as follows:

Sulfur %:	2.0 Maximum
Ash %:	12.0 Maximum, 9.0 Preferred
Btu:	11,800 Minimum

At this time, we would have no problems meeting these specifications for a 20-year commitment from any of our operations.

Regarding ash backhaul from your Florida project, I am attaching the summary I presented to you in my January 30, 1991 letter. At this time, this response is all Coastal Coal can make on ash removal.

Steve, please let me know if additional information is needed and I look forward to continuing discussions with you on this project.

Best regards,

Gene McBurney/sam

Gene McBurney, Jr.
District Manager
Southeast Region

sam/977

Enclosures

Coastal Coal Sales, Inc.
A SUBSIDIARY OF THE COASTAL CORPORATION
P O BOX 1871 • ROANOKE VA 24008 • 703-983-0222 • TLX 888415 • FAX 703-983-0267

Coastal Coal Sales, Inc.
A SUBSIDIARY OF THE COASTAL CORPORATION

Table 1

COASTAL COAL GROUP

Compilation of Landholdings and Resource Base

Clean Recoverable Reserves and Resources
(Proven and Probable Tons X 1000)

State	Leased To Others	Available for Development			Total Reserves and Resources
		Reserves	Cond. Reserves	Resources	
VA	6,741.3	64,615.3	44,367.3	63,040.4	178,764.3
KY	162,012.6	32,369.2	3,025.6	29,372.0	226,779.4
WV	31,500.0	98,862.6	86,500.0	-	216,862.6
UT	-	122,614.5	-	-	122,614.5
TX	-	168,000.0	-	-	168,000.0
	200,253.9	486,461.6	133,892.9	92,412.4	913,020.8

Landholdings
(Acres)

State	Owned			Controlled By Lease and Exchange	Total
	Fee	Mineral	Surface		
VA	22,116	38,983	1,459	21,233	83,791
KY	9,251	64,328	1,225	5,563	80,367
WV	2,167	36,157	1,166	22,979	62,469
UT	-	640	-	13,045	13,685
TX	-	-	-	17,000	17,000
	33,534	140,108	3,850	79,820	257,312

Note: Reserves are those tonnages, expressed on a recoverable basis, which are deemed currently minable and merchantable.

Conditional Reserves & Resources are those tonnages, expressed on a recoverable basis, for which the minability or merchantability are less certain under current market conditions.

7/89

WASTE REMOVAL INFORMATION

Kentucky

Coastal Coal Sales, Inc. (CCS) is willing to provide a disposal site located near our Kentucky mines for the coal ash from the proposed facility. This is contingent on obtaining all necessary permits and appropriate financing.

CCS will construct and operate this disposal site and charge PG&E Bechtel Generating Company estimated costs, that are subject to refinement, of approximately $ per ton in current dollars. This amount does not include rail rates from plant to unloading site.

It is the best interest of the project to find a local market for the waste product and CCS will support this endeavor to the fullest.

West Virginia

Seller has received a modification to its Kingwood mine refuse disposal permit to accept coal ash from a fluidized-bed combustion plant. This permit would need to be modified to accept the pulverized coal ash and FGD waste and is conditionally approved subject to satisfying certain conditions. The cost of waste disposal would be $ per ton. This amount does not include rail rates from plant to unloading te.

Coastal Coal Sales, Inc. proposes to provide complete ash management services for the project, including construction of a pelletization facility for an additional estimated $ million and $ ton to pelletize the ash for transport.

sam/876

Exhibit FDER46-1
APR 2 1991
S. Sorrentino

COSTAIN COAL INC.

249 EAST MAIN STREET · SUITE 200 ■ LEXINGTON, KY. 40507 ■ 606/255-4006
FAX: 606/231-6520

March 28, 1991

PETER R. P. SCHMIDT
DIRECTOR OF EASTERN DIVISION
SALES / COGENERATION

Mr. Stephen A. Sorrentino
Project Development Manager
PG&E-Bechtel Generating Company
7475 Wisconsin Avenue - Suite 1000
Bethesda, MD 20814-3422

Dear Mr. Sorrentino:

Per our phone conversation of March 12th in which you requested information regarding Costain Coal's reserve base and the status of ash disposal at our various mines, I trust the information found below will address most of your concerns.

Costain Reserve Base:

As can be determined from the enclosed brochure, Costain has a substantial reserve base in Kentucky and West Virginia to meet the coal and term offered in our letter of July 26, 1990.

Eastern Kentucky	55 Million
Western Kentucky	310 Million
West Virginia	60 Million

Costain is constantly adding reserves to its base, replacing the annual company production of approximately 18 million tons. As you are aware, Costain is the long-term supplier on two other cogeneration projects and our reserve base has been evaluated by the financial lenders in those projects. The lenders felt Costain, being one of the top producing coal companies in the United States, has ample reserves to supply their two projects and several more of similar term and tonnage.

Ash Disposal:

As you are aware, Costain Coal Inc. will be the fuel supplier on the AES Cedar Bay Florida project. In addition to supplying fuel under a 20-year contract, we will be responsible for the disposal of 150,000 tons of pelletized fluidized bed ash annually for 20 years. By early 1992 Costain should have a fully-permitted waste disposal site at our Prater Creek mining operation in Eastern Kentucky. Our Jim Smith operation, located in Western Kentucky is currently disposing of ash waste from a local utility.

Exhibit FDER46-1

Enclosed is a brochure describing Creative Resource Management, a Costain Holdings subsidiary involved with permitting, design, and management of waste disposal facilities. Costain is presently reviewing the possibility of ash disposal sites at all our operations, providing our fuel customers with a variety of disposal options.

Steve, Costain remains very interested in your project. After negotiating a very competitive fuel supply and transportation package for the AES project, I feel confident Costain can provide a similar package for your Florida project. I look forward to meeting with you during the next month to discuss this further. Please call with any additional questions or concerns.

Regards,

COSTAIN COAL INC.

Peter R. P. Schmidt
Director of Eastern Division
Sales/Cogeneration

PRPS/bss
Enclosure

cc: J. Willson

Exhibit FDER46-1

Kentucky Criterion Coal Company (KCCC)

KCCC will produce and sell coal to the Indiantown Cogeneration Project. KCCC is a wholly owned subsidiary of Criterion Coal Company (KCCC), which is a wholly owned subsidiary of Westmoreland.

KCCC was formed with the acquisition of a large tract of mineral and surface acreage on July 1, 1987. KCCC controls 8,000 surface acres and 27,000 mineral acres of reserves located around Deane, Letcher County, Kentucky. Presently, all production from the reserves is mined by four independent contractors operating five mines.

Reserves:

KCCC controls approximately 27,000 mineral acres with in-place reserves of 96 million and clean recoverable reserves of 63 million tons. Aproximately one half of the reserves have sulfur content of less than 1.2 lb SO2/MMBtu. Reserves are contained in the following seams:

Seam	Clean Recoverable Tons (As of 12/31/89)
Hazard #6	68,000
Hazard #5A	1,076,000
Hamlin	742,758
Hazard #4 Rider	1,940,298
Hazard #4	32,056,007
Whitesburg	1,399,215
Elkhorn #3	26,710,200
TOTAL	63,992,478

Estimated Recovery Level = 65%

Exhibit FDER46-1

Ash Disposal Proposal

Disposal Site: Kentucky Criterion Coal Company
Location: Deane Kentucky

Westmoreland Coal Company and JTM Industries, a subsidiary of the Union Pacific Railroad, will dispose of all ash from the project at a site to be permited at Kentucky Criterion Coal Company. At this time, we anticipate that the cost of disposal will be approximately _ per ton. This price is subject to Westmoreland's receiving the necessary permits for disposal at the mine site.

Westmoreland and JTM have already established a business relationship at four 68 MW cogeneration projects which Westmoreland owns in Virginia. JTM is disposing of the ash from all of these projects.

JTM Industries Background

JTM Industries, Inc. (JTM) is one of the largest ash management companies in the United States, with total sales in 1989 of over 1 million tons of fly ash and bottom ash from electric utility generating plants. In addition, JTM handled over 3 million tons of coal combustion by-products for disposal and utilization purposes.

JTM subsidiaries include:

* Ash Sales and Marketing - markets and disposes of fly ash, bottom ash, and scrubber sludge nationwide.

* Mineral By-Products Division - markets lime and cement kiln dust, fluidized bed ash, and other mineral by-products throughout the United States.

* KBK Enterprises, Inc. - provides engineering and consulting services in the areas of ash handling equipment design, ash management, utilization, marketing, environmental assessments and permitting, and real estate development utilizing coal combustion by-products.

Exhibit FDER46-1

JTM is actively involved and has many years of experience in the methods of utilization and disposal of conventional coal combustion processes. The company presently has contracts with utility and industrial coal ash producers for fly ash and bottom ash disposal. JTM is also active in the utilization of coal ash, having several contracts to market fly ash and bottom ash, and is the largest supplier of coal ash for use as raw cement feedstock in the United States.

JTM recognizes that the by-products from non-utility generators will demand special attention for proper disposal and utilization. JTM realizes that methods developed for conventional by-products will need modification or new methods to manage by-products from new clean coal technology plants JTM has been involved in the research and development of methods to utilize and dispose of ash from both fluidized bed and lime scrubber (dry or wet) facilities. With this objective, JTM has invested over 1.5 million dollars in its research and development facilities near Atlanta, GA.

Exhibit FDER46-1

JTM Utility Generator Contracts:

Appalachian Power John Amos Plant	Marketing of Fly Ash and Bottom Ash
Houston Lighting and Power W.A. Parrish Plant	Marketing and Disposal of Fly Ash and Bottom Ash
Houston Lighting and Power Limestone Plant	Disposal of Fly Ash, Bottom Ash and Sludge
Georgia Power Plant Bowen	Marketing of Bottom Ash
Pennsylvania Power and Light Montour Plant	Marketing of Fly Ash
Pennsylvania Power and Light Brunner Island Plant	Marketing of Bottom Ash
Carolina Power and Light Mayo Plant Roxborough Plant	Marketing of Fly Ash
Utah Power and Light All Plants	Marketing of Fly Ash
Public Service Company San Juan Plant	Marketing of Fly Ash
Jacksonville Electric Authority St. John's River Plant	Marketing of Fly Ash And Bottom Ash
Duke Power Company Belews Creek Plant	Marketing of Bottom Ash
Riverbend Plant	Utilization of ponded ash
Tennessee Valley Authority Bull Run Plant	Disposal of Fly Ash
Plant Allen	Utilization of Fly Ash
	Various Engineering and Marketing Studies

Exhibit FDER46-1

Non-Utility Generator Contracts:

Cogentrix Southport Plant	Utilization of Fly Ash and Bottom Ash
Westmoreland Hadson Partners Virginia Plants (4)	Utilization of Fly Ash, Bottom Ash, and Dry Scrubber Waste
Black River Ltd Partnership	Marketing of FBC Ash

Exhibit FDER46-1

MAR 2 7 1991

S. Sorrentino

AMVEST COAL SALES, INC.

ONE BOAR'S HEAD PLACE P. O. BOX 5347 CHARLOTTESVILLE, VIRGINIA 22905-5347 TELEPHONE 804-977-3350 TELEX 822-459 FAX 804-972-7741

DAYTON E. EISEL, III
REGIONAL SALES MANAGER
DIRECT DIAL 804-972-7770

March 25, 1991

Mr. Stephen A. Sorrentino
Project Development Manager
PG&E/Bechtel Generating Company
7475 Wisconsin Avenue
Bethesda, MD 20814

Dear Steve:

This letter is to confirm our interest in supplying coal to the Indiantown Cogeneration Project being developed by your firm. In a preliminary proposal, we indicated our interest in supplying all of the project's coal requirements, anticipated to be approximately 1,250,000 net tons per year, from our Powell Mountain Coal Company operations located in Lee County, Virginia and Harlan County, Kentucky. Sufficient reserves of acceptable quality coal are in place there to supply this quantity of fuel for the 20-year term we have discussed.

Further, we understand that you will require ash disposal services for boiler ash and scrubber by-products, and are proceeding with the preliminary activities necessary to provide this service at our mine. Of course, final details will be established as we finalize of supply/disposal agreement.

Steve, we look forward to continuing to work with you on the Indiantown Cogeneration Project. Please feel free to call me whenever I can be of assistance.

Sincerely,

Dayton E. Eisel, III

DEE:dmk

AMVEST CORPORATION

BIG STONE GAP 2537 4th Avenue East Big Stone Gap, Virginia 24219 Telephone 703-523-4932
BLOUNTVILLE Rt. 3 437 Muddy Creek Road Blountville, Tennessee 37617 Telephone 615-323-2625
PITTSBURGH 215 Allegheny Avenue Suite 210 Oakmont, Pennsylvania 15139 Telephone 412-826-8000
SUMMERSVILLE Rt. 2, Box 900 Summersville, West Virginia 26651 Telephone 304-872-6100
WISE Glamorgan Building P. O. Box 3237 Wise, Virginia 24293 Telephone 703-328-8078

MAR 2 1 1991

S. Sorrentino

W. G. Karis
Executive Vice President
Administration

Consolidation Coal Company
Consol Plaza
Pittsburgh, Pennsylvania 15241
(412) 831-4122

March 19, 1991

Mr. Stephen A. Sorrentino
Project Development Manager
PG&E-Bechtel Generating Company
7475 Wisconsin Avenue
Bethesda, MD 20814-3422

Dear Mr. Sorrentino:

This letter is to advise you that there are substantial coal reserves from both a quality and logistical standpoint that can serve the proposed Indiantown project. Focusing only on CSX origin coals located in eastern Kentucky (the most likely, but not the only potential region to supply the project), the Department of Energy reports that there are 4.8 billion recoverable tons of coal that contain less than 1.7 lbs. sulfur/MMBtu and more than 11,500 Btu/lb. (EPA report "Estimation of U.S. Coal Reserves by Coal Type, Heat and Sulfur Content," October 1989). This sulfur content equates to 2.0% at 12,000 Btu/lb. At current production rates in eastern Kentucky, this is approximately a 50-year supply for this type of coal.

Please feel free to call me if I can be of further assistance.

Sincerely,

W. G. Karis

WGK/meg

Exhibit FDER46-1

MAR 2 1 1991

S. Sorrentino

W. G. Karis
Executive Vice President
Administration

Consolidation Coal Company
Consol Plaza
Pittsburgh, Pennsylvania 15241
(412) 831-4122

March 19, 1991

Mr. Stephen A. Sorrentino
Project Development Manager
PG&E-Bechtel Generating Company
7475 Wisconsin Avenue
Bethesda, MD 20814-3422

Dear Mr. Sorrentino:

This letter is to advise you that Consolidation Coal Company plans to bid on both the supply of coal to and disposal of coal ash residue from the proposed Indiantown project.

Disposal of coal ash residue from cogeneration and independent power projects is becoming a rapidly growing business for coal companies such as Consol that intend to be a major supplier to such projects. Ash disposal is a logical extension of our existing mining operations. We already have signed a contract for the disposal of up to 160,000 tons per year of ash residue/dry scrubber waste from a cogeneration plant that will be coming on line in New Jersey by late 1993. We are in the final stages of receiving a permit for the disposal site for this project. We believe that our many years of mining and reclamation experience position us well for the disposal of ash residue in an economic and environmentally sound manner.

Please feel free to call if I can be of further assistance.

Sincerely,

William G. Karis

WGK/meg

Exhibit FDER46-1

AMVEST COAL SALES, INC.

ONE BOAR'S HEAD PLACE P.O. BOX 5347 CHARLOTTESVILLE, VIRGINIA 22905-5347 TELEPHONE 804-977-3350 TELEX 822-459 FAX 804-972-7741

DAYTON E. EISEL, III
REGIONAL SALES MANAGER
DIRECT DIAL 804-972-7770

March 25, 1991

Mr. Stephen A. Sorrentino
Project Development Manager
PG&E/Bechtel Generating Company
7475 Wisconsin Avenue
Bethesda, MD 20814

Dear Steve:

This letter is to confirm our interest in supplying coal to the Indiantown Cogeneration Project being developed by your firm. In a preliminary proposal, we indicated our interest in supplying all of the project's coal requirements, anticipated to be approximately 1,250,000 net tons per year, from our Powell Mountain Coal Company operations located in Lee County, Virginia and Harlan County, Kentucky. Sufficient reserves of acceptable quality coal are in place there to supply this quantity of fuel for the 20-year term we have discussed.

Further, we understand that you will require ash disposal services for boiler ash and scrubber by-products, and are proceeding with the preliminary activities necessary to provide this service at our mine. Of course, final details will be established as we finalize of supply/disposal agreement.

Steve, we look forward to continuing to work with you on the Indiantown Cogeneration Project. Please feel free to call me whenever I can be of assistance.

Sincerely,

Dayton E. Eisel, III

DEE:dmk

AMVEST CORPORATION

BIG STONE GAP 2537 4th Avenue East Big Stone Gap, Virginia 24219 Telephone 703-523-4932
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WISE Glamorgan Building P.O. Box 3237 Wise, Virginia 24293 Telephone 703 328-8078

QUESTION 47

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

The applicant has proposed to dispose of all solid wastes generated at offsite locations (Table 3.7.1-1 and Section 3.7.1.2). Our main concern is disposal of bottom and fly ash at the as yet unidentified mine where the coal will come from. In order to provide reasonable assurance of proper disposal, the applicant should provide a copy of a contract or a long term agreement demonstrating that the ash will be accepted for disposal at the mine site.

RESPONSE

The ICL intends to finalize its coal supply/ash disposal agreement by early 1992. See the letters attached to the response for FDER Question 46, in which several bidders express their willingness to provide ash disposal services for the project.

QUESTION 48

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

The paragraphs discuss the fact that individual subcontractors will be responsible for handling hazardous wastes resulting from their onsite activities. Our experience with contractor activities shows that a signficiant amount of oversight by the site owner is needed to make certain that raw materials are stored and handled properly and waste materials are properly managed and transported to disposal facilities. ICL should also have in place procedures to follow for subcontractor reporting of potential discharges of hazardous materials/wastes. Quick identification by all parties during all phases of construction (as well as plant operation) of actual or potential contaminant releases clearly is preferable to long-term assessments/cleanups later. Examples include the requirements for subcontractors to provide secondary containment surrounding portable fuel tanks; storing paint related materials and solvents in secure areas designed to contain spills; having emergency plans in place in order to prevent the possibility of fires in ignitable storage areas and provide for quick response to these incidents. Waste analysis plans are needed.

RESPONSE

Construction

The prime contractor has developed procedures for storage and handling of all hazardous materials onsite, as well as an emergency response procedure. These procedures are the same or equivalent to those presented in the Hazardous Waste Management Plan, found in the response to SFWMD Question 11. The procedures for storage and handling require that all materials be stored in areas that have secondary containments designed to contain spills. The emergency response procedure requires prompt notification of the prime contractor, who then will promptly notify the owner and all appropriate authorities, in the event of any significant spill. In addition, this procedure identifies the appropriate response for each category of spill, including direct actions required to mitigate spill consequences.

These procedures apply to all hazardous materials of the prime contractor and all subcontractors. The owner will perform periodic audits to verify that the contractor is complying with his procedures. In addition, periodic drills will be conducted to verify that all site personnel are properly trained in responding to spills.

Operations

The above-mentioned Hazardous Waste Management Plan establishes procedures for the storage and handling of hazardous materials, as well as an emergency response procedure. All hazardous materials will be stored in areas that have

secondary containments designed to contain spills. The emergency response procedure will require prompt notification of owner's management and appropriate authorities having jurisdiction. Periodic audits and drills will be performed to verify that personnel are properly trained to implement these procedures.

Should it become necessary, either during construction or operations, to dispose of material from a spill of unknown source, the material will be analyzed prior to disposal so that the appropriate disposal method may be selected.

QUESTION 49

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Waste oil disposal may not be as easy as "collected in appropriate containers and transported offsite for recycling or disposal at an approved facility." Testing is needed of used oil prior to determining disposal in most cases. We suggest that individual waste streams be clearly segregated. For example: Dedicating certain drums for "waste mineral spirits", "used lubricating oil", "hazardous waste lacquer thinner", or similar lawful language. Such easy designations help prevent the mixing of incompatible wastes. This clarification also would help in profiling the wastes in order to determine the proper disposal or recycle. Routine maintenance of construction vehicles and refueling of vehicles should be conducted on impervious surfaces (e.g. on concrete pads with containment and provisions for separating spills etc. from rain water).

RESPONSE

Disposal of hazardous and potentially hazardous materials, including waste oil, is addressed in the Hazardous Waste Management Plan provided in response to SFWMD Question 11.

Waste Oil Disposal

Consistent with FDER suggestions, waste oil and other hazardous materials will be segregated into individual waste streams and collected in containers that are clearly identified for a specific product or group of compatible products. These containers will then be collected for recycle or disposal, as appropriate, by contractors at approved facilities. Any substances of unidentified origin will be analyzed and identified prior to disposal at an approved facility.

Vehicle Refueling and Maintenance

During construction and operation, all mobile vehicles, except for large construction cranes, large earth-moving equipment, etc., will be refueled and maintained in facilities that have impervious surfaces and containment to provide separation from storm runoff. Refueling and maintenance of vehicles at other locations will be performed by personnel who have been trained in spill prevention control and containment.

QUESTION 50

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

It needs to be clear that ultimate responsibility for proper management of wastes generated at the site are with the site owner.

RESPONSE

As the owner, ICL has the ultimate responsibility for the proper management of wastes generated at the facility, is taking a pro-active role in the management of these processes. Steps taken by ICL include reviewing and implementing procedures for waste handling and disposal to verify that these procedures comply with regulatory requirements, auditing records of those responsible for disposal, and conducting drills and other tests to verify that personnel are properly trained and perform their roles appropriately.

QUESTION 51

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling

Over the past two years, we have logged in several incidents involving the discharge of diesel from locomotive fuel tanks. While we have no record of diesel discharges along this segment of the railroad corridor, it is conceivable that, over the years, spills have occurred to the rail track/bed. Provisions should be made to address cleanup in the event contamination is discovered along the tracks during the pipeline construction part of the project.

RESPONSE

The applicant will prepare a contingency plan addressing contamination responses in the event contamination is discovered during pipeline construction. If soil contamination is discovered during pipeline construction, ICL or its contractor will notify the appropriate agencies and work with FDER to ensure containment of the contaminants.

QUESTION 52

The US EPA and the Department are currently tracking the cleanup of a nearby site known as Florida Steel. The site is a Superfund site, contaminated with hazardous wastes from past operations. Close coordination needs to be made with the Bureau of Waste Cleanup, the US EPA, Florida Steel and the SED to make certain that possible cleanup alternatives at Florida Steel take into account the ICL plant. Also, work needs to be conducted documenting any possible effects on existing contamination at Florida Steel (e.g. ground water contamination plumes or proposed cleanups). It is recommended that this coordination be conducted soon, so that there is ample lead time for project changes and considerations for the Florida Steel cleanup.

Source: February 28, 1991, Letter from S. L. Palmer to D. K. Kiesling.

RESPONSE

ICL is aware of the existence of the Superfund Site at the adjacent Florida Steel site. Discussions and coordination with EPA have occurred and will continue as our project proceeds and as the site cleanup activities continue. Modelling of groundwater withdrawals for dewatering during construction demonstrates that there is no effect on the movement of the contamination plume on the Florida Steel site. See response to SFWMD Question 37.

INDIANTOWN COGENERATION PROJECT

SITE CERTIFICATION APPLICATION

RESPONSES TO

SUFFICIENCY COMMENTS BY

THE DEPARTMENT OF COMMUNITY AFFAIRS

April 9, 1991

QUESTION 1

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

Figure 2.1.0-1 does not identify adjacent properties, as required under Section 2.1 of the Site Certification Application (SCA) Instruction Guide.

RESPONSE

The Site Vicinity Plan (Drawing COA-0001 in the Appendix) has been revised to incorporate the additional adjacent properties. Exhibit DCA1-1 is attached indicating property holders within 600 feet of the site.

ATTORNEYS' TITLE INSURANCE FUND, INC.
Martin Branch
10 Central Parkway
Suite 200
Stuart, Florida 34994

SPECIAL CERTIFICATE NO.: 42-44558

PROVIDED FOR: Gunster, Yoakley & Stewart, P.A.

FILE NUMBER: 12586.09000

We hereby certify that a search has been made of the 1990 Tax Roll of Martin County, Florida, regarding a six hundred and sixty foot area surrounding a parcel of land being described as follows:

See exhibit "A"

And we find that the APPARENT Titleholders of land within a 660 foot perimeter of the subject property to be as listed below:

---

1. Wall, Harris H. &
   Post, Robert M. Jr (T/C)
   PO Box 1
   Indiantown, Fl 34956-0001

2. Tampa Farm Service, Inc.
   PO Box 600
   Dover, Fl 33527-0600

3. Via Tropical Fruits, Inc.
   15950 SW Kanner Hwy
   Indiantown, Fl 34956

4. Florida Steel Corp
   PO Box 23328
   Tampa, Fl 33601

5. Bay State Willing Company
   Mercantile-Safe Dep & Tr (TR)
   One Congress St
   Quincy, MA 02169

6. Caulkins Indiantown Citrus Co.
   PO Box 458
   Indiantown, Fl 34956-0458

7. Martin County
   2401 E Monterey Road
   Stuart, Fl 34994

The foregoing information is given in accordance with the requirements set forth in Item No. 14, Paragraph Three, of the application for an amendment, modification, addition or change to the Martin County Comprehensive Plan, revised August 17, 1989, and no responsibility is assumed for any changes subsequent to the date of issuance of the aforementioned tax roll.

THE FOREGOING INFORMATION IS CERTIFIED AS OF THE 1990 TAX ROLL.

IN WITNESS WHEREOF, Attorneys' Title Insurance Fund, Inc. has caused these presents to be authorized representative and its corporate seal to be affixed hereto, this 29th day of November, 1990.

BY Michael Debish

Michael Debish

QUESTION 2

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

Taylor Creek/Nubbin Slough has been proposed as the source of the power plant's cooling water. The SCA supports this proposal with historic surface water data. The Department notes, however, that South Florida has been in a drought over the past 2-½ years and that the level of Lake Okeechobee has dropped to 12 feet or thereabouts. How would this drought condition affect the suitability of Taylor Creek/Nubbin Slough as a cooling water source if it persists or if water levels remain appreciably lower than anticipated?

RESPONSE

Structure S-191 controls the level of water in the Taylor Creek/Nubbin Slough canals at a higher elevation than the lake. Even when the lake is lower than 16 feet, the water level in the canal would be sufficient to provide water for the plant until the canal elevation reaches 17.5 feet MSL.

We have worked closely with South Florida Water Management District on choosing this source of water for the plant and used their data for the past 16 years as the best available information from which to design our system. Based upon this data, we expect that Taylor Creek/Nubbin Slough will supply adequate water to the plant approximately 95 percent of the time. Our supply system is designed to use Taylor Creek/Nubbin Slough as the primary water supply. An onsite storage pond will provide capacity during short-term drought periods. Deep wells drilled into the brackish portion of the Upper Florida aquifer serve as backup sources which would be used during extreme drought conditions.

Section 10.9, Volume IV, of the SCA provides a detailed water availability study including an analysis of historic drought conditions. The plant has been designed to meet worst-case conditions.

QUESTION 3

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

The Governor and Cabinet have recently certified Florida Power and Light's Martin Coal Plant. This power plant and its impact should therefore be considered as background for calculations of the Indiantown Cogeneration Plant's impacts on air quality, ground water, and traffic. For traffic impacts, please review project-generated trips and coal-train impacts on local road crossings, with the Martin Coal Plant's impacts added to the background.

RESPONSE

AIR

The proposed FPL Martin Coal Plant was considered as part of the interactive source analysis provided in the Site Certification Application. Therefore, the combined air quality impact from the existing FPL Martin units, the expansion Martin Coal Plant, and other nearby sources was analyzed. This information is provided in Section 10.1 of the SCA.

The resulting analysis is as follows, indicating that the combined impact is well below federal and state air quality standards.

Pollutant	Averaging Period	Total Impact ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	FAAQS ($\mu g/m^3$)
SO_2	3-Hour	243	1300	1300
	24-Hour	61.1	365	260
	Annual	8.18	80	60
NO_2	Annual	11.5	100	100
PM[a]	24-Hour	42.3	150	150
	Annual	13.56	50	50
CO	1-Hour	8097.2	40,000	40,000
	8-Hour	5878.9	10,000	10,000

[a]Stack and fugitive emissions combined.

TRAFFIC

A traffic analysis was performed using existing traffic levels, projections for the FPL Martin Coal Plant, and projections for the ICP. The ICP will contribute 80 employees on a long-term basis, spread over three shifts a day. The 1994 analysis (covering the construction period for the ICP) demonstrates that State Road 710 will maintain Level-of-Service C or D during peak hours. Please see the response to FDOT Question 1 for additional details.

COAL TRAIN

An analysis of coal-train traffic impacts was conducted to determine the cumulative effect of adding the FPL Martin Coal Plant's rail traffic, along with the proposed ICP rail traffic, to existing background rail traffic levels. The analysis found that the combination of existing maximum train traffic and the Martin plant on the overland CSX route would generate 18.5 trains per day. The proposed ICP would add 0.86 train trips per day. Total traffic would thus be 19.36 train trips/day. The ICP contribution to rail traffic levels and waiting times would be very minor.

The ICP trains will come into, and leave the site, from the north and northwest. There will be no impacts on Indiantown road crossings.

The following analysis provides details.

Introduction

The estimated maximum coal burning rate for the ICP is 145 tons per hour, which is equivalent to 3,480 tons per day, or 24,360 tons per week. Assuming the capacity of rail cars is 95 tons each with an average of 90 cars per train, operation of the facility will require approximately three 86-car trains per week (6 train trips per week including out-shipment). Trains will arrive and depart around the clock, 7 days per week to facilitate loading and unloading and to minimize demurrage. For the purpose of this analysis, 0.86 train trip daily was used. All coal will be transported overland directly from coal fields in Appalachia via CSX Railroad. This route will take the trains through Jacksonville, Orlando, and Okeechobee to the plant site. Table DCA3-1 (attached) shows an inventory, by county, of the number of at-grade railroad crossings for the overland CSX route and presents the average crossings per mile on each segment.

Methodology

Two criteria were used to evaluate the traffic impact of railroad transportation:

- Magnitude of existing and proposed train traffic.
- Additional traffic delay caused by coal trains at railroad grade crossings.

As requested, the FPL coal-train traffic was also included in this analysis, even though Phases 1 through 3 of the Coal Gasification Combined Cycle Plant are currently proposed to be in operation in 1997, which is later than the buildout year (1995) of the proposed ICP project.

At buildout and full operation of all three phases of the FPL Coal Gasification Combined Cycle Plant, the 1,600 MW Martin Expansion will require up to 5.5 million tons of coal per year. The coal transportation routes have not been confirmed at this time. However, FPL staff indicated that the most probable scenario would be transporting 50 percent of the coal by the overland CSX routes and transporting the remaining 50 percent of the coal by either an east coast or west coast port facility. The estimated FPL coal-train traffic is approximately 590 90-car train loads per year, or 11.4 trains per week (22.8 train trips per week including out-shipment). Fifty percent (11.4 train trips per week) of the train traffic would impact the overland CSX route with the aforementioned most probable scenario. For purposes of this analysis, 1.5 total train trips daily was used for the FPL Martin Expansion coal-train traffic impact.

Train Volume Increase

It is anticipated that at full operation of the Indiantown Cogeneration power plant, an average of 0.43 86-car trains (0.86 train trips) daily will bring coal to the plant and possibly out-ship slag byproducts. Based on information provided by CSX Railroad, the existing maximum train traffic on the overland CSX route is 17 trains per day. Therefore, the total of existing and the proposed project's train traffic would be 17.86 train trips per day. When the FPL Coal Gasification Combined Cycle Plant comes on line, the total of existing, the proposed project, and the FPL train traffic would be 19.36 train trips per day.

Traffic Delay Increase

The following calculation for delay was performed with existing train volumes plus approved FPL train volumes and the project's proposed train volumes. This information was used to estimate the magnitude of the increase in delay caused by the proposed project:

$$D = NC * ANT * ACT * AWT$$

where

D = Total delay in vehicle-hour per day
NC = Total number of at-grade crossings
ANT = Average daily train volume
ACT = Average traffic on crossing roadways per crossing event
AWT = Average waiting time for the traffic stopped by the train

The components of the equation are described as follows:

- Total number of at-grade crossings (NC) - Latest available railroad crossing locator maps were obtained from Florida Department of Transportation district offices to identify the number of at-grade crossings along each candidate railroad line. Table DCA3-1 shows the summary of crossing numbers. Only those crossings with crossing numbers were counted.

- Average daily train volume (ANT) - The average daily train volume as discussed in the preceding "Train Volume Increase" section.

- Average traffic on crossing roadways per crossing event (ACT) - Ten consecutive sample crossings were selected from both an urban area and a rural area along the overland CSX route. Average daily traffic counts for selected samples were obtained from the Rail-Highway Crossing Inventory by Transportation Statistics Office of Florida Department of Transportation. From the selected samples, the average daily traffic on crossing roadways is 4,362 vehicles per day in the urban area and 299 vehicles per day in the rural area. The average daily traffic on crossing roadways is divided by the average gate-closing periods during 1 day to calculate traffic delays for an average crossing event. Delay was calculated separately for urban area and rural area, using the average daily traffic from selected samples.

- Average waiting time for the traffic stopped by the train (AWT) - Actual arrival times were not measured for this analysis. We have assumed an average waiting time of half of the average gate-closing time, based on a uniform distribution of the vehicles arriving during the crossing. The average gate-closing time is calculated as follows:

  - Average Gate-Closing Time = Advance warning time (30 seconds) plus average train crossing time plus a lag time (10 seconds) for gate opening.

  - Average Train-Crossing Time = (# of cars x length of each car) divided by average running speed.

For the purpose of calculating average train-crossing time, a review of all travel speed information was made. Based on available data, average travel speeds of 35 mph in urban areas and 45 mph in rural areas were chosen.

Table DCA3-2 summarizes the train traffic impacts at the at-grade railroad crossings for existing traffic levels, the full-capacity of the FPL project, and the proposed project. "Average Daily Vehicular Delay Per Vehicle" is the total daily vehicular delay caused during at-grade railroad crossing gate-closing time divided

by the average daily traffic on the crossing highways. "Average Daily Vehicular Delay Per Crossing" is the total daily vehicular delay caused during gate-closing time at each at-grade railroad crossing. "Average Daily Number of Vehicles Delayed" represents an average daily number of vehicles that will be delayed at the at-grade railroad crossings during the gate-closing time along the overland CSX route.

No standards or objectives have been set for rail traffic levels or waiting times. The ICP contribution to these two measures would be very minor.

GROUNDWATER

The ICP's only use of groundwater is as a backup source of cooling water approximately 5 percent of the time. We are working closely with SFWMD to assess the impacts of withdrawals, including any cumulative impacts. The impact of withdrawal by the Indiantown Project on surrounding users is discussed in SCA Section 5.3.2 and will be further addressed following an Aquifer Pump Test to be conducted at the site within the next 3 months. Please see responses to SFWMD Questions 9 and 43 for further information.

TABLE DCA3-1
INVENTORY OF AT-GRADE CROSSINGS
(CSX: Appalachia-Jacksonville-Orlando-Okeechobee-Site)

County	No. of At-Grade Intersection Crossings	Crossings Per Mile
Martin	1	0.10
Okeechobee	15	0.58
Highlands	31	0.84
Polk	63	1.21
Osceola	33	2.36
Orange	87	3.95
Seminole	21	1.31
Volusia	51	1.28
Putnam	57	1.46
Clay	38	1.36
Duval	82	2.73
Nassau	36	2.77
Total	515	1.57

TABLE DCA3-2. Existing, Approved, and Proposed Train Traffic Impact At-Grade Railroad Crossings Overland CSX Route

(CSX: Appalachia-Jacksonville-Orlando-Okeechobee-Site)

	Average Daily Vehicular Delay Per Vehicle (seconds)		Average Daily Vehicular Delay Per Crossing (vehicles-minute)		Average Daily Number of Vehicles Delayed (vehicles)	
Type	Urban	Rural	Urban	Rural	Urban	Rural
Existing	2.21	1.42	42.50	34.00	33,090	1,820
Approved FPL	0.20	0.13	3.75	3.00	2,910	160
Proposed Project	0.11	0.07	2.15	1.72	1,670	90
Existing + FPL	2.41	1.55	46.25	37.00	36,000	1,980
Existing + Project	2.32	1.49	44.65	35.72	34,760	1,910
Existing + FPL + Project	2.52	1.62	48.40	38.72	37,670	2,070

QUESTION 4

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

Section 4.6 of the SCA does not present data for the impact of power plant construction on noise levels along the perimeter of the site and at the nearest residences, as is done in Section 4.7 for the impact of power plant operation. Please provide information on construction noise levels.

RESPONSE

The proposed project will entail construction of the plant and construction of a 20-mile-long cooling water pipeline along State Road 710. Noise levels and potential impacts of both elements are discussed in the following paragraphs. Except for short-term, sporadic site construction activities which will be perceptible at the nearest residence, noise levels will be insignificant. The analysis suggests measures to minimize construction noise impacts.

Plant Construction

Conventional construction techniques will be used for this project. Project construction consists of four general phases, namely:

1. Site Preparation and Foundations
2. Equipment and Building Erection
3. Electrical and Mechanical Installation
4. Check-out and Startup Procedures

Phases 1 and 2 will produce the highest site construction noise levels. The predominant sources of noise during these phases are pile driving operations and diesel powered equipment. Temporary intrusive construction noise levels will decrease as the project progresses to later quieter activities.

The primary land uses in the area surrounding the proposed Indiantown plant construction site are industrial and agricultural. The nearest housing development, Booker Park, is located approximately 1.4 miles from the site, with approximately six scattered residences between Booker Park and the plant. The closest residence is located approximately 3,500 feet southeast of the plant on West Farm Road.

Maximum instantaneous or peak sound levels for construction equipment and processes at 50 feet, and at the closest residence at 3,500 feet, have been estimated and are shown in Table DCA4-1.

The noise levels displayed in Table DCA4-1 are maximum instantaneous values or peak values. In practice, equipment does not operate at these peak values except for a relatively small percentage of time during a work shift. Consequently, the

levels shown at the nearest residence represent the worst case of intrusive noise that can occur for short periods of time.

The existing background sound levels at the nearest residence have been measured with a minimum value of 34 dBA recorded during early morning calm and still wind conditions. A more typical range of 38 to 42 dBA occurs during daytime hours. These levels correspond to those typically found in rural and very quiet suburban residential areas. A new noise source, intermittent in nature such as peak construction noises, introduced against this quiet background, could be intrusive and annoying if the level exceeds the background by 15 dBA or more.

A comparison of the expected construction noise sources with existing background levels indicates that only the three loudest sources may possibly be intrusive and annoying to the closest residence. The worst case, steam blow-outs, only occur for short durations (1 to 15 minutes) and infrequently during the latter test phase of construction, for approximately 2 weeks. Because of the relatively large buffer distance of 3,500 feet, most of the other construction activity noise levels are not expected to be significant at the closest residence.

Noise Abatement Measures--Plant Construction

The following measures are planned to minimize construction noise impact:

1. All obvious "loud" construction activities such as jackhammers, pile drivers, and steam blow-outs, etc., will be restricted to daytime hours of 7 am to 10 pm, except in cases of emergency.

2. The closest residences to the plant will be notified in advance of all steam or air blow-outs.

3. All diesel powered equipment will be inspected to ensure that mufflers are in good working order, and all defective mufflers will be replaced immediately.

Pipeline Construction

The applicant proposes to construct a 19-mile-long pipeline to supply plant cooling water parallel to State Road 710 from Taylor Creek/Nubbin Slough, within the CSX rail right-of-way, to the plant site. Construction will consist of backhoe digging and laying of pipe. Generated construction noise would not be materially different from ordinary maintenance of sewer and water services.

There are a few adjacent scattered residences along the route, but no other noise sensitive receptors such as schools or churches. There are no residences within a mile of the pumphouse construction site at the pipeline start.

Based on the minimal density of sensitive receptors, and the relatively low noise associated with this activity, no impact is expected for the pipeline construction.

TABLE DCA4-1. Maximum Instantaneous Noise Levels, L Max, dBA for Equipment and Processes Used for Power Plant Construction

	At 50 Feet	At 3,500 Feet
Steam Blow-outs, 4"-8" pipe diameter	131	89
Pile Driving, 20,000-32,000 ft-lb/blow	104	62
Warning Horns	100	58
Dozers, up to 700 hp	90	48
Sand Blasting	87	45
Trucks, up to 400 hp	87	45
Excavators, up to 3 CY	86	44
Graders, up to 16-foot blade	86	44
Tractor Shovels, up to 5 CY	86	44
Chain Saws, gasoline	85	43
Mobile Cranes, up to 75 ton	85	43
Backhoe, 1.5 CY	84	42
Trucks, up to 200 hp	84	42
Concrete Batch Plants	83	41
Jack Hammers, unquieted	82	40
Portable Air Compressors, up to 375 hp	82	40
Portable Generators, up to 50 kW	81	39
Steel Rollers, up to 11 ton	80	38
Welding	73	31

Sources:
1. U.S. Environmental Protection Agency, EPA.
2. Barnes et al., "Power Plant Construction Noise Guide," Empire State Electric Energy Research Corporation, May 1977.

QUESTION 5

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

Page 2.3.6-32 of the SCA states that an Asiatic clam known to be a biofouling organism is present in Taylor Creek, the proposed source of cooling water. Will the project's proposed antifouling measures control this organism or will additional measures be needed?

RESPONSE

The water intake structure at Taylor Creek (L63 N) is designed to protect fish and larvae from entrapment and impingement, without further measures. (See Exhibits OC4-1 and OC4-2 in response to Okeechobee County Question 4 for illustrations of the intake structure.) Water will be withdrawn with a velocity of less than 0.50 fps through cylindrical wedge wire screens. The spacing between the wires is approximately 1 mm (0.04 inch). Any debris or biofouling, including the Asiatic clam, will be removed from the screens with a compressed air backwash system incorporated into the design. In addition, the screens will be periodically inspected and cleaned manually, if needed, to remove encrustation or other deposits not removed by the air backwash.

Based on the proposed design and long-standing experience in the operation and maintenance of wedge wire screens, no anti-fouling agents will be required at the project intake at Taylor Creek.

QUESTION 6

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

Are any of the solid wastes produced by the project suitable for recycling?

RESPONSE

Yes, the filter cake, bottom ash, and spray-dryer byproduct all have potential recycled value.

Wastewater filter cake

During the water treatment process, suspended and dissolved solids (containing some phosphorus and nitrates) will be removed. This material has potential agricultural use, and can be used in the groves or other land applications in the area. Preliminary discussions with Caulkins Citrus representatives have indicated that they may be able to use the material in their groves. Other potential customers for this material are being investigated.

Bottom Ash

Bottom ash is a saleable product which is used in asphalt plants. The intention is to market the bottom ash from the project to local plants.

Fly Ash

Fly ash from coal fired units has traditionally been used in cement making, road base, and soil stabilization applications. With the changing air pollution laws requiring SO_2 control, scrubbers have been added to the units. This introduces lime and reaction products into the fly ash system. Some research and testing has been done using fly ash and lime mixture for addition to cement and road base applications. These potential uses are being investigated, and there is substantial monetary incentive to reuse as much of this material as possible. Provisions have been made to haul fly ash from the site not only by rail, but also by truck, in the event a local market can be found for the ash.

Recycling of the fly ash is being strongly pursued, and may include several applications.

QUESTION 7

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

Page 3.3.3-1 of the SCA describes the fuel oil transfer and storage system. Does it include a liner under the containment area?

RESPONSE

The fuel oil storage dike will be lined, and transfer pumps will be located within a curbed area. The containment area will be designed and engineered to meet the requirements of DER 17-761, Stationary Aboveground Storage Tank Systems. The containment area will be operated according to the Best Management Practices (BMP) plan prepared for the plant.

QUESTION 8

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

Is the main boiler sized to provide more than 100 percent of process steam needs of the Caulkins Citrus plant and, if so, why?

RESPONSE

Yes, the main boiler is sized to provide both up to 225,000 lb/hr of process steam to Caulkins and steam to generate up to 330 MWe of electricity to FPL. To meet these demands, the main boiler is sized to produce approximately 2,500,000 lb/hr of steam.

QUESTION 9

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

According to page 3.5.3-1 the Indiantown Company's water service capacity is 1.3 MGD compared to the average daily flow of 0.67 MGD. Please provide the peak daily flow.

RESPONSE

The Indiantown Company's water service peak daily capacity is 0.865 MGD for potable water.

QUESTION 10

Source: February 20, 1991, Letter from J. Thomas Beck to H. Oven

Please describe the impact of cooling tower salt drift on the quality of water in the shallow aquifer.

RESPONSE

In the area within a 100-meter radius of the cooling tower, where salt deposition will be highest, surface water runoff will be directed to the lined stormwater management basin immediately south of the cooling tower. Water collecting in this basin will be treated and used for plant cooling and will not enter the shallow groundwater system.

The maximum potential release of salt to the shallow groundwater system was determined by dividing the flux of salt deposited over a given area by the quantity of precipitation that recharges the shallow groundwater system within that area.

Groundwater recharge, computed as the difference between precipitation and evapotranspiration, averages 5.5 inches (14 centimeters) per year. This is based on an average precipitation rate of 48 inches per year and an average evapotranspiration rate of 42.5 inches per year (see Section 2.3.3 of the SCA). The computation assumes that direct runoff is negligible.

Dissolving the entire mass of salt deposited between a radius of 100 and 150 meters around the cooling tower into the recharge water would result in a maximum potential increase in the total dissolved solids (TDS) concentration of the recharge water in that area of 240 milligrams per liter (mg/l). Likewise, the maximum potential increase in TDS in the recharge water to the shallow water table between a radius of 100 and 250 meters around the cooling tower would average 100 mg/l and between a 100 and 1,000-meter radius it would average 10 mg/l.

The TDS concentration measured in onsite monitoring wells screened in the shallow aquifer ranges from 168 to 492 mg/l (see Table 2.3.2-3 in the SCA). Any significant increase in these values will occur only within several hundred meters of the cooling tower. As the impacted groundwater moves away from the site, the TDS concentration will decrease due to mixing with unaffected groundwater and due to dilution by unaffected recharge water. Therefore, the effect on surrounding users of the Surficial aquifer is expected to be negligible, especially as drinking water is obtained from lower levels of the Surficial aquifer. These lower levels should not be affected by the salt drift, due to the presence of intervening confining layers within the Surficial aquifer.

INDIANTOWN COGENERATION PROJECT

SITE CERTIFICATION APPLICATION

RESPONSES TO

SUFFICIENCY COMMENTS BY

THE FLORIDA GAME AND FRESH WATER FISH COMMISSION

April 9, 1991

QUESTION 1

Source: February 14, 1991, Letter from B. J. Hartman to H. Oven

It is apparent that the applicant has expended some effort to research records of wildlife occurrences in the area and has searched the literature for information on what species would be expected to utilize the habitats on and surrounding the site; however, the level of effort put into the site surveys specifically for wildlife is not as clear. Indeed, Fig. 2.3.6-1 shows only one upland and one wet prairie wildlife transect, each in the northern half of the site. Our concern is that a complete wildlife survey of the site was not performed on the basis of the expectations generated from the literature review and existing nesting records, and that as a result, some listed species that may be present were overlooked. For example, red-cockaded woodpeckers (federally listed as endangered and state-listed as threatened) were deemed unlikely to be present because the condition of the pine flatwoods does not represent classical habitat, yet red-cockaded woodpeckers nest in atypical habitat in the nearby J. W. Corbett Wildlife Management Area. Also, while the GFC has not been construed as a census of every nest throughout the state. Finally, Florida sandhill cranes (threatened), another species that the application listed as unlikely to nest on the site, frequently nest in maidencane/pickerelweed-dominated wetlands, and wet prairie no. 1 is described by Table 2.3.5-3 as having a relatively high frequency of both plant species. Since the application only describes the plant communities of two of the seven wet prairies, it is possible that the other wet prairies may also contain similar plant associations.

Accordingly, please provide a more complete description of the site surveys for wildlife and a brief description of the other five wet prairies. Include on a map (scale 1" = 400') the locations of all transects, traps, and wildlife and wildlife sign observations, and provide information on the time of day and month that surveys were done, how many work-hours were put into the wildlife survey, and whether searches were made for nests in the tree canopies, wet prairies, and elsewhere on the site. Of particular interest is whether surveys were performed for red-cockaded woodpeckers, bald eagle nests, and Florida sandhill crane nests. If none of these specific surveys have been performed, then we request that they be done at this point, particularly since Florida sandhill cranes would be nesting during the winter months.

RESPONSE

The assessment of biological and ecological conditions of the ICP project site and adjoining areas was based on a systematic and comprehensive baseline investigation consisting of a literature survey, agency contacts, and seasonal field studies complete with aerial and ground surveys. The type of information gathered was designed to verify the occurrence, or establish the probability of occurrence, of the resident biota and specific species including 4 mammal, 45 bird, 10 reptile and amphibian, 2 fish, and 5 invertebrate species identified as important species by Florida Game & Fresh Water Fish Commission (FGFWFC), Treasure Coast Regional Planning Council (TCRPC), U.S. Fish and Wildlife Service (USFWS), SFWMD, and other agencies. These species are discussed individually in Section 2.3.6.1 of the SCA.

Task 1 was a literature survey to review the scientific and general literature, technical reports, life history studies, ecological studies, and distribution maps. Particular attention was paid to the extensive database collected at the nearby Florida Power & Light Company (FPL) Martin site.

Task 2 included contacts with agencies to update the literature information by reviewing the agency files, including updated distribution maps that enabled incorporation of species data through 1990. Local issues and concerns were reviewed with each agency. During these contacts, the probability of occurrence of particular species within the project site area was reviewed.

Task 3 consisted of a series of ground surveys and two aerial surveys conducted for licensing of the adjoining FPL transmission line corridor. These surveys served primarily to characterize habitats, inventory species, and search for specific resources such as wading bird and red-cockaded woodpecker colonies, eagle nests, sandhill crane nests, scrub and sandhill habitats, wetlands, and high quality feeding and/or roosting areas for other important species. During these surveys, the site was examined for existing environmental and manmade stresses that could diminish the quality and suitability of wildlife habitats.

Ecological/biological surveys of the ICP project site were conducted on May 8, May 22 and 23, June 5, July 23 through 28, August 2, October 3 and 4, September 25, November 2, and December 13, 1990; and ecology staff members spent approximately 168 manhours onsite conducting inventories or assessing wetlands and other habitats.

The biological assessment of the site included quantitative sampling consisting of a small-mammal trapping program conducted along three transects shown in SCA Figure 2.3.6-1. Each transect was approximately 1,000 feet in length and included 25 trap stations spaced approximately 40 to 50 feet apart. Each station consisted of two Sherman live traps operated for a total of 600 trap nights. The study's breeding bird surveys were also conducted along these flagged transects.

The sampling transects were established to represent each of the three onsite wildlife habitats including marsh, pine flatwoods, and cut-over pine flatwoods. The marsh transect crossed the entire wetland No. 4 and was located to the south of the pine flatwood transect. The cut-over flatwoods transect was located on the northeastern portion of the site in nonforested habitat densely covered by saw palmetto, tar flower, and other shrub and herbaceous species. The transect locations were selected on the basis of representative habitat and sensitivity to potential impacts from future site development.

In addition to avian surveys along the transects and throughout the site, specific nest surveys were conducted for southern bald eagle, red-cockaded woodpecker, and Florida sandhill crane nests or suitable nesting habitat. Eagle and red-cockaded woodpecker searches consisted of a ground inspection of mature pines across the entire 222.8-acre site. Sandhill crane searches included surveys of all onsite wetlands to assess suitability, i.e., suitable hydrology and vegetation. No active or abandoned red-cockaded woodpecker nest trees or colony sites were found and, probably as a direct result of the long-term drought and historical changes to the site's drainage, the onsite wetlands were too dry for sandhill crane nesting. No eagle nests were located on or in the vicinity of the ICP site. The eagle and sandhill crane habitat assessments were conducted throughout the year. The nearest eagle nests are located at Jonathan Dickerson State Park to the east, at Barley Barber Swamp, and at another site several miles north of Barley Barber Swamp.

Mr. John Wiese (ECT) provided a special tour of the ICP project site to Ms. Mary Ann Nelson, FGFWFC, on February 11, 1991. The purpose of this site visit was to familiarize Ms. Nelson with onsite wildlife habitats, particularly wetlands; with existing stresses and impact (e.g., wildfires and controlled burning, existing wastewater discharge ditch); and with the site's suitability for any of the 61 important species identified as occurring in the regional area.

QUESTION 2

Source: February 14, 1991, Letter from B. J. Hartman to H. Oven

The importance of periodic fires has been well documented in maintaining the habitat value of pine flatwoods. Will prescribed burns be incorporated into the preserve management plan?

RESPONSE

Virtually the entire site was control-burned in 1990-1991. Prescribed burning or mowing of the upland pine flatwood habitats will be incorporated into the preserve management plan. The frequency of such measures will be established with representatives of FGFWFC and the Forest Service following site development.

QUESTION 3

Source: February 14, 1991, Letter from B. J. Hartman to H. Oven

During a site visit, Mr. John Wiese (Environmental Consulting & Technology) indicated that the Crane-Bridge-Plumosus 230-kV transmission line may ultimately be routed through a portion of the property. How might this affect the design of the preserve?

RESPONSE

FPL's Crane-Bridge-Plumosus 230 kV transmission line right-of-way is not located in the vicinity of the ICP site. The location of the proposed FPL 500 kV Levee-Midway transmission line right-of-way, which adjoins the eastern boundary of the ICP site, is shown in the revised Site Plan, Drawing COA-0001, included in the Appendix. The ICP property boundary has been reconfigured to remain entirely outside the right-of-way for the proposed FPL Levee-Midway transmission line. As such, development of the line should not affect either the design or the wildlife resources of the preserve areas.

QUESTION 4

Source: February 14, 1991, Letter from B. J. Hartman to H. Oven

Please provide a clear topographic map of the site with drainage patterns, both pre- and post-development. Figure 3.8.2-1 (Preliminary Drainage Plan) is difficult to read, but it appears that there is a dotted connection between wet prairie No. 4 and the proposed cooling pond. Does this represent an overflow pathway? Under what conditions might the 25-acre cooling pond be expected to overflow (e.g., from heavy rainstorms), and what would be the receiving area(s)?

RESPONSE

Site drainage is shown on drawing COL-0101 included in the Appendix. Pre- and post-drainage patterns are shown in the response to SFWMD Question 25. The site layout was designed to maintain existing drainage patterns in or around the site. The location of the cooling water storage pond with respect to the adjacent wetlands maintains pre-existing flows to wetlands. Based on the selected layout, the pond does not affect either the inflow or the outflow from wetland No. 4, since there is no connection between them.

The cooling water storage pond is designed to store water pumped from Taylor Creek/Nubbin Slough (TC/NS) for cooling tower makeup and process water during short periods of time when water levels in TC/NS are too low for withdrawals.

A broad crest type emergency spillway with a crest elevation of 37.75 feet and a width of 12 feet is provided to discharge any excess water above El. 37.75 feet during periods of prolonged precipitation. The normal water level in the pond will be maintained at El. 37.5 feet, which is 0.25 foot below the spillway crest by controlling the pump operation at the TC/NS water pump station. During the wet season (May to August), the pond operating water level may be lowered to El. 37 feet to accommodate heavy rainfall and to prevent spill from the emergency spillway. Therefore, a discharge from the emergency spillway is not normally anticipated. During a 25-year, 72-hour design storm, a spill with a maximum discharge of 9 cfs over the emergency spillway would occur if the attempt to lower the pond water level by controlling the pumping rate from TC/NS was not successful. Similarly, for storms with a higher frequency, a spill over the spillway could occur if the water level was not lowered.

Any overflow from the pond during storms will be conveyed by a drain at the toe of the pond embankment. About 0.1 to 0.2 cfs of the flow from the toe drain will be conveyed to wetland No. 3 to maintain preconstruction flows. Any remaining flow will be carried by the drain and discharged to the existing onsite drainage ditch near the southern boundary of the site.

QUESTION 5

Source: February 14, 1991, Letter from B. J. Hartman to H. Oven

Although the effects of emissions from the proposed facility on vegetation have been discussed, the possible effects on water quality in Lake Okeechobee have not, nor have the potential of the combined emissions from the existing FPL plant, the proposed FPL expansion, and the Indiantown Cogeneration plant been reviewed. Please expand on what the anticipated combined effects would be both on vegetation and on Lake Okeechobee.

RESPONSE

Vegetation

Tables GFC5-1 through GFC5-4 present the modeled emissions data for the proposed ICP and the combined data for ICP, the existing FPL facility, and the proposed FPL facility. SO_2 and NO_X are the only emissions released at PSD significance levels, and thus the only ones considered in this response. All data are presumed to be worst case (i.e., No. 2 distillate fuel oil firing at 100 percent load at 40 °F ambient temperature). For sulphur dioxide (SO_2) (Table GFC-1), the maximum combined depositional rate is approximately 407.8, 97.8, and 11.3 μ/m^3 for 3-hour, 24-hour, and annual mean concentrations, respectively. Tables 5.6.1-17 and 5.6.1-18 in the SCA indicate that SO_2 levels still fall well below the minimum injury threshold for 3-hour exposures to sensitive plants.

For nitrogen dioxide (NO_2) (Table GFC5-2), the maximum predicted annual mean is 15.75 $\mu g/m^3$ for the combined sources. Using the available literature value (Taylor and MaClean, 1970; Thompson et al, 1970) of a minimum injury threshold of 470 $\mu g/m^2$ in an 8-month period and interpolating the predicted depositional rate over an 8-month period, this rate continues to lie more than an order of magnitude below threshold (see Tables 5.6.1-19 and 5.6.1-20 in the SCA).

Lake Okeechobee

Lake Okeechobee is approximately 13 km from the proposed ICP site on an approximate 270° bearing (see Exhibit GFC5-1). The nearest relevant available data, which can be used in evaluating impacts to the lake, are from bearings of 270° and 280°. The predicted maximum combined SO_2 concentrations for annual, 24-hour, and 3-hour periods are 9.9, 76.8, and 391.8 $\mu g/m^3$ respectively (see Table GFC5-3). Table GFC5-4 predicts maximum annual mean NO_2 emissions of 3.15 $\mu g/m^3$ for combined sources. The point of these maximum predicted concentrations nearest the Lake is 10.5 km distance from the proposed ICP site; the other data points are 8 and 6 km, respectively. It is safe to assume that depositional rates will decrease at greater distances from the proposed ICP site. Given current available data, it is difficult to predict impacts of pollutants upon Lake Okeechobee in the absence of specific relevant and comparable basic research. However,

Table 5.6.1-13 in the SCA indicates that the combined 3-facility emissions data still fall well within the ambient air quality standards. Furthermore, the emissions data fall below those rates specified in the Prevention of Significant Deterioration of Air Quality (PSD) Class II standards which are applicable to Martin County.

Table GFC5-1

MODELED EMISSIONS DATA FOR ICP AND COMBINED SOURCES SO_2 LEVELS ON VEGETATION

AVERAGING PERIOD	YEAR		CONCENTRATION[1] ($\mu g/m^3$)	LOCATION[2]
Annual	82	ICP	1.09	330, 0.5
		Total[3]	11.3	300, 10.5
	83	ICP	0.81	320, 0.5
		Total	9.2	300, 10.0
	84	ICP	0.82	320, 0.5
		Total	8.0	280, 11.0
	85	ICP	0.80	280, 0.5
		Total	9.0	300, 10.0
	86	ICP	0.88	280, 0.5
		Total	9.9	280, 10.5
24-hour	82	ICP	6.5	310, 3.0
		Total	85.5	300, 9.5
	83	ICP	7.2	330, 0.5
		Total	76.8	270, 8.0
	84	ICP	7.0	350, 0.5
		Total	97.8	310, 9.0
	85	ICP	6.7	330, 0.5
		Total	84.0	290, 10.5
	86	ICP	6.1	320, 0.5
		Total	72.8	240, 1.0

Notes:

[1]Concentration = maximum for annual, 2nd maximum for 3- and 24-hour
[2]Location = direction (degrees, north as 0°), distance (km)
[3]Total = ICP + Existing FPL + Proposed FPL

Table GFC5-1 (Continued)

MODELED EMISSIONS DATA FOR ICP AND
COMBINED SOURCES SO_2 LEVELS ON VEGETATION

AVERAGING PERIOD	YEAR		CONCENTRATION[1] ($\mu g/m^3$)	LOCATION[2]
3-hour	82	ICP	20.5	300, 3.0
		Total[3]	379.1	290, 7.0
	83	ICP	21.5	310, 2.5
		Total	391.8	280, 6.0
	84	ICP	23.7	310, 2.0
		Total	330.7	310, 9.0
	85	ICP	20.8	270, 2.0
		Total	407.8	300, 6.5
	86	ICP	22.4	250, 1.5
		Total	332.4	290, 7.0

Notes:

[1]Concentration = maximum for annual, 2nd maximum for 3- and 24-hour
[2]Location = direction (degrees, north as 0°), distance (km)
[3]Total = ICP + Existing FPL + Proposed FPL

Table GFC5-2

MODELED EMISSIONS DATA FOR ICP AND COMBINED SOURCES NO_2 LEVELS ON VEGETATION

AVERAGING PERIOD	YEAR		CONCENTRATION[1] ($\mu g/m^3$)	LOCATION[2]
Annual	82	ICP	4.22	330, 0.5
		Total[3]	15.75	290, 6.0
	83	ICP	3.12	320, 0.5
		Total	11.92	290, 6.0
	84	ICP	3.17	320, 0.5
		Total	13.51	290, 6.0
	85	ICP	3.08	280, 0.5
		Total	12.00	290, 6.0
	86	ICP	3.37	280, 0.5
		Total	11.85	290, 6.0

Notes:

[1]Concentration = maximum for annual, 2nd maximum for 3- and 24-hour
[2]Location = direction (degrees, north as 0°), distance (km)
[3]Total = ICP + Existing FPL + Proposed FPL

Table GFC5-3

MODELED EMISSIONS DATA FOR ICP AND COMBINED SOURCES SO_2 LEVELS AT LAKE OKEECHOBEE

AVERAGING PERIOD	YEAR		CONCENTRATION[1] ($\mu g/m^3$)	LOCATION[2]
Annual	82	ICP	0.29	260, 11.0
		Total[3]	7.6	280, 13.0
	83	ICP	0.19	240, 11.0
		Total	5.4	280, 13.0
	84	ICP	0.34	260, 11.0
		Total	7.7	280, 13.0
	85	ICP	0.26	260, 11.0
		Total	8.1	280, 13.0
	86	ICP	0.28	260, 11.0
		Total	9.1	280, 13.0
24-hour	82	ICP	2.7	260, 11.0
		Total	56.6	250, 11.0
	83	ICP	2.4	240, 11.0
		Total	56.3	260, 12.5
	84	ICP	3.0	260, 11.0
		Total	53.0	280, 13.0
	85	ICP	2.2	240, 11.0
		Total	56.6	280, 13.0
	86	ICP	2.4	260, 11.0
		Total	57.3	260, 12.0

Notes:

[1]Concentration = maximum for annual, 2nd maximum for 3- and 24-hour
[2]Location = direction (degrees, north as 0°), distance (km)
[3]Total = ICP + Existing FPL + Proposed FPL

Table GFC5-3 (Continued)

MODELED EMISSIONS DATA FOR ICP AND
COMBINED SOURCES SO_2 LEVELS AT LAKE OKEECHOBEE

AVERAGING PERIOD	YEAR		CONCENTRATION[1] ($\mu g/m^3$)	LOCATION[2]
3-hour	82	ICP	6.8	260, 11.0
		Total[3]	201.4	280, 13.0
	83	ICP	6.8	280, 13.0
		Total	212.4	260, 11.0
	84	ICP	6.8	250, 12.0
		Total	192.7	280, 13.0
	85	ICP	6.3	280, 14.0
		Total	228.1	260, 11.5
	86	ICP	6.6	260, 11.0
		Total	196.2	260, 11.0

Notes:

[1]Concentration = maximum for annual, 2nd maximum for 3- and 24-hour
[2]Location = direction (degrees, north as 0°), distance (km)
[3]Total = ICP + Existing FPL + Proposed FPL

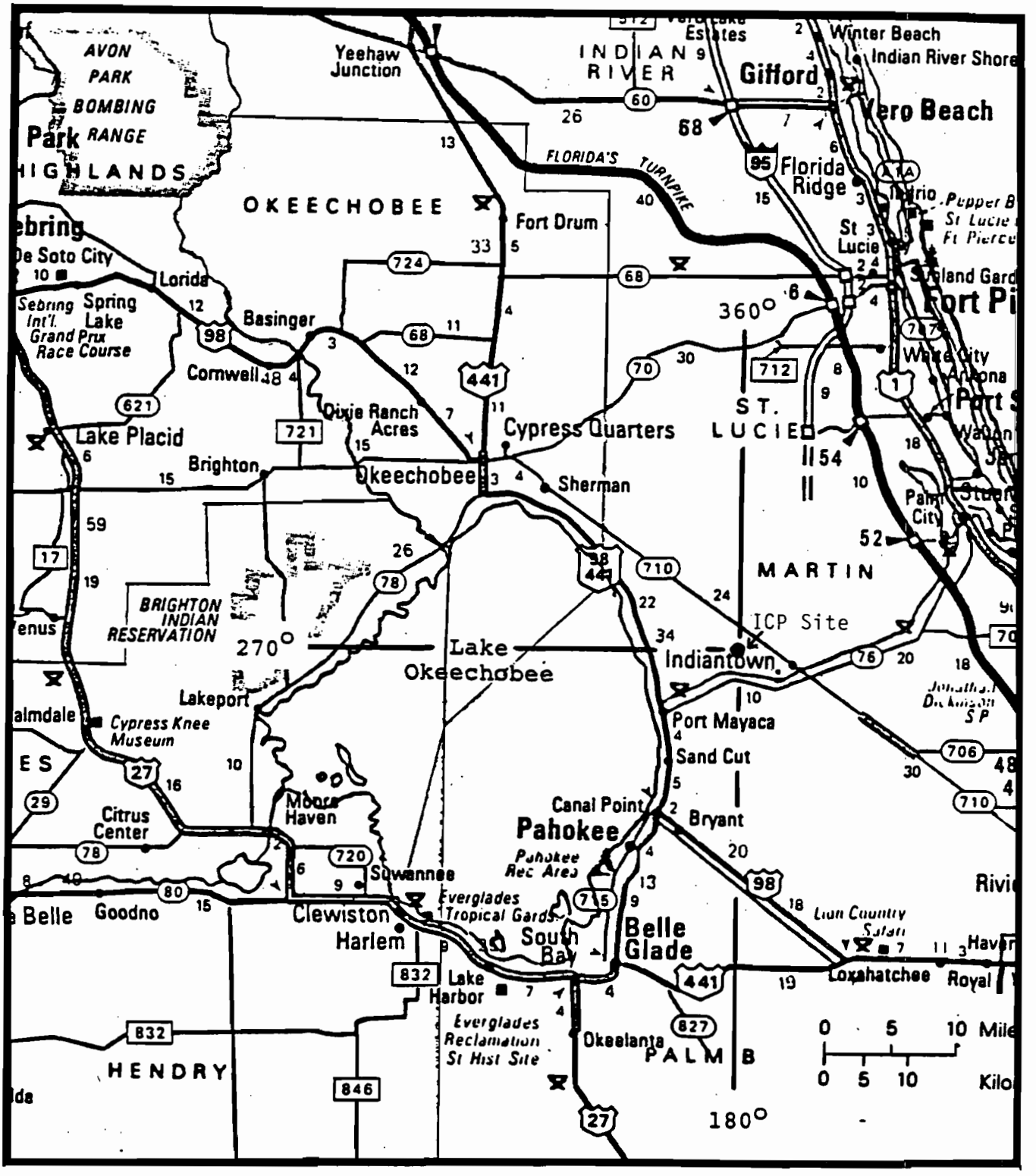
Table GFC5-4

MODELED EMISSIONS DATA FOR ICP AND
COMBINED SOURCES NO_2 LEVELS AT LAKE OKEECHOBEE

AVERAGING PERIOD	YEAR		CONCENTRATION[1] ($\mu g/m^3$)	LOCATION[2]
Annual	82	ICP	0.39	260, 11.0
		Total[3]	2.70	260, 11.0
	83	ICP	0.26	260, 11.0
		Total	2.69	260, 11.0
	84	ICP	0.45	260, 11.0
		Total	2.58	260, 11.0
	85	ICP	0.35	260, 11.0
		Total	2.87	260, 11.0
	86	ICP	0.37	260, 11.0
		Total	3.15	260, 11.0

Notes:

[1]Concentration = maximum for annual, 2nd maximum for 3- and 24-hour
[2]Location = direction (degrees, north as 0°), distance (km)
[3]Total = ICP + Existing FPL + Proposed FPL



Relative Location of the ICP Site to Lake Okeechobee

INDIANTOWN COGENERATION PROJECT

SITE CERTIFICATION APPLICATION

RESPONSES TO

SUFFICIENCY COMMENTS BY

FLORIDA DEPARTMENT OF TRANSPORTATION

April 9, 1991

QUESTION 1

Source: February 14, 1991, Letter from V. L. Whittier, Jr., to H. Oven

Traffic (AM, PM, and Daily) from the adjacent FP&L power plant expansion should be provided for the peak construction period (1994) and the project buildout (1995).

RESPONSE

Traffic from the recently approved FPL Power Plant Martin Expansion was added to the background traffic. Tables FDOT1-1 and FDOT1-2 summarize the daily, the AM peak hour and the PM peak hour link analysis for both the peak construction period (1994) and the project buildout (1995).

The FPL Power Plant Martin Expansion Phase I (Units 3 and 4) is scheduled to be completed in 1994 and would be operated by 150 employees. Construction for Phase II (Units 5 and 6) will not begin until late 1994 and early 1995. Therefore, the 150-operation-employee trip generation was added to the 1994 background traffic.

Since the ICP project's construction traffic would have minor impact during street peak hours, the 1994 construction traffic analysis examined the generator's peak hours and daily traffic. The 1994 link analysis with FPL expansion traffic indicates that State Road 710 will maintain Level-of-Service C or D during peak hours. (See Exhibit FDOT1-1.)

In the ICP's buildout year (the end of 1995), the FPL Power Plant Martin Expansion Phase I would be completed and be operated by 150 employees. In addition to Phase I operation, the construction of FPL Expansion Phase II would be in progress with 850 peak construction employees. The trip generation associated with the 150 operation employees and 850 construction employees was added to the 1995 background traffic. The 1995 link analysis also indicates that State Road 710 will maintain Level-of-Service C or D within the project's radius of influence.

20-Mar-91

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TABLE FDOT1-1

1994 CONSTRUCTION TRAFFIC ANALYSIS

ANNUAL AVERAGE DAILY TRAFFIC (AADT)

SEGMENT	NUMBER OF LANES	1990 EXISTING VOLUME	GROWTH FACTOR	FP&L TRAFFIC	1994 BACKGROUND TRAFFIC	PROJECT TRAFFIC	1994 TOTAL TRAFFIC	LEVEL OF SERVICE
STATE ROAD 710 NORTH OF PROJECT ENTRANCE	2L	6,053	5.6%	257	7,784	335	8,119	A
STATE ROAD 710 SOUTH OF PROJECT ENTRANCE	2L	6,053	5.6%	257	7,784	905	8,689	A

AM GENERATOR PEAK HOUR TRAFFIC ANALYSIS

SEGMENT	NUMBER OF LANES	1990 EXISTING VOLUME	GROWTH FACTOR	FP&L TRAFFIC	1994 BACKGROUND TRAFFIC	PROJECT TRAFFIC	1994 TOTAL TRAFFIC	LEVEL OF SERVICE
STATE ROAD 710 NORTH OF PROJECT ENTRANCE	2L	456	5.6%	68	635	162	797	C
STATE ROAD 710 SOUTH OF PROJECT ENTRANCE	2L	456	5.6%	68	635	438	1,073	D

PM GENERATOR PEAK HOUR TRAFFIC ANALYSIS

SEGMENT	NUMBER OF LANES	1990 EXISTING VOLUME	GROWTH FACTOR	FP&L TRAFFIC	1994 BACKGROUND TRAFFIC	PROJECT TRAFFIC	1994 TOTAL TRAFFIC	LEVEL OF SERVICE
STATE ROAD 710 NORTH OF PROJECT ENTRANCE	2L	330	5.6%	18	428	162	590	C
STATE ROAD 710 SOUTH OF PROJECT ENTRANCE	2L	330	5.6%	18	428	438	866	D

TABLE FDOT1-2

1995 BUILDOUT TRAFFIC ANALYSIS

ANNUAL AVERAGE DAILY TRAFFIC (AADT)

SEGMENT	NUMBER OF LANES	1990 EXISTING VOLUME	GROWTH FACTOR	FP&L TRAFFIC	1995 BACKGROUND TRAFFIC	PROJECT TRAFFIC	1995 TOTAL TRAFFIC	LEVEL OF SERVICE
STATE ROAD 710 NORTH OF PROJECT ENTRANCE	2L	6,053	5.6%	907	8,856	41	8,897	A
STATE ROAD 710 SOUTH OF PROJECT ENTRANCE	2L	6,053	5.6%	907	8,856	112	8,968	A

AM PEAK HOUR TRAFFIC ANALYSIS

SEGMENT	NUMBER OF LANES	1990 EXISTING VOLUME	GROWTH FACTOR	FP&L TRAFFIC	1995 BACKGROUND TRAFFIC	PROJECT TRAFFIC	1995 TOTAL TRAFFIC	LEVEL OF SERVICE
STATE ROAD 710 NORTH OF PROJECT ENTRANCE	2L	456	5.6%	332	931	12	943	D
STATE ROAD 710 SOUTH OF PROJECT ENTRANCE	2L	456	5.6%	332	931	34	965	D

PM PEAK HOUR TRAFFIC ANALYSIS

SEGMENT	NUMBER OF LANES	1990 EXISTING VOLUME	GROWTH FACTOR	FP&L TRAFFIC	1995 BACKGROUND TRAFFIC	PROJECT TRAFFIC	1995 TOTAL TRAFFIC	LEVEL OF SERVICE
STATE ROAD 710 NORTH OF PROJECT ENTRANCE	2L	472	5.6%	85	705	7	712	C
STATE ROAD 710 SOUTH OF PROJECT ENTRANCE	2L	472	5.6%	85	705	19	724	C

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... SR 710 NORTH OF PG&E BECHTEL PLANT
ANALYST..... LCL
TIME OF ANALYSIS..... AM GEN. PEAK HOUR
DATE OF ANALYSIS..... 3/20/1991
OTHER INFORMATION.... 1994 TOTAL TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	12
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.93
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	30

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.89
B	2.2	2	2.5	1	.96	.87
C	2.2	2	2.5	1	.96	.87
D	2	1.6	1.6	1	.96	.89
E	2	1.6	1.6	1	.96	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 797
ACTUAL FLOW RATE: 857

LOS	SERVICE FLOW RATE	V/C
A	287	.12
B	563	.24
C	914	.39
D	1485	.62
E	2395	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... SR 710 SOUTH OF PG&E BECHTEL PLANT
ANALYST..... LCL
TIME OF ANALYSIS..... AM GEN. PEAK HOUR
DATE OF ANALYSIS..... 3/20/1991
OTHER INFORMATION.... 1994 TOTAL TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	12
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.93
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	30

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.89
B	2.2	2	2.5	1	.96	.87
C	2.2	2	2.5	1	.96	.87
D	2	1.6	1.6	1	.96	.89
E	2	1.6	1.6	1	.96	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 1073
ACTUAL FLOW RATE: 1154

LOS	SERVICE FLOW RATE	V/C
A	288	.12
B	564	.24
C	916	.39
D	1488	.62
E	2400	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... SR 710 NORTH OF PG&E BECHTEL PLANT
ANALYST..... LCL
TIME OF ANALYSIS..... PM GEN. PEAK HOUR
DATE OF ANALYSIS..... 3/20/1991
OTHER INFORMATION.... 1994 TOTAL TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	12
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.93
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	30

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.89
B	2.2	2	2.5	1	.96	.87
C	2.2	2	2.5	1	.96	.87
D	2	1.6	1.6	1	.96	.89
E	2	1.6	1.6	1	.96	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 590
ACTUAL FLOW RATE: 634

LOS	SERVICE FLOW RATE	V/C
A	288	.12
B	564	.24
C	916	.39
D	1488	.62
E	2400	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... SR 710 SOUTH OF PG&E BECHTEL PLANT
ANALYST..... LCL
TIME OF ANALYSIS..... PM GEN. PEAK HOUR
DATE OF ANALYSIS..... 3/20/1991
OTHER INFORMATION.... 1994 TOTAL TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	12
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.93
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	30

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.89
B	2.2	2	2.5	1	.96	.87
C	2.2	2	2.5	1	.96	.87
D	2	1.6	1.6	1	.96	.89
E	2	1.6	1.6	1	.96	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 866
ACTUAL FLOW RATE: 931

LOS	SERVICE FLOW RATE	V/C
A	288	.12
B	564	.24
C	916	.39
D	1488	.62
E	2400	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... SR 710 NORTH OF PG&E BECHTEL PLANT
ANALYST..... LCL
TIME OF ANALYSIS..... AM PEAK HOUR
DATE OF ANALYSIS..... 3/20/1991
OTHER INFORMATION.... 1995 TOTAL TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	12
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.93
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	30

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.89
B	2.2	2	2.5	1	.96	.87
C	2.2	2	2.5	1	.96	.87
D	2	1.6	1.6	1	.96	.89
E	2	1.6	1.6	1	.96	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 943
ACTUAL FLOW RATE: 1014

LOS	SERVICE FLOW RATE	V/C
A	288	.12
B	564	.24
C	916	.39
D	1488	.62
E	2400	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... SR 710 SOUTH OF PG&E BECHTEL PLANT
ANALYST..... LCL
TIME OF ANALYSIS..... AM PEAK HOUR
DATE OF ANALYSIS..... 3/20/1991
OTHER INFORMATION.... 1995 TOTAL TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	12
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.93
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	30

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.89
B	2.2	2	2.5	1	.96	.87
C	2.2	2	2.5	1	.96	.87
D	2	1.6	1.6	1	.96	.89
E	2	1.6	1.6	1	.96	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 965
ACTUAL FLOW RATE: 1038

LOS	SERVICE FLOW RATE	V/C
A	288	.12
B	564	.24
C	916	.39
D	1488	.62
E	2400	1

LOS FOR GIVEN CONDITIONS: D

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... SR 710 NORTH OF PG&E BECHTEL PLANT
ANALYST..... LCL
TIME OF ANALYSIS..... PM PEAK HOUR
DATE OF ANALYSIS..... 3/20/1991
OTHER INFORMATION.... 1995 TOTAL TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	12
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.93
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	30

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.89
B	2.2	2	2.5	1	.96	.87
C	2.2	2	2.5	1	.96	.87
D	2	1.6	1.6	1	.96	.89
E	2	1.6	1.6	1	.96	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 712
ACTUAL FLOW RATE: 766

LOS	SERVICE FLOW RATE	V/C
A	288	.12
B	564	.24
C	916	.39
D	1488	.62
E	2400	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... SR 710 SOUTH OF PG&E BECHTEL PLANT
ANALYST..... LCL
TIME OF ANALYSIS..... PM PEAK HOUR
DATE OF ANALYSIS..... 3/20/1991
OTHER INFORMATION.... 1995 TOTAL TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	12
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.93
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	30

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.89
B	2.2	2	2.5	1	.96	.87
C	2.2	2	2.5	1	.96	.87
D	2	1.6	1.6	1	.96	.89
E	2	1.6	1.6	1	.96	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 724
ACTUAL FLOW RATE: 778

LOS	SERVICE FLOW RATE	V/C
A	288	.12
B	564	.24
C	916	.39
D	1488	.62
E	2400	1

LOS FOR GIVEN CONDITIONS: C

QUESTION 2

Source: February 14, 1991, Letter from V. L. Whittier, Jr., to H. Oven

Documentation of trip generation, trip distribution, and auto occupancy rates for construction and power plant employees should be provided.

RESPONSE

Trip Generation (Power Plant Employees)

As indicated in our report, the trip generation potential of the proposed project was determined by using the trip generation rates of the adjacent existing FPL power plant. According to the trip generation survey undertaken by Kimley-Horn and Associates, Inc., in 1989, the FPL power plant was operated by 204 employees per day with 85 percent of its employees working the day shift and 15 percent of its employees working the evening shift. Turning movement counts made at the existing FPL power plant entrance show a daily traffic of 479 trips (2.35 trips per employee) with 144 trips (0.71 trip per employee) during AM peak hour and 97 trips (0.475 trip per employee) during PM peak hour. The 144 AM peak-hour trips are associated with the 85-percent work force working the day shift and the 97 PM peak-hour trips are associated with the 100-percent work force working the day shift (going out) and evening shift (coming in).

On the other hand, the proposed project work shift plan has 70 percent (45 employees) working the day shift, 15 percent (10 employees) working the evening shift, and another 15 percent (10 employees) working the night shift. Therefore, the AM peak-hour project traffic would be generated by the 85-percent work force working the night shift (going out) and the day shift (coming in) and the PM peak-hour project traffic would be generated by the 85-percent work force working the day shift (going out) and the evening shift (coming in).

Table FDOT2-1 shows the adjustment of FPL peak-hour trip generation rates to be used for the proposed project.

TABLE FDOT2-1
PEAK HOUR TRIP GENERATION RATES

	FPL		PROJECT	
Category	Workforce	Trip Rate	Workforce	Adjusted Trip Rate
AM Generator Peak Hour	85%	0.71	85%	0.71
PM Generator Peak Hour	100%	0.475	85%	0.40

Trip Generation (Construction Employees)

The traffic generation potential of the construction workers was determined based on studies performed for FPL's recent application. It was anticipated that each worker would make one trip in the AM peak hour (coming to the site) and one trip in the PM peak hour (leaving the site). Although it is common that during the PM peak hour, the duration of workers leaving the site tends to spread over an hour due to workers staying over time or leaving prior to regular time. One trip per worker was used for the PM peak-hour trip generation rate to represent the "highest" possible traffic impact. Another 20-truck trip generation potential was added to the daily traffic to reflect the traffic impact from deliveries, services, and others. Two trips, in and out, per day were used for each truck.

Trip Distribution

Existing turning movement traffic counted at the adjacent existing FPL power plant was the basis for determining trip distribution for both the proposed power plant employees and the construction employees. The data collected in the field indicates a split of 27 percent of the site-generated traffic traveling northwest of the site and the remaining 73 percent of the traffic travelling southeast. It was assumed that the future traffic conditions would remain at the same split.

Auto Occupancy Rates

As mentioned in the previous section, the proposed power plant employee trip generation rates were developed based on the turning movement traffic counted at the adjacent existing FPL power plant which already reflects the car-pooling factor. Therefore, no further auto occupancy rate adjustment was made to the trip generation rates of the operation employees.

For the construction workers, since most of the employees will be commuting from the areas surrounding the site, we anticipate workers to car pool. From studies undertaken by FPL, two persons per vehicle is the auto occupancy rate for construction workers. However, the magnitude and the length of the peak period of the construction work force for the proposed project are considerably smaller compared with the FPL expansion. It was anticipated that the opportunity and desire of car-pooling would be less than the FPL project. Due to the lack of documentation for construction workers' ride-sharing, a 1-1/3 auto occupancy rate was selected using professional judgment, which is felt to be conservative.

QUESTION 3

Source: February 14, 1991, Letter from V. L. Whittier, Jr., to H. Oven

Geometries of the project driveway under existing and buildout conditions should be provided.

RESPONSE

Exhibits FDOT3-1 and FDOT3-2 are included to provide the existing and buildout dimensions.

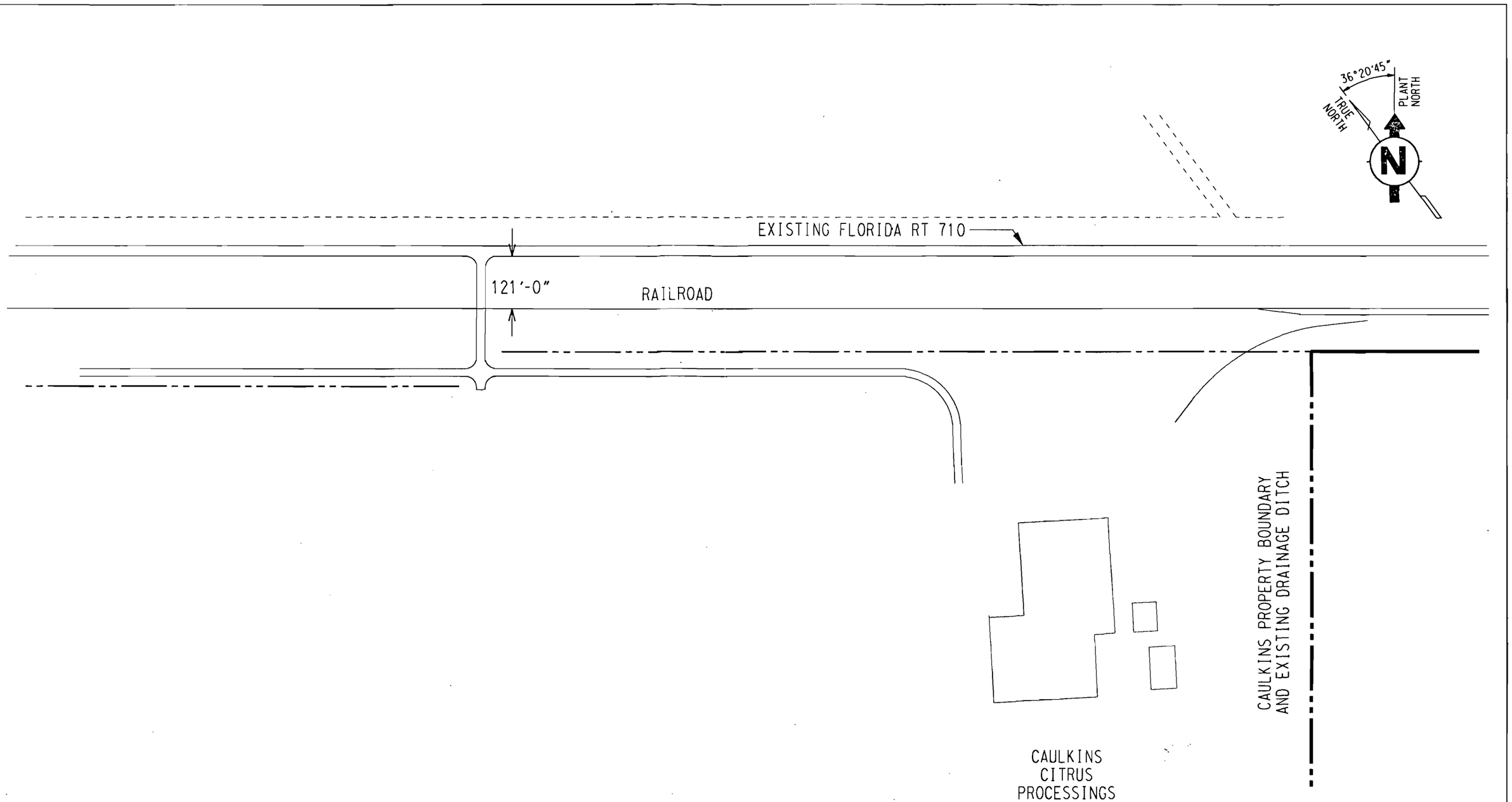
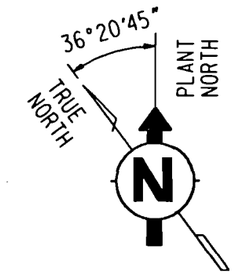


EXHIBIT FDOT 3-1
EXISTING ROADS



EXISTING FLORIDA RT 710

PROPOSED TURNING LANE (12'-0" WIDE)

121'-0"

RAILROAD

PROPOSED NEW SITE ENTRANCE ROAD

CAULKINS PROPERTY BOUNDARY AND EXISTING DRAINAGE DITCH

CAULKINS CITRUS PROCESSINGS

EXHIBIT FDOT 3-2
PROPOSED ROAD CHANGES FOR SITE ENTRANCE

C:\DGN\RWWROAD.DGN Apr. 02, 1991 12:16:39
Tuesday April 2 1991 12:17:33 *** RWWROAD.### ***

Tuesday April 2 1991 12:17:33 *** RWWROAD.### ***
Tuesday April 2 1991 12:17:33 *** RWWROAD.### ***
Tuesday April 2 1991 12:17:33 *

QUESTION 4

Source: February 14, 1991, Letter from V. L. Whittier, Jr., to H. Oven

An analysis of the potential fog impacts on SR 710, based on the combined impacts of the FP&L and proposed cogeneration power plant, should be provided.

RESPONSE

No fogging impact is expected on State Road 710 from the ICP cooling tower when operating alone or in combination with the FPL cooling pond. At its closest approach, State Road 710 is at least 750 meters to the northeast of the ICP site. As stated in Section 7.3.3 of the PSD Permit Application (Section 10.1.5 of the SCA), at 750 meters from the site the estimated plume height is approximately 150 meters above plant site grade. Since terrain surrounding the plant site is essentially flat, visibility on State Road 710 is not expected to be degraded by the formation of the elevated visible plume. In addition, the frequency of induced ground-level fogging during plume downwash conditions was provided in the PSD document. Results indicated that nearly all of the plume fogging events occurred within 300 meters of the cooling tower and that building-induced ground fog from the ICP cooling tower will not obstruct any traffic flow on State Road 710.

No cooling towers are proposed for the expanded FPL Martin Project. The existing Martin cooling pond has been proposed for Phases I-III of the FPL Martin plant expansion. As stated in Section 5.1.4 of the Martin Site Certification Application, the scheduled clearing of the vegetative growth from the cooling pond is expected to cause the operating temperature within the cooling pond to remain at or below existing ambient temperature. For this reason, no effects on local fog formation are expected to result with the addition of the proposed Martin units.

INDIANTOWN COGENERATION PROJECT

SITE CERTIFICATION APPLICATION

RESPONSES TO

SUFFICIENCY COMMENTS BY

THE TREASURE COAST REGIONAL PLANNING COUNCIL

April 9, 1991

QUESTION 1

Source: February 8, 1991, Letter from P. G. Merritt to H. Oven

Table 2.3.5-1 lists "periodic wildfires" along with cattle grazing, road construction, and drainage as principal sources of disturbance to pine and wet prairie habitats on site. As correctly noted on page 2.3.5-3, fire is a natural factor in the maintenance of pine flatwoods communities. Therefore, "periodic wildfires" should not be listed in Table 2.3.5-1 where it is implied that fire has some type of unnatural degrading effect on the native communities existing on site.

RESPONSE

We agree that periodic wildfires do help to maintain pine flatwood communities, and have incorporated prescribed burns or mowing into the preserve management plan. Table TCRPC1-1 (revised SCA Table 2.3.5-1) lists all disturbances to the vegetation community; periodic wildfires were removed from the list of degrading disturbances. Acreage numbers have been revised to reflect changes in project design.

Table TCRPC1-1 (Revised SCA Table 2.3.5-1)
SUMMARY OF VEGETATION COMMUNITIES AT THE INDIANTOWN COGENERATION PROJECT SITE, 1990

Vegetation Community Type*	Acreage (acres)	Relative Ecological Quality+	Level of Disturbance	Principal Ecological Source of Disturbance
Pine and wet prairie	222.8			
Pine flatwoods--FEPF**	191.6	Moderate to high	Low	Cattle grazing, road construction
Wet prairie--WP	24.4	Moderate to high	Moderate	Drainage
Ruderal land--UTTL	6.8	Low High		Construction and clearing operations
Total uplands	198.4			
Total wetlands	24.4			
Total area	222.8			

* Letters that represent the Level III SFWMD Land Use and Land Cover Classification Code and Vegetation Community Types shown on Figure 2.3.5-1.

\+ High = displays little or no physical disturbance; of a pristine quality.
Moderate = evidence of physical disturbance present, but still retains representative structure and species composition.
Low = poor quality, highly altered condition.

**Vegetation types that reflect subcommunity designations used to further describe and delineate pine and wet prairie on the project site.

Source: ECT, 1990.

QUESTION 2

Source: February 8, 1991, Letter from P. G. Merritt to H. Oven

Regional Policy 16.1.1.1 calls for new urban development to occur only within areas where necessary urban services and facilities exist concurrent with development. This application indicates that the 2,300 gallons per day of domestic/sanitary wastewater generated by the project will be treated by the Indiantown Company. Also, the application indicates that the 2,300 gallons per day of potable/drinking water needed by the project will be provided by the Indiantown Company. In order to determine consistency with the Regional Plan, please provide a letter from the Indiantown Company that indicates:

a. the present and projected excess capacity of the water supply and wastewater treatment/transmission facilities to which connection will be made;

b. any other commitments that have been made for this excess capacity; and,

c. a statement of ability to provide service at all times during and after development.

RESPONSE

These items are addressed in the attached letter from Indiantown Company (Exhibit TCRPC2-1).

Exhibit TCRPC2-1

INDIANTOWN COMPANY, INC. *"The Community Planned for Pleasant Living"*

WEST FARMS RD. • P.O. BOX 397 • INDIANTOWN, FLORIDA 34956
Telephone (407) 597-2121

April 5, 1991

Mr. Stephen A. Sorrentino
Project Development Manager
PG&E/Bechtel Generating Company
7475 Wisconsin Avenue
Bethesda, Maryland 20814-3422

Dear Steve:

Pursuant to your recent request we are pleased to issue this statement of capacity of our water and sewer facilities. As of this date, the Indiantown Company, Inc. can add an additional seven (7) E.R.C.'s to it's system.

It is important to point out the following information:

1. Prior to any commitment by the Indiantown Company, Inc., Florida Public Service Commission approval and verification of your property being located within the Indiantown Company, Inc.'s service area must be received.

2. A developer's agreement must be reached between the Indiantown Company, Inc. and your development and the required fees must be paid in advance as approved by both Martin County and the Florida Public Service Commission. This agreement would include all plant expansion costs plus any main extensions as agreed upon.

3. All regulatory agencies, including but not limited to the Department of Environmental Regulation, South Florida Water Management District, Martin County Board of Commissioners and their related departments must approve of the extensions and capacities prior to finalizing development agreement.

4. This letter IS NOT a commitment to service your property, but a statement of current capacity.

We trust this information is sufficient and if we can be of further service, please do not hesitate to contact this office.

Sincerely,

INDIANTOWN COMPANY, INC.

William W. Hannah
Manager

WWH/mah

QUESTION 3

Source: February 8, 1991, Letter from P. G. Merritt to H. Oven

Regional Goal 8.1.1 is to assure that the Region's water supply is managed to provide for: 1) protection of fish and wildlife values; 2) protection of natural systems and their functions and values; 3) agriculture; 4) power development; 5) domestic, municipal, and industrial needs on a sustainable basis. The South Florida Water Management District has identified 17.5 feet MSL as the drought control elevation for the Taylor Creek/Nubbin Slough canals. However, the application uses 16.5 feet MSL as the water control elevation. Please submit a water availability study for the Taylor Creek/Nubbin Slough basin using the 17.5 foot elevation.

RESPONSE

The requested detailed water availability study of the plant water withdrawal from Taylor Creek/Nubbin Slough (TC/NS) with canal control water level of 17.5 feet MSL was provided in SCA Volume 4, Section 10.9, Subsection 4. In that analysis, the plant water withdrawal from TC/NS was assumed to stop whenever the canal water level reached elevation 17.5 feet MSL. Pursuant to negotiations with the SFWMD, the proposed control water level will be 17.5 feet MSL.

QUESTION 4

Source: February 8, 1991, Letter from P.G. Merritt to H. Oven

Regional Policy 8.1.1.6 calls for water conservation programs to be developed and implemented. Specifically, the policy calls for 50 percent of all trees and 30 percent of other landscaped areas be composed of native plants adopted to soil and climatic conditions occurring on site. The policy also requires water reuse, where appropriate. In order to evaluate consistency with this policy, please answer the following questions:

a. Are any landscaped areas proposed for this project?

RESPONSE

Yes, landscaping is proposed for the main and secondary entrance roads, along with areas around the parking lot and administration buildings.

b. If so, please estimate landscape and irrigated acreage and identify an irrigation source (preferably wastewater reuse) and the amount of irrigation water needed.

RESPONSE

Approximately 6 acres will be landscaped with drought-resistant plantings. No irrigation will be required.

c. Please discuss the feasibility of treating and using the cooling tower blowdown water for reuse in the cooling tower and/or as process water, in order to conserve additional water and reduce the amount of wastewater to be deepwell injected.

RESPONSE

Project wastewater usage has been modified to enable us to treat all the wastewater generated onsite. The treated wastewater is now recycled within our process for a totally "zero" water discharge plant (except for the sanitary discharges). This design change is described in detail in the response to DER Question 35.

QUESTION 5

Source: February 8, 1991, Letter from P. G. Merritt to H. Oven

The analysis indicates information about construction was provided by PG&E/Bechtel Generating Company. Council staff was unable to locate this information in the report. Please provide this information and explain how it was determined and/or what assumptions have been made to develop the information.

RESPONSE

The information about the construction work force is included in Section 4.6.2 of the Site Certification Application (SCA). The methodology of determining the trip generation potential and auto occupancy rates for the construction traffic is presented in the following paragraphs.

The traffic generation potential of the construction workers was determined based on recent studies performed in the area. It was anticipated that each worker would make one trip in the AM peak hour (coming to the site) and one trip in the PM peak hour (leaving the site). Commonly, the duration of workers leaving the site during the PM peak hour is spread over an hour due to workers staying over time or leaving prior to regular time. One trip per worker was used for the PM peak-hour trip generation rate to represent the "highest" possible traffic impact. Another 20-truck trip generation potential was added to the daily traffic to reflect the traffic impact from deliveries, services, and others. Two trips (in and out) per day were used for each truck.

Most of the construction workers will be commuting from within a 100-mile radius, and we anticipate that some workers will car-pool. Two persons per vehicle is the typical auto occupancy rate for construction workers. However, the magnitude and the length of the peak period of the construction work force for the project are relatively low, with a resultant low opportunity and desire for car-pooling. Due to the lack of documentation for construction workers ride-sharing, a 1-1/3 auto occupancy rate was selected using professional judgment, which is felt to be conservative.

QUESTION 6

Source: February 8, 1991, Letter from P. G. Merritt to H. Oven

The analysis anticipates construction traffic to generate its peak at off-peak periods on the adjacent roadway network. Why is this anticipated? Is there any information available on work shifts? Please provide additional information and/or documentation to justify this assumption.

RESPONSE

The only information available on construction work shifts at this time is that the work force will be working 40 hours per week with a single day-shift. It was assumed that this would be a typical 7:00 am to 3:00 pm construction work shift. Therefore, it is anticipated that the majority of the construction traffic would come to the site traveling in the westbound direction during 6:30 am to 7:00 am and leave the site between 3:00 pm and 4:00 pm. Thus, it was concluded that the construction traffic would generate its peak at off-peak periods and in the off-peak direction on the adjacent roadway network.

QUESTION 7

Source: February 8, 1991, Letter from P. G. Merritt to H. Oven

On page 3, Conclusions and Recommendations section of the report, the text refers to analysis of projected "1995" traffic. All other sections of the report refer to 1994 traffic analysis. Please revise and/or explain the year of the analysis.

RESPONSE

The text "Analyses of projected 1995 traffic volumes....." was referring to the traffic impact study for the project's buildout year. This is not a mistake. It was suggesting that the recommended improvement (adding a southbound right-turn lane on State Road 710 at the project entrance) in the project buildout analysis be accelerated and be implemented prior to initiation of construction so that it can serve construction traffic.

QUESTION 8

Source: February 8, 1991, Letter from P. G. Merritt to H. Oven

Table 1 contains 1990 Average Annual Daily Traffic (AADT). Was this data collected or was it available from a public agency? Please provide information about source for the 1990 AADT. If this information was collected, please provide the traffic count.

RESPONSE

The 1990 Average Annual Daily Traffic Count (6,053) was calculated by using 1989 Average Annual Daily Traffic Counts (5,732), plus a 5.6 percent yearly growth which is the rate established in the Martin County Comprehensive Growth Management Plan. The 1989 Average Annual Daily Traffic was counted in September 1989 by Kimley-Horn and Associates, Inc. Please see Exhibits TCRPC 8-1 through TCRPC 8-6 for the traffic count worksheets.

SR 710 (BEELINE HWY)
700' E OF FP&L POWER PLANT
EB

HOUR OF DAY	1ST	2ND	3RD	4TH	HOUR TOTAL	EACH * REPRESENTS 9 VEHICLES A DASH MEANS HOUR VOLUME < 5
12 AM	0	0	0	0	0	-
1 AM	0	0	0	0	0	-
2 AM	0	0	0	0	0	-
3 AM	0	0	0	0	0	-
4 AM	0	0	0	0	0	-
5 AM	0	0	0	0	0	-
6 AM	0	0	0	0	0	-
7 AM	63	68	73	55	259	**********************************
8 AM	62	61	51	21	195	**********************
9 AM	43	52	35	31	161	******************
10 AM	36	31	42	31	140	****************
11 AM	38	38	38	46	160	******************
12 PM	42	27	33	23	125	**************
1 PM	48	38	35	28	149	*****************
2 PM	32	18	44	40	134	***************
3 PM	21	36	37	30	124	**************
4 PM	91	44	43	34	212	************************
5 PM	16	34	52	43	145	*****************
6 PM	35	46	23	40	144	*****************
7 PM	8	21	21	11	61	*******
8 PM	24	14	22	14	74	********
9 PM	5	10	6	15	36	****
10 PM	10	6	12	17	45	*****
11 PM	6	6	16	5	33	****

TOTAL VOLUME IS 2,197 VEHICLES.

PEAK HOURS:
MORNING PEAK HOUR VOLUME OF 259 BEGINS AT 7:00 AM (11%)
EVENING PEAK HOUR VOLUME OF 212 BEGINS AT 4:00 PM (9%)

DATA COLLECTION BEGAN AT 12 PM ON WEDNESDAY, SEPTEMBER 13, 1989.

SR 710 (BEELINE HWY)
700' E OF FP&L POWER PLANT
EB

HOUR OF DAY	- - QUARTER 1ST	HOUR - - 2ND	3RD	4TH	HOUR TOTAL	EACH * REPRESENTS 13 VEHICLES A DASH MEANS HOUR VOLUME (7
12 AM	4	2	6	4	16	*
1 AM	8	5	7	5	25	**
2 AM	7	12	11	23	53	****
3 AM	1	12	6	3	22	**
4 AM	7	16	10	13	46	****
5 AM	23	25	42	63	153	**********
6 AM	83	108	95	81	367	**********
7 AM	0	0	0	0	0	-
8 AM	0	0	0	0	0	-
9 AM	0	0	0	0	0	-
10 AM	0	0	0	0	0	-
11 AM	0	0	0	0	0	-
12 PM	0	0	0	0	0	-
1 PM	0	0	0	0	0	-
2 PM	0	0	0	0	0	-
3 PM	0	0	0	0	0	-
4 PM	0	0	0	0	0	-
5 PM	0	0	0	0	0	-
6 PM	0	0	0	0	0	-
7 PM	0	0	0	0	0	-
8 PM	0	0	0	0	0	-
9 PM	0	0	0	0	0	-
10 PM	0	0	0	0	0	-
11 PM	0	0	0	0	0	-

TOTAL VOLUME IS 682 VEHICLES.

PEAK HOURS:
MORNING PEAK HOUR VOLUME OF 367 BEGINS AT 6:00 AM (53%)
EVENING TRAFFIC IS ZERO.

DATA COLLECTION BEGAN AT 12 PM ON THURSDAY, SEPTEMBER 14, 1989.

SR 710 (BEELINE HWY)
100' E OF FP&L POWER PLANT
WB THRU

HOUR OF DAY	- - QUARTER HOUR - - 1ST	2ND	3RD	4TH	HOUR TOTAL	EACH * REPRESENTS 10 VEHICLES A DASH MEANS HOUR VOLUME (5
12 AM	0	0	0	0	0	-
1 AM	0	0	0	0	0	-
2 AM	0	0	0	0	0	-
3 AM	0	0	0	0	0	-
4 AM	0	0	0	0	0	-
5 AM	0	0	0	0	0	-
6 AM	0	0	0	0	0	-
7 AM	0	0	0	0	0	-
8 AM	0	0	0	0	0	-
9 AM	0	0	0	0	0	-
10 AM	0	0	0	0	0	-
11 AM	0	0	0	0	0	-
12 PM	0	0	0	0	0	-
1 PM	0	0	0	0	0	-
2 PM	0	0	0	0	0	-
3 PM	35	64	59	60	218	**********
4 PM	83	69	55	82	289	**********
5 PM	58	71	74	54	257	**********
6 PM	51	40	40	34	165	**********
7 PM	27	26	25	15	93	*********
8 PM	21	8	22	26	77	********
9 PM	13	8	13	12	46	*****
10 PM	14	3	13	11	41	****
11 PM	6	8	9	5	28	***

TOTAL VOLUME IS 1,214 VEHICLES.

PEAK HOURS:
MORNING TRAFFIC IS ZERO.
EVENING PEAK HOUR VOLUME OF 289 BEGINS AT 4:00 PM (23%)

DATA COLLECTION BEGAN AT 03 PM ON MONDAY, SEPTEMBER 11, 1989.

SR 710 (BEELINE HWY)
100' E OF FP&L POWER PLANT
WB THRU

HOUR OF DAY	- - QUARTER 1ST	HOUR - - 2ND	3RD	4TH	HOUR TOTAL	EACH * REPRESENTS 7 VEHICLES A DASH MEANS HOUR VOLUME (4
12 AM	9	16	10	5	40	******
1 AM	5	4	4	6	19	***
2 AM	5	8	4	7	24	***
3 AM	2	7	2	0	11	**
4 AM	7	1	9	0	17	**
5 AM	8	7	1	5	21	***
6 AM	9	6	12	20	47	*******
7 AM	22	17	29	28	96	**************
8 AM	27	21	22	22	92	*************
9 AM	28	44	33	43	148	*********************
10 AM	34	48	41	63	186	**************************
11 AM	25	27	45	42	139	********************
12 PM	33	56	33	42	164	************************
1 PM	35	31	35	32	133	*******************
2 PM	40	36	25	15	116	*****************
3 PM	0	0	0	0	0	-
4 PM	0	0	0	0	0	-
5 PM	0	0	0	0	0	-
6 PM	0	0	0	0	0	-
7 PM	0	0	0	0	0	-
8 PM	0	0	0	0	0	-
9 PM	0	0	0	0	0	-
10 PM	0	0	0	0	0	-
11 PM	0	0	0	0	0	-

TOTAL VOLUME IS 1,253 VEHICLES.

PEAK HOURS:
MORNING PEAK HOUR VOLUME OF 186 BEGINS AT 10:00 AM (14%)
EVENING PEAK HOUR VOLUME OF 166 BEGINS AT 12:15 PM (13%)

DATA COLLECTION BEGAN AT 12 PM ON TUESDAY, SEPTEMBER 12, 1989.

SR 710 (BEELINE HWY)
100' E OF FP&L POWER PLANT
WB LT

HOUR OF DAY	QUARTER HOUR 1ST	2ND	3RD	4TH	HOUR TOTAL	EACH * REPRESENTS 4 VEHICLES A DASH MEANS HOUR VOLUME < 2
12 AM	0	0	0	0	0	-
1 AM	0	0	0	0	0	-
2 AM	0	0	0	0	0	-
3 AM	0	0	0	0	0	-
4 AM	0	0	0	0	0	-
5 AM	0	0	0	0	0	-
6 AM	0	0	0	0	0	-
7 AM	0	0	0	0	0	-
8 AM	0	0	0	0	0	-
9 AM	0	0	0	0	0	-
10 AM	0	0	0	0	0	-
11 AM	0	0	0	0	0	-
12 PM	0	0	0	0	0	-
1 PM	0	0	0	0	0	-
2 PM	0	0	0	0	0	-
3 PM	5	3	7	6	21	*****
4 PM	3	2	4	8	17	****
5 PM	2	3	2	2	9	**
6 PM	0	3	0	3	6	**
7 PM	1	2	2	0	5	*
8 PM	1	2	4	3	10	***
9 PM	0	1	1	0	2	*
10 PM	1	3	1	2	7	**
11 PM	10	4	0	1	15	****

TOTAL VOLUME IS 92 VEHICLES.

PEAK HOURS:
MORNING TRAFFIC IS ZERO.
EVENING PEAK HOUR VOLUME OF 21 BEGINS AT 3:00 PM (22%)

DATA COLLECTION BEGAN AT 12 AM ON MONDAY, SEPTEMBER 11, 1989.

SR 710 (BEELINE HWY)
100' E OF FP&L POWER PLANT
WB LT

HOUR OF DAY	QUARTER HOUR 1ST	2ND	3RD	4TH	HOUR TOTAL	EACH * REPRESENTS 4 VEHICLES A DASH MEANS HOUR VOLUME < 2
12 AM	1	1	1	2	5	*
1 AM	1	0	0	1	2	*
2 AM	0	2	1	2	5	*
3 AM	0	0	1	0	1	-
4 AM	0	0	0	0	0	-
5 AM	7	1	4	0	12	***
6 AM	5	1	6	8	20	*****
7 AM	34	40	0	3	77	**********
8 AM	6	2	2	3	13	***
9 AM	1	3	1	8	13	***
10 AM	6	6	3	7	22	******
11 AM	4	3	6	4	17	****
12 PM	6	7	5	4	22	******
1 PM	5	5	4	13	27	*******
2 PM	7	7	12	32	58	**********
3 PM	0	0	0	0	0	-
4 PM	0	0	0	0	0	-
5 PM	0	0	0	0	0	-
6 PM	0	0	0	0	0	-
7 PM	0	0	0	0	0	-
8 PM	0	0	0	0	0	-
9 PM	0	0	0	0	0	-
10 PM	0	0	0	0	0	-
11 PM	0	0	0	0	0	-

TOTAL VOLUME IS 294 VEHICLES.

PEAK HOURS:
MORNING PEAK HOUR VOLUME OF 88 BEGINS AT 6:30 AM (29%)
EVENING PEAK HOUR VOLUME OF 58 BEGINS AT 2:00 PM (19%)

DATA COLLECTION BEGAN AT 12 AM ON TUESDAY, SEPTEMBER 12, 1989.

QUESTION 9

Source: February 8, 1991, Letter from P. G. Merritt to H. Oven

Figures 2 and 3 of the report depict AM and PM peak hour driveway traffic, respectively. Staff has assumed these peak periods refer to peak hour of the generator (construction traffic) as indicated in the text. What assumptions were made to determine background traffic? What time period do the AM and PM peak hour represent? How was peak hour traffic projected for the year 1994? Please provide information to clarify how AM and PM off-peak hour background traffic was projected for the year 1994.

RESPONSE

Yes, the peak hours on Figures 2 and 3 are the peak hours of the ICP generator. The AM peak hour represents 6:00 am to 7:00 am and the PM peak hour represents 3:00 pm to 4:00 pm. The background traffic for 1994 was projected by using a 5.6 percent growth factor (from Martin County Comprehensive Growth Management Plan, 1990) in addition to the existing generator peak-hour traffic. The total traffic for 1994 is the sum of background traffic and the project traffic. As indicated in the report, the project buildout traffic distribution and assignment, 27 percent traveling northwest and 73 percent traveling southeast, were used to estimate the traffic impact of construction-related traffic. Also, it was assumed that 100 percent of the construction employee traffic would come to the site during the AM generator peak hour and leave the site during the PM generator peak hour.

QUESTION 10

Source: February 8, 1991, Letter from P. G. Merritt to H. Oven

The report indicates the project will require 65 employees per day by the buildout year. The 65 employees will work in three work shifts of which 45 employees will work the day shift (7:00 AM to 4:00 PM), 10 employees will work the evening shift, and 10 employees will work the night shift. When determining the peak-hour trip generation, all 65 employees were used. From the information provided, it seems that only 55 employees will be generating traffic during the peak hours due to the work shifts. In order to determine the appropriateness of the trip generation rates for peak-hour conditions, please clarify how peak hour trip generation and trip generation rates were developed. Provide all information necessary to understand and follow up the analytical process.

RESPONSE

The proposed work shifts were taken into account in calculating the peak-hour trip generation rates. The peak-hour trip generation rates are based on total daily employee number to be consistent with the daily trip generation rates. The methodology of determining the peak-hour trip generation rates follows.

Trip Generation (Power Plant Employees)

As indicated in our report, the trip generation potential of the proposed project was determined by using the trip generation rates of the adjacent existing FPL power plant. According to the trip generation survey undertaken by Kimley-Horn and Associates, Inc., in 1989, the FPL power plant was operated by 204 employees per day with 85 percent of its employees working the day shift and 15 percent of its employees working the evening shift. Turning movement counts made at the existing FPL power plant entrance show 144 trips (0.71 trip per employee) during AM peak hour and 97 trips (0.475 trip per employee) during PM peak hour. The 144 AM peak-hour trips are associated with the 85-percent work force working the day shift and the 97 PM peak-hour trips are associated with the 100-percent work force working either the day shift (going out) or the evening shift (coming in).

On the other hand, the proposed ICP project work shift plan has 70 percent (45 employees) working the day shift, 15 percent (10 employees) working the evening shift, and another 15 percent (10 employees) working the night shift. Therefore the AM peak-hour project traffic would be generated by the 85-percent work force working the night shift (going out) and the day shift (coming in) and the PM peak-hour project traffic would be generated by the 85-percent work force working the day shift (going out) and the evening shift (coming in).

The table below shows the adjustment of FPL peak-hour trip generation rates to calculate trip generation rates for the proposed project.

Peak Hour Trip Generation Rates

	FPL		PROJECT	
Category	Workforce	Trip Rate	Workforce	Adjusted Trip Rate
AM Generator Peak Hour	85%	0.71	85%	0.71
PM Generator Peak Hour	100%	0.475	85%	0.40

INDIANTOWN COGENERATION PROJECT

SITE CERTIFICATION APPLICATION

RESPONSES TO

SUFFICIENCY COMMENTS BY

MARTIN COUNTY

April 9, 1991

QUESTION 1

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

Hydrogeolist Comments:

Please design the level of the drawdown in the L-63N Canal to the 17.5 MSL that is preferred by the SFWMD.

RESPONSE

The drawdown will be designed to the SFWMD 17.5 MSL criteria.

QUESTION 2

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

If the inactive coal pile is blown around the area, then the leachate will impact the water table. What type or intensity of storm will the inactive coal storage pile withstand?

RESPONSE

The inactive coal storage pile will be compacted, covered with top soil and seeded. This will prevent any wind erosion of the coal pile, including the highest expected winds. The grass cover should prevent rainwater from generating leachate or runoff with a quality in excess of water quality standards. In any event, all runoff from the coal pile and surrounding area will be collected in the lined runoff collection basin. The runoff from this basin will be pumped to the wastewater treatment facility and reused for plant process water and other uses; it will not be discharged offsite. The coal pile will have a liner and leachate collection system beneath the pile to collect any leachate and prevent it from entering the groundwater. The collected leachate will also be treated and reused in the plant.

QUESTION 3

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

The application indicates that the maximum salt deposition rate from the cooling tower salt drift is 24.7 lbs/acre-month. The salt is washed from the soil by rainfall. Some of the runoff will go to off-site retention ponds or water table wetlands. The saline runoff will increase the levels of sodium and chloride in the water table. Evaluate the adverse impacts to the water table.

Also, the application only indicates that the vegetation in the area can tolerate the levels of salt that will be deposited in the soil. Please address the affect of salt spray directly on the foliage.

RESPONSE

Please see the response to DCA Question 10, which describes the impact of cooling tower salt drift on the quality of water in the shallow aquifer.

To address the impact of salt spray directly on foliage, further analysis was performed. As a result of this analysis, the engineering design of the facility was modified to minimize impacts to the extent possible.

Although no existing published or unpublished studies on the effects of saltwater drift on freshwater wetlands could be found, the literature does suggest that, of the vegetation surrounding the cooling towers, the freshwater wetlands would be most sensitive to salt deposition. Design changes focused on minimizing salt deposition to the wetlands, and included halving the number of cycles of concentration in the cooling tower blowdown (and consequently the drift), and isolating stormwater runoff from facility areas receiving the highest concentrations of salt for recycling through the plant. With these modifications, the estimated deposition rate of salts as TDS from a combination of drift, runoff from wetland perimeter areas, and discharge from stormwater basins is 13.93 lb/acre-month, as compared to the 24.7 lb/acre-month reported in the SCA under original design considerations.

The ion in the ICP cooling tower drift with the greatest potential for causing injury to foliage is the chloride ion. The available literature demonstrates that chloride injury levels to vegetation occurring on the site range between 0.04 and 5 g/m^2; projected chloride deposition levels on wetlands near the site range between 0.43 and 7.1 g/m^2.

The conclusion of current analysis is that use of the two available water sources for the cooling tower may adversely impact sensitive vegetation, especially annual species, in up to five separate wetlands totalling 26.9 acres. With persistent foliar injury, a gradual change in the herbaceous species composition of the wetlands toward more salt-resistant species may occur as a result of salt deposition. The wetlands would continue to function and be classified as wetlands based on soil, hydrologic, and vegetation criteria.

ICL proposes to conduct monitoring of potentially affected wetlands to assess the degree and extent of impact. The details of the monitoring program would be arrived at as a post-certification activity.

QUESTION 4

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

Please note that Table 2.3.3-4, "Existing Water Users Within a 5-Mile Radius of the ICL Site" did not indicate the wells at the Indiantown Water Company.

RESPONSE

Table 2.3.3-4 (pages 7 and 8) and Figure 2.3.3-1 of the SCA have been revised to include the Indiantown Water Company wells as Identification No. 72. They are included as Exhibits MC4-1 and MC4-2, respectively.

Exhibit MC4-1
(Page 1 of 2)

IDENTIFICATION NO.*	PERMIT/ REF. NO.	ANNUAL WATER ALLOCATION (mil. gals)	DESCRIPTION OF USER AND WATER SOURCE
63			**James Slay, GW use.** One well, 100' depth. Location: SE 1/4 SW 1/4 Sec 35, T39S R38E
64	BTW-1, 2, 3, 4		**Florida Power and Light Corp., GW use.** 4 aquifer test wells, depth 145-168 ft.
65			**Florida Power and Light Corp., GW use.** Water supply well.
66	MF-23[5]		**Florida Power & Light Corp., GW use.** SFWMD monitoring well, depth 1,119 ft. Location SW 1/4, SW 1/4 Sec 17, 739S, R38E
67	LFM-1		**Florida Power & Light Corp., GW use.** Aquifer test well, depth 1,648 ft. Location NW 1/4, NW 1/4 Sec 20, T39S, R38E
68	MF-25[5]		**Florida Power & Light Corp., GW use.** SFWMD monitoring well, depth 1,220 ft. Location NW 1/4, SW 1/4, NW 1/4, Sec 33, T39S, R38E
69	MF-37[5]		**Caulkins Indiantown Groves, GW use.** SFWMD monitoring well, depth 1,260 Location SW 1/4, NW 1/4, NW 1/4, Sec 35, T39S, R38E
70	43-00233		**Jack Phares, GW use.** One well in Surficial aquifer for agricultural use.
71	43-00232		**J&R, GW use.** One well in Surficial aquifer for agricultural use.

*See Figure 2.3.3-1 for location of corresponding number.

Exhibit MC4-1
(Page 2 of 2)

IDENTIFICATION NO.*	PERMIT/ REF. NO.	ANNUAL WATER ALLOCATION (mil. gals)	DESCRIPTION OF USER AND WATER SOURCE
72	43-00041	355	**Indiantown Co. Inc., GW use.** Eight wells in Surficial aquifer for municipal use. One well of 250 gpm capacity, three wells of 200 gpm capacity, two wells of 150 gpm capacity, one well of 100 gpm capacity, one well of 85 gpm capacity.

1. GW - Groundwater Use
2. SW - Surface Water Use
3. Maximum Daily Allowance for General Use Permits
4. U.S. Geological Survey Well Number
5. SFWMD Well Number

Source: Bechtel, 1990
SFWMD
USGS
FPL, 1989

*See Figure 2.3.3-1 for location of corresponding number.

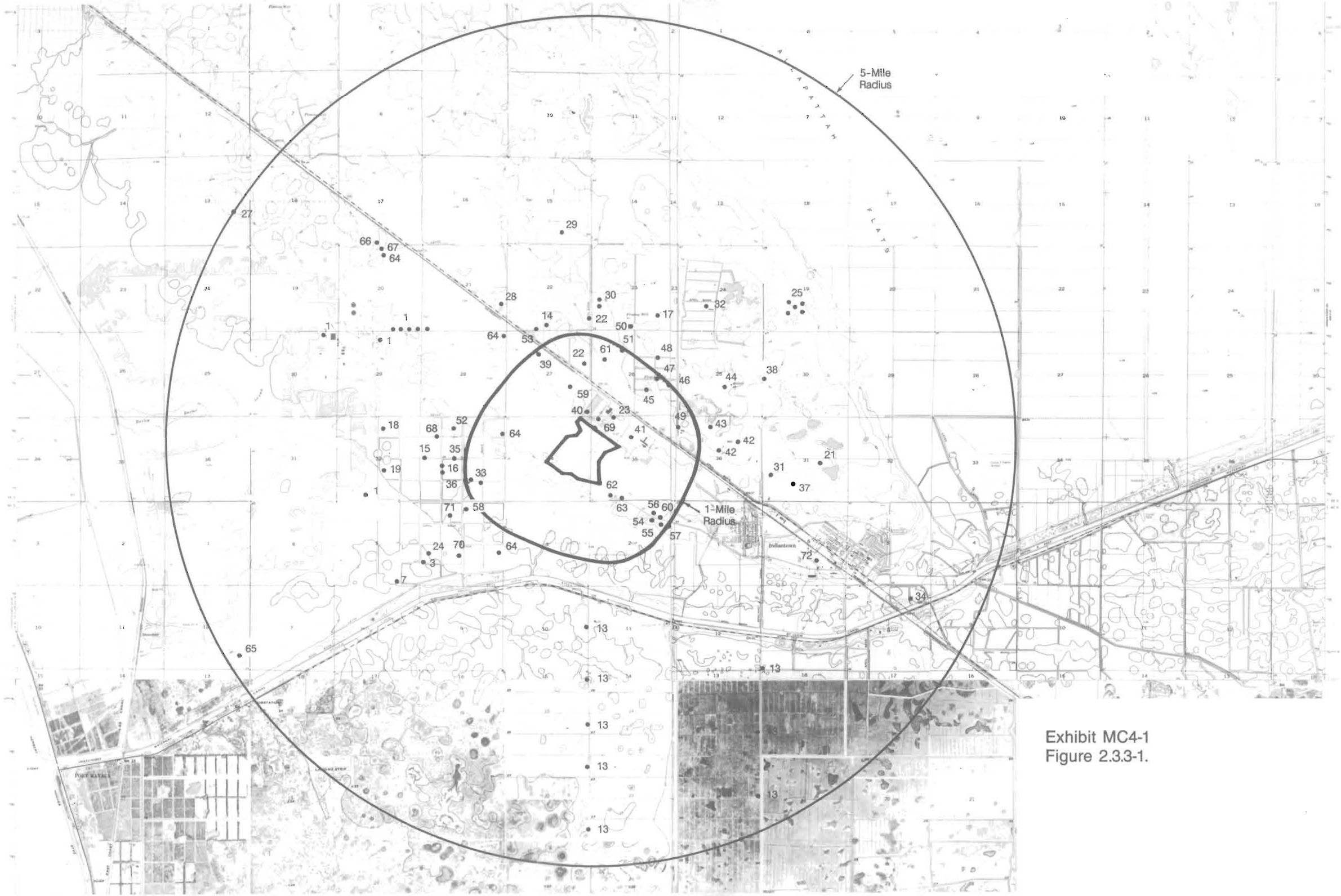


Exhibit MC4-1
Figure 2.3.3-1.

QUESTION 5

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

A large number of wells have been constructed in the Floridan Aquifer System in that area of the County that have lowered the potentiometric surface. An approval from the SFWMD will be necessary for the proposed withdrawal.

RESPONSE

Our intent is to only use the Floridan as a backup supply of water. Withdrawals from the wells would occur only 5 percent of the time, with the Taylor Creek/ Nubbin Slough providing 95 percent of the water demand. The wells would flow under natural artesian pressure and would not be pumped. We are working directly with SFWMD to analyze potential impacts to the aquifer from the proposed withdrawals. Approvals for groundwater withdrawals will be sought through the certification process.

QUESTION 1 (Development Review Comments)

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

The site vicinity plan (Figure 2.1.0-1) does not show the full site provided in Figure 3.1.1-1 which is the site development plan.

RESPONSE

Figure 2.1.0-1 from the SCA illustrates existing baseline information as the site vicinity plan. Drawing COA-0001, included in the Appendix, is an updated site plan showing the full site in detail.

QUESTION 2 (Development Review Comments)

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

The narrative discussion of the site (2.1) refers to site elements not reflected on the site plan provided.

The narrative neglects to qualify that all coal will be brought to the site from the west. It also does not refer to or address the construction of a perimeter access road south from SR 710 to Farm Road which is to be an important transportation link in this area for heavy vehicle traffic.

RESPONSE

The site plan, Drawing COA-0001 in the Appendix, has been revised to include this additional information.

It is our intention to provide the SR 710/S. Farms Road connector as discussed in Section 3.2 and shown in Figure 3.1.1-1 of the SCA. The road, shown on Drawing COA-0001 in the Appendix, will provide access to the ICP site, and will also reroute Caulkins traffic that currently goes through Indiantown and Booker Park. The existing ROW easement for the proposed county road crosses the eastern edge of a wetland. Of the total road area of approximately 14.9 acres, an estimated 1.8 acres of wetland will have to be filled if the existing easement is used.

Coal trains will be coming from the southern Appalachian area of Kentucky and West Virginia, entering the site from the west and departing back to the northwest.

QUESTION 3 (Development Review Comments)

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

Under Section 3.1.2, it is not clear if the resulting ash will be containerized, bagged, or placed loose into railroad cars, covered for transport, and returned to the originating mines.

The same vagueness exists for handling and disposal of the bottom ash, fly ash, and water treatment filter cake.

RESPONSE

The current plans are to transport the ash in covered rail cars back to the mine. We are looking at pelletizing the ash to enhance its marketability.

The water treatment filter cake is largely dirt and suspended solids such as phosphorus and nitrates. This low grade fertilizer can be used in the groves or other land applications in the area. Preliminary discussions with grove owners have indicated that they may be able to use the material in their groves. Discussions are also ongoing with Okeechobee County regarding use of this material for landfill cover. We are pursuing other potential customers for this material.

QUESTION 4 (Development Review Comments)

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

Section 3.3.4 does not mention any precautions to be taken to prevent or minimize impacts of a liner failure for the inactive coal pile, runoff containment area failure, and adverse impacts on the neighboring wetlands or ground water.

It would be helpful to have a cross section of the proposed inactive coal pile and leachate collection pond.

RESPONSE

The design of the proposed coal pile and collection pond liners complies with DER established standards, is the standard design for pile liners, and complies with National Sanitary Foundation standards. Since this is an inactive storage pile and not regularly disturbed, the chances of disturbing the liner are minimal.

A durable flexible membrane liner (60 mils) will be used to line the area containing the inactive coal pile, drainage ditches, and runoff basin. This liner will be covered with a geonet material for leachate collection, on top of which a geotextile material will provide additional strength. These layers will be covered by granular fill and gravel layers providing a strong, reliable barrier for prevention of liner penetration or leachate contamination.

The inactive coal pile is designed to minimize leachate, with a grass covering that encourages rainfall to run off near the surface of the pile instead of percolating through. Leachate that does collect will be captured within the coal pile runoff basin. Details of the design of this basin are found in the response to SFWMD Question 6.

Groundwater monitoring will be used to detect if a leak in the liner has occurred. If a leak is detected the coal will be removed and the liner repaired. Drawing COY-0912, in the Appendix, provides a cross section of the proposed liner for the inactive pile and runoff basin.

QUESTION 5 (Development Review Comments)

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

Under section 3.4. (3-8), there was no indication of the selective catalytic reduction for the auxiliary boiler. Is this a problem?

RESPONSE

A BACT (Best Available Control Technology) analysis (Section 10.1 of the SCA) was performed for the auxiliary boiler. The analysis showed that SNCR was not cost effective and that low NO_X burners would be BACT for this unit. See the response to FDER Question 42 for a revised BACT analysis. This revision resulted from the auxiliary boiler's increase in operating hours necessary to meet the steam supply reliability requirement of our steam customer Caulkins Citrus Company.

QUESTION 6 (Development Review Comments)

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

The need for SFWMD involvement in the obtaining of permits for drawing water from the Taylor Creek/Nubbin Slough is not identified.

RESPONSE

Approval for withdrawals from Taylor Creek/Nubbin Slough will be sought during the certification process.

QUESTION 7 (Development Review Comments)

Source: February 13, 1991, Letter from F. W. van Vonno to H. Oven

Technical explanation of alternatives for emission control did not result in a layman's explanation of what option(s) are to be utilized, and if there will be appreciable amounts of airborne contaminants impacting surrounding area and/or a monitoring system established to prevent problems.

RESPONSE

Air emissions from the proposed Indiantown Cogeneration Plant are minimized and controlled to applicable standards as described in the following paragraphs.

Fuel Selection

The coal to be used in the main boiler will be selected to be low in sulfur content (less than 2 percent by weight) and ash (less than 12 percent by weight). The auxiliary boiler will use low sulfur fuels (natural gas and fuel oil). These fuel selections will help minimize emissions.

Design Considerations

The pulverized coal boiler includes advanced combustion controls, which serve to lower NO_X, carbon monoxide, and hydrocarbon emissions. SO_2 and mercury will be controlled through the use of lime spray drying and a fabric filter (baghouse), which removes 95 percent of the sulfur from the coal. The fabric filter will also capture particulate matter, as well as trace metals.

In the auxiliary boiler, NO_X emissions are controlled by use of low NO_X burners. Combustion controls will enable achievement of BACT (Best Available Control Technology) levels of emissions of CO and VOC.

The height of the plant's stack was calculated to ensure maximum dispersion of emissions, in accordance with Good Engineering Practice height standards set by EPA.

The cooling tower design incorporates state-of-the-art drift eliminators to minimize salt and particulate emissions from the cooling tower.

Coal, lime, and ash conveyors will be enclosed and vented through fabric filters to control fugitive dust in these material handling operations.

Air emission pollution controls for the proposed Indiantown Cogeneration Plant include the following processes and equipment, listed by pollutant:

- Nitrogen oxides emissions (Selected Non-Catalytic Reduction System)

- Sulfur dioxide (fuel selection, combustion controls, and Spray Dryer Absorber System)
- Particulates (fabric filter)
- Fugitive dust (enclosed conveyors with fabric filters)

These controls are illustrated in Figure 3.4.4-1, which is in the Site Certification Application, Volume 3, Section 10.1 (10.1.5 PSD Review/Application to Operate/Construct made to the DER). In addition, the Project Description in the BACT analysis (found in Section 10.1.5) includes a non-technical description of each pollution control component and how it functions.

The state Department of Environmental Regulation has been delegated responsibility by EPA to implement the federal Clean Air Act, which is designed to ensure that air quality impacts from a new source such as the ICL are insignificant and do not pose any health hazards. The air quality permits which the ICL has applied for entail a rigorous review which ensures that the plant, at worst case operating and meteorological conditions and in combination with existing emission sources, will meet ambient air quality standards. Conditions of the air permit, certification, and PSD air permit promulgated by the DER will include continuous stack monitoring of emission streams to ensure continuing compliance with the permitted limits. The ICL plant employs state-of-the art control technology and represents a very clean source of electrical energy for the region.

INDIANTOWN COGENERATION PROJECT

SITE CERTIFICATION APPLICATION

RESPONSES TO
SUFFICIENCY COMMENTS BY
OKEECHOBEE COUNTY

April 9, 1991

QUESTION 1

Source: February 20, 1991, Letter from P. G. Merritt to H. Oven

Please provide additional information regarding the effects to upstream property with respect to the varying water levels of Taylor Creek/Nubbins Slough. Please indicate whether withdrawing water from Nubbins Slough to an elevation of 16.0 MSL will have any adverse effect on adjacent property upstream of the intake.

RESPONSE

The ICP plant consumption would amount to approximately 5 percent of the volume of water in the Taylor Creek/Nubbin Slough (TC/NS). Based on discussions with the SFWMD, plant water withdrawal from TC/NS will stop whenever the canal water level reaches elevation 17.5 feet-MSL. To assess the effect on the existing surface water users of lowering the water level in L-63N and L-63S to 17.5 feet from the normal water level of 19.2 feet, a search was made of SFWMD records on permits issued. Based on this information, no permitted surface water users were found. A field walkdown will be made to visually identify the existence of other intakes on L-63N. The findings will be provided at a later date.

An analysis of impacts to groundwater levels from withdrawal from the canal showed that any impacts would be minimal. The 1-foot drawdown of the groundwater table should be limited to a distance of 400 feet from the canal.

QUESTION 2

Source: February 20, 1991, Letter from P. G. Merritt to H. Oven

Please indicate the concurrence and involvement of South Florida Water Management District in obtaining of permits for drawing water from Taylor Creek/Nubbins Slough.

RESPONSE

In the initial planning stages for the Indiantown Cogeneration Project, we went to the SFWMD to request a source of water to be used for the project. SFWMD suggested that we investigate using the Taylor Creek/Nubbins Slough because of its high nutrient level which was causing problems with algae growth in Lake Okeechobee.

SFWMD is an integral part of the Florida Site Certification Process, and, through that process, approvals for drawing water from Taylor Creek/Nubbin Slough will be obtained.

QUESTION 3

Source: February 20, 1991, Letter from P. G. Merritt to H. Oven

Please clarify proposed impacts to Okeechobee County Roads 15A and 15B involved with the pipeline installation. Please clarify proposed remedial action or mitigation during and after the installation of this pipeline.

RESPONSE

The pipeline will require crossing of County Roads 15A and 15B. The pipe placed under the road will be made up in a prefabricated length that will extend entirely across the road. This will minimize the length of time that the road will have to be closed while the trench is open. Also, this construction will be scheduled so that it will be at minimum use times, at night or daytime hours with low use.

QUESTION 4

Source: February 20, 1991, Letter from P. G. Merritt to H. Oven

Please identify aquatic and/or environmental impacts that may occur due to withdrawals from Nubbins Slough (particularly wildlife and aquatic life impact).

RESPONSE

The makeup water intake at Taylor Creek (L63N) is designed to preclude fish and larvae entrapment and impingement utilizing best available technology. Water will be withdrawn through cylindrical wedge wire screens placed below the minimum design water level. The spacing between the wires is 1 mm (0.04 inch). Typical screen assembly is shown on Exhibits OC4-1 and OC4-2. Two assemblies will be used at the intake at L63N canal, each capable of supplying the full water requirement of approximately 3,400 gpm (7.5 cfs). With this design arrangement, the water velocity through the spacings between the wires is less than 0.30 fps. The approach velocity will be much lower which allows aquatic life to escape, avoiding impingement or entrapment.

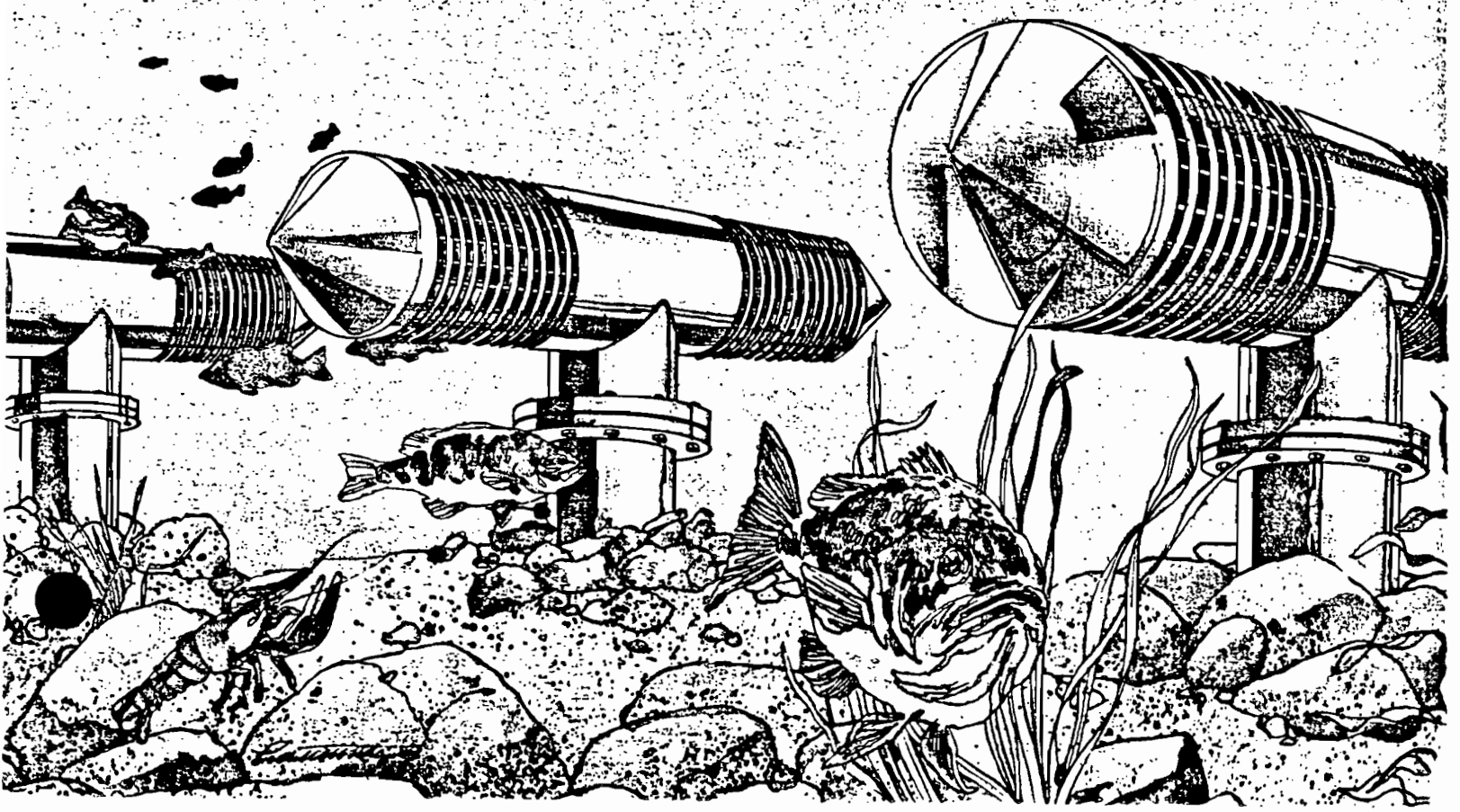
Impacts will be minimized further in that no treated wastewater or heated effluent will be discharged to the Taylor Creek/Nubbin Slough system. Periodic cleaning of the wire screens will be accomplished by compressed air, which eliminates the need for chemical backwashes. A survey of the local fish fauna shows that common species (e.g., sunfish, shad, gar, mosquito fish) comprise the principal fish fauna. No endangered or threatened fish or invertebrates are known to occur in Taylor Creek or Nubbin Slough.

It is proposed that the construction of the intake structure occur within the canal bank. Appropriate construction mitigation measures, as established through the permitting process, will be taken to minimize water quality impacts to aquatic and wildlife species. No impacts to wildlife are expected as a result of withdrawals from L63N.

Exhibit OC4-1

Process & Utility Corporation
Manufacturers Representatives
P.O. Box 29868 - 3108-3A Parham Road
Richmond, Virginia 23229
Phone: 804-346-0926

JOHNSON SURFACE WATER INTAKE SCREENS

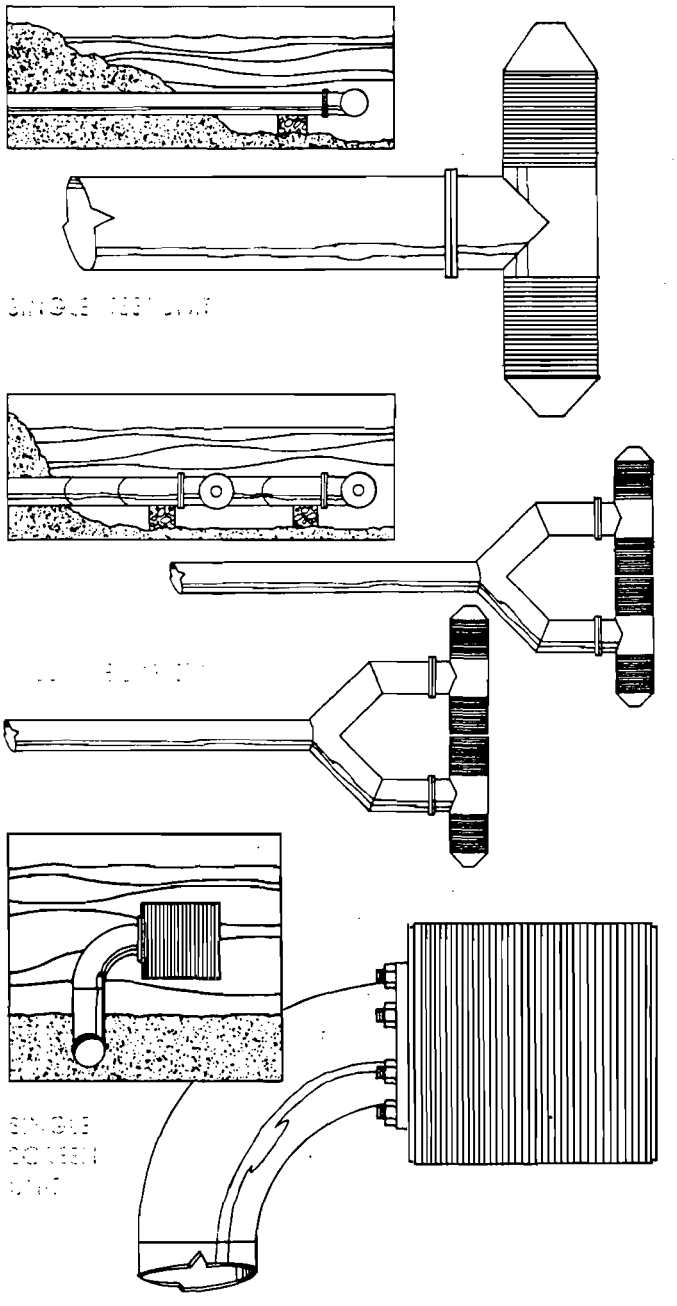


RIVER INTAKES

The most common forms of river intakes are screen cylinders located offshore and oriented parallel to ambient currents. Single screens or "Tees" and multiple units can be adapted to fit varied system capacities and sites.

Offshore screens are easily cleaned by Johnson's unique air backwash system which eliminates the need for on-land disposal of debris.

For sites not well suited for offshore screens, shoreline intakes using bulkhead mounted screens or panels as shown on pages 12 thru 15 may be used.



QUESTION 5

Source: February 20, 1991, Letter from P. G. Merritt to H. Oven

In light of the siting of this power plant in close proximity to Okeechobee County, please describe social/economic benefits and/or detriments relating to Okeechobee County. Please provide additional information regarding any revenue benefits that may be realized by Okeechobee County. Please provide an executive summary as to the social and economic impacts to Okeechobee County.

RESPONSE

The attached Executive Summary and analysis of the impact on Okeechobee County (Attachment OC5-1) addresses these comments.

EXECUTIVE SUMMARY

ANALYSIS OF THE SOCIOECONOMIC IMPACT ON OKEECHOBEE COUNTY FROM THE ICL PROJECT IN MARTIN COUNTY

INTRODUCTION

The ICL project is scheduled to be built in Martin County between 1992 and 1996. Although the majority of the socioeconomic impacts associated with the project will be concentrated in Martin County, some impacts may be felt in the adjacent counties. The estimated benefits and costs to Okeechobee County resulting from the ICL project construction and operation are summarized below.

CONSTRUCTION IMPACTS

Most construction workers are expected to commute daily from their current residences. This includes the portion of the labor force which may be available in Okeechobee County. It is assumed that 24 percent of the construction work force will be weekly commuters, and that 25 percent of the weekly commuters will be temporary residents of Okeechobee County.

The primary impact on the County due to construction of the ICL project is the addition of between 52 and 155 jobs each year during construction, with wages of between $1,259,230 and $3,747,690. These jobs will result in increased expenditures on temporary housing, food and other goods and services and increased tax revenues from general sales and gasoline sales. In addition, construction expenditures are expected to total $2.46 million in the local area, with expenditures of $213,000 in Okeechobee County. There should be no adverse impact on the County in terms of housing and public facilities and services in the short term.

TABLE 1
DIRECT AND INDIRECT CONSTRUCTION RELATED JOBS AND WAGES

Year	Local Workers	Wages	Weekly Commuters	Wages	Indirect Jobs	Wages
1992	21	$630,000	12	$360,000	19	$269,230
1993	41	$1,230,000	24	$720,000	38	$538,460
1994	62	$1,860,000	36	$1,080,000	57	$807,690
1995	21	$630,000	12	$360,000	19	$269,230

OPERATIONAL IMPACTS

The operational personnel for the ICL project are expected to begin work in July 1995. The permanent work force is expected to total 80 persons with an estimated 10 percent of the operational work force living in Okeechobee County.

The most significant long term benefits associated with the ICL project include increased permanent employment and increased wages and income for the County. The ICL project will result in the addition of 23 permanent direct and indirect jobs in Okeechobee County with an annual payroll of $442,046 in 1988 dollars. The benefits also include increased property tax revenues, improvements to County Roads 15A and 15B and access to the job training program being developed in Martin County. Long term costs resulting from the project include possible increased public expenditures on public safety, education, transportation, and recreation. However, the revenues accruing to the County are estimated to significantly outweigh the costs incurred.

TABLE 2
DIRECT AND INDIRECT OPERATION RELATED JOBS AND WAGES

Year	Permanent Employees	Annual Wages	Indirect Jobs	Annual Wages
1995-2025	8	$229,496	15	$212,550

PROPERTY TAXES AND OTHER ANNUAL REVENUES

The ICL project will result in an estimated increase of $3982 in annual property tax revenues beginning in 1995. The increase in County population will also result in an increase of $5496 in State revenue sharing funds and $64,825 in State education funds. The annual increase in revenues to the County, excluding personal property taxes on the pipeline facilities as discussed below, will total $74,304 based on 1990 millage rates and 1988 state funding levels.

WATER PIPLINE AND PUMPING FACILITIES PERSONAL PROPERTY TAX REVENUES

Construction of the ICL water pipeline will increase the County's tax base by approximately $1 million in 1993. Personal property taxes generated on these facilities over the 30 year life, are estimated at $369,811 based on 1990 millage rates. When fully depreciated, the assessed value of the pipeline and pumping facilities will remain at approximately $400,000, generating $7,513 annually (based on the 1990 millage rates) for as long as the facility remains in operation.

COUNTY ROAD 15B WIDENING

In addition to the economic benefits accruing to Okeechobee County as a result of the construction and operation of the ICL project, ICL has agreed to assist the County with needed widening of County Road 15B.

JOB TRAINING

Another benefit Okeechobee County residents will receive is participation in the job training program being developed and offered in Martin County. This program is designed to train residents for positions available in construction, operation and maintenance of an electrical power plant as well as other, more general, job skill training.

TABLE 3
INCREASED ANNUAL REVENUES AND COSTS TO OKEECHOBEE COUNTY

Year	1993	1994	1995	Buildout[1]
Increased Revenues				
Ad Valorem Taxes				
Pipeline Facilities	8780	8507	8242	7986
Permanent Emp Homes	0	0	1932	1932
Indirect Emp Homes	0	0	2051	2051
Total Ad Valorem Taxes	8780	8507	12,225	11,969
State Funds				
State Revenue Sharing	0	0	5496	5496
State Education Funds	0	0	64,825	64,825
Total Increase in Revenues	8780	8507	82,546	82,290
Increased Costs				
Increased Teacher Salaries	0	0	23,909	23,909
Education Capital Outlay	0	0	21,343	0
Increased Police Salaries	0	0	342	342
Increased Firemen Salaries	0	0	938	938
Transportation Improvements	0	0	13,671	0
Recreation Improvements	0	0	17,369	0
General Government Service	0	0	4632	4632
Total Increase in Costs	0	0	82,204	29,821
Net Benefit	8780	8507	342	52,469

[1] Ad Valorem taxes on the pipeline facility will decrease each year as the pipeline is depreciated. All other revenues and costs are assumed to remain the same over the 30-year life of the facility.

ANALYSIS OF THE SOCIOECONOMIC IMPACT ON OKEECHOBEE COUNTY FROM THE ICL PROJECT IN MARTIN COUNTY

INTRODUCTION

The ICL project is scheduled to be built in Martin County between 1992 and 1996. Although the majority of the socioeconomic impacts associated with the project will be concentrated in Martin County, some impacts may be felt in the adjacent counties. This analysis will look at the benefits and costs to Okeechobee County resulting from the ICL project construction and operation.

CONSTRUCTION IMPACTS

Most construction workers are expected to commute daily from their current residences. It is not uncommon for construction workers to commute up to 100 miles one-way, as opposed to relocating closer to the site. This 100 mile commuting distance includes the urbanized areas of Miami, Fort Lauderdale and West Palm Beach resulting in a large construction labor force to draw on. A small number of construction workers are likely to commute on a weekly basis, staying in campgrounds and recreational vehicle (RV) parks during the week and returning home on the weekends. In addition, some of the non-specialized construction skill required for the project may be available in the existing construction labor force in the local area, including Martin and Okeechobee Counties. As stated in the SCA, the short term construction impacts are expected to be concentrated in Martin County. However, based on the fact that some portion of the construction workforce may reside in Okeechobee County, the impacts associated with these workers are examined here.

Construction is expected to begin in 1992 and end in 1995. The construction work force is estimated at 200 during the first year, increasing to an average peak of 600 during the third year of construction. The construction work force will consist of general labor, specialized workers and construction administration. Of this workforce, approximately 41 percent are expected to be unskilled or building construction related positions which may be available in the local area as opposed to specialized tradesmen which may not be available locally. As mentioned above, most construction workers will commute to the site on a daily basis. Based in existing commuting patterns at both the FPL Martin power plant and the Caulkins processing facility, where 24 percent and 30 percent of the work force, respectively, commute daily from Okeechobee County, approximately 25 percent of the unskilled labor force for the project, or between 21 and 62 workers annually, may come from Okeechobee County (Table 1). According to the Florida Department of Labor and Employment Security, Okeechobee County has a 1990 construction labor supply of 465 persons. The average salary for heavy construction workers was approximately $30,000 in 1989.

TABLE 1
ESTIMATED NON-SPECIALIZED CONSTRUCTION LABOR

Year	Average Annual Construction Jobs	Average Annual Non-Specialized Jobs	Average Annual Jobs Filled by Local Workers
1992	200	82	21
1993	400	164	41
1994	600	246	62
1995	200	82	21

This would result in additional wages of between $630,000 and $1,860,000 annually in the County during the plant construction period between 1992 and 1995.

Further, for this analysis, it is assumed that 24 percent of the construction force will commute on a weekly basis (70% daily commuters, 24% weekly commuters and 6% permanent relocatees) and that 25 percent of these weekly commuters will find temporary housing in Okeechobee County (Table 2). Temporary housing is readily available in Okeechobee County because of the area's significance as a recreational fishing destination. The 1990 Okeechobee County Comprehensive Plan states that the County has 3200 recreation vehicle spaces available. This compares to a small number available in Martin County. The number of construction employees temporarily residing in Okeechobee County is expected to range between 12 and 36 throughout the construction period. Based on the average construction salary listed above, the wages earned by weekly commuters would reach between $360,000 and $1,080,000 annually. Employees temporarily residing in Okeechobee County will spend part (but not all) of their salary in the county, increasing total expenditures in the county, local option gasoline tax revenues and half-cent sales tax revenues.

TABLE 2
ESTIMATED DAILY AND WEEKLY COMMUTING CONSTRUCTION WORKERS

Year	Average Annual Construction Jobs	Daily Commuters	Weekly Commuters	Weekly Commuters Residing in Okeechobee County
1992	200	152	48	12
1993	400	304	96	24
1994	600	456	144	36
1995	200	152	48	12

Indirect jobs which are associated with the construction jobs in the area are calculated using multipliers based on output of the U.S. Department of Commerce, Bureau of Economic Analysis (BEA), RIMS II model. This model is based on the 1977 national input-output table, and has been updated by BEA to reflect actual 1987 wage and salary data from Martin, St. Lucie and Okeechobee Counties. According to the model, 0.6 indirect jobs are associated with each heavy industry construction job. Since the County will be affected by both the local construction employees and the weekly commuters, indirect jobs were calculated on the total of both of these categories (Table 3). Therefore, between 1992 and 1995 there will be between 32 and 95 new construction jobs created. These jobs will result in an additional 19 to 57 associated indirect jobs in the area. Assuming that the salary associated with these jobs would be approximately $14,170 (the 1988 average annual salary for Okeechobee County), this would result in an increase of $269,230 to $807,690 in wages each year during the construction period. As with the construction jobs, some but not all of these wages would be spent in the county increasing total expenditures and tax revenues for the county.

TABLE 3
DIRECT AND INDIRECT CONSTRUCTION RELATED JOBS AND WAGES

Year	Local Workers	Wages	Weekly Commuters	Wages	Indirect Jobs	Wages
1992	21	$630,000	12	$360,000	19	$269,230
1993	41	$1,230,000	24	$720,000	38	$538,460
1994	62	$1,860,000	36	$1,080,000	57	$807,690
1995	21	$630,000	12	$360,000	19	$269,230

Construction expenditures during the plant construction period are expected to include local purchases of materials totaling $4.26 million. These materials would include lumber, hardware, paint, rags, oil, plumbing materials and others. Approximately 5 percent of these purchases, or $213,000, are expected to be made in Okeechobee County, resulting in an increase of over $12,700 in sales tax revenues.

Since the number of new construction workers staying in Okeechobee County on a weekly basis is fairly small, it is not anticipated that these employees will have any significant impact on public facilities and services such as roads, hospitals, or police and fire services. As mentioned above, these employees are expected to seek temporary housing, most likely in campgrounds and RV parks. According to the Okeechobee County Comprehensive Plan, campgrounds and RV parks are served by private water and septic systems. Therefore, the weekly commuters are not expected to significantly impact the county's housing supply or public services. Since they are already residents of the County, those construction

employees commuting to the job on a daily basis from Okeechobee County will not place additional demands on county facilities or services.

OPERATIONAL IMPACTS

The operational personnel for the ICL project are expected to begin work in July 1995. The permanent work force is expected to total 80 persons. Based on the high rate of in-migration into the area, it is assumed that the 80 new jobs will be filled by newcomers to the area. Although job applications will be made available to residents of both Martin and Okeechobee Counties, those who become employed by the project will likely leave behind the position they currently occupy, and this position could be filled by someone new to the area. Therefore, the end result is assumed to be 80 newcomers to the area. Although the operational work force is being encouraged to live in the Indiantown area, some will undoubtedly live in surrounding areas, including Okeechobee County. Again, this expectation is based on commuting patterns at the FPL Martin plant and the Caulkins processing plant, which show 24 percent and 30 percent, respectively, commuting from homes in Okeechobee County to jobs in Martin County. For this analysis, it is assumed that 10 percent of the operational work force will live in Okeechobee County.

Beneficial impacts to Okeechobee County will include increased employment, wages, and income, increased property tax revenues from houses purchased by the newcomers and increased gasoline taxes, sales taxes and intergovernmental revenues which are based on the population of the county. The 8 new jobs filled by Okeechobee residents are expected to increase wages by $229,496 annually for the life of the plant, or an average of $28,687 per position. It is anticipated that the 8 new jobs created at the plant will in turn create an additional 15 jobs based on the job multiplier associated with operations jobs involving the generation of electricity (Table 4). Assuming that these 15 jobs have an average salary of $14,170 there would be an increase of wages earned of $212,550 annually.

TABLE 4
DIRECT AND INDIRECT OPERATION RELATED JOBS AND WAGES

Year	Permanent Employees	Annual Wages	Indirect Jobs	Annual Wages
1995-2025	8	$229,496	15	$212,550

Additional benefits to Okeechobee County will occur as these new employees buy houses in the County increasing the County's tax base. Table 5 shows the property tax revenues accruing to the County if all 8 new power plant employees purchase houses and if just over half of the indirect employees purchase

houses. Assuming average Okeechobee County housing values and assuming that all of the houses purchased are eligible for homestead exemption, the tax base of the county would be increased by $202,967 resulting in additional property tax revenues of $3,982 annually based on the 1990 Okeechobee County millage rate. Of this total, $2,030 would be general county revenue and the other $1,952 would be revenues accruing to the school board and the South Florida Water Management District.

TABLE 5
INCREASED ANNUAL REVENUES AND COSTS TO OKEECHOBEE COUNTY

Year	1993	1994	1995	Buildout[1]
Increased Revenues				
Ad Valorem Taxes				
Pipeline Facilities	8780	8507	8242	7986
Permanent Emp Homes	0	0	1932	1932
Indirect Emp Homes	0	0	2051	2051
Total Ad Valorem Taxes	8780	8507	12,225	11,969
State Funds				
State Revenue Sharing	0	0	5496	5496
State Education Funds	0	0	64,825	64,825
Total Increase in Revenues	8780	8507	82,546	82,290
Increased Costs				
Increased Teacher Salaries	0	0	23,909	23,909
Education Capital Outlay	0	0	21,343	0
Increased Police Salaries	0	0	342	342
Increased Firemen Salaries	0	0	938	938
Transportation Improvements	0	0	13,671	0
Recreation Improvements	0	0	17,369	0
General Government Service	0	0	4632	4632
Total Increase in Costs	0	0	82,204	29,821
Net Benefit	8780	8507	342	52,469

[1] Ad Valorem taxes on the pipeline facility decrease each year as pipeline is depreciated. All other revenues and costs are assumed to remain the same over the 30-year economic life of the facility.

State funds that depend on county population or student population would be impacted by the new residents. Table 5 shows an annual increase of $5496 in state revenue sharing and an increase of $64,825 in state educational funds to Okeechobee County assuming that the new residents have an average household size of 2.47 persons and 0.68 students per household.

Table 5 also shows the increased costs to Okeechobee County for providing facilities and services to the new residents associated with the project. Based on the new students, an additional $23,909 annually in teacher salaries would be required as well as an initial capital outlay of $21,343. The increased costs for public safety and fire protection are estimated at $1,280 annually and the cost for additional transportation facilities a one time expense of $13,671. Recreation costs are estimated at a one-time cost of $17,369 for acquisition and development of new parks.

OTHER IMPACTS

WATER PIPLINE AND PUMPING FACILITIES TANGIBLE PERSONAL PROPERTY TAX REVENUES

Okeechobee County has reached the property tax millage cap of 10.0 mills. Therefore, the only way to increase tax revenues in the County is to increase the tax base. In addition to the increased tax base generated by houses purchased by new employees, the County's tax base will be increased by the value of the ICL water pipeline and pumping station. The value of the pump station and pipeline within Okeechobee County is estimated at $1 million. Assuming these facilities are depreciated on a straight-line basis, the personal property taxes generated on these facilities over their 30 year life are estimated at $369,811, assuming 1990 millage rates. The County would receive $206,109 while the school board and water management district would receive the other $180,964. When fully depreciated, the assessed value of the pipeline and pumping facilities will remain at approximately $400,000, generating $7,513 annually (assuming 1990 millage rates) for as long as the facility remains in operation.

COUNTY ROAD 15B WIDENING

In addition to the economic benefits accruing to Okeechobee County as a result of the construction and operation of the ICL project, ICL has agreed to assist the County with needed widening of County Road 15B.

JOB TRAINING

Another benefit Okeechobee County residents will receive is participation in the job training program being developed and offered in Martin County. This program is designed to train residents for positions available in construction, operation and maintenance of an electric power plant as well as other, more general job skill training. The training is scheduled to be offered beginning in 1991.

SUMMARY

The ICL project will have both a short term and a long term beneficial impact on Okeechobee County. In the short run, the benefits to the County will consist of the addition of between 52 and 155 jobs each year during construction, with wages of between $1,259,230 and $3,747,690. These temporary jobs will result in increased expenditures on temporary housing, food and other goods and services and increased tax revenues from general sales and gasoline sales. There should be no adverse impact on the County in terms of housing and public facilities and services in the short term.

The most significant long term benefits associated with the ICL project include increased permanent employment and increased wages and income for the County. The ICL project is estimated to generate 23 new permanent jobs for Okeechobee County residents with an annual payroll of $442,046 in 1988 dollars. The benefits also include increased property tax revenues (on the pipeline facilities and new residential units), improvements to County Road 15B, and access to the job training program being developed in Martin County. Long-term costs resulting from the project include increased public expenditures on public safety, education, transportation, and recreation. However, as indicated in the earlier discussion, the revenues accruing to the County are expected to significantly outweigh the costs incurred.

QUESTION 6

Source: February 20, 1991, Letter from P. G. Merritt to H. Oven

Please provide and/or clarify air quality impacts on Okeechobee County/or the impacts associated with future siting of power plants within Okeechobee County.

RESPONSE

As stated in the PSD permit application (Section 10.1.5 of the SCA), the proposed ICP plant has insignificant impacts at and beyond 4.25 and 4.5 km from the plant for both SO_2 and NO_2 emissions. In addition, there were no significant impact areas, as defined by the EPA, for TSP/PM-10 and CO emissions from the proposed ICP plant.

The closest distance between the proposed ICP plant site and the Okeechobee County line is approximately 18 km. Only winds from the ENE to the ESE could transport pollutants emitted from the proposed ICP plant toward Okeechobee County. Based on the modeling results presented in the PSD Permit Application, the air quality impacts on Okeechobee County resulting from the operation of the proposed ICP plant will be insignificant due to the meteorological conditions and the relatively large distance between the proposed ICP plant and Okeechobee County.

In response to Florida Game and Freshwater Fish Commission Question 5, air quality impacts associated with the proposed ICP plant, at distances beyond the ICP significant impact area, were evaluated using 5 years of the meteorological data and the EPA approved air quality model. The modeling results indicated that at distances beyond 10 km from the proposed ICP plant, the maximum ground-level pollutant concentrations were all negligible when compared to the PSD maximum incremental allowables for the county. Therefore, air quality impacts resulting from the operation of the proposed ICP plant will have insignificant effects on the future siting of power plants within the county.