SITE CERTIFICATION APPLICATION
Sufficiency Responses

Kissimmee Utility Authority

Florida Municipal Power Agency

Cane Island Power Park
Units 1-3

BLACK & VEATCH LLP

BLACK & VEATCH LLP

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Cane Island Power Park
Site Certification Application

B&V Project 59140
B&V File 32.0403
November 5, 1998

Hamilton S. Oven, P.E.
Administrator
Siting Coordination Office
Department of Environmental Protection
2720 Blair Stone Road, Suite H
Tallahassee, FL 32399-2400

RE: Kissimmee Utility Authority-Florida Municipal Power Agency
Site Certification Application - Cane Island Power Park
DOAH Case No. 98-3619 EPP
DEP Case No. 98-2297
Response to Statement of Sufficiency

Dear Mr. Oven:

On behalf of the applicants, and as required by Chapter 403.5067(1)(a) of the Florida Statutes, Black & Veatch submits the enclosed response to the Statement of Sufficiency received from the Department on October 8, 1998.

We appreciate the Department's cooperation and efforts to assist us during its review of the Site Certification Application. Please contact me at (913) 458-7563 if you have questions regarding this submittal.

Very truly yours,

Mike Soltys

J. Michael Soltys

Enclosure
cc: Service List

CERTIFICATE OF SERVICE

I CERTIFY that a true and correct copy of the enclosed Sufficiency Statement Response was mailed on November 5, 1998, to:

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J. Michael Soltys

CANE ISLAND POWER PARK

RESPONSE TO SUFFICIENCY QUESTIONS

The following information is provided in response to the Notice of Statement of Sufficiency, included as Attachment A, received from the Florida Department of Environmental Protection on October 8, 1998.

Department of Environmental Protection

1. *The application states the combustion turbine will operate in simple cycle mode or combined cycle mode with supplemental firing. Please clarify the proposed hours of operation in the simple cycle mode. Is this an initial operational mode lasting several years or is it a permanent operating scenario in addition to combined cycle operation?*

   Response: As noted in Appendix 10.7 - PSD Application, Section 3.1.1, Page 3-2 of the Site Certification Application (SCA), it is proposed that the combustion turbine operate 8,760 hours per year in either simple cycle or combined cycle mode. As noted in Appendix 10.7 - PSD Application, Section 2.2, Page 2-3, the combustion turbine heat recovery steam generator (HRSG) will be equipped with a bypass stack and guillotine damper to permit simple cycle operation prior to the HRSG installation and/or while the HRSG is out of service for any duration at any time thereafter. It should be noted that both the air quality impact analysis and BACT analysis contained in the PSD Application have considered operating scenarios of combined and/or simple cycle operation for the entire year.

   The proposed schedule calls for the project to begin commercial operation in a combined cycle mode. From a practical standpoint, simple cycle operation would only occur if there was an outage of the HRSG or steam turbine, or if there is some significant unforseen change in the future power market.

2. *Is KUA considering power augmentation? If so, explain the overall operation in the power augmentation mode. What technology is used to generate extra power (i.e., steam or water injection)? How much more power output is due to operation in the power augmentation mode? Provide an schematic of the power augmentation operation mode. What is the maximum manufacturer's recommended period (hr/year, hr/month) for operation in the power augmentation mode?*

   Response: Power augmentation is not proposed for Unit 3.

3. *It appears the proposed project potential to emit (PTE) is high compared to other recent applications for the same size turbine. Please submit GE and Westinghouse manufacturer data at ambient conditions. Are the proposed emissions limits (Table 2-2 Page 2-6) based on the worst case scenario for each cycle, including the HRSG duct firing operational mode?*

Response: As noted in Appendix 10.7 - PSD Application, Section 2.3.1, Page 2-3 of the SCA, manufacturer's data from GE and Westinghouse are included in Attachment 1 of the PSD Application. As noted in Appendix 10.7 - PSD Application, Section 2.4, Page 2-4, and Table 2-2 footnotes, the PTE calculations in Table 2-2 were based on the maximum hourly emission rate for each pollutant at an ambient temperature of 72°F (average ambient conditions) considering both turbine manufacturers (i.e., GE or Westinghouse), combined or simple cycle operation, 50 to 100 percent load combined cycle operation and 100 percent load simple cycle operation, and 720 hours of distillate fuel oil firing (0.05 percent sulfur) with the remainder of the year on natural gas.

The details of the calculations are included in Attachment 3 to Appendix 10.7 - PSD Application, and may be summarized as follows:

- To calculate the PTE for a given pollutant, the maximum lb/hr emission rate considering both combustion turbine manufacturers (GE and Westinghouse) were determined for each of four possible operating scenarios at the ambient condition of 72°F. These four scenarios include combined cycle operation on natural gas, combined cycle operation on distillate oil, simple cycle operation on natural gas, and simple cycle operation on distillate oil. (These lb/hr data are summarized at the bottom of Attachment 3 to Appendix 10.7 - PSD Application for each pollutant). In the case of combined cycle operation, the maximum lb/hr emission rate for either natural gas or distillate oil firing represents the highest emission rate over the proposed operating load range (i.e., 50 to 100 percent load), while the simple cycle operation maximum lb/hr emission rates consider base load operation only.

- Using the natural gas and distillate oil maximum lb/hr emission rates established in step one above for combined and simple cycle operation, ton per year calculations were made for the combined and simple cycle operating scenarios assuming each scenario was independent of the other and operated the entire year (i.e., 8,760 hr/yr) assuming 8,040 hr/yr of natural gas firing and 720 hr/yr of distillate oil firing. (These calculations are summarized at the bottom of Attachment 3 to Appendix 10.7 - PSD Application for each pollutant).

- The highest ton per year calculation resulting from either combined or simple cycle operation was presented in Table 2-2.

4. What is the proposed design heat capacity of the duct burner (MMBtu/hr)? What type of fuel will be used to fire the duct burner? What are the proposed emissions from this unit?

Response: As noted in the performance data in Attachment 1 to Appendix 10.7 - PSD Application of the SCA, the design heat capacity of the duct burner is 67 MMBtu/hr (HHV) if a Westinghouse combustion turbine is selected, and 44 MMBtu/hr (HHV) if a General Electric combustion turbine is used. The duct burner will fire natural gas exclusively. As noted in the performance data in Attachment 1 to Appendix 10.7 - PSD Application, the estimated emissions from the duct burner are:

NO_x:	0.080 lb/MMBtu (HHV)
CO:	0.100 lb/MMBtu (HHV)
PM/PM_{10}:	0.015 lb/MMBtu (HHV)
VOC:	0.012 lb/MMBtu (HHV)

5. *What is the maximum steam production rate (lb steam/hr) from the HRSG?*

Response: The maximum steam production rate of the HRSG is approximately 544,000 lb/hr at 19 F ambient temperature.

6. *Refer to the DEP's letter of August 17, 1998 and respond to questions regarding the BACT analysis.*

Response: A re-evaluation of the NO_x BACT analysis as recommended in the DEP's letter of August 17, 1998, was completed as follows. Assuming uncontrolled NO_x emissions of 200 ppm, estimates of the minimum cost to achieve 15, 9, 7.5, and 3.5 ppm with any combination of NO_x control technologies were developed. The results of this analysis are presented in the following Table 1.

It should be noted that subsequent to DEP's August 17, 1998 letter, KUA has taken competitive bids as required by their municipal purchasing rules from combustion turbine vendor's and only received one bid which was for a GE 7FA combustion turbine. Based on the GE 7FA NO_x emission guarantees, the aforementioned NO_x BACT re-evaluation, recent NO_x limits established for similar facilities, as well as the energy, social, economic, and environmental considerations associated with SCR systems as described in Appendix 10.7 - PSD Application, Section 3.0, KUA proposes the following NO_x BACT options:

NO_x BACT Options		Emissions (ppm @ at 15 % O_2)	Control Technology
Option 1	(gas)	9	Dry Low NO_x (DLN)
	(oil)	42	Water Injection (WI)
Option 2	(gas)	7	Selective Catalytic Reduction (SCR)
	(oil)	15	SCR

Table 1

KISSIMMEE UTILITY AUTHORITY - STANDARD COMBUSTOR
NOX CONTROL ECONOMIC EVALUATION

	STANDARD COMBUSTOR TO 200.0 ppm @ 15%O2	STANDARD COMBUSTOR WITH SCR TO 15.0 ppm @ 15%O2	STANDARD COMBUSTOR WITH SCR TO 9.0 ppm @ 15%O2	DRY LOW NOx COMBUSTOR TO 9.0 ppm @ 15%O2	DRY LOW NOx COMBUSTOR WITH SCR TO 7.5 ppm @ 15%O2	DRY LOW NOx COMBUSTOR WITH SCR TO 3.5 ppm @ 15%O2
Capital Cost						
Direct Capital Costs						
Dry Low NOx Combustors		0	0	1,000,000	1,000,000	1,000,000
Catalyst		1,100,000	1,210,000	0	176,000	341,000
Catalyst Reactor		250,000	279,000	0	150,000	186,000
Control and Instrumentation		140,000	140,000	0	70,000	140,000
Ammonia Storage and Injection Equipment		400,000	425,000	0	125,000	175,000
Balance of Plant		643,000	698,000	0	177,000	286,000
Subtotal		2,533,000	2,752,000	1,000,000	1,698,000	2,128,000
Indirect Capital Costs						
Contingency		633,000	688,000	250,000	425,000	532,000
Engineering & Supervision		253,000	275,000	10,000	170,000	213,000
Construction & Field Expenses		127,000	138,000	50,000	85,000	106,000
Construction Fee		253,000	275,000	0	170,000	213,000
Start-up Assistance		51,000	55,000	20,000	34,000	43,000
Performance Test		51,000	51,000	20,000	43,000	43,000
Subtotal		1,368,000	1,482,000	350,000	927,000	1,150,000
Total Installed Costs	**Base**	**3,901,000**	**4,234,000**	**1,350,000**	**2,625,000**	**3,278,000**
Annual Cost						
Direct Annual Costs						
Catalyst Replacement		458,000	504,000	Base	73,000	142,000
O&M Labor		19,000	19,000	Base	19,000	19,000
Maintenance Materials		11,000	11,000	Base	4,000	6,000
Reagent Feed		2,522,000	2,602,000	Base	83,000	136,000
Power Consumption		670,000	691,000	Base	23,000	37,000
Lost Power Generation		485,000	485,000	97,000	291,000	388,000
Annual Distribution Check		25,000	25,000	Base	21,000	21,000
Subtotal		4,190,000	4,337,000	97,000	514,000	749,000
Indirect Annual Cost						
Overhead (Labor)		11,000	11,000	0	11,000	11,000
Administrative Charges		78,000	85,000	0	53,000	66,000
Property Taxes		39,000	42,000	14,000	26,000	33,000
Insurance		39,000	42,000	14,000	26,000	33,000
Capital Recovery		326,000	354,000	113,000	220,000	274,000
Subtotal		493,000	534,000	141,000	336,000	417,000
Total Annual Cost		**4,683,000**	**4,871,000**	**238,000**	**850,000**	**1,166,000**
Annual NOx Emissions, tpy	5775.8	433.2	259.9	259.9	216.6	101.1
NOx Reduction, tpy	Base	5342.6	5515.9	5515.9	5559.2	5674.7
NOx Removal Costs, $/ton	**Base**	**877**	**883**	**43**	**153**	**205**

In the event the GE 7FA is unable to achieve the emission limits described in NO_x BACT Option 1, then Option 2 levels will be obtained with an SCR.

7. *What is the nominal power output (MW) for the combustion turbine? What is the nominal power output (MW) associated with the HRSG?*

   Response: The proposed combined cycle combustion turbine unit is rated at 250 MW (nominal). The proposed combustion turbine generator is rated at approximately 150 MW and the proposed associated steam turbine generator is rated at approximately 100 MW.

8. *The Department may grant authorization in accordance with Rule 62.210.710 F.A. C., to allow for excess emissions beyond the regulatory limit during periods of startup/shutdown and power augmentation periods (if requested). If excess emissions are requested during those periods, please, submit specific details about the frequency of these periods. Attach manufacturer support data.*

   Response: The number of necessary starts is difficult to predict especially as the electric utility industry becomes deregulated and with the uncertainty of future fuel prices. In the near term, Cane Island Unit 3 is expected to be a base load unit, but it is not unreasonable to project scenarios where it cycles weekly resulting in 52 starts per year.

9. *Please submit the application information on an ELSA disk. This will facilitate the input of the application data in the Department's ARIMS system.*

   Response: An ELSA disk of the application is enclosed as Attachment B.

10. *Quantify emissions associated with the cooling tower.*

    Response: A comprehensive analysis of cooling tower emissions and impacts is quantified in Volume 2 of the Site Certification Application, Section 5.1.4, Page 5-1.

11. *Additional comments from EPA and the National Park Service will be forwarded when received.*

    Response: In a letter dated September 23, 1998, the DEP forwarded a letter from the Department of the Interior, Fish and Wildlife Service (FWS) requesting that the regional haze and visibility study conducted for the Chassahowitzka Class I Area consider a background visual range (BVR) of 65 km (40 mi) instead of 25 km (15 mi). A revised analysis using a BVR of 65 km (40 mi) as well as lower NO_x emission levels based on the revised BACT discussed in response to sufficiency Question 6 above. The revised regional haze study is included as Attachment C.

12. *Was a figure showing the location of the piezometers and soil infiltrometer tests provided in the submittal?*

Response: Locations of the piezometers and soil infiltrometer tests are noted in SCA Appendix 10.8 Site Subsurface Data, within the report titled "Subsurface Investigation Data Report, Units 1 and 2". Note that the piezometers installed during the investigation were temporary and were removed during construction of Units 1 and 2. There are three monitoring wells currently installed at the site. Locations of these monitoring wells are presented in Figure 2.1-3, page 2-5, of the SCA.

13. *At what depth were the double ring infiltrometer tests performed?*

Response: The tests were performed at the ground surface. There was minimal site preparation required that included only leveling the rings and removing surface debris.

14. *According to the table on page 2-33, the water table elevations vary widely over the site.*

A. How was the maximum high and low water table elevations derived?

Response: High and low groundwater elevations were determined using results of the piezometers and test pits completed during the subsurface investigation during 1992 (see SCA Appendix 10.8), and the groundwater data measured in the existing monitoring wells (see SCA Figure 2.3-2, page 2-35).

B. What is the maximum high water table elevation at the location of the Unit 3 stormwater pond?

Response: The maximum high water table elevation at the location of the Unit 3 stormwater pond is 74 feet MSL.

15. *According to the table on page 2-34, infiltration rates vary widely over the three tests conducted.*

A. Be advised that infiltration is NOT synonymous with hydraulic conductivity, and any calculations showing storage recovery in the percolation ponds and stormwater ponds must use the latter test value.

Response: Hydraulic conductivity was determined by slug tests performed in piezometers installed at the site. Please refer to SCA Section 5.3.4 Leachate and Runoff for a description of the slug tests and how the hydraulic conductivity was determined for the study.

B. Be advised that when test results vary by at least one order of magnitude, it is not appropriate to average the values. If the higher test value is to be used, it must be quantified by further testing.

Response: The infiltration tests presented on SCA page 2-34 represent double ring infiltrometer test data from the plant site, I-1, and two tests within the access road corridor, I-2 and I-3. The surficial soils varied significantly from the higher elevation of the plant location to the lowland areas within the corridor and are reflected in the test results. Test results from the infiltrometer tests were used in design for the appropriate facility: I-1 for surface infiltration for the main plant facility; and, I-2 and I-3 for surface infiltration for the access road corridor. Results determined from I-2 and I-3 are not appropriate for design of the main plant area. As stated in Item 15.A above, slug tests performed in piezometers were used for determination of hydraulic conductivity for the ponds in the main plant area.

C. Why was the lowest test value omitted to obtain the "estimated" infiltration rate of 30 feet per day?

Response: The infiltration rate for the ponds was determined from the results of the slug tests performed in piezometers installed within the main plant area. The double ring infiltrometer tests were used for other miscellaneous calculations, not for determination of the percolation rates for the design of the ponds. The values determined from the double ring infiltrometer tests represent significantly different site conditions based on the tested location. Tests performed within the access road corridor resulted in a much lower value than was measured on Cane Island. The results of the double ring infiltrometer tests were not averaged; rather, the data collected for specific areas was used for design within that specific area.

D. Why are infiltration rates for units 1 and 2 used for unit 3?

Response: Units 1, 2, and 3 use some common facilities, such as the percolation pond. Unit 3 will employ the use of a separate stormwater detention pond located immediately north of the switchyard. Test results from slug tests performed in piezometers P-3 and P-4, see 15A above, are representative for the entire plant site on Cane Island.

16. *What is the minimum and average wetland buffer zone proposed on Figure 3.2-1?*

Response: 50 foot minimum around perimeter of Cane Island as shown on SCA Figure 3.2-2, Site Arrangement.

17. *Page 3-20 refers to percolation of retained runoff within 24 hours. Was a groundwater mounding analysis provided to demonstrate this?*

Response: A mounding analysis was performed for the expanded percolation pond. The results of that mounding study indicate that the site soils have the capacity to percolate runoff in the

percolation pond and the adjacent onsite detention basins. Operation of Units 1 and 2 since 1993 have demonstrated more than adequate percolation within the existing detention basin.

18. *Page 3-23 states that the design storm used was the 25-year, 72-hour storm. However, the appropriate storm for Osceola County is the 10-year, 72-hour storm. Revise as necessary.*

Response: The 25-year, 72-hour design storm was chosen to meet the requirements of the South Florida Water Management District, as stated in Chapter 6 of their Management and Storage of Surface Waters Permit Information Manual, Volume IV, dated May 1994. The 10-year, 72 hour event was also modeled and the HEC-1 output files are attached as the KUA Cane Island "Unit 3 Hydrologic Analysis - Response to Sufficiency Questions" calculation set included with the sufficiency response package as Attachment D.

19. *Provide calculations showing, the following:*
    A. Water quality;
    B. sizing of the orifice;
    C. impervious and pervious surfaces;

Response: These calculations are included as Section 3.10 of the SCA. Additional calculations are provided in the "Unit 3 Hydrologic Analysis - Response to Sufficiency Questions" calculation set (Attachment D).

20. *Was a map provided that shows the location of the 100-year flood plain in reference to the project site?*

Response: The maximum floodstage at the project site in response to the 100 year recurrence interval precipitation event was estimated during Units 1 and 2 development. These units were previously permitted by SFWMD and FDEP. Figure E-2 in Section 10.4 of the SCA illustrates the 100-year flood plain in the vicinity of the Power Park.

21. *Was a map provided that shows the location and direction of on-site and off-site runoff for pre- and post-development?*

Response: Offsite runoff is not affected by Unit 3 construction. Drainage patterns are discussed in sections 2.3.4 and 3.8 of the SCA. Drainage associated with Unit 3 construction is shown (in bold line type) on Figure 3.8.1 of the SCA.

22. *Please provide a full-sized set of the figures pertaining to stormwater management in the application (many of the ones provided in the application are illegible).*

Response: A full-sized set of figures is included in the sufficiency response package as Attachment E.

23. *Page 3-25 states that straw bale dikes will be used to minimize sediments flowing off-site and into the stormwater pond. The DEP strongly discourages the usage of straw bale dikes and recommends a double row of silt fencing (separated by at least 3 feet width) for the following reasons:*
    1. Straw bale dikes are rarely installed correctly and less frequently maintained;
    2. Straw bale dikes are very labor-intensive and require frequent replacement;
    3. An exotic and invasive species called the tropical soda apple is associated with straw bales and has potential to adversely affect the ecosystem; and
    4. Straw bale dikes are more expensive than silt fencing; Straw bale dikes cost approximately $4 per foot while silt fencing costs less than $2 per foot.

    Response: Straw bale dikes have been deleted from the SCA and Figure 3.8-2 of the SCA. The silt fence detail and notes have been updated to meet the double row recommendation, and is included in Attachment E.

24. *Page 3-25 states that ALL significant vegetation will be removed except for SOME trees in the construction/lay-down staging area. What criterion will be used to determine which trees will remain standing?*

    Response: Trees will be removed from the construction/laydown staging area as required to support plant construction, equipment movement, and storage requirements. Minimizing tree removal will be a priority in the utilization of this area.

25. *Why is a handrail provided at a stormwater outfall structure?*

    Response: The handrail is provided as a safety measure for plant personnel working in the area.

26. *Provide cross-sections of the percolation and detention ponds.*

    Response: The percolation pond cross-section is provided as Section 3 of Drawing 59140-CSTF-S3011 included in Attachment E to this sufficiency response package. The detention pond cross-section is included as Section 5 - Wet Detention Basin Section on Figure 3.8-2 of the SCA.

27. *Demonstrate that the proposed pond meets the following criterion as found on page 82 of the SFWMD Basis of Review:*
    A. minimum area;
    B. width;
    C. depth;
    D. side slopes;

Response: The pond area is approximately 1 acre which is greater than the 0.5 acre minimum area specified. The bottom of pond width of 135 feet is greater than the minimum width of 100 feet. The pond depth is less than 6 feet. This matches the design criteria of the Units 1 and 2 stormwater pond which is already in operation at the site. Side slopes have been changed from 3:1 to 4:1 to meet the basis of review criteria.

28. *Can the percolation ponds be demonstrated to meet the criterion as found in Appendix 6 of the Basis of Review?*

Response: The percolation pond and the detention ponds meet the criterion stated for minor impoundments as defined by Appendix 6 of the Basis of Review. The ponds satisfy all general requirements as defined by Appendix 6 as well as specific criteria such as sideslopes of 2H:1V, top widths no less than 5 feet, and minimum freeboard of not less than 2 feet.

29. *Page 4-2 states that compensating storage within the 100-year flood plain will be provided by the new stormwater pond. Were these calculations provided in the submittal?*

Response: Compensating storage for Units 1 and 2 construction was provided by the Units 1 and 2 Stormwater Pond. These Units were previously permitted. There is no additional construction within the 100-year flood plain for Unit 3 Construction. The referenced statement on page 4-2 is incorrect.

30. *The proposed power transmission line system required for the Cane Island Plant will impact a total of 19.7 acres of wetland (section 6.0). Table 6.1-2 provides a very basic breakdown of the impacts but does not provide the location indicating where these impacts will be located. In addition there is no discussion of alternative corridors which may reduce wetland impacts, nor is mitigation for the destruction of the wetlands discussed.*

Response: The proposed power transmission line system required for the Cane Island Plant will impact a total of 11.3 acres of wetlands (section 6.0). The revised Figure 6.1-1 enclosed as Attachment F indicates wetlands impact areas. Attachment F also includes signed/sealed transmission line construction drawings. Two other routes options were evaluated (Figure 6.1-1); however, these routes would result in greater impacts because of potentially longer line lengths, and additional vegetation clearing and construction within wetland areas. The proposed mitigation plan for the impacts to wetlands in the transmission line corridor is included as Attachment G.

31a. *Does the 19.7 acres of wetland impact discussed in section 6.0 include both direct impacts from the access road construction, filling, clearing within the corridor and the indirect impacts such as clearing for the conflict line.*

Response: The 11.3 acres of wetland impact discussed in section 6.0, includes direct impacts.

31b. *In section 6.0, (transmission lines), it is stated that access roads will be required through the wetland areas and that fill will be placed and culverts may be utilized. Figure 6. 1 -1 is identified as showing the location of the proposed fill locations, unfortunately Figure 6. 1-1 is a blank page. If fill is used to construct access roads and culverts are not utilized, how will surface water flows be maintained? Will the project result in flooding to adjacent areas? If culverts are to be utilized, where will they be placed and will they maintain historic water flow patterns.*

Response: Section 6.1.8.1 states that culverts, if required will be installed as the road construction progresses to maintain drainage and water flow. Section 6.1.8.4 states that in forested wetlands, appropriately sized drainage structures will be place in the access road to maintain existing drainage patterns and to allow the movement of aquatic organisms. Culverts will be utilized and the project will not result in flooding to adjacent areas. Figure 6.1-1 (Attachment F) illustrates the location of the wetlands, the existing transmission structures and line, the new transmission structures and line, access roads, and structure pads. However, as stated in section 6.1.8.2 the information is preliminary design regarding the wetland impacts of the proposed transmission line and access roads. According to the Instruction Guide for Certification Applications, submittal of detailed wetland impacts information either during the certification process or post-certification for later review is allowed. The additional information is being developed and is expected to be available by May 1999 during the certification process.

32. *What type of fill will be used for construction of the access roads? Will that fill be a source of nuisance or exotic plant species?*

Response: The fill will be from an approved local source.

33. *Why are the access roads necessary?*

Response: The access roads are necessary for initial construction and future maintenance of the transmission line.

34. *Details regarding long term maintenance of the transmission line corridors, access roads and culverts were not provided. How will the vegetated and non-vegetated areas be maintained?*

Response: Details regarding long term maintenance of the transmission line corridors, access roads, and culverts are provided in Section 6.1.9 of the SCA.

35. *Will maintenance of the transmission line corridor and access road involve monitoring for the presence of exotic or nuisance plant species?*

Response: The vegetation in the corridor will be monitored for transmission line clearance and safety purposes, but there are no plans to monitor the transmission line corridor for exotic or nuisance plant species.

36. *How will the construction areas be delineated to prevent unnecessary impacts to wetland areas outside the work area? How will the delineation indicators be maintained during construction? How will contractors be educated as to the location of the work area? Who will be responsible for ensuring that impacts are limited to the designated work area?*

Response: Construction areas will be surveyed and staked to prevent unnecessary impacts to wetland areas outside the work area. Stakes indicating the construction areas will be replaced if knocked down or inadvertently removed. If the stakes are knocked down and cannot be replaced accurately, the construction area will be resurveyed. Contractors will be educated as to the location of the work area during pre-construction meetings and during construction activities by the onsite construction manager. The construction manager will be responsible for ensuring that impacts are limited to the designated work area.

37. *The allowable discharge for projects within Reedy Creek watershed is 67 CFS per square mile. Does the stormwater management system meet these criteria?*

Response: The stormwater management system is designed to limit the post-development peak discharge to the pre-development peak discharge rate of runoff. In response to the 10 year-72 hour precipitation event, the pre- and post-development peak discharge rate is 1 cfs. For an area of 0.01184 square miles, this corresponds to a rate of 84 CFS per square mile.

DCA SUFFICIENCY COMMENTS

Land use map legend

Fig. 2.2-1, "Vegetation and Land Use Within a 5-mile Radius," does not have a legend by which to identify the vegetation and land use.

Should we substitute the legend from Fig. 2.3-3 on p. 2-40? What land use categories are used in Fig. 2.3.3? Are they from the Osceola County Future Land Use Plan or are they from some other classification?

Response: Yes, substitute the legend from Fig. 2.3-3 on p. 2-40 of the SCA. The land use categories used in Fig. 2.3-3 are Residential, Wet Natural, Upland Natural, Industrial/Commercial, and Agricultural. These categories are not from the Osceola County Future Land Use Plan. The categories are based on the Kissimmee, Florida, 30 X 60 Minute, USGS topographic map and observations of the existing conditions in the area.

Noise

KUA's noise modeling predicts that the C-weighted sound levels of "the full Power Park" will be 66 dBC at the main gate and 64 dBC at the nearest residence (SCA vol. 2, p. 5-48). The SCA gives the measured C-weighted sound level from Power Park Units 1 and 2 as 55 dBC at the main gate and at the nearest residence. KUA concludes therefore that its noise model is conservative in its predictions by 9-11 dBC.

Please clarify whether "full Power Park" refers to the existing Power Park, comprising Units 1 and 2, or to the future Power Park, comprising Units 1, 2, and 3.

(If the predicted noise level is from all three units, then it would not be fair to compare a predicted noise level from three generating units to a measured noise level from two units. If the predicted noise level is from the existing two units, then this suggests that the noise model is inaccurate, since its predicted noise level varies from the measured noise level by 9-11 dBC.)

Response: The existing measured sound levels were incorrectly compared to the "full Power Park" modeled sound levels. Full Power Park operation refers to Units 1, 2, and 3. The correct comparison would be between the measured existing facility sound level of 55 dBC at both NML-1 (entrance gate to the facility) and NML-2 (nearest residence) to the modeled sound level for the existing facility of 64 dBC at NML-1 and 63 dBC at NML-2. Therefore the modeling results are conservative by 8 to 9 dBC.

KUA states that the predicted C-weighted sound level from the full Power Park at the nearest residential locations is 64 dBC. This exceeds the 45 dBC standard from the county code. KUA states that past experience indicates that residents are unlikely to experience any disturbance when exposed to broad-band sound levels below 70 dBC, so that the people in the nearest residences should not be disturbed by the noise of the new unit (SCA vol. 2, p. 5-53). KUA appears to be saying that noise from the Power Park can exceed the county's noise standard by 19 decibels (dBC) without disturbing the nearest residents. A noise level of 64 dBC is, according to the Department's calculation, over eight times as loud as the county's 45 dBC noise-level standard.

Please explain why a noise level that is much louder than the county's noise-level standard will not disturb the affected residents.

Response: The purpose of a C-weighted noise criterion is to protect neighboring residents from excess low frequency "rumble" noise. A C-weighted noise criterion of 45 dBC is extremely stringent and is not readily feasible at a power plant. Typical noise criteria within community locations will range from 45 to 55 dBA, and 65 to 75 dBC. These levels are generally considered adequate to protect the public from excess noise emissions. For comparison, the community sound levels as measured prior to any construction at the Cane Island facility ranged from 36.4 dBA to 50.9 dBA and 52.4 dBC to 65 dBC. As this data indicates, the pre-

construction noise environment was well in excess of the current Osceola County C-weighted Noise Criteria of 45 dBC. However, Power Park noise emissions are restricted to 55 dBA by the Osceola County Conditional Use Permit.

Please explain why the SCA's discussion of noise emphasizes the C-weighted noise level.

Response: The Osceola County noise criteria were recently changed to include C-weighted noise limitations. This change was made subsequent to the construction of Cane Island Units 1 and 2. The SCA was written to address these new C-weighted noise requirements.

Following submittal of the SCA, KUA requested and received a letter from Mr. Ted Garrod of the Osceola County Zoning and Code Enforcement Department verifying that the applicable noise limitation at the Power Park is specified in Special Condition 15 of the Conditional Use Permit CU/SDP 92-86. A copy of Mr. Garrod's letter follows this page. This limitation is 55 dBA as measured at the property boundary.

Please explain why KUA has not used the Equivalent Sound Level (L_{eq}) or Day-Night Level (L_{dn}) or any kind of cumulative sound exposure measurement in describing the noise to be generated at the Power Park.

Response: The equivalent sound level is a logarithmically averaged sound level as measured over a specific sampling period. All modeled noise levels for the facility are assumed to be a continuous, maximum sound level as produced by the power station equipment. Therefore, all predictive sound levels, as determined through modeling, represent continuous worst-case Leq sound values.

The modeling results as represented in the SCA were developed for comparison with the applicable noise criteria. As such, an Ldn sound level or other cumulative sound exposure levels are not applicable to this site.

Transportation

At the peak of the construction phase, which will last about 15 weeks, 240 workers will be traveling to and from the site. This will create additional traffic on area roadways, particularly Old Tampa Highway and US Highway 17/92. Despite this increase in local traffic, KUA says that level of service standards should not be exceeded by the construction-related traffic (SCA vol. 2, p. 4-27).

Please cite the LOS standards referred to.

Response: Level of Service C was assumed based on Osceola County service standards.

Zoning &
Code
Enforcement
Department

17 S. Vernon Avenue
Room 235
Kissimmee, FL
34741
(407) 847-1405
fax (407) 847-1488

Osceola
County

August 10, 1998

Mike Soltys
Black & Veech
11401 Lamar
Overland Park, Kansas 66211

Ref: Osceola County Noise Ordinance

Dear Mr. Soltys:

The KUA-Cane Island electrical generation plant was approved as a Conditional Use according to our file reference CU/ SDP 92-86. According to Special Condition 15, KUA agreed not to exceed a sound level of 55 decibel measured at the property boundary. Although the condition lacks specificity, I believe the intention at the time of approval was to measure the decibels in the A weighted scale.

Subsequent to the approval of CU/SDP 92-86, Osceola County adopted by ordinance a code restricting maximum noise levels throughout the county. According to Osceola County Code, Chapter 9, Article IV, Section 9-110, (c) the maximum sound level which may emit from mechanical equipment between 7 a.m. through sunset is 50 decibels (C- scale). One minute after sunset through 6:59 a.m. the decibel limitation is reduced to 45. Section 9-110, (c), requires sound measurements to be conducted at the real property boundary of sound source.

In respect to compliance with CU/SDP 92-86, the County Attorney's office advises me, Special Condition 15 continues to govern sound limitations in effect at the KUA-Cane Island site. In accordance with the approved Conditional Use Site Development Plan (CU/SDP), 55 decibels (A-scale) is the maximum sound decibel which may be measured at the property boundary. Osceola County Code, Chapter 9, Article IV, Section 9-110, (c) does not apply unless the Conditional Use Site Development Plan is amended. However, if KUA chooses to amend the approved site development plan, Osceola County must apply sound limitation criteria as regulated by Osceola County Code, Article IV. These criterion include provisions for a Special Variance. According to Chapter 9, Article IV, Section 9-109, (a), (1), the Planning Commission may grant a Special Variance for a period of time not to exceed 365 calendar days. According to established variance procedures, extensions of time may be granted in accordance with Chapter 9, Article IV, Section 9-109,(a), (5).

I trust this letter clarifies the sound measurement criteria Osceola County will utilize regarding sound limitations at the KUA-Cane Island electrical generation plant. If you have any further questions, please do not hesitate to contact me. In closing, I remain.

Respectfully yours,

Ted Garrod, AICP
Zoning & Code Enforcement Manager

cc: Ben Sharma, KUA

Air quality- NO_x emissions

KUA is apparently seeking to have BACT for NO_x emissions established as follows: the use of dry low NO_x combustors to limit emissions to 15 ppmdv for the first 2 years of operation, with the limit dropping to 9 ppmdv after that (SCA appendix 10-7, p, 3-13-16).

Please explain why BACT for Unit 3 should be set at high as 15 ppmdv NO_x for the first 2 years, when the recently certified City of Tallahassee Purdom Unit 8 power plant was required to meet 12- ppmdv NO_x.

Response: A revised BACT for Unit 3 NO_x emissions is under consideration by the DEP, and consists of the following NO_x limits:

NO_x BACT Options	Emissions (ppm)	Control Technology
Option 1 (gas) (oil)	9 42	Dry Low NO_x (DLN) Water Injection (WI)
Option 2 (gas) (oil)	7 15	Selective Catalytic Reduction (SCR) SCR

Refer to the response to Question 6 for detailed information regarding the revised NO_x BACT.

Cooling towers and sewage effluent

Treated sewage effluent supplied by the City of Kissimmee (Water and Sewer Department) effluent pipeline adjacent to the Cane Island Power Park will be the primary source of cooling water. The combined cooling tower blowdown, neutralization basin effluent, and boiler blowdown will be returned to the effluent pipeline and thence to the Imperial regional percolation pond treatment facility.

Will the return of this plant water to the effluent pipeline have any adverse effect on the Kissimmee water treatment system?

Response: The return of plant water to the regional effluent pipeline will not have any adverse effects on the Kissimmee water treatment system. Per an agreement between the City of Kissimmee and the Kissimmee Utility Authority, the combined effluent downstream of the Power Park will continue to meet the governing permit requirements and F.A.C 62.610.

Does the addition of plant water increase the temperature of the water in the pipeline, and, if so, will that promote the growth of microorganisms in the pipeline?

Response: A large portion of the plant discharge to the regional effluent pipeline consists of cooling tower blowdown. However, the majority of heat rejection at the site occurs via evaporative cooling within the cooling tower. Cooling tower blowdown is obtained from the cool side of the circulating water system downstream of cooling tower. The return of plant wastewater to the regional effluent pipeline will not have a significant impact on the temperature of the pipeline or the potential for microbial growth.

Please discuss the public health implications of using treated sewage effluent in the cooling towers at the Power Park.

Response: The water obtained from the Kissimmee effluent pipeline to be used for makeup to the cooling towers will be treated by the City of Kissimmee prior to use at the Power Park to meet the public access levels of treatment standards as defined in F.A.C. 62.610. The circulating water systems will be chemically conditioned with intermittent use of both oxidizing and non-oxidizing biocides to control microbial growth within the Cane Island cooling tower systems. Proper upstream treatment by the City of Kissimmee and a proper circulating water chemical conditioning program at the Power Park will provide adequate safeguards regarding public health and safety.

Dewatering and stormwater runoff

Dewatering will be necessary in order to construct the neutralization basin and the oil/water separator, which will both require below-grade excavations. Discharge from dewatering will be directed to the existing stormwater pond.

Will this dewatering discharge increase the probability of overflow of the stormwater pond during storm events?

Response: The storm water wet detention basin associated with Unit 3 is designed based on a 25 year 72 hour event (SFWMD requirements). The EPA generally requires that a Storm Water Pollution Prevention Plan and Best Management Practices be generated to support construction activities. The EPA requires within the SWPPP guidelines that the construction drainage system be designed to handle a 10-year, 24-hour event.

The storm water system associated with Unit 3 is designed to handle an event twice the size of the requirements set forth by the EPA for construction activities. Therefore, the applicants do not anticipate overflowing the storm water basin during storm events while dewatering activities are underway.

Based on Units 1 and 2 construction it was observed that the flow from dewatering activities was between 50 and 100 gpm. This same type of flow is expected during the construction of Unit 3.

Disabling of the effluent pipeline

If the effluent pipeline is disabled, the combined cooling tower blowdown, neutralization basin effluent, and boiler blowdown will be temporarily discharged to the stormwater runoff ponds. If the effluent pipeline is out of service for longer than 3 days, the capacity of the ponds will be overwhelmed and the excess will be discharged over the ponds' overflow structures into Reedy Creek swamp. KUA notes that the effluent pipeline has never been out of service since the Power Park has been in operation (SCA vol. 2, p. 5-28).

Please explain what kind of event would cause the effluent pipeline to be out of action? Given the occurrence of such an event, what is a likely time period for the effluent pipeline to be out of action? What actions would be necessary to bring the pipeline back on line?

Response: Although very unlikely, possible scenarios may include a pipeline failure upstream or downstream of the Cane Island site, or out-of-service upstream treatment plant(s). (Note this has not occurred with the existing units in 3-1/2 years of operation). Corrective actions by the responsible party will likely be taken as soon as possible to minimize the duration of the event and restore treatment or delivery functions. Actual durations or corrective actions are dependent upon the type and severity of the unforeseen failure. The effluent pipeline provides the City of Kissimmee's treated sewage effluent disposal and must be returned to service as quickly as possible.

Oil storage tank containment

The new fuel oil storage tank and the transformers will be constructed with a secondary containment area. The transformer secondary containment will be designed to accommodate 110 percent of the volume of oil stored and a sufficient allowance for the rainfall from the design storm event (SCA vol. 2, p. 3-28).

Please describe the containment capacity for the new oil storage tank.

Response: The capacity of the new fuel oil storage tank will be approximately 1,000,000 gallons. The secondary containment area associated with this new tank will have a minimum of 1,100,000 gallons of secondary containment plus capacity for the 10 year 24 hour storm event (approximately 7 inches) and 1 foot of free board.

Fire protection

The SCA states that fire protection for the Power Park is provided by the Osceola County Department of Public Safety (SCA vol. 2, p. 2-22).

Does the Power Park have any on-site fire protection capability?

Response: The Power Park is protected by it's own fire protection system of pumps (1 electric and diesel driven) and fire hydrants. Each fire hydrant is equipped with a hose house, which contains fire-fighting equipment. Sensitive equipment (i.e.: transformers) and buildings which are occupied are equipped with a deluge or sprinkler system. The water source for the fire protection system at the Power Park are two wells that pump water into a raw water/fire water storage tank. The fire protection pumps are capable of delivering 1000 gpm each. The fire protection system associated with Unit 3 will tie into the existing system. Additional fire hydrants and hose houses will be installed with Unit 3.

Transmission line

One new transmission line is proposed to connect the Power Park with FPC's Intercession City Plant, located only 0.25 mile west of the Power Park boundary.

Please explain the purpose of having the new transmission line go to the FPC power plant. Does the existing transmission line from the Power Park into Kissimmee (Clay Street substation) have enough capacity to carry the additional power from Unit 3 or will all the power from Unit 3 go to the FPC plant on the new transmission line?

Response: The purpose of the transmission line from the Power Park to Intercession City is to satisfy overloads on KUA's transmission system which occur during the outage of the Cane Island-Taft interconnection. This single contingency design criteria is standard practice for the electric utility industry.

The new line will be a single circuit 230-kV line supported by steel poles. The line will be approximately 3 miles in length from switchyard to switchyard and will be constructed entirely on KUA or FPC property, adjacent to an existing transportation/utility corridor (SCA vol. 2, p. 612). The SCA states that both the Power Park site and the FPC Intercession City plant site have been zoned for industrial use and therefore the installation of the transmission line complies with the existing zoning.

Is this use consistent with the Osceola County Future Land Use Plan/Map?

Response: Yes, the use is consistent with the Osceola County Future Land Use Plan/Map.

The corridor crosses Reedy Creek and its swampy flood plain. The 120-foot ROW will take in 11.3 acres of jurisdictional wetlands, which will be subject to Environmental Resource Permitting. This area will be cleared and apparently some of it will be filled. Minor wetland dredge and fill will be necessary in a few locations to construct transmission pole foundations; fill will also be necessary in a number of locations associated with the construction of access

and maintenance roads. The map following p. 6-1 appears to show some access roads paralleling the transmission line where it crosses wetlands.

Please explain why KUA wishes to construct long paralleling access roads, which require filling wetlands, when shorter perpendicular roads from the adjacent uplands to the transmission line corridor could be used for access?

Response: The parallel access road proposed west of Reedy Creek is necessary to provide access to the proposed structures. This access is necessary for initial construction and future maintenance. Perpendicular roads from the CSX railroad would not only create a transportation safety hazard, but would also be prohibited by CSX. Through this west section, the upland areas to the north are too distant to be of benefit for structure access.

The short parallel access road proposed just west of the Cane Island entrance road is to be located on the southern edge of a previously disturbed wetland. Providing a perpendicular access road north to the existing dirt road would further divide the existing wetlands and uplands in this area.

The unnamed map following p. 6-1 is unclear. The legend does not distinguish between existing and proposed transmission lines. It does not identify the black dots on the map or the features identified by the circled numbers 1, 2, and 3.

Please furnish a revised legend that provides this information.

Response: The map was printed incorrectly and some information was not as clear as it should have been. The revised Figure 6.1-1 is enclosed as Attachment F.

There appear to be two different transmission line corridors connecting the Cane Island Power Park with the FPC Intercession City plant site, one along US 17-92 and one to the north.

If this is a correct interpretation of the map, please explain why two corridors are needed.

Response: This not a correct interpretation of the map. The route shown to the north is an alternative that is not preferred because of the significantly higher costs and associated wetland impacts.

KUA proposes to install steel monopoles capable of carrying two 230-kV circuits, although only one will be installed (SCA vol. 2, p. 6-3).

Please explain the purpose of using poles capable of carrying two circuits when only one will be installed.

Response: The purpose of using poles capable of carrying two circuits when only one will be installed is to have the option to install a second circuit in the future without the impacts of constructing another transmission line.

Units of measurement

This is not a sufficiency question, but an editorial comment and recommendation, in the event there are future amendments or revisions to the SCA. Because the SCA is being reviewed by planners and other persons who do not normally use the metric system of measurement, it is recommended that the appropriate U.S. Customary System measurement unit (inch, foot, mile, pound, ton) be provided, except for cases where the use of the metric system is long established, as in scientific measurement.

Response: Comment noted.

Department of Transportation

In Section 7.2.1.1 of the application, the applicant states that the gated access was designed and constructed during the construction of Units 1 and 2 with appropriate geometric improvements and deceleration, acceleration and turn lanes, which meet MOT standards. Further, it is stated that the proposed construction of Unit 3 does not warrant further improvements. However, the figure (which is a drawing of the entrance to the facility) entitled Site Preparation-Grading and Drainage, Access Road Grading, Plan and Profile-Area 4 does not show the aforementioned deceleration or acceleration lanes. The applicant is requested to clarify the current access configuration at the gated entrance including deceleration, acceleration and turn lanes, provide an updated drawing as necessary, and clarify any associated narrative relative to the entire access configuration.

To enable the Department to conduct a site impact analysis resulting from the Cane Island Facility expansion, the applicant is requested to provide the statewide routes which will be used by overweight/overdimensional vehicles, if any; the types of overweight/overdimensional vehicles to be used and anticipated weight loads to be carried on the vehicles. In addition, the applicant is asked to estimate the number of trips which will be generated by the construction work force and allocate those trips to anticipated routes. The Florida Department of Transportation's District 5 Planning Office in Orlando will work with the applicant to determine an acceptable methodology for determining the trips generated and the scope of the trip distribution. Mr. Jim Hayden, District 5 Planning Office, can be contacted at telephone number (407) 623 -103 5, Ext. 13 1, for specific directions in determining methodology and scope of trip distribution.

Response: The statement within Section 7.2.1.1 stating "this entrance was designed with appropriate geometric improvements, deceleration, acceleration and turn lanes, all based on Florida Department of Transportation (FDOT) standards, so that the construction and operational traffic could be appropriately accommodated" is correct from the standpoint that the entrance road was designed with the appropriate geometric improvements so that the construction and operational traffic could be appropriately accommodated. However, the statement that deceleration, acceleration, and turn lanes are present is incorrect.

KUA is not responsible for the transportation of any of overweight/overdimensional loads, which may be delivered to the site during the construction of Unit 3. This responsibility will be borne by the equipment vendors. At this point in time, KUA has no equipment contracts with manufacturers. Therefore, the applicants cannot provide accurate information with regards to weights, sizes, or potential routes of travel.

In response to the construction work force trips and routes, the applicants have assumed that 25 % of the work force will car pool on a daily basis. This car pooling results in 360 trips per day to and from the site. This number of trips is a 3% increase of vehicles per day in the site area (traffic count site 29). The applicants also assume that 90 % of the workforce will come from Orlando. Routes from Orlando include the Florida Turnpike or I-4 to U.S. Highway 192. Workers can proceed on U.S. 192 to Poinciana Boulevard, then south to Highway 17/92. Travel on Old Tampa Highway will be discouraged. Workers will be encouraged to proceed through Intercession City to the junction of Old Tampa Highway and Highway 17/92, then turn east on Old Tampa Highway to the site entrance. Any workers originating from south of the site area can exit I-4 North at State Route 532 and proceed to Old Tampa Highway.

Attachment A
Statement of Sufficiency

STATE OF FLORIDA
DIVISION OF ADMINISTRATIVE HEARINGS

In Re: Kissimmee Utility Authority - Florida Municipal Power Agency Cane Island Power Park Power Plant Siting Application PA 98-38	)	DOAH CASE NO. 98-3619EPP DEP CASE NO. 98-2297

NOTICE OF STATEMENT OF SUFFICIENCY

The state of Florida Department of Environmental Protection (Department), pursuant to Section 403.5066, Florida Statutes, gives notice to the Division of Administrative Hearings:

An application for power plant site certification was filed with the Department on August 5, 1998, by the Kissimmee Utility Authority and the Florida Municipal Power Agency pursuant to the Florida Electrical Power Plant Siting Act, section 403.501 **et seq.**, Florida Statutes. Pursuant to section 403.5067, Florida Statutes, the Department finds the application to be **not** sufficient. The areas of insufficiency are listed on Attachment A.

Respectfully submitted,

Hamilton S. Oven

Hamilton S. Oven, P.E.
Administrator, Siting
Coordination Office

ATTACHMENT A

CANE ISLAND POWER PARK

SUFFICIENCY QUESTIONS

Department of Environmental Protection

The following information is needed in order to continue processing the KUA application:

1. The application states the combustion turbine will operate in simple cycle mode or combined cycle mode with supplemental firing. Please clarify the proposed hours of operation in the simple cycle mode. Is this an initial operational mode lasting several years or is it a permanent operating scenario in addition to combined cycle operation?
2. Is KUA considering power augmentation? If so, explain the overall operation in the power augmentation mode. What technology is used to generate extra power (i.e., steam or water injection)? How much more power output is due to operation in the power augmentation mode. Provide an schematic of the power augmentation operation mode. What is the maximum manufacturer's recommended period (hr/year, hr/month) for operation in the power augmentation mode?
3. It appears the proposed project potential to emit (PTE) is high compare to other recent applications for the same size turbine. Please submit GE and Westinghouse manufacturer data at ambient conditions. Are the proposed emissions limits (Table 2-2 Page 2-6) based on the worst case scenario for each cycle, including the HRSG duct firing operational mode?
4. What is the proposed design heat capacity of the duct burner (MMBtu/hr)? What type of fuel will be used to fire the duct burner? What are the proposed emissions from this unit?
5. What is the maximum steam production rate (lb steam/hr) from the HRSG?
6. Refer to the DEP's letter of August 17, 1998 and respond to questions regarding the BACT analysis.
7. What is the nominal power output (MW) for the combustion turbine? What is the nominal power output (MW) associated with the HRSG?
8. The Department may grant authorization in accordance with Rule 62.210.710 F.A.C., to allow for excess emissions beyond the regulatory limit during periods of startup/shutdown and power augmentation periods (if requested). If excess emissions are requested during those periods, please, submit specific details about the frequency of these periods. Attach manufacturer support data.
9. Please submit the application information on an ELSA disk. This will facilitate the input of the application data in the Department's ARMS system.
10. Quantify emissions associated with the cooling tower.
11. Additional comments from EPA and the National Park Service will be forwarded when received.

12. Was a figure showing the location of the piezometers and soil infiltrometer tests provided in the submittal?

13. At what depth were the double ring infiltrometer tests performed?

14. According to the table on page 2-33, the water table elevations vary widely over the site.
A. How was the maximum high and low water table elevations derived?
B. What is the maximum high water table elevation at the location of the Unit 3 stormwater pond?

15. According to the table on page 2-34, infiltration rates vary widely over the three tests conducted.
A. Be advised that infiltration is NOT synonymous with hydraulic conductivity, and any calculations showing storage recovery in the percolation ponds and stormwater ponds must use the latter test value.

B. Be advised that when test results vary by at least one order of magnitude, it is not appropriate to average the values. If the higher test value is to be used, it must be quantified by further testing.

C. Why was the lowest test value omitted to obtain the "estimated" infiltration rate of 30 feet per day?

D. Why are infiltration rates for units 1 and 2 used for unit 3?

16. What is the minimum and average wetland buffer zone proposed on Figure 3.2-1?

17. Page 3-20 refers to percolation of retained runoff within 24 hours. Was a groundwater mounding analysis provided to demonstrate this?

18. Page 3-23 states that the design storm used was the 25-year, 72-hour storm. However, the appropriate storm for Osceola County is the 10-year, 72-hour storm. Revise as necessary.

19. Provide calculations showing the following:
A. Water quality ;
B. sizing of the orifice;
C. impervious and pervious surfaces;

20. Was a map provided that shows the location of the 100-year floodplain in reference to the project site?

21. Was a map provided that shows the location and direction of on-site and off-site runoff for pre- and post-development?

22. Please provide a full-sized set of the figures pertaining to stormwater management in the application (many of the ones provided in the application are illegible).

23. Page 3-25 states that straw bale dikes will be used to minimize sediments flowing off-site and into the stormwater pond. The DEP strongly discourages the usage of straw bale dikes and recommends a double row of silt fencing (separated by at least 3 feet width) for the following reasons:

1. Straw bale dikes are rarely installed correctly and less frequently maintained;
2. Straw bale dikes are very labor-intensive and require frequent replacement;
3. An exotic and invasive species called the tropical soda apple is associated with straw bales and has potential to adversely affect the ecosystem; and
4. Straw bale dikes are more expensive than silt fencing; Straw bale dikes cost approximately $4 per foot while silt fencing costs less than $2 per foot.

24. Page 3-25 states that ALL significant vegetation will be removed except for SOME trees in the construction/lay-down staging area. What criterion will be used to determine which trees will remain standing?

25. Why is a handrail provided at a stormwater outfall structure?

26. Provide cross-sections of the percolation and detention ponds.

27. Demonstrate that the proposed pond meets the following criterion as found on page 82 of the SFWMD Basis of Review:

A. minimum area;
B. width;
C. depth;
D. side slopes;

28. Can the percolation ponds be demonstrated to meet the criterion as found in Appendix 6 of the Basis of Review?

29. Page 4-2 states that compensating storage within the 100-year flood plain will be provided by the new stormwater pond. Were these calculations provided in the submittal?

30. The proposed power transmission line system required for the Cane Island Plant will impact a total of 19.7 acres of wetland (section 6.0). Table 6.1-2 provides a very basic breakdown of the impacts but does not provide the location indicating where these impacts will be located. In addition there is no discussion of alternative corridors which may reduce wetland impacts, nor is mitigation for the destruction of the wetlands discussed.

31. Does the 19.7 acres of wetland impact discussed in section 6.0, include both direct impacts from the access road construction, filling, clearing within the corridor and the indirect impacts such as clearing for the conflict line.

31. In section 6.0, (transmission lines), it is stated that access roads will be required through the wetland areas and that fill will be placed and culverts may be utilized. Figure 6.1-1 is identified as showing the location of the proposed fill locations, unfortunately Figure 6.1-1 is a blank page. If fill is used to construct access roads and culverts are not utilized, how will surface water flows be maintained ? Will the project result in flooding to adjacent areas ? If culverts are to be utilized, where will they be placed and will they maintain historic water flow patterns.

32. What type of fill will be used for construction of the access roads. Will that fill be a source of nuisance or exotic plant species.

33. Why are the access roads necessary.

34. Details regarding long term maintenance of the transmission line corridors, access roads and culverts were not provided. How will the vegetated and non-vegetated areas be maintained.

35. Will maintenance of the transmission line corridor and access road involve monitoring for the presence of exotic or nuisance plant species.

36. How will the construction areas be delineated to prevent unnecessary impacts to wetland areas outside the work area. How will the delineation indicators be maintained during construction. How will contractors be educated as to the location of the work area. Who will be responsible for ensuring that impacts are limited to the designated work area.

37. The allowable discharge for projects within Reedy Creek watershed is 67 CFS per square mile. Does the stormwater management system meet this criteria.

D C A SUFFICIENCY COMMENTS

Land use map legend

Fig. 2.2-1, "Vegetation and Land Use Within a 5-mile Radius," does not have a legend by which to identify the vegetation and land use.
Should we substitute the legend from Fig. 2.3-3 on p. 2-40? What land use categories are used in Fig. 2.3.3? Are they from the Osceola County Future Land Use Plan or are they from some other classification?

Noise

KUA's noise modeling predicts that the C-weighted sound levels of "the full Power Park" will be 66 dBC at the main gate and 64 dBC at the nearest residence (SCA vol. 2, p. 5-48). The SCA gives the measured C-weighted sound level from Power Park Units 1 and 2 as 55 dBC at the main gate and at the nearest residence. KUA concludes therefore that its noise model is conservative in its predictions by 9–11 dBC.

Please clarify whether "full Power Park" refers to the existing Power Park, comprising Units 1 and 2, or to the future Power Park, comprising Units 1, 2, and 3.
(If the predicted noise level is from all three units, then it would not be fair to compare a predicted noise level from three generating units to a measured noise level from two units. If the predicted

noise level is from the existing two units, then this suggests that the noise model is inaccurate, since its predicted noise level varies from the measured noise level by 9–11 dBC.)
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Please explain why the SCA's discussion of noise emphasizes the C-weighted noise level.

Please explain why KUA has not used the Equivalent Sound Level (L_{eq}) or Day-Night Level (L_{dn}) or any kind of cumulative sound exposure measurement in describing the noise to be generated at the Power Park.

Transportation

At the peak of the construction phase, which will last about 15 weeks, 240 workers will be traveling to and from the site. This will create additional traffic on area roadways, particularly Old Tampa Highway and US Highway 17/92. Despite this increase in local traffic, KUA says that level of service standards should not be exceeded by the construction-related traffic (SCA vol. 2, p. 4-27).

Please cite the LOS standards referred to.

Air quality— NO_x emissions

KUA is apparently seeking to have BACT for NO_x emissions established as follows: the use of dry low NO_x combustors to limit emissions to 15 ppmdv for the first 2 years of operation, with the limit dropping to 9 ppmdv after that (SCA appendix 10-7, p. 3-13–16).

Please explain why BACT for Unit 3 should be set at high as 15 ppmdv NO_x for the first 2 years, when the recently certified City of Tallahassee Purdom Unit 8 power plant was required to meet 12 ppmdv NO_x.

Cooling towers and sewage effluent

Treated sewage effluent supplied by the City of Kissimmee (Water and Sewer Department) effluent pipeline adjacent to the Cane Is. Power Park will be the primary source of cooling water. The combined cooling tower blowdown, neutralization basin effluent, and boiler blowdown will be returned to the effluent pipeline and thence to the Imperial regional percolation pond treatment facility.

Will the return of this plant water to the effluent pipeline have any adverse effect on the Kissimmee water treatment system? Does the addition of plant water increase the temperature of the water in the pipeline, and, if so, will that promote the growth of microorganisms in the pipeline?

Please discuss the public health implications of using treated sewage effluent in the cooling towers at the Power Park.

Dewatering and stormwater runoff

Dewatering will be necessary in order to construct the neutralization basin and the oil/water separator, which will both require below-grade excavations. Discharge from dewatering will be directed to the existing stormwater pond.

Will this dewatering discharge increase the probability of overflow of the stormwater pond during storm events?

Disabling of the effluent pipeline

If the effluent pipeline is disabled, the combined cooling tower blowdown, neutralization basin effluent, and boiler blowdown will be temporarily discharged to the stormwater runoff ponds. If the effluent pipeline is out of service for longer than 3 days, the capacity of the ponds will be overwhelmed and the excess will be discharged over the ponds' overflow structures into Reedy Creek swamp. KUA notes that the effluent pipeline has never been out of service since the Power Park has been in operation (SCA vol. 2, p. 5-28).

Please explain what kind of event would cause the effluent pipeline to be out of action? Given the occurrence of such an event, what is a likely time period for the effluent pipeline to be out of action? What actions would be necessary to bring the pipeline back on line?

Oil storage tank containment

The new fuel oil storage tank and the transformers will be constructed with a secondary containment area. The transformer secondary containment are will be designed to accommodate 110 percent of the volume of oil stored and a sufficient allowance for the rainfall from the design storm event (SCA vol. 2, p. 3-28).

Please describe the containment capacity for the new oil storage tank.

Fire protection

The SCA states that fire protection for the Power Park is provided by the Osceola County Department of Public Safety (SCA vol. 2, p. 2-22).

Does the Power Park have any on-site fire protection capability?

Transmission line

One new transmission line is proposed to connect the Power Park with FPC's Intercession City Plant, located only 0.25 mile west of the Power Park boundary.

Please explain the purpose of having the new transmission line go to the FPC power plant. Does the existing transmission line from the Power Park into Kissimmee (Clay Street substation) have enough capacity to carry the additional power from Unit 3 or will all the power from Unit 3 go to the FPC plant on the new transmission line?

This line will be a single circuit 230-kV line supported by steel poles. The line will be approximately 3 miles in length from switchyard to switchyard and will be constructed entirely on KUA or FPC property, adjacent to an existing transportation/utility corridor (SCA vol. 2, p. 6-12). The SCA states that both the Power Park site and the FPC Intercession City plant site have been zoned for industrial use and therefore the installation of the transmission line complies with the existing zoning.

Is this use consistent with the Osceola County Future Land Use Plan/Map?

The corridor crosses Reedy Creek and its swampy floodplain. The 120-foot ROW will take in 11.3 acres of jurisdictional wetlands, which will be subject to Environmental Resource Permitting. This area will be cleared and apparently some of it will be filled. Minor wetland dredge and fill will be necessary in a few locations to construct transmission pole foundations; fill will also be necessary in a number of locations associated with the construction of access and maintenance roads. The map following p. 6-1 appears to show some access roads paralleling the transmission line where it crosses wetlands.

Please explain why KUA wishes to construct long paralleling access roads, which require filling wetlands, when shorter perpendicular roads from the adjacent uplands to the transmission line corridor could be used for access?

The unnamed map following p. 6-1 is unclear. The legend does not distinguish between existing and proposed transmission lines. It does not identify the black dots on the map or the features identified by the circled numbers 1, 2, and 3.

Please furnish a revised legend that provides this information.

There appear to be two different transmission line corridors connecting the Cane Island Power Park with the FPC Intercession City plant site, one along US 17-92 and one to the north.

If this is a correct interpretation of the map, please explain why two corridors are needed.

KUA proposes to install steel monopoles capable of carrying two 230-kV circuits, although only one will be installed (SCA vol. 2, p. 6-3).

Please explain the purpose of using poles capable of carrying two circuits when only one will be installed.

Units of measurement

This is not a sufficiency question, but an editorial comment and recommendation, in the event there are future amendments or revisions to the SCA. Because the SCA is being reviewed by planners and other persons who do not normally use the metric system of measurement, it is recommended that the appropriate U.S. Customary System measurement unit (inch, foot, mile, pound, ton) be provided, except for cases where the use of the metric system is long established, as in scientific measurement.

Department of Transportation

In Section 7.2.1.1. of the application, the applicant states that the gated access was designed and constructed during the construction of Units 1 and 2 with appropriate geometric improvements and deceleration, acceleration and turn lanes, which meet FDOT standards. Further, it is stated that the proposed construction of Unit 3 does not warrant further improvements. However, the figure (which is a drawing of the entrance to the facility) entitled Site Preparation-Grading and Drainage, Access Road Grading, Plan and Profile-Area 4 does not show the aforementioned deceleration or acceleration lanes. The applicant is requested to clarify the current access configuration at the gated entrance including deceleration, acceleration and turn lanes, provide an updated drawing as necessary, and clarify any associated narrative relative to the entire access configuration.

To enable the Department to conduct a site impact analysis resulting from the Cane Island Facility expansion, the applicant is requested to provide the statewide routes which will be used by overweight/overdimensional vehicles, if any; the types of overweight/overdimensional vehicles to be used and anticipated weight loads to be carried on the vehicles. In addition, the applicant is asked to estimate the number of trips which will be generated by the construction work force and allocate those trips to anticipated routes. The Florida Department of Transportaion's District 5 Planning Office in Orlando will work with the applicant to determine an acceptable methodology for determining the trips generated and the scope of the trip distribution. Mr. Jim Hayden, District 5 Planning Office, can be contacted at telephone number (407) 623-1035, Ext. 131, for specific directions in determining methodology and scope of trip distribution.

CERTIFICATE OF SERVICE

I CERTIFY that a true and correct copy of the foregoing Statement of Sufficiency was mailed on October 5, 1998, to:

Stephanie G. Kruer, Esq.
General Counsel
Department of Community Affairs
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Tallahassee, Florida 32399-2100

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East Central Florida Regional
Planning Council
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South Florida Water Management District
P.O. Box 24680
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Game and Fresh Water Fish Commission
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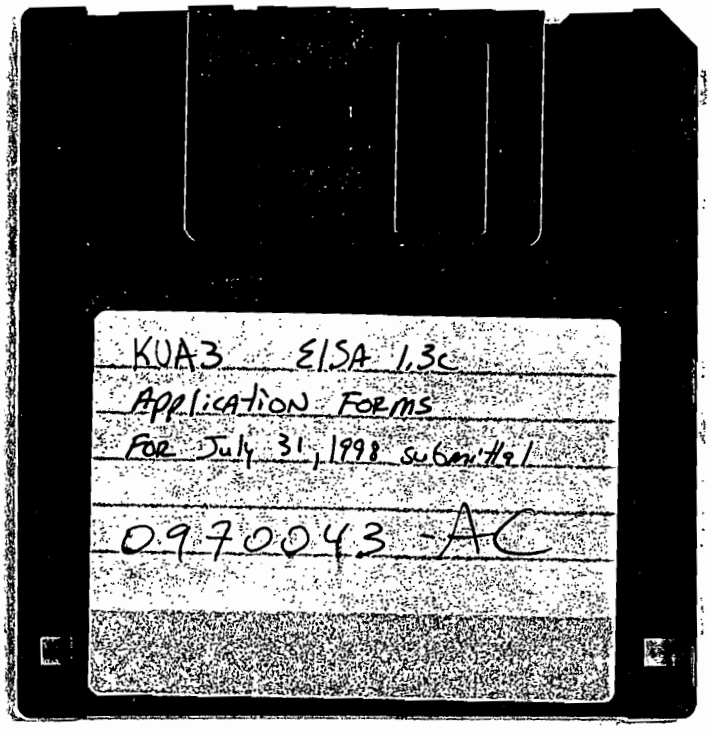
Department of Environmental Protection
3900 Commonwealth Blvd., M.S. 35
Tallahassee, Florida 32399-3000

Hamilton S. Oven

Hamilton S. Oven, P.E.

Attachment B
ELSA Disk


KUA3 ESA 1,3c
Application Forms
For July 31, 1998 Submittal
0970043-AC


KUA3 Regional Haze Analysis
Revised Modeling 10/20/98
0970043-AC

Attachment C
Regional Haze Study

Attachment D
Unit 3 Hydrologic Analysis

BLACK & VEATCH

Owner KUA | Computed By GV Johnso
Plant Cane Island | Unit | Date 10/26 | 19 98
Project No. 59140 | File No. | Verified By MDA
Title Unit 3 Hydrologic Analysis | Date 10/29 | 19 98
Response to Sufficiency Questions | Page 1 | of

Objective: Review and update the Unit 3 Hydrologic Analysis to address issues raised during the sufficiency phase of the evaluation process.

References:

(1) KUA Cane Island, "Unit 3 Hydrologic Analysis," Calc. set, G.V. Johnson, B&V, July 17, 1998

(2) State of Florida, Division of Administrative Hearings, "Notice of Statement of Sufficiency," Oct. 5, 1998.

Water Quality Treatment:

↳ Compare 1 inch of runoff vs. (2.5" x impervious area)

⇒ from ref ①, p. 7/14,

Impervious Area = 58,994 ft²

TOTAL AREA (w/o POND) = 268,138 ft²

1" Runoff = $\left(\frac{1"}{12"}\right)(268,138\ ft^2)$ = 22,345 ft³

2½" x Imp Area = $\left(\frac{2.5"}{12}\right)(58,994\ ft^2)$ = 12,290 ft³

⇒ Use 1 inch of Runoff off Entire Area.

Update HEC-1 Model:

Post-Development CASE II from Ref ① {Pages 7-10 and attached HEC-I Output} was updated to model 1.0 inches of runoff as calculated above. The stage-storage relationship in the model was also updated to reflect 4:1 side slopes. The pond was modified by keeping the bottom

area the same, (Approximately 135 ft x 235 ft), and sloping up at 4:1 instead of 3:1. The peak stage in the pond resulting from a rainfall event that produces 1 inch of runoff is 75.67 feet MSL. This elevation is below the discharge structure orifice invert elevation of 76.0 ft MSL; therefore the discharge structure will work without modification. (The updated output file is included as CASE V.)

Design Storm Event:

A 10 year - 72 hour storm event was specified in Ref ②.

A 25 year - 72 hour storm event was used in Ref ①. The storage in the pond increased slightly when the side slopes were changed from 3:1 to 4:1. Therefore, the peak discharge flow rates and peak pond stages estimated in Ref ①, CASES III and IV, will decrease slightly. The discharge structure

Will continue to control these events without modification.

From Ref ①, the 10 year- 72 hour storm event produces 9.65 inches of rainfall. CASE VII attached to this calculation contains the output file of the HEC-1 model for this event.

Add discharge @ elev. 77

↳ from Ref ①, $Q = (0.61)\left(\frac{\pi}{4}\left(\frac{8}{12}\right)^2\right)(2 \times 32.2 \times 0.667)^{1/2}$

$= 1.4$ cfs

The peak stage in the pond in response to this event is 76.94 feet MSL. This correlates to a peak discharge rate of 1 cfs.

Discharge per Square Mile:

$Q_{(CASE\ VII)} = 1\ cfs / (0.01184\ mi^2) = 84\ cfs/mi^2$

DO NOT WRITE IN THIS SPACE

PGN-173B

Pre-Development Model for 10 yr-72 hour event:

HEC-1 CASE VII attached to these calculations provides the estimated response of the pre-development watershed to the 10 yr-72 hr. storm event. The peak discharge estimated for this event is 1 cfs.

Pre- vs. Post-Development Peak Discharge:

The discharge per square mile of 84 cfs exceeds the allowable 67 cfs/mi^2 defined for the Reedy Creek watershed. However, the post-development peak discharge matches the pre-development peak discharge rate.

SIZING SPREADER SWALE:

Spreader Swale Width = 45 feet

Peak Flow Rate = 1 cfs

Existing Grade D/S of Swale = 1'/135' = 0.0074 ft/ft

Mannings "n" of Existing Grade = 0.035 (sand w/some Grass)

⇒ Velocity = 0.47 ft/sec

↳ from Flow Master Output (see p. 7)

MCM
10/29/98

Rectangular Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: KUA - Cane Island

Comment: Velocity Immediately D/S of Spreader Swale

Solve For Depth

Given Input Data:

Bottom Width.....	45.00 ft
Manning's n.....	0.035
Channel Slope....	0.0074 ft/ft
Discharge.....	1.00 cfs

Computed Results:

Depth.....	0.05 ft
Velocity.....	0.47 fps
Flow Area.....	2.11 sf
Flow Top Width...	45.00 ft
Wetted Perimeter.	45.09 ft
Critical Depth...	0.02 ft
Critical Slope...	0.0613 ft/ft
Froude Number....	0.39 (flow is Subcritical)

CASE V

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  10/26/1998  TIME  13:56:42 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1           ID   KUA - Cane Island Unit 3
  2           ID   Site Certification Application
  3           ID   HEC-1 Analysis of Unit 3:   3.95 Inch Precipitation Event
  4           ID   This Storm Event Produces 1.0 Inches of Runoff.
  5           ID   Black & Veatch Project No. 59140     Modelled By: Gregory V. Johnson
  6           ID   Post-Construction Model
  7           ID   Input File: k395.in   Output File:  k395.out
  8           IT      10 26OCT98   0600     300
  9           IO       0       0
 10           IN      15
              * **********

 11           KK    SITE
 12           KM   Runoff From Unit 3 Power Block and Construction Laydown Area
 13           BA  .00964
 14           PB   3.95
 15           PC  0.002  0.003  0.005  0.006  0.008  0.009  0.011  0.012  0.014  0.015
 16           PC  0.017  0.018  0.020  0.021  0.023  0.024  0.026  0.027  0.029  0.030
 17           PC  0.032  0.033  0.035  0.036  0.038  0.040  0.041  0.043  0.044  0.046
 18           PC  0.047  0.049  0.050  0.052  0.053  0.055  0.056  0.058  0.059  0.061
 19           PC  0.062  0.064  0.065  0.067  0.068  0.070  0.071  0.073  0.075  0.076
 20           PC  0.078  0.079  0.081  0.082  0.084  0.085  0.087  0.088  0.090  0.091
 21           PC  0.093  0.094  0.096  0.097  0.099  0.100  0.102  0.103  0.105  0.106
 22           PC  0.108  0.110  0.111  0.113  0.114  0.116  0.117  0.119  0.120  0.122
 23           PC  0.123  0.125  0.126  0.128  0.129  0.131  0.132  0.134  0.135  0.137
 24           PC  0.138  0.140  0.141  0.143  0.144  0.146  0.148  0.150  0.153  0.155
 25           PC  0.157  0.159  0.162  0.164  0.166  0.168  0.170  0.173  0.175  0.177
 26           PC  0.179  0.182  0.184  0.186  0.188  0.190  0.193  0.195  0.197  0.199
 27           PC  0.201  0.204  0.206  0.208  0.210  0.213  0.215  0.217  0.219  0.221
 28           PC  0.224  0.226  0.228  0.230  0.233  0.235  0.237  0.239  0.241  0.244
 29           PC  0.246  0.248  0.250  0.252  0.255  0.257  0.259  0.261  0.264  0.266
 30           PC  0.268  0.270  0.272  0.275  0.277  0.279  0.281  0.284  0.286  0.288
 31           PC  0.290  0.292  0.295  0.297  0.299  0.301  0.304  0.306  0.308  0.310
 32           PC  0.312  0.315  0.317  0.319  0.321  0.324  0.326  0.328  0.330  0.332
```

```
          33          PC   0.335   0.337   0.339   0.341   0.343   0.346   0.348   0.350   0.352   0.355
          34          PC   0.357   0.359   0.362   0.364   0.367   0.369   0.372   0.374   0.377   0.379
          35          PC   0.382   0.385   0.388   0.391   0.394   0.397   0.400   0.404   0.408   0.412
          36          PC   0.417   0.421   0.426   0.431   0.437   0.442   0.448   0.454   0.461   0.467
          37          PC   0.474   0.481   0.488   0.496   0.504   0.512   0.521   0.530   0.540   0.550
          38          PC   0.561   0.572   0.584   0.596   0.612   0.628   0.653   0.678   0.847   1.015
          39          PC   1.052   1.088   1.107   1.126   1.140   1.154   1.166   1.177   1.186   1.194
          40          PC   1.202   1.209   1.217   1.224   1.232   1.239   1.243   1.248   1.253   1.257
          41          PC   1.262   1.266   1.271   1.275   1.280   1.284   1.289   1.293   1.298   1.302
          42          PC   1.307   1.311   1.314   1.317   1.320   1.323   1.326   1.329   1.332   1.335
          43          PC   1.338   1.341   1.344   1.347   1.350   1.353   1.356   1.359
          44          LS      0      65      0
          45          UD    0.26
                      * **********

          46          KK    POND
          47          KM   Unit 3 Stormwater Pond
          48          BA  .00152
          49          LS      0      49     100
          50          UD    0.01
                      * **********
1                                          HEC-1 INPUT                                          PAGE  2

        LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          51          KK    COMB
          52          KM   Combining Two Hydrographs in Reservoir
          53          HC       2
                      * **********

          54          KK    RES1
          55          KM   Reservoir Routing Operation
          56          RS       1    ELEV    74.0
          57          SA  .01313 0.76079 0.83623 0.94231 1.07782 2.22002
          58          SE    74.0    75.0    76.0    77.0    78.0    79.0
          59          SQ       0       0       0       0       0       0
          60          SE    74.0    75.0    76.0    77.0    78.0    79.0
                      * **********
                      *DIAGRAM
          61          ZZ
1
              SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    11        SITE
                .
                .
    46          .        POND
                .          .
                .          .
    51        COMB.........
                V
                V
    54        RES1

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             FEBRUARY 1981             *
 *           REVISED 02 AUG 88           *
 *                                       *
 *  RUN DATE  10/26/1998  TIME  13:56:42 *
 *                                       *
 *****************************************

 *****************************************
 *                                       *
 *    U.S. ARMY CORPS OF ENGINEERS       *
 *  THE HYDROLOGIC ENGINEERING CENTER    *
 *         609 SECOND STREET             *
 *       DAVIS, CALIFORNIA 95616         *
 *           (916) 551-1748              *
 *                                       *
 *****************************************
```

```
                         KUA - Cane Island Unit 3
                         Site Certification Application
                         HEC-1 Analysis of Unit 3:  3.95 Inch Precipitation Event
                         This Storm Event Produces 1.0 Inches of Runoff.
                         Black & Veatch Project No. 59140    Modelled By: Gregory V. Johnson
                         Post-Construction Model
                         Input File: k395.in   Output File:  k395.out

*** ERROR *** SPECIFIED START AND END DATES RESULT IN TOO MANY TIME PERIODS

  9 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           0  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          10  MINUTES IN COMPUTATION INTERVAL
                      IDATE     26OCT98  STARTING DATE
                      ITIME        1200  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE     30OCT98  ENDING DATE
                     NDTIME        1350  ENDING TIME
                     ICENT           19  CENTURY MARK

                COMPUTATION INTERVAL      .17 HOURS
                     TOTAL TIME BASE    49.83 HOURS

        ENGLISH UNITS
            DRAINAGE AREA           SQUARE MILES
            PRECIPITATION DEPTH     INCHES
            LENGTH, ELEVATION       FEET
            FLOW                    CUBIC FEET PER SECOND
            STORAGE VOLUME          ACRE-FEET
            SURFACE AREA            ACRES
            TEMPERATURE             DEGREES FAHRENHEIT


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **


          ***************
          *             *
  11 KK   *      SITE   *
          *             *
          ***************
                         Runoff From Unit 3 Power Block and Construction Laydown Area

  10 IN         TIME DATA FOR INPUT TIME SERIES
                      JXMIN          15  TIME INTERVAL IN MINUTES
                     JXDATE     26OCT98  STARTING DATE
                     JXTIME        6000  STARTING TIME

            SUBBASIN RUNOFF DATA

  13 BA         SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                PRECIPITATION DATA

  14 PB               STORM        3.95  BASIN TOTAL PRECIPITATION

  15 PI           INCREMENTAL PRECIPITATION PATTERN
                      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
                      .00      .00      .00      .00      .00      .00      .00      .00      .00      .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	

```
44 LS          SCS LOSS RATE
                     STRTL        1.08  INITIAL ABSTRACTION
                    CRVNBR       65.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

45 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG         .26  LAG
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***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

UNIT HYDROGRAPH

10 END-OF-PERIOD ORDINATES

6.	14.	10.	4.	2.	1.	0.	0.	0.	0.

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HYDROGRAPH AT STATION SITE

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DA MON HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA MON HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
28 OCT 1200	1	.00	.00	.00	0.	*	29 OCT 1300	151	.01	.01	.00	0.
28 OCT 1210	2	.01	.01	.00	0.	*	29 OCT 1310	152	.01	.01	.00	0.
28 OCT 1220	3	.01	.01	.00	0.	*	29 OCT 1320	153	.02	.01	.00	0.
28 OCT 1230	4	.01	.01	.00	0.	*	29 OCT 1330	154	.02	.02	.00	0.
28 OCT 1240	5	.01	.01	.00	0.	*	29 OCT 1340	155	.01	.01	.00	0.
28 OCT 1250	6	.01	.01	.00	0.	*	29 OCT 1350	156	.01	.01	.00	0.
28 OCT 1300	7	.01	.01	.00	0.	*	29 OCT 1400	157	.01	.01	.00	0.
28 OCT 1310	8	.01	.01	.00	0.	*	29 OCT 1410	158	.01	.01	.00	0.
28 OCT 1320	9	.01	.01	.00	0.	*	29 OCT 1420	159	.01	.01	.00	0.
28 OCT 1330	10	.01	.01	.00	0.	*	29 OCT 1430	160	.01	.01	.00	0.
28 OCT 1340	11	.01	.01	.00	0.	*	29 OCT 1440	161	.02	.02	.00	0.
28 OCT 1350	12	.01	.01	.00	0.	*	29 OCT 1450	162	.02	.01	.00	0.
28 OCT 1400	13	.01	.01	.00	0.	*	29 OCT 1500	163	.01	.01	.00	0.
28 OCT 1410	14	.01	.01	.00	0.	*	29 OCT 1510	164	.01	.01	.00	0.
28 OCT 1420	15	.01	.01	.00	0.	*	29 OCT 1520	165	.01	.01	.00	0.
28 OCT 1430	16	.01	.01	.00	0.	*	29 OCT 1530	166	.01	.01	.00	0.
28 OCT 1440	17	.01	.01	.00	0.	*	29 OCT 1540	167	.02	.02	.00	0.
28 OCT 1450	18	.01	.01	.00	0.	*	29 OCT 1550	168	.02	.01	.00	0.
28 OCT 1500	19	.01	.01	.00	0.	*	29 OCT 1600	169	.01	.01	.00	0.
28 OCT 1510	20	.01	.01	.00	0.	*	29 OCT 1610	170	.01	.01	.00	0.
28 OCT 1520	21	.01	.01	.00	0.	*	29 OCT 1620	171	.01	.01	.00	0.
28 OCT 1530	22	.01	.01	.00	0.	*	29 OCT 1630	172	.01	.01	.00	0.
28 OCT 1540	23	.01	.01	.00	0.	*	29 OCT 1640	173	.01	.01	.00	0.
28 OCT 1550	24	.01	.01	.00	0.	*	29 OCT 1650	174	.02	.01	.00	0.
28 OCT 1600	25	.01	.01	.00	0.	*	29 OCT 1700	175	.02	.02	.01	0.

28 OCT 1610	26	.01	.01	.00	0.	*	29 OCT 1710	176	.01	.01	.00	0.
28 OCT 1620	27	.01	.01	.00	0.	*	29 OCT 1720	177	.01	.01	.00	0.
28 OCT 1630	28	.01	.01	.00	0.	*	29 OCT 1730	178	.01	.01	.00	0.
28 OCT 1640	29	.01	.01	.00	0.	*	29 OCT 1740	179	.01	.01	.00	0.
28 OCT 1650	30	.01	.01	.00	0.	*	29 OCT 1750	180	.01	.01	.00	0.
28 OCT 1700	31	.01	.01	.00	0.	*	29 OCT 1800	181	.01	.01	.00	0.
28 OCT 1710	32	.01	.01	.00	0.	*	29 OCT 1810	182	.02	.01	.01	0.
28 OCT 1720	33	.01	.01	.00	0.	*	29 OCT 1820	183	.02	.01	.01	0.
28 OCT 1730	34	.01	.01	.00	0.	*	29 OCT 1830	184	.01	.01	.00	0.
28 OCT 1740	35	.01	.01	.00	0.	*	29 OCT 1840	185	.01	.01	.00	0.
28 OCT 1750	36	.01	.01	.00	0.	*	29 OCT 1850	186	.01	.01	.00	0.
28 OCT 1800	37	.01	.01	.00	0.	*	29 OCT 1900	187	.01	.01	.00	0.
28 OCT 1810	38	.01	.01	.00	0.	*	29 OCT 1910	188	.02	.01	.01	0.
28 OCT 1820	39	.01	.01	.00	0.	*	29 OCT 1920	189	.02	.01	.01	0.
28 OCT 1830	40	.01	.01	.00	0.	*	29 OCT 1930	190	.01	.01	.00	0.
28 OCT 1840	41	.01	.01	.00	0.	*	29 OCT 1940	191	.01	.01	.00	0.
28 OCT 1850	42	.01	.01	.00	0.	*	29 OCT 1950	192	.01	.01	.00	0.
28 OCT 1900	43	.01	.01	.00	0.	*	29 OCT 2000	193	.01	.01	.00	0.
28 OCT 1910	44	.01	.01	.00	0.	*	29 OCT 2010	194	.01	.01	.00	0.
28 OCT 1920	45	.01	.01	.00	0.	*	29 OCT 2020	195	.02	.01	.01	0.
28 OCT 1930	46	.01	.01	.00	0.	*	29 OCT 2030	196	.02	.01	.01	0.
28 OCT 1940	47	.01	.01	.00	0.	*	29 OCT 2040	197	.01	.01	.00	0.
28 OCT 1950	48	.01	.01	.00	0.	*	29 OCT 2050	198	.01	.01	.00	0.
28 OCT 2000	49	.01	.01	.00	0.	*	29 OCT 2100	199	.01	.01	.00	0.
28 OCT 2010	50	.01	.01	.00	0.	*	29 OCT 2110	200	.01	.01	.00	0.
28 OCT 2020	51	.01	.01	.00	0.	*	29 OCT 2120	201	.02	.01	.01	0.
28 OCT 2030	52	.01	.01	.00	0.	*	29 OCT 2130	202	.02	.01	.01	0.
28 OCT 2040	53	.01	.01	.00	0.	*	29 OCT 2140	203	.01	.01	.01	0.
28 OCT 2050	54	.01	.01	.00	0.	*	29 OCT 2150	204	.01	.01	.01	0.
28 OCT 2100	55	.01	.01	.00	0.	*	29 OCT 2200	205	.01	.01	.01	0.
28 OCT 2110	56	.01	.01	.00	0.	*	29 OCT 2210	206	.01	.01	.01	0.
28 OCT 2120	57	.01	.01	.00	0.	*	29 OCT 2220	207	.01	.01	.01	0.
28 OCT 2130	58	.01	.01	.00	0.	*	29 OCT 2230	208	.01	.01	.01	0.
28 OCT 2140	59	.01	.01	.00	0.	*	29 OCT 2240	209	.02	.01	.01	0.
28 OCT 2150	60	.01	.01	.00	0.	*	29 OCT 2250	210	.02	.01	.01	0.
28 OCT 2200	61	.01	.01	.00	0.	*	29 OCT 2300	211	.01	.01	.01	0.
28 OCT 2210	62	.01	.01	.00	0.	*	29 OCT 2310	212	.01	.01	.01	0.
28 OCT 2220	63	.01	.01	.00	0.	*	29 OCT 2320	213	.01	.01	.01	0.
28 OCT 2230	64	.01	.01	.00	0.	*	29 OCT 2330	214	.01	.01	.01	0.
28 OCT 2240	65	.01	.01	.00	0.	*	29 OCT 2340	215	.01	.01	.01	0.
28 OCT 2250	66	.01	.01	.00	0.	*	29 OCT 2350	216	.02	.01	.01	0.
28 OCT 2300	67	.01	.01	.00	0.	*	30 OCT 0000	217	.02	.01	.01	0.
28 OCT 2310	68	.01	.01	.00	0.	*	30 OCT 0010	218	.01	.01	.01	0.
28 OCT 2320	69	.01	.01	.00	0.	*	30 OCT 0020	219	.01	.01	.01	0.
28 OCT 2330	70	.01	.01	.00	0.	*	30 OCT 0030	220	.01	.01	.01	0.
28 OCT 2340	71	.01	.01	.00	0.	*	30 OCT 0040	221	.01	.01	.01	0.
28 OCT 2350	72	.01	.01	.00	0.	*	30 OCT 0050	222	.02	.01	.01	0.
29 OCT 0000	73	.01	.01	.00	0.	*	30 OCT 0100	223	.02	.01	.01	0.
29 OCT 0010	74	.01	.01	.00	0.	*	30 OCT 0110	224	.01	.01	.01	0.
29 OCT 0020	75	.01	.01	.00	0.	*	30 OCT 0120	225	.01	.01	.01	0.
29 OCT 0030	76	.01	.01	.00	0.	*	30 OCT 0130	226	.01	.01	.01	0.
29 OCT 0040	77	.01	.01	.00	0.	*	30 OCT 0140	227	.01	.01	.01	0.
29 OCT 0050	78	.01	.01	.00	0.	*	30 OCT 0150	228	.01	.01	.01	0.
29 OCT 0100	79	.01	.01	.00	0.	*	30 OCT 0200	229	.01	.01	.01	0.
29 OCT 0110	80	.01	.01	.00	0.	*	30 OCT 0210	230	.02	.01	.01	0.
29 OCT 0120	81	.01	.01	.00	0.	*	30 OCT 0220	231	.02	.01	.01	0.
29 OCT 0130	82	.01	.01	.00	0.	*	30 OCT 0230	232	.01	.01	.01	0.
29 OCT 0140	83	.01	.01	.00	0.	*	30 OCT 0240	233	.01	.01	.01	0.
29 OCT 0150	84	.01	.01	.00	0.	*	30 OCT 0250	234	.01	.01	.01	0.
29 OCT 0200	85	.01	.01	.00	0.	*	30 OCT 0300	235	.01	.01	.01	0.
29 OCT 0210	86	.01	.01	.00	0.	*	30 OCT 0310	236	.02	.01	.01	0.
29 OCT 0220	87	.01	.01	.00	0.	*	30 OCT 0320	237	.02	.01	.01	0.
29 OCT 0230	88	.01	.01	.00	0.	*	30 OCT 0330	238	.01	.01	.01	0.
29 OCT 0240	89	.01	.01	.00	0.	*	30 OCT 0340	239	.01	.01	.01	0.
29 OCT 0250	90	.01	.01	.00	0.	*	30 OCT 0350	240	.01	.01	.01	0.
29 OCT 0300	91	.01	.01	.00	0.	*	30 OCT 0400	241	.01	.01	.01	0.
29 OCT 0310	92	.01	.01	.00	0.	*	30 OCT 0410	242	.01	.01	.01	0.
29 OCT 0320	93	.01	.01	.00	0.	*	30 OCT 0420	243	.02	.01	.01	0.
29 OCT 0330	94	.01	.01	.00	0.	*	30 OCT 0430	244	.02	.01	.01	0.
29 OCT 0340	95	.01	.01	.00	0.	*	30 OCT 0440	245	.01	.01	.01	0.
29 OCT 0350	96	.01	.01	.00	0.	*	30 OCT 0450	246	.01	.01	.01	0.
29 OCT 0400	97	.01	.01	.00	0.	*	30 OCT 0500	247	.01	.01	.01	0.

29 OCT 0410	98	.01	.01	.00	0.	*	30 OCT 0510	248	.01	.01	.01	0.
29 OCT 0420	99	.01	.01	.00	0.	*	30 OCT 0520	249	.02	.01	.01	0.
29 OCT 0430	100	.01	.01	.00	0.	*	30 OCT 0530	250	.02	.01	.01	0.
29 OCT 0440	101	.01	.01	.00	0.	*	30 OCT 0540	251	.01	.01	.01	0.
29 OCT 0450	102	.01	.01	.00	0.	*	30 OCT 0550	252	.01	.01	.01	0.
29 OCT 0500	103	.01	.01	.00	0.	*	30 OCT 0600	253	.01	.01	.01	0.
29 OCT 0510	104	.01	.01	.00	0.	*	30 OCT 0610	254	.01	.01	.01	0.
29 OCT 0520	105	.01	.01	.00	0.	*	30 OCT 0620	255	.01	.01	.01	0.
29 OCT 0530	106	.01	.01	.00	0.	*	30 OCT 0630	256	.01	.01	.01	0.
29 OCT 0540	107	.01	.01	.00	0.	*	30 OCT 0640	257	.02	.01	.01	0.
29 OCT 0550	108	.01	.01	.00	0.	*	30 OCT 0650	258	.02	.01	.01	0.
29 OCT 0600	109	.01	.01	.00	0.	*	30 OCT 0700	259	.01	.01	.01	0.
29 OCT 0610	110	.01	.01	.00	0.	*	30 OCT 0710	260	.01	.01	.01	0.
29 OCT 0620	111	.01	.01	.00	0.	*	30 OCT 0720	261	.01	.01	.01	0.
29 OCT 0630	112	.01	.01	.00	0.	*	30 OCT 0730	262	.01	.01	.01	0.
29 OCT 0640	113	.01	.01	.00	0.	*	30 OCT 0740	263	.02	.01	.01	0.
29 OCT 0650	114	.01	.01	.00	0.	*	30 OCT 0750	264	.02	.01	.01	0.
29 OCT 0700	115	.01	.01	.00	0.	*	30 OCT 0800	265	.01	.01	.01	0.
29 OCT 0710	116	.01	.01	.00	0.	*	30 OCT 0810	266	.01	.01	.01	0.
29 OCT 0720	117	.01	.01	.00	0.	*	30 OCT 0820	267	.01	.01	.01	0.
29 OCT 0730	118	.01	.01	.00	0.	*	30 OCT 0830	268	.01	.01	.01	0.
29 OCT 0740	119	.01	.01	.00	0.	*	30 OCT 0840	269	.01	.01	.01	0.
29 OCT 0750	120	.01	.01	.00	0.	*	30 OCT 0850	270	.02	.01	.01	0.
29 OCT 0800	121	.01	.01	.00	0.	*	30 OCT 0900	271	.02	.01	.01	0.
29 OCT 0810	122	.01	.01	.00	0.	*	30 OCT 0910	272	.01	.01	.01	0.
29 OCT 0820	123	.01	.01	.00	0.	*	30 OCT 0920	273	.01	.01	.01	0.
29 OCT 0830	124	.01	.01	.00	0.	*	30 OCT 0930	274	.01	.01	.01	0.
29 OCT 0840	125	.01	.01	.00	0.	*	30 OCT 0940	275	.01	.01	.01	0.
29 OCT 0850	126	.01	.01	.00	0.	*	30 OCT 0950	276	.01	.01	.01	0.
29 OCT 0900	127	.01	.01	.00	0.	*	30 OCT 1000	277	.01	.01	.01	0.
29 OCT 0910	128	.01	.01	.00	0.	*	30 OCT 1010	278	.02	.01	.01	0.
29 OCT 0920	129	.01	.01	.00	0.	*	30 OCT 1020	279	.02	.01	.01	0.
29 OCT 0930	130	.01	.01	.00	0.	*	30 OCT 1030	280	.01	.01	.01	0.
29 OCT 0940	131	.01	.01	.00	0.	*	30 OCT 1040	281	.01	.01	.01	0.
29 OCT 0950	132	.01	.01	.00	0.	*	30 OCT 1050	282	.01	.01	.01	0.
29 OCT 1000	133	.01	.01	.00	0.	*	30 OCT 1100	283	.01	.01	.01	0.
29 OCT 1010	134	.01	.01	.00	0.	*	30 OCT 1110	284	.02	.01	.01	0.
29 OCT 1020	135	.01	.01	.00	0.	*	30 OCT 1120	285	.02	.01	.01	0.
29 OCT 1030	136	.01	.01	.00	0.	*	30 OCT 1130	286	.01	.01	.01	0.
29 OCT 1040	137	.01	.01	.00	0.	*	30 OCT 1140	287	.01	.01	.01	0.
29 OCT 1050	138	.01	.01	.00	0.	*	30 OCT 1150	288	.02	.01	.01	0.
29 OCT 1100	139	.01	.01	.00	0.	*	30 OCT 1200	289	.02	.01	.01	0.
29 OCT 1110	140	.01	.01	.00	0.	*	30 OCT 1210	290	.01	.01	.01	0.
29 OCT 1120	141	.01	.01	.00	0.	*	30 OCT 1220	291	.02	.01	.01	0.
29 OCT 1130	142	.01	.01	.00	0.	*	30 OCT 1230	292	.02	.01	.01	0.
29 OCT 1140	143	.01	.01	.00	0.	*	30 OCT 1240	293	.01	.01	.01	0.
29 OCT 1150	144	.01	.01	.00	0.	*	30 OCT 1250	294	.02	.01	.01	0.
29 OCT 1200	145	.01	.01	.00	0.	*	30 OCT 1300	295	.02	.01	.01	0.
29 OCT 1210	146	.01	.01	.00	0.	*	30 OCT 1310	296	.01	.01	.01	0.
29 OCT 1220	147	.02	.01	.00	0.	*	30 OCT 1320	297	.02	.01	.01	0.
29 OCT 1230	148	.02	.02	.00	0.	*	30 OCT 1330	298	.02	.01	.01	0.
29 OCT 1240	149	.01	.01	.00	0.	*	30 OCT 1340	299	.01	.01	.01	0.
29 OCT 1250	150	.01	.01	.00	0.	*	30 OCT 1350	300	.02	.01	.01	0.
						*						

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TOTAL RAINFALL = 3.95, TOTAL LOSS = 2.95, TOTAL EXCESS = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.83-HR
+ (CFS)	(HR)					
		(CFS)				
+ 0.	49.67		0.	0.	0.	0.
		(INCHES)	.312	.920	.979	.979
		(AC-FT)	0.	0.	1.	1.

CUMULATIVE AREA = .01 SQ MI

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              ***************
              *             *
  46 KK       *     POND    *
              *             *
              ***************
                             Unit 3 Stormwater Pond

                 SUBBASIN RUNOFF DATA

  48 BA            SUBBASIN CHARACTERISTICS
                         TAREA          .00  SUBBASIN AREA

                   PRECIPITATION DATA

  14 PB                  STORM         3.95  BASIN TOTAL PRECIPITATION

  15 PI              INCREMENTAL PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00

  49 LS            SCS LOSS RATE
                         STRTL         2.08  INITIAL ABSTRACTION
                        CRVNBR        49.00  CURVE NUMBER
                         RTIMP       100.00  PERCENT IMPERVIOUS AREA

  50 UD            SCS DIMENSIONLESS UNITGRAPH
                          TLAG          .01  LAG

                                                                        ***

 WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

                                                                  UNIT HYDROGRAPH
                                                              5 END-OF-PERIOD ORDINATES
                  4.         1.         0.         0.         0.

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                                                         HYDROGRAPH AT STATION      POND

***************************************************************************************************************************
                                                                        *
       DA MON HRMN  ORD     RAIN     LOSS  EXCESS     COMP Q            *        DA MON HRMN  ORD     RAIN     LOSS  EXCESS     COMP Q
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28 OCT 1200	1	.00	.00	.00	0.	*	29 OCT 1300	151	.01	.00	.01	0.
28 OCT 1210	2	.01	.00	.01	0.	*	29 OCT 1310	152	.01	.00	.01	0.
28 OCT 1220	3	.01	.00	.01	0.	*	29 OCT 1320	153	.02	.00	.02	0.
28 OCT 1230	4	.01	.00	.01	0.	*	29 OCT 1330	154	.02	.00	.02	0.
28 OCT 1240	5	.01	.00	.01	0.	*	29 OCT 1340	155	.01	.00	.01	0.
28 OCT 1250	6	.01	.00	.01	0.	*	29 OCT 1350	156	.01	.00	.01	0.
28 OCT 1300	7	.01	.00	.01	0.	*	29 OCT 1400	157	.01	.00	.01	0.
28 OCT 1310	8	.01	.00	.01	0.	*	29 OCT 1410	158	.01	.00	.01	0.
28 OCT 1320	9	.01	.00	.01	0.	*	29 OCT 1420	159	.01	.00	.01	0.
28 OCT 1330	10	.01	.00	.01	0.	*	29 OCT 1430	160	.01	.00	.01	0.
28 OCT 1340	11	.01	.00	.01	0.	*	29 OCT 1440	161	.02	.00	.02	0.
28 OCT 1350	12	.01	.00	.01	0.	*	29 OCT 1450	162	.02	.00	.02	0.
28 OCT 1400	13	.01	.00	.01	0.	*	29 OCT 1500	163	.01	.00	.01	0.
28 OCT 1410	14	.01	.00	.01	0.	*	29 OCT 1510	164	.01	.00	.01	0.
28 OCT 1420	15	.01	.00	.01	0.	*	29 OCT 1520	165	.01	.00	.01	0.
28 OCT 1430	16	.01	.00	.01	0.	*	29 OCT 1530	166	.01	.00	.01	0.
28 OCT 1440	17	.01	.00	.01	0.	*	29 OCT 1540	167	.02	.00	.02	0.
28 OCT 1450	18	.01	.00	.01	0.	*	29 OCT 1550	168	.02	.00	.02	0.
28 OCT 1500	19	.01	.00	.01	0.	*	29 OCT 1600	169	.01	.00	.01	0.
28 OCT 1510	20	.01	.00	.01	0.	*	29 OCT 1610	170	.01	.00	.01	0.
28 OCT 1520	21	.01	.00	.01	0.	*	29 OCT 1620	171	.01	.00	.01	0.
28 OCT 1530	22	.01	.00	.01	0.	*	29 OCT 1630	172	.01	.00	.01	0.
28 OCT 1540	23	.01	.00	.01	0.	*	29 OCT 1640	173	.01	.00	.01	0.
28 OCT 1550	24	.01	.00	.01	0.	*	29 OCT 1650	174	.02	.00	.02	0.
28 OCT 1600	25	.01	.00	.01	0.	*	29 OCT 1700	175	.02	.00	.02	0.
28 OCT 1610	26	.01	.00	.01	0.	*	29 OCT 1710	176	.01	.00	.01	0.
28 OCT 1620	27	.01	.00	.01	0.	*	29 OCT 1720	177	.01	.00	.01	0.
28 OCT 1630	28	.01	.00	.01	0.	*	29 OCT 1730	178	.01	.00	.01	0.
28 OCT 1640	29	.01	.00	.01	0.	*	29 OCT 1740	179	.01	.00	.01	0.
28 OCT 1650	30	.01	.00	.01	0.	*	29 OCT 1750	180	.01	.00	.01	0.
28 OCT 1700	31	.01	.00	.01	0.	*	29 OCT 1800	181	.01	.00	.01	0.
28 OCT 1710	32	.01	.00	.01	0.	*	29 OCT 1810	182	.02	.00	.02	0.
28 OCT 1720	33	.01	.00	.01	0.	*	29 OCT 1820	183	.02	.00	.02	0.
28 OCT 1730	34	.01	.00	.01	0.	*	29 OCT 1830	184	.01	.00	.01	0.
28 OCT 1740	35	.01	.00	.01	0.	*	29 OCT 1840	185	.01	.00	.01	0.
28 OCT 1750	36	.01	.00	.01	0.	*	29 OCT 1850	186	.01	.00	.01	0.
28 OCT 1800	37	.01	.00	.01	0.	*	29 OCT 1900	187	.01	.00	.01	0.
28 OCT 1810	38	.01	.00	.01	0.	*	29 OCT 1910	188	.02	.00	.02	0.
28 OCT 1820	39	.01	.00	.01	0.	*	29 OCT 1920	189	.02	.00	.02	0.
28 OCT 1830	40	.01	.00	.01	0.	*	29 OCT 1930	190	.01	.00	.01	0.
28 OCT 1840	41	.01	.00	.01	0.	*	29 OCT 1940	191	.01	.00	.01	0.
28 OCT 1850	42	.01	.00	.01	0.	*	29 OCT 1950	192	.01	.00	.01	0.
28 OCT 1900	43	.01	.00	.01	0.	*	29 OCT 2000	193	.01	.00	.01	0.
28 OCT 1910	44	.01	.00	.01	0.	*	29 OCT 2010	194	.01	.00	.01	0.
28 OCT 1920	45	.01	.00	.01	0.	*	29 OCT 2020	195	.02	.00	.02	0.
28 OCT 1930	46	.01	.00	.01	0.	*	29 OCT 2030	196	.02	.00	.02	0.
28 OCT 1940	47	.01	.00	.01	0.	*	29 OCT 2040	197	.01	.00	.01	0.
28 OCT 1950	48	.01	.00	.01	0.	*	29 OCT 2050	198	.01	.00	.01	0.
28 OCT 2000	49	.01	.00	.01	0.	*	29 OCT 2100	199	.01	.00	.01	0.
28 OCT 2010	50	.01	.00	.01	0.	*	29 OCT 2110	200	.01	.00	.01	0.
28 OCT 2020	51	.01	.00	.01	0.	*	29 OCT 2120	201	.02	.00	.02	0.
28 OCT 2030	52	.01	.00	.01	0.	*	29 OCT 2130	202	.02	.00	.02	0.
28 OCT 2040	53	.01	.00	.01	0.	*	29 OCT 2140	203	.01	.00	.01	0.
28 OCT 2050	54	.01	.00	.01	0.	*	29 OCT 2150	204	.01	.00	.01	0.
28 OCT 2100	55	.01	.00	.01	0.	*	29 OCT 2200	205	.01	.00	.01	0.
28 OCT 2110	56	.01	.00	.01	0.	*	29 OCT 2210	206	.01	.00	.01	0.
28 OCT 2120	57	.01	.00	.01	0.	*	29 OCT 2220	207	.01	.00	.01	0.
28 OCT 2130	58	.01	.00	.01	0.	*	29 OCT 2230	208	.01	.00	.01	0.
28 OCT 2140	59	.01	.00	.01	0.	*	29 OCT 2240	209	.02	.00	.02	0.
28 OCT 2150	60	.01	.00	.01	0.	*	29 OCT 2250	210	.02	.00	.02	0.
28 OCT 2200	61	.01	.00	.01	0.	*	29 OCT 2300	211	.01	.00	.01	0.
28 OCT 2210	62	.01	.00	.01	0.	*	29 OCT 2310	212	.01	.00	.01	0.
28 OCT 2220	63	.01	.00	.01	0.	*	29 OCT 2320	213	.01	.00	.01	0.
28 OCT 2230	64	.01	.00	.01	0.	*	29 OCT 2330	214	.01	.00	.01	0.
28 OCT 2240	65	.01	.00	.01	0.	*	29 OCT 2340	215	.01	.00	.01	0.
28 OCT 2250	66	.01	.00	.01	0.	*	29 OCT 2350	216	.02	.00	.02	0.
28 OCT 2300	67	.01	.00	.01	0.	*	30 OCT 0000	217	.02	.00	.02	0.
28 OCT 2310	68	.01	.00	.01	0.	*	30 OCT 0010	218	.01	.00	.01	0.
28 OCT 2320	69	.01	.00	.01	0.	*	30 OCT 0020	219	.01	.00	.01	0.
28 OCT 2330	70	.01	.00	.01	0.	*	30 OCT 0030	220	.01	.00	.01	0.
28 OCT 2340	71	.01	.00	.01	0.	*	30 OCT 0040	221	.01	.00	.01	0.

28	OCT	2350	72	.01	.00	.01	0.	*	30	OCT	0050	222	.02	.00	.02	0.
29	OCT	0000	73	.01	.00	.01	0.	*	30	OCT	0100	223	.02	.00	.02	0.
29	OCT	0010	74	.01	.00	.01	0.	*	30	OCT	0110	224	.01	.00	.01	0.
29	OCT	0020	75	.01	.00	.01	0.	*	30	OCT	0120	225	.01	.00	.01	0.
29	OCT	0030	76	.01	.00	.01	0.	*	30	OCT	0130	226	.01	.00	.01	0.
29	OCT	0040	77	.01	.00	.01	0.	*	30	OCT	0140	227	.01	.00	.01	0.
29	OCT	0050	78	.01	.00	.01	0.	*	30	OCT	0150	228	.01	.00	.01	0.
29	OCT	0100	79	.01	.00	.01	0.	*	30	OCT	0200	229	.01	.00	.01	0.
29	OCT	0110	80	.01	.00	.01	0.	*	30	OCT	0210	230	.02	.00	.02	0.
29	OCT	0120	81	.01	.00	.01	0.	*	30	OCT	0220	231	.02	.00	.02	0.
29	OCT	0130	82	.01	.00	.01	0.	*	30	OCT	0230	232	.01	.00	.01	0.
29	OCT	0140	83	.01	.00	.01	0.	*	30	OCT	0240	233	.01	.00	.01	0.
29	OCT	0150	84	.01	.00	.01	0.	*	30	OCT	0250	234	.01	.00	.01	0.
29	OCT	0200	85	.01	.00	.01	0.	*	30	OCT	0300	235	.01	.00	.01	0.
29	OCT	0210	86	.01	.00	.01	0.	*	30	OCT	0310	236	.02	.00	.02	0.
29	OCT	0220	87	.01	.00	.01	0.	*	30	OCT	0320	237	.02	.00	.02	0.
29	OCT	0230	88	.01	.00	.01	0.	*	30	OCT	0330	238	.01	.00	.01	0.
29	OCT	0240	89	.01	.00	.01	0.	*	30	OCT	0340	239	.01	.00	.01	0.
29	OCT	0250	90	.01	.00	.01	0.	*	30	OCT	0350	240	.01	.00	.01	0.
29	OCT	0300	91	.01	.00	.01	0.	*	30	OCT	0400	241	.01	.00	.01	0.
29	OCT	0310	92	.01	.00	.01	0.	*	30	OCT	0410	242	.01	.00	.01	0.
29	OCT	0320	93	.01	.00	.01	0.	*	30	OCT	0420	243	.02	.00	.02	0.
29	OCT	0330	94	.01	.00	.01	0.	*	30	OCT	0430	244	.02	.00	.02	0.
29	OCT	0340	95	.01	.00	.01	0.	*	30	OCT	0440	245	.01	.00	.01	0.
29	OCT	0350	96	.01	.00	.01	0.	*	30	OCT	0450	246	.01	.00	.01	0.
29	OCT	0400	97	.01	.00	.01	0.	*	30	OCT	0500	247	.01	.00	.01	0.
29	OCT	0410	98	.01	.00	.01	0.	*	30	OCT	0510	248	.01	.00	.01	0.
29	OCT	0420	99	.01	.00	.01	0.	*	30	OCT	0520	249	.02	.00	.02	0.
29	OCT	0430	100	.01	.00	.01	0.	*	30	OCT	0530	250	.02	.00	.02	0.
29	OCT	0440	101	.01	.00	.01	0.	*	30	OCT	0540	251	.01	.00	.01	0.
29	OCT	0450	102	.01	.00	.01	0.	*	30	OCT	0550	252	.01	.00	.01	0.
29	OCT	0500	103	.01	.00	.01	0.	*	30	OCT	0600	253	.01	.00	.01	0.
29	OCT	0510	104	.01	.00	.01	0.	*	30	OCT	0610	254	.01	.00	.01	0.
29	OCT	0520	105	.01	.00	.01	0.	*	30	OCT	0620	255	.01	.00	.01	0.
29	OCT	0530	106	.01	.00	.01	0.	*	30	OCT	0630	256	.01	.00	.01	0.
29	OCT	0540	107	.01	.00	.01	0.	*	30	OCT	0640	257	.02	.00	.02	0.
29	OCT	0550	108	.01	.00	.01	0.	*	30	OCT	0650	258	.02	.00	.02	0.
29	OCT	0600	109	.01	.00	.01	0.	*	30	OCT	0700	259	.01	.00	.01	0.
29	OCT	0610	110	.01	.00	.01	0.	*	30	OCT	0710	260	.01	.00	.01	0.
29	OCT	0620	111	.01	.00	.01	0.	*	30	OCT	0720	261	.01	.00	.01	0.
29	OCT	0630	112	.01	.00	.01	0.	*	30	OCT	0730	262	.01	.00	.01	0.
29	OCT	0640	113	.01	.00	.01	0.	*	30	OCT	0740	263	.02	.00	.02	0.
29	OCT	0650	114	.01	.00	.01	0.	*	30	OCT	0750	264	.02	.00	.02	0.
29	OCT	0700	115	.01	.00	.01	0.	*	30	OCT	0800	265	.01	.00	.01	0.
29	OCT	0710	116	.01	.00	.01	0.	*	30	OCT	0810	266	.01	.00	.01	0.
29	OCT	0720	117	.01	.00	.01	0.	*	30	OCT	0820	267	.01	.00	.01	0.
29	OCT	0730	118	.01	.00	.01	0.	*	30	OCT	0830	268	.01	.00	.01	0.
29	OCT	0740	119	.01	.00	.01	0.	*	30	OCT	0840	269	.01	.00	.01	0.
29	OCT	0750	120	.01	.00	.01	0.	*	30	OCT	0850	270	.02	.00	.02	0.
29	OCT	0800	121	.01	.00	.01	0.	*	30	OCT	0900	271	.02	.00	.02	0.
29	OCT	0810	122	.01	.00	.01	0.	*	30	OCT	0910	272	.01	.00	.01	0.
29	OCT	0820	123	.01	.00	.01	0.	*	30	OCT	0920	273	.01	.00	.01	0.
29	OCT	0830	124	.01	.00	.01	0.	*	30	OCT	0930	274	.01	.00	.01	0.
29	OCT	0840	125	.01	.00	.01	0.	*	30	OCT	0940	275	.01	.00	.01	0.
29	OCT	0850	126	.01	.00	.01	0.	*	30	OCT	0950	276	.01	.00	.01	0.
29	OCT	0900	127	.01	.00	.01	0.	*	30	OCT	1000	277	.01	.00	.01	0.
29	OCT	0910	128	.01	.00	.01	0.	*	30	OCT	1010	278	.02	.00	.02	0.
29	OCT	0920	129	.01	.00	.01	0.	*	30	OCT	1020	279	.02	.00	.02	0.
29	OCT	0930	130	.01	.00	.01	0.	*	30	OCT	1030	280	.01	.00	.01	0.
29	OCT	0940	131	.01	.00	.01	0.	*	30	OCT	1040	281	.01	.00	.01	0.
29	OCT	0950	132	.01	.00	.01	0.	*	30	OCT	1050	282	.01	.00	.01	0.
29	OCT	1000	133	.01	.00	.01	0.	*	30	OCT	1100	283	.01	.00	.01	0.
29	OCT	1010	134	.01	.00	.01	0.	*	30	OCT	1110	284	.02	.00	.02	0.
29	OCT	1020	135	.01	.00	.01	0.	*	30	OCT	1120	285	.02	.00	.02	0.
29	OCT	1030	136	.01	.00	.01	0.	*	30	OCT	1130	286	.01	.00	.01	0.
29	OCT	1040	137	.01	.00	.01	0.	*	30	OCT	1140	287	.01	.00	.01	0.
29	OCT	1050	138	.01	.00	.01	0.	*	30	OCT	1150	288	.02	.00	.02	0.
29	OCT	1100	139	.01	.00	.01	0.	*	30	OCT	1200	289	.02	.00	.02	0.
29	OCT	1110	140	.01	.00	.01	0.	*	30	OCT	1210	290	.01	.00	.01	0.
29	OCT	1120	141	.01	.00	.01	0.	*	30	OCT	1220	291	.02	.00	.02	0.
29	OCT	1130	142	.01	.00	.01	0.	*	30	OCT	1230	292	.02	.00	.02	0.
29	OCT	1140	143	.01	.00	.01	0.	*	30	OCT	1240	293	.01	.00	.01	0.

29	OCT	1150	144	.01	.00	.01	0.	*	30	OCT	1250	294	.02	.00	.02	0.
29	OCT	1200	145	.01	.00	.01	0.	*	30	OCT	1300	295	.02	.00	.02	0.
29	OCT	1210	146	.01	.00	.01	0.	*	30	OCT	1310	296	.01	.00	.01	0.
29	OCT	1220	147	.02	.00	.02	0.	*	30	OCT	1320	297	.02	.00	.02	0.
29	OCT	1230	148	.02	.00	.02	0.	*	30	OCT	1330	298	.02	.00	.02	0.
29	OCT	1240	149	.01	.00	.01	0.	*	30	OCT	1340	299	.01	.00	.01	0.
29	OCT	1250	150	.01	.00	.01	0.	*	30	OCT	1350	300	.02	.00	.02	0.
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    TOTAL RAINFALL =     3.95, TOTAL LOSS =      .00, TOTAL EXCESS =     3.95

  PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                         6-HR        24-HR       72-HR      49.83-HR
+   (CFS)        (HR)
                               (CFS)
+       0.      24.50                      0.          0.          0.           0.
                             (INCHES)   .581       2.248       3.936        3.936
                              (AC-FT)     0.          0.          0.           0.

                          CUMULATIVE AREA =      .00 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *

             ***************
             *             *
   51 KK     *      COMB   *
             *             *
             ***************
                       Combining Two Hydrographs in Reservoir

   53 HC          HYDROGRAPH COMBINATION
                      ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

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                                                  HYDROGRAPH AT STATION      COMB
                                                      SUM OF  2 HYDROGRAPHS

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
28	OCT	1200	1	0.	*	29	OCT	0030	76	0.	*	29	OCT	1300	151	0.	*	30	OCT	0130	226	0.
28	OCT	1210	2	0.	*	29	OCT	0040	77	0.	*	29	OCT	1310	152	0.	*	30	OCT	0140	227	0.
28	OCT	1220	3	0.	*	29	OCT	0050	78	0.	*	29	OCT	1320	153	0.	*	30	OCT	0150	228	0.
28	OCT	1230	4	0.	*	29	OCT	0100	79	0.	*	29	OCT	1330	154	0.	*	30	OCT	0200	229	0.
28	OCT	1240	5	0.	*	29	OCT	0110	80	0.	*	29	OCT	1340	155	0.	*	30	OCT	0210	230	0.
28	OCT	1250	6	0.	*	29	OCT	0120	81	0.	*	29	OCT	1350	156	0.	*	30	OCT	0220	231	0.
28	OCT	1300	7	0.	*	29	OCT	0130	82	0.	*	29	OCT	1400	157	0.	*	30	OCT	0230	232	0.
28	OCT	1310	8	0.	*	29	OCT	0140	83	0.	*	29	OCT	1410	158	0.	*	30	OCT	0240	233	0.
28	OCT	1320	9	0.	*	29	OCT	0150	84	0.	*	29	OCT	1420	159	0.	*	30	OCT	0250	234	0.
28	OCT	1330	10	0.	*	29	OCT	0200	85	0.	*	29	OCT	1430	160	0.	*	30	OCT	0300	235	0.
28	OCT	1340	11	0.	*	29	OCT	0210	86	0.	*	29	OCT	1440	161	0.	*	30	OCT	0310	236	0.
28	OCT	1350	12	0.	*	29	OCT	0220	87	0.	*	29	OCT	1450	162	0.	*	30	OCT	0320	237	0.
28	OCT	1400	13	0.	*	29	OCT	0230	88	0.	*	29	OCT	1500	163	0.	*	30	OCT	0330	238	0.
28	OCT	1410	14	0.	*	29	OCT	0240	89	0.	*	29	OCT	1510	164	0.	*	30	OCT	0340	239	0.
28	OCT	1420	15	0.	*	29	OCT	0250	90	0.	*	29	OCT	1520	165	0.	*	30	OCT	0350	240	0.
28	OCT	1430	16	0.	*	29	OCT	0300	91	0.	*	29	OCT	1530	166	0.	*	30	OCT	0400	241	0.
28	OCT	1440	17	0.	*	29	OCT	0310	92	0.	*	29	OCT	1540	167	0.	*	30	OCT	0410	242	0.
28	OCT	1450	18	0.	*	29	OCT	0320	93	0.	*	29	OCT	1550	168	0.	*	30	OCT	0420	243	0.
28	OCT	1500	19	0.	*	29	OCT	0330	94	0.	*	29	OCT	1600	169	0.	*	30	OCT	0430	244	0.
28	OCT	1510	20	0.	*	29	OCT	0340	95	0.	*	29	OCT	1610	170	0.	*	30	OCT	0440	245	0.
28	OCT	1520	21	0.	*	29	OCT	0350	96	0.	*	29	OCT	1620	171	0.	*	30	OCT	0450	246	0.
28	OCT	1530	22	0.	*	29	OCT	0400	97	0.	*	29	OCT	1630	172	0.	*	30	OCT	0500	247	0.
28	OCT	1540	23	0.	*	29	OCT	0410	98	0.	*	29	OCT	1640	173	0.	*	30	OCT	0510	248	0.

28 OCT 1550	24	0.	*	29 OCT 0420	99	0.	*	29 OCT 1650	174	0.	*	30 OCT 0520	249	0.
28 OCT 1600	25	0.	*	29 OCT 0430	100	0.	*	29 OCT 1700	175	0.	*	30 OCT 0530	250	0.
28 OCT 1610	26	0.	*	29 OCT 0440	101	0.	*	29 OCT 1710	176	0.	*	30 OCT 0540	251	0.
28 OCT 1620	27	0.	*	29 OCT 0450	102	0.	*	29 OCT 1720	177	0.	*	30 OCT 0550	252	0.
28 OCT 1630	28	0.	*	29 OCT 0500	103	0.	*	29 OCT 1730	178	0.	*	30 OCT 0600	253	0.
28 OCT 1640	29	0.	*	29 OCT 0510	104	0.	*	29 OCT 1740	179	0.	*	30 OCT 0610	254	0.
28 OCT 1650	30	0.	*	29 OCT 0520	105	0.	*	29 OCT 1750	180	0.	*	30 OCT 0620	255	0.
28 OCT 1700	31	0.	*	29 OCT 0530	106	0.	*	29 OCT 1800	181	0.	*	30 OCT 0630	256	0.
28 OCT 1710	32	0.	*	29 OCT 0540	107	0.	*	29 OCT 1810	182	0.	*	30 OCT 0640	257	0.
28 OCT 1720	33	0.	*	29 OCT 0550	108	0.	*	29 OCT 1820	183	0.	*	30 OCT 0650	258	0.
28 OCT 1730	34	0.	*	29 OCT 0600	109	0.	*	29 OCT 1830	184	0.	*	30 OCT 0700	259	0.
28 OCT 1740	35	0.	*	29 OCT 0610	110	0.	*	29 OCT 1840	185	0.	*	30 OCT 0710	260	0.
28 OCT 1750	36	0.	*	29 OCT 0620	111	0.	*	29 OCT 1850	186	0.	*	30 OCT 0720	261	0.
28 OCT 1800	37	0.	*	29 OCT 0630	112	0.	*	29 OCT 1900	187	0.	*	30 OCT 0730	262	0.
28 OCT 1810	38	0.	*	29 OCT 0640	113	0.	*	29 OCT 1910	188	0.	*	30 OCT 0740	263	0.
28 OCT 1820	39	0.	*	29 OCT 0650	114	0.	*	29 OCT 1920	189	0.	*	30 OCT 0750	264	0.
28 OCT 1830	40	0.	*	29 OCT 0700	115	0.	*	29 OCT 1930	190	0.	*	30 OCT 0800	265	0.
28 OCT 1840	41	0.	*	29 OCT 0710	116	0.	*	29 OCT 1940	191	0.	*	30 OCT 0810	266	0.
28 OCT 1850	42	0.	*	29 OCT 0720	117	0.	*	29 OCT 1950	192	0.	*	30 OCT 0820	267	0.
28 OCT 1900	43	0.	*	29 OCT 0730	118	0.	*	29 OCT 2000	193	0.	*	30 OCT 0830	268	0.
28 OCT 1910	44	0.	*	29 OCT 0740	119	0.	*	29 OCT 2010	194	0.	*	30 OCT 0840	269	0.
28 OCT 1920	45	0.	*	29 OCT 0750	120	0.	*	29 OCT 2020	195	0.	*	30 OCT 0850	270	0.
28 OCT 1930	46	0.	*	29 OCT 0800	121	0.	*	29 OCT 2030	196	0.	*	30 OCT 0900	271	0.
28 OCT 1940	47	0.	*	29 OCT 0810	122	0.	*	29 OCT 2040	197	0.	*	30 OCT 0910	272	0.
28 OCT 1950	48	0.	*	29 OCT 0820	123	0.	*	29 OCT 2050	198	0.	*	30 OCT 0920	273	0.
28 OCT 2000	49	0.	*	29 OCT 0830	124	0.	*	29 OCT 2100	199	0.	*	30 OCT 0930	274	0.
28 OCT 2010	50	0.	*	29 OCT 0840	125	0.	*	29 OCT 2110	200	0.	*	30 OCT 0940	275	0.
28 OCT 2020	51	0.	*	29 OCT 0850	126	0.	*	29 OCT 2120	201	0.	*	30 OCT 0950	276	0.
28 OCT 2030	52	0.	*	29 OCT 0900	127	0.	*	29 OCT 2130	202	0.	*	30 OCT 1000	277	0.
28 OCT 2040	53	0.	*	29 OCT 0910	128	0.	*	29 OCT 2140	203	0.	*	30 OCT 1010	278	0.
28 OCT 2050	54	0.	*	29 OCT 0920	129	0.	*	29 OCT 2150	204	0.	*	30 OCT 1020	279	0.
28 OCT 2100	55	0.	*	29 OCT 0930	130	0.	*	29 OCT 2200	205	0.	*	30 OCT 1030	280	0.
28 OCT 2110	56	0.	*	29 OCT 0940	131	0.	*	29 OCT 2210	206	0.	*	30 OCT 1040	281	0.
28 OCT 2120	57	0.	*	29 OCT 0950	132	0.	*	29 OCT 2220	207	0.	*	30 OCT 1050	282	0.
28 OCT 2130	58	0.	*	29 OCT 1000	133	0.	*	29 OCT 2230	208	0.	*	30 OCT 1100	283	0.
28 OCT 2140	59	0.	*	29 OCT 1010	134	0.	*	29 OCT 2240	209	0.	*	30 OCT 1110	284	0.
28 OCT 2150	60	0.	*	29 OCT 1020	135	0.	*	29 OCT 2250	210	0.	*	30 OCT 1120	285	0.
28 OCT 2200	61	0.	*	29 OCT 1030	136	0.	*	29 OCT 2300	211	0.	*	30 OCT 1130	286	0.
28 OCT 2210	62	0.	*	29 OCT 1040	137	0.	*	29 OCT 2310	212	0.	*	30 OCT 1140	287	0.
28 OCT 2220	63	0.	*	29 OCT 1050	138	0.	*	29 OCT 2320	213	0.	*	30 OCT 1150	288	0.
28 OCT 2230	64	0.	*	29 OCT 1100	139	0.	*	29 OCT 2330	214	0.	*	30 OCT 1200	289	0.
28 OCT 2240	65	0.	*	29 OCT 1110	140	0.	*	29 OCT 2340	215	0.	*	30 OCT 1210	290	0.
28 OCT 2250	66	0.	*	29 OCT 1120	141	0.	*	29 OCT 2350	216	0.	*	30 OCT 1220	291	0.
28 OCT 2300	67	0.	*	29 OCT 1130	142	0.	*	30 OCT 0000	217	0.	*	30 OCT 1230	292	0.
28 OCT 2310	68	0.	*	29 OCT 1140	143	0.	*	30 OCT 0010	218	0.	*	30 OCT 1240	293	0.
28 OCT 2320	69	0.	*	29 OCT 1150	144	0.	*	30 OCT 0020	219	0.	*	30 OCT 1250	294	0.
28 OCT 2330	70	0.	*	29 OCT 1200	145	0.	*	30 OCT 0030	220	0.	*	30 OCT 1300	295	0.
28 OCT 2340	71	0.	*	29 OCT 1210	146	0.	*	30 OCT 0040	221	0.	*	30 OCT 1310	296	0.
28 OCT 2350	72	0.	*	29 OCT 1220	147	0.	*	30 OCT 0050	222	0.	*	30 OCT 1320	297	0.
29 OCT 0000	73	0.	*	29 OCT 1230	148	0.	*	30 OCT 0100	223	0.	*	30 OCT 1330	298	0.
29 OCT 0010	74	0.	*	29 OCT 1240	149	0.	*	30 OCT 0110	224	0.	*	30 OCT 1340	299	0.
29 OCT 0020	75	0.	*	29 OCT 1250	150	0.	*	30 OCT 0120	225	0.	*	30 OCT 1350	300	0.
			*				*				*			

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.83-HR
+ (CFS)	(HR)					
		(CFS)				
+ 0.	49.50		0.	0.	0.	0.
		(INCHES)	.348	1.101	1.381	1.381
		(AC-FT)	0.	1.	1.	1.

CUMULATIVE AREA = .01 SQ MI

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          *           *
54 KK     *     RES1  *
          *           *
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Reservoir Routing Operation

HYDROGRAPH ROUTING DATA

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56 RS          STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC     74.00  INITIAL CONDITION
                        X        .00 WORKING R AND D COEFFICIENT

57 SA               AREA          .0        .8        .8        .9       1.1       2.2

58 SE           ELEVATION       74.00     75.00     76.00     77.00     78.00     79.00

59 SQ           DISCHARGE          0.        0.        0.        0.        0.        0.

60 SE           ELEVATION       74.00     75.00     76.00     77.00     78.00     79.00
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COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.29	1.09	1.98	2.99	4.60
ELEVATION	74.00	75.00	76.00	77.00	78.00	79.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.29	1.09	1.98	2.99	4.60
OUTFLOW	.00	.00	.00	.00	.00	.00
ELEVATION	74.00	75.00	76.00	77.00	78.00	79.00

HYDROGRAPH AT STATION RES1

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
28	OCT	1200	1	0.	.0	74.0	29	OCT	0440	101	0.	.1	74.3	29	OCT	2120	201	0.	.3	75.0
28	OCT	1210	2	0.	.0	74.0	29	OCT	0450	102	0.	.1	74.3	29	OCT	2130	202	0.	.3	75.0
28	OCT	1220	3	0.	.0	74.0	29	OCT	0500	103	0.	.1	74.3	29	OCT	2140	203	0.	.3	75.0
28	OCT	1230	4	0.	.0	74.0	29	OCT	0510	104	0.	.1	74.3	29	OCT	2150	204	0.	.3	75.1
28	OCT	1240	5	0.	.0	74.0	29	OCT	0520	105	0.	.1	74.3	29	OCT	2200	205	0.	.3	75.1
28	OCT	1250	6	0.	.0	74.0	29	OCT	0530	106	0.	.1	74.3	29	OCT	2210	206	0.	.3	75.1
28	OCT	1300	7	0.	.0	74.0	29	OCT	0540	107	0.	.1	74.3	29	OCT	2220	207	0.	.3	75.1
28	OCT	1310	8	0.	.0	74.0	29	OCT	0550	108	0.	.1	74.3	29	OCT	2230	208	0.	.3	75.1
28	OCT	1320	9	0.	.0	74.0	29	OCT	0600	109	0.	.1	74.3	29	OCT	2240	209	0.	.4	75.1
28	OCT	1330	10	0.	.0	74.0	29	OCT	0610	110	0.	.1	74.3	29	OCT	2250	210	0.	.4	75.1
28	OCT	1340	11	0.	.0	74.0	29	OCT	0620	111	0.	.1	74.3	29	OCT	2300	211	0.	.4	75.1
28	OCT	1350	12	0.	.0	74.0	29	OCT	0630	112	0.	.1	74.3	29	OCT	2310	212	0.	.4	75.1
28	OCT	1400	13	0.	.0	74.0	29	OCT	0640	113	0.	.1	74.3	29	OCT	2320	213	0.	.4	75.1
28	OCT	1410	14	0.	.0	74.0	29	OCT	0650	114	0.	.1	74.3	29	OCT	2330	214	0.	.4	75.1
28	OCT	1420	15	0.	.0	74.0	29	OCT	0700	115	0.	.1	74.3	29	OCT	2340	215	0.	.4	75.1
28	OCT	1430	16	0.	.0	74.0	29	OCT	0710	116	0.	.1	74.3	29	OCT	2350	216	0.	.4	75.1
28	OCT	1440	17	0.	.0	74.0	29	OCT	0720	117	0.	.1	74.3	30	OCT	0000	217	0.	.4	75.1
28	OCT	1450	18	0.	.0	74.0	29	OCT	0730	118	0.	.1	74.3	30	OCT	0010	218	0.	.4	75.1
28	OCT	1500	19	0.	.0	74.0	29	OCT	0740	119	0.	.1	74.4	30	OCT	0020	219	0.	.4	75.1
28	OCT	1510	20	0.	.0	74.1	29	OCT	0750	120	0.	.1	74.4	30	OCT	0030	220	0.	.4	75.1
28	OCT	1520	21	0.	.0	74.1	29	OCT	0800	121	0.	.1	74.4	30	OCT	0040	221	0.	.4	75.1
28	OCT	1530	22	0.	.0	74.1	29	OCT	0810	122	0.	.1	74.4	30	OCT	0050	222	0.	.4	75.1
28	OCT	1540	23	0.	.0	74.1	29	OCT	0820	123	0.	.1	74.4	30	OCT	0100	223	0.	.4	75.2
28	OCT	1550	24	0.	.0	74.1	29	OCT	0830	124	0.	.1	74.4	30	OCT	0110	224	0.	.4	75.2
28	OCT	1600	25	0.	.0	74.1	29	OCT	0840	125	0.	.1	74.4	30	OCT	0120	225	0.	.4	75.2
28	OCT	1610	26	0.	.0	74.1	29	OCT	0850	126	0.	.1	74.4	30	OCT	0130	226	0.	.4	75.2
28	OCT	1620	27	0.	.0	74.1	29	OCT	0900	127	0.	.1	74.4	30	OCT	0140	227	0.	.4	75.2
28	OCT	1630	28	0.	.0	74.1	29	OCT	0910	128	0.	.1	74.4	30	OCT	0150	228	0.	.4	75.2
28	OCT	1640	29	0.	.0	74.1	29	OCT	0920	129	0.	.1	74.4	30	OCT	0200	229	0.	.4	75.2

28 OCT	1650	30	0.	.0	74.1	*	29 OCT	0930	130	0.	.1	74.4	*	30 OCT	0210	230	0.	.4	75.2
28 OCT	1700	31	0.	.0	74.1	*	29 OCT	0940	131	0.	.1	74.4	*	30 OCT	0220	231	0.	.5	75.2
28 OCT	1710	32	0.	.0	74.1	*	29 OCT	0950	132	0.	.1	74.4	*	30 OCT	0230	232	0.	.5	75.2
28 OCT	1720	33	0.	.0	74.1	*	29 OCT	1000	133	0.	.1	74.4	*	30 OCT	0240	233	0.	.5	75.2
28 OCT	1730	34	0.	.0	74.1	*	29 OCT	1010	134	0.	.1	74.4	*	30 OCT	0250	234	0.	.5	75.2
28 OCT	1740	35	0.	.0	74.1	*	29 OCT	1020	135	0.	.1	74.4	*	30 OCT	0300	235	0.	.5	75.2
28 OCT	1750	36	0.	.0	74.1	*	29 OCT	1030	136	0.	.1	74.4	*	30 OCT	0310	236	0.	.5	75.2
28 OCT	1800	37	0.	.0	74.1	*	29 OCT	1040	137	0.	.1	74.4	*	30 OCT	0320	237	0.	.5	75.2
28 OCT	1810	38	0.	.0	74.1	*	29 OCT	1050	138	0.	.1	74.4	*	30 OCT	0330	238	0.	.5	75.2
28 OCT	1820	39	0.	.0	74.1	*	29 OCT	1100	139	0.	.1	74.4	*	30 OCT	0340	239	0.	.5	75.2
28 OCT	1830	40	0.	.0	74.1	*	29 OCT	1110	140	0.	.1	74.4	*	30 OCT	0350	240	0.	.5	75.3
28 OCT	1840	41	0.	.0	74.1	*	29 OCT	1120	141	0.	.1	74.5	*	30 OCT	0400	241	0.	.5	75.3
28 OCT	1850	42	0.	.0	74.1	*	29 OCT	1130	142	0.	.1	74.5	*	30 OCT	0410	242	0.	.5	75.3
28 OCT	1900	43	0.	.0	74.1	*	29 OCT	1140	143	0.	.1	74.5	*	30 OCT	0420	243	0.	.5	75.3
28 OCT	1910	44	0.	.0	74.1	*	29 OCT	1150	144	0.	.1	74.5	*	30 OCT	0430	244	0.	.5	75.3
28 OCT	1920	45	0.	.0	74.1	*	29 OCT	1200	145	0.	.1	74.5	*	30 OCT	0440	245	0.	.5	75.3
28 OCT	1930	46	0.	.0	74.1	*	29 OCT	1210	146	0.	.1	74.5	*	30 OCT	0450	246	0.	.5	75.3
28 OCT	1940	47	0.	.0	74.1	*	29 OCT	1220	147	0.	.1	74.5	*	30 OCT	0500	247	0.	.5	75.3
28 OCT	1950	48	0.	.0	74.1	*	29 OCT	1230	148	0.	.1	74.5	*	30 OCT	0510	248	0.	.5	75.3
28 OCT	2000	49	0.	.0	74.1	*	29 OCT	1240	149	0.	.1	74.5	*	30 OCT	0520	249	0.	.5	75.3
28 OCT	2010	50	0.	.0	74.1	*	29 OCT	1250	150	0.	.2	74.5	*	30 OCT	0530	250	0.	.5	75.3
28 OCT	2020	51	0.	.0	74.1	*	29 OCT	1300	151	0.	.2	74.5	*	30 OCT	0540	251	0.	.5	75.3
28 OCT	2030	52	0.	.0	74.1	*	29 OCT	1310	152	0.	.2	74.5	*	30 OCT	0550	252	0.	.6	75.3
28 OCT	2040	53	0.	.0	74.1	*	29 OCT	1320	153	0.	.2	74.5	*	30 OCT	0600	253	0.	.6	75.3
28 OCT	2050	54	0.	.0	74.2	*	29 OCT	1330	154	0.	.2	74.6	*	30 OCT	0610	254	0.	.6	75.3
28 OCT	2100	55	0.	.0	74.2	*	29 OCT	1340	155	0.	.2	74.6	*	30 OCT	0620	255	0.	.6	75.3
28 OCT	2110	56	0.	.0	74.2	*	29 OCT	1350	156	0.	.2	74.6	*	30 OCT	0630	256	0.	.6	75.4
28 OCT	2120	57	0.	.0	74.2	*	29 OCT	1400	157	0.	.2	74.6	*	30 OCT	0640	257	0.	.6	75.4
28 OCT	2130	58	0.	.0	74.2	*	29 OCT	1410	158	0.	.2	74.6	*	30 OCT	0650	258	0.	.6	75.4
28 OCT	2140	59	0.	.0	74.2	*	29 OCT	1420	159	0.	.2	74.6	*	30 OCT	0700	259	0.	.6	75.4
28 OCT	2150	60	0.	.0	74.2	*	29 OCT	1430	160	0.	.2	74.6	*	30 OCT	0710	260	0.	.6	75.4
28 OCT	2200	61	0.	.1	74.2	*	29 OCT	1440	161	0.	.2	74.6	*	30 OCT	0720	261	0.	.6	75.4
28 OCT	2210	62	0.	.1	74.2	*	29 OCT	1450	162	0.	.2	74.6	*	30 OCT	0730	262	0.	.6	75.4
28 OCT	2220	63	0.	.1	74.2	*	29 OCT	1500	163	0.	.2	74.6	*	30 OCT	0740	263	0.	.6	75.4
28 OCT	2230	64	0.	.1	74.2	*	29 OCT	1510	164	0.	.2	74.7	*	30 OCT	0750	264	0.	.6	75.4
28 OCT	2240	65	0.	.1	74.2	*	29 OCT	1520	165	0.	.2	74.7	*	30 OCT	0800	265	0.	.6	75.4
28 OCT	2250	66	0.	.1	74.2	*	29 OCT	1530	166	0.	.2	74.7	*	30 OCT	0810	266	0.	.6	75.4
28 OCT	2300	67	0.	.1	74.2	*	29 OCT	1540	167	0.	.2	74.7	*	30 OCT	0820	267	0.	.6	75.4
28 OCT	2310	68	0.	.1	74.2	*	29 OCT	1550	168	0.	.2	74.7	*	30 OCT	0830	268	0.	.6	75.4
28 OCT	2320	69	0.	.1	74.2	*	29 OCT	1600	169	0.	.2	74.7	*	30 OCT	0840	269	0.	.6	75.4
28 OCT	2330	70	0.	.1	74.2	*	29 OCT	1610	170	0.	.2	74.7	*	30 OCT	0850	270	0.	.6	75.4
28 OCT	2340	71	0.	.1	74.2	*	29 OCT	1620	171	0.	.2	74.7	*	30 OCT	0900	271	0.	.7	75.5
28 OCT	2350	72	0.	.1	74.2	*	29 OCT	1630	172	0.	.2	74.7	*	30 OCT	0910	272	0.	.7	75.5
29 OCT	0000	73	0.	.1	74.2	*	29 OCT	1640	173	0.	.2	74.7	*	30 OCT	0920	273	0.	.7	75.5
29 OCT	0010	74	0.	.1	74.2	*	29 OCT	1650	174	0.	.2	74.8	*	30 OCT	0930	274	0.	.7	75.5
29 OCT	0020	75	0.	.1	74.2	*	29 OCT	1700	175	0.	.2	74.8	*	30 OCT	0940	275	0.	.7	75.5
29 OCT	0030	76	0.	.1	74.2	*	29 OCT	1710	176	0.	.2	74.8	*	30 OCT	0950	276	0.	.7	75.5
29 OCT	0040	77	0.	.1	74.2	*	29 OCT	1720	177	0.	.2	74.8	*	30 OCT	1000	277	0.	.7	75.5
29 OCT	0050	78	0.	.1	74.2	*	29 OCT	1730	178	0.	.2	74.8	*	30 OCT	1010	278	0.	.7	75.5
29 OCT	0100	79	0.	.1	74.2	*	29 OCT	1740	179	0.	.2	74.8	*	30 OCT	1020	279	0.	.7	75.5
29 OCT	0110	80	0.	.1	74.2	*	29 OCT	1750	180	0.	.2	74.8	*	30 OCT	1030	280	0.	.7	75.5
29 OCT	0120	81	0.	.1	74.2	*	29 OCT	1800	181	0.	.2	74.8	*	30 OCT	1040	281	0.	.7	75.5
29 OCT	0130	82	0.	.1	74.2	*	29 OCT	1810	182	0.	.2	74.8	*	30 OCT	1050	282	0.	.7	75.5
29 OCT	0140	83	0.	.1	74.2	*	29 OCT	1820	183	0.	.3	74.9	*	30 OCT	1100	283	0.	.7	75.5
29 OCT	0150	84	0.	.1	74.2	*	29 OCT	1830	184	0.	.3	74.9	*	30 OCT	1110	284	0.	.7	75.5
29 OCT	0200	85	0.	.1	74.2	*	29 OCT	1840	185	0.	.3	74.9	*	30 OCT	1120	285	0.	.7	75.5
29 OCT	0210	86	0.	.1	74.2	*	29 OCT	1850	186	0.	.3	74.9	*	30 OCT	1130	286	0.	.7	75.6
29 OCT	0220	87	0.	.1	74.2	*	29 OCT	1900	187	0.	.3	74.9	*	30 OCT	1140	287	0.	.7	75.6
29 OCT	0230	88	0.	.1	74.3	*	29 OCT	1910	188	0.	.3	74.9	*	30 OCT	1150	288	0.	.7	75.6
29 OCT	0240	89	0.	.1	74.3	*	29 OCT	1920	189	0.	.3	74.9	*	30 OCT	1200	289	0.	.8	75.6
29 OCT	0250	90	0.	.1	74.3	*	29 OCT	1930	190	0.	.3	75.0	*	30 OCT	1210	290	0.	.8	75.6
29 OCT	0300	91	0.	.1	74.3	*	29 OCT	1940	191	0.	.3	75.0	*	30 OCT	1220	291	0.	.8	75.6
29 OCT	0310	92	0.	.1	74.3	*	29 OCT	1950	192	0.	.3	75.0	*	30 OCT	1230	292	0.	.8	75.6
29 OCT	0320	93	0.	.1	74.3	*	29 OCT	2000	193	0.	.3	75.0	*	30 OCT	1240	293	0.	.8	75.6
29 OCT	0330	94	0.	.1	74.3	*	29 OCT	2010	194	0.	.3	75.0	*	30 OCT	1250	294	0.	.8	75.6
29 OCT	0340	95	0.	.1	74.3	*	29 OCT	2020	195	0.	.3	75.0	*	30 OCT	1300	295	0.	.8	75.6
29 OCT	0350	96	0.	.1	74.3	*	29 OCT	2030	196	0.	.3	75.0	*	30 OCT	1310	296	0.	.8	75.6
29 OCT	0400	97	0.	.1	74.3	*	29 OCT	2040	197	0.	.3	75.0	*	30 OCT	1320	297	0.	.8	75.6
29 OCT	0410	98	0.	.1	74.3	*	29 OCT	2050	198	0.	.3	75.0	*	30 OCT	1330	298	0.	.8	75.6
29 OCT	0420	99	0.	.1	74.3	*	29 OCT	2100	199	0.	.3	75.0	*	30 OCT	1340	299	0.	.8	75.7
29 OCT	0430	100	0.	.1	74.3	*	29 OCT	2110	200	0.	.3	75.0	*	30 OCT	1350	300	0.	.8	75.7
						*							*						

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.83-HR
(CFS)	(HR)	(CFS)				
0.	.17		0.	0.	0.	0.
		(INCHES)	.000	.000	.000	.000
		(AC-FT)	0.	0.	0.	0.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	49.83-HR
(AC-FT)	(HR)				
1.	49.83	1.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	49.83-HR
(FEET)	(HR)				
75.67	49.83	75.53	75.17	74.68	74.68

CUMULATIVE AREA = .01 SQ MI

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	SITE	0.	49.67	0.	0.	0.	.01		
HYDROGRAPH AT	POND	0.	24.50	0.	0.	0.	.00		
2 COMBINED AT	COMB	0.	49.50	0.	0.	0.	.01		
ROUTED TO	RES1	0.	.17	0.	0.	0.	.01	75.67	49.83

*** NORMAL END OF HEC-1 ***

CASE VI

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  10/27/1998  TIME  11:31:34 *
*                                       *
*****************************************
```

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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*          (916) 551-1748               *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1           ID   KUA - Cane Island Unit 3
  2           ID   Site Certification Application
  3           ID   HEC-1 Analysis of Unit 3:   10 Year - 72 Hour Precipitation Event
  4           ID   Black & Veatch Project No. 59140     Modelled By: Gregory V. Johnson
  5           ID   Post-Construction Model
  6           ID   Input File: kua10-72.in   Output File:  kua10-72.out
  7           IT      10 27OCT98   0600     300
  8           IO       0       0
  9           IN      15
              * **********

 10           KK    SITE
 11           KM   Runoff From Unit 3 Power Block and Construction Laydown Area
 12           BA  .00964
 13           PB   9.65
 14           PC  0.002  0.003  0.005  0.006  0.008  0.009  0.011  0.012  0.014  0.015
 15           PC  0.017  0.018  0.020  0.021  0.023  0.024  0.026  0.027  0.029  0.030
 16           PC  0.032  0.033  0.035  0.036  0.038  0.040  0.041  0.043  0.044  0.046
 17           PC  0.047  0.049  0.050  0.052  0.053  0.055  0.056  0.058  0.059  0.061
 18           PC  0.062  0.064  0.065  0.067  0.068  0.070  0.071  0.073  0.075  0.076
 19           PC  0.078  0.079  0.081  0.082  0.084  0.085  0.087  0.088  0.090  0.091
 20           PC  0.093  0.094  0.096  0.097  0.099  0.100  0.102  0.103  0.105  0.106
 21           PC  0.108  0.110  0.111  0.113  0.114  0.116  0.117  0.119  0.120  0.122
 22           PC  0.123  0.125  0.126  0.128  0.129  0.131  0.132  0.134  0.135  0.137
 23           PC  0.138  0.140  0.141  0.143  0.144  0.146  0.148  0.150  0.153  0.155
 24           PC  0.157  0.159  0.162  0.164  0.166  0.168  0.170  0.173  0.175  0.177
 25           PC  0.179  0.182  0.184  0.186  0.188  0.190  0.193  0.195  0.197  0.199
 26           PC  0.201  0.204  0.206  0.208  0.210  0.213  0.215  0.217  0.219  0.221
 27           PC  0.224  0.226  0.228  0.230  0.233  0.235  0.237  0.239  0.241  0.244
 28           PC  0.246  0.248  0.250  0.252  0.255  0.257  0.259  0.261  0.264  0.266
 29           PC  0.268  0.270  0.272  0.275  0.277  0.279  0.281  0.284  0.286  0.288
 30           PC  0.290  0.292  0.295  0.297  0.299  0.301  0.304  0.306  0.308  0.310
 31           PC  0.312  0.315  0.317  0.319  0.321  0.324  0.326  0.328  0.330  0.332
 32           PC  0.335  0.337  0.339  0.341  0.343  0.346  0.348  0.350  0.352  0.355
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          33          PC   0.357   0.359   0.362   0.364   0.367   0.369   0.372   0.374   0.377   0.379
          34          PC   0.382   0.385   0.388   0.391   0.394   0.397   0.400   0.404   0.408   0.412
          35          PC   0.417   0.421   0.426   0.431   0.437   0.442   0.448   0.454   0.461   0.467
          36          PC   0.474   0.481   0.488   0.496   0.504   0.512   0.521   0.530   0.540   0.550
          37          PC   0.561   0.572   0.584   0.596   0.612   0.628   0.653   0.678   0.847   1.015
          38          PC   1.052   1.088   1.107   1.126   1.140   1.154   1.166   1.177   1.186   1.194
          39          PC   1.202   1.209   1.217   1.224   1.232   1.239   1.243   1.248   1.253   1.257
          40          PC   1.262   1.266   1.271   1.275   1.280   1.284   1.289   1.293   1.298   1.302
          41          PC   1.307   1.311   1.314   1.317   1.320   1.323   1.326   1.329   1.332   1.335
          42          PC   1.338   1.341   1.344   1.347   1.350   1.353   1.356   1.359
          43          LS      0      65       0
          44          UD    0.26
                      * **********

          45          KK    POND
          46          KM   Unit 3 Stormwater Pond
          47          BA  .00152
          48          LS      0      49     100
          49          UD    0.01
                      * **********
1                                          HEC-1 INPUT                                          PAGE  2

        LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          50          KK    COMB
          51          KM   Combining Two Hydrographs in Reservoir
          52          HC       2
                      * **********

          53          KK    RES1
          54          KM   Reservoir Routing Operation
          55          RS       1    ELEV    74.0
          56          SA  .01313 0.76079 0.83623 0.94231 1.07782 2.22002
          57          SE    74.0    75.0    76.0    77.0    78.0    79.0
          58          SQ       0       0       0     1.4     2.2    33.7
          59          SE    74.0    75.0    76.0    77.0    78.0    79.0
                      * **********
                      *DIAGRAM
          60          ZZ
1
              SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    10        SITE
                 .
                 .
    45           .        POND
                 .           .
                 .           .
    50        COMB............
                 V
                 V
    53        RES1

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  10/27/1998  TIME  11:31:34 *
*                                       *
*****************************************

*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*           (916) 551-1748              *
*                                       *
*****************************************
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                        KUA - Cane Island Unit 3
                        Site Certification Application
                        HEC-1 Analysis of Unit 3:   10 Year - 72 Hour Precipitation Event
                        Black & Veatch Project No. 59140    Modelled By: Gregory V. Johnson
                        Post-Construction Model
                        Input File: kua10-72.in   Output File:  kua10-72.out

*** ERROR *** SPECIFIED START AND END DATES RESULT IN TOO MANY TIME PERIODS

   8 IO        OUTPUT CONTROL VARIABLES
                     IPRNT          0  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT        HYDROGRAPH TIME DATA
                      NMIN         10  MINUTES IN COMPUTATION INTERVAL
                     IDATE    27OCT98  STARTING DATE
                     ITIME       1200  STARTING TIME
                        NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE    31OCT98  ENDING DATE
                    NDTIME       1350  ENDING TIME
                     ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .17 HOURS
                      TOTAL TIME BASE   49.83 HOURS

         ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **

           ***************
           *             *
  10 KK    *     SITE    *
           *             *
           ***************
                       Runoff From Unit 3 Power Block and Construction Laydown Area

   9 IN        TIME DATA FOR INPUT TIME SERIES
                     JXMIN         15  TIME INTERVAL IN MINUTES
                    JXDATE    27OCT98  STARTING DATE
                    JXTIME       6000  STARTING TIME

            SUBBASIN RUNOFF DATA

  12 BA        SUBBASIN CHARACTERISTICS
                     TAREA        .01  SUBBASIN AREA

               PRECIPITATION DATA

  13 PB              STORM       9.65  BASIN TOTAL PRECIPITATION

  14 PI          INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	

```
43 LS         SCS LOSS RATE
                    STRTL        1.08  INITIAL ABSTRACTION
                   CRVNBR       65.00  CURVE NUMBER
                    RTIMP         .00  PERCENT IMPERVIOUS AREA

44 UD         SCS DIMENSIONLESS UNITGRAPH
                     TLAG         .26  LAG
```

***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

UNIT HYDROGRAPH
10 END-OF-PERIOD ORDINATES

6.	14.	10.	4.	2.	1.	0.	0.	0.	0.

****

HYDROGRAPH AT STATION SITE

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
29	OCT	1200	1	.00	.00	.00	0.	*	30	OCT	1300	151	.03	.01	.02	1.
29	OCT	1210	2	.02	.02	.00	0.	*	30	OCT	1310	152	.03	.01	.02	1.
29	OCT	1220	3	.03	.03	.00	0.	*	30	OCT	1320	153	.04	.02	.02	1.
29	OCT	1230	4	.03	.03	.00	0.	*	30	OCT	1330	154	.05	.02	.03	1.
29	OCT	1240	5	.02	.02	.00	0.	*	30	OCT	1340	155	.03	.01	.02	1.
29	OCT	1250	6	.03	.03	.00	0.	*	30	OCT	1350	156	.03	.01	.02	1.
29	OCT	1300	7	.03	.03	.00	0.	*	30	OCT	1400	157	.03	.01	.02	1.
29	OCT	1310	8	.02	.02	.00	0.	*	30	OCT	1410	158	.03	.01	.02	1.
29	OCT	1320	9	.03	.03	.00	0.	*	30	OCT	1420	159	.03	.01	.02	1.
29	OCT	1330	10	.03	.03	.00	0.	*	30	OCT	1430	160	.03	.01	.02	1.
29	OCT	1340	11	.02	.02	.00	0.	*	30	OCT	1440	161	.05	.02	.03	1.
29	OCT	1350	12	.03	.03	.00	0.	*	30	OCT	1450	162	.04	.02	.03	1.
29	OCT	1400	13	.03	.03	.00	0.	*	30	OCT	1500	163	.03	.01	.02	1.
29	OCT	1410	14	.02	.02	.00	0.	*	30	OCT	1510	164	.03	.01	.02	1.
29	OCT	1420	15	.03	.03	.00	0.	*	30	OCT	1520	165	.03	.01	.02	1.
29	OCT	1430	16	.03	.03	.00	0.	*	30	OCT	1530	166	.03	.01	.02	1.
29	OCT	1440	17	.02	.02	.00	0.	*	30	OCT	1540	167	.05	.02	.03	1.
29	OCT	1450	18	.03	.03	.00	0.	*	30	OCT	1550	168	.04	.02	.03	1.
29	OCT	1500	19	.03	.03	.00	0.	*	30	OCT	1600	169	.03	.01	.02	1.
29	OCT	1510	20	.02	.02	.00	0.	*	30	OCT	1610	170	.03	.01	.02	1.
29	OCT	1520	21	.03	.03	.00	0.	*	30	OCT	1620	171	.03	.01	.02	1.
29	OCT	1530	22	.03	.03	.00	0.	*	30	OCT	1630	172	.03	.01	.02	1.
29	OCT	1540	23	.02	.02	.00	0.	*	30	OCT	1640	173	.03	.01	.02	1.
29	OCT	1550	24	.03	.03	.00	0.	*	30	OCT	1650	174	.04	.01	.03	1.
29	OCT	1600	25	.03	.03	.00	0.	*	30	OCT	1700	175	.05	.02	.03	1.
29	OCT	1610	26	.02	.02	.00	0.	*	30	OCT	1710	176	.03	.01	.02	1.
29	OCT	1620	27	.03	.03	.00	0.	*	30	OCT	1720	177	.03	.01	.02	1.

29 OCT 1630	28	.03	.03	.00	0.	*	30 OCT 1730	178	.03	.01	.02	1.
29 OCT 1640	29	.02	.02	.00	0.	*	30 OCT 1740	179	.03	.01	.02	1.
29 OCT 1650	30	.03	.03	.00	0.	*	30 OCT 1750	180	.03	.01	.02	1.
29 OCT 1700	31	.03	.03	.00	0.	*	30 OCT 1800	181	.03	.01	.02	1.
29 OCT 1710	32	.02	.02	.00	0.	*	30 OCT 1810	182	.05	.02	.03	1.
29 OCT 1720	33	.03	.03	.00	0.	*	30 OCT 1820	183	.04	.01	.03	1.
29 OCT 1730	34	.03	.03	.00	0.	*	30 OCT 1830	184	.03	.01	.02	1.
29 OCT 1740	35	.02	.02	.00	0.	*	30 OCT 1840	185	.03	.01	.02	1.
29 OCT 1750	36	.03	.03	.00	0.	*	30 OCT 1850	186	.03	.01	.02	1.
29 OCT 1800	37	.03	.03	.00	0.	*	30 OCT 1900	187	.03	.01	.02	1.
29 OCT 1810	38	.03	.03	.00	0.	*	30 OCT 1910	188	.05	.02	.04	1.
29 OCT 1820	39	.03	.03	.00	0.	*	30 OCT 1920	189	.04	.01	.03	1.
29 OCT 1830	40	.02	.02	.00	0.	*	30 OCT 1930	190	.03	.01	.02	1.
29 OCT 1840	41	.03	.03	.00	0.	*	30 OCT 1940	191	.03	.01	.02	1.
29 OCT 1850	42	.03	.03	.00	0.	*	30 OCT 1950	192	.03	.01	.02	1.
29 OCT 1900	43	.02	.02	.00	0.	*	30 OCT 2000	193	.03	.01	.02	1.
29 OCT 1910	44	.03	.03	.00	0.	*	30 OCT 2010	194	.03	.01	.02	1.
29 OCT 1920	45	.03	.03	.00	0.	*	30 OCT 2020	195	.04	.01	.03	1.
29 OCT 1930	46	.02	.02	.00	0.	*	30 OCT 2030	196	.05	.01	.04	1.
29 OCT 1940	47	.03	.03	.00	0.	*	30 OCT 2040	197	.03	.01	.02	1.
29 OCT 1950	48	.03	.02	.00	0.	*	30 OCT 2050	198	.03	.01	.02	1.
29 OCT 2000	49	.02	.02	.00	0.	*	30 OCT 2100	199	.03	.01	.02	1.
29 OCT 2010	50	.03	.03	.00	0.	*	30 OCT 2110	200	.03	.01	.02	1.
29 OCT 2020	51	.03	.02	.00	0.	*	30 OCT 2120	201	.04	.01	.03	1.
29 OCT 2030	52	.02	.02	.00	0.	*	30 OCT 2130	202	.05	.01	.04	1.
29 OCT 2040	53	.03	.03	.00	0.	*	30 OCT 2140	203	.03	.01	.02	1.
29 OCT 2050	54	.03	.02	.00	0.	*	30 OCT 2150	204	.03	.01	.02	1.
29 OCT 2100	55	.02	.02	.00	0.	*	30 OCT 2200	205	.03	.01	.02	1.
29 OCT 2110	56	.03	.03	.00	0.	*	30 OCT 2210	206	.03	.01	.02	1.
29 OCT 2120	57	.03	.02	.00	0.	*	30 OCT 2220	207	.03	.01	.02	1.
29 OCT 2130	58	.02	.01	.00	0.	*	30 OCT 2230	208	.03	.01	.02	1.
29 OCT 2140	59	.03	.03	.00	0.	*	30 OCT 2240	209	.05	.01	.04	1.
29 OCT 2150	60	.03	.02	.00	0.	*	30 OCT 2250	210	.04	.01	.03	1.
29 OCT 2200	61	.02	.01	.00	0.	*	30 OCT 2300	211	.03	.01	.03	1.
29 OCT 2210	62	.03	.03	.01	0.	*	30 OCT 2310	212	.03	.01	.03	1.
29 OCT 2220	63	.03	.02	.00	0.	*	30 OCT 2320	213	.03	.01	.03	1.
29 OCT 2230	64	.02	.01	.00	0.	*	30 OCT 2330	214	.03	.01	.03	1.
29 OCT 2240	65	.03	.03	.01	0.	*	30 OCT 2340	215	.03	.01	.03	1.
29 OCT 2250	66	.03	.02	.00	0.	*	30 OCT 2350	216	.04	.01	.03	1.
29 OCT 2300	67	.02	.01	.00	0.	*	31 OCT 0000	217	.05	.01	.04	1.
29 OCT 2310	68	.03	.03	.01	0.	*	31 OCT 0010	218	.03	.01	.03	1.
29 OCT 2320	69	.03	.02	.01	0.	*	31 OCT 0020	219	.03	.01	.03	1.
29 OCT 2330	70	.02	.01	.00	0.	*	31 OCT 0030	220	.03	.01	.03	1.
29 OCT 2340	71	.03	.03	.01	0.	*	31 OCT 0040	221	.03	.01	.03	1.
29 OCT 2350	72	.03	.03	.01	0.	*	31 OCT 0050	222	.04	.01	.03	1.
30 OCT 0000	73	.03	.03	.01	0.	*	31 OCT 0100	223	.05	.01	.04	1.
30 OCT 0010	74	.02	.01	.00	0.	*	31 OCT 0110	224	.03	.01	.03	1.
30 OCT 0020	75	.03	.02	.01	0.	*	31 OCT 0120	225	.03	.01	.03	1.
30 OCT 0030	76	.03	.03	.01	0.	*	31 OCT 0130	226	.03	.01	.03	1.
30 OCT 0040	77	.02	.01	.00	0.	*	31 OCT 0140	227	.03	.01	.03	1.
30 OCT 0050	78	.03	.02	.01	0.	*	31 OCT 0150	228	.03	.01	.03	1.
30 OCT 0100	79	.03	.02	.01	0.	*	31 OCT 0200	229	.03	.01	.03	1.
30 OCT 0110	80	.02	.01	.00	0.	*	31 OCT 0210	230	.05	.01	.04	1.
30 OCT 0120	81	.03	.02	.01	0.	*	31 OCT 0220	231	.04	.01	.03	1.
30 OCT 0130	82	.03	.02	.01	0.	*	31 OCT 0230	232	.03	.01	.03	1.
30 OCT 0140	83	.02	.01	.01	0.	*	31 OCT 0240	233	.03	.01	.03	1.
30 OCT 0150	84	.03	.02	.01	0.	*	31 OCT 0250	234	.03	.01	.03	1.
30 OCT 0200	85	.03	.02	.01	0.	*	31 OCT 0300	235	.03	.01	.03	1.
30 OCT 0210	86	.02	.01	.01	0.	*	31 OCT 0310	236	.05	.01	.04	1.
30 OCT 0220	87	.03	.02	.01	0.	*	31 OCT 0320	237	.04	.01	.03	1.
30 OCT 0230	88	.03	.02	.01	0.	*	31 OCT 0330	238	.03	.01	.03	1.
30 OCT 0240	89	.02	.01	.01	0.	*	31 OCT 0340	239	.03	.01	.03	1.
30 OCT 0250	90	.03	.02	.01	0.	*	31 OCT 0350	240	.03	.01	.03	1.
30 OCT 0300	91	.03	.02	.01	0.	*	31 OCT 0400	241	.03	.01	.03	1.
30 OCT 0310	92	.02	.01	.01	0.	*	31 OCT 0410	242	.03	.01	.03	1.
30 OCT 0320	93	.03	.02	.01	0.	*	31 OCT 0420	243	.04	.01	.03	1.
30 OCT 0330	94	.03	.02	.01	0.	*	31 OCT 0430	244	.05	.01	.04	1.
30 OCT 0340	95	.02	.01	.01	0.	*	31 OCT 0440	245	.03	.01	.03	1.
30 OCT 0350	96	.03	.02	.01	0.	*	31 OCT 0450	246	.03	.01	.03	1.
30 OCT 0400	97	.03	.02	.01	0.	*	31 OCT 0500	247	.03	.01	.03	1.
30 OCT 0410	98	.02	.01	.01	0.	*	31 OCT 0510	248	.03	.01	.03	1.
30 OCT 0420	99	.03	.02	.01	0.	*	31 OCT 0520	249	.04	.01	.03	1.

30 OCT	0430	100	.03	.02	.01	0.	*	31 OCT	0530	250	.05	.01	.04	1.
30 OCT	0440	101	.02	.01	.01	0.	*	31 OCT	0540	251	.03	.01	.03	1.
30 OCT	0450	102	.03	.02	.01	0.	*	31 OCT	0550	252	.03	.01	.03	1.
30 OCT	0500	103	.03	.02	.01	0.	*	31 OCT	0600	253	.03	.01	.03	1.
30 OCT	0510	104	.02	.01	.01	0.	*	31 OCT	0610	254	.03	.01	.03	1.
30 OCT	0520	105	.03	.02	.01	0.	*	31 OCT	0620	255	.03	.01	.03	1.
30 OCT	0530	106	.03	.02	.01	0.	*	31 OCT	0630	256	.03	.01	.03	1.
30 OCT	0540	107	.03	.02	.01	0.	*	31 OCT	0640	257	.05	.01	.04	1.
30 OCT	0550	108	.03	.01	.01	0.	*	31 OCT	0650	258	.04	.01	.03	1.
30 OCT	0600	109	.02	.01	.01	0.	*	31 OCT	0700	259	.03	.01	.03	1.
30 OCT	0610	110	.03	.02	.01	0.	*	31 OCT	0710	260	.03	.01	.03	1.
30 OCT	0620	111	.03	.01	.01	0.	*	31 OCT	0720	261	.03	.01	.03	1.
30 OCT	0630	112	.02	.01	.01	0.	*	31 OCT	0730	262	.03	.01	.03	1.
30 OCT	0640	113	.03	.02	.01	0.	*	31 OCT	0740	263	.05	.01	.04	1.
30 OCT	0650	114	.03	.01	.01	0.	*	31 OCT	0750	264	.04	.01	.03	1.
30 OCT	0700	115	.02	.01	.01	0.	*	31 OCT	0800	265	.03	.01	.03	1.
30 OCT	0710	116	.03	.02	.02	0.	*	31 OCT	0810	266	.03	.01	.03	1.
30 OCT	0720	117	.03	.01	.01	0.	*	31 OCT	0820	267	.03	.01	.03	1.
30 OCT	0730	118	.02	.01	.01	0.	*	31 OCT	0830	268	.03	.01	.03	1.
30 OCT	0740	119	.03	.02	.02	0.	*	31 OCT	0840	269	.03	.01	.03	1.
30 OCT	0750	120	.03	.01	.01	0.	*	31 OCT	0850	270	.04	.01	.03	1.
30 OCT	0800	121	.02	.01	.01	0.	*	31 OCT	0900	271	.05	.01	.04	1.
30 OCT	0810	122	.03	.02	.02	0.	*	31 OCT	0910	272	.03	.01	.03	1.
30 OCT	0820	123	.03	.01	.01	0.	*	31 OCT	0920	273	.03	.01	.03	1.
30 OCT	0830	124	.02	.01	.01	0.	*	31 OCT	0930	274	.03	.01	.03	1.
30 OCT	0840	125	.03	.02	.02	0.	*	31 OCT	0940	275	.03	.01	.03	1.
30 OCT	0850	126	.03	.01	.01	0.	*	31 OCT	0950	276	.03	.01	.03	1.
30 OCT	0900	127	.02	.01	.01	0.	*	31 OCT	1000	277	.03	.01	.03	1.
30 OCT	0910	128	.03	.02	.02	0.	*	31 OCT	1010	278	.05	.01	.04	1.
30 OCT	0920	129	.03	.01	.01	0.	*	31 OCT	1020	279	.04	.01	.04	1.
30 OCT	0930	130	.02	.01	.01	0.	*	31 OCT	1030	280	.03	.01	.03	1.
30 OCT	0940	131	.03	.02	.02	0.	*	31 OCT	1040	281	.03	.01	.03	1.
30 OCT	0950	132	.03	.01	.01	0.	*	31 OCT	1050	282	.03	.01	.03	1.
30 OCT	1000	133	.02	.01	.01	0.	*	31 OCT	1100	283	.03	.01	.03	1.
30 OCT	1010	134	.03	.02	.02	0.	*	31 OCT	1110	284	.05	.01	.04	1.
30 OCT	1020	135	.03	.01	.01	1.	*	31 OCT	1120	285	.04	.01	.04	1.
30 OCT	1030	136	.02	.01	.01	0.	*	31 OCT	1130	286	.03	.01	.03	1.
30 OCT	1040	137	.03	.02	.02	0.	*	31 OCT	1140	287	.03	.01	.03	1.
30 OCT	1050	138	.03	.01	.01	1.	*	31 OCT	1150	288	.04	.01	.04	1.
30 OCT	1100	139	.02	.01	.01	0.	*	31 OCT	1200	289	.05	.01	.04	1.
30 OCT	1110	140	.03	.02	.02	0.	*	31 OCT	1210	290	.03	.01	.03	1.
30 OCT	1120	141	.03	.01	.01	1.	*	31 OCT	1220	291	.04	.01	.04	1.
30 OCT	1130	142	.02	.01	.01	1.	*	31 OCT	1230	292	.05	.01	.04	1.
30 OCT	1140	143	.03	.02	.02	0.	*	31 OCT	1240	293	.03	.01	.03	1.
30 OCT	1150	144	.03	.02	.02	1.	*	31 OCT	1250	294	.04	.01	.04	1.
30 OCT	1200	145	.03	.02	.02	1.	*	31 OCT	1300	295	.05	.01	.04	1.
30 OCT	1210	146	.03	.02	.02	1.	*	31 OCT	1310	296	.03	.01	.03	1.
30 OCT	1220	147	.04	.02	.02	1.	*	31 OCT	1320	297	.04	.01	.04	1.
30 OCT	1230	148	.05	.02	.03	1.	*	31 OCT	1330	298	.05	.01	.04	1.
30 OCT	1240	149	.03	.01	.02	1.	*	31 OCT	1340	299	.03	.01	.03	1.
30 OCT	1250	150	.03	.01	.02	1.	*	31 OCT	1350	300	.04	.01	.04	1.

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   TOTAL RAINFALL =    9.65, TOTAL LOSS =    4.38, TOTAL EXCESS =    5.27

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                  6-HR        24-HR       72-HR      49.83-HR
+   (CFS)       (HR)
                          (CFS)
+       1.     49.67                 1.          1.          1.          1.
                      (INCHES)   1.178       4.119       5.189       5.189
                       (AC-FT)      1.          2.          3.          3.

                      CUMULATIVE AREA =     .01 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** **
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                ***************
                *             *
45 KK           *    POND     *
                *             *
                ***************
                             Unit 3 Stormwater Pond

                   SUBBASIN RUNOFF DATA

47 BA                SUBBASIN CHARACTERISTICS
                           TAREA          .00  SUBBASIN AREA

                     PRECIPITATION DATA

13 PB                      STORM         9.65  BASIN TOTAL PRECIPITATION

14 PI                  INCREMENTAL PRECIPITATION PATTERN
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                           .00       .00       .00       .00       .00       .00       .00       .00       .00

48 LS                SCS LOSS RATE
                           STRTL         2.08  INITIAL ABSTRACTION
                          CRVNBR        49.00  CURVE NUMBER
                           RTIMP       100.00  PERCENT IMPERVIOUS AREA

49 UD                SCS DIMENSIONLESS UNITGRAPH
                            TLAG          .01  LAG

                                                              ***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

                                                        UNIT HYDROGRAPH
                                                     5 END-OF-PERIOD ORDINATES
                     4.         1.         0.         0.         0.

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                                                  HYDROGRAPH AT STATION      POND

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                                                              *
       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q    *        DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                              *
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29 OCT 1200	1	.00	.00	.00	0.	*	30 OCT 1300	151	.03	.00	.03	0.
29 OCT 1210	2	.02	.00	.02	0.	*	30 OCT 1310	152	.03	.00	.03	0.
29 OCT 1220	3	.03	.00	.03	0.	*	30 OCT 1320	153	.04	.00	.04	0.
29 OCT 1230	4	.03	.00	.03	0.	*	30 OCT 1330	154	.05	.00	.05	0.
29 OCT 1240	5	.02	.00	.02	0.	*	30 OCT 1340	155	.03	.00	.03	0.
29 OCT 1250	6	.03	.00	.03	0.	*	30 OCT 1350	156	.03	.00	.03	0.
29 OCT 1300	7	.03	.00	.03	0.	*	30 OCT 1400	157	.03	.00	.03	0.
29 OCT 1310	8	.02	.00	.02	0.	*	30 OCT 1410	158	.03	.00	.03	0.
29 OCT 1320	9	.03	.00	.03	0.	*	30 OCT 1420	159	.03	.00	.03	0.
29 OCT 1330	10	.03	.00	.03	0.	*	30 OCT 1430	160	.03	.00	.03	0.
29 OCT 1340	11	.02	.00	.02	0.	*	30 OCT 1440	161	.05	.00	.05	0.
29 OCT 1350	12	.03	.00	.03	0.	*	30 OCT 1450	162	.04	.00	.04	0.
29 OCT 1400	13	.03	.00	.03	0.	*	30 OCT 1500	163	.03	.00	.03	0.
29 OCT 1410	14	.02	.00	.02	0.	*	30 OCT 1510	164	.03	.00	.03	0.
29 OCT 1420	15	.03	.00	.03	0.	*	30 OCT 1520	165	.03	.00	.03	0.
29 OCT 1430	16	.03	.00	.03	0.	*	30 OCT 1530	166	.03	.00	.03	0.
29 OCT 1440	17	.02	.00	.02	0.	*	30 OCT 1540	167	.05	.00	.05	0.
29 OCT 1450	18	.03	.00	.03	0.	*	30 OCT 1550	168	.04	.00	.04	0.
29 OCT 1500	19	.03	.00	.03	0.	*	30 OCT 1600	169	.03	.00	.03	0.
29 OCT 1510	20	.02	.00	.02	0.	*	30 OCT 1610	170	.03	.00	.03	0.
29 OCT 1520	21	.03	.00	.03	0.	*	30 OCT 1620	171	.03	.00	.03	0.
29 OCT 1530	22	.03	.00	.03	0.	*	30 OCT 1630	172	.03	.00	.03	0.
29 OCT 1540	23	.02	.00	.02	0.	*	30 OCT 1640	173	.03	.00	.03	0.
29 OCT 1550	24	.03	.00	.03	0.	*	30 OCT 1650	174	.04	.00	.04	0.
29 OCT 1600	25	.03	.00	.03	0.	*	30 OCT 1700	175	.05	.00	.05	0.
29 OCT 1610	26	.02	.00	.02	0.	*	30 OCT 1710	176	.03	.00	.03	0.
29 OCT 1620	27	.03	.00	.03	0.	*	30 OCT 1720	177	.03	.00	.03	0.
29 OCT 1630	28	.03	.00	.03	0.	*	30 OCT 1730	178	.03	.00	.03	0.
29 OCT 1640	29	.02	.00	.02	0.	*	30 OCT 1740	179	.03	.00	.03	0.
29 OCT 1650	30	.03	.00	.03	0.	*	30 OCT 1750	180	.03	.00	.03	0.
29 OCT 1700	31	.03	.00	.03	0.	*	30 OCT 1800	181	.03	.00	.03	0.
29 OCT 1710	32	.02	.00	.02	0.	*	30 OCT 1810	182	.05	.00	.05	0.
29 OCT 1720	33	.03	.00	.03	0.	*	30 OCT 1820	183	.04	.00	.04	0.
29 OCT 1730	34	.03	.00	.03	0.	*	30 OCT 1830	184	.03	.00	.03	0.
29 OCT 1740	35	.02	.00	.02	0.	*	30 OCT 1840	185	.03	.00	.03	0.
29 OCT 1750	36	.03	.00	.03	0.	*	30 OCT 1850	186	.03	.00	.03	0.
29 OCT 1800	37	.03	.00	.03	0.	*	30 OCT 1900	187	.03	.00	.03	0.
29 OCT 1810	38	.03	.00	.03	0.	*	30 OCT 1910	188	.05	.00	.05	0.
29 OCT 1820	39	.03	.00	.03	0.	*	30 OCT 1920	189	.04	.00	.04	0.
29 OCT 1830	40	.02	.00	.02	0.	*	30 OCT 1930	190	.03	.00	.03	0.
29 OCT 1840	41	.03	.00	.03	0.	*	30 OCT 1940	191	.03	.00	.03	0.
29 OCT 1850	42	.03	.00	.03	0.	*	30 OCT 1950	192	.03	.00	.03	0.
29 OCT 1900	43	.02	.00	.02	0.	*	30 OCT 2000	193	.03	.00	.03	0.
29 OCT 1910	44	.03	.00	.03	0.	*	30 OCT 2010	194	.03	.00	.03	0.
29 OCT 1920	45	.03	.00	.03	0.	*	30 OCT 2020	195	.04	.00	.04	0.
29 OCT 1930	46	.02	.00	.02	0.	*	30 OCT 2030	196	.05	.00	.05	0.
29 OCT 1940	47	.03	.00	.03	0.	*	30 OCT 2040	197	.03	.00	.03	0.
29 OCT 1950	48	.03	.00	.03	0.	*	30 OCT 2050	198	.03	.00	.03	0.
29 OCT 2000	49	.02	.00	.02	0.	*	30 OCT 2100	199	.03	.00	.03	0.
29 OCT 2010	50	.03	.00	.03	0.	*	30 OCT 2110	200	.03	.00	.03	0.
29 OCT 2020	51	.03	.00	.03	0.	*	30 OCT 2120	201	.04	.00	.04	0.
29 OCT 2030	52	.02	.00	.02	0.	*	30 OCT 2130	202	.05	.00	.05	0.
29 OCT 2040	53	.03	.00	.03	0.	*	30 OCT 2140	203	.03	.00	.03	0.
29 OCT 2050	54	.03	.00	.03	0.	*	30 OCT 2150	204	.03	.00	.03	0.
29 OCT 2100	55	.02	.00	.02	0.	*	30 OCT 2200	205	.03	.00	.03	0.
29 OCT 2110	56	.03	.00	.03	0.	*	30 OCT 2210	206	.03	.00	.03	0.
29 OCT 2120	57	.03	.00	.03	0.	*	30 OCT 2220	207	.03	.00	.03	0.
29 OCT 2130	58	.02	.00	.02	0.	*	30 OCT 2230	208	.03	.00	.03	0.
29 OCT 2140	59	.03	.00	.03	0.	*	30 OCT 2240	209	.05	.00	.05	0.
29 OCT 2150	60	.03	.00	.03	0.	*	30 OCT 2250	210	.04	.00	.04	0.
29 OCT 2200	61	.02	.00	.02	0.	*	30 OCT 2300	211	.03	.00	.03	0.
29 OCT 2210	62	.03	.00	.03	0.	*	30 OCT 2310	212	.03	.00	.03	0.
29 OCT 2220	63	.03	.00	.03	0.	*	30 OCT 2320	213	.03	.00	.03	0.
29 OCT 2230	64	.02	.00	.02	0.	*	30 OCT 2330	214	.03	.00	.03	0.
29 OCT 2240	65	.03	.00	.03	0.	*	30 OCT 2340	215	.03	.00	.03	0.
29 OCT 2250	66	.03	.00	.03	0.	*	30 OCT 2350	216	.04	.00	.04	0.
29 OCT 2300	67	.02	.00	.02	0.	*	31 OCT 0000	217	.05	.00	.05	0.
29 OCT 2310	68	.03	.00	.03	0.	*	31 OCT 0010	218	.03	.00	.03	0.
29 OCT 2320	69	.03	.00	.03	0.	*	31 OCT 0020	219	.03	.00	.03	0.
29 OCT 2330	70	.02	.00	.02	0.	*	31 OCT 0030	220	.03	.00	.03	0.
29 OCT 2340	71	.03	.00	.03	0.	*	31 OCT 0040	221	.03	.00	.03	0.
29 OCT 2350	72	.03	.00	.03	0.	*	31 OCT 0050	222	.04	.00	.04	0.

30 OCT 0000	73	.03	.00	.03	0.	*	31 OCT 0100	223	.05	.00	.05	0.
30 OCT 0010	74	.02	.00	.02	0.	*	31 OCT 0110	224	.03	.00	.03	0.
30 OCT 0020	75	.03	.00	.03	0.	*	31 OCT 0120	225	.03	.00	.03	0.
30 OCT 0030	76	.03	.00	.03	0.	*	31 OCT 0130	226	.03	.00	.03	0.
30 OCT 0040	77	.02	.00	.02	0.	*	31 OCT 0140	227	.03	.00	.03	0.
30 OCT 0050	78	.03	.00	.03	0.	*	31 OCT 0150	228	.03	.00	.03	0.
30 OCT 0100	79	.03	.00	.03	0.	*	31 OCT 0200	229	.03	.00	.03	0.
30 OCT 0110	80	.02	.00	.02	0.	*	31 OCT 0210	230	.05	.00	.05	0.
30 OCT 0120	81	.03	.00	.03	0.	*	31 OCT 0220	231	.04	.00	.04	0.
30 OCT 0130	82	.03	.00	.03	0.	*	31 OCT 0230	232	.03	.00	.03	0.
30 OCT 0140	83	.02	.00	.02	0.	*	31 OCT 0240	233	.03	.00	.03	0.
30 OCT 0150	84	.03	.00	.03	0.	*	31 OCT 0250	234	.03	.00	.03	0.
30 OCT 0200	85	.03	.00	.03	0.	*	31 OCT 0300	235	.03	.00	.03	0.
30 OCT 0210	86	.02	.00	.02	0.	*	31 OCT 0310	236	.05	.00	.05	0.
30 OCT 0220	87	.03	.00	.03	0.	*	31 OCT 0320	237	.04	.00	.04	0.
30 OCT 0230	88	.03	.00	.03	0.	*	31 OCT 0330	238	.03	.00	.03	0.
30 OCT 0240	89	.02	.00	.02	0.	*	31 OCT 0340	239	.03	.00	.03	0.
30 OCT 0250	90	.03	.00	.03	0.	*	31 OCT 0350	240	.03	.00	.03	0.
30 OCT 0300	91	.03	.00	.03	0.	*	31 OCT 0400	241	.03	.00	.03	0.
30 OCT 0310	92	.02	.00	.02	0.	*	31 OCT 0410	242	.03	.00	.03	0.
30 OCT 0320	93	.03	.00	.03	0.	*	31 OCT 0420	243	.04	.00	.04	0.
30 OCT 0330	94	.03	.00	.03	0.	*	31 OCT 0430	244	.05	.00	.05	0.
30 OCT 0340	95	.02	.00	.02	0.	*	31 OCT 0440	245	.03	.00	.03	0.
30 OCT 0350	96	.03	.00	.03	0.	*	31 OCT 0450	246	.03	.00	.03	0.
30 OCT 0400	97	.03	.00	.03	0.	*	31 OCT 0500	247	.03	.00	.03	0.
30 OCT 0410	98	.02	.00	.02	0.	*	31 OCT 0510	248	.03	.00	.03	0.
30 OCT 0420	99	.03	.00	.03	0.	*	31 OCT 0520	249	.04	.00	.04	0.
30 OCT 0430	100	.03	.00	.03	0.	*	31 OCT 0530	250	.05	.00	.05	0.
30 OCT 0440	101	.02	.00	.02	0.	*	31 OCT 0540	251	.03	.00	.03	0.
30 OCT 0450	102	.03	.00	.03	0.	*	31 OCT 0550	252	.03	.00	.03	0.
30 OCT 0500	103	.03	.00	.03	0.	*	31 OCT 0600	253	.03	.00	.03	0.
30 OCT 0510	104	.02	.00	.02	0.	*	31 OCT 0610	254	.03	.00	.03	0.
30 OCT 0520	105	.03	.00	.03	0.	*	31 OCT 0620	255	.03	.00	.03	0.
30 OCT 0530	106	.03	.00	.03	0.	*	31 OCT 0630	256	.03	.00	.03	0.
30 OCT 0540	107	.03	.00	.03	0.	*	31 OCT 0640	257	.05	.00	.05	0.
30 OCT 0550	108	.03	.00	.03	0.	*	31 OCT 0650	258	.04	.00	.04	0.
30 OCT 0600	109	.02	.00	.02	0.	*	31 OCT 0700	259	.03	.00	.03	0.
30 OCT 0610	110	.03	.00	.03	0.	*	31 OCT 0710	260	.03	.00	.03	0.
30 OCT 0620	111	.03	.00	.03	0.	*	31 OCT 0720	261	.03	.00	.03	0.
30 OCT 0630	112	.02	.00	.02	0.	*	31 OCT 0730	262	.03	.00	.03	0.
30 OCT 0640	113	.03	.00	.03	0.	*	31 OCT 0740	263	.05	.00	.05	0.
30 OCT 0650	114	.03	.00	.03	0.	*	31 OCT 0750	264	.04	.00	.04	0.
30 OCT 0700	115	.02	.00	.02	0.	*	31 OCT 0800	265	.03	.00	.03	0.
30 OCT 0710	116	.03	.00	.03	0.	*	31 OCT 0810	266	.03	.00	.03	0.
30 OCT 0720	117	.03	.00	.03	0.	*	31 OCT 0820	267	.03	.00	.03	0.
30 OCT 0730	118	.02	.00	.02	0.	*	31 OCT 0830	268	.03	.00	.03	0.
30 OCT 0740	119	.03	.00	.03	0.	*	31 OCT 0840	269	.03	.00	.03	0.
30 OCT 0750	120	.03	.00	.03	0.	*	31 OCT 0850	270	.04	.00	.04	0.
30 OCT 0800	121	.02	.00	.02	0.	*	31 OCT 0900	271	.05	.00	.05	0.
30 OCT 0810	122	.03	.00	.03	0.	*	31 OCT 0910	272	.03	.00	.03	0.
30 OCT 0820	123	.03	.00	.03	0.	*	31 OCT 0920	273	.03	.00	.03	0.
30 OCT 0830	124	.02	.00	.02	0.	*	31 OCT 0930	274	.03	.00	.03	0.
30 OCT 0840	125	.03	.00	.03	0.	*	31 OCT 0940	275	.03	.00	.03	0.
30 OCT 0850	126	.03	.00	.03	0.	*	31 OCT 0950	276	.03	.00	.03	0.
30 OCT 0900	127	.02	.00	.02	0.	*	31 OCT 1000	277	.03	.00	.03	0.
30 OCT 0910	128	.03	.00	.03	0.	*	31 OCT 1010	278	.05	.00	.05	0.
30 OCT 0920	129	.03	.00	.03	0.	*	31 OCT 1020	279	.04	.00	.04	0.
30 OCT 0930	130	.02	.00	.02	0.	*	31 OCT 1030	280	.03	.00	.03	0.
30 OCT 0940	131	.03	.00	.03	0.	*	31 OCT 1040	281	.03	.00	.03	0.
30 OCT 0950	132	.03	.00	.03	0.	*	31 OCT 1050	282	.03	.00	.03	0.
30 OCT 1000	133	.02	.00	.02	0.	*	31 OCT 1100	283	.03	.00	.03	0.
30 OCT 1010	134	.03	.00	.03	0.	*	31 OCT 1110	284	.05	.00	.05	0.
30 OCT 1020	135	.03	.00	.03	0.	*	31 OCT 1120	285	.04	.00	.04	0.
30 OCT 1030	136	.02	.00	.02	0.	*	31 OCT 1130	286	.03	.00	.03	0.
30 OCT 1040	137	.03	.00	.03	0.	*	31 OCT 1140	287	.03	.00	.03	0.
30 OCT 1050	138	.03	.00	.03	0.	*	31 OCT 1150	288	.04	.00	.04	0.
30 OCT 1100	139	.02	.00	.02	0.	*	31 OCT 1200	289	.05	.00	.05	0.
30 OCT 1110	140	.03	.00	.03	0.	*	31 OCT 1210	290	.03	.00	.03	0.
30 OCT 1120	141	.03	.00	.03	0.	*	31 OCT 1220	291	.04	.00	.04	0.
30 OCT 1130	142	.02	.00	.02	0.	*	31 OCT 1230	292	.05	.00	.05	0.
30 OCT 1140	143	.03	.00	.03	0.	*	31 OCT 1240	293	.03	.00	.03	0.
30 OCT 1150	144	.03	.00	.03	0.	*	31 OCT 1250	294	.04	.00	.04	0.

30	OCT	1200	145	.03	.00	.03	0.	*	31	OCT	1300	295	.05	.00	.05	0.
30	OCT	1210	146	.03	.00	.03	0.	*	31	OCT	1310	296	.03	.00	.03	0.
30	OCT	1220	147	.04	.00	.04	0.	*	31	OCT	1320	297	.04	.00	.04	0.
30	OCT	1230	148	.05	.00	.05	0.	*	31	OCT	1330	298	.05	.00	.05	0.
30	OCT	1240	149	.03	.00	.03	0.	*	31	OCT	1340	299	.03	.00	.03	0.
30	OCT	1250	150	.03	.00	.03	0.	*	31	OCT	1350	300	.04	.00	.04	0.

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TOTAL RAINFALL = 9.65, TOTAL LOSS = .00, TOTAL EXCESS = 9.65

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.83-HR
+ (CFS)	(HR)					
		(CFS)				
+ 0.	24.50		0.	0.	0.	0.
		(INCHES)	1.420	5.492	9.616	9.616
		(AC-FT)	0.	0.	1.	1.

CUMULATIVE AREA = .00 SQ MI

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          *             *
50 KK     *      COMB   *
          *             *
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Combining Two Hydrographs in Reservoir

52 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION COMB

SUM OF 2 HYDROGRAPHS

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
29	OCT	1200	1	0.	*	30	OCT	0030	76	0.	*	30	OCT	1300	151	1.	*	31	OCT	0130	226	1.
29	OCT	1210	2	0.	*	30	OCT	0040	77	0.	*	30	OCT	1310	152	1.	*	31	OCT	0140	227	1.
29	OCT	1220	3	0.	*	30	OCT	0050	78	0.	*	30	OCT	1320	153	1.	*	31	OCT	0150	228	1.
29	OCT	1230	4	0.	*	30	OCT	0100	79	0.	*	30	OCT	1330	154	1.	*	31	OCT	0200	229	1.
29	OCT	1240	5	0.	*	30	OCT	0110	80	0.	*	30	OCT	1340	155	1.	*	31	OCT	0210	230	1.
29	OCT	1250	6	0.	*	30	OCT	0120	81	0.	*	30	OCT	1350	156	1.	*	31	OCT	0220	231	1.
29	OCT	1300	7	0.	*	30	OCT	0130	82	0.	*	30	OCT	1400	157	1.	*	31	OCT	0230	232	1.
29	OCT	1310	8	0.	*	30	OCT	0140	83	0.	*	30	OCT	1410	158	1.	*	31	OCT	0240	233	1.
29	OCT	1320	9	0.	*	30	OCT	0150	84	0.	*	30	OCT	1420	159	1.	*	31	OCT	0250	234	1.
29	OCT	1330	10	0.	*	30	OCT	0200	85	0.	*	30	OCT	1430	160	1.	*	31	OCT	0300	235	1.
29	OCT	1340	11	0.	*	30	OCT	0210	86	0.	*	30	OCT	1440	161	1.	*	31	OCT	0310	236	1.
29	OCT	1350	12	0.	*	30	OCT	0220	87	0.	*	30	OCT	1450	162	1.	*	31	OCT	0320	237	1.
29	OCT	1400	13	0.	*	30	OCT	0230	88	0.	*	30	OCT	1500	163	1.	*	31	OCT	0330	238	1.
29	OCT	1410	14	0.	*	30	OCT	0240	89	0.	*	30	OCT	1510	164	1.	*	31	OCT	0340	239	1.
29	OCT	1420	15	0.	*	30	OCT	0250	90	0.	*	30	OCT	1520	165	1.	*	31	OCT	0350	240	1.
29	OCT	1430	16	0.	*	30	OCT	0300	91	0.	*	30	OCT	1530	166	1.	*	31	OCT	0400	241	1.
29	OCT	1440	17	0.	*	30	OCT	0310	92	0.	*	30	OCT	1540	167	1.	*	31	OCT	0410	242	1.
29	OCT	1450	18	0.	*	30	OCT	0320	93	0.	*	30	OCT	1550	168	1.	*	31	OCT	0420	243	1.
29	OCT	1500	19	0.	*	30	OCT	0330	94	1.	*	30	OCT	1600	169	1.	*	31	OCT	0430	244	1.
29	OCT	1510	20	0.	*	30	OCT	0340	95	0.	*	30	OCT	1610	170	1.	*	31	OCT	0440	245	1.
29	OCT	1520	21	0.	*	30	OCT	0350	96	0.	*	30	OCT	1620	171	1.	*	31	OCT	0450	246	1.
29	OCT	1530	22	0.	*	30	OCT	0400	97	1.	*	30	OCT	1630	172	1.	*	31	OCT	0500	247	1.
29	OCT	1540	23	0.	*	30	OCT	0410	98	0.	*	30	OCT	1640	173	1.	*	31	OCT	0510	248	1.
29	OCT	1550	24	0.	*	30	OCT	0420	99	0.	*	30	OCT	1650	174	1.	*	31	OCT	0520	249	1.

29 OCT 1600	25	0.	*	30 OCT 0430	100	1.	*	30 OCT 1700	175	1.	*	31 OCT 0530	250	1.
29 OCT 1610	26	0.	*	30 OCT 0440	101	0.	*	30 OCT 1710	176	1.	*	31 OCT 0540	251	1.
29 OCT 1620	27	0.	*	30 OCT 0450	102	0.	*	30 OCT 1720	177	1.	*	31 OCT 0550	252	1.
29 OCT 1630	28	0.	*	30 OCT 0500	103	1.	*	30 OCT 1730	178	1.	*	31 OCT 0600	253	1.
29 OCT 1640	29	0.	*	30 OCT 0510	104	1.	*	30 OCT 1740	179	1.	*	31 OCT 0610	254	1.
29 OCT 1650	30	0.	*	30 OCT 0520	105	1.	*	30 OCT 1750	180	1.	*	31 OCT 0620	255	1.
29 OCT 1700	31	0.	*	30 OCT 0530	106	1.	*	30 OCT 1800	181	1.	*	31 OCT 0630	256	1.
29 OCT 1710	32	0.	*	30 OCT 0540	107	1.	*	30 OCT 1810	182	1.	*	31 OCT 0640	257	1.
29 OCT 1720	33	0.	*	30 OCT 0550	108	1.	*	30 OCT 1820	183	1.	*	31 OCT 0650	258	2.
29 OCT 1730	34	0.	*	30 OCT 0600	109	1.	*	30 OCT 1830	184	1.	*	31 OCT 0700	259	1.
29 OCT 1740	35	0.	*	30 OCT 0610	110	1.	*	30 OCT 1840	185	1.	*	31 OCT 0710	260	1.
29 OCT 1750	36	0.	*	30 OCT 0620	111	1.	*	30 OCT 1850	186	1.	*	31 OCT 0720	261	1.
29 OCT 1800	37	0.	*	30 OCT 0630	112	1.	*	30 OCT 1900	187	1.	*	31 OCT 0730	262	1.
29 OCT 1810	38	0.	*	30 OCT 0640	113	1.	*	30 OCT 1910	188	1.	*	31 OCT 0740	263	1.
29 OCT 1820	39	0.	*	30 OCT 0650	114	1.	*	30 OCT 1920	189	1.	*	31 OCT 0750	264	2.
29 OCT 1830	40	0.	*	30 OCT 0700	115	1.	*	30 OCT 1930	190	1.	*	31 OCT 0800	265	1.
29 OCT 1840	41	0.	*	30 OCT 0710	116	1.	*	30 OCT 1940	191	1.	*	31 OCT 0810	266	1.
29 OCT 1850	42	0.	*	30 OCT 0720	117	1.	*	30 OCT 1950	192	1.	*	31 OCT 0820	267	1.
29 OCT 1900	43	0.	*	30 OCT 0730	118	1.	*	30 OCT 2000	193	1.	*	31 OCT 0830	268	1.
29 OCT 1910	44	0.	*	30 OCT 0740	119	1.	*	30 OCT 2010	194	1.	*	31 OCT 0840	269	1.
29 OCT 1920	45	0.	*	30 OCT 0750	120	1.	*	30 OCT 2020	195	1.	*	31 OCT 0850	270	1.
29 OCT 1930	46	0.	*	30 OCT 0800	121	1.	*	30 OCT 2030	196	1.	*	31 OCT 0900	271	2.
29 OCT 1940	47	0.	*	30 OCT 0810	122	1.	*	30 OCT 2040	197	1.	*	31 OCT 0910	272	2.
29 OCT 1950	48	0.	*	30 OCT 0820	123	1.	*	30 OCT 2050	198	1.	*	31 OCT 0920	273	1.
29 OCT 2000	49	0.	*	30 OCT 0830	124	1.	*	30 OCT 2100	199	1.	*	31 OCT 0930	274	1.
29 OCT 2010	50	0.	*	30 OCT 0840	125	1.	*	30 OCT 2110	200	1.	*	31 OCT 0940	275	1.
29 OCT 2020	51	0.	*	30 OCT 0850	126	1.	*	30 OCT 2120	201	1.	*	31 OCT 0950	276	1.
29 OCT 2030	52	0.	*	30 OCT 0900	127	1.	*	30 OCT 2130	202	1.	*	31 OCT 1000	277	1.
29 OCT 2040	53	0.	*	30 OCT 0910	128	1.	*	30 OCT 2140	203	1.	*	31 OCT 1010	278	1.
29 OCT 2050	54	0.	*	30 OCT 0920	129	1.	*	30 OCT 2150	204	1.	*	31 OCT 1020	279	2.
29 OCT 2100	55	0.	*	30 OCT 0930	130	1.	*	30 OCT 2200	205	1.	*	31 OCT 1030	280	2.
29 OCT 2110	56	0.	*	30 OCT 0940	131	1.	*	30 OCT 2210	206	1.	*	31 OCT 1040	281	1.
29 OCT 2120	57	0.	*	30 OCT 0950	132	1.	*	30 OCT 2220	207	1.	*	31 OCT 1050	282	1.
29 OCT 2130	58	0.	*	30 OCT 1000	133	1.	*	30 OCT 2230	208	1.	*	31 OCT 1100	283	1.
29 OCT 2140	59	0.	*	30 OCT 1010	134	1.	*	30 OCT 2240	209	1.	*	31 OCT 1110	284	1.
29 OCT 2150	60	0.	*	30 OCT 1020	135	1.	*	30 OCT 2250	210	1.	*	31 OCT 1120	285	2.
29 OCT 2200	61	0.	*	30 OCT 1030	136	1.	*	30 OCT 2300	211	1.	*	31 OCT 1130	286	2.
29 OCT 2210	62	0.	*	30 OCT 1040	137	1.	*	30 OCT 2310	212	1.	*	31 OCT 1140	287	1.
29 OCT 2220	63	0.	*	30 OCT 1050	138	1.	*	30 OCT 2320	213	1.	*	31 OCT 1150	288	1.
29 OCT 2230	64	0.	*	30 OCT 1100	139	1.	*	30 OCT 2330	214	1.	*	31 OCT 1200	289	2.
29 OCT 2240	65	0.	*	30 OCT 1110	140	1.	*	30 OCT 2340	215	1.	*	31 OCT 1210	290	2.
29 OCT 2250	66	0.	*	30 OCT 1120	141	1.	*	30 OCT 2350	216	1.	*	31 OCT 1220	291	2.
29 OCT 2300	67	0.	*	30 OCT 1130	142	1.	*	31 OCT 0000	217	1.	*	31 OCT 1230	292	2.
29 OCT 2310	68	0.	*	30 OCT 1140	143	1.	*	31 OCT 0010	218	1.	*	31 OCT 1240	293	2.
29 OCT 2320	69	0.	*	30 OCT 1150	144	1.	*	31 OCT 0020	219	1.	*	31 OCT 1250	294	2.
29 OCT 2330	70	0.	*	30 OCT 1200	145	1.	*	31 OCT 0030	220	1.	*	31 OCT 1300	295	2.
29 OCT 2340	71	0.	*	30 OCT 1210	146	1.	*	31 OCT 0040	221	1.	*	31 OCT 1310	296	2.
29 OCT 2350	72	0.	*	30 OCT 1220	147	1.	*	31 OCT 0050	222	1.	*	31 OCT 1320	297	2.
30 OCT 0000	73	0.	*	30 OCT 1230	148	1.	*	31 OCT 0100	223	1.	*	31 OCT 1330	298	2.
30 OCT 0010	74	0.	*	30 OCT 1240	149	1.	*	31 OCT 0110	224	1.	*	31 OCT 1340	299	2.
30 OCT 0020	75	0.	*	30 OCT 1250	150	1.	*	31 OCT 0120	225	1.	*	31 OCT 1350	300	2.
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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.83-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2.	49.50		1.	1.	1.	1.
		(INCHES)	1.211	4.306	5.792	5.792
		(AC-FT)	1.	3.	3.	3.

CUMULATIVE AREA = .01 SQ MI

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53 KK * RES1 *
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Reservoir Routing Operation

HYDROGRAPH ROUTING DATA

55 RS STORAGE ROUTING
NSTPS 1 NUMBER OF SUBREACHES
ITYP ELEV TYPE OF INITIAL CONDITION
RSVRIC 74.00 INITIAL CONDITION
X .00 WORKING R AND D COEFFICIENT

56 SA	AREA	.0	.8	.8	.9	1.1	2.2
57 SE	ELEVATION	74.00	75.00	76.00	77.00	78.00	79.00
58 SQ	DISCHARGE	0.	0.	0.	1.	2.	34.
59 SE	ELEVATION	74.00	75.00	76.00	77.00	78.00	79.00

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COMPUTED STORAGE-ELEVATION DATA

STORAGE	.00	.29	1.09	1.98	2.99	4.60
ELEVATION	74.00	75.00	76.00	77.00	78.00	79.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.29	1.09	1.98	2.99	4.60
OUTFLOW	.00	.00	.00	1.40	2.20	33.70
ELEVATION	74.00	75.00	76.00	77.00	78.00	79.00

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HYDROGRAPH AT STATION RES1

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
29	OCT	1200	1	0.	.0	74.0	30	OCT	0440	101	0.	.4	75.1	30	OCT	2120	201	1.	1.5	76.4
29	OCT	1210	2	0.	.0	74.0	30	OCT	0450	102	0.	.4	75.1	30	OCT	2130	202	1.	1.5	76.4
29	OCT	1220	3	0.	.0	74.0	30	OCT	0500	103	0.	.4	75.1	30	OCT	2140	203	1.	1.5	76.4
29	OCT	1230	4	0.	.0	74.0	30	OCT	0510	104	0.	.4	75.1	30	OCT	2150	204	1.	1.5	76.4
29	OCT	1240	5	0.	.0	74.0	30	OCT	0520	105	0.	.4	75.1	30	OCT	2200	205	1.	1.5	76.5
29	OCT	1250	6	0.	.0	74.0	30	OCT	0530	106	0.	.4	75.1	30	OCT	2210	206	1.	1.5	76.5
29	OCT	1300	7	0.	.0	74.0	30	OCT	0540	107	0.	.4	75.1	30	OCT	2220	207	1.	1.5	76.5
29	OCT	1310	8	0.	.0	74.0	30	OCT	0550	108	0.	.4	75.2	30	OCT	2230	208	1.	1.5	76.5
29	OCT	1320	9	0.	.0	74.0	30	OCT	0600	109	0.	.4	75.2	30	OCT	2240	209	1.	1.5	76.5
29	OCT	1330	10	0.	.0	74.1	30	OCT	0610	110	0.	.4	75.2	30	OCT	2250	210	1.	1.5	76.5
29	OCT	1340	11	0.	.0	74.1	30	OCT	0620	111	0.	.4	75.2	30	OCT	2300	211	1.	1.5	76.5
29	OCT	1350	12	0.	.0	74.1	30	OCT	0630	112	0.	.4	75.2	30	OCT	2310	212	1.	1.5	76.5
29	OCT	1400	13	0.	.0	74.1	30	OCT	0640	113	0.	.5	75.2	30	OCT	2320	213	1.	1.6	76.5
29	OCT	1410	14	0.	.0	74.1	30	OCT	0650	114	0.	.5	75.2	30	OCT	2330	214	1.	1.6	76.5
29	OCT	1420	15	0.	.0	74.1	30	OCT	0700	115	0.	.5	75.2	30	OCT	2340	215	1.	1.6	76.5
29	OCT	1430	16	0.	.0	74.1	30	OCT	0710	116	0.	.5	75.2	30	OCT	2350	216	1.	1.6	76.5
29	OCT	1440	17	0.	.0	74.1	30	OCT	0720	117	0.	.5	75.2	31	OCT	0000	217	1.	1.6	76.6
29	OCT	1450	18	0.	.0	74.1	30	OCT	0730	118	0.	.5	75.3	31	OCT	0010	218	1.	1.6	76.6
29	OCT	1500	19	0.	.0	74.1	30	OCT	0740	119	0.	.5	75.3	31	OCT	0020	219	1.	1.6	76.6
29	OCT	1510	20	0.	.0	74.1	30	OCT	0750	120	0.	.5	75.3	31	OCT	0030	220	1.	1.6	76.6
29	OCT	1520	21	0.	.0	74.1	30	OCT	0800	121	0.	.5	75.3	31	OCT	0040	221	1.	1.6	76.6
29	OCT	1530	22	0.	.0	74.1	30	OCT	0810	122	0.	.5	75.3	31	OCT	0050	222	1.	1.6	76.6
29	OCT	1540	23	0.	.0	74.1	30	OCT	0820	123	0.	.5	75.3	31	OCT	0100	223	1.	1.6	76.6
29	OCT	1550	24	0.	.0	74.2	30	OCT	0830	124	0.	.5	75.3	31	OCT	0110	224	1.	1.6	76.6
29	OCT	1600	25	0.	.0	74.2	30	OCT	0840	125	0.	.6	75.3	31	OCT	0120	225	1.	1.6	76.6
29	OCT	1610	26	0.	.0	74.2	30	OCT	0850	126	0.	.6	75.3	31	OCT	0130	226	1.	1.6	76.6
29	OCT	1620	27	0.	.1	74.2	30	OCT	0900	127	0.	.6	75.3	31	OCT	0140	227	1.	1.6	76.6
29	OCT	1630	28	0.	.1	74.2	30	OCT	0910	128	0.	.6	75.4	31	OCT	0150	228	1.	1.7	76.6
29	OCT	1640	29	0.	.1	74.2	30	OCT	0920	129	0.	.6	75.4	31	OCT	0200	229	1.	1.7	76.6
29	OCT	1650	30	0.	.1	74.2	30	OCT	0930	130	0.	.6	75.4	31	OCT	0210	230	1.	1.7	76.6

29 OCT 1700	31	0.	.1	74.2	*	30 OCT 0940	131	0.	.6	75.4	*	31 OCT 0220	231	1.	1.7	76.6
29 OCT 1710	32	0.	.1	74.2	*	30 OCT 0950	132	0.	.6	75.4	*	31 OCT 0230	232	1.	1.7	76.7
29 OCT 1720	33	0.	.1	74.2	*	30 OCT 1000	133	0.	.6	75.4	*	31 OCT 0240	233	1.	1.7	76.7
29 OCT 1730	34	0.	.1	74.2	*	30 OCT 1010	134	0.	.6	75.4	*	31 OCT 0250	234	1.	1.7	76.7
29 OCT 1740	35	0.	.1	74.2	*	30 OCT 1020	135	0.	.6	75.4	*	31 OCT 0300	235	1.	1.7	76.7
29 OCT 1750	36	0.	.1	74.2	*	30 OCT 1030	136	0.	.6	75.4	*	31 OCT 0310	236	1.	1.7	76.7
29 OCT 1800	37	0.	.1	74.2	*	30 OCT 1040	137	0.	.7	75.5	*	31 OCT 0320	237	1.	1.7	76.7
29 OCT 1810	38	0.	.1	74.3	*	30 OCT 1050	138	0.	.7	75.5	*	31 OCT 0330	238	1.	1.7	76.7
29 OCT 1820	39	0.	.1	74.3	*	30 OCT 1100	139	0.	.7	75.5	*	31 OCT 0340	239	1.	1.7	76.7
29 OCT 1830	40	0.	.1	74.3	*	30 OCT 1110	140	0.	.7	75.5	*	31 OCT 0350	240	1.	1.7	76.7
29 OCT 1840	41	0.	.1	74.3	*	30 OCT 1120	141	0.	.7	75.5	*	31 OCT 0400	241	1.	1.7	76.7
29 OCT 1850	42	0.	.1	74.3	*	30 OCT 1130	142	0.	.7	75.5	*	31 OCT 0410	242	1.	1.7	76.7
29 OCT 1900	43	0.	.1	74.3	*	30 OCT 1140	143	0.	.7	75.5	*	31 OCT 0420	243	1.	1.7	76.7
29 OCT 1910	44	0.	.1	74.3	*	30 OCT 1150	144	0.	.7	75.5	*	31 OCT 0430	244	1.	1.7	76.7
29 OCT 1920	45	0.	.1	74.3	*	30 OCT 1200	145	0.	.7	75.5	*	31 OCT 0440	245	1.	1.7	76.7
29 OCT 1930	46	0.	.1	74.3	*	30 OCT 1210	146	0.	.7	75.6	*	31 OCT 0450	246	1.	1.7	76.7
29 OCT 1940	47	0.	.1	74.3	*	30 OCT 1220	147	0.	.8	75.6	*	31 OCT 0500	247	1.	1.7	76.7
29 OCT 1950	48	0.	.1	74.3	*	30 OCT 1230	148	0.	.8	75.6	*	31 OCT 0510	248	1.	1.7	76.7
29 OCT 2000	49	0.	.1	74.3	*	30 OCT 1240	149	0.	.8	75.6	*	31 OCT 0520	249	1.	1.8	76.7
29 OCT 2010	50	0.	.1	74.3	*	30 OCT 1250	150	0.	.8	75.6	*	31 OCT 0530	250	1.	1.8	76.8
29 OCT 2020	51	0.	.1	74.4	*	30 OCT 1300	151	0.	.8	75.7	*	31 OCT 0540	251	1.	1.8	76.8
29 OCT 2030	52	0.	.1	74.4	*	30 OCT 1310	152	0.	.8	75.7	*	31 OCT 0550	252	1.	1.8	76.8
29 OCT 2040	53	0.	.1	74.4	*	30 OCT 1320	153	0.	.8	75.7	*	31 OCT 0600	253	1.	1.8	76.8
29 OCT 2050	54	0.	.1	74.4	*	30 OCT 1330	154	0.	.9	75.7	*	31 OCT 0610	254	1.	1.8	76.8
29 OCT 2100	55	0.	.1	74.4	*	30 OCT 1340	155	0.	.9	75.7	*	31 OCT 0620	255	1.	1.8	76.8
29 OCT 2110	56	0.	.1	74.4	*	30 OCT 1350	156	0.	.9	75.7	*	31 OCT 0630	256	1.	1.8	76.8
29 OCT 2120	57	0.	.1	74.4	*	30 OCT 1400	157	0.	.9	75.8	*	31 OCT 0640	257	1.	1.8	76.8
29 OCT 2130	58	0.	.1	74.4	*	30 OCT 1410	158	0.	.9	75.8	*	31 OCT 0650	258	1.	1.8	76.8
29 OCT 2140	59	0.	.1	74.4	*	30 OCT 1420	159	0.	.9	75.8	*	31 OCT 0700	259	1.	1.8	76.8
29 OCT 2150	60	0.	.1	74.5	*	30 OCT 1430	160	0.	.9	75.8	*	31 OCT 0710	260	1.	1.8	76.8
29 OCT 2200	61	0.	.1	74.5	*	30 OCT 1440	161	0.	1.0	75.8	*	31 OCT 0720	261	1.	1.8	76.8
29 OCT 2210	62	0.	.1	74.5	*	30 OCT 1450	162	0.	1.0	75.8	*	31 OCT 0730	262	1.	1.8	76.8
29 OCT 2220	63	0.	.1	74.5	*	30 OCT 1500	163	0.	1.0	75.9	*	31 OCT 0740	263	1.	1.8	76.8
29 OCT 2230	64	0.	.1	74.5	*	30 OCT 1510	164	0.	1.0	75.9	*	31 OCT 0750	264	1.	1.8	76.8
29 OCT 2240	65	0.	.2	74.5	*	30 OCT 1520	165	0.	1.0	75.9	*	31 OCT 0800	265	1.	1.8	76.8
29 OCT 2250	66	0.	.2	74.5	*	30 OCT 1530	166	0.	1.0	75.9	*	31 OCT 0810	266	1.	1.8	76.8
29 OCT 2300	67	0.	.2	74.6	*	30 OCT 1540	167	0.	1.0	75.9	*	31 OCT 0820	267	1.	1.8	76.8
29 OCT 2310	68	0.	.2	74.6	*	30 OCT 1550	168	0.	1.1	76.0	*	31 OCT 0830	268	1.	1.8	76.8
29 OCT 2320	69	0.	.2	74.6	*	30 OCT 1600	169	0.	1.1	76.0	*	31 OCT 0840	269	1.	1.8	76.8
29 OCT 2330	70	0.	.2	74.6	*	30 OCT 1610	170	0.	1.1	76.0	*	31 OCT 0850	270	1.	1.8	76.8
29 OCT 2340	71	0.	.2	74.6	*	30 OCT 1620	171	0.	1.1	76.0	*	31 OCT 0900	271	1.	1.8	76.8
29 OCT 2350	72	0.	.2	74.6	*	30 OCT 1630	172	0.	1.1	76.0	*	31 OCT 0910	272	1.	1.8	76.8
30 OCT 0000	73	0.	.2	74.7	*	30 OCT 1640	173	0.	1.1	76.1	*	31 OCT 0920	273	1.	1.8	76.8
30 OCT 0010	74	0.	.2	74.7	*	30 OCT 1650	174	0.	1.1	76.1	*	31 OCT 0930	274	1.	1.8	76.8
30 OCT 0020	75	0.	.2	74.7	*	30 OCT 1700	175	0.	1.2	76.1	*	31 OCT 0940	275	1.	1.8	76.8
30 OCT 0030	76	0.	.2	74.7	*	30 OCT 1710	176	0.	1.2	76.1	*	31 OCT 0950	276	1.	1.8	76.8
30 OCT 0040	77	0.	.2	74.7	*	30 OCT 1720	177	0.	1.2	76.1	*	31 OCT 1000	277	1.	1.8	76.8
30 OCT 0050	78	0.	.2	74.8	*	30 OCT 1730	178	0.	1.2	76.1	*	31 OCT 1010	278	1.	1.8	76.9
30 OCT 0100	79	0.	.2	74.8	*	30 OCT 1740	179	0.	1.2	76.1	*	31 OCT 1020	279	1.	1.8	76.9
30 OCT 0110	80	0.	.2	74.8	*	30 OCT 1750	180	0.	1.2	76.2	*	31 OCT 1030	280	1.	1.9	76.9
30 OCT 0120	81	0.	.2	74.8	*	30 OCT 1800	181	0.	1.2	76.2	*	31 OCT 1040	281	1.	1.9	76.9
30 OCT 0130	82	0.	.2	74.8	*	30 OCT 1810	182	0.	1.3	76.2	*	31 OCT 1050	282	1.	1.9	76.9
30 OCT 0140	83	0.	.2	74.8	*	30 OCT 1820	183	0.	1.3	76.2	*	31 OCT 1100	283	1.	1.9	76.9
30 OCT 0150	84	0.	.3	74.9	*	30 OCT 1830	184	0.	1.3	76.2	*	31 OCT 1110	284	1.	1.9	76.9
30 OCT 0200	85	0.	.3	74.9	*	30 OCT 1840	185	0.	1.3	76.2	*	31 OCT 1120	285	1.	1.9	76.9
30 OCT 0210	86	0.	.3	74.9	*	30 OCT 1850	186	0.	1.3	76.2	*	31 OCT 1130	286	1.	1.9	76.9
30 OCT 0220	87	0.	.3	74.9	*	30 OCT 1900	187	0.	1.3	76.3	*	31 OCT 1140	287	1.	1.9	76.9
30 OCT 0230	88	0.	.3	75.0	*	30 OCT 1910	188	0.	1.3	76.3	*	31 OCT 1150	288	1.	1.9	76.9
30 OCT 0240	89	0.	.3	75.0	*	30 OCT 1920	189	0.	1.3	76.3	*	31 OCT 1200	289	1.	1.9	76.9
30 OCT 0250	90	0.	.3	75.0	*	30 OCT 1930	190	0.	1.4	76.3	*	31 OCT 1210	290	1.	1.9	76.9
30 OCT 0300	91	0.	.3	75.0	*	30 OCT 1940	191	0.	1.4	76.3	*	31 OCT 1220	291	1.	1.9	76.9
30 OCT 0310	92	0.	.3	75.0	*	30 OCT 1950	192	0.	1.4	76.3	*	31 OCT 1230	292	1.	1.9	76.9
30 OCT 0320	93	0.	.3	75.0	*	30 OCT 2000	193	0.	1.4	76.3	*	31 OCT 1240	293	1.	1.9	76.9
30 OCT 0330	94	0.	.3	75.0	*	30 OCT 2010	194	0.	1.4	76.3	*	31 OCT 1250	294	1.	1.9	76.9
30 OCT 0340	95	0.	.3	75.0	*	30 OCT 2020	195	0.	1.4	76.3	*	31 OCT 1300	295	1.	1.9	76.9
30 OCT 0350	96	0.	.3	75.0	*	30 OCT 2030	196	1.	1.4	76.4	*	31 OCT 1310	296	1.	1.9	76.9
30 OCT 0400	97	0.	.3	75.1	*	30 OCT 2040	197	1.	1.4	76.4	*	31 OCT 1320	297	1.	1.9	76.9
30 OCT 0410	98	0.	.3	75.1	*	30 OCT 2050	198	1.	1.4	76.4	*	31 OCT 1330	298	1.	1.9	76.9
30 OCT 0420	99	0.	.3	75.1	*	30 OCT 2100	199	1.	1.4	76.4	*	31 OCT 1340	299	1.	1.9	76.9
30 OCT 0430	100	0.	.4	75.1	*	30 OCT 2110	200	1.	1.4	76.4	*	31 OCT 1350	300	1.	1.9	76.9
					*						*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.83-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1.	49.83		1.	1.	0.	0.
		(INCHES)	1.014	2.557	2.557	2.557
		(AC-FT)	1.	2.	2.	2.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	49.83-HR
+ (AC-FT)	(HR)				
2.	49.83	2.	2.	1.	1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	49.83-HR
+ (FEET)	(HR)				
76.94	49.83	76.87	76.54	75.62	75.62

CUMULATIVE AREA = .01 SQ MI

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RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
	HYDROGRAPH AT									
+		SITE	1.	49.67	1.	1.	1.	.01		
	HYDROGRAPH AT									
+		POND	0.	24.50	0.	0.	0.	.00		
	2 COMBINED AT									
+		COMB	2.	49.50	1.	1.	1.	.01		
	ROUTED TO									
+		RES1	1.	49.83	1.	1.	0.	.01		
+									76.94	49.83

*** NORMAL END OF HEC-1 ***

CASE VII

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1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  10/27/1998  TIME  13:01:33 *
*                                       *
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*          (916) 551-1748               *
*                                       *
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  1       ID   KUA - Cane Island Unit 3
  2       ID   Site Certification Application
  3       ID   HEC-1 Analysis of Unit 3:   10 Year - 72 Hour Precipitation Event
  4       ID   Black & Veatch Project No. 59140     Modelled By: Gregory V. Johnson
  5       ID   Pre-Construction Model
  6       ID   Input File: kua-pre2.in   Output File:  kua-pre2.out
  7       IT      10 27OCT98   0600     300
  8       IO       0       0
  9       IN      15
          * **********

 10       KK    SITE
 11       KM   Runoff From Pre-Construction Site Area
 12       BA  .01184
 13       PB   9.65
 14       PC  0.002  0.003  0.005  0.006  0.008  0.009  0.011  0.012  0.014  0.015
 15       PC  0.017  0.018  0.020  0.021  0.023  0.024  0.026  0.027  0.029  0.030
 16       PC  0.032  0.033  0.035  0.036  0.038  0.040  0.041  0.043  0.044  0.046
 17       PC  0.047  0.049  0.050  0.052  0.053  0.055  0.056  0.058  0.059  0.061
 18       PC  0.062  0.064  0.065  0.067  0.068  0.070  0.071  0.073  0.075  0.076
 19       PC  0.078  0.079  0.081  0.082  0.084  0.085  0.087  0.088  0.090  0.091
 20       PC  0.093  0.094  0.096  0.097  0.099  0.100  0.102  0.103  0.105  0.106
 21       PC  0.108  0.110  0.111  0.113  0.114  0.116  0.117  0.119  0.120  0.122
 22       PC  0.123  0.125  0.126  0.128  0.129  0.131  0.132  0.134  0.135  0.137
 23       PC  0.138  0.140  0.141  0.143  0.144  0.146  0.148  0.150  0.153  0.155
 24       PC  0.157  0.159  0.162  0.164  0.166  0.168  0.170  0.173  0.175  0.177
 25       PC  0.179  0.182  0.184  0.186  0.188  0.190  0.193  0.195  0.197  0.199
 26       PC  0.201  0.204  0.206  0.208  0.210  0.213  0.215  0.217  0.219  0.221
 27       PC  0.224  0.226  0.228  0.230  0.233  0.235  0.237  0.239  0.241  0.244
 28       PC  0.246  0.248  0.250  0.252  0.255  0.257  0.259  0.261  0.264  0.266
 29       PC  0.268  0.270  0.272  0.275  0.277  0.279  0.281  0.284  0.286  0.288
 30       PC  0.290  0.292  0.295  0.297  0.299  0.301  0.304  0.306  0.308  0.310
 31       PC  0.312  0.315  0.317  0.319  0.321  0.324  0.326  0.328  0.330  0.332
 32       PC  0.335  0.337  0.339  0.341  0.343  0.346  0.348  0.350  0.352  0.355
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          33          PC   0.357   0.359   0.362   0.364   0.367   0.369   0.372   0.374   0.377   0.379
          34          PC   0.382   0.385   0.388   0.391   0.394   0.397   0.400   0.404   0.408   0.412
          35          PC   0.417   0.421   0.426   0.431   0.437   0.442   0.448   0.454   0.461   0.467
          36          PC   0.474   0.481   0.488   0.496   0.504   0.512   0.521   0.530   0.540   0.550
          37          PC   0.561   0.572   0.584   0.596   0.612   0.628   0.653   0.678   0.847   1.015
          38          PC   1.052   1.088   1.107   1.126   1.140   1.154   1.166   1.177   1.186   1.194
          39          PC   1.202   1.209   1.217   1.224   1.232   1.239   1.243   1.248   1.253   1.257
          40          PC   1.262   1.266   1.271   1.275   1.280   1.284   1.289   1.293   1.298   1.302
          41          PC   1.307   1.311   1.314   1.317   1.320   1.323   1.326   1.329   1.332   1.335
          42          PC   1.338   1.341   1.344   1.347   1.350   1.353   1.356   1.359
          43          LS      0      47       0
          44          UD    0.25
                      * **********
                      *DIAGRAM
          45          ZZ
1
              SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    10        SITE

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             FEBRUARY 1981            *
*           REVISED 02 AUG 88          *
*                                      *
*  RUN DATE  10/27/1998  TIME  13:01:33 *
*                                      *
****************************************

****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*          (916) 551-1748              *
*                                      *
****************************************

                      KUA - Cane Island Unit 3
                      Site Certification Application
                      HEC-1 Analysis of Unit 3:   10 Year - 72 Hour Precipitation Event
                      Black & Veatch Project No. 59140     Modelled By: Gregory V. Johnson
                      Pre-Construction Model
                      Input File: kua-pre2.in   Output File:  kua-pre2.out

*** ERROR *** SPECIFIED START AND END DATES RESULT IN TOO MANY TIME PERIODS

   8 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          0  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN         10  MINUTES IN COMPUTATION INTERVAL
                       IDATE     27OCT98  STARTING DATE
                       ITIME       1200  STARTING TIME
                          NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE     31OCT98  ENDING DATE
                      NDTIME       1350  ENDING TIME
                      ICENT         19  CENTURY MARK

                    COMPUTATION INTERVAL      .17 HOURS
                        TOTAL TIME BASE   49.83 HOURS

           ENGLISH UNITS
                DRAINAGE AREA         SQUARE MILES
                PRECIPITATION DEPTH   INCHES
                LENGTH, ELEVATION     FEET
                FLOW                  CUBIC FEET PER SECOND
                STORAGE VOLUME        ACRE-FEET
                SURFACE AREA          ACRES
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            TEMPERATURE          DEGREES FAHRENHEIT

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *

          ***************
          *             *
 10 KK    *     SITE    *
          *             *
          ***************
                   Runoff From Pre-Construction Site Area

  9 IN        TIME DATA FOR INPUT TIME SERIES
                 JXMIN          15  TIME INTERVAL IN MINUTES
                JXDATE     27OCT98  STARTING DATE
                JXTIME        6000  STARTING TIME

            SUBBASIN RUNOFF DATA

 12 BA        SUBBASIN CHARACTERISTICS
                 TAREA         .01  SUBBASIN AREA

              PRECIPITATION DATA

 13 PB           STORM        9.65  BASIN TOTAL PRECIPITATION

 14 PI         INCREMENTAL PRECIPITATION PATTERN
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00     .00
                .00     .00     .00     .00     .00     .00     .00     .00     .00

 43 LS        SCS LOSS RATE
                 STRTL        2.26  INITIAL ABSTRACTION
                CRVNBR       47.00  CURVE NUMBER
                 RTIMP         .00  PERCENT IMPERVIOUS AREA

 44 UD        SCS DIMENSIONLESS UNITGRAPH
                  TLAG         .25  LAG

                                      ***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG
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UNIT HYDROGRAPH
10 END-OF-PERIOD ORDINATES

8. 17. 12. 5. 2. 1. 0. 0. 0. 0.

HYDROGRAPH AT STATION SITE

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
29	OCT	1200	1	.00	.00	.00	0.	30	OCT	1300	151	.03	.03	.01	0.
29	OCT	1210	2	.02	.02	.00	0.	30	OCT	1310	152	.03	.03	.01	0.
29	OCT	1220	3	.03	.03	.00	0.	30	OCT	1320	153	.04	.03	.01	0.
29	OCT	1230	4	.03	.03	.00	0.	30	OCT	1330	154	.05	.04	.01	0.
29	OCT	1240	5	.02	.02	.00	0.	30	OCT	1340	155	.03	.03	.01	0.
29	OCT	1250	6	.03	.03	.00	0.	30	OCT	1350	156	.03	.03	.01	0.
29	OCT	1300	7	.03	.03	.00	0.	30	OCT	1400	157	.03	.02	.01	0.
29	OCT	1310	8	.02	.02	.00	0.	30	OCT	1410	158	.03	.02	.01	0.
29	OCT	1320	9	.03	.03	.00	0.	30	OCT	1420	159	.03	.02	.01	0.
29	OCT	1330	10	.03	.03	.00	0.	30	OCT	1430	160	.03	.02	.01	0.
29	OCT	1340	11	.02	.02	.00	0.	30	OCT	1440	161	.05	.04	.01	0.
29	OCT	1350	12	.03	.03	.00	0.	30	OCT	1450	162	.04	.03	.01	1.
29	OCT	1400	13	.03	.03	.00	0.	30	OCT	1500	163	.03	.02	.01	1.
29	OCT	1410	14	.02	.02	.00	0.	30	OCT	1510	164	.03	.02	.01	1.
29	OCT	1420	15	.03	.03	.00	0.	30	OCT	1520	165	.03	.02	.01	0.
29	OCT	1430	16	.03	.03	.00	0.	30	OCT	1530	166	.03	.02	.01	0.
29	OCT	1440	17	.02	.02	.00	0.	30	OCT	1540	167	.05	.04	.02	1.
29	OCT	1450	18	.03	.03	.00	0.	30	OCT	1550	168	.04	.03	.01	1.
29	OCT	1500	19	.03	.03	.00	0.	30	OCT	1600	169	.03	.02	.01	1.
29	OCT	1510	20	.02	.02	.00	0.	30	OCT	1610	170	.03	.02	.01	1.
29	OCT	1520	21	.03	.03	.00	0.	30	OCT	1620	171	.03	.02	.01	1.
29	OCT	1530	22	.03	.03	.00	0.	30	OCT	1630	172	.03	.02	.01	1.
29	OCT	1540	23	.02	.02	.00	0.	30	OCT	1640	173	.03	.02	.01	1.
29	OCT	1550	24	.03	.03	.00	0.	30	OCT	1650	174	.04	.03	.01	1.
29	OCT	1600	25	.03	.03	.00	0.	30	OCT	1700	175	.05	.03	.02	1.
29	OCT	1610	26	.02	.02	.00	0.	30	OCT	1710	176	.03	.02	.01	1.
29	OCT	1620	27	.03	.03	.00	0.	30	OCT	1720	177	.03	.02	.01	1.
29	OCT	1630	28	.03	.03	.00	0.	30	OCT	1730	178	.03	.02	.01	1.
29	OCT	1640	29	.02	.02	.00	0.	30	OCT	1740	179	.03	.02	.01	1.
29	OCT	1650	30	.03	.03	.00	0.	30	OCT	1750	180	.03	.02	.01	1.
29	OCT	1700	31	.03	.03	.00	0.	30	OCT	1800	181	.03	.02	.01	1.
29	OCT	1710	32	.02	.02	.00	0.	30	OCT	1810	182	.05	.03	.02	1.
29	OCT	1720	33	.03	.03	.00	0.	30	OCT	1820	183	.04	.03	.02	1.
29	OCT	1730	34	.03	.03	.00	0.	30	OCT	1830	184	.03	.02	.01	1.
29	OCT	1740	35	.02	.02	.00	0.	30	OCT	1840	185	.03	.02	.01	1.
29	OCT	1750	36	.03	.03	.00	0.	30	OCT	1850	186	.03	.02	.01	1.
29	OCT	1800	37	.03	.03	.00	0.	30	OCT	1900	187	.03	.02	.01	1.
29	OCT	1810	38	.03	.03	.00	0.	30	OCT	1910	188	.05	.03	.02	1.
29	OCT	1820	39	.03	.03	.00	0.	30	OCT	1920	189	.04	.03	.02	1.
29	OCT	1830	40	.02	.02	.00	0.	30	OCT	1930	190	.03	.02	.01	1.
29	OCT	1840	41	.03	.03	.00	0.	30	OCT	1940	191	.03	.02	.01	1.
29	OCT	1850	42	.03	.03	.00	0.	30	OCT	1950	192	.03	.02	.01	1.
29	OCT	1900	43	.02	.02	.00	0.	30	OCT	2000	193	.03	.02	.01	1.
29	OCT	1910	44	.03	.03	.00	0.	30	OCT	2010	194	.03	.02	.01	1.
29	OCT	1920	45	.03	.03	.00	0.	30	OCT	2020	195	.04	.03	.02	1.
29	OCT	1930	46	.02	.02	.00	0.	30	OCT	2030	196	.05	.03	.02	1.
29	OCT	1940	47	.03	.03	.00	0.	30	OCT	2040	197	.03	.02	.01	1.
29	OCT	1950	48	.03	.03	.00	0.	30	OCT	2050	198	.03	.02	.01	1.
29	OCT	2000	49	.02	.02	.00	0.	30	OCT	2100	199	.03	.02	.01	1.
29	OCT	2010	50	.03	.03	.00	0.	30	OCT	2110	200	.03	.02	.01	1.
29	OCT	2020	51	.03	.03	.00	0.	30	OCT	2120	201	.04	.02	.02	1.
29	OCT	2030	52	.02	.02	.00	0.	30	OCT	2130	202	.05	.03	.02	1.
29	OCT	2040	53	.03	.03	.00	0.	30	OCT	2140	203	.03	.02	.01	1.
29	OCT	2050	54	.03	.03	.00	0.	30	OCT	2150	204	.03	.02	.01	1.
29	OCT	2100	55	.02	.02	.00	0.	30	OCT	2200	205	.03	.02	.01	1.
29	OCT	2110	56	.03	.03	.00	0.	30	OCT	2210	206	.03	.02	.01	1.
29	OCT	2120	57	.03	.03	.00	0.	30	OCT	2220	207	.03	.02	.01	1.
29	OCT	2130	58	.02	.02	.00	0.	30	OCT	2230	208	.03	.02	.02	1.
29	OCT	2140	59	.03	.03	.00	0.	30	OCT	2240	209	.05	.03	.02	1.
29	OCT	2150	60	.03	.03	.00	0.	30	OCT	2250	210	.04	.02	.02	1.

29 OCT 2200	61	.02	.02	.00	0.	*	30 OCT 2300	211	.03	.02	.02	1.
29 OCT 2210	62	.03	.03	.00	0.	*	30 OCT 2310	212	.03	.02	.02	1.
29 OCT 2220	63	.03	.03	.00	0.	*	30 OCT 2320	213	.03	.02	.02	1.
29 OCT 2230	64	.02	.02	.00	0.	*	30 OCT 2330	214	.03	.02	.02	1.
29 OCT 2240	65	.03	.03	.00	0.	*	30 OCT 2340	215	.03	.02	.02	1.
29 OCT 2250	66	.03	.03	.00	0.	*	30 OCT 2350	216	.04	.02	.02	1.
29 OCT 2300	67	.02	.02	.00	0.	*	31 OCT 0000	217	.05	.03	.02	1.
29 OCT 2310	68	.03	.03	.00	0.	*	31 OCT 0010	218	.03	.02	.02	1.
29 OCT 2320	69	.03	.03	.00	0.	*	31 OCT 0020	219	.03	.02	.02	1.
29 OCT 2330	70	.02	.02	.00	0.	*	31 OCT 0030	220	.03	.02	.02	1.
29 OCT 2340	71	.03	.03	.00	0.	*	31 OCT 0040	221	.03	.02	.02	1.
29 OCT 2350	72	.03	.03	.00	0.	*	31 OCT 0050	222	.04	.02	.02	1.
30 OCT 0000	73	.03	.03	.00	0.	*	31 OCT 0100	223	.05	.03	.02	1.
30 OCT 0010	74	.02	.02	.00	0.	*	31 OCT 0110	224	.03	.02	.02	1.
30 OCT 0020	75	.03	.03	.00	0.	*	31 OCT 0120	225	.03	.02	.02	1.
30 OCT 0030	76	.03	.03	.00	0.	*	31 OCT 0130	226	.03	.02	.02	1.
30 OCT 0040	77	.02	.02	.00	0.	*	31 OCT 0140	227	.03	.02	.02	1.
30 OCT 0050	78	.03	.03	.00	0.	*	31 OCT 0150	228	.03	.02	.02	1.
30 OCT 0100	79	.03	.03	.00	0.	*	31 OCT 0200	229	.03	.02	.02	1.
30 OCT 0110	80	.02	.02	.00	0.	*	31 OCT 0210	230	.05	.03	.03	1.
30 OCT 0120	81	.03	.03	.00	0.	*	31 OCT 0220	231	.04	.02	.02	1.
30 OCT 0130	82	.03	.03	.00	0.	*	31 OCT 0230	232	.03	.02	.02	1.
30 OCT 0140	83	.02	.02	.00	0.	*	31 OCT 0240	233	.03	.02	.02	1.
30 OCT 0150	84	.03	.03	.00	0.	*	31 OCT 0250	234	.03	.02	.02	1.
30 OCT 0200	85	.03	.03	.00	0.	*	31 OCT 0300	235	.03	.02	.02	1.
30 OCT 0210	86	.02	.02	.00	0.	*	31 OCT 0310	236	.05	.02	.03	1.
30 OCT 0220	87	.03	.03	.00	0.	*	31 OCT 0320	237	.04	.02	.02	1.
30 OCT 0230	88	.03	.03	.00	0.	*	31 OCT 0330	238	.03	.02	.02	1.
30 OCT 0240	89	.02	.02	.00	0.	*	31 OCT 0340	239	.03	.02	.02	1.
30 OCT 0250	90	.03	.03	.00	0.	*	31 OCT 0350	240	.03	.02	.02	1.
30 OCT 0300	91	.03	.03	.00	0.	*	31 OCT 0400	241	.03	.02	.02	1.
30 OCT 0310	92	.02	.02	.00	0.	*	31 OCT 0410	242	.03	.02	.02	1.
30 OCT 0320	93	.03	.03	.00	0.	*	31 OCT 0420	243	.04	.02	.02	1.
30 OCT 0330	94	.03	.03	.00	0.	*	31 OCT 0430	244	.05	.02	.03	1.
30 OCT 0340	95	.02	.02	.00	0.	*	31 OCT 0440	245	.03	.02	.02	1.
30 OCT 0350	96	.03	.02	.00	0.	*	31 OCT 0450	246	.03	.02	.02	1.
30 OCT 0400	97	.03	.03	.00	0.	*	31 OCT 0500	247	.03	.02	.02	1.
30 OCT 0410	98	.02	.02	.00	0.	*	31 OCT 0510	248	.03	.02	.02	1.
30 OCT 0420	99	.03	.02	.00	0.	*	31 OCT 0520	249	.04	.02	.02	1.
30 OCT 0430	100	.03	.03	.00	0.	*	31 OCT 0530	250	.05	.02	.03	1.
30 OCT 0440	101	.02	.02	.00	0.	*	31 OCT 0540	251	.03	.02	.02	1.
30 OCT 0450	102	.03	.02	.00	0.	*	31 OCT 0550	252	.03	.02	.02	1.
30 OCT 0500	103	.03	.03	.00	0.	*	31 OCT 0600	253	.03	.02	.02	1.
30 OCT 0510	104	.02	.02	.00	0.	*	31 OCT 0610	254	.03	.02	.02	1.
30 OCT 0520	105	.03	.02	.00	0.	*	31 OCT 0620	255	.03	.02	.02	1.
30 OCT 0530	106	.03	.03	.00	0.	*	31 OCT 0630	256	.03	.02	.02	1.
30 OCT 0540	107	.03	.03	.00	0.	*	31 OCT 0640	257	.05	.02	.03	1.
30 OCT 0550	108	.03	.02	.00	0.	*	31 OCT 0650	258	.04	.02	.02	1.
30 OCT 0600	109	.02	.02	.00	0.	*	31 OCT 0700	259	.03	.01	.02	1.
30 OCT 0610	110	.03	.03	.00	0.	*	31 OCT 0710	260	.03	.01	.02	1.
30 OCT 0620	111	.03	.02	.00	0.	*	31 OCT 0720	261	.03	.01	.02	1.
30 OCT 0630	112	.02	.02	.00	0.	*	31 OCT 0730	262	.03	.01	.02	1.
30 OCT 0640	113	.03	.03	.00	0.	*	31 OCT 0740	263	.05	.02	.03	1.
30 OCT 0650	114	.03	.02	.00	0.	*	31 OCT 0750	264	.04	.02	.02	1.
30 OCT 0700	115	.02	.02	.00	0.	*	31 OCT 0800	265	.03	.01	.02	1.
30 OCT 0710	116	.03	.03	.00	0.	*	31 OCT 0810	266	.03	.01	.02	1.
30 OCT 0720	117	.03	.02	.00	0.	*	31 OCT 0820	267	.03	.01	.02	1.
30 OCT 0730	118	.02	.01	.00	0.	*	31 OCT 0830	268	.03	.01	.02	1.
30 OCT 0740	119	.03	.03	.00	0.	*	31 OCT 0840	269	.03	.01	.02	1.
30 OCT 0750	120	.03	.02	.00	0.	*	31 OCT 0850	270	.04	.02	.02	1.
30 OCT 0800	121	.02	.01	.00	0.	*	31 OCT 0900	271	.05	.02	.03	1.
30 OCT 0810	122	.03	.03	.00	0.	*	31 OCT 0910	272	.03	.01	.02	1.
30 OCT 0820	123	.03	.02	.00	0.	*	31 OCT 0920	273	.03	.01	.02	1.
30 OCT 0830	124	.02	.01	.00	0.	*	31 OCT 0930	274	.03	.01	.02	1.
30 OCT 0840	125	.03	.03	.00	0.	*	31 OCT 0940	275	.03	.01	.02	1.
30 OCT 0850	126	.03	.02	.00	0.	*	31 OCT 0950	276	.03	.01	.02	1.
30 OCT 0900	127	.02	.01	.00	0.	*	31 OCT 1000	277	.03	.01	.02	1.
30 OCT 0910	128	.03	.03	.01	0.	*	31 OCT 1010	278	.05	.02	.03	1.
30 OCT 0920	129	.03	.02	.00	0.	*	31 OCT 1020	279	.04	.02	.03	1.
30 OCT 0930	130	.02	.01	.00	0.	*	31 OCT 1030	280	.03	.01	.02	1.
30 OCT 0940	131	.03	.03	.01	0.	*	31 OCT 1040	281	.03	.01	.02	1.
30 OCT 0950	132	.03	.02	.00	0.	*	31 OCT 1050	282	.03	.01	.02	1.

30 OCT 1000	133	.02	.01	.00	0.	*	31 OCT 1100	283	.03	.01	.02	1.
30 OCT 1010	134	.03	.03	.01	0.	*	31 OCT 1110	284	.05	.02	.03	1.
30 OCT 1020	135	.03	.02	.00	0.	*	31 OCT 1120	285	.04	.02	.03	1.
30 OCT 1030	136	.02	.01	.00	0.	*	31 OCT 1130	286	.03	.01	.02	1.
30 OCT 1040	137	.03	.03	.01	0.	*	31 OCT 1140	287	.03	.01	.02	1.
30 OCT 1050	138	.03	.02	.00	0.	*	31 OCT 1150	288	.04	.02	.03	1.
30 OCT 1100	139	.02	.01	.00	0.	*	31 OCT 1200	289	.05	.02	.03	1.
30 OCT 1110	140	.03	.03	.01	0.	*	31 OCT 1210	290	.03	.01	.02	1.
30 OCT 1120	141	.03	.02	.01	0.	*	31 OCT 1220	291	.04	.02	.03	1.
30 OCT 1130	142	.02	.01	.00	0.	*	31 OCT 1230	292	.05	.02	.03	1.
30 OCT 1140	143	.03	.03	.01	0.	*	31 OCT 1240	293	.03	.01	.02	1.
30 OCT 1150	144	.03	.03	.01	0.	*	31 OCT 1250	294	.04	.02	.03	1.
30 OCT 1200	145	.03	.03	.01	0.	*	31 OCT 1300	295	.05	.02	.03	1.
30 OCT 1210	146	.03	.03	.01	0.	*	31 OCT 1310	296	.03	.01	.02	1.
30 OCT 1220	147	.04	.03	.01	0.	*	31 OCT 1320	297	.04	.02	.03	1.
30 OCT 1230	148	.05	.04	.01	0.	*	31 OCT 1330	298	.05	.02	.03	1.
30 OCT 1240	149	.03	.03	.01	0.	*	31 OCT 1340	299	.03	.01	.02	1.
30 OCT 1250	150	.03	.03	.01	0.	*	31 OCT 1350	300	.04	.02	.03	1.
						*						

****

TOTAL RAINFALL = 9.65, TOTAL LOSS = 6.72, TOTAL EXCESS = 2.93

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	49.83-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1.	49.67		1.	1.	0.	0.
		(INCHES)	.852	2.621	2.874	2.874
		(AC-FT)	1.	2.	2.	2.

CUMULATIVE AREA = .01 SQ MI

1

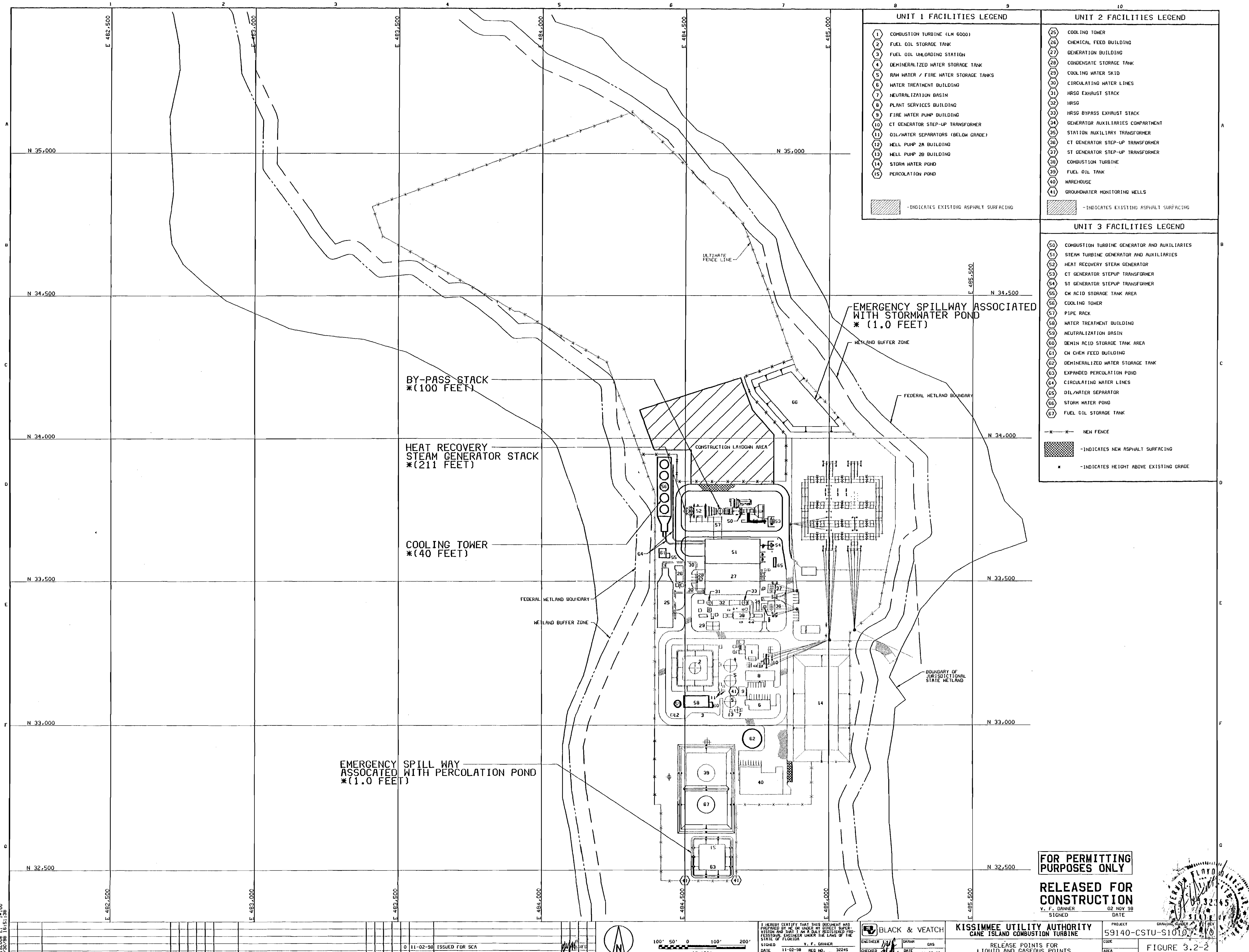
RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

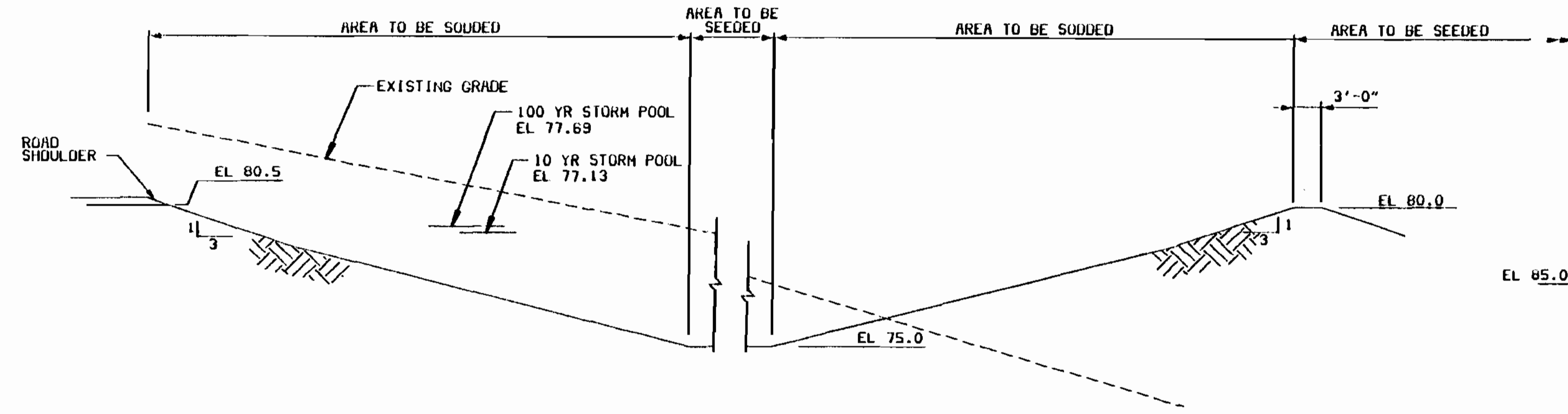
	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+					6-HOUR	24-HOUR	72-HOUR			
	HYDROGRAPH AT									
+		SITE	1.	49.67	1.	1.	0.	.01		

*** NORMAL END OF HEC-1 ***

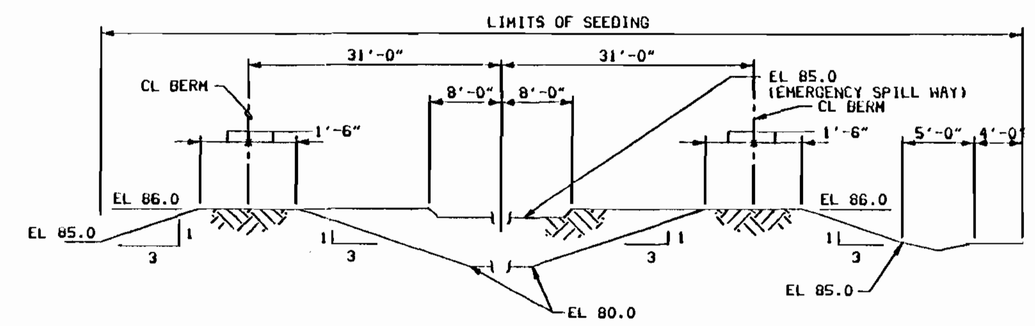
Attachment E
Grading and Drainage Drawings

0970043-AC


UNIT 1 FACILITIES LEGEND
1 COMBUSTION TURBINE (LM 6000)
2 FUEL OIL STORAGE TANK
3 FUEL OIL UNLOADING STATION
4 DEMINERALIZED WATER STORAGE TANK
5 RAW WATER / FIRE WATER STORAGE TANKS
6 WATER TREATMENT BUILDING
7 NEUTRALIZATION BASIN
8 PLANT SERVICES BUILDING
9 FIRE WATER PUMP BUILDING
10 CT GENERATOR STEP-UP TRANSFORMER
11 OIL/WATER SEPARATORS (BELOW GRADE)
12 WELL PUMP 2A BUILDING
13 WELL PUMP 2B BUILDING
14 STORM WATER POND
15 PERCOLATION POND
-INDICATES EXISTING ASPHALT SURFACING
UNIT 2 FACILITIES LEGEND
25 COOLING TOWER
26 CHEMICAL FEED BUILDING
27 GENERATION BUILDING
28 CONDENSATE STORAGE TANK
29 COOLING WATER SKID
30 CIRCULATING WATER LINES
31 HRSG EXHAUST STACK
32 HRSG
33 HRSG BYPASS EXHAUST STACK
34 GENERATOR AUXILIARIES COMPARTMENT
35 STATION AUXILIARY TRANSFORMER
36 CT GENERATOR STEP-UP TRANSFORMER
37 ST GENERATOR STEP-UP TRANSFORMER
38 COMBUSTION TURBINE
39 FUEL OIL TANK
40 WAREHOUSE
41 GROUNDWATER MONITORING WELLS
-INDICATES EXISTING ASPHALT SURFACING
UNIT 3 FACILITIES LEGEND
50 COMBUSTION TURBINE GENERATOR AND AUXILIARIES
51 STEAM TURBINE GENERATOR AND AUXILIARIES
52 HEAT RECOVERY STEAM GENERATOR
53 CT GENERATOR STEPUP TRANSFORMER
54 ST GENERATOR STEPUP TRANSFORMER
55 CW ACID STORAGE TANK AREA
56 COOLING TOWER
57 PIPE RACK
58 WATER TREATMENT BUILDING
59 NEUTRALIZATION BASIN
60 DEMIN ACID STORAGE TANK AREA
61 CW CHEM FEED BUILDING
62 DEMINERALIZED WATER STORAGE TANK
63 EXPANDED PERCOLATION POND
64 CIRCULATING WATER LINES
65 OIL/WATER SEPARATOR
66 STORM WATER POND
67 FUEL OIL STORAGE TANK
NEW FENCE
-INDICATES NEW ASPHALT SURFACING
* -INDICATES HEIGHT ABOVE EXISTING GRADE
EMERGENCY SPILLWAY ASSOCIATED WITH STORMWATER POND
* (1.0 FEET)
BY-PASS STACK
*(100 FEET)
HEAT RECOVERY STEAM GENERATOR STACK
*(211 FEET)
COOLING TOWER
*(40 FEET)
EMERGENCY SPILL WAY ASSOCATED WITH PERCOLATION POND
*(1.0 FEET)
ULTIMATE FENCE LINE
WETLAND BUFFER ZONE
FEDERAL WETLAND BOUNDARY
CONSTRUCTION LAYDOWN AREA
BOUNDARY OF JURISDICTIONAL STATE WETLAND
N 35,000
N 34,500
N 34,000
N 33,500
N 33,000
N 32,500
E 482,500
E 483,000
E 483,500
E 484,000
E 484,500
E 485,000
E 485,500
FOR PERMITTING PURPOSES ONLY
RELEASED FOR CONSTRUCTION
V. F. DANNER 02 NOV 98
SIGNED DATE
0 11-02-98 ISSUED FOR SCA
NO DATE REVISIONS AND RECORD OF ISSUE
100' 50' 0 100' 200'
1"=100'
I HEREBY CERTIFY THAT THIS DOCUMENT HAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA
SIGNED V. F. DANNER
DATE 11-02-98 REG NO. 32245
BLACK & VEATCH
ENGINEER DRAWN GAS
CHECKED DATE 11-02-98
KISSIMMEE UTILITY AUTHORITY
CANE ISLAND COMBUSTION TURBINE
RELEASE POINTS FOR LIQUID AND GASEOUS POINTS
PROJECT DRAWING NUMBER REV
59140-CSTU-S1010 0
CODE
AREA
FIGURE 3.2-2



SECTION 1
SCALE: 1"=10'
SEE DWG S3001

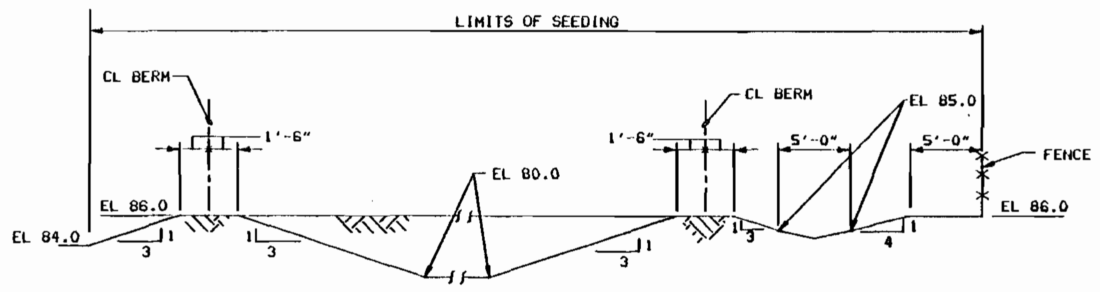


SECTION 2
NO SCALE
SEE DWG S3001

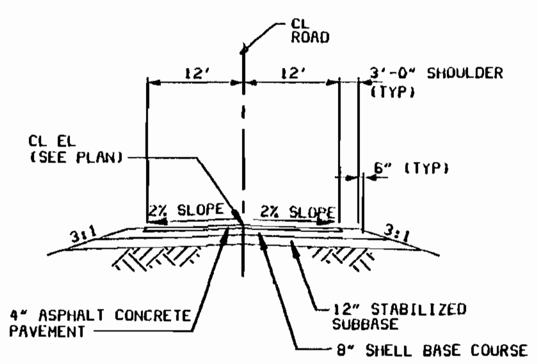
CULVERT NUMBER	LENGTH (FEET)	TYPE	CENTERLINE COORDINATES NORTH	CENTERLINE COORDINATES EAST	INVERT ELEVATION (FT) NORTH	INVERT ELEVATION (FT) SOUTH	INVERT ELEVATION (FT) EAST	INVERT ELEVATION (FT) WEST	SIZE (IN)	REFERENCE DRAWING	CLASS	REMARKS
C-1	53	HERCP	1433280.5	484424.5			78.8	79.0	23 X 14	S3001	IV	
C-2	45	HERCP	1433308.5	484801.5	77.7	77.6			30 X 19	S3001	IV	
C-3	61	HERCP	1433568.0	484875.0	78.2	78.1			23 X 14	S3001	IV	CCW ROTATION = 25°
C-4	45	HERCP	1433231.0	484846.0			77.5	77.3	30 X 19	S3001	IV	
C-5	45	HERCP	1433226.0	484846.0			77.5	77.3	30 X 19	S3001	IV	
C-6	61	HERCP	1433029.0	484840.0			77.5	77.3	30 X 19	S3001	IV	
C-7	45	HERCP	1433274.0	484908.0	77.5	77.3			30 X 19	S3001	IV	
C-8	45	HERCP	1433274.0	484913.0	77.5	77.3			30 X 19	S3001	IV	
C-9	45	HERCP	1433274.0	484918.0	77.5	77.3			30 X 19	S3001	IV	
C-10	68	RCP	1432521.0	486591.0			68.0	67.0	24"ø	S3003	V	CCW ROTATION = 53°
C-11	68	RCP	1432428.0	486695.0			68.0	67.0	24"ø	S3003	V	CCW ROTATION = 41°
C-12	76	RCP	1430326.0	487138.0			70.0	70.0	15"ø	S3004	V	
C-13	76	RCP	1430171.1	487138.0			71.0	71.0	15"ø	S3004	V	
C-14	100	RCP	1433303.5	484666.0			77.9	78.1	30 X 19	S3001	IV	
C-15	26	RCP	1433030.0	484628.0			79.6	79.5	15"ø	S3001	V	CCW ROTATION = 26°
C-16	20	RCP	1430402.0	487116.0	71.0	71.0			18"ø	S3004	V	
C-17	75	RCP	1433303.5	484753.5			77.7	77.9	30 X 19	S3001	IV	
C-18	68	RCP	1432313.0	486774.0			68.0	67.0	24"ø	S3003	V	CCW ROTATION = 27°
C-19	68	RCP	1432188.0	486831.0			68.0	67.0	24"ø	S3003	V	CCW ROTATION = 24°
C-20	68	RCP	1432061.0	486887.0			68.0	67.0	24"ø	S3003	V	CCW ROTATION = 22°
TC-3	162	CHDPE	1433419.0	484888.5	77.9	77.7			2-12"ø	S3001	N/A	SEE NOTE 10

Table: CULVERT LIST*

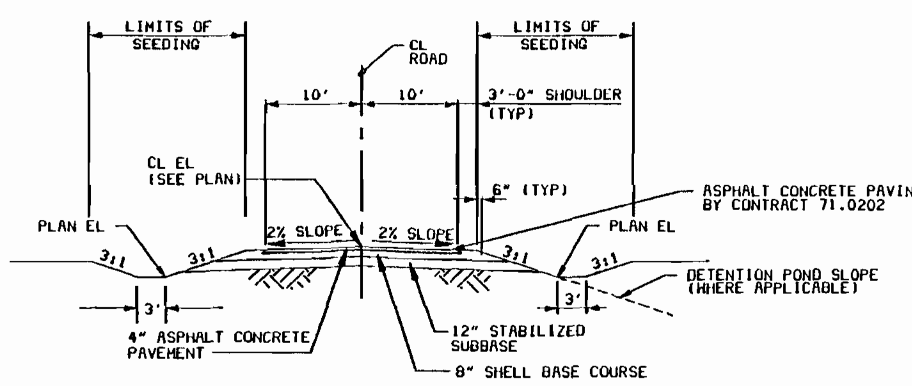
* SEE NOTES 6,7,8 AND 11



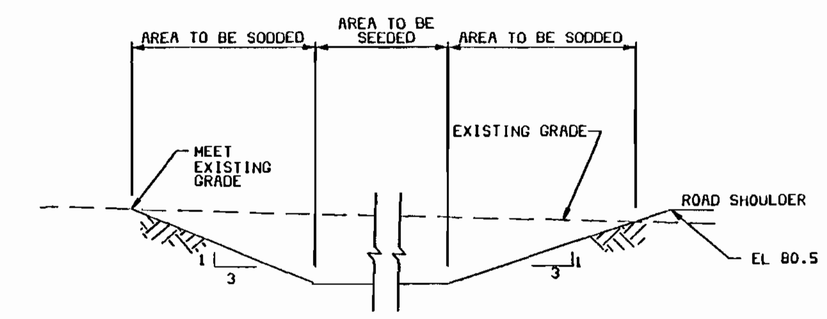
SECTION 3
NO SCALE
SEE DWG S3001



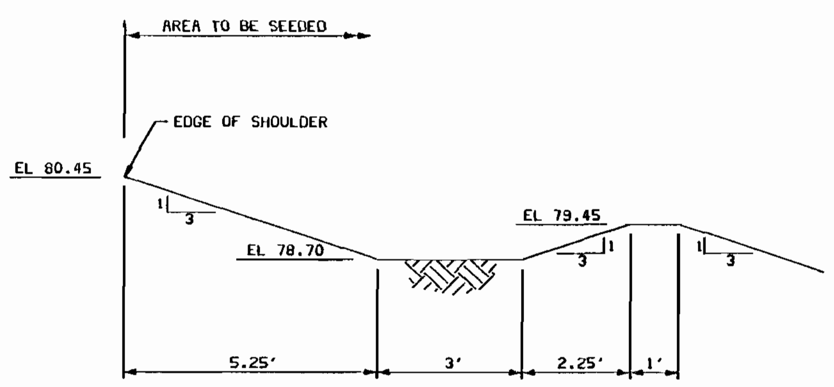
SECTION 4
TYPICAL TYPE A ROAD
NO SCALE



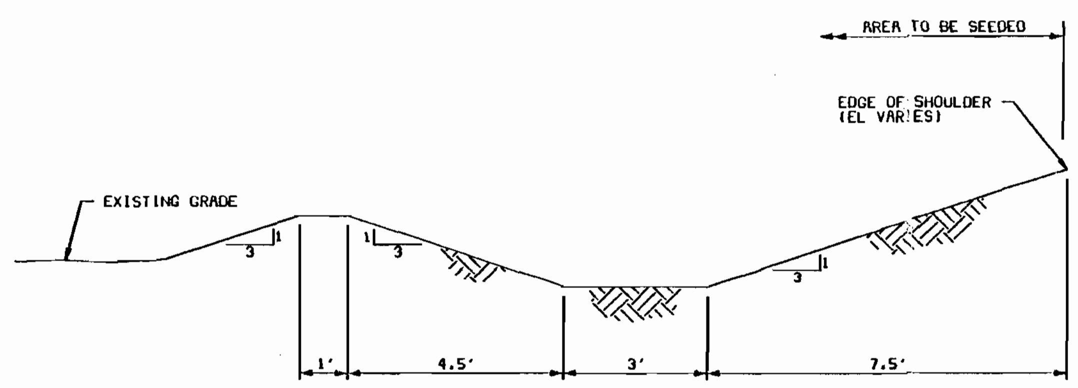
SECTION 5
TYPICAL TYPE B ROAD AND DITCH SECTION
NO SCALE



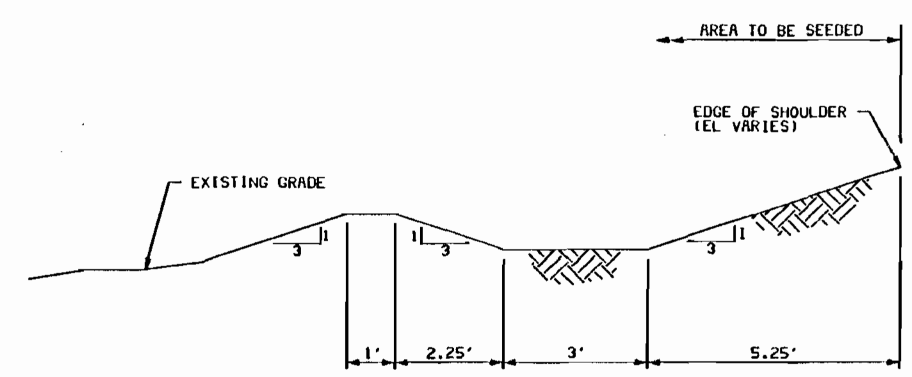
SECTION 6
NO SCALE
SEE DWG S3001



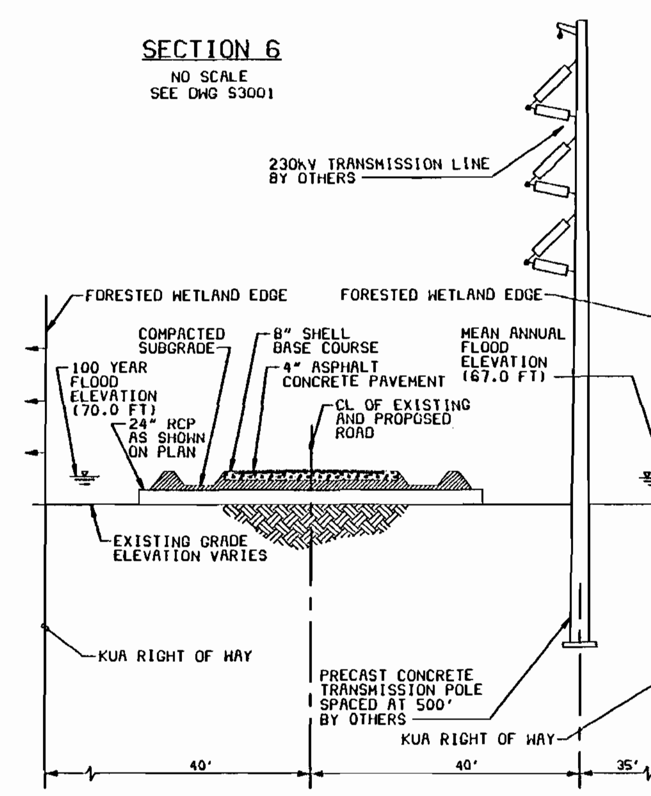
SECTION 7
NO SCALE
SEE DWG S3002



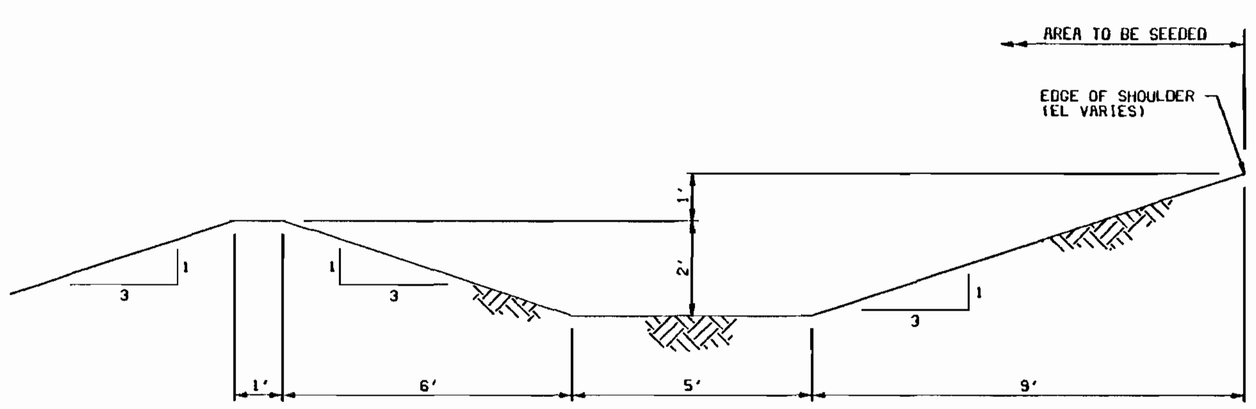
SECTION 8
NO SCALE
SEE DWG S3002



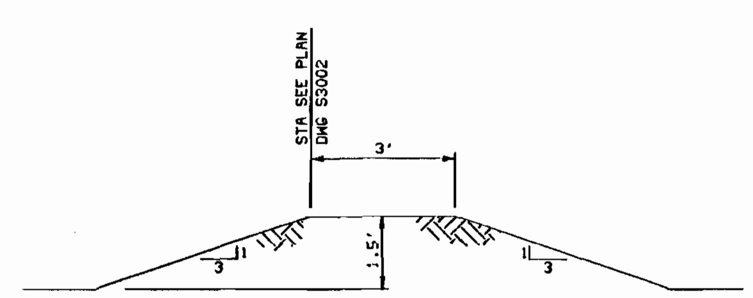
SECTION 9
NO SCALE
SEE DWGS S3002, S3003 AND S3004



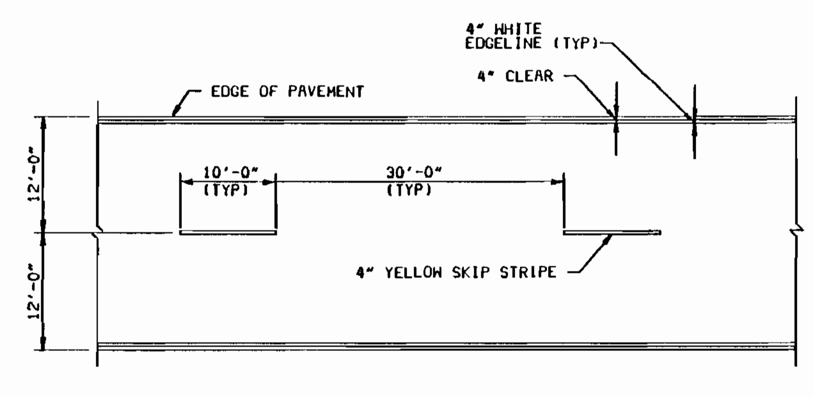
SECTION 12
ACCESS ROAD UTILITY CORRIDOR
NO SCALE
SEE DWG S3002, S3003 & S3004



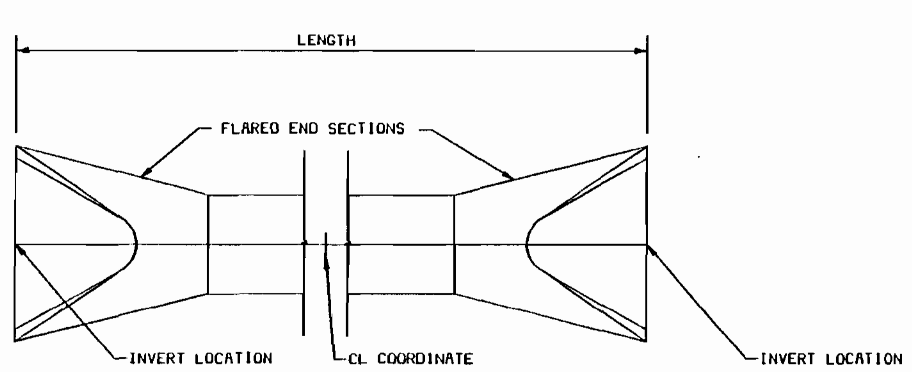
SECTION 10
NO SCALE
SEE DWGS S3002 AND S3004



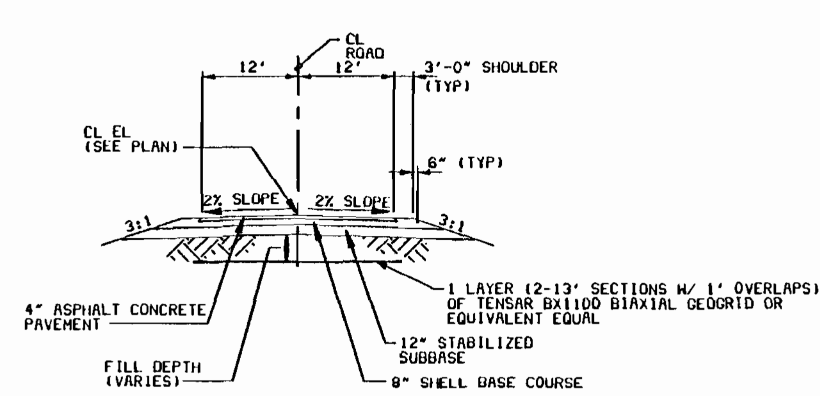
SECTION 11
TYPICAL CHECK DAM
NO SCALE
SEE DWG S3002



TYPICAL ACCESS ROAD PAVEMENT MARKING DETAIL
NO SCALE



TYPICAL PERMANENT CULVERT INSTALLATION
NO SCALE



SECTION 13
TYPICAL ROAD WITH BIAXIAL GEOGRID
NO SCALE

NOTES:
1. GEOGRID TO BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS.
2. GEOGRID TO BE PLACED BETWEEN THE FILL AND THE PREPARED IN-SITU GRADE.

FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION
V.F. DANNER — 02 NOV 98
SIGNED — DATE

NOTES

1. SEE DWG S3000 FOR LEGEND AND GENERAL NOTES.
2. PIPE SHALL BE LAID WITH THE TONGUE OR SPIGOT ENDS POINTING IN THE DIRECTION OF FLOW.
3. RCP SHALL CONFORM TO THE SPECIFICATIONS SET FORTH IN ASTM C76 AND AASHTO M170.
4. FLAT RUBBER GASKETS SHALL BE USED ON ALL JOINTS AND SHALL CONFORM TO SECTION 6 OF ASTM C443.
5. PIPE, FITTINGS, AND ACCESSORIES SHALL BE HANDLED IN A MANNER THAT WILL ENSURE INSTALLATION IN A SOUND, UNDAMAGED CONDITION.
6. TEMPORARY CULVERTS ARE CONSTRUCTED WITH TWO 15"ø CHDPE PIPES WITH 6" CLEAR BETWEEN.
7. PERMANENT CULVERTS C-1 THROUGH C-13 SHALL HAVE FLARED END SECTIONS.
8. CULVERTS 14,15 AND 17 BY CONTRACT 71.0202.
9. ALL WORK ON THIS DRAWING TO BE COMPLETED BY CONTRACT 71.0201 UNLESS OTHERWISE NOTED.
10. TC-3 SHALL BE REMOVED BY CONTRACT 71.0202 PRIOR TO FINAL INSPECTION OF WORK. THE DRAINAGE DITCH SHALL BE REGRADED AND SEEDED.
11. ALL STORM DRAIN PIPE SHALL CONFORM TO FDOT AND OSCEOLA COUNTY SPECIFICATIONS. PIPES REQUIRING END SECTIONS SHALL BE PER FDOT INDEX 272 AND/OR 273 WHERE APPLICABLE.
12. ALL ASPHALT CONCRETE PAVEMENT SHALL BE FDOT TYPE S-1.
13. IN AREAS THAT REQUIRE SOD, THE SOD USED SHALL CONTAIN A GOOD COVER OF LIVING GRASS AND SHALL BE OBTAINED FROM AREAS HAVING GROWING CONDITIONS SIMILAR TO THOSE ON WHICH THE SOD IS TO BE LAID. SOD SHALL BE RELATIVELY FREE OF WEEDS AND VEGETATION SHALL BE CUT TO 3 INCHES OR LESS. SOD SHALL BE CUT INTO SQUARES OR RECTANGULAR SECTIONS OF A SIZE THAT PERMITS THE SOD TO BE LIFTED AND ROLLED WITHOUT BREAKING. CARE SHALL BE EXERCISED TO RETAIN THE NATIVE SOIL ON THE ROOTS OF THE SOD DURING STRIPPING, TRANSPORTING, AND PLANTING. SOD SHALL BE STORED IN A MANNER TO PREVENT DAMAGE AND SHALL NOT BE DUMPED FROM VEHICLES. SOD SHALL BE PLACED ONLY DURING SEASONS WHEN SATISFACTORY RESULTS CAN BE EXPECTED. WHEN AUTHORIZED BY THE PROJECT FIELD MANAGER, SOD CAN BE PLACED DURING PERIODS OF DROUGHT AFTER THE SOD BED IS THOROUGHLY WATERED TO A DEPTH OF AT LEAST 4 INCHES. ON SLOPES GREATER THAN 2 FEET HORIZONTAL TO 1 FOOT VERTICAL, THE SOD SHALL BE FASTENED IN PLACE WITH SUITABLE WOOD PINS OR OTHER METHODS ACCEPTABLE TO THE PROJECT FIELD MANAGER. SOD SHALL BE LAID SMOOTH, EDGE TO EDGE, WITH STAGGERED JOINTS AND SHALL BE PRESSED FIRMLY IN CONTACT WITH THE SOD BED BY TAMPING OR ROLLING. SCREENED SOIL OF GOOD QUALITY SHALL BE USED TO FILL ALL CRACKS AND EXCESS SOIL SHALL BE WORKED INTO THE GRASS WITH RAKES. PREPARATION OF SOIL, FERTILIZING, WATERING, MAINTENANCE, AND THE GUARANTEE OF ALL WORK SHALL BE THE SAME AS SPECIFIED FOR SEEDING OPERATIONS.

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY	CHK	APP	FLM
0	11-02-98	ISSUED FOR SCA			VFD	

SCALE: AS NOTED

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA
SIGNED V. F. DANNER
DATE 11-02-98 REG NO. 32245

BLACK & VEATCH
ENGINEER — DRAWN GAS
CHECKED JS — DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND COMBUSTION TURBINE

SITE - GRADING & DRAINAGE
SECTIONS AND DETAILS

PROJECT / DRAWING NUMBER: 59140-CSTF-S3011 — REV 0
CODE
AREA

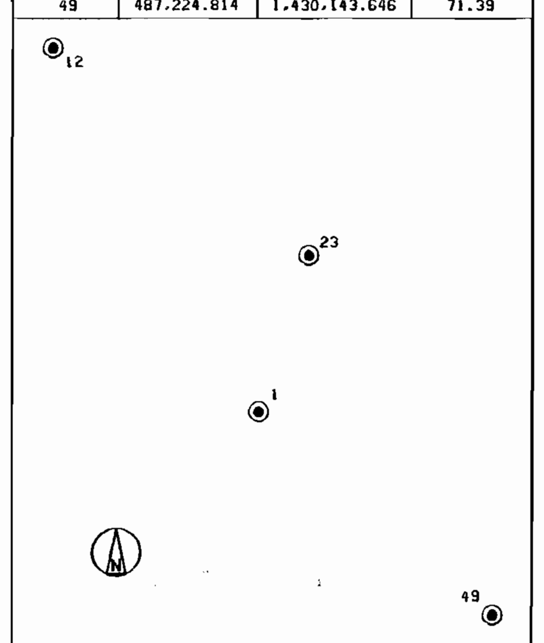
ABBREVIATIONS

APPROX - APPROXIMATE
ASPH - ASPHALT
BM - BENCH MARK
CHDPE - CORRUGATED HIGH DENSITY POLYETHYLENE PIPE
CJ - CONTRACTION JOINT
CL - CENTER LINE
CONC - CONCRETE
DWG - DRAWING
EL - ELEVATION
EJ - EXPANSION JOINT
FF - FINISHED FLOOR
HERCP - HORIZONTALLY ELLIPTICAL REINFORCED CONCRETE PIPE
HP - HIGH POINT
INV - INVERT
MSL - MEAN SEA LEVEL
NO - NUMBER
NTS - NOT TO SCALE
PC - POINT OF CURVATURE
PI - POINT OF INTERSECTION
PL - PROPERTY LINE
PT - POINT OF TANGENCY
PVI - POINT OF VERTICAL INTERSECTION
RCP - REINFORCED CONCRETE PIPE
REV - REVISION
R/W - RIGHT OF WAY
T/C - TOP OF CONCRETE
T/P - TOP OF PAVEMENT
T/GRATE - TOP OF GRATE

PROJECT CONTROL

CONTROL MONUMENT LOCATIONS

MONUMENT NO.	STATE PLANE COORDINATES		ELEVATION
	EASTING	NORTHING	
1	484,953.765	1,432,348.949	78.05
12	482,882.646	1,435,905.858	73.59
23	485,217.602	1,433,848.406	74.15
49	487,224.814	1,430,143.646	71.39



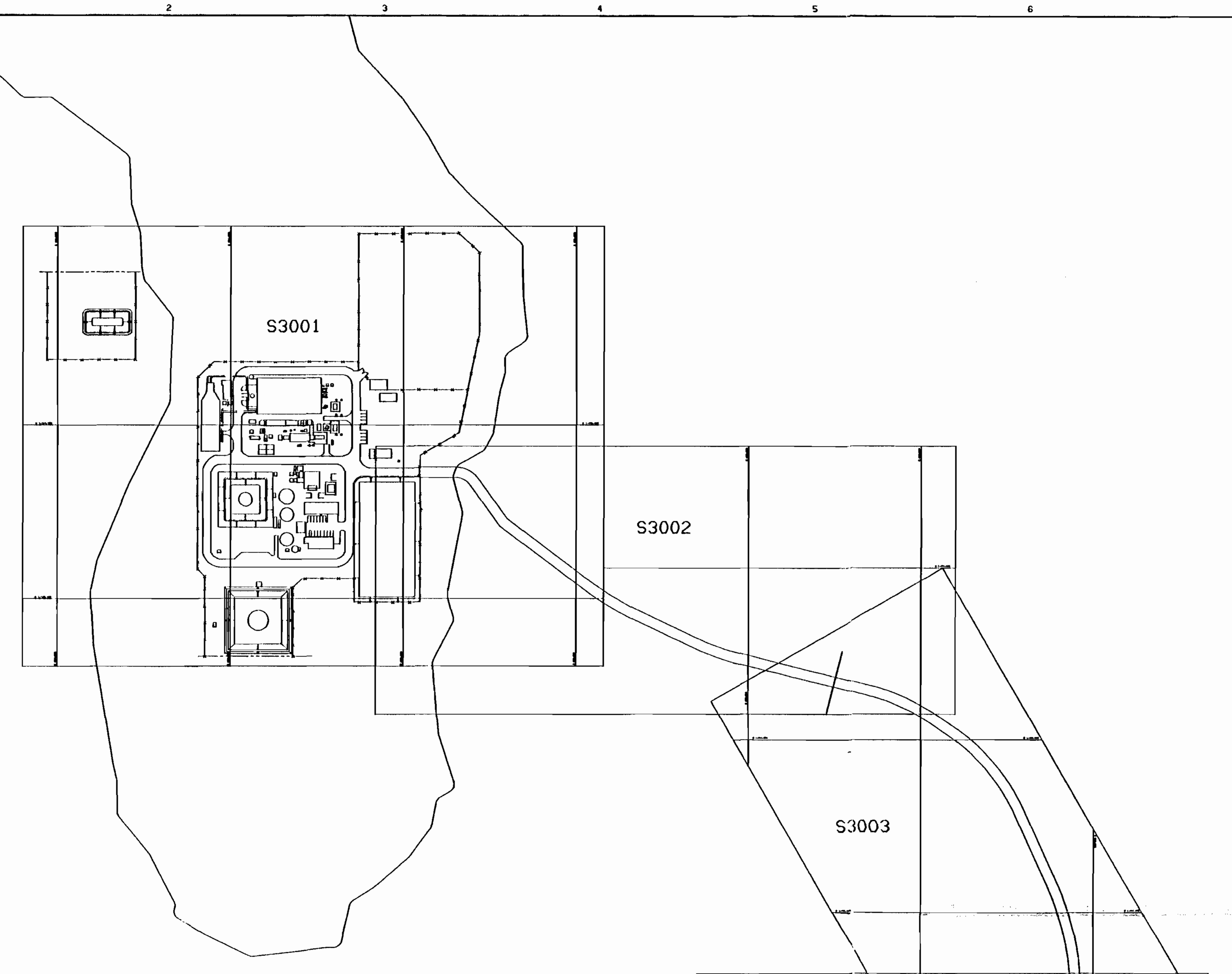
NOTE: BENCHMARKS ARE 5' x 12"ø CONCRETE MONUMENTS WITH BRASS DISC IN THE TOP. HORIZONTAL CONTROL IS BASED ON THE FLORIDA STATE PLANE COORDINATE - EAST ZONE (1983/90 N.A.D.) SYSTEM. THE ELEVATIONS ARE BASED ON THE NGVD 1929 DATUM FROM BENCHMARKS SET BY THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT AND INFORMATION THAT WAS FURNISHED BY THE OSCEOLA COUNTY ENGINEERING DEPARTMENT.

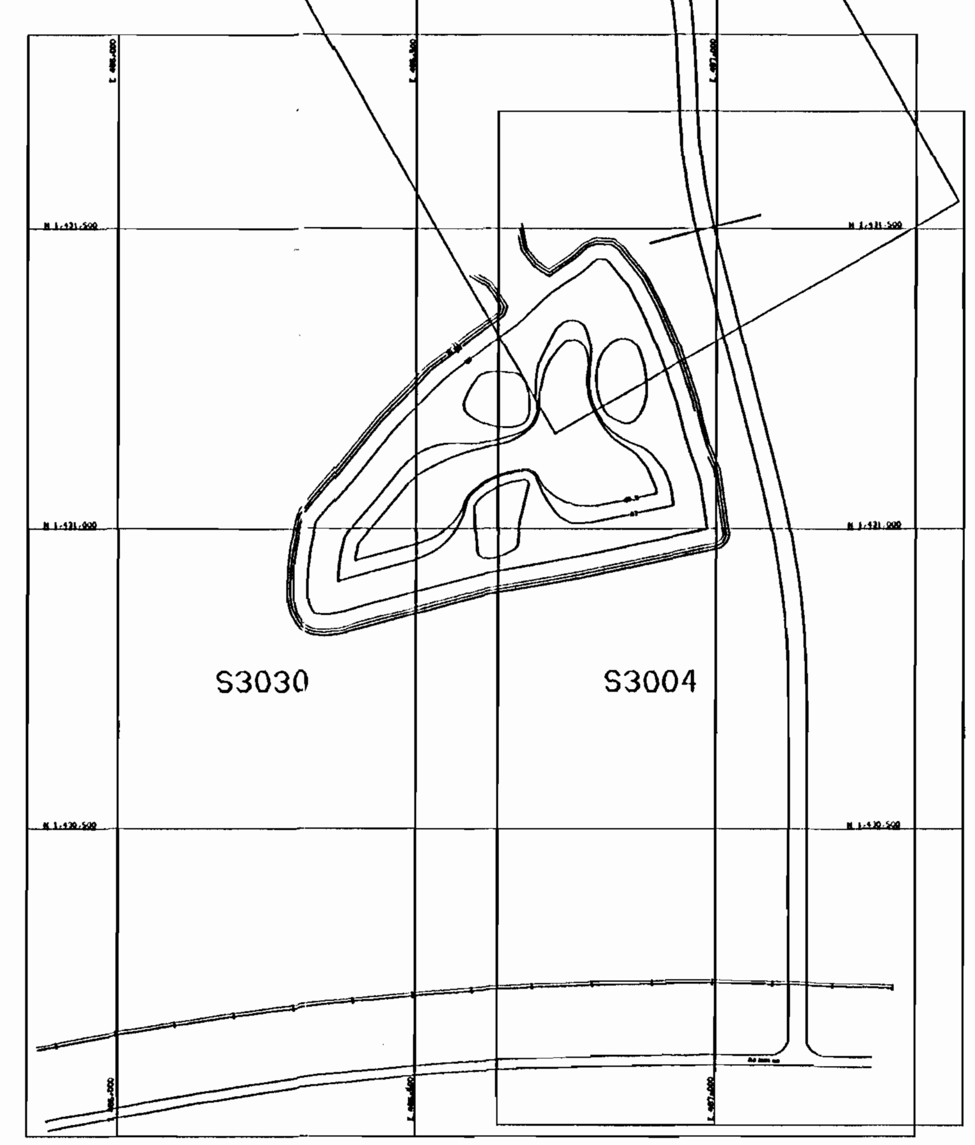
GENERAL NOTES

1. SEE KEY ON THIS DWG FOR ARRANGEMENT OF SITE GRADING PLANS.
2. THE PLANT GRID SYSTEM USED FOR HORIZONTAL CONTROL IS BASED ON TRUE NORTH. CONTROL MONUMENTS AND BENCH MARKS ARE LISTED ON THIS DWG.
3. INTERSECTIONS OF PAVED ROADS SHALL HAVE A 30' TURNING RADIUS MEASURED FROM EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.
4. EXISTING RAILROADS, ROADS, AND UTILITY LOCATIONS ARE SUBJECT TO FIELD VERIFICATION BY THE CONTRACTOR.
5. ROADS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TYPICAL ROAD CROSS SECTIONS AND DETAILS SHOWN ON DWG S3011.
6. ALL WORK SHALL BE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1991, FLORIDA DEPARTMENT OF TRANSPORTATION", AND ALL AMENDMENTS THERETO, UNLESS OTHERWISE SPECIFIED.
7. SEE DWG S3012 FOR FENCE DETAILS.
8. CONSTRUCTION SEQUENCE SHALL BE SCHEDULED TO MINIMIZE UNCONTROLLED RUNOFF AND OFFSITE SEDIMENTATION DURING GRADING OPERATIONS. SEDIMENTATION BARRIERS SHALL BE INSTALLED IN EACH AREA BEFORE GRADING OPERATIONS BEGIN. GRADED AREAS SHALL BE SEEDED IMMEDIATELY FOLLOWING COMPLETION OF FINAL GRADING IN EACH AREA.
9. NEW CONTOURS AND GRADE ELEVATIONS SHOWN ON THE SITE PREPARATION PLANS INDICATE FINISH GRADE UNLESS NOTED OTHERWISE.
10. GRADE BETWEEN CONTOURS SHOWN ON SITE PREPARATION PLANS SHALL SLOPE UNIFORMLY BETWEEN THOSE CONTOURS UNLESS NOTED OTHERWISE.
11. ALL CUT AND FILL SLOPES SHALL BE 3 HORIZONTAL TO 1 VERTICAL UNLESS NOTED OTHERWISE.
12. SEE DRAWING 17790-CUUU-S5950 FOR TYPICAL CONCRETE DETAILS.
13. REFER TO SECTION 2A OF THE SPECIFICATION FOR LIMITS OF CLEARING AND GRUBBING.
14. THE CONTRACTOR SHALL SCHEDULE HIS WORK WITHIN THE CSX RIGHT-OF-WAY WITH THE CSX RAILROAD.
15. ALL AREAS DISTURBED BY CONTRACT 71.0202 SHALL BE SEEDED.

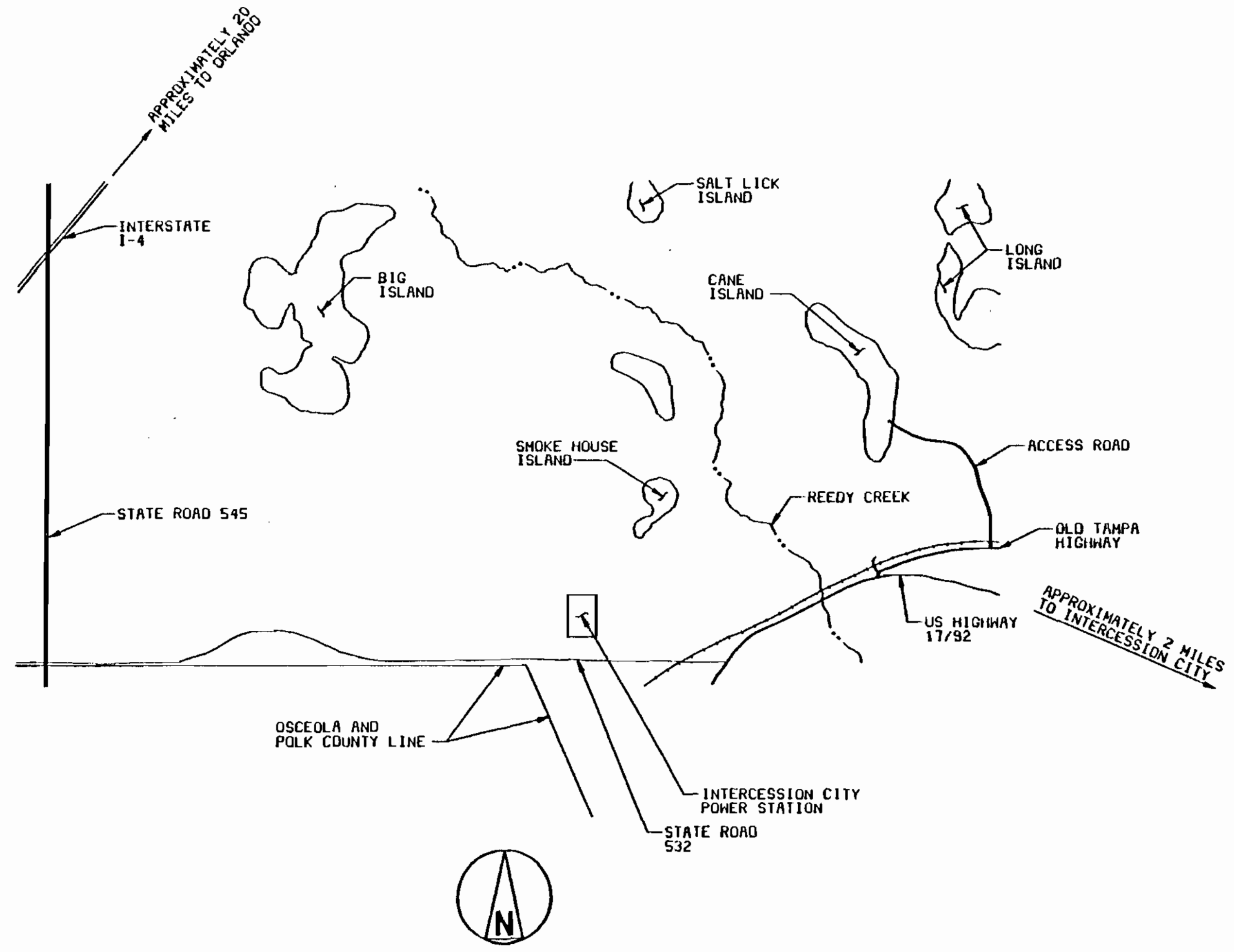
LEGEND

(dotted pattern)	WETLAND AREAS
(circle pattern)	SHELL BASE SURFACING
(crosshatch)	ASPHALT CONCRETE PAVEMENT
——75——	EXISTING CONTOURS
——70——	NEW CONTOURS
(dashed box)	NEW CULVERT
x 66-8	EXISTING SPOT ELEVATION
+ 73.8	PROPOSED SPOT ELEVATION
(dashed line)	INDICATES CONSTRUCTION SILT FENCE OR STRAW BALE DIKE
(long-short dashed line)	INDICATES CONSTRUCTION SILT FENCE AND STRAW BALE DIKE
-x——x——x-	SECURITY FENCING
C-11	INDICATES CULVERT
◉	CONTROL MONUMENT
(diagonal hatch)	INDICATES AREA WHERE BIAXIAL GEOGRID IS TO BE USED





KEY PLAN FOR GRADING AND DRAINAGE DRAWINGS



VICINITY MAP
NO SCALE

FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION
V.F. DANNER 02 NOV 98
SIGNED DATE

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY	CHK	APP
0	11-02-98	ISSUED FOR SCA			

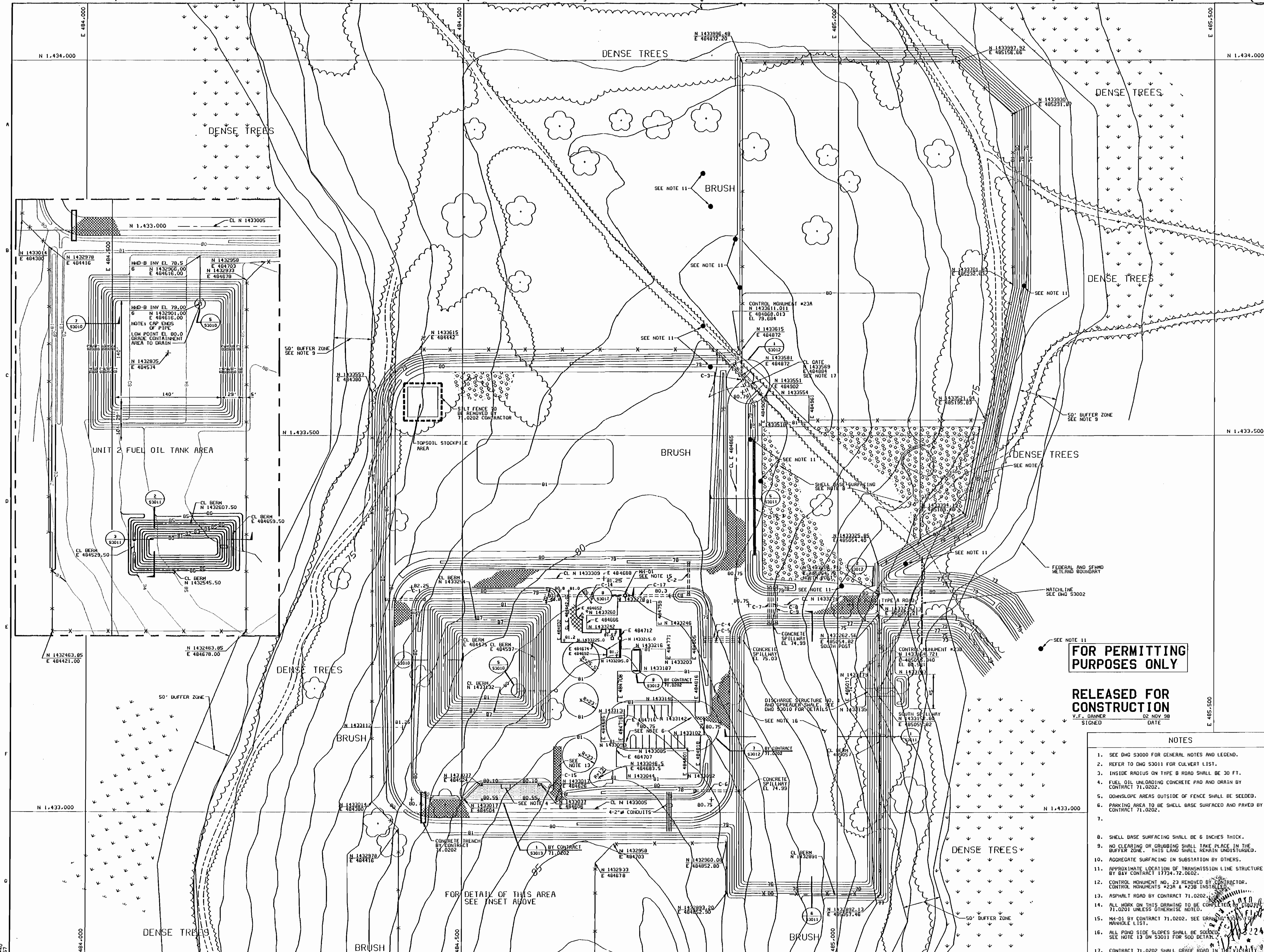
NO SCALE

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA
SIGNED V.F. DANNER
DATE 11-02-98 REG NO. 32245

BLACK & VEATCH
ENGINEER | DRAWN GAS
CHECKED MJS | DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND COMBUSTION TURBINE
SITE PREPARATION - GRADING & DRAINAGE
GENERAL NOTES, LEGEND & TYPICAL DETAILS

PROJECT / DRAWING NUMBER: 59140-1STF-S3000 REV 0
CODE
AREA



FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION

V.F. DANNER — 02 NOV 98
SIGNED — DATE

NOTES

1. SEE DWG S3000 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DWG S3011 FOR CULVERT LIST.
3. INSIDE RADIUS ON TYPE B ROAD SHALL BE 30 FT.
4. FUEL OIL UNLOADING CONCRETE PAD AND DRAIN BY CONTRACT 71.0202.
5. DOWNSLOPE AREAS OUTSIDE OF FENCE SHALL BE SEEDED.
6. PARKING AREA TO BE SHELL BASE SURFACED AND PAVED BY CONTRACT 71.0202.
7.
8. SHELL BASE SURFACING SHALL BE 6 INCHES THICK.
9. NO CLEARING OR GRUBBING SHALL TAKE PLACE IN THE BUFFER ZONE. THIS LAND SHALL REMAIN UNDISTURBED.
10. AGGREGATE SURFACING IN SUBSTATION BY OTHERS.
11. APPROXIMATE LOCATION OF TRANSMISSION LINE STRUCTURE BY B&V CONTRACT 17734.72.0602.
12. CONTROL MONUMENT NO. 23 REMOVED BY CONTRACTOR. CONTROL MONUMENTS #23A & #23B INSTALLED.
13. ASPHALT ROAD BY CONTRACT 71.0202.
14. ALL WORK ON THIS DRAWING TO BE COMPLETED BY CONTRACT 71.0201 UNLESS OTHERWISE NOTED.
15. MH-01 BY CONTRACT 71.0202. SEE DRAWING S3305 FOR MANHOLE LIST.
16. ALL POND SIDE SLOPES SHALL BE SODDED. SEE NOTE 13 ON S3011 FOR SOD DETAIL.
17. CONTRACT 71.0202 SHALL GRADE ROAD IN THE VICINITY OF SWING GATE TO MEET AGGREGATE SURFACING ELEVATION.

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY	CHK	APP	FLM
0	11-02-98	ISSUED FOR SCA			VFD	

Scale: 40' 20' 0 40' 80' — 1"=40'

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA
SIGNED V.F. DANNER
DATE 11-02-98 REG NO. 32245

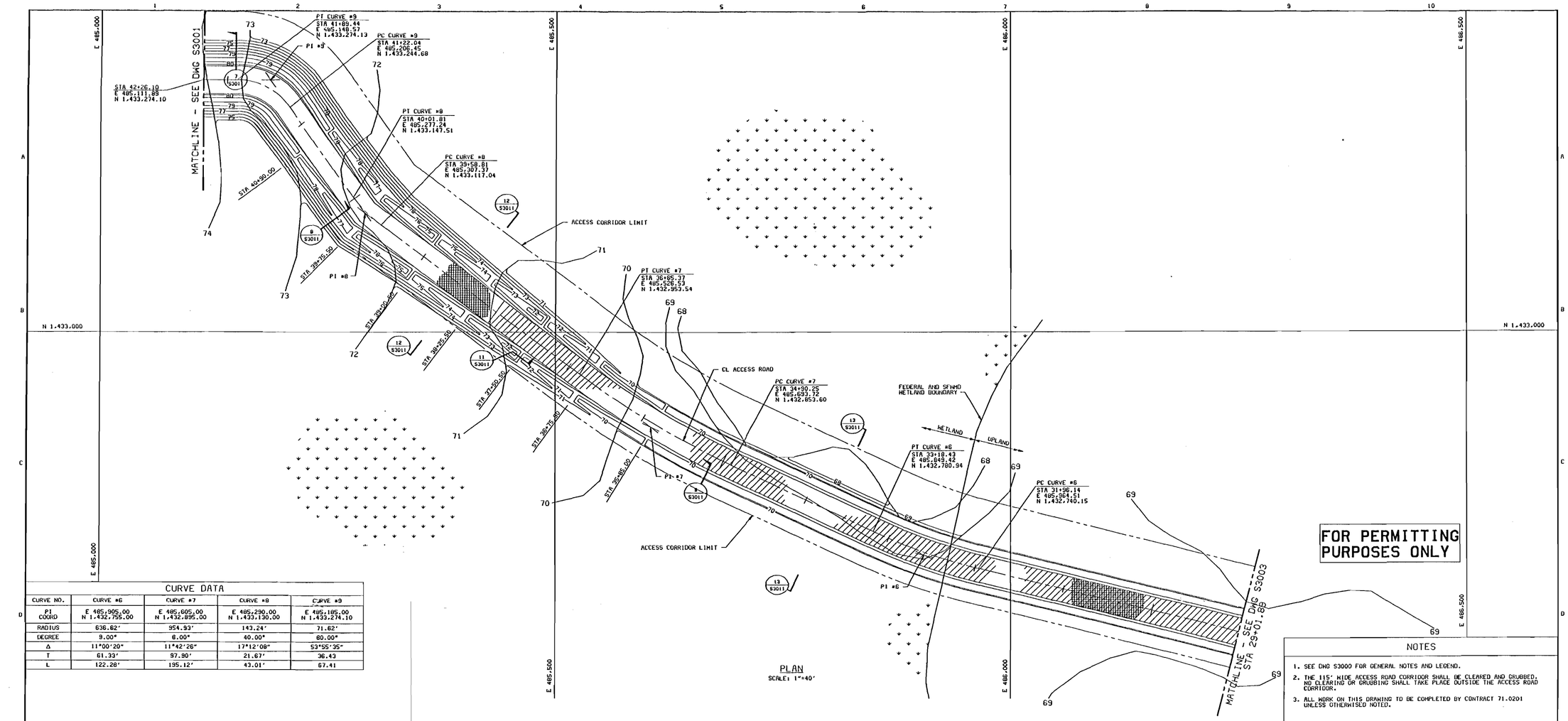
BLACK & VEATCH
ENGINEER — DRAWN GAS
CHECKED MJS — DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND COMBUSTION TURBINE

SITE PREPARATION - GRADING & DRAINAGE
SITE GRADING PLAN - AREA 1

PROJECT / DRAWING NUMBER: 59140-1STF-S3001 — REV 0
CODE
AREA

(5)



FOR PERMITTING PURPOSES ONLY

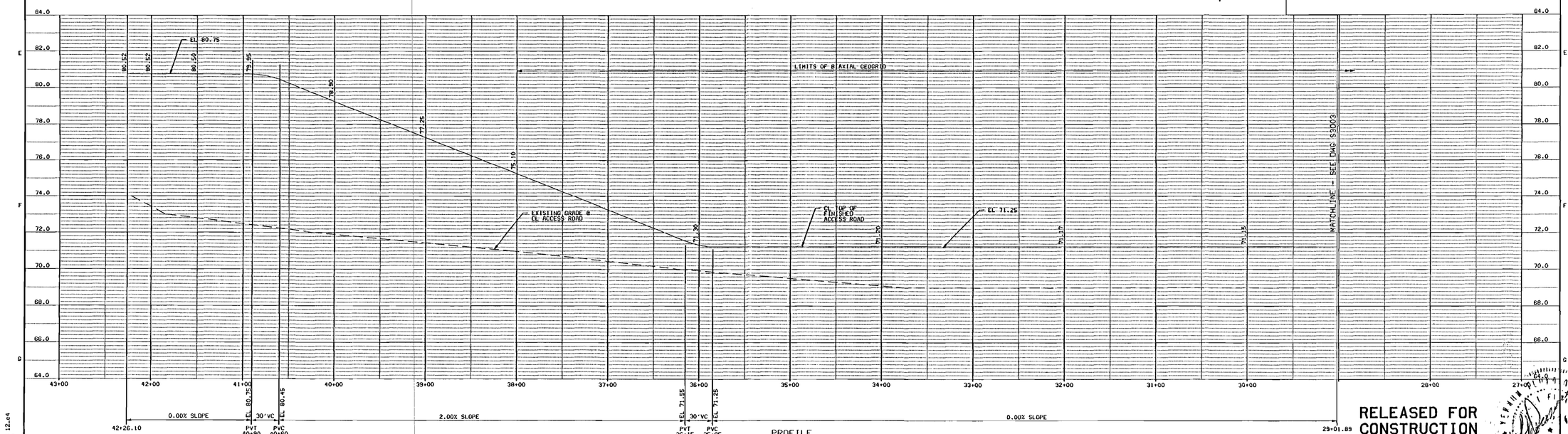
CURVE DATA

CURVE NO.	CURVE #6	CURVE #7	CURVE #8	CURVE #9
PI COORD	E 485,905.00 N 1,432,755.00	E 485,605.00 N 1,432,895.00	E 485,290.00 N 1,433,130.00	E 485,185.00 N 1,433,274.10
RADIUS	636.62'	954.93'	143.24'	71.62'
DEGREE	9.00°	6.00°	40.00°	80.00°
Δ	11°00'20"	11°42'26"	17°12'08"	53°55'35"
T	61.33'	97.80'	21.67'	36.43
L	122.28'	195.12'	43.01'	67.41

PLAN
SCALE: 1"=40'

NOTES

1. SEE DWG S3000 FOR GENERAL NOTES AND LEGEND.
2. THE 115' WIDE ACCESS ROAD CORRIDOR SHALL BE CLEARED AND GRUBBED. NO CLEARING OR GRUBBING SHALL TAKE PLACE OUTSIDE THE ACCESS ROAD CORRIDOR.
3. ALL WORK ON THIS DRAWING TO BE COMPLETED BY CONTRACT 71.0201 UNLESS OTHERWISED NOTED.



PROFILE
HORIZ = 1"=40'
VERT = 1"=2'

VERT. 2' 1' 0 2' 4' 1"=2'
HORIZ. 40' 20' 0 40' 80' 1"=40'

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA
SIGNED V.F. DANNER
DATE 11-02-98 REG NO. 32245

BLACK & VEATCH
ENGINEER VFD DRAWN GAS
CHECKED MJP DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND COMBUSTION TURBINE
SITE PREPARATION - GRADING & DRAINAGE
ACCESS ROAD GRADING
PLAN AND PROFILE - AREA 2

PROJECT 59140-1STF-S3002 | DRAWING NUMBER | REV 0
CODE
AREA

NO	DATE	REVISIONS AND RECORD OF ISSUE
0	11-02-98	ISSUED FOR SCA

RELEASED FOR CONSTRUCTION
V.F. DANNER 02 NOV 98
SIGNED DATE

D0997DESCHEP ACAD 12.c4
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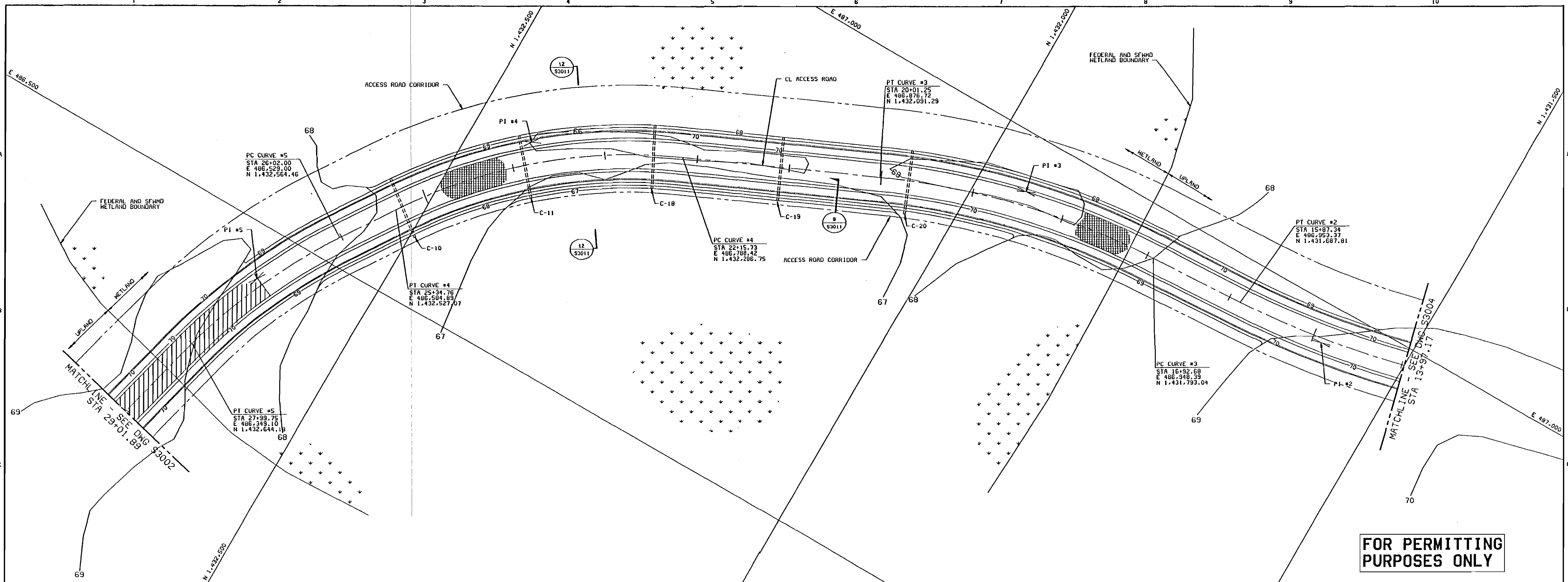
02/20/98 17:24:11



CURVE DATA

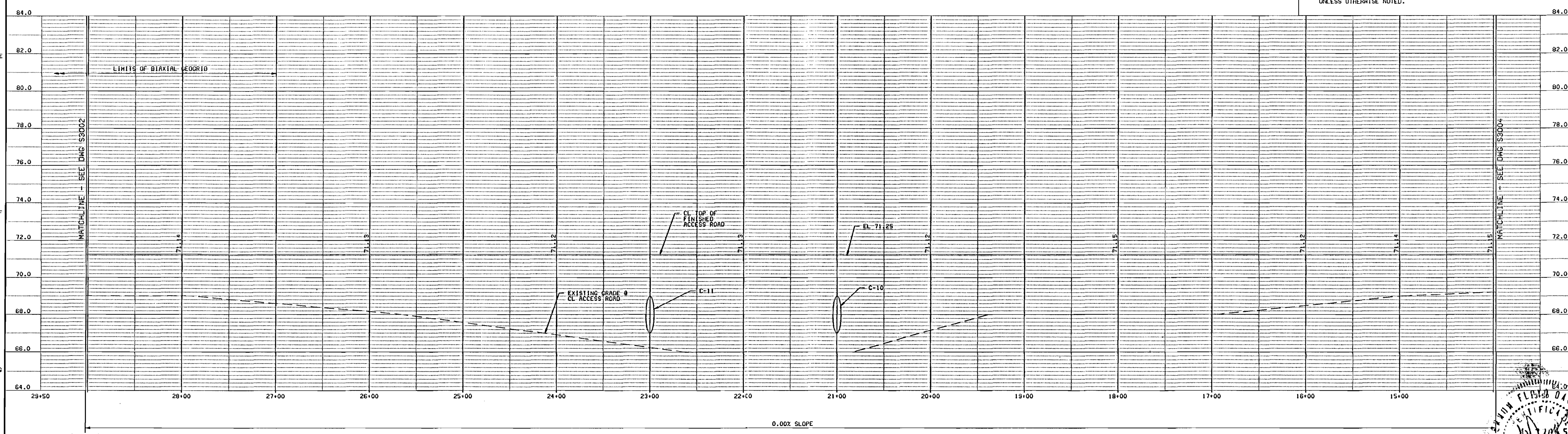
CURVE NO.	CURVE #2	CURVE #3	CURVE #4	CURVE #5
PI COORD	E 486,958.00 N 1,431,590.00	E 486,941.00 N 1,431,949.00	E 486,721.00 N 1,432,436.00	E 486,446.00 N 1,432,620.00
RADIUS	954.93'	818.51'	572.96'	572.96'
DEGREE	6.00°	7.00°	10.00°	10.00°
Δ	11°42'35"	21°35'59"	31°54'11"	19°46'29"
T	97.92'	156.14'	163.77'	99.87'
L	195.16'	308.57'	319.03'	197.75'

PLAN
SCALE: 1"=40'

RELEASED FOR CONSTRUCTION
V.F. DANNER 02 NOV 98
SIGNED DATE

NOTES

1. SEE DWG S3000 FOR GENERAL NOTES AND LEGEND.
2. REFER TO DWG S3011 FOR CULVERT LIST.
3. THE 115' WIDE ACCESS ROAD CORRIDOR SHALL BE CLEARED AND GRUBBED. NO CLEARING OR GRUBBING SHALL TAKE PLACE OUTSIDE THE ACCESS ROAD CORRIDOR.
4. ALL WORK ON THIS DRAWING TO BE COMPLETED BY CONTRACT 71.0201 UNLESS OTHERWISE NOTED.



PROFILE
HORIZ = 1"=40'
VERT = 1"=2'

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY	CHK	APP
0	11-02-98	ISSUED FOR SCA		VFD	FLM

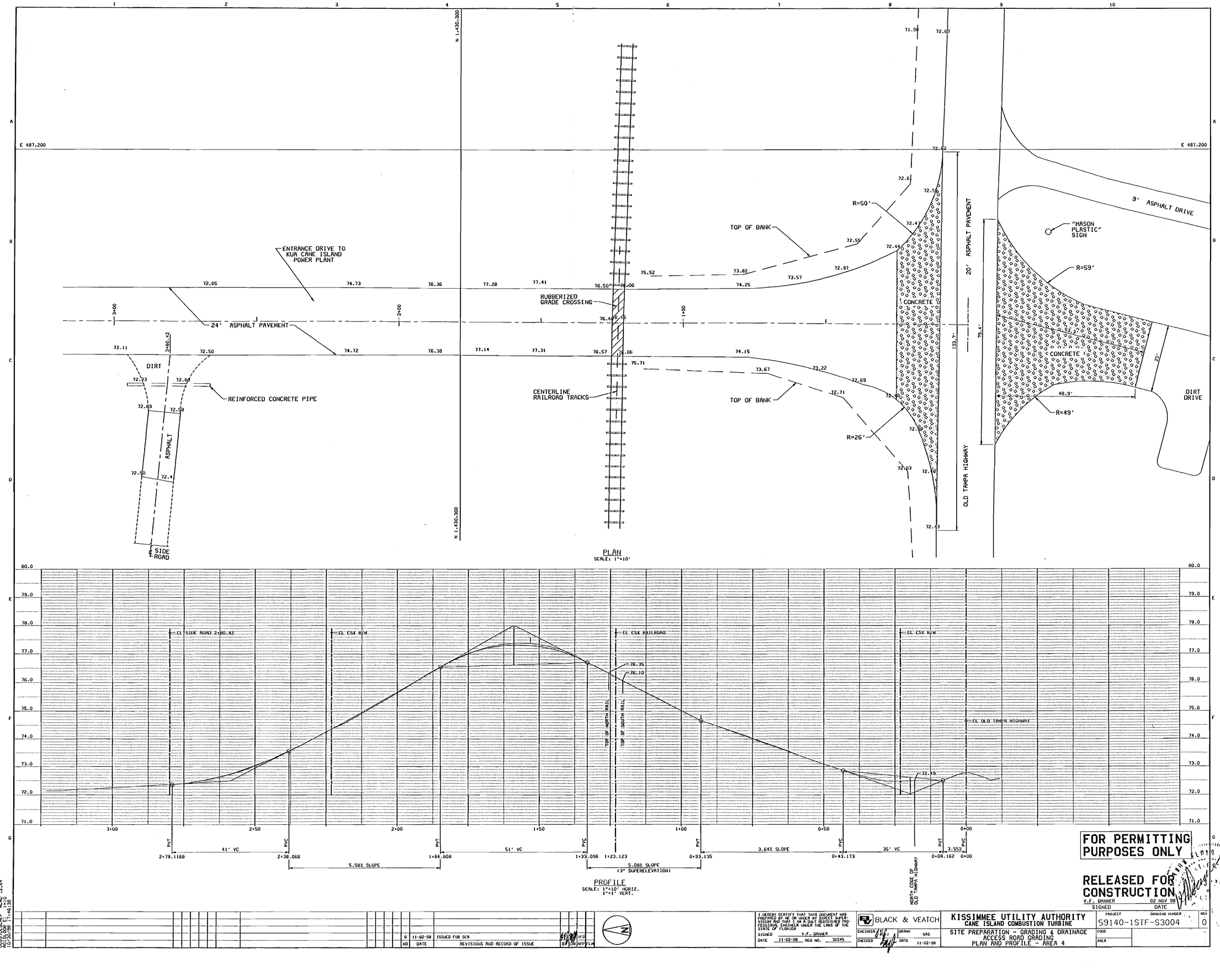
VERT. 1"=2'
HORIZ. 1"=40'

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA
SIGNED V.F. DANNER
DATE 11-02-98 REG NO. 32245

BLACK & VEATCH
ENGINEER DRAWN GAS
CHECKED MJB DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND COMBUSTION TURBINE
SITE PREPARATION - GRADING & DRAINAGE
ACCESS ROAD GRADING
PLAN AND PROFILE - AREA 3

PROJECT | DRAWING NUMBER 59140-1STF-S3003 | REV 0



FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION
V.F. DANNER 02 NOV 98
SIGNED DATE

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY	CK	APP'D
0	11-02-98	ISSUED FOR SCA	VFD		

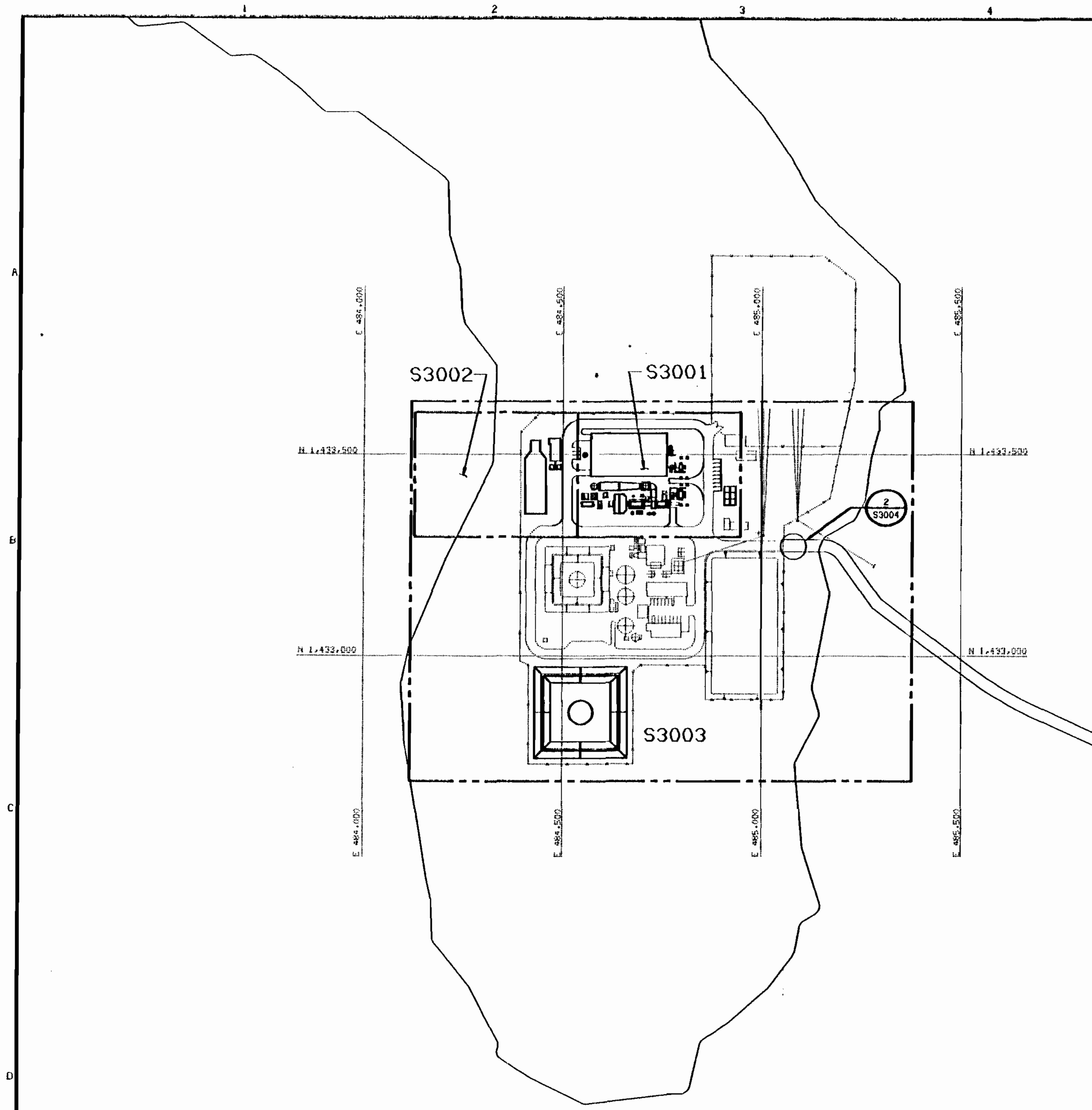
I HEREBY CERTIFY THAT THIS DOCUMENT HAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA
SIGNED V.F. DANNER
DATE 11-02-98 REG NO. 32245

BLACK & VEATCH

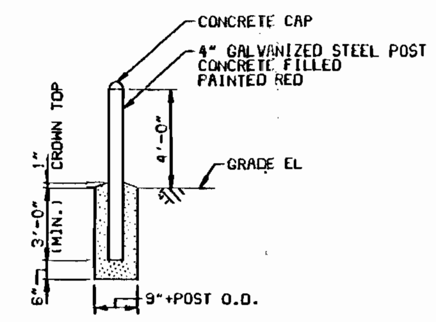
ENGINEER	VFD	DRAWN	GAS
CHECKED		DATE	11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND COMBUSTION TURBINE
SITE PREPARATION - GRADING & DRAINAGE
ACCESS ROAD GRADING
PLAN AND PROFILE - AREA 4

PROJECT	DRAWING NUMBER	REV
59140-1STF-S3004		0
CODE		
AREA		

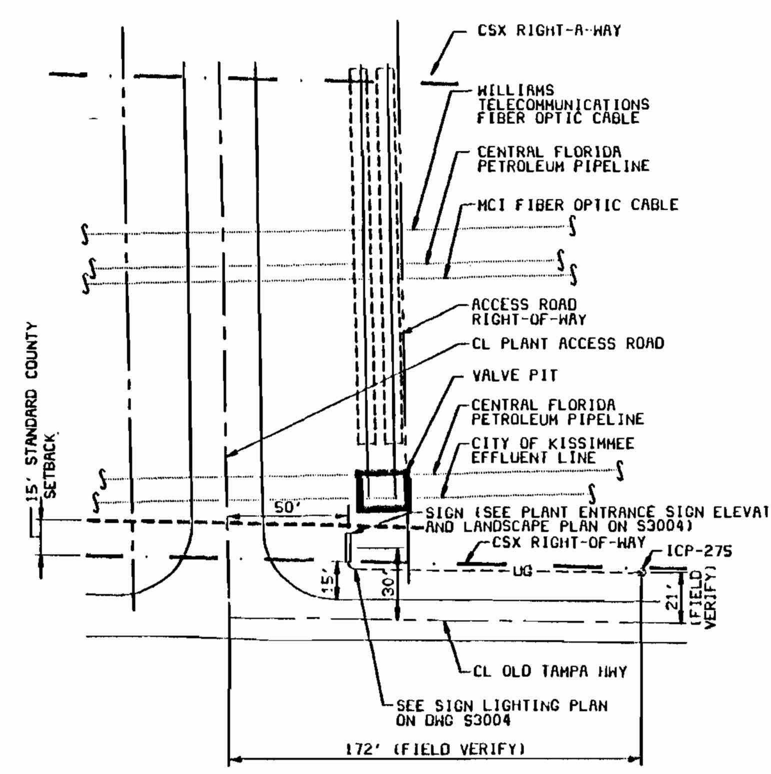


KEY PLAN FOR GRADING AND DRAINAGE DRAWINGS

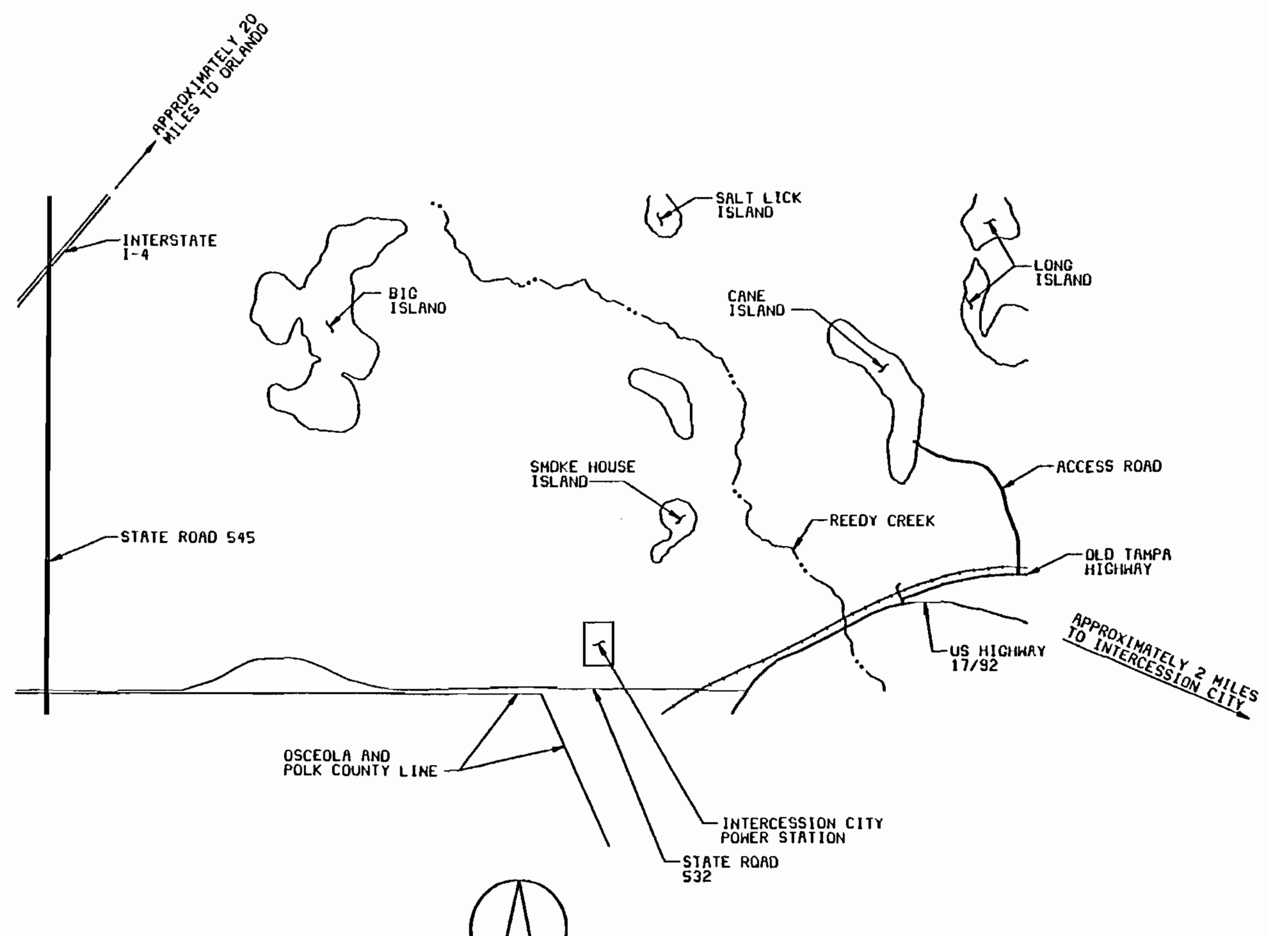


BUMPER POST

DETAIL 1
NO SCALE
BY CONTRACT 72.0201



DETAIL 2
SIGN LOCATION
SCALE: 1"=40'
SEE THIS DWG



VICINITY MAP
NO SCALE

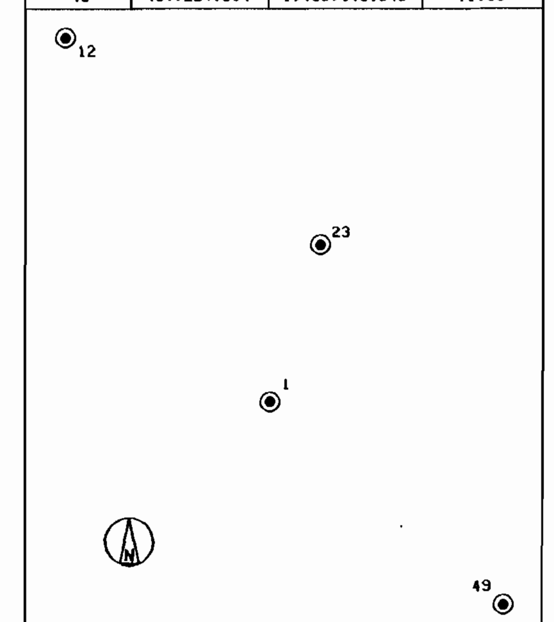
ABBREVIATIONS

APPROX	- APPROXIMATE
ASPH	- ASPHALT
BM	- BENCH MARK
CHDPE	- CORRUGATED HIGH DENSITY POLYETHYLENE PIPE
CJ	- CONTRACTION JOINT
CL	- CENTER LINE
CONC	- CONCRETE
DWG	- DRAWING
EL	- ELEVATION
EJ	- EXPANSION JOINT
FF	- FINISHED FLOOR
HERCP	- HORIZONTALLY ELLIPTICAL REINFORCED CONCRETE PIPE
HP	- HIGH POINT
INV	- INVERT
MSL	- MEAN SEA LEVEL
NO	- NUMBER
NTS	- NOT TO SCALE
PC	- POINT OF CURVATURE
PI	- POINT OF INTERSECTION
PL	- PROPERTY LINE
PT	- POINT OF TANGENCY
PVI	- POINT OF VERTICAL INTERSECTION
RCP	- REINFORCED CONCRETE PIPE
REV	- REVISION
R/W	- RIGHT OF WAY
T/C	- TOP OF CONCRETE
T/P	- TOP OF PAVEMENT
T/GRATE	- TOP OF GRATE

PROJECT CONTROL

CONTROL MONUMENT LOCATIONS

MONUMENT NO.	STATE PLANE COORDINATES		ELEVATION
	EASTING	NORTHING	
1	484,953.765	1,432,348.949	78.05
12	482,882.646	1,435,905.858	73.59
23	485,217.602	1,433,848.406	74.15
49	487,224.814	1,430,143.646	71.39



NOTE: BENCHMARKS ARE 5' x 12"Ø CONCRETE MONUMENTS WITH BRASS DISC IN THE TOP. HORIZONTAL CONTROL IS BASED ON THE FLORIDA STATE PLANE COORDINATE - EAST ZONE (1983/90 N.A.D.) SYSTEM. THE ELEVATIONS ARE BASED ON THE NGVD 1929 DATUM FROM BENCHMARKS SET BY THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT AND INFORMATION THAT WAS FURNISHED BY THE OSCEOLA COUNTY ENGINEERING DEPARTMENT.

GENERAL NOTES

1. SEE KEY ON THIS DWG FOR ARRANGEMENT OF SITE GRADING PLANS.
2. THE PLANT GRID SYSTEM USED FOR HORIZONTAL CONTROL IS BASED ON TRUE NORTH. CONTROL MONUMENTS AND BENCH MARKS ARE LISTED ON THIS DWG.
3. INTERSECTIONS OF PAVED ROADS SHALL HAVE A 30' TURNING RADIUS MEASURED FROM EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.
4. EXISTING RAILROADS, ROADS, AND UTILITY LOCATIONS ARE SUBJECT TO FIELD VERIFICATION BY THE CONTRACTOR.
5. ROADS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TYPICAL ROAD CROSS SECTIONS AND DETAILS SHOWN ON DWG S3004.
6. ALL WORK SHALL BE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1991, FLORIDA DEPARTMENT OF TRANSPORTATION", AND ALL AMENDMENTS THERETO, UNLESS OTHERWISE SPECIFIED.
7. CONSTRUCTION SEQUENCE SHALL BE SCHEDULED TO MINIMIZE UNCONTROLLED RUNOFF AND OFFSITE SEDIMENTATION DURING GRADING OPERATIONS. SEDIMENTATION BARRIERS SHALL BE INSTALLED IN EACH AREA BEFORE GRADING OPERATIONS BEGIN. GRADED AREAS SHALL BE SEEDED IMMEDIATELY FOLLOWING COMPLETION OF FINAL GRADING IN EACH AREA.
8. NEW CONTOURS AND GRADE ELEVATIONS SHOWN ON THE SITE PREPARATION PLANS INDICATE FINISH GRADE UNLESS NOTED OTHERWISE.
9. GRADE BETWEEN CONTOURS SHOWN ON SITE PREPARATION PLANS SHALL SLOPE UNIFORMLY BETWEEN THOSE CONTOURS UNLESS NOTED OTHERWISE.
10. ALL CUT AND FILL SLOPES SHALL BE 3 HORIZONTAL TO 1 VERTICAL UNLESS NOTED OTHERWISE.
11. ALL WORK ON THE S3000 SERIES DRAWINGS BY CONTRACT 71.0205 UNLESS OTHERWISE NOTED.
12. SEE DWG S3004 FOR CULVERT AND TRENCH LIST.
13. ALL AREAS NOT COVERED BY EQUIPMENT OR SURFACED WITH ASPHALT OR CRUSHED ROCK SHALL BE SEEDED OR SODDED BY CONTRACT 72.0201.

LEGEND

Symbol	Description
(hatched)	EXISTING ASPHALT
(stippled)	AGGREGATE SURFACING
(cross-hatched)	ASPHALT CONCRETE PAVEMENT
—75—	EXISTING CONTOURS
- - -73- - -	EXISTING CONTOURS (INSTALLED UNDER UNIT 1 CONTRACT)
—70—	NEW CONTOURS
	NEW CULVERT
66-8	EXISTING SPOT ELEVATION
73.8	PROPOSED SPOT ELEVATION
	INDICATES CONSTRUCTION SILT FENCE OR STRAW BALE DIKE
	INDICATES MATCH LINE
-x-x-x-	SECURITY FENCING
C-11	INDICATES CULVERT
T-8	INDICATES TRENCH
◉	CONTROL MONUMENT
	INDICATES BUMPER POST
☒	INDICATES FIRE HYDRANT HOSE HOUSE

FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION
V.F. DANNER — 02 NOV 98
SIGNED — DATE

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY	CHK	APP	FLM
0	11-02-98	ISSUED FOR SCA			VFD	

I HEREBY CERTIFY THAT THIS DOCUMENT HAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA.
SIGNED V. F. DANNER
DATE 11-02-98 REG NO. 32245

BLACK & VEATCH
ENGINEER — DRAWN GAS
CHECKED — DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND PLANT - UNIT 2
SITE - GRADING AND DRAINAGE
GENERAL NOTES, LEGEND & TYPICAL DETAILS

PROJECT / DRAWING NUMBER: 59140-2STF-S3000
REV: 0
CODE
AREA

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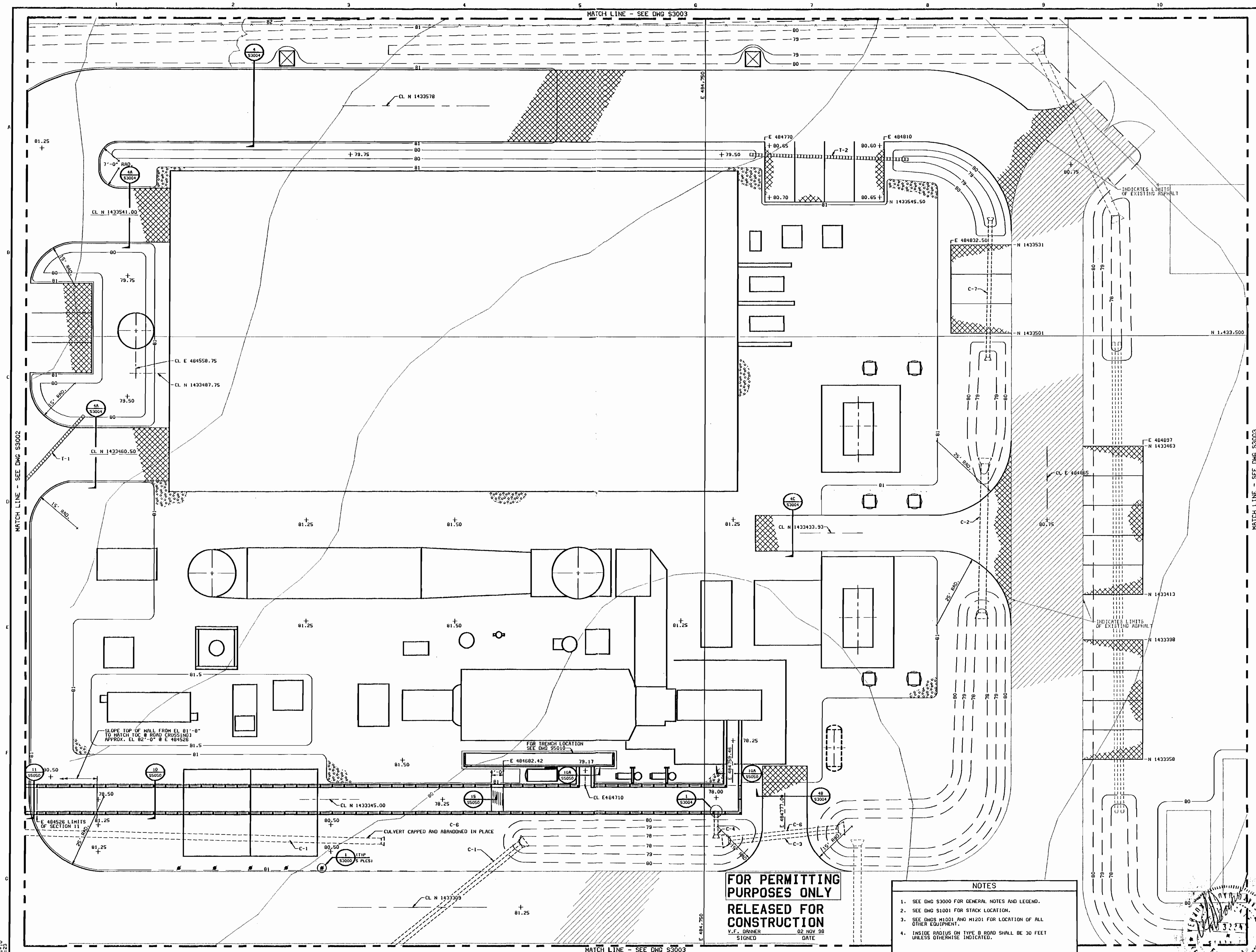
A1ASL008 E1 1=160
10/30/98 17:57:15



FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION

V.F. DANNER 02 NOV 98

SIGNED DATE

NOTES

1. SEE DWG S3000 FOR GENERAL NOTES AND LEGEND.
2. SEE DWG S1001 FOR STACK LOCATION.
3. SEE DWGS M1001 AND M1201 FOR LOCATION OF ALL OTHER EQUIPMENT.
4. INSIDE RADIUS ON TYPE B ROAD SHALL BE 30 FEET UNLESS OTHERWISE INDICATED.

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY	CK	APP
0	11-02-98	ISSUED FOR SCA			

SCALE: 1"=10'

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DATE 11-02-98 REG NO. 32245

BLACK & VEATCH

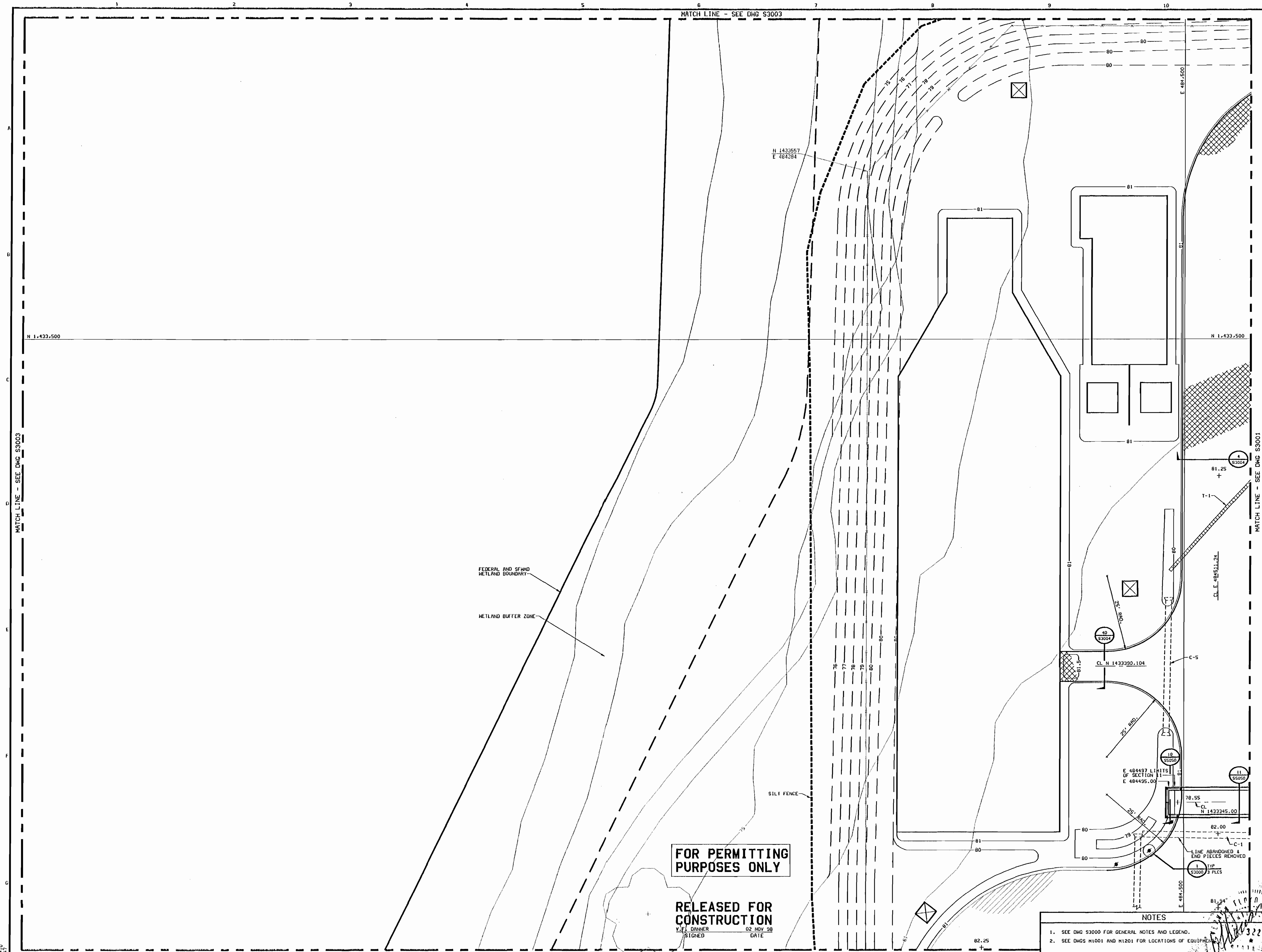
ENGINEER | DRAWN GAS | CHECKED MJS | DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND PLANT - UNIT 2

SITE - GRADING & DRAINAGE
SITE GRADING PLAN

PROJECT / DRAWING NUMBER: 59140-2STF-S3001 REV 0

(10)



FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION
V.F. DANNER 02 NOV 98
SIGNED DATE

NOTES

1. SEE DWG S3000 FOR GENERAL NOTES AND LEGEND.
2. SEE DWGS M1001 AND M1201 FOR LOCATIONS OF EQUIPMENT.

NO	DATE	REVISIONS AND RECORD OF ISSUE
0	11-02-98	ISSUED FOR SCA

SCALE: 1"=10'

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SIGNED V.F. DANNER
DATE 11-02-98 REG NO. 32245

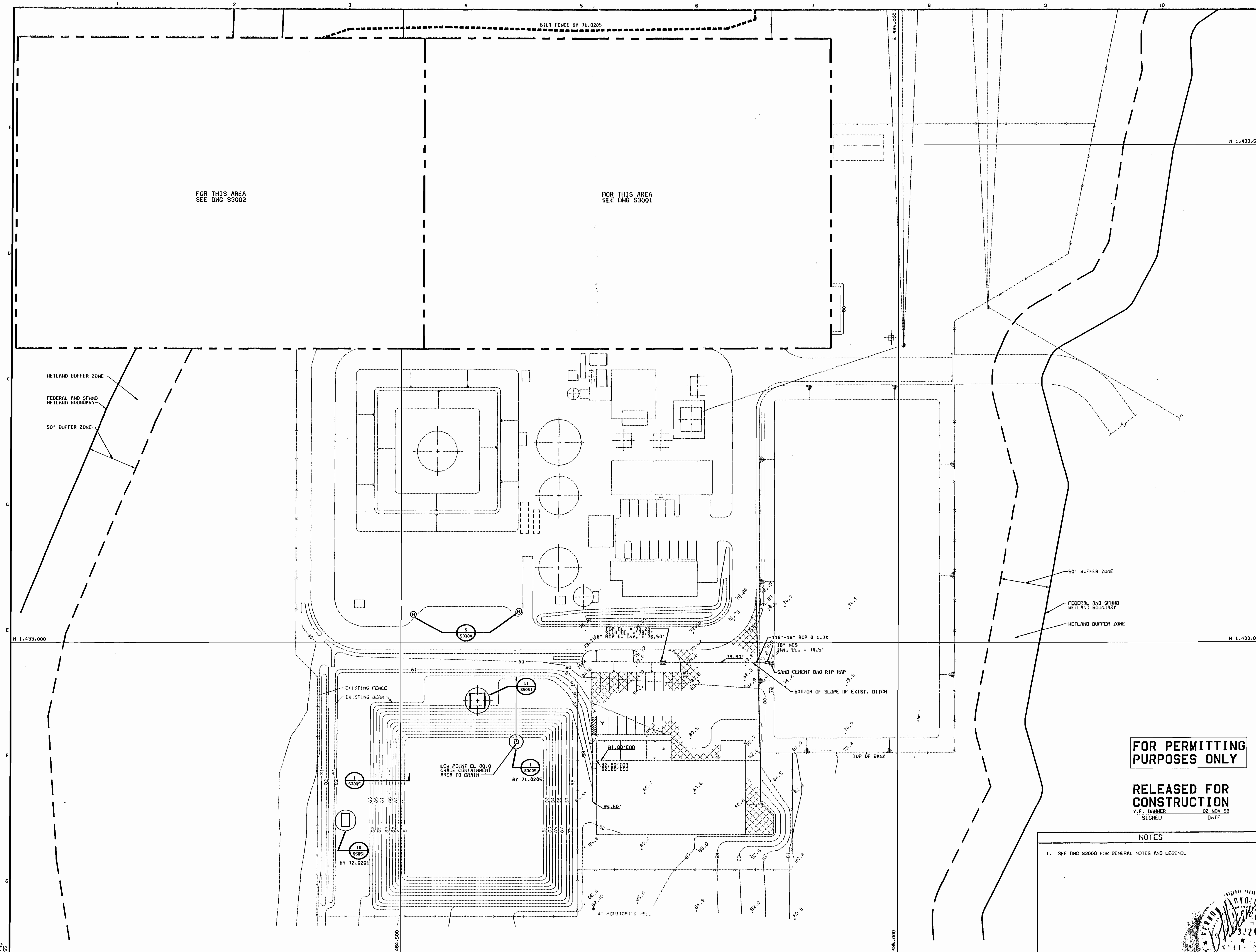
BLACK & VEATCH
ENGINEER | DRAWN GAS
CHECKED | DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND PLANT - UNIT 2

SITE - GRADING & DRAINAGE
SITE GRADING PLAN

PROJECT 59140-2STF-S3002 | DRAWING NUMBER | REV 0
CODE
AREA

(11)



FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION

V.F. DANNER — 02 NOV 98

SIGNED — DATE

NOTES

1. SEE DWG S3000 FOR GENERAL NOTES AND LEGEND.

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY	CHK	APP	FLM
0	11-02-98	ISSUED FOR SCA			VFD	

SCALE: 1"=30'

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA.

SIGNED V.F. DANNER

DATE 11-02-98 REG NO. 32245

BLACK & VEATCH

ENGINEER — DRAWN GAS

CHECKED — DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY

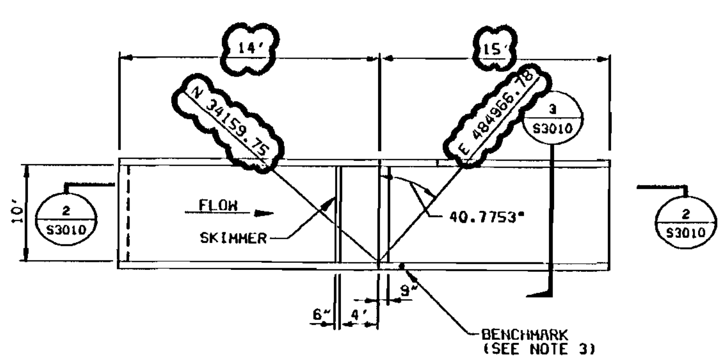
CANE ISLAND PLANT - UNIT 2

SITE - GRADING & DRAINAGE
SITE GRADING PLAN

PROJECT — DRAWING NUMBER: 59140-2STF-S3003 — REV 0

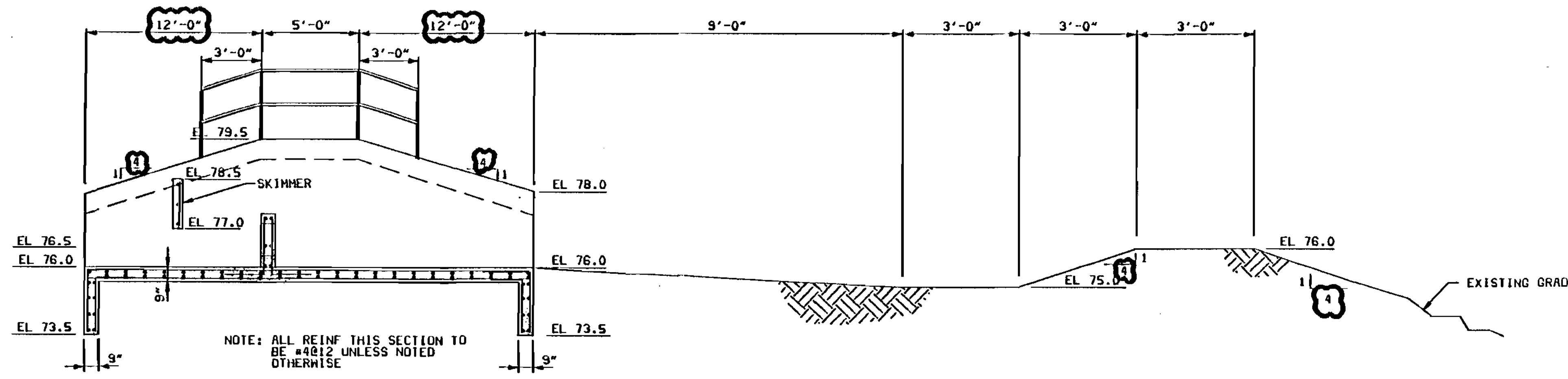
CODE

AREA

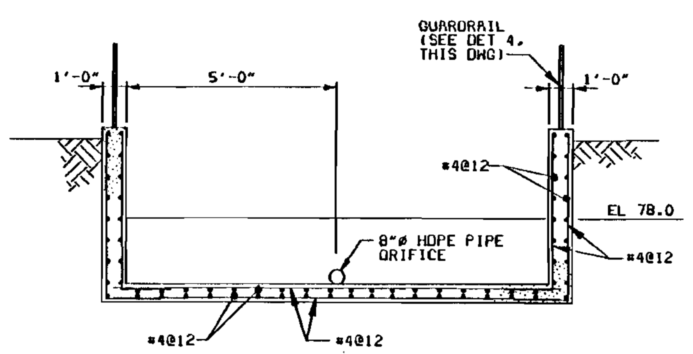


PLAN

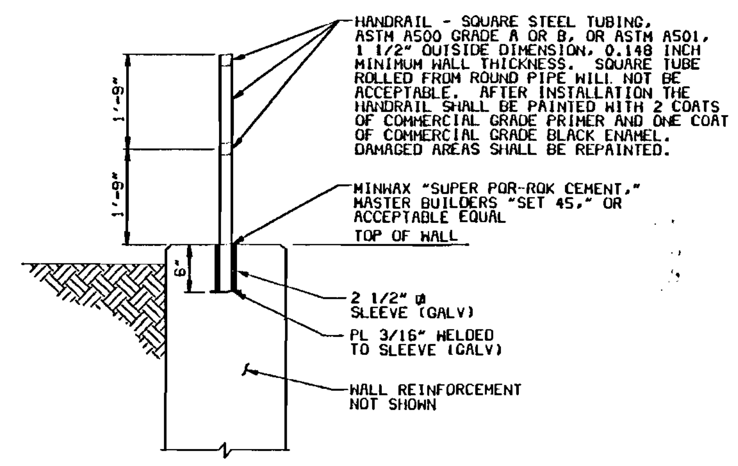
DETAIL 1
DISCHARGE STRUCTURE NO. 2
SCALE: 1"=10'
SEE DWG S3001



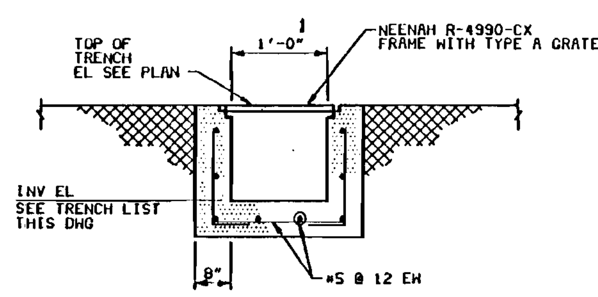
SECTION 2
NO SCALE
SEE THIS DWG



SECTION 3
NO SCALE
SEE THIS DWG



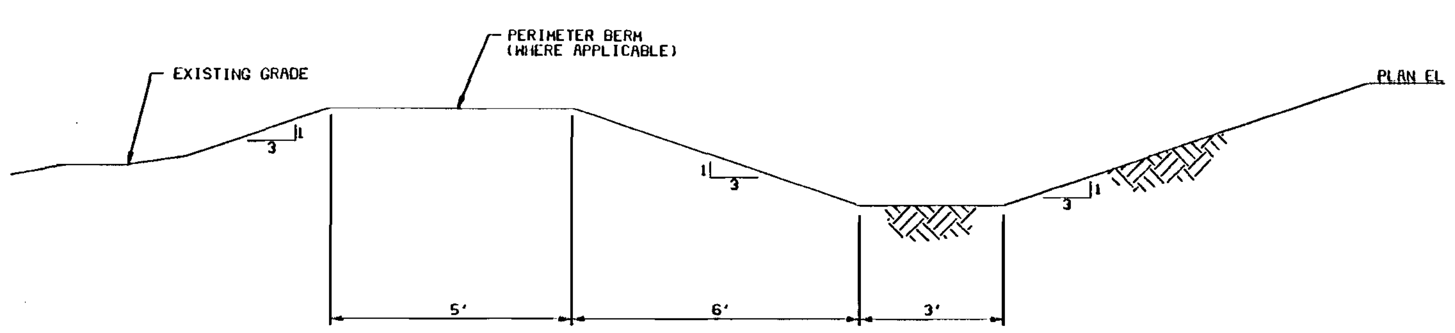
DETAIL 4
NO SCALE
SEE THIS DWG



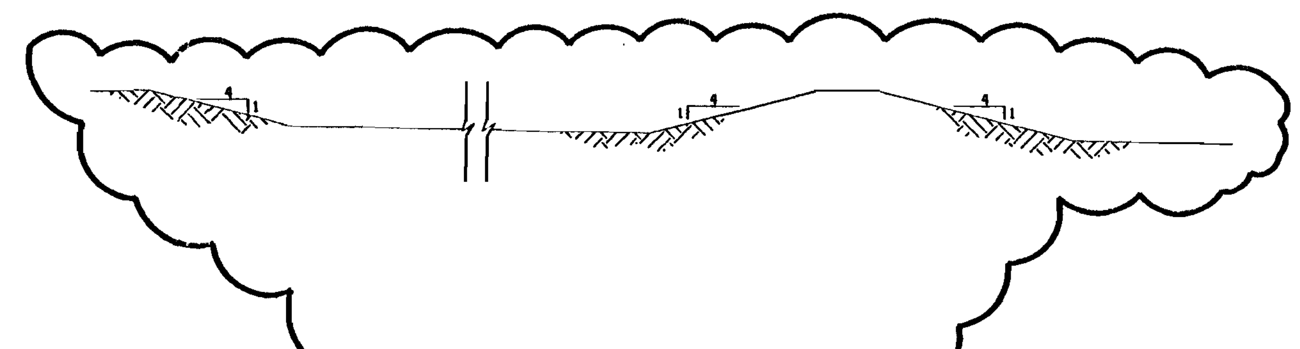
TYPICAL TRENCH DETAIL
SCALE: 3/4"=1'-0"
SEE THIS DWG

TRENCH NUMBER	LENGTH (FEET)	INLET CENTERLINE COORDINATES		OUTLET CENTERLINE COORDINATES		INVERT ELEVATION (FT)		REMARKS
		NORTH	EAST	NORTH	EAST	INLET	OUTLET	
T-1	38.00	33647.59	484498.79	33685.51	484498.79	80.50	80.25	
T-2	36.00	33802.30	484499.88	33827.71	484474.47	79.65	79.40	CCW ROTATION = 45°
T-3	42.00	33805.75	484819.20	33846.73	484819.20	79.65	79.40	

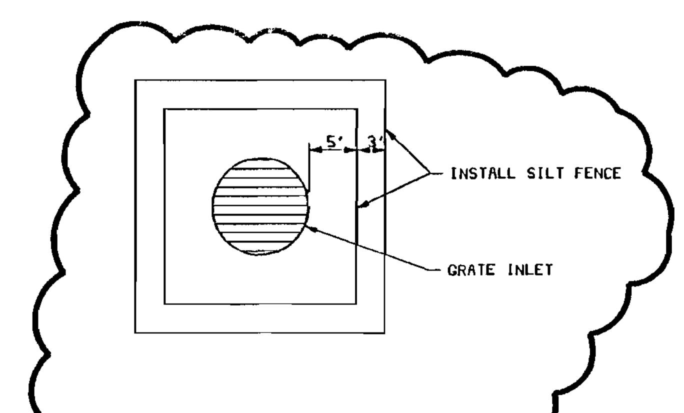
TRENCH LIST



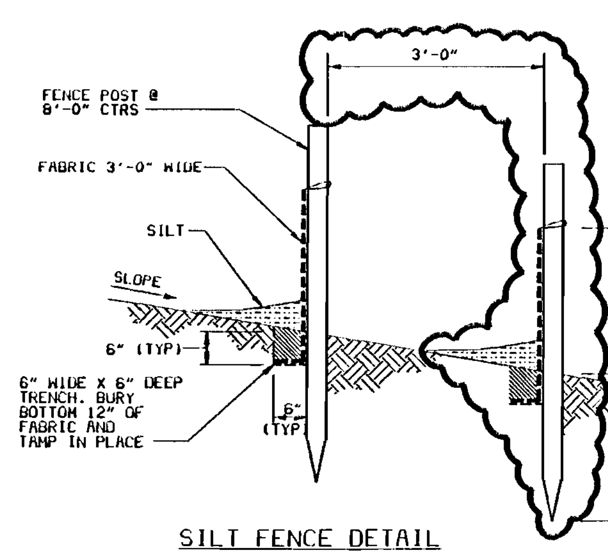
TYPICAL DITCH DETAIL
NO SCALE
SEE DWGS S3001



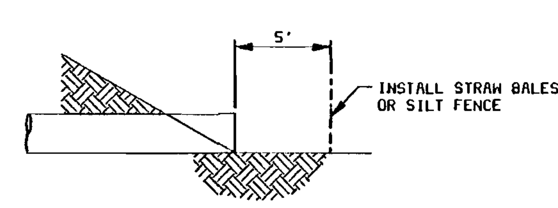
SECTION 5
WET DETENTION BASIN SECTION
NO SCALE
SEE DWGS S3001



CATCH BASIN SEDIMENTATION CONTROL PLAN
NO SCALE



SILT FENCE DETAIL
NO SCALE
SEE NOTES 3, 4, 5, &6



TRENCH INLET SEDIMENTATION CONTROL DETAIL
NO SCALE

NOTES

1. IN AREAS THAT REQUIRE SOD, THE SOD SHALL CONTAIN A GOOD COVER OF LIVING GRASS AND SHALL BE OBTAINED FROM AREAS HAVING GROWING CONDITIONS SIMILAR TO THOSE ON WHICH THE SOD IS TO BE LAID. SOD SHALL BE RELATIVELY FREE OF WEEDS AND VEGETATION AND SHALL BE CUT TO 3 INCHES OR LESS. SOD SHALL BE CUT INTO SQUARES OR RECTANGULAR SECTIONS OF A SIZE THAT PERMITS THE SOD TO LIFTED AND ROLLED WITHOUT BREAKING. CARE SHALL BE EXERCIZED TO RETAIN THE NATIVE SOIL ON THE ROOTS OF THE SOD DURING STRIPPING, TRANSPORTING, AND PLANTING. SOD SHALL BE STORED IN A MANOR TO PREVENT DAMAGE AND SHALL NOT BE DUMPED FROM VEHICLES. SOD SHALL BE PLACED ONLY DURING SEASONS WHEN SATISFACTORY RESULTS CAN BE EXPECTED. WHEN AUTHORIZED BY THE PROJECT FIELD MANAGER, SOD CAN BE PLACED DURING PERIODS OF DROUGHT AFTER THE SOD BED IS THOROUGHLY WATERED TO A DEPTH OF AT LEAST 4 INCHES. ON SLOPES GREATER THAN 2 FEET HORIZONTAL TO 1 FOOT VERTICAL, THE SOD SHALL BE FASTENED IN PLACE WITH SUITABLE WOOD PINS OR OTHER METHODS ACCEPTABLE TO THE PROJECT FIELD MANAGER. SOD SHALL BE LAID SMOOTH, EDGE TO EDGE, WITH STAGGERED JOINTS AND SHALL BE PRESSED FIRMLY IN CONTACT WITH THE SOD BED BY TAMPING OR ROLLING. SCREENED SOIL OF GOOD QUALITY SHALL BE USED TO FILL ALL CRACKS AND EXCESS SOIL SHALL BE WORKED INTO THE GRASS WITH RAKES. PREPARATION OF SOIL, FERTILIZING, WATERING, MAINTENANCE, AND THE GUARANTEE OF ALL WORK SHALL BE THE SAME AS SPECIFIED FOR SEEDING OPERATIONS.
2. ALL DISTURBED AREAS SHALL BE SEEDED, UNLESS NOTED OTHERWISE.
3. BEFORE CONSTRUCTION BEGINS, DOUBLE ROW OF SILT FENCE WILL BE INSTALLED AROUND THE PERIMETER OF CONSTRUCTION AREAS.
4. DOUBLE ROW SILT FENCE WILL BE INSTALLED AT ALL TRENCH AND CATCH BASIN INLETS AS DETAILED IN THIS DRAWING.
5. ADDITIONAL SILT FENCE WILL BE INSTALLED AS NECESSARY TO CONTROL SEDIMENT DISPOSITION.
6. SILT FENCE AND DRAINAGE STRUCTURES WILL BE INSPECTED PERIODICALLY AND AFTER EACH SEVERE RAILFALL EVENT. MAINTENANCE, CLEANING, AND REPAIR WORK WILL BE COMPLETED AS REQUIRED.

FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION
V.F. DANNER — 02 NOV 98
SIGNED — DATE

NO	DATE	REVISIONS AND RECORD OF ISSUE	BY	CHK	APP
1	11-02-98	ISSUED FOR SCA			
0	07-31-98	ISSUED FOR SCA			

SCALE: AS NOTED

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA
SIGNED V.F. DANNER
DATE 11-02-98 REG NO. 32245

BLACK & VEATCH
ENGINEER — DRAWN GAS
CHECKED — DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND COMBUSTION TURBINE

SITE - GRADING & DRAINAGE
SECTIONS AND DETAILS

PROJECT / DRAWING NUMBER: 59140-3STF-S3010 — REV 1
CODE
AREA
FIGURE 3.8-2

(3)

E 484,500

E 485,000

N 34,000

N 33,500

WP
N 34155.83
E 484962.24

DISCHARGE STRUCTURE NO. 2
AND SPREADER SWALE. SEE
DWG S3010 FOR DETAILS

WETLAND BUFFER ZONE

FEDERAL WETLAND BOUNDARY

DENSE TREES

CONSTRUCTION LAYDOWN AREA

T-1 HP EL 81.25

T-2 HP EL 81.25

T-3 HP EL 81.25

HP EL 81.0

HP EL 81.25

FOR PERMITTING PURPOSES ONLY

RELEASED FOR CONSTRUCTION

V.F. DANNER 02 NOV 98
SIGNED DATE

NOTES

1. SEE DRAWING S3010 FOR SITE-GRADING AND DRAINAGE- SECTIONS AND DETAILS.
2. SEE DRAWING S3010 FOR TRENCH LIST.
3. DOWNSLOPE AREAS OUTSIDE OF FENCE SHALL BE SEEDED.
4. NO CLEARING OR GRUBBING SHALL TAKE PLACE IN THE BUFFER ZONE. THIS LAND SHALL REMAIN UNDISTURBED.
5. ALL POND SIDE SLOPES SHALL BE SODDED.

NO	DATE	REVISIONS AND RECORD OF ISSUE	DWD	MJS
1	11-02-98	ISSUED FOR SCA	GKJ	
0	07-31-98	ISSUED FOR SCA	BY	CHK APP'D

SCALE: 1"=30'

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA.
SIGNED V.F. DANNER
DATE 11-02-98 REG NO. 32245

BLACK & VEATCH
ENGINEER DRAWN GAS
CHECKED DATE 11-02-98

KISSIMMEE UTILITY AUTHORITY
CANE ISLAND COMBUSTION TURBINE
SITE - GRADING AND DRAINAGE PLAN

PROJECT 59140-3STF-S3001 | DRAWING NUMBER S3001 | REV 1
CODE | AREA | FIGURE 3.8-1

ACAD 12.64
10/30/98 12:22:59

Attachment F
Figure 6.1-1

GENERAL NOTES:
1. THIS DRAWING IS BASED ON AERIAL PHOTOGRAPHS.

Curtis W. Smith
11/2/98

KUA CANE ISLAND
SUBSTATION

FPC INTERSESSION
CITY PLANT

TO LAKE
BRYAN

EXIST. 230kV LINE

SUBSTATION

EXIST. 69kV LINE

EXIST. 69kV LINE

REEDY CREEK

CSX RAILROAD R/W

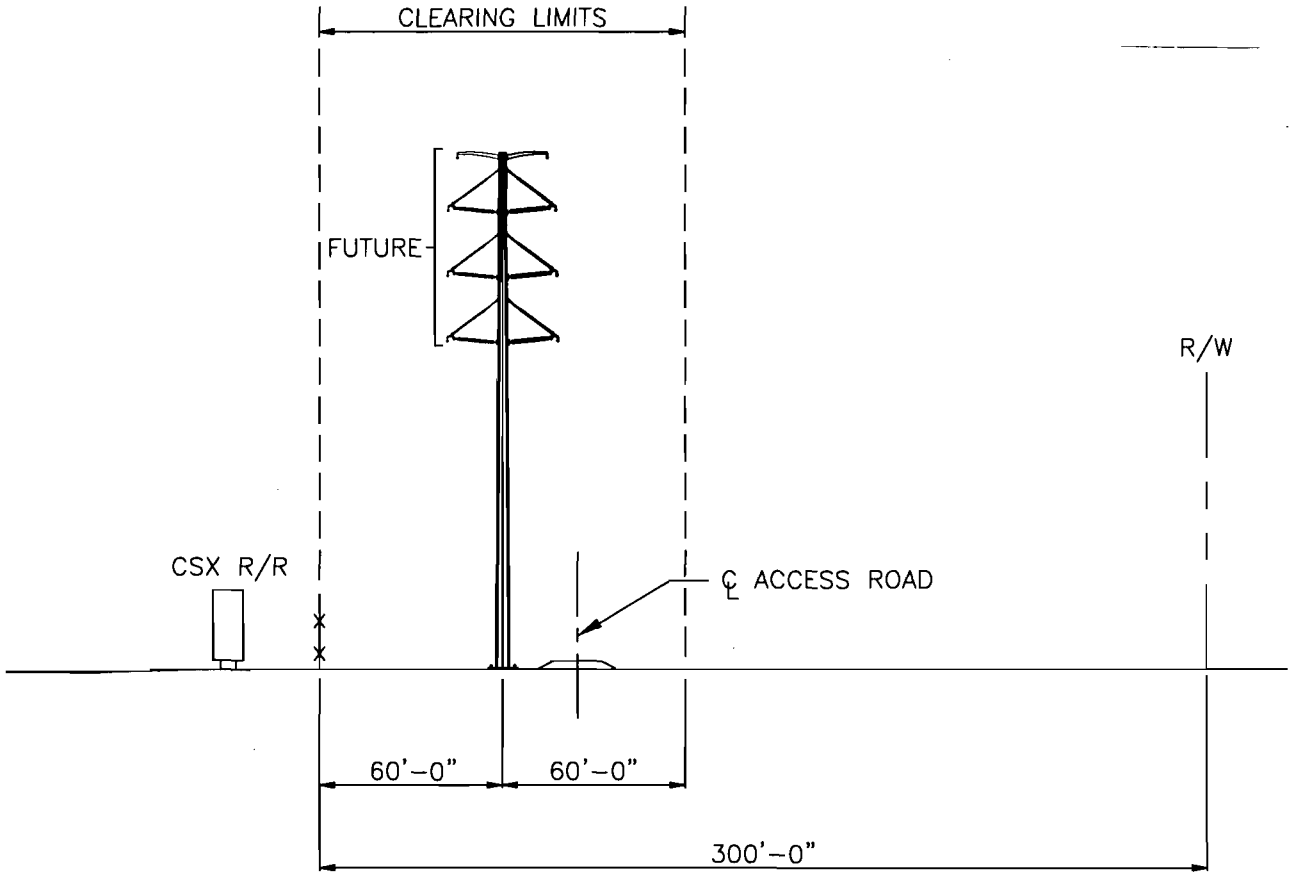
SR 17-92

LEGEND:
- EXISTING TRANSMISSION STRUCTURE
- NEW TRANSMISSION STRUCTURE
- EXISTING TRANSMISSION LINE
- NEW TRANSMISSION LINE
- WETLANDS
- ACCESS ROAD & PAD

CONCEPTUAL LOCATION OF CANE ISLAND
TRANSMISSION LINE CROSSING

Figure 6.1-1

NOTE: NOT RELEASED FOR CONSTRUCTION

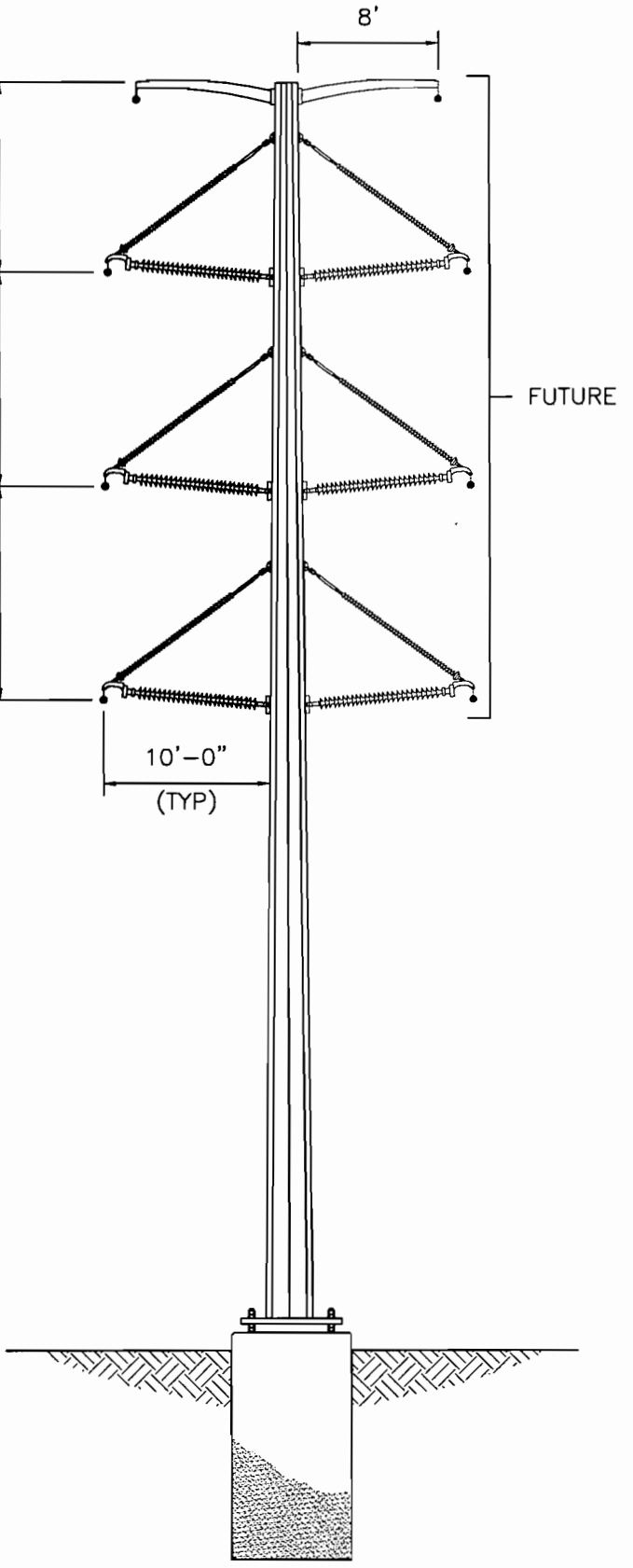


CANE ISLAND-INTERCESSION CITY 230kV
TRANSMISSION LINE ALONG RAIL ROAD
CANE ISLAND PLANT ACCESS ROAD
WEST TO EDGE OF KUA PROPERTY
LOOKING WEST

Curtis O. Arnold
11/2/98

FIGURE 6.1.3-1

NOTE: NOT RELEASED FOR CONSTRUCTION

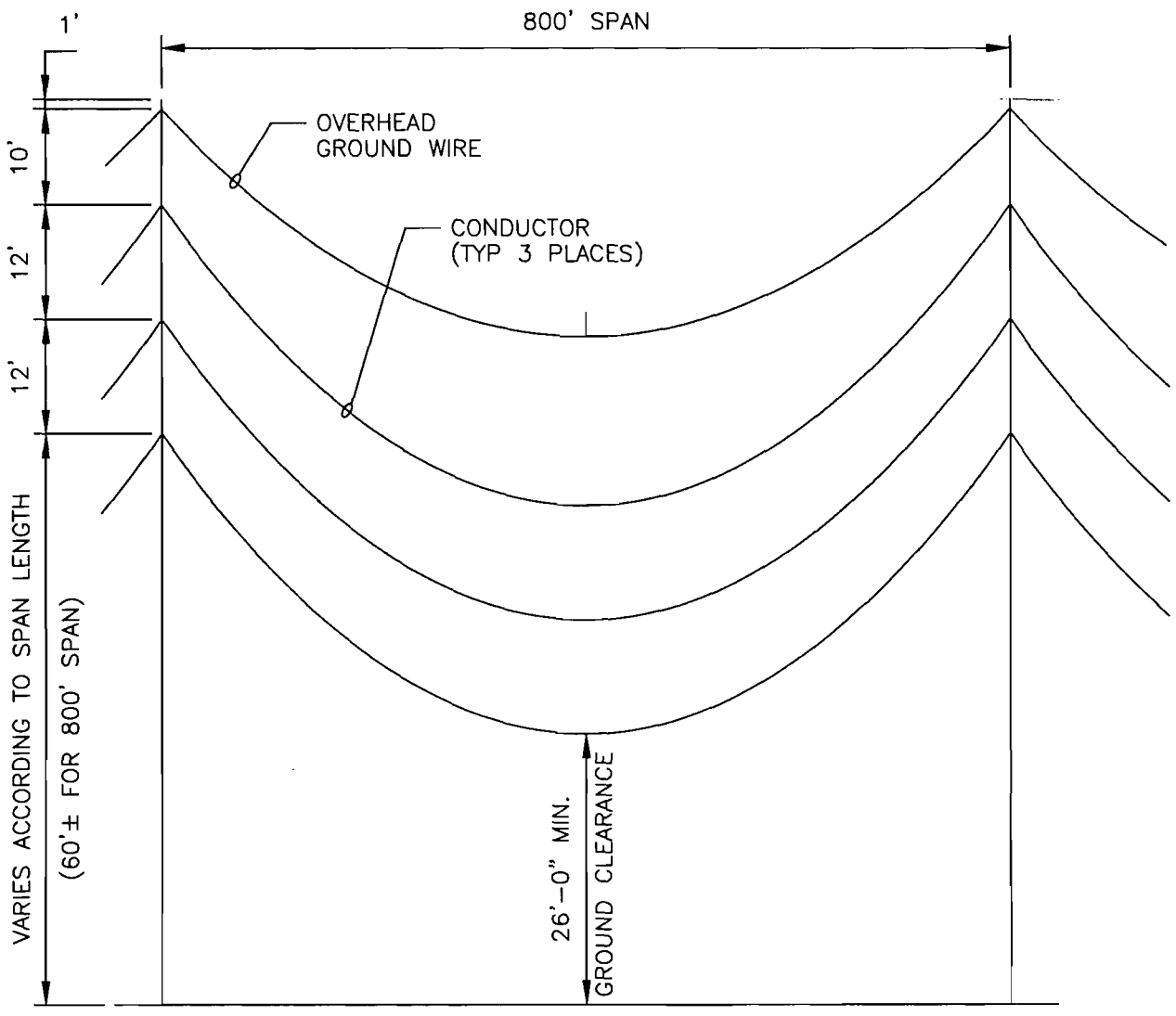


Curtis W. Smith
11/2/98

DOUBLE CIRCUIT TRANSMISSION LINE STRUCTURE

FIGURE 6.1.3-2

NOTE: NOT RELEASED FOR CONSTRUCTION

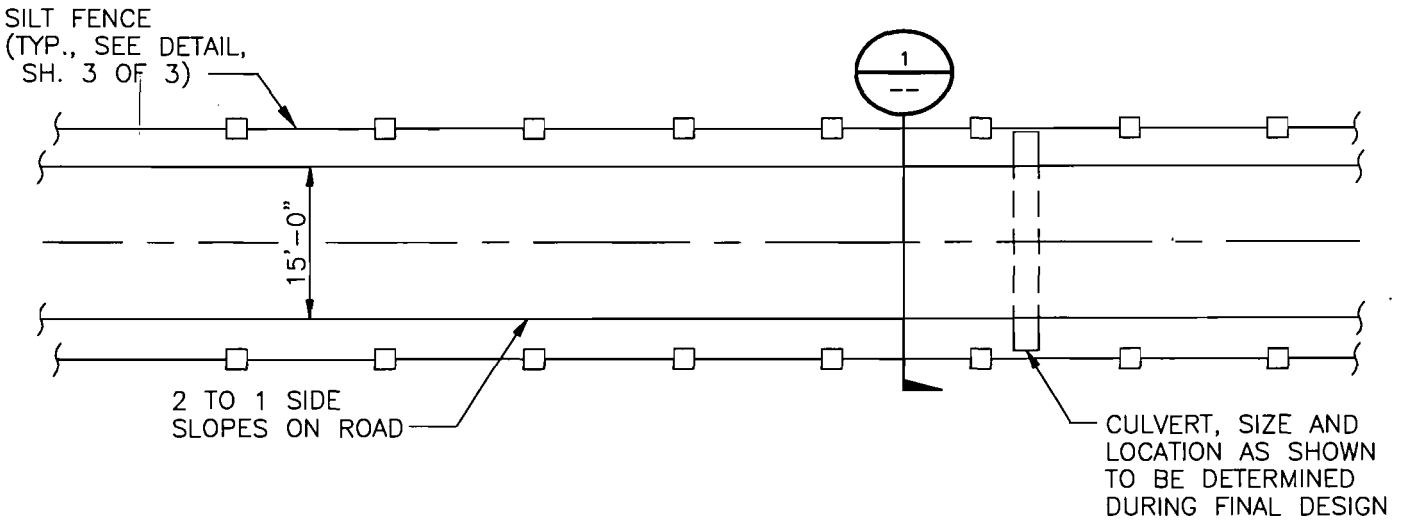


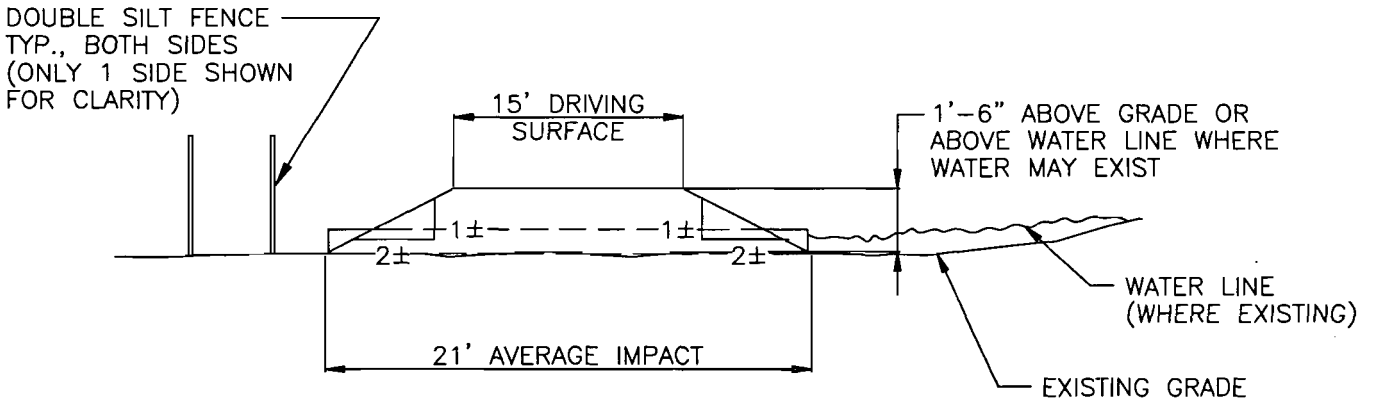
PROFILE OF TYPICAL 800 FOOT SPAN

Curtis W. Arnett
11/2/95

FIGURE 6.1.3-3

NOTE: NOT RELEASED FOR CONSTRUCTION





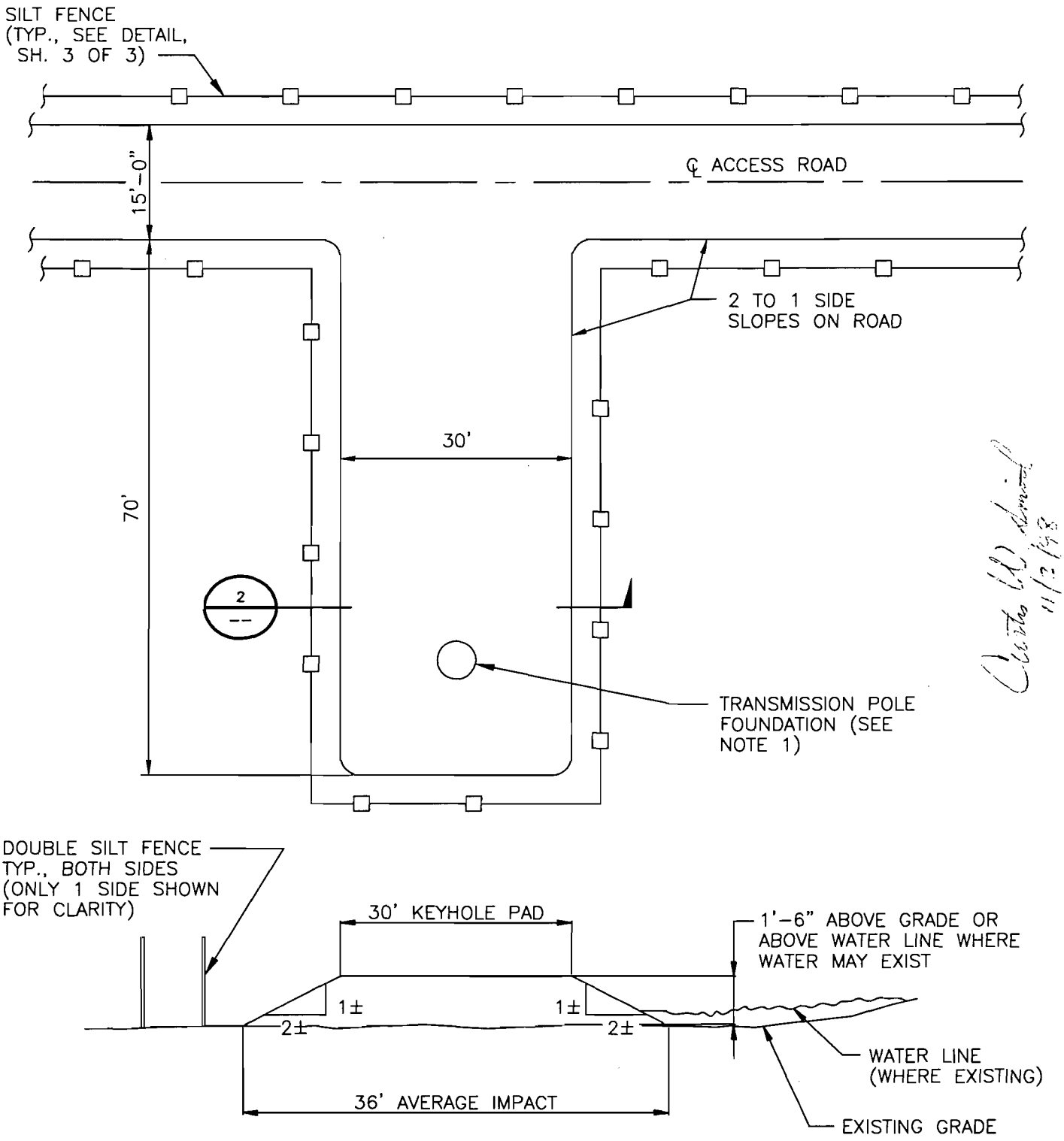
SECTION 1

11/23/09

CANE ISLAND-INTERCESSION CITY 230kV TRANSMISSION LINE CROSS SECTION OF TYPICAL TRANSMISSION LINE ACCESS ROAD

FIGURE 6.1.3-4
SH. 1 OF 3

NOTE: NOT RELEASED FOR CONSTRUCTION



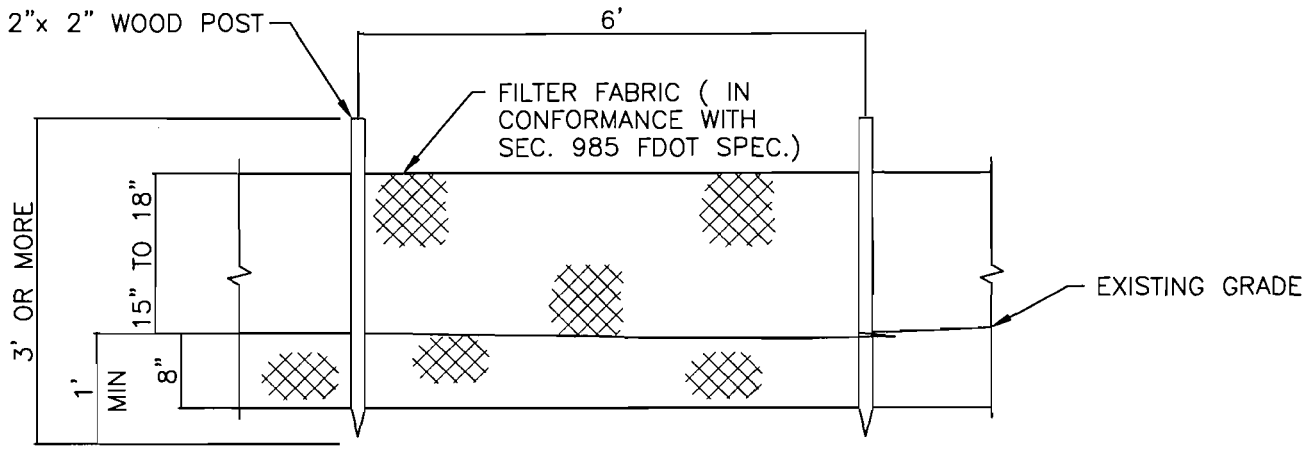
SECTION 2

NOTE:
1. SPOILS FROM FOUNDATION EXCAVATION TO BE SPREAD IN UPLAND LOCATIONS ON KUA PROPERTY.

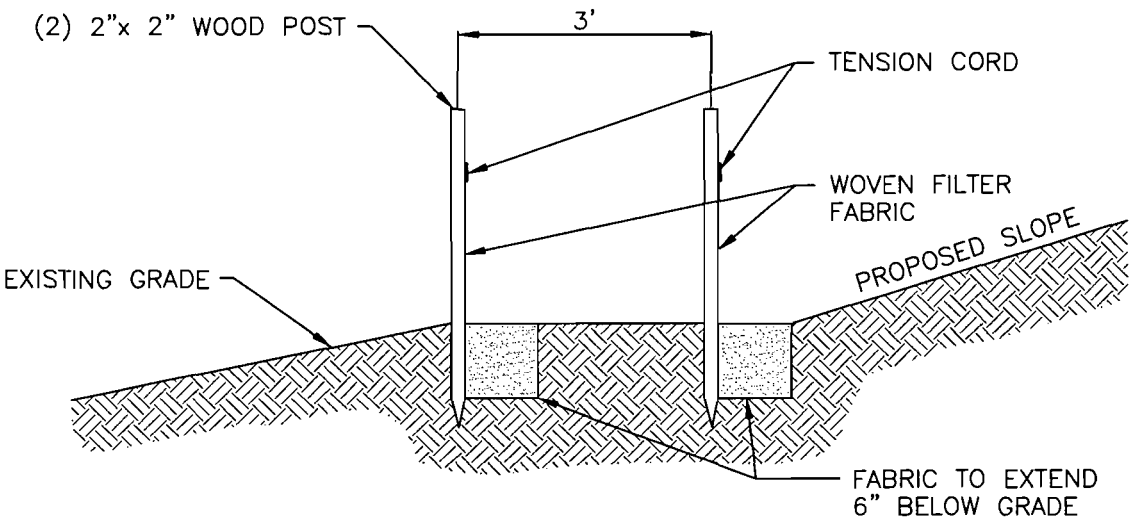
CANE ISLAND-INTERCESSION CITY 230kV TRANSMISSION LINE CROSS SECTION OF TYPICAL TRANSMISSION LINE ACCESS PAD

FIGURE 6.1.3-4
SH. 2 OF 3

NOTE: NOT RELEASED FOR CONSTRUCTION



ELEVATION

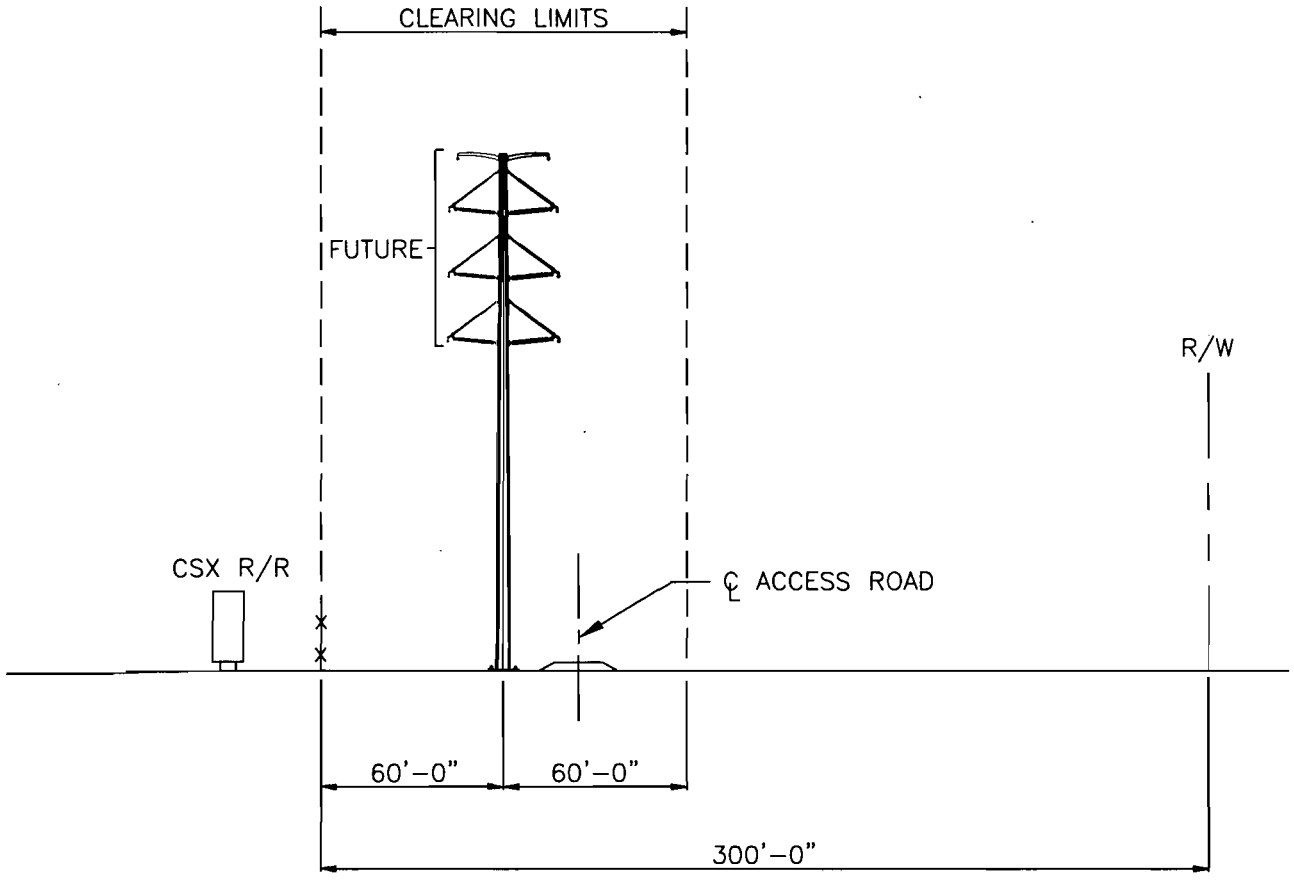


SECTION

CANE ISLAND-INTERCESSION CITY 230kV TRANSMISSION LINE CROSS SECTION OF TYPICAL SILT FENCE DETAILS

FIGURE 6.1.3-4
SH. 3 OF 3

NOTE: NOT RELEASED FOR CONSTRUCTION



CANE ISLAND-INTERCESSION CITY 230kV
TRANSMISSION LINE ALONG RAIL ROAD
CANE ISLAND PLANT ACCESS ROAD
WEST TO EDGE OF KUA PROPERTY
LOOKING WEST

Curtis W. Smith
11/2/98

FIGURE 6.1.3-1

NOTE: NOT RELEASED FOR CONSTRUCTION

Attachment G
Proposed Mitigation Plan

Cane Island Power Park - Unit 3
Mitigation Proposal

The Kissimmee Utility Authority (KUA) and Florida Municipal Power Agency (FMPA) are proposing to construct and operate a new combustion turbine generating unit (Unit 3) at the Cane Island Power Park near Intercession City, Osceola County, Florida. In addition to Unit 3, a new 230 kV overhead transmission line is required between the Power Park and Florida Power Corporation's Intercession City Plant. KUA and FMPA have elected to certify existing Units 1 and 2, Unit 3, and the new transmission line, under the Florida Electrical Power Plant and Transmission Line Siting Act, Chapter 403, Part II, Florida Statutes. The Site Certification Application was filed with the Florida Department of Environmental Protection (FDEP) on August 5, 1998, and declared complete on August 20, 1998. An Environmental Resource Permit Application for construction and operation of the new transmission line was submitted to the Corps of Engineers on September 29, 1998.

The impacts associated with construction of Unit 3 on Cane Island have been partially compensated through the mitigation/compensation efforts completed during the construction of Units 1 and 2. As a result of those efforts, largely in the form of an 860 acre onsite conservation easement, 45 additional mitigation credits were granted to KUA by the South Florida Water Management District (SFWMD), the recipient of the conservation easement. KUA, or approved designees, may use the credits as compensation for utility-related projects within the SFWMD-Orlando Service Center area.

Construction of 2 miles of new transmission line will impact regulated wetlands within the proposed corridor. These impacts will require mitigation/compensation. Approximately 4,030 cubic yards of fill will be placed over 1.8 acres at tower and access road locations. This 1.8 acres will also be cleared to the ground surface; the vegetative materials removed for construction will be removed from the wetland and disposed of in an approved area. An additional 9.5 acres of mixed hardwood and cypress strand forest will be hand-cleared or cleared using light-tracked shear machines for transmission line safety and clearance requirements. This 9.5 acres will be cleared (topped) to a height of 14 feet. The applicants have taken measures to avoid and minimize wetland impacts, such as installing culverts through the access road, to maintain the natural functions of this wetland. The main channel of Reedy Creek will be spanned.

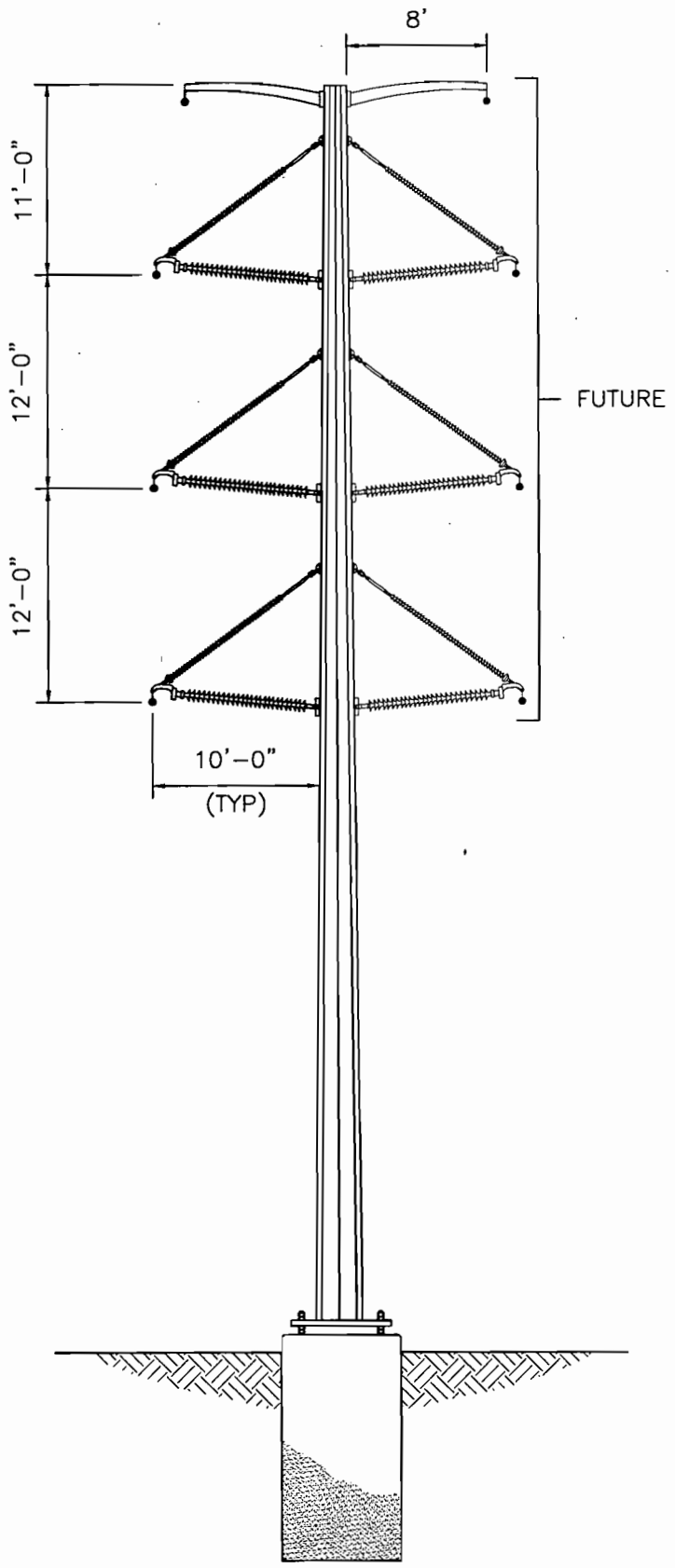
KUA proposes to debit the mitigation credit account by 2 acres (approximately 1:1) to compensate for the direct clearing/filling of the 1.8 acres associated with transmission line access road and structure construction. There will be 43 credits remaining in the account following this debit.

In consideration for receipt of additional mitigation credits, KUA has agreed to restore a hydrologic connection to an isolated cypress strand, and also allow Osceola County to establish a public hiking/biking trail and picnic area. Both activities will occur in the southern portion of the site.

The isolated cypress strand includes approximately 3 acres between the existing trail and the south property line. It was the original construction of this trail many years ago prior to purchase by KUA that created the isolated cypress area. KUA has agreed to install culverts through the trail in this cypress strand area to re-establish the surface water connection between the cypress strands on the north and south sides of the trail. KUA requests 1.5 additional mitigation credits (0.5:1) for this effort.

KUA has also reached a preliminary agreement with Osceola County to establish a public hiking/biking trail and picnic area in the southern portion of the site, completely within the conservation easement exclusion area. The existing trail, as mentioned above, will provide the base alignment for the hiking/biking trail. The final alignment will be determined after the transmission line has been constructed. A picnic area will be created just south of the created wetland and north of the existing trail in the old farmhouse area. KUA will also provide a parking area for 4-5 cars near the intersection of the plant access road and the existing trail in the southeastern portion of the site. The hiking/biking trail, picnic and parking areas, will occupy approximately 2 acres. KUA believes the trail will be a valuable recreational asset to the local community, and requests 2 additional mitigation credits (1:1) for this good faith effort.

In summary, if the debit and additional mitigation credit requests are granted, KUA will debit 2 acres from the 45 acre account, and add 3.5 acres, for a new total of 46.5 credits in the account. The accounting process will be completed by the submittal and approval of a letter modification request to SFWMD.

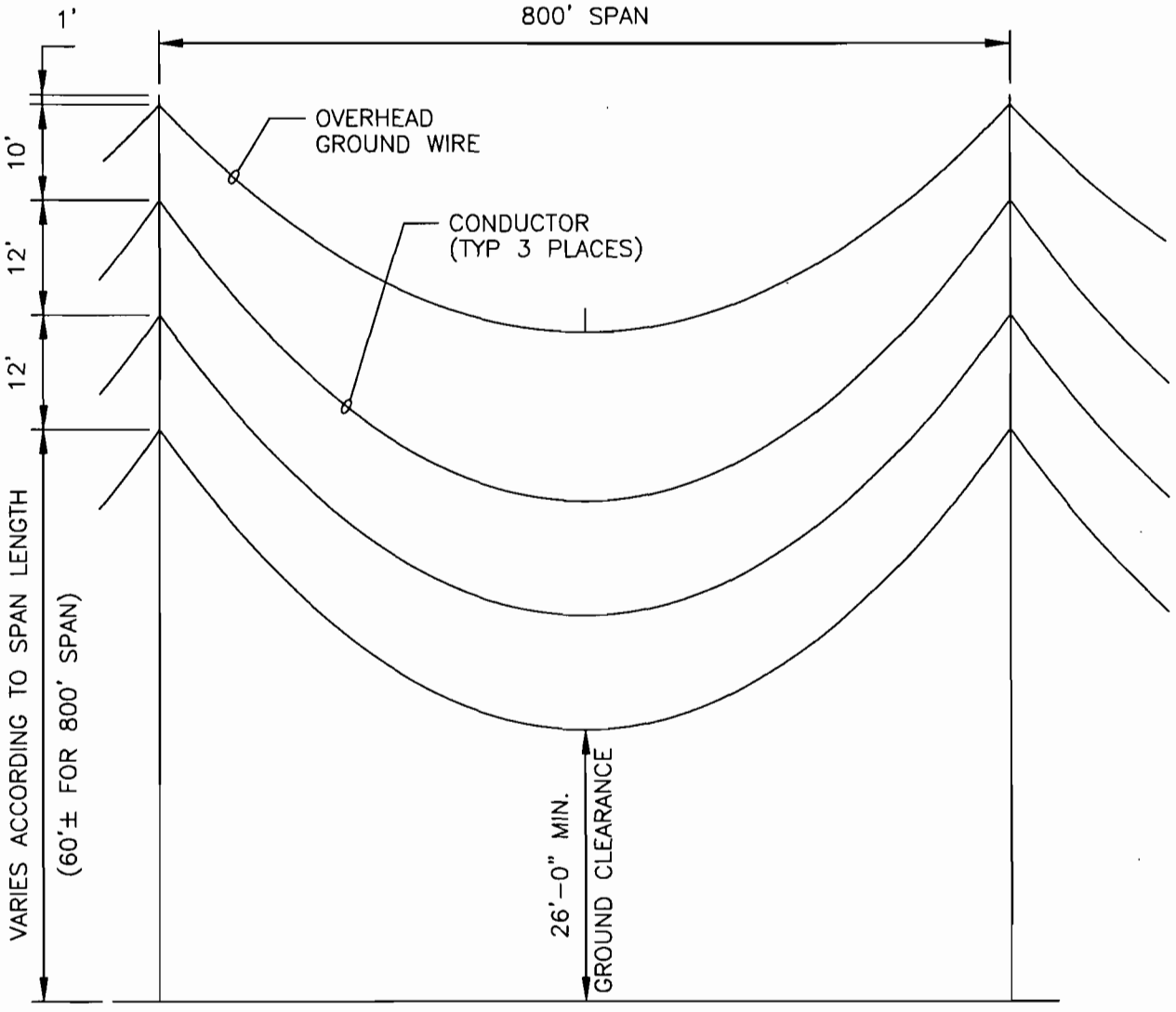


Curtis W. Arnold
11/2/98

DOUBLE CIRCUIT TRANSMISSION LINE STRUCTURE

FIGURE 6.1.3-2

NOTE: NOT RELEASED FOR CONSTRUCTION

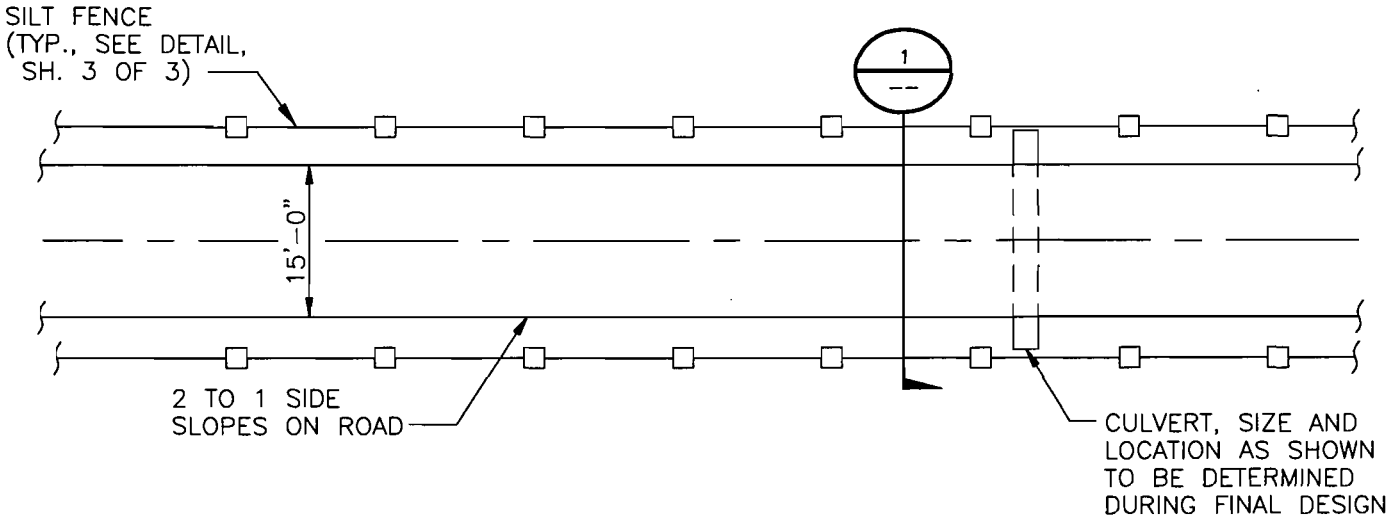


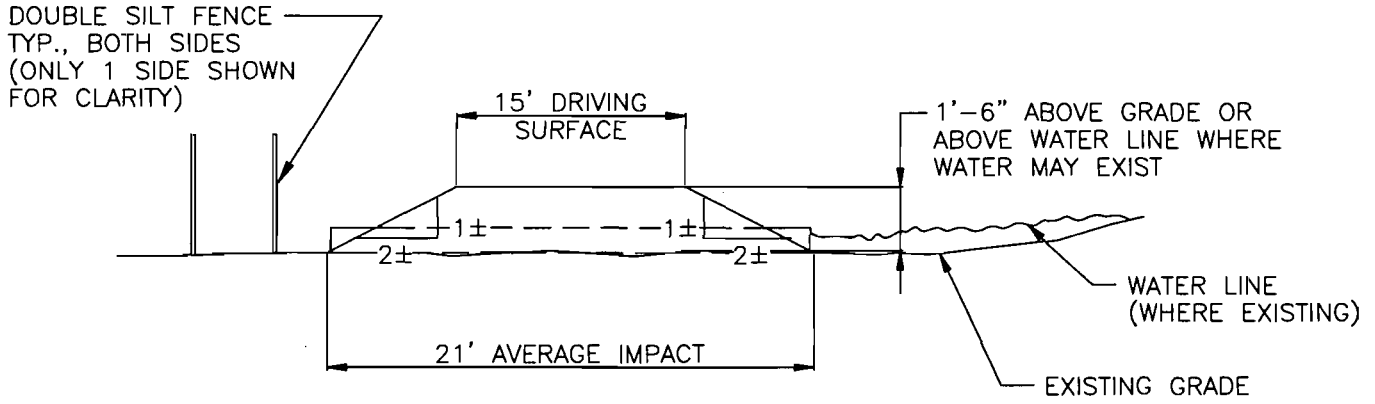
PROFILE OF TYPICAL 800 FOOT SPAN

Charles W. Lamb
11/2/78

FIGURE 6.1.3-3

NOTE: NOT RELEASED FOR CONSTRUCTION





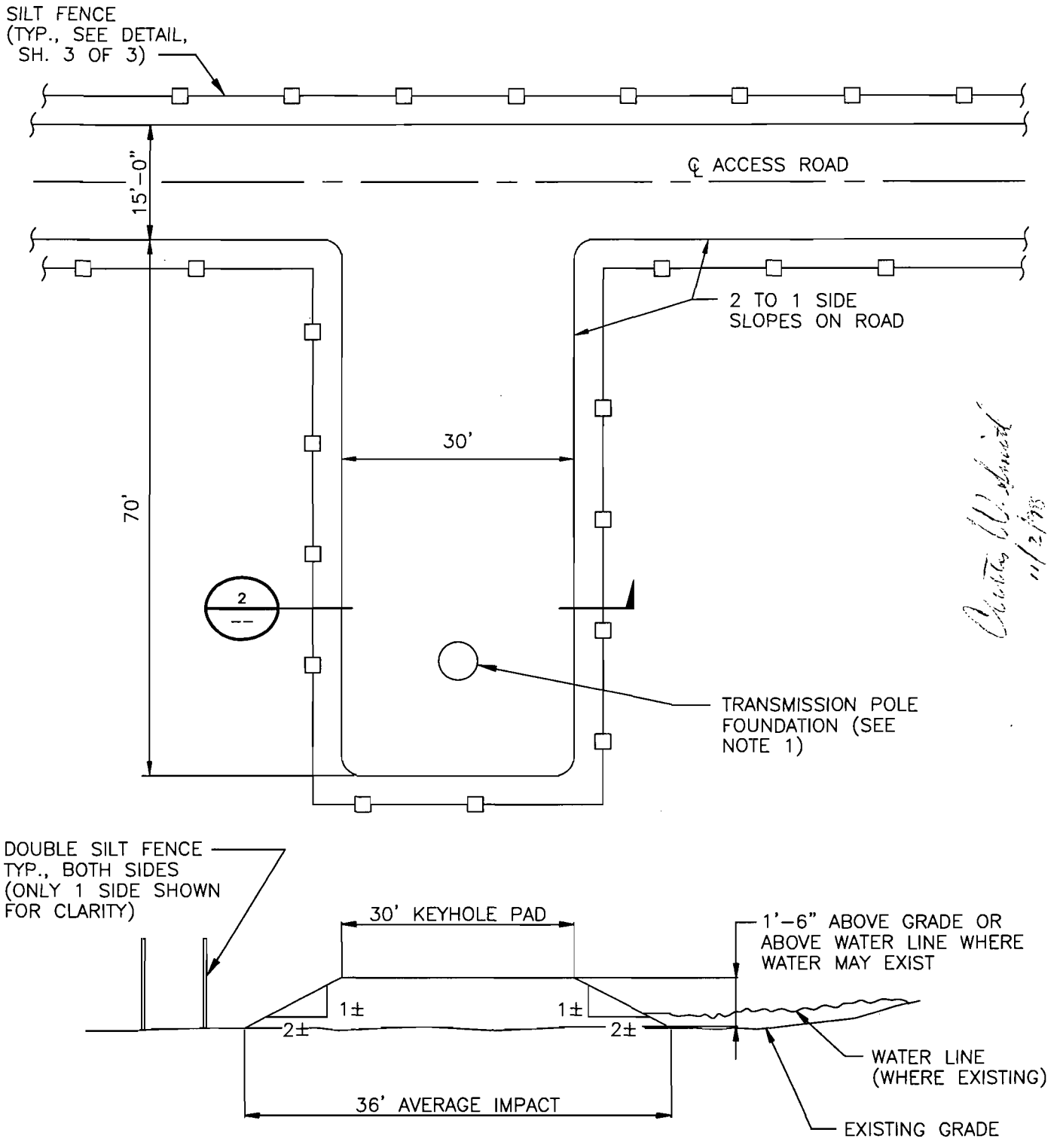
SECTION 1

Curtis W. Stewart
11/2/98

CANE ISLAND-INTERCESSION CITY 230kV TRANSMISSION LINE CROSS SECTION OF TYPICAL TRANSMISSION LINE ACCESS ROAD

FIGURE 6.1.3-4
SH. 1 OF 3

NOTE: NOT RELEASED FOR CONSTRUCTION



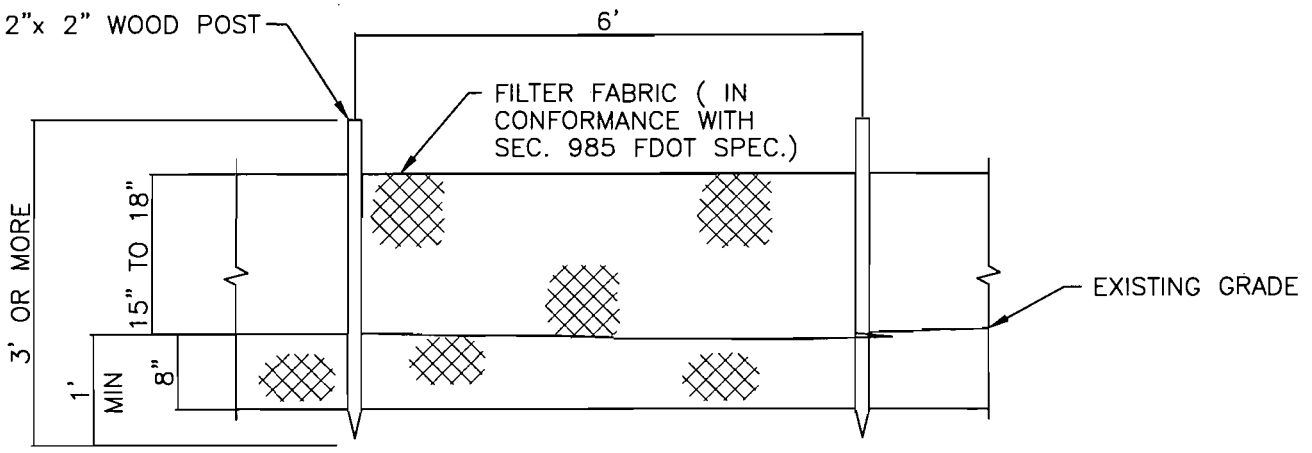
SECTION 2

NOTE:
1. SPOILS FROM FOUNDATION EXCAVATION TO BE SPREAD IN UPLAND LOCATIONS ON KUA PROPERTY.

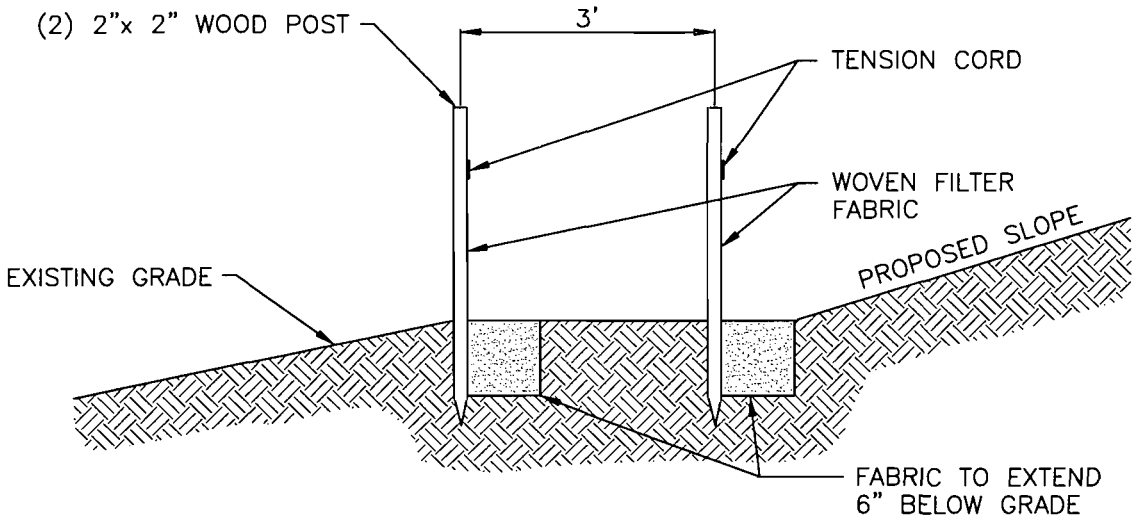
CANE ISLAND-INTERCESSION CITY 230kV TRANSMISSION LINE CROSS SECTION OF TYPICAL TRANSMISSION LINE ACCESS PAD

FIGURE 6.1.3-4
SH. 2 OF 3

NOTE: NOT RELEASED FOR CONSTRUCTION



ELEVATION



SECTION

CANE ISLAND-INTERCESSION CITY 230kV TRANSMISSION LINE CROSS SECTION OF TYPICAL SILT FENCE DETAILS

FIGURE 6.1.3-4
SH. 3 OF 3

NOTE: NOT RELEASED FOR CONSTRUCTION