EXHIBIT 14:

Alternative A:
Design Around Existing Stream System

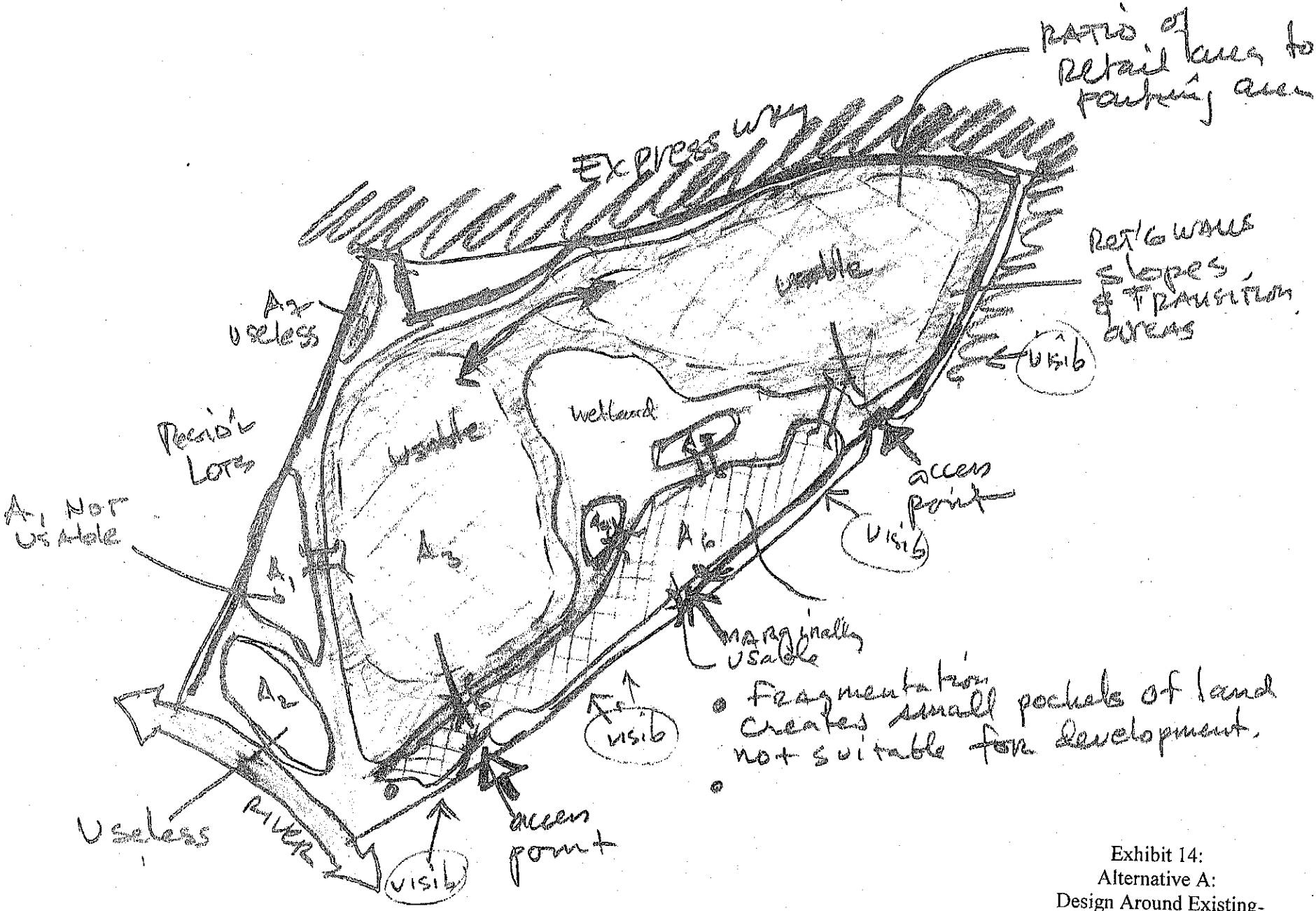


Exhibit 14:
Alternative A:
Design Around Existing-
Stream System

EXHIBIT 15:

Alternative B:
Design a Typical Strip Shopping Center

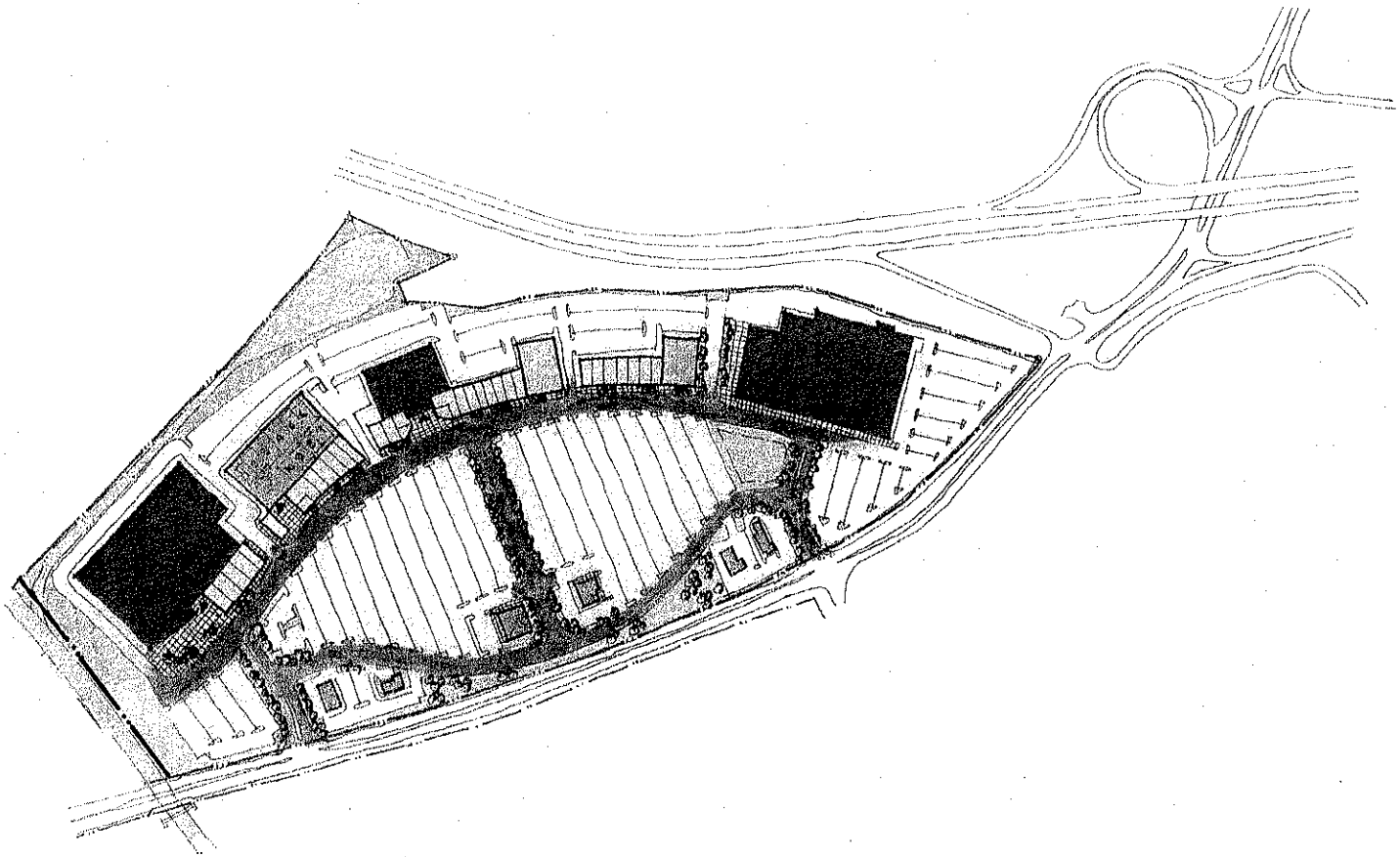


Exhibit 15:
Alternative B:
Design a Typical Strip
Shopping Center

EXHIBIT 16:

Alternative C:
Design a Typical Covered Mall

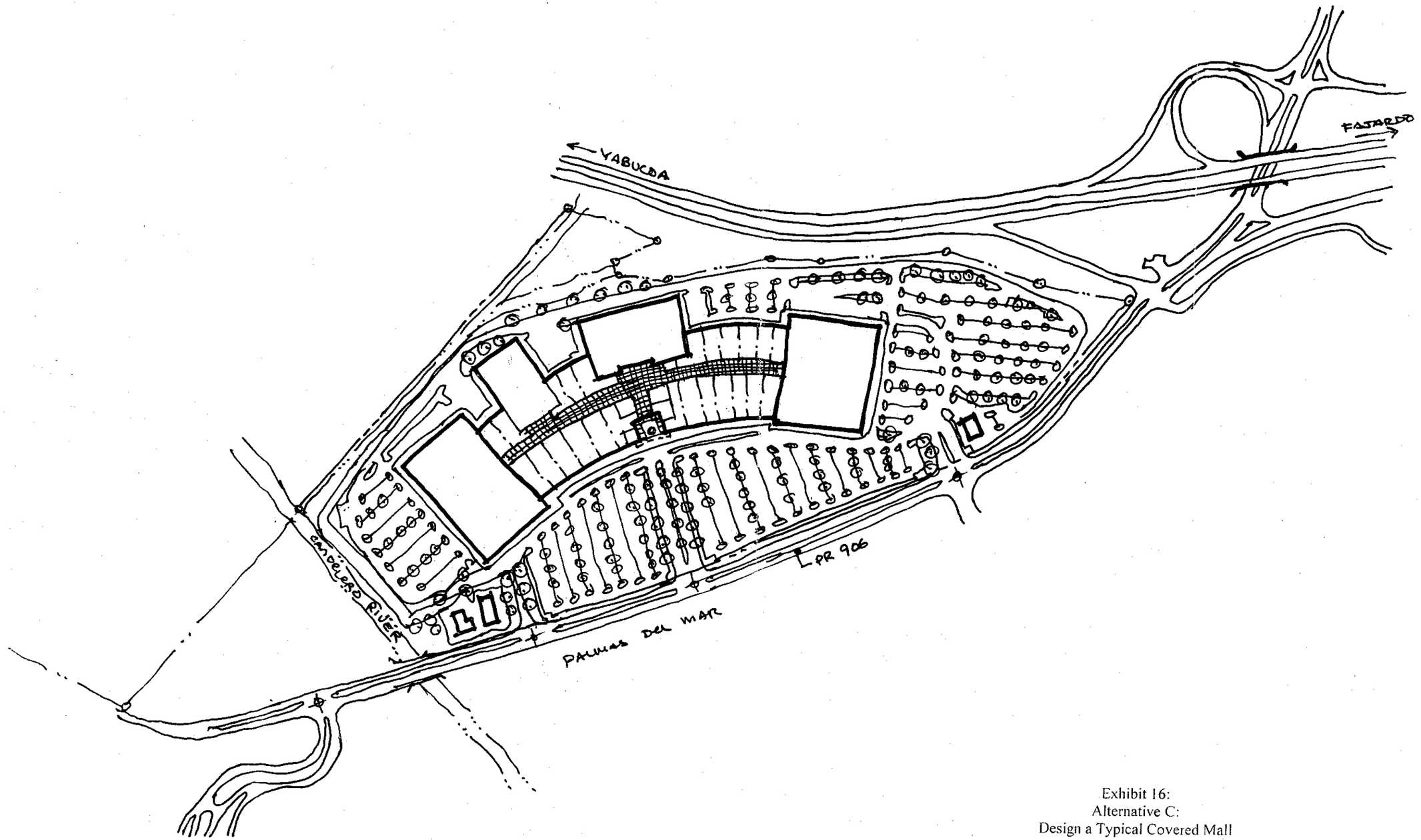


Exhibit 16:
Alternative C:
Design a Typical Covered Mall

EXHIBIT 17:

Alternative D:
Design a Hybrid Mall

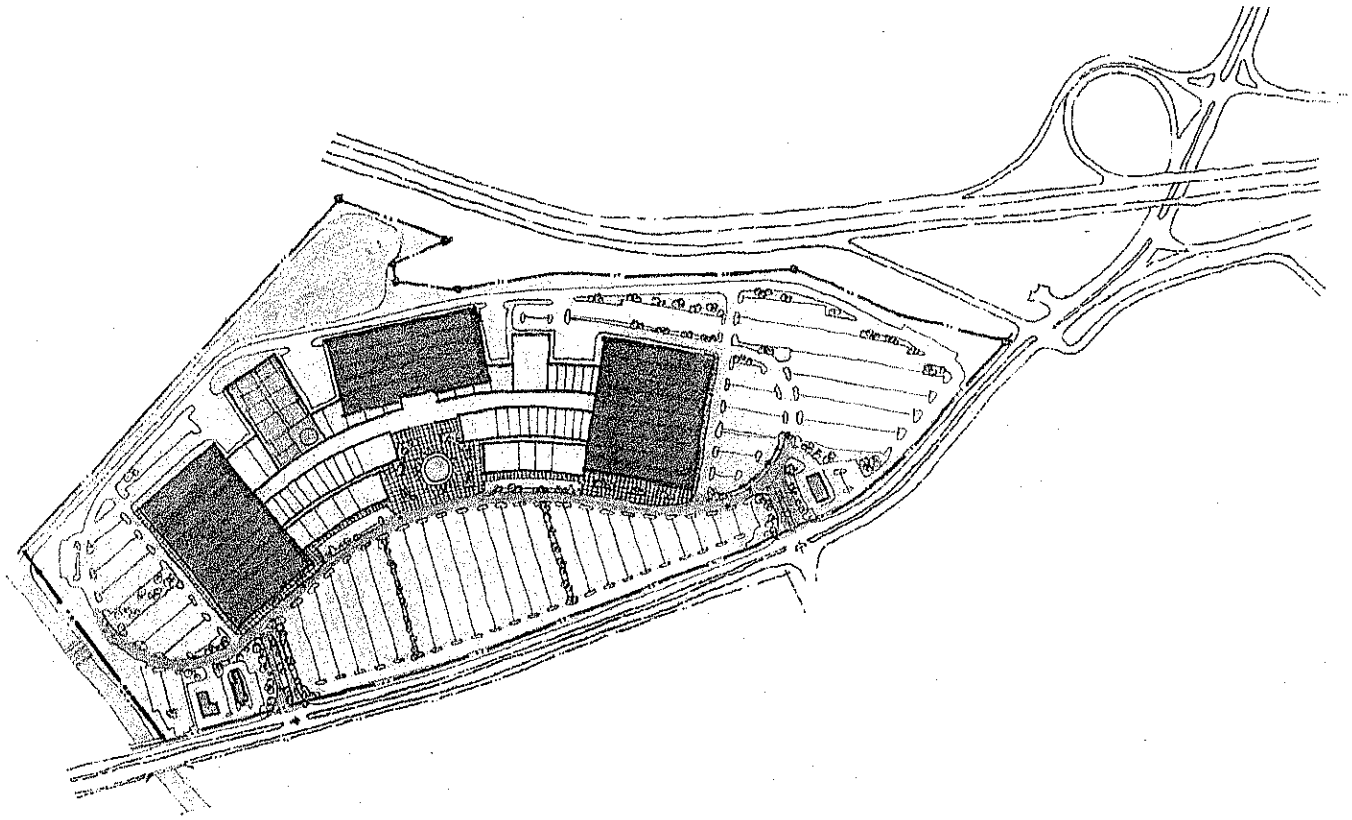


Exhibit 17:
Alternative D:
Design a Hybrid Mall

EXHIBIT 18:

Alternative E:
Design a Town Center

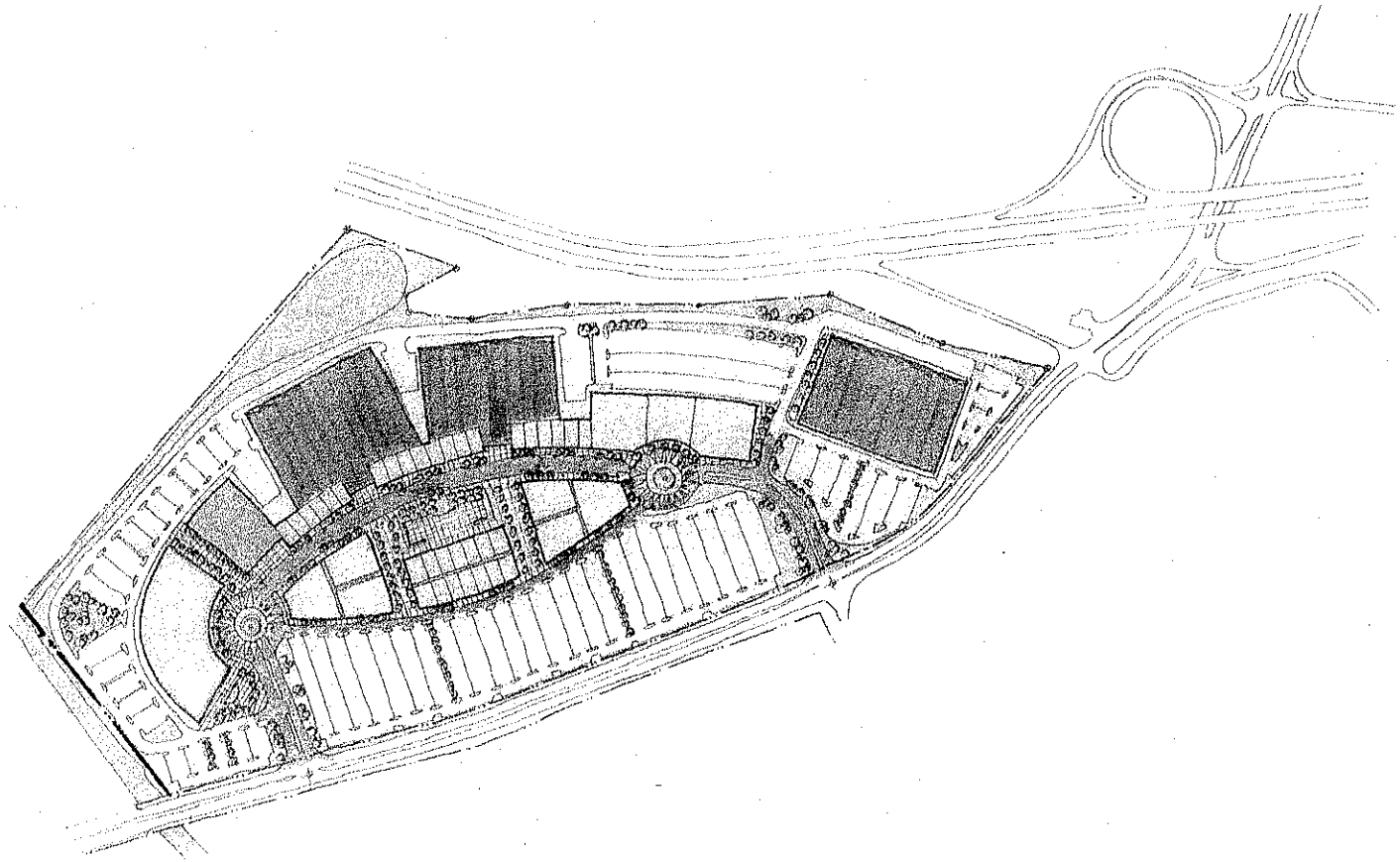


Exhibit 18:
Alternative E:
Design a Town Center

EXHIBIT 19:

Alternative F:
Design a Main Street Concept

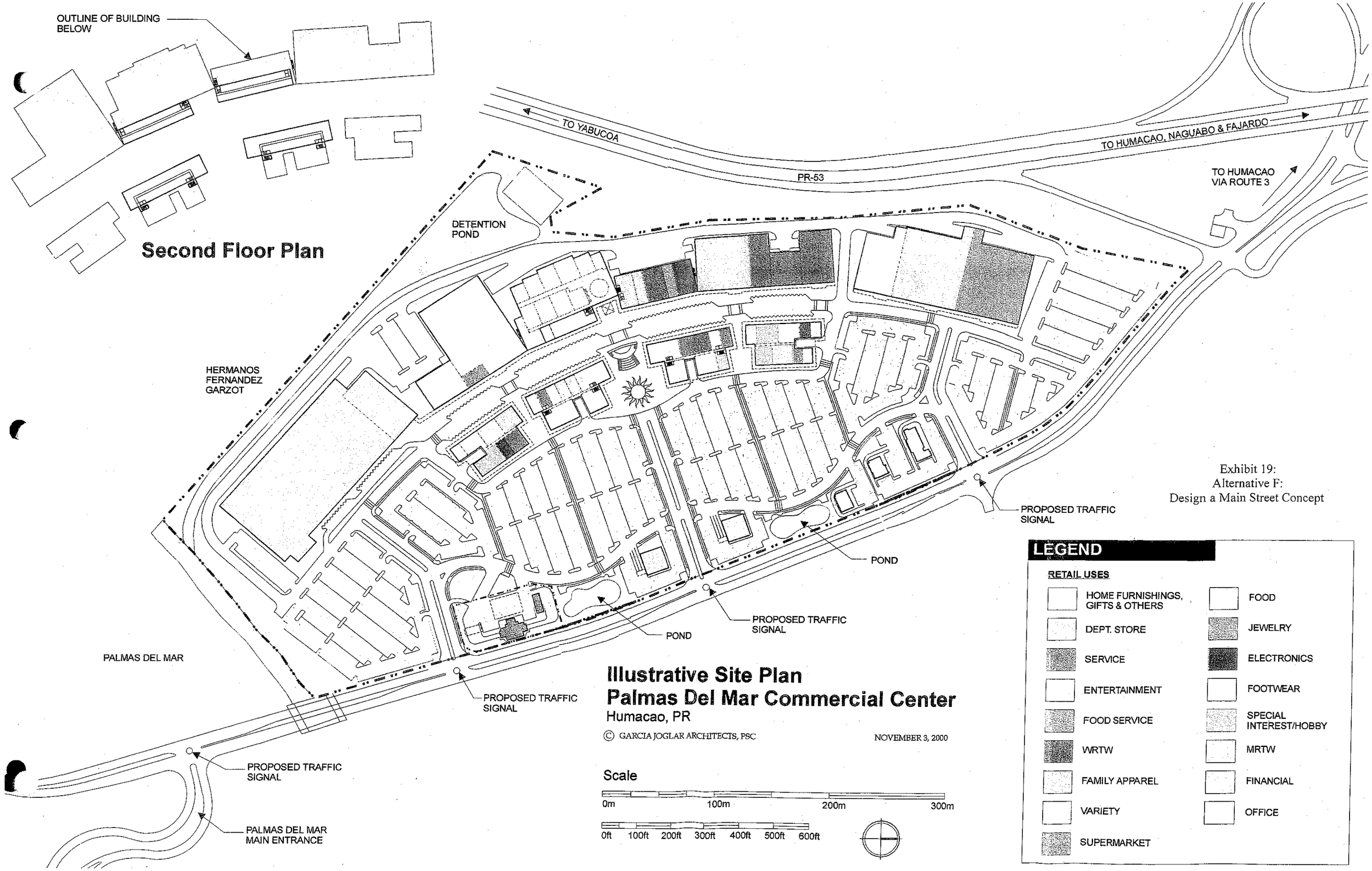


Exhibit 19:
Alternative F:
Design a Main Street Concept

EXHIBIT 20:

Alternative F:
Section Sketch

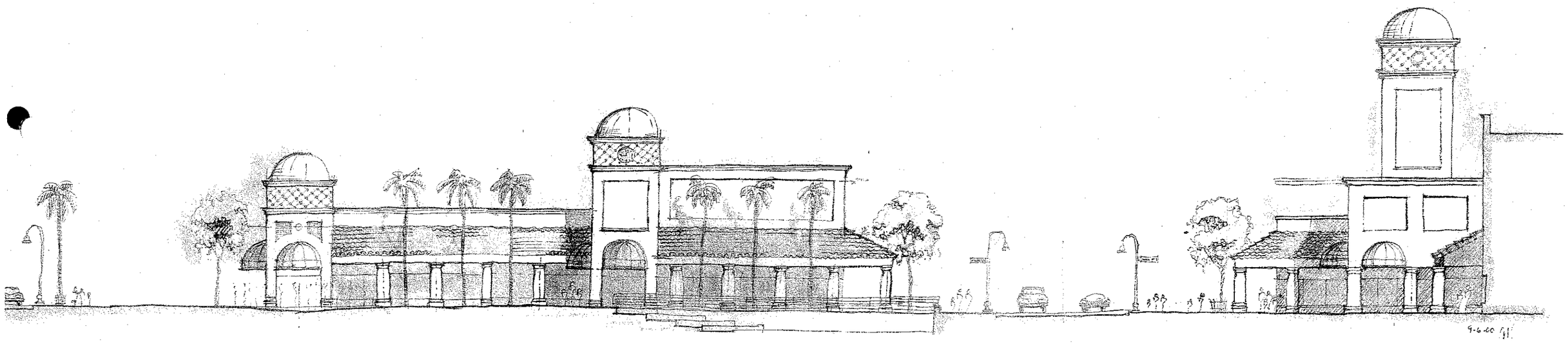


Exhibit 20:
Alternative F:
Section Sketch

EXHIBIT 21:

Alternative F:
Section Perspective (Aerial)

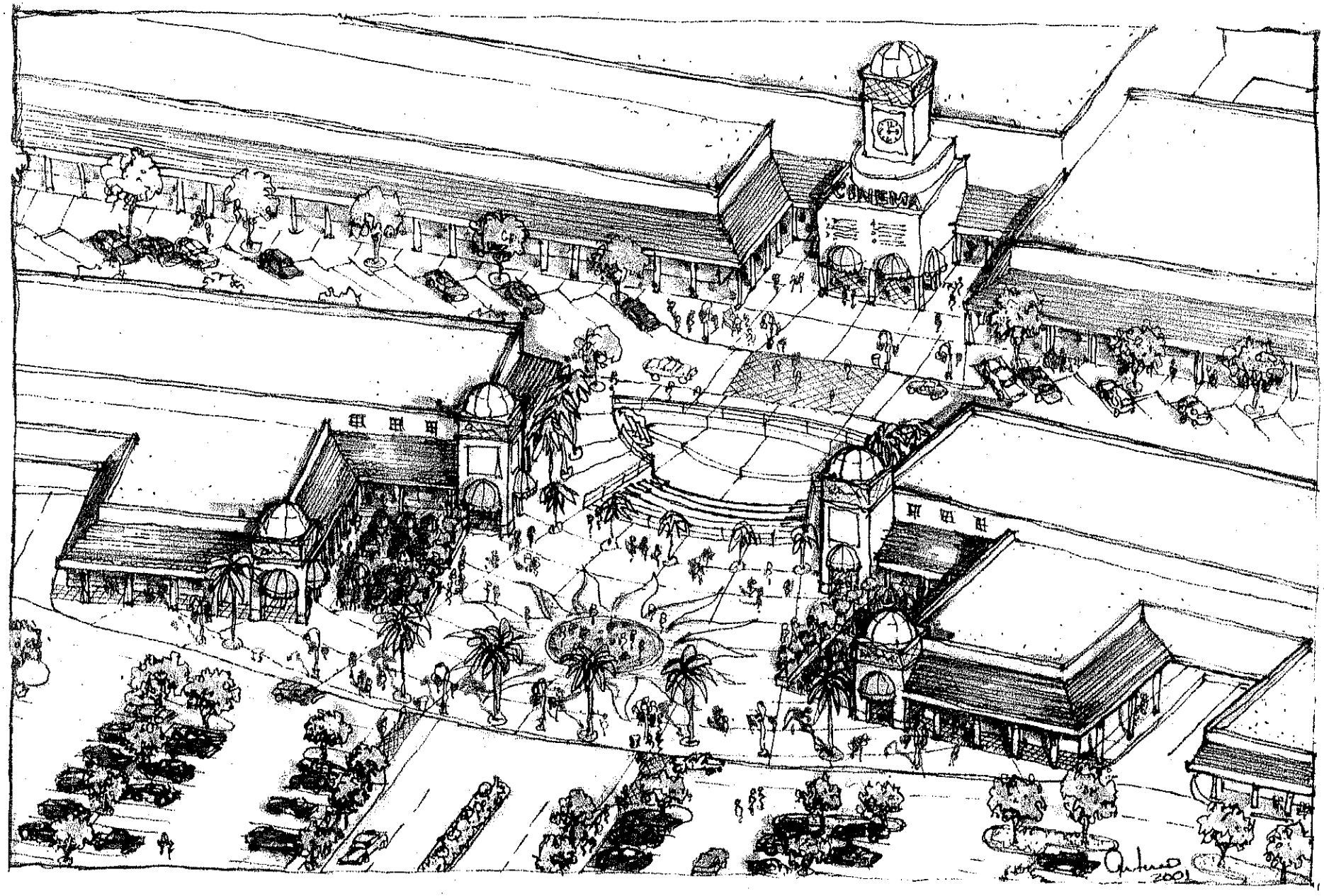
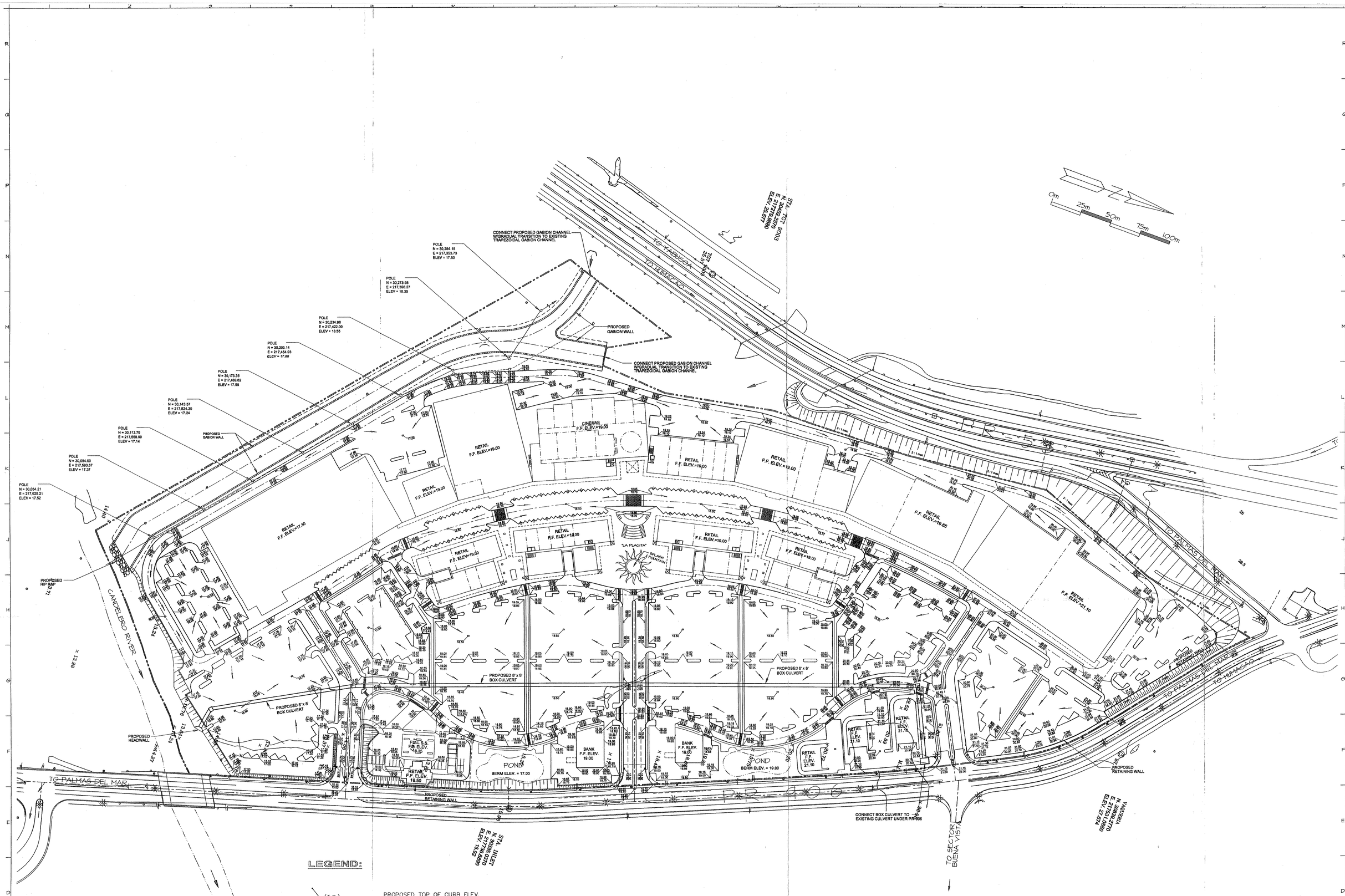


Exhibit 21:
Alternative F:
Section Perspective (Aerial)

EXHIBIT 22:

Commercial Project Grading Plan (Advanced Print)



LEGEND:

(T.C.)	PROPOSED TOP OF CURB ELEV.
(E.P.)	PROPOSED EDGE OF PVMT. ELEV.
	PROPOSED FLOW DIRECTION
	PROPOSED SLOPE (2:1 max)
	PROPOSED INLET
	PROPOSED 115 KV POLE
(TOW)	TOP OF RETAINING WALL
	PEDESTRIAN CROSSING
	PROP. ALTERNATE WETLAND MITIGATION AREA

NOTE:

1. GRADING PLAN PROPOSED BASED ON ASSUMPTION THAT TOP RIGHT OF WALL CAN BE GRAPED.

NO	ISSUE / REVISIONS	DATE

ADVANCE PRINT
NOT FOR CONSTRUCTION

NOTE: THESE DOCUMENTS ARE FOR DISCUSSION & PLANNING PURPOSES ONLY AND NOTHING SHOWN HEREON SHALL BE DEEMED A REPRESENTATION BY THE OWNER OR ANY OTHER ENTITY AS TO THE COMPLETENESS, ACCURACY OR VALIDITY OF ANYTHING SHOWN HEREON NOR SHALL ANYTHING SHOWN HEREON BE BINDING ON THE OWNER AS TO ANY CURRENT OR FUTURE DEVELOPMENT WITH RESPECT TO THE PROPERTY. ANY NAMES OF PROSPECTIVE OCCUPANTS OR USERS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE SUBJECT TO CHANGE.

cph Engineers Planning Zoning/Permitting Design Development Coordination Construction Management

Exhibit 22:
Commercial Project Grading Plan
(Advanced Print)

ARTURO J. GARCIA, AIA
ARCHITECTS
PO BOX 191707, SAN JUAN, PR 00919-1707
TRES MONJITAS INDUSTRIAL PARK, 62 FEDERICO COSTAS ST., 2ND FLOOR, HATO REY, PR
TEL (787)622-2266 FAX (787)622-2267 E-MAIL arturo@ajgarchitects.com

PROJECT NAME:
THE VILLAGE AT PALMAS DEL MAR
HUMACAO, PUERTO RICO

DRAWING TITLE:
SITE GRADING PLAN

PROJECT ID: 62301		DRAWING NO: SGP
DWG DATE: 04/24/02	DRAWN BY: E.O.L./A.L.R.	
SCALE: 1:1250	PLOT SCALE: 1:1	
XREFS: BASE1		

DRAFT Vol. 3 Exhibit 22

EXHIBIT 23:

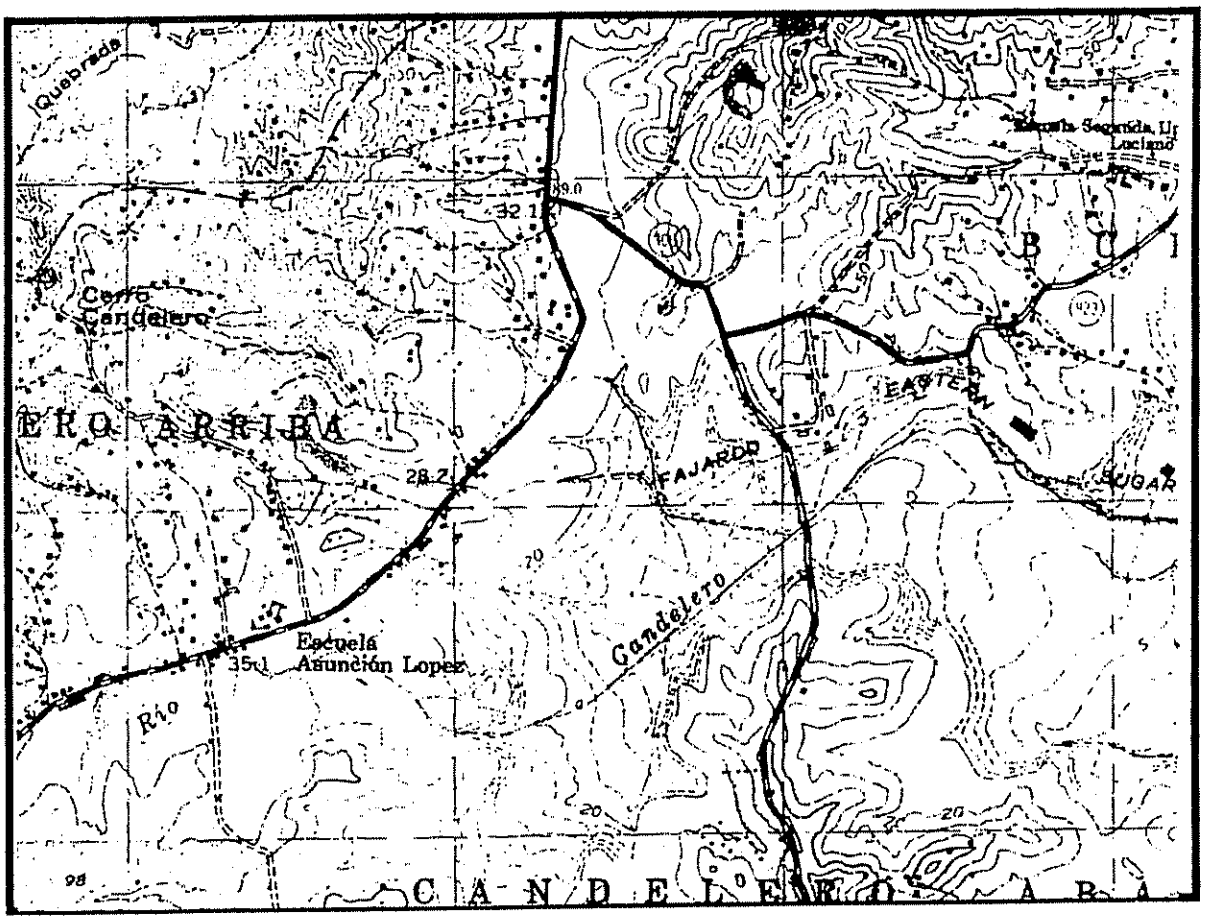
Commercial Project HH Study
And
DNER Endorsement

Hydrologic and Hydraulic Analysis :

Palmas del Mar Commercial Parcel

Humacao, Puerto Rico

RECEIVED
Palmas Del Mar Properties, Inc.
JUL 23 2001



July 18, 2001

Prepared for:

Palmas del Mar Properties, Inc.
Real Estate Development Group
Humacao, Puerto Rico

Prepared by:

Gregory Morris & Associates
265 San Francisco Street
P. O. Box 9024157
San Juan, Puerto Rico

Exhibit 23:
Commercial Project HH Study
And
DNER Endorsement

ESTADO LIBRE ASOCIADO DE PUERTO RICO
DEPARTAMENTO DE RECURSOS NATURALES Y AMBIENTALES

27 DIC 2002

RECEIVED
Palmas [illegible] Inc
JAN 06 2003
LUIS R RODRIGUEZ, PE

ING ELSIE PARRILLA CASTELLAR
GREGORY MORRIS & ASSOCIATES
265 SAN FRANCISCO STREET
PO BOX 9024157
SAN JUAN PR

Estimada ingeniera Parrilla:

Estudio Hidrológico-Hidráulico
Palmas del Mar Commercial Parcel
Humacao

C-9-2000-1270
(200205756)

Hemos evaluado los documentos sometidos en relación al asunto descrito en epígrafe.

El Departamento de Recursos Naturales y Ambientales encuentra que el estudio es aceptable desde el punto de vista técnico, por lo que no tenemos objeción. No obstante, todas sus recomendaciones deberán ser consideradas en la fase de diseño y construcción.

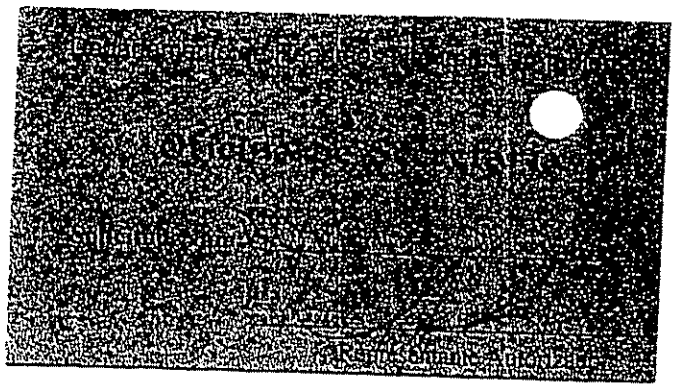
Las obras propuestas podrían requerir un permiso del Cuerpo de Ingenieros bajo la Sección 404 de la Ley de Agua Limpia, ya que puede haber una descarga de material en terrenos jurisdiccionales. También podría requerir un permiso de dicha entidad federal bajo la Sección 10 de la Ley de Ríos y Puertos ya que las estructuras propuestas podrían afectar o estar en aguas jurisdiccionales.

Cordialmente,

Luis E. Rodríguez Rivera
Secretario

LRR/CRT/JT/CSD/cc

cc: Sr. Edwin Muñiz
Cuerpo de Ingenieros
400 Fernández Juncos
San Juan, PR 00901



Gregory L. Morris & Associates.

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email: gmorris@caribe.net

• Hydraulics • Hydrology • Environmental Engineering • Sedimentation Engineering • Groundwater Analysis • Civil Design •

July 18, 2001

RECEIVED
Palmas Del Mar Properties, Inc.
JUL 23 2001
HUMACAO, PR

Dr. Carlos M. Padín
Secretary
Department of Natural and
Environmental Resources
P.O. Box 9066600
Puerta de Tierra Station
San Juan, P.R. 00906-6600

Re: Estudio Hidrológico Hidráulico
Area Comercial Palmas del Mar

Dr. Carlos M. Padín:

Enclosed please find two (2) copies of our report titled "Hydrologic and Hydralic Analysis: Palmas del Mar Commerical Parcel, Humacao, Puerto Rico, July 12, 2001" for your review.

Thank you.

Sincerely,

Elsie Parrilla Castellar

Elsie Parrilla Castellar, P.E.

DRNA
18 JUL 2001
OFICINA DE SECRETARIA

INTRODUCTION

Palmas del Mar Properties, Inc. wishes to develop a commercial center within a 60 acre parcel which lies on the western side of state road PR-906 in the municipality of Humacao, Puerto Rico . An unnamed creek tributary to Río Candelero crosses from west to east through the site, while Río Candelero crosses through the southern end of the parcel (see Figure 1).

The site forms part of the Palmas del Mar complex, a multi-component development with residential areas, hotels and resorts, school, shopping areas, marina, golf courses, wetlands, and tropical forests, which extends over approximately 3,000 acres of the southern end of the municipality of Humacao. In a previous H/H study, detention areas were assigned within the Palmas del Mar complex to attenuate the post-development peak outflow from the Palmas del Mar site under the 100-year storm. This study analyzes the proposed site for the Palmas del Mar Commercial Center as part of the entire Palmas del Mar complex. The total watershed draining through the entire Palmas del Mar complex and discharging into Río Candelero, including the site for the Commercial Center, is analyzed under pre- and post- development conditions; and the detention storage areas already proposed throughout the Palmas del Mar complex in a previous H/H study are utilized in this study to attenuate the total peak outflow from the entire Palmas del Mar site (see Figure 2).

This study also analyzes the offstream drainage affecting the Palmas del Mar Commercial Center site and provides recommendations so that 100-year flood levels under the future development conditions of this area do not reach the first-floor elevation of the lowest buildings of any of the developments within this study area.

SCOPE AND PURPOSE OF STUDY

This study constitutes the hydrologic and hydraulic analysis for the proposed commercial area of Palmas del Mar. This study determines:

1. The maximum water levels that will be attained throughout the study area for the 100-year design storm;
2. Detention analysis incorporating the Commercial site ; and

3. The sizing, location, and orientation of all required new and existing culverts and earthen channels;

The results of this study should be used as the basis for the civil design of all drainage-related infrastructure within the study area of this report.

STUDY AREA

The study area for Palmas del Mar Commercial Center consists of 60 acres of Palmas del Mar property which lie west (immediately upstream) of state road PR-906. The total watershed which contributes runoff to the PR-906 bridge adjacent to the downstream limit of the proposed commercial area is 1,717 acres. Hydrologic and hydraulic analysis of the additional 1,822 acres draining through all parcels within Palmas del Mar east (downstream) of state road PR-906 which drain into Río Candelero have been analyzed separately in previous H/H studies and are not studied in detail here, but modeling from these previous H/H studies is incorporated into this analysis determine the total peak outflows from the entire Palmas del Mar complex.

PARTIES INVOLVED

Project:	Palmas del Mar Commercial Center Drainage Analysis, Palmas del Mar, Humacao
Owner:	Palmas del Mar Properties, Inc P. O. Box 2020 Humacao, P.R. 00792-2020
Report Preparers:	Eng. Elsie Parrilla, Dr. Gregory Morris

AUTHORIZATION

Preparation of this report has been authorized by contract with Palmas del Mar Properties, Inc.

STUDY APPROACH AND METHODOLOGY

CONCEPTUAL DESCRIPTION OF THE SYSTEM

The study area is currently an undeveloped parcel which occupies approximately 60 acres of the Palmas del Mar property west (upstream) of state road PR-906. The site is crossed from west to east by an unnamed creek which receives waters from upstream of state road PR-53 and discharges into Río Candelero, about 20 feet upstream of the PR-906 bridge over Río Candelero. The site is also crossed from north to south by a dry-bed stream which receives waters from upstream (east) of state road PR-906 and discharges into the mentioned unnamed creek at a point approximately 145 ft upstream of the PR-906 bridge over Río Candelero (see Figure 6).

Under future conditions, the reach of the west-east unnamed creek crossing through the site will be replaced with an earthen open channel sized to contain 100-year flood flows and will be realigned to cross along the southern property limit, discharging into Río Candelero at a location 590 ft upstream of the PR-906 bridge. A section of this channel will need to cross through a culvert beneath the access road to the parcel within the Commercial site which will hold a new power substation. The reach of the north-south dry-bed stream crossing the site will be replaced with a new culvert sized for 100-year flows.

RÍO CANDELERO

The portion of Rio Candelero at the commercial parcel is classified as Zone 2 floodplain. A channelization plan for Río Candelero was submitted for this reach of the river, and approved by CLOMR dated June 16, 1995. That study provides the channel section and the 100-year water surface elevations along Río Candelero, and for that reason Río Candelero is not studied in this report. The channel cross-sections along Río Candelero are illustrated in Figure 5b, and flood levels along the river from that study are presented in Table 1. A copy of the CLOMR approval letter is provided in Appendix E.

Table 1. **100-year Flood Levels along Río Candelero**

Location*	Flood level, m msl	Location*	Flood level, m msl
Section 3.181	14.66	Section 1.448	5.46
Section 3.001	14.40	Section 1.353	5.18
Section 2.988	14.24	Section 1.333	4.87
Section 2.873	12.25	Section 1.255	4.75
Section 2.776	11.93	Section 1.182	4.72
Section 2.704	11.58	Section 1.157	4.68
Section 2.609	11.25	Section 1.152	4.56
Section 2.516	10.88	Section 1.128	4.23
Section 2.392	10.19	Section 1.072	4.30
Section 2.300	10.03	Section 0.978	4.22
Section 2.275	10.09	Section 0.876	4.13
Section 2.265	9.94	Section 0.699	4.02
Section 2.210	8.98	Section 0.614	3.34
Section 2.200	9.07	Section0.599	3.39
Section 2.190	9.06	Section 0.594	3.14
Section 2.159	8.96	Section 0.499	3.11
Section 1.900	7.65	Section 0.249	2.01
Section 1.821	7.03	Section 0.094	2.80
Section 1.728	6.52	Section 0.089	2.74
Section 1.644	6.11	Section 0.070	2.59
Section 1.547	5.72	Section0.000	2.07

* Refer to Figure 5b for location of cross-sections.

MODELING APPROACH

The one-dimensional adICPR unsteady-flow model was selected to simulate flooding. The system geometry is suited to modeling using a one-dimensional approach, the adICPR model contains all the hydraulic elements required for the modeling, and an unsteady flow model is required to accommodate the detention storage effects.

The hydraulic model extends from the mouth of Río Candelero to upstream of the Palmas del Mar Commercial Center site. The pre-development condition model simulates conditions within the areas of the Palmas del Mar complex discharging into Río Candelero (including Commercial Center site), prior to any development. However, since the Academy Drive and Country Club Drive bridges across Río Candelero and the levee bordering the south side of Río Candelero had already been approved prior to any development within the areas of the Palmas del Mar complex which discharge into Río Camdelero (FEMA CLOMR case number 99-02-025R), these are included in the pre-development conditions model. The post-development condition model simulates future full development conditions within Palmas del Mar. All simulations were performed for the 100-year rainfall event.

HYDROLOGY

MODELING TECHNIQUE

The total drainage area of the watersheds analyzed in this study is approximately 3,539 acres, which is the total drainage area for Río Candelero at its mouth. Of this total drainage area, 1,717 acres are tributary to PR-906 at the Commerical Center site. Due to their relatively small size, watersheds which drain into the study area have a quick hydrologic response and were simulated using a hydrograph peaking factor of 484.

The Soil Conservation Service unit hydrograph methodology, as implemented in the adICPR model, was used to generate runoff hydrographs. Runoff hydrographs generated by this method are based on rainfall depth and duration, value of Curve Number (based on soil type and land use), watershed area, time of concentration, and antecedent moisture condition.

WATERSHED CHARACTERISTICS

Under pre-development conditions, land cover throughout the Commercial Center site is mostly pasture with some brushes while land cover for the rest of the Palmas del Mar complex varies is generally pasture or herbaceous vegetation.

Under post-development conditions, a large area of the Palmas del Mar complex is developed with a land cover being a combination of impervious areas with grassed areas, especially golf courses. Land cover for the remaining area of the Palmas del Mar complex is either dense tree cover for all portions designated to remain as forest, or forest/herbacious vegetation for all portions to remain as wetlands.

Watershed Limits

Watershed limits were determined from the U.S.G.S. Punta Guayanés Quadrangle. The total watershed area was divided into 10 sub-basins which were analyzed separately for hydrologic modeling purposes. These are shown in Figure 3. The area of the Commercial Center site has been analyzed as a sub-basin separate from the offsite watersheds which discharge through the commercial site. Acreage of each sub-basin is presented in Table 2.

Precipitation

From Technical Paper #42 (U.S. Department of Commerce, 1961) the twenty-four hour rainfall for the 100-year recurrence interval rainstorm over the Humacao area was defined as 15 inches. Soil Conservation Service Type II rainfall distribution and antecedent moisture condition II (AMC-II) were used.

Time of Concentration

The time of concentration is the time required for rainfall in the most distant part of the watershed to influence discharge from the basin outlet. The time of concentration was computed using the Kirpich equation, which has the following form:

$$T_c = 0.00013\, L^{0.77} / S^{0.385}$$

where: T_c = time of concentration (hrs.)

L = maximum length of travel of water (ft)

S = slope (ft/ft)

Slopes and distances were obtained from the topographic data provided by Palmas del Mar. The computed times of concentration for each of the sub-basins are shown in Table 2.

Table 2: Areas and Times of Concentration (T_c) for Each Sub-basin.

Sub-Basin	Area (acres)	T_c (min)	Sub-basin	Area (acres)	T_c (min)
NORWEST	478	26	RIOCAND	791	40
WEST	128	21	N-CAND1	99	15
NORTH	99	27	N-CAND2	191	22
SOUTH	136	20	N-CAND3	236	27
SITE	60	10	INTERIOR	1470	42

Runoff Curve Number

Runoff curve numbers for each sub-basin were determined based on land use and soil types. The soil type for the entire Palmas del Mar area is reported in the soils map prepared by the Soil Conservation Service (1993) covering the eastern region of Puerto Rico (see Figure 4). Runoff curve numbers for each sub-basin are summarized in Table 3.

Table 3. **Runoff Curve Numbers for all Sub-basins.**

Basin	Runoff Curve Number Pre-develop	Post develop	Basin	Runoff Curve Number Pre-develop	Post develop
NORWEST	86	86	RIOCAND	86	86
WEST	86	86	N-CAND1	85	93
NORTH	86	86	N-CAND2	81	87
SOUTH	86	86	N-CAND3	81	92
SITE	86	96	INTERIOR	80.5	Various

Design Hydrology

Runoff hydrographs for the 100-year event were computed within the adICPR modeling environment for each of the watersheds by applying the 24-hour rainfall depths from Technical Paper #42 (U.S. Department of Commerce, 1961) and using the Soil Conservation Service Type II rainfall distribution. The resulting 24-hour, 100-year peak discharges from each watershed are summarized in Table 4. Hydrologic modeling and results are presented in Appendix A and Appendix B.

Table 4: Watershed 100-year Peak Discharges.

Sub-basin	Discharge, cfs Pre-develop	Post-develop	Sub-basin	Discharge, cfs Pre-develop	Post-develop
NORWEST	3703	3703	RIOCAND	5197	5197
WEST	1045	1045	N-CAND1	846	890
NORTH	755	756	N-CAND2	1492	1682
SOUTH	1126	1126	N-CAND3	1742	2085
SITE	543	559			

HYDRAULICS

Hydraulic analysis was performed using the adICPR model, an unsteady flow, one-dimensional, link-node hydraulic model capable of simulating storage components, hydraulic structures, and flow reversal situations. Friction losses were computed using the Manning equation and average conveyance method, and expansion and contraction losses were determined using velocity headloss coefficients. The following Manning's equation roughness coefficients (n-values) were used in the analysis:

Condition	n-value
Pavement and concrete	0.013
Vegetated earth swale	0.02-0.035
Vegetated river banks	0.03-0.05

Stage-storage relationships used within the model were constructed based on the surveyed geometry provided by Palmas del Mar Properties, Inc. All simulations reported here were performed using the 100-year storm hydrographs computed within the adICPR hydrology module. For simulation of both the pre-development and post-development conditions, the water level at the downstream boundary condition (mouth of Río Candelero) was simulated as a time-stage node using the 100-year storm surge elevation at that location (2.5 meters). Initial water level was set at the node invert elevation for all normally dry nodes.

MODEL GEOMETRY

Topographic data for the section of Palmas del Mar under study was provided by Palmas del Mar Properties, Inc. From these data information on existing drainage structures was obtained and channel geometry was established for simulation of the pre-development conditions. Locations of all survey cross-sections used in this analysis are presented in Figure 5a and Figure 5b.

PRE-DEVELOPMENT HYDRAULIC ANALYSIS

The pre-development hydraulic model extends from the mouth of Río Candelero to the upstream limit of the Palmas del Mar Commercial Center site. This model simulates drainage through all areas of the Palmas del Mar complex (including the Commercial Center parcel) which discharge into Río Candelero. It simulates conditions prior to any development within the section of the Palmas del Mar complex draining into Río Candelero, but includes the Academy Drive and Country Club Drive bridges across Río Candelero and the levee bordering the south side of Río Candelero.

The pre-development drainage features throughout the Commercial site are presented in Figure 6. A schematic of the link-node configuration used to simulate pre-development conditions is shown in Figure 7. The location of each of these nodes is presented schematically in Figure 8. Hydraulic modeling and results for pre-development conditions are presented in Appendix C.

PROPOSED CONDITION DESIGN HYDRAULICS

The post-development condition model uses the pre-development condition model as base, and incorporates all the proposed changes to the site hydraulics. To simulate full development conditions, this model has been merged with the Interior Drainage model which simulates future development conditions within the enclosed drainage area of Palmas del Mar south of Río Candelero. The Interior Drainage model has been presented as a separate analysis and is not discussed in this report.

The site forms part of the Palmas del Mar complex, and its hydraulics have been analyzed as a component of the entire Palmas del Mar complex hydraulics. In a previous H/H study, detention areas were assigned within the Palmas del Mar complex to attenuate the post-development peak outflows from the sections of the Palmas del Mar site discharging into Río Candelero, including the Commercial parcel, under the 100-year storm. For this reason, no individual detention area has been provided for the stormwater produced within the commercial site.

Several hydraulic elements have been modified within the PDM Commercial Parcel under future development conditions. A schematic of the proposed layout is presented in Figure 9. The link-node configuration used in hydraulic modeling of post-development conditions is presented in Figure 10a and Figure 10b. A node location map for this model is presented in Figure 11.

Under post development conditions, the unnamed creek which crosses the site from west to east is realigned and modified as a two-stage channel which contains the 100-year flow. Figure 12a shows this new earthen, open channel divided into three separate reaches (Reach1, Reach 2, and Reach 3) and Figure 12b presents the proposed geometry for each of these reaches. It must be noted that a section of Reach 2 will be replaced by the culvert proposed beneath the power substation access road stretching across this unnamed creek (culvert #1 in Figure 9) . All sections of Reach 2 upstream and downstream of the power substation access road culvert should have the geometry proposed for Reach 2 (presented in Figure 12b). Design parameters for this channel are as follows (refer to Figure 11 and Figures 12a and 12b):

Table 5. Parameters for Channelization of Unnamed Stream Crossing Site.

Distance from confluence with Candelero River, m	Location corres-ponds to node:	Invert elevation, m	Bottom width, center channel m	Side Slopes, center channel	Total width of channel, m	Side slopes of channel (see Figure 12b)
0	CONFLU3	10.86	3	2:1	21	*
100	CONFLU2	11.7	3	2:1	21	*
300	CONFLU1	13.02	1	2:1	16	*
370	US-SITE	14.47	1	2:1	16	*
405	CULV-53	15.86	1	2:1	12	*

- Vertical gabion wall

The design parameters for the culvert beneath the power substation access road are presented in Table 6.

Table 6. **Design Parameters for Proposed Culvert Beneath Power Substation Access Road.**

Parameter	Value
Type:	Rectangular, concrete
Design (100-yr) Dischage	429 m^3/s (15,158 cfs)
Pipe height:	3.0 m (9.84 ft)
Pipe width	4.0 m (13.12 ft)
Number of cells:	3
Length:	10 m
Upstream invert	14.47 m
Downstream invert	14.35 m
Entrance:	Beveled ring, 45° bevels
Exit:	Beveled ring, 45° bevels

The unnamed dry-bed stream which crosses the site from north to south is replaced with a new culvert sized to convey the 100-year flow. Alignment of this new culvert is presented in Figure 9. Design parameters for this culvert are presented in Table 7. Water levels throughout the Commercial site for proposed conditions are presented in Table 8. Hydraulic modeling and results for post-development conditions are presented in Appendix D.

Table 7. **Design Parameters for Proposed Culvert to Replace Existing North-South Unnamed Dry-Bed Stream.**

Parameter	Value
Type:	Rectangular, concrete
Design (100-yr) Dischage	34.13 m^3/s (1,205 cfs)
Pipe height:	2.5 m (8.2 ft)
Pipe width	2.5 m (8.2 ft)
Number of cells:	1
Length:	640 m
Upstream invert	18.60 m
Downstream invert	9.85 m
Entrance:	Beveled ring, 45° bevels
Exit:	Beveled ring, 45° bevels

Table 8. Water levels throughout site (see Figure 11).

Node	Post development water surface elevation, m
CULV-53	17.51
US-SITE	17.72
AEE-RD	17.5
CONFLU1	16.10
CONFLU2	15.72
CONFLU3	15.65
DS-906-C	21.10
US-906	15.31

The post-development hydraulic model routes all flows produced within the Palmas del Mar site under full development conditions to the site's point of discharge (mouth of Río Candelero). For the 100-year, 24 hour storm, the peak outflow from the Palmas del Mar complex is as follows:

Pre-development Condition 100-yr Peak Outflow From PDM Complex	Post Development Condition 100-yr Peak Outflow From PDM Complex
18,194 cfs	14,667 cfs

CONCLUSIONS

Analysis of the 100-year, 24 hour rainstorm of 15 inches depth has produced the following conclusions regarding the Commercial Center site of the Palmas del Mar complex :

1. Placement of new pipes and earthen channels are recommended throughout the study area as shown in Figure 9.

2. The dimensions and invert elevations of the new earthen channel bordering the south side of the site should be as listed in Table 5 and as described in Figures 12a and 12b of this report.

3. The dimensions of the pipe proposed beneath the new access road to the proposed power substation parcel should be as listed in Table 6.

4. The dimensions of the pipe to replace the existing dry-bed stream crossing the site from north to south should be as listed in Table 7. This pipe has been designed to convey the 100-year offsite drainage.

5. The pipe which will replace the existing north-south dry-bed stream may also be used to drain the site for storms with up to a 25-year recurrence period. All excess runoff produced within the site during larger storms should flow along streets and/or parking areas towards the southeastern corner of the site and into Río Candelero. It shall be the responsibility of the site engineer to grade all streets and parking areas such that all storm sewer surcharge flows along these towards the southeastern corner of the site and into Río Candelero.

    - Maximum flood levels throughout the site are presented in Figure 13. To avoid flooding of the lowest buildings in the Commercial parcel, minimum finish first floor elevations throughout the site should as presented in Figure 14.

FIGURES

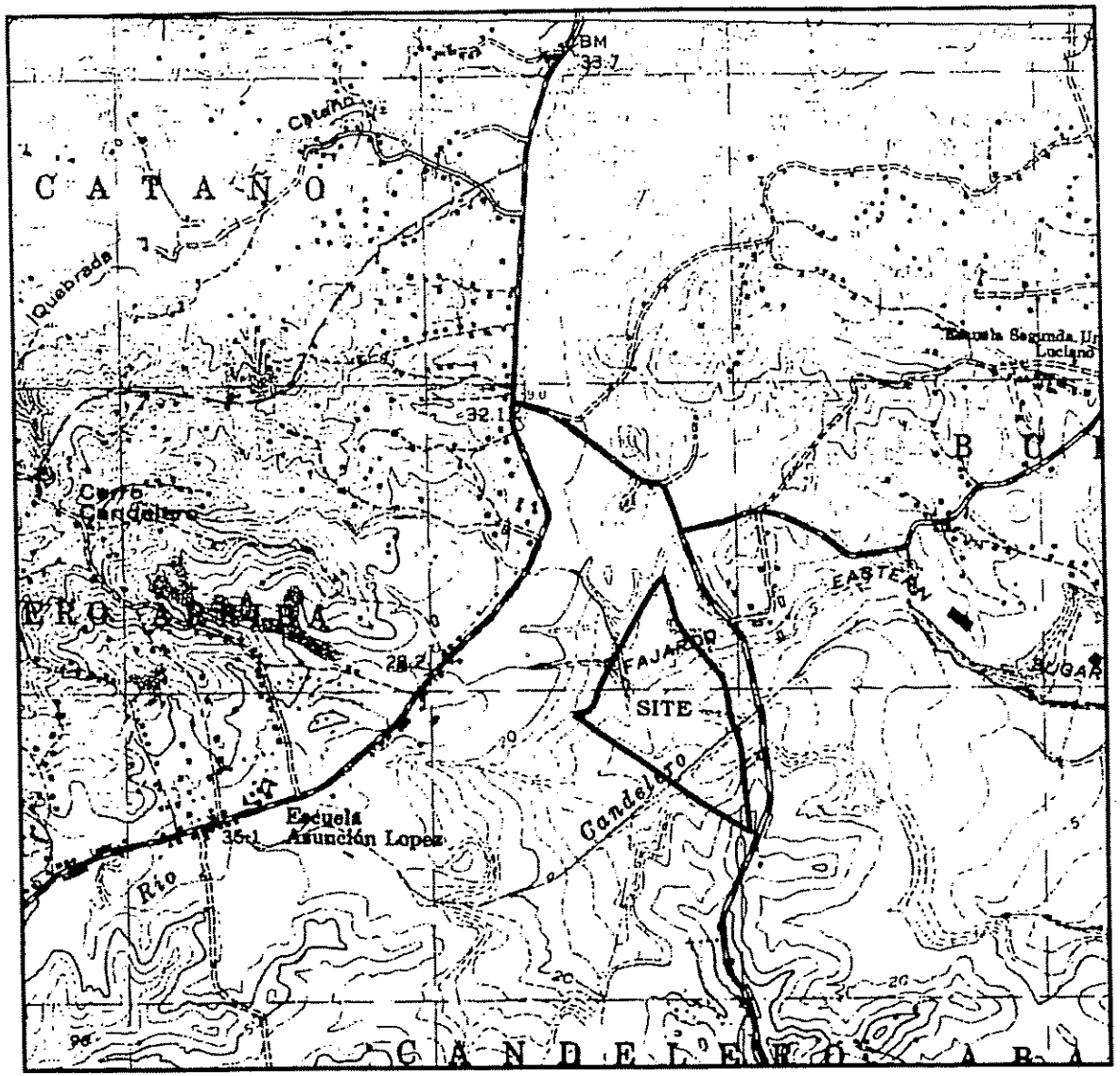


Figure 1. Site location map. The land on the south side of Río Candelero is part of the property but will not be developed as part of this project.

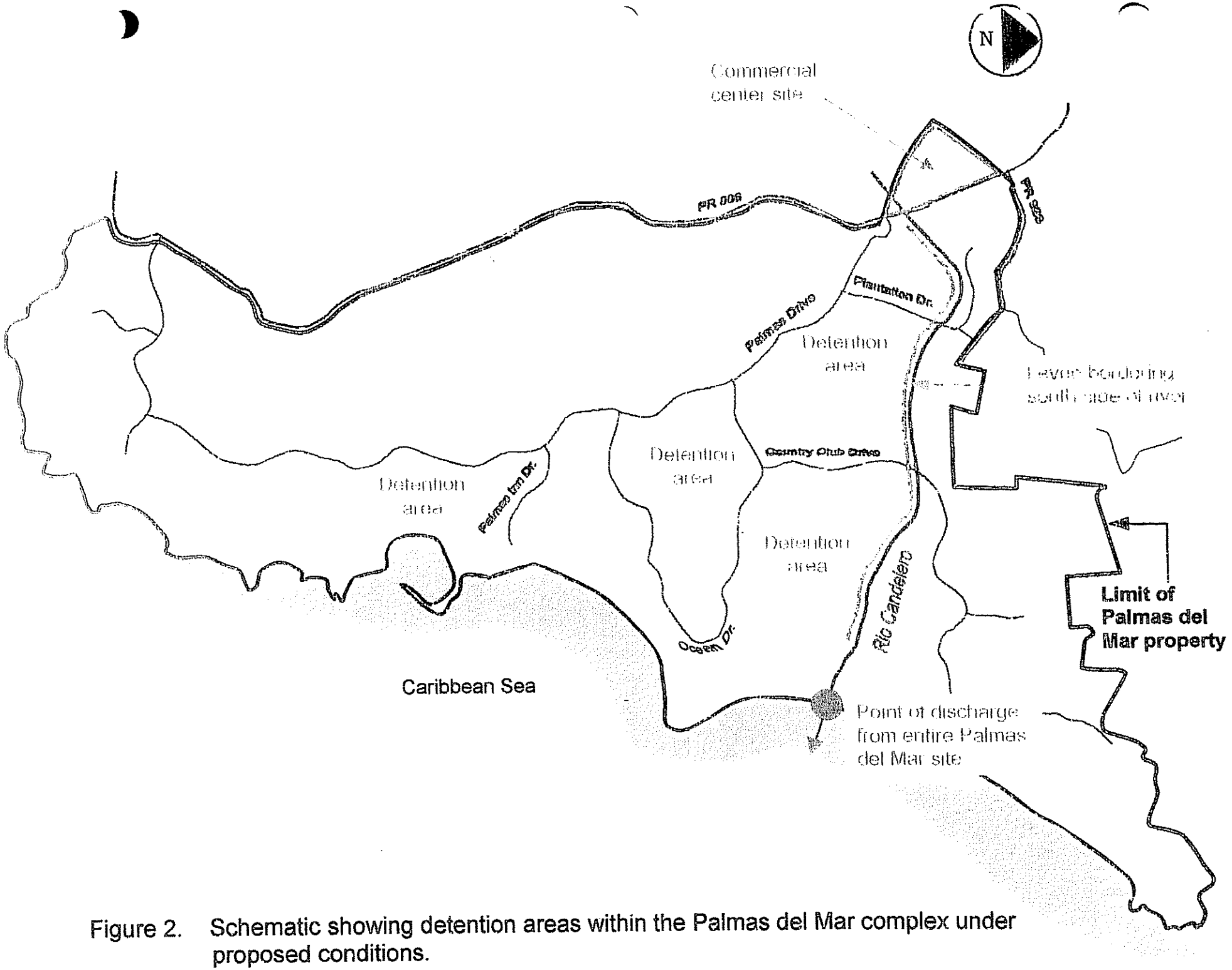


Figure 2. Schematic showing detention areas within the Palmas del Mar complex under proposed conditions.

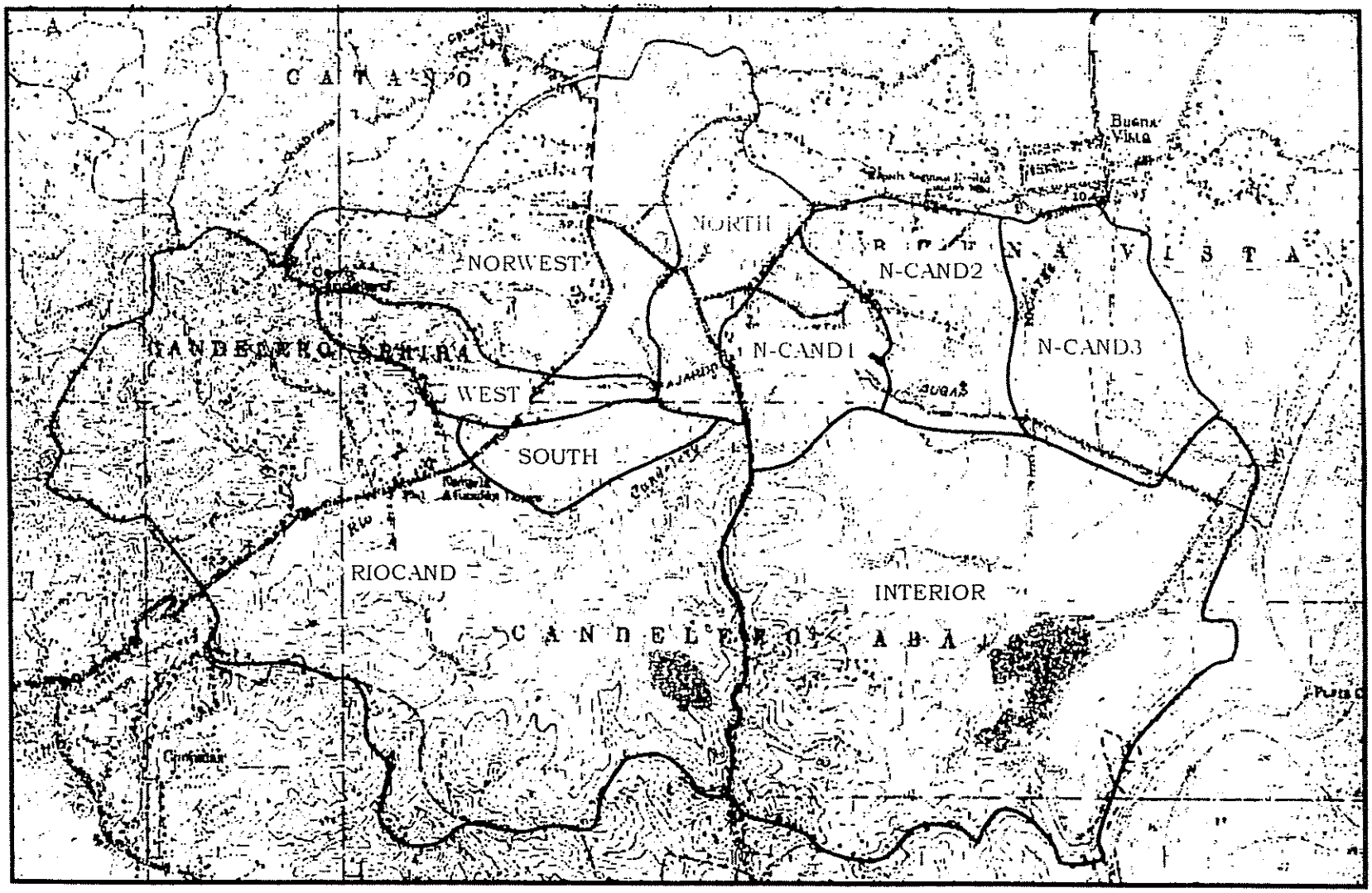


Figure 3. Watershed limits used in hydrologic modeling.

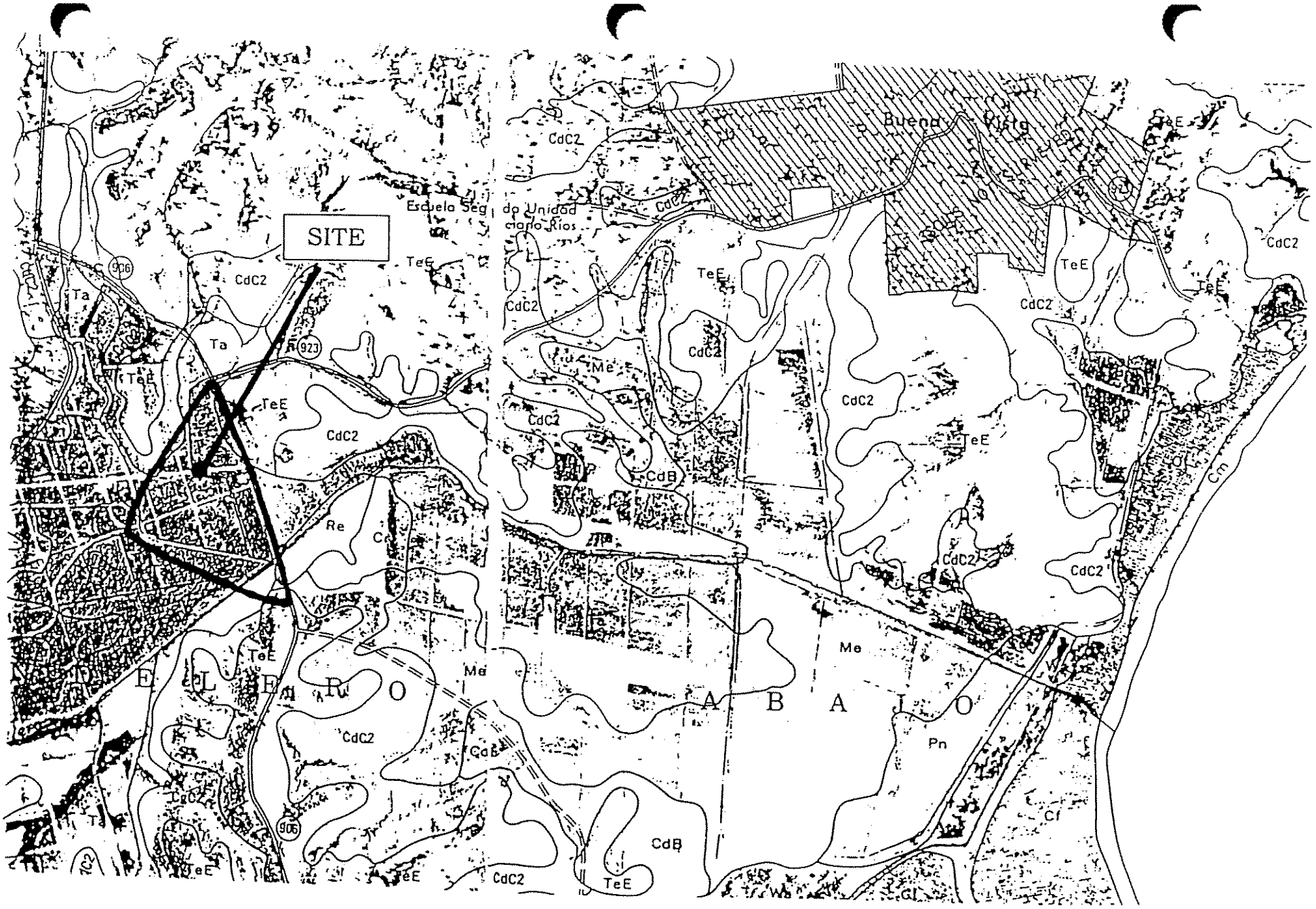


Figure 4. Soils in the area of the Palmas del Mar Commercial Center

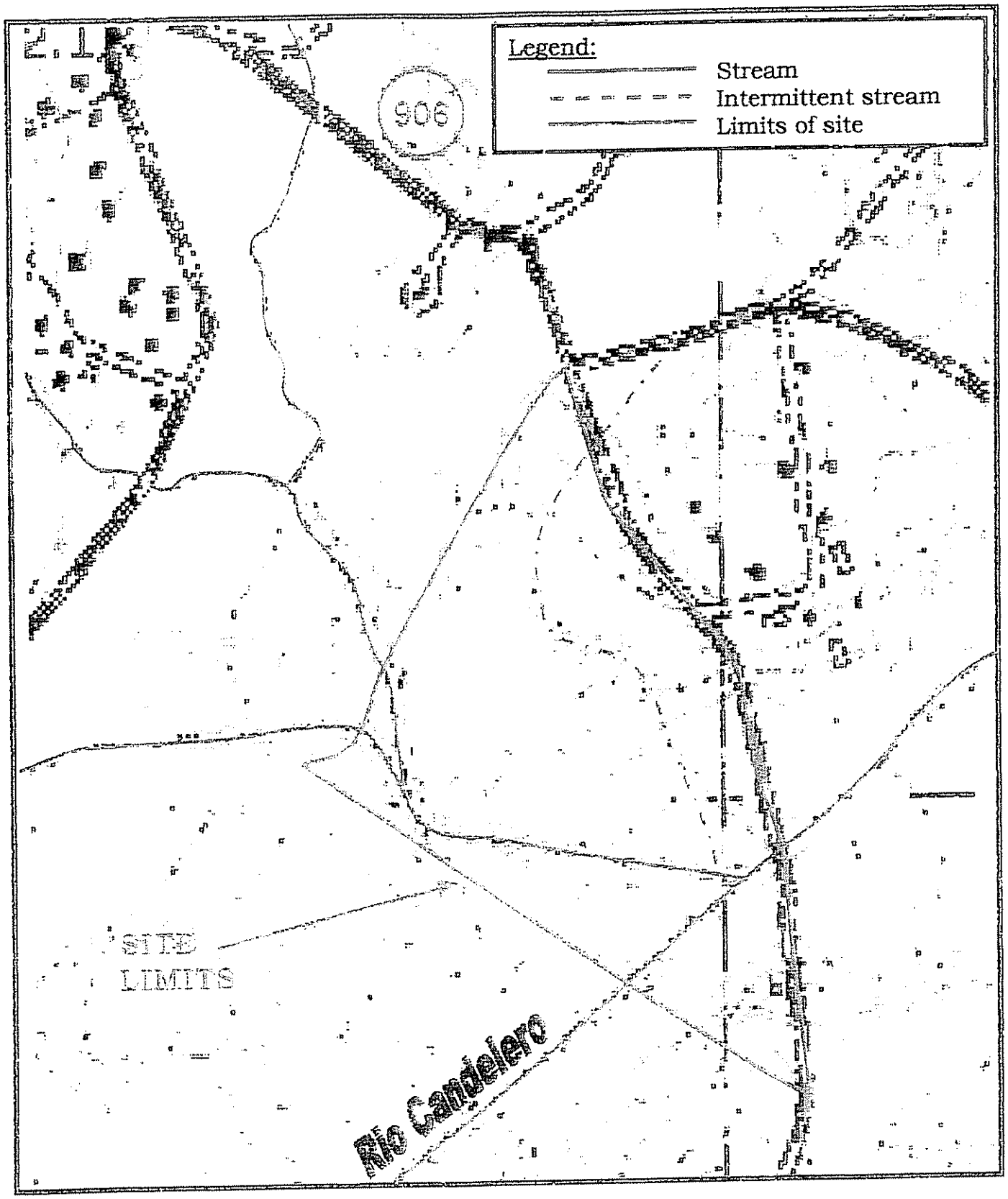


Figure 6. Schematic of pre-development drainage features.

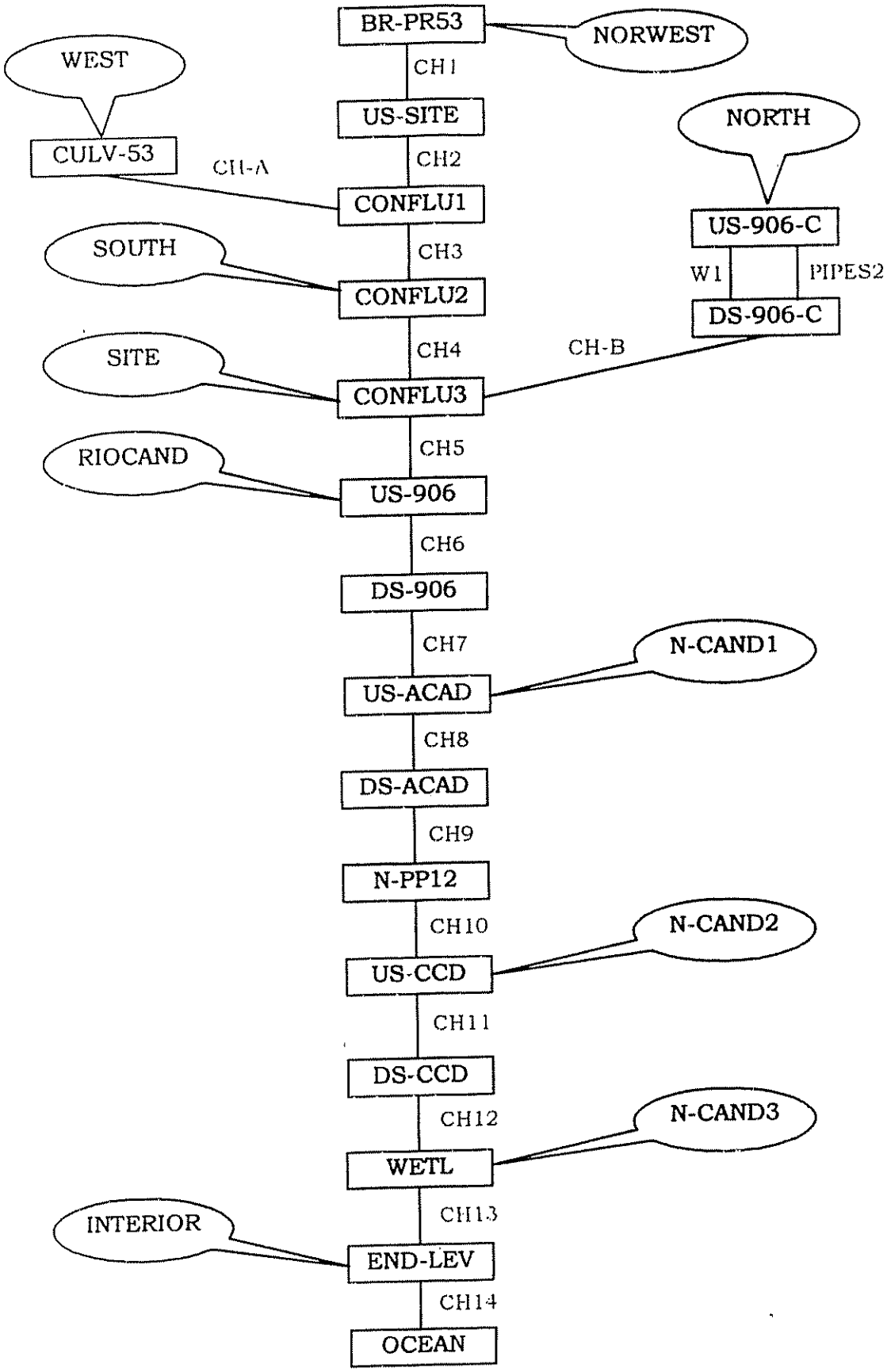
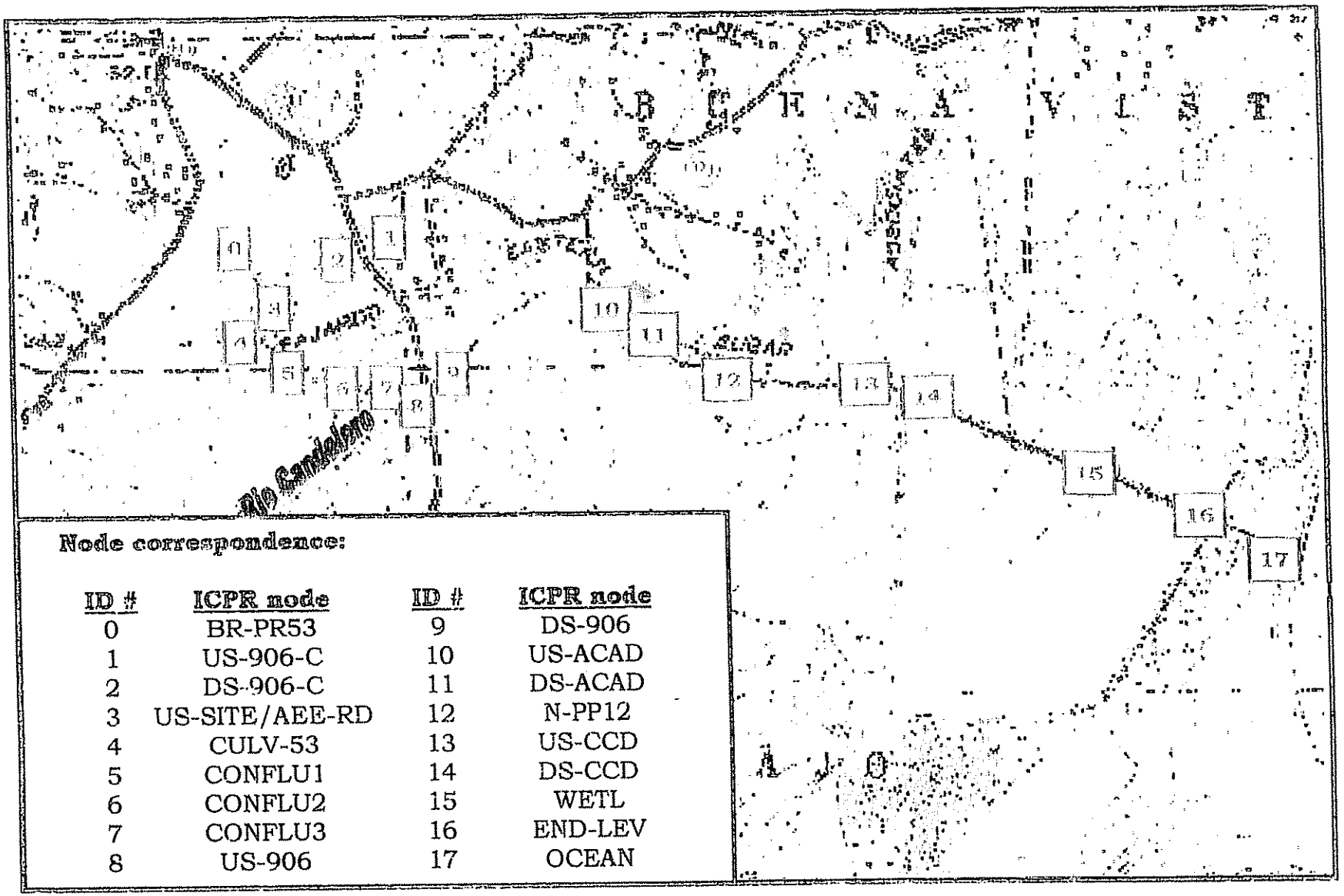


Figure 7. Schematic of link node configuration used for simulation of pre-development conditions.



Node correspondence:

ID #	ICPR node	ID #	ICPR node
0	BR-PR53	9	DS-906
1	US-906-C	10	US-ACAD
2	DS-906-C	11	DS-ACAD
3	US-SITE/AEE-RD	12	N-PP12
4	CULV-53	13	US-CCD
5	CONFLU1	14	DS-CCD
6	CONFLU2	15	WETL
7	CONFLU3	16	END-LEV
8	US-906	17	OCEAN

Figure 8. Location map of nodes used in ICPR hydraulic model for pre-development conditions.

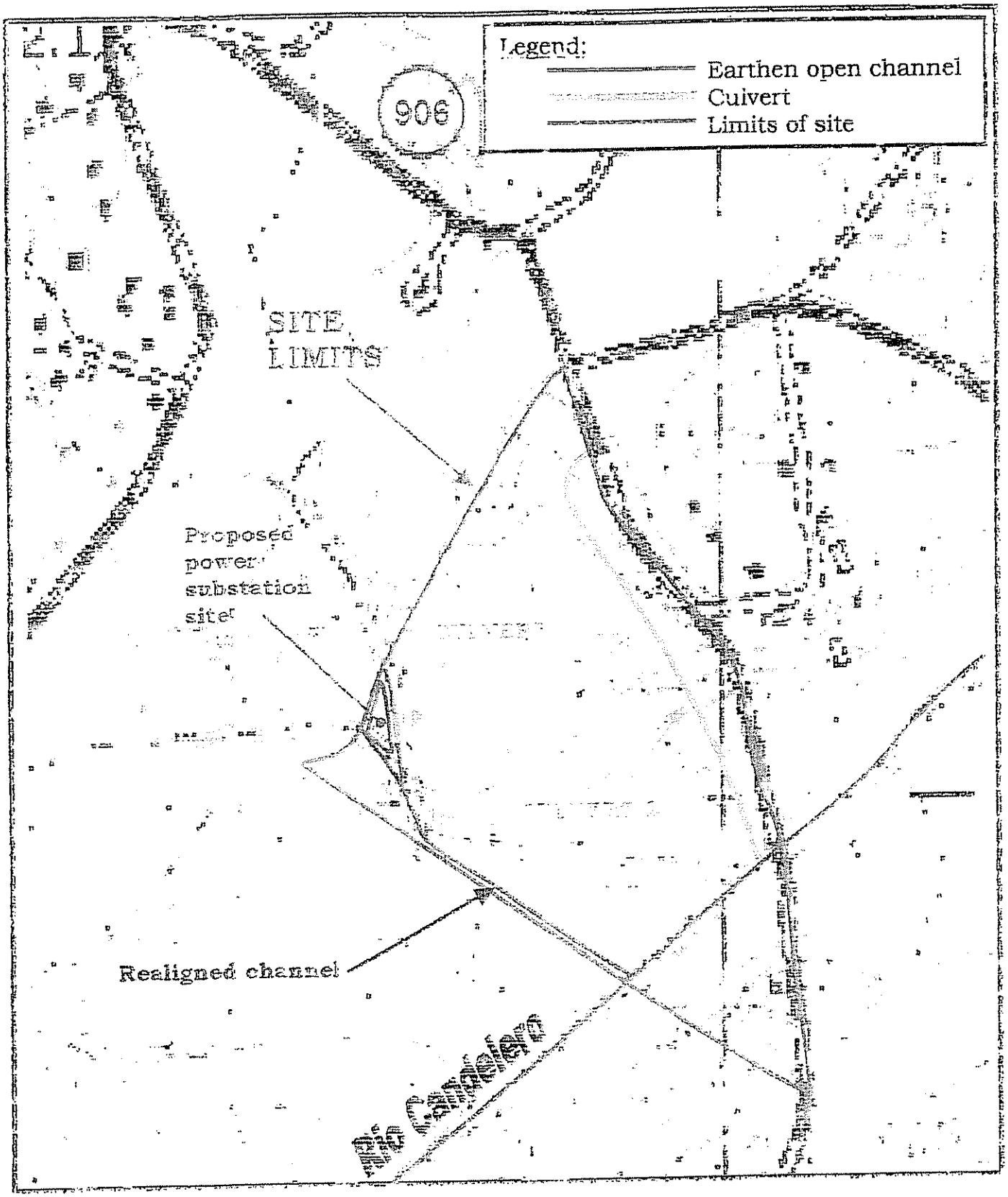


Figure 9. Schematic of proposed drainage structures.

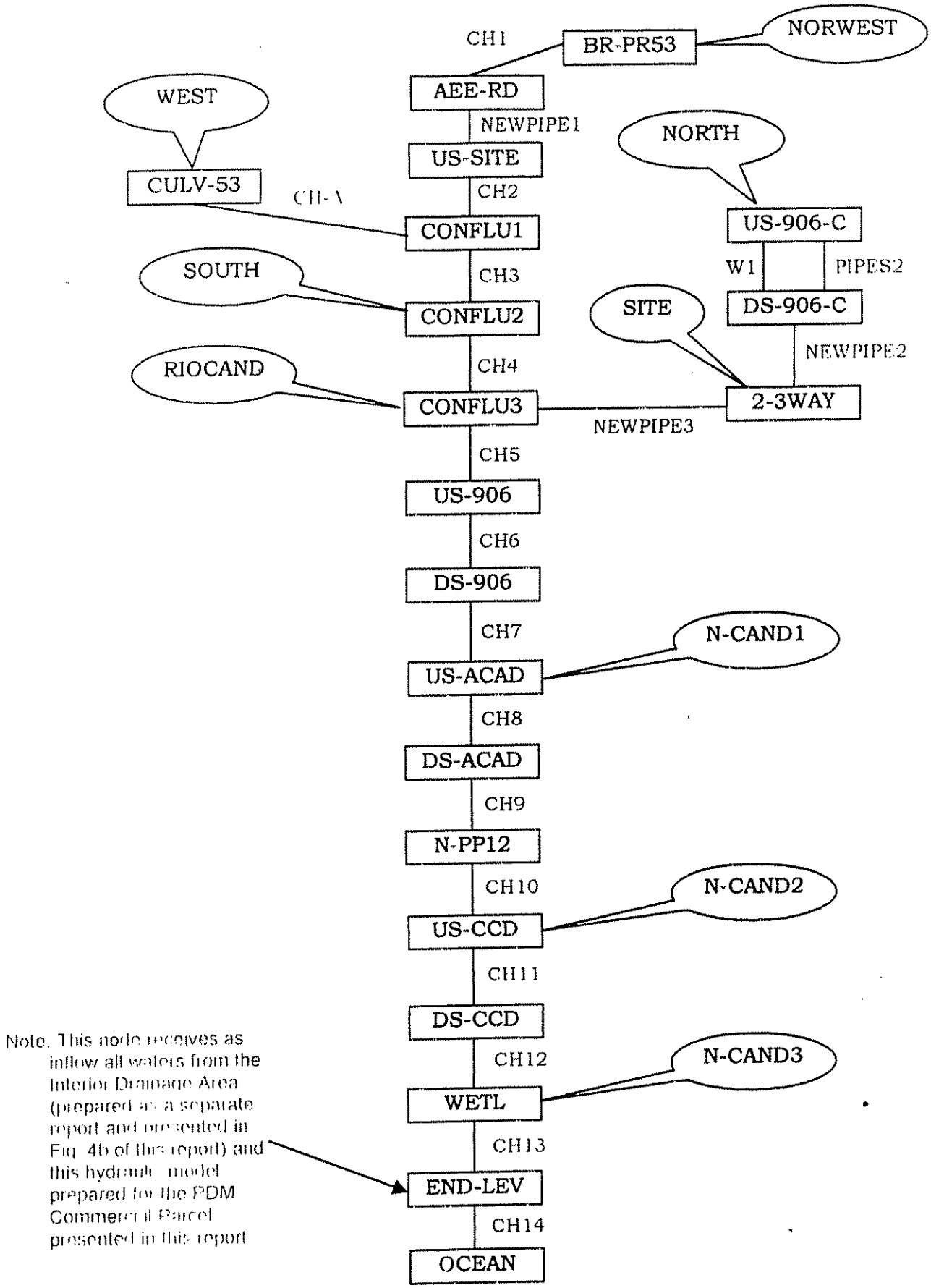
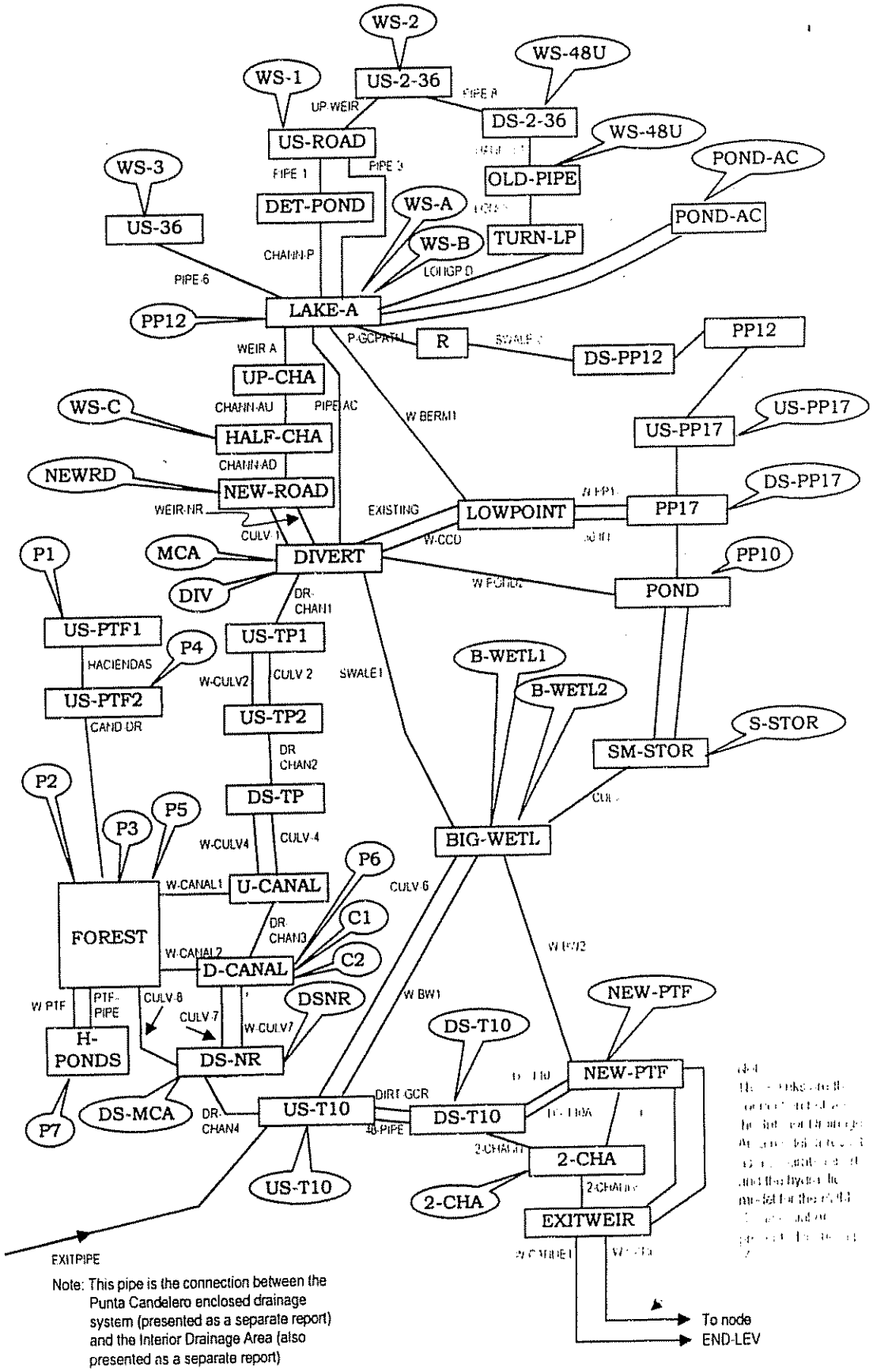
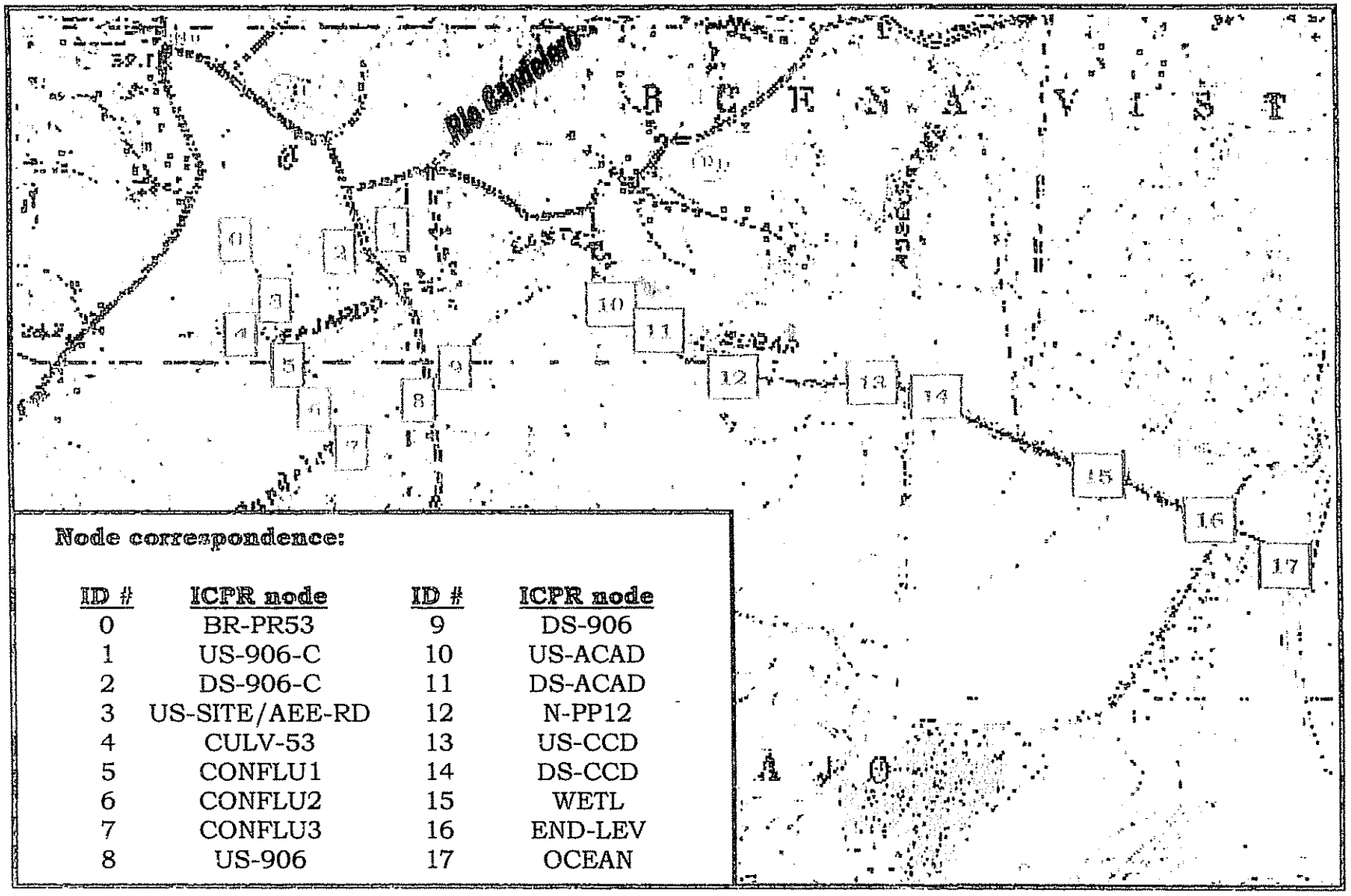


Figure 10a. Schematic of link node configuration used for simulation of proposed conditions for PDM commercial parcel. This model connects to the model which simulates proposed conditions within the Palmas del Mar Interior Drainage Area (see Figure 10b).



Note: This pipe is the connection between the Punta Candelero enclosed drainage system (presented as a separate report) and the Interior Drainage Area (also presented as a separate report)

Figure 10b. Schematic of link node configuration used for simulation of proposed conditions within the PDM Interior Drainage Area. This model connects to the proposed condition model presented in this report for analysis of proposed conditions within the PDM Commercial Area.



Node correspondence:

ID #	ICPR node	ID #	ICPR node
0	BR-PR53	9	DS-906
1	US-906-C	10	US-ACAD
2	DS-906-C	11	DS-ACAD
3	US-SITE/AEE-RD	12	N-PP12
4	CULV-53	13	US-CCD
5	CONFLU1	14	DS-CCD
6	CONFLU2	15	WETL
7	CONFLU3	16	END-LEV
8	US-906	17	OCEAN

Figure 11. Location map of nodes used in ICPR hydraulic model for future conditions.

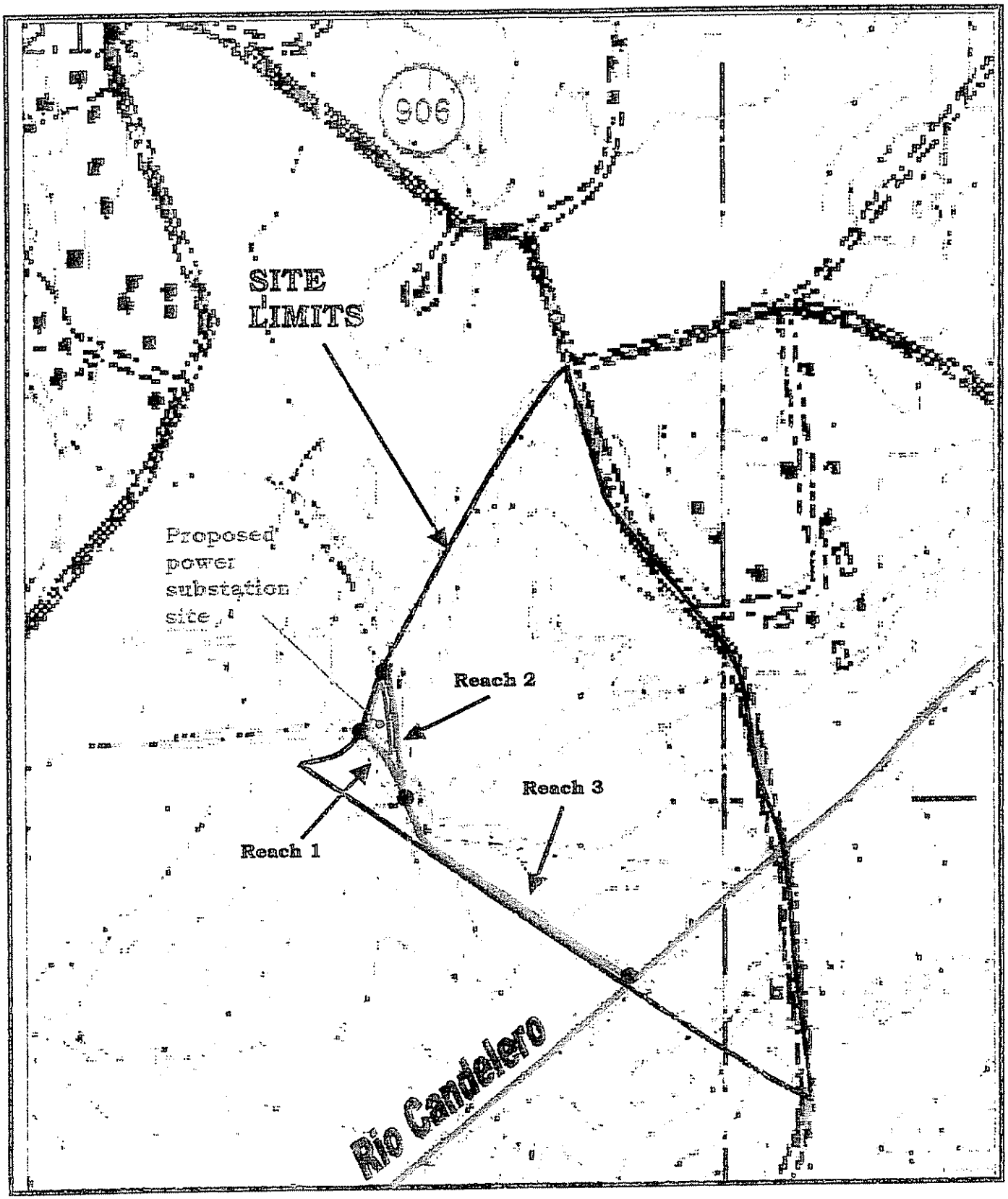


Figure 12a. Reaches of channel to be modified (see Figure 12b).

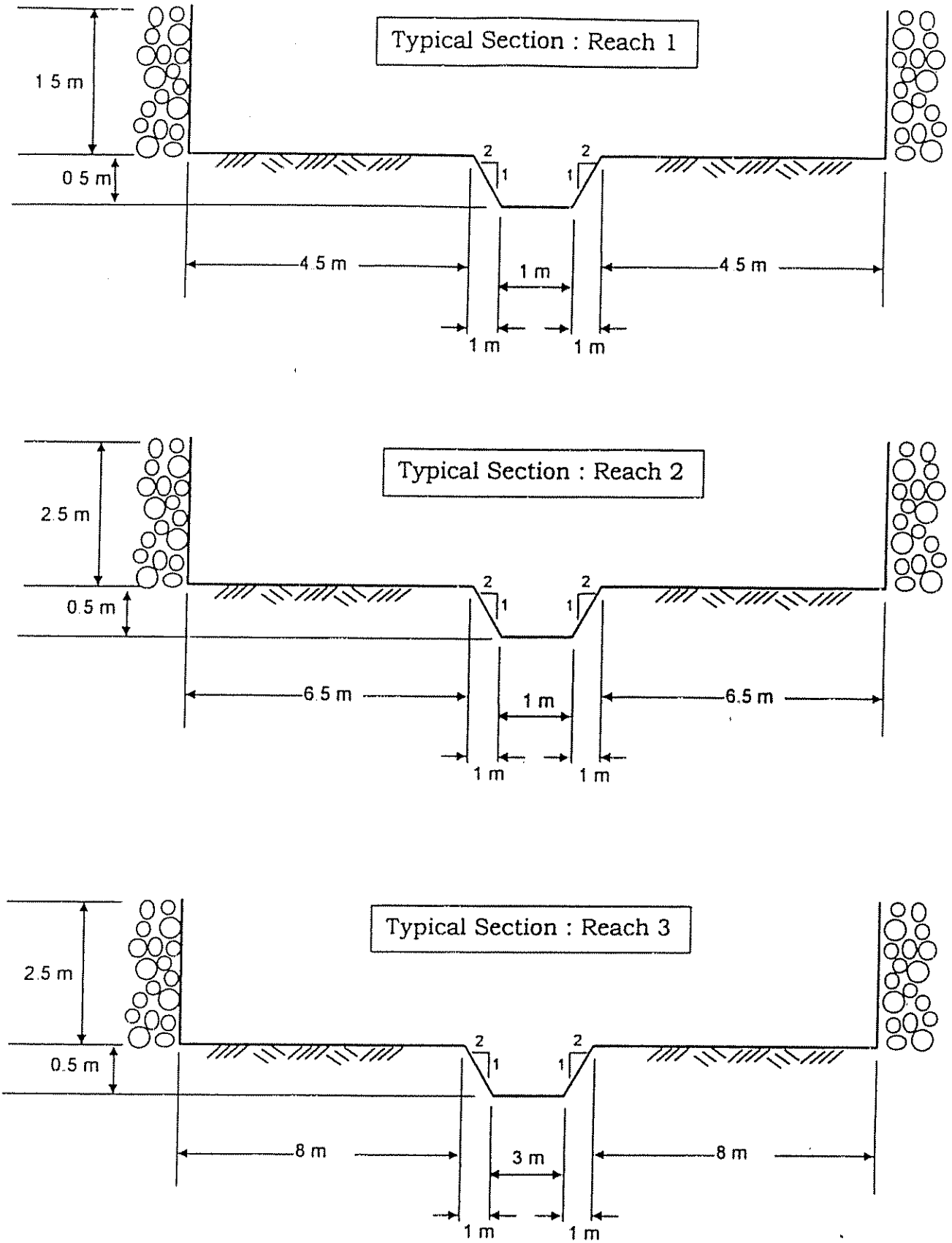


Figure 12b. Typical sections of reaches of channel to be modified (see Figure 12a). Not to scale.

APPENDIX A:

Hydrologic Modeling and Reults
Pre-development Conditions

100 year storm

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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Hydrology Input Report
Palmas del Mar Commercial Parcel
Pre-development conditions

********** Input Report: Basins **********

Basin: INTER-DR Node: INTERIOR Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH323 Peak Factor: 323
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 525 Concentration Time(min): 42
Curve #: 80.5 Time Shift(hrs): 0
DCIA(%): 0

Basin: N-CAND1 Node: US-ACAD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 40 Concentration Time(min): 15
Curve #: 85 Time Shift(hrs): 0
DCIA(%): 0

Basin: N-CAND2 Node: US-CCD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 77.4 Concentration Time(min): 22
Curve #: 81 Time Shift(hrs): 0
DCIA(%): 0

Basin: N-CAND3 Node: WETL Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 95.5 Concentration Time(min): 27
Curve #: 81 Time Shift(hrs): 0
DCIA(%): 0

Hydrology Input Report
Palmas del Mar Commercial Parcel
Pre-development conditions

********** Input Report: Basins **********

Basin: NORTH Node: US-906-C Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 40 Concentration Time(min): 27
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

Basin: NORWEST Node: BR-PR53 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 193.4 Concentration Time(min): 26
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

Basin: RIOCAND Node: US-906 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 320 Concentration Time(min): 40
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

Basin: SITE Node: CONFLU3 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 25 Concentration Time(min): 10
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

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Hydrology Input Report
Palmas del Mar Commercial Parcel
Pre-development conditions

********** Input Report: Basins **********

Basin: SOUTH Node: CONFLU2 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 55 Concentration Time(min): 20
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

Basin: WEST Node: CULV-53 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 51.6 Concentration Time(min): 21
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

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Hydrology Results
Palmas del Mar Commercial Center
Pre-development conditions

********** Basin Results Summary - 100-YR **********

Basin Name	Time Max (hrs)	Flow Max (m3/s)	Runoff Volume (cm)	Runoff Volume (m3)
RIOCAND	12.18	147.16	33.51	1072184
WEST	12.04	29.59	33.49	172816
NORWEST	12.08	104.87	33.48	647541
NORTH	12.06	21.41	33.51	134023
SITE	12.00	15.38	33.51	83765
SOUTH	12.04	31.88	33.51	184282
N-CAND1	12.00	24.00	33.16	132634
N-CAND2	12.03	42.26	31.69	245268
N-CAND3	12.12	49.34	31.74	303074
INTER-DR	12.23	167.13	31.60	1658761

APPENDIX B:

Hydrologic Modeling and Reults
Post-development Conditions

100 year storm

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: 2-CHA Node: 2-CHA Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 5.17999943 Concentration Time(min): 10
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 90

Basin: B-WETL1 Node: BIG-WETL Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 20.37 Concentration Time(min): 12
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 80

Basin: B-WETL2 Node: BIG-WETL Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 4.49 Concentration Time(min): 10
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 0

Basin: C1 Node: D-CANAL Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 6.44999928 Concentration Time(min): 15
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 0

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: C2 Node: D-CANAL Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 1.8699998 Concentration Time(min): 10
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 0

Basin: DIV Node: DIVERT Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 7.64 Concentration Time(min): 15
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 0

Basin: DS-MCA Node: DS-NR Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 4.14999954 Concentration Time(min): 10
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 10

Basin: DS-NR Node: DS-NR Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 4.5199995 Concentration Time(min): 10
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 90

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: DS-PP17 Node: PP-17 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 4.8 Concentration Time(min): 10
Curve #: 93 Time Shift(hrs): 0
DCIA(%): 0

Basin: DS-SUNRI Node: US-PTF2 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 6.07 Concentration Time(min): 12
Curve #: 95 Time Shift(hrs): 0
DCIA(%): 0

Basin: DS-T10 Node: DS-T10 Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 3.1 Concentration Time(min): 10
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 90

Basin: MARBELLA Node: US-T10 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 31.45 Concentration Time(min): 12
Curve #: 95 Time Shift(hrs): 0
DCIA(%): 0

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: MCA Node: DIVERT Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 7.71999913 Concentration Time(min): 10
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 10

Basin: N-CAND1 Node: US-ACAD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 40 Concentration Time(min): 15
Curve #: 85 Time Shift(hrs): 0
DCIA(%): 0

Basin: N-CAND2 Node: US-CCD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 77.4 Concentration Time(min): 22
Curve #: 81 Time Shift(hrs): 0
DCIA(%): 0

Basin: N-CAND3 Node: WETL Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 95.5 Concentration Time(min): 27
Curve #: 81 Time Shift(hrs): 0
DCIA(%): 0

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: N-PTF Node: NEW-PTF Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 6.1 Concentration Time(min): 7
Curve #: 88 Time Shift(hrs): 0
DCIA(%): 81

Basin: NEWRD Node: NEW-ROAD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 7.60999915 Concentration Time(min): 15
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 0

Basin: NGC-1 Node: LAKEB Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 21.1 Concentration Time(min): 10
Curve #: 78 Time Shift(hrs): 0
DCIA(%): 1.9

Basin: NGC-2 Node: LAKEC Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 1.93 Concentration Time(min): 8
Curve #: 71.2 Time Shift(hrs): 0
DCIA(%): 13.9

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: NGC-3 Node: LAKED Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 4.47 Concentration Time(min): 8
Curve #: 76.6 Time Shift(hrs): 0
DCIA(%): 16.5

Basin: NGC-4 Node: LAKEE Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 0.51 Concentration Time(min): 8
Curve #: 93 Time Shift(hrs): 0
DCIA(%): 17.6

Basin: NGC-5 Node: LAKEM Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 1.48 Concentration Time(min): 8
Curve #: 93 Time Shift(hrs): 0
DCIA(%): 12.2

Basin: NGC-6 Node: LAKEF Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 3.2 Concentration Time(min): 8
Curve #: 80.1 Time Shift(hrs): 0
DCIA(%): 5.6

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: NGC-7 Node: LAKEJ Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 20.75 Concentration Time(min): 10
Curve #: 81.3 Time Shift(hrs): 0
DCIA(%): 10.7

Basin: NORTH Node: DS-906-C Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 40 Concentration Time(min): 27
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

Basin: NORWEST Node: BR-PR53 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 193.4 Concentration Time(min): 26
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

Basin: P-AC Node: POND-AC Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 11.9999986 Concentration Time(min): 18
Curve #: 70 Time Shift(hrs): 0
DCIA(%): 0

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: P1 Node: FOREST Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 40.65 Concentration Time(min): 36.3
Curve #: 75 Time Shift(hrs): 0.05
DCIA(%): 0

Basin: P2 Node: FOREST Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 41.7599951 Concentration Time(min): 38.5
Curve #: 75 Time Shift(hrs): 0.05
DCIA(%): 0

Basin: P3 Node: FOREST Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 32.5099964 Concentration Time(min): 31
Curve #: 75 Time Shift(hrs): 0.05
DCIA(%): 0

Basin: P4 Node: FOREST Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 12.6 Concentration Time(min): 16.2
Curve #: 75 Time Shift(hrs): 0
DCIA(%): 0

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: P5 Node: FOREST Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 26.229997 Concentration Time(min): 7
Curve #: 76.5 Time Shift(hrs): 0
DCIA(%): 90

Basin: P6 Node: D-CANAL Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 40.8699951 Concentration Time(min): 69.8
Curve #: 97 Time Shift(hrs): 0
DCIA(%): 0

Basin: P7 Node: H-PONDS Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 6.1 Concentration Time(min): 45.4
Curve #: 60.6 Time Shift(hrs): 0
DCIA(%): 0

Basin: PP10 Node: POND Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 6.5 Concentration Time(min): 15
Curve #: 93 Time Shift(hrs): 0
DCIA(%): 0

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: PP12 Node: PP-12 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 8.3 Concentration Time(min): 15
Curve #: 93 Time Shift(hrs): 0
DCIA(%): 0

Basin: RIOCAND Node: CONFLU3 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 320 Concentration Time(min): 40
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

Basin: S-STOR Node: SM-STOR Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 8.46 Concentration Time(min): 15
Curve #: 85 Time Shift(hrs): 0
DCIA(%): 0

Basin: S-WETL Node: SM-WETL Status: Inactive Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 2.59 Concentration Time(min): 7
Curve #: 85 Time Shift(hrs): 0
DCIA(%): 60

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: SITE1 Node: 2-3WAY Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 29.5
Area(ha): 13 Concentration Time(min): 10
Curve #: 96 Time Shift(hrs): 0
DCIA(%): 0

Basin: SITE2 Node: US-906 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 29.5
Area(ha): 12 Concentration Time(min): 10
Curve #: 96 Time Shift(hrs): 0
DCIA(%): 0

Basin: SOUTH Node: CONFLU2 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 55 Concentration Time(min): 20
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

Basin: SUNRISE Node: US-PTF1 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 10.11 Concentration Time(min): 12
Curve #: 95 Time Shift(hrs): 0
DCIA(%): 0

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: SUNRISE1 Node: DETPOND1 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 12.3 Concentration Time(min): 9.06
Curve #: 90.18 Time Shift(hrs): 0
DCIA(%): 0

Basin: SUNRISE2 Node: DETPOND2 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 44.52 Concentration Time(min): 32.58
Curve #: 90.31 Time Shift(hrs): 0
DCIA(%): 0

Basin: US-PP17 Node: US-PP17 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 4.7 Concentration Time(min): 10
Curve #: 93 Time Shift(hrs): 0
DCIA(%): 0

Basin: US-T10 Node: US-T10 Status: Off Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 6.58 Concentration Time(min): 10
Curve #: 90 Time Shift(hrs): 0
DCIA(%): 90

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: WEST Node: CULV-53 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 51.6 Concentration Time(min): 21
Curve #: 86 Time Shift(hrs): 0
DCIA(%): 0

Basin: WS-1 Node: US-ROAD Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 39.979991 Concentration Time(min): 20
Curve #: 90.95 Time Shift(hrs): 0
DCIA(%): 0

Basin: WS-2 Node: US-2-36 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 6.99999846 Concentration Time(min): 8
Curve #: 90.95 Time Shift(hrs): 0
DCIA(%): 0

Basin: WS-3 Node: US-36 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 2.09999954 Concentration Time(min): 7
Curve #: 90.95 Time Shift(hrs): 0
DCIA(%): 0

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: WS-48D Node: OLD-PIPE Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 1.04999976 Concentration Time(min): 7
Curve #: 82 Time Shift(hrs): 0
DCIA(%): 4

Basin: WS-48U Node: DS-2-36 Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 0.54599988 Concentration Time(min): 7
Curve #: 82 Time Shift(hrs): 0
DCIA(%): 4

Basin: WS-A Node: LAKE-A Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 32.1499928 Concentration Time(min): 37.6
Curve #: 83.24 Time Shift(hrs): 0
DCIA(%): 42

Basin: WS-B Node: LAKE-A Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 4.18999904 Concentration Time(min): 11.88
Curve #: 83 Time Shift(hrs): 0
DCIA(%): 22

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Hydrologic Input Report
Palmas del Mar Commerical Parcel

********** Input Report: Basins **********

Basin: WS-C Node: HALF-CHA Status: On Site Type: SCS Unit Hydr
Group: BASE
Unit Hydrograph: UH484 Peak Factor: 484
Rainfall File: PALMAS2 Storm Duration(hrs): 24
Rainfall Amount(cm): 38.1
Area(ha): 2.54999944 Concentration Time(min): 7
Curve #: 83 Time Shift(hrs): 0
DCIA(%): 34

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Hydrology Results
Palmas del Mar Commercial Center
Post development conditions

********** Basin Results Summary - 100-2 **********

Basin Name	Time Max (hrs)	Flow Max (m3/s)	Runoff Volume (cm)	Runoff Volume (m3)
WS-1	12.04	23.69	35.18	140645
WS-3	11.99	1.32	35.16	7384
WS-2	12.00	4.39	35.18	24625
WS-48U	11.99	0.33	32.31	1764
WS-48D	11.99	0.64	32.31	3393
WS-A	12.20	15.21	34.73	111642
WS-B	11.99	2.55	33.63	14089
WS-C	11.99	1.57	34.26	8735
DIV	12.00	4.69	34.86	26636
NEWRD	12.00	4.67	34.86	26531
C1	12.00	3.96	34.86	22487
C2	12.00	1.17	34.86	6520
P2	12.20	17.58	29.45	122988
P1	12.23	17.74	29.45	119730
P3	12.17	15.20	29.47	95806
P4	12.02	6.94	29.47	37136
P7	12.31	1.92	23.48	14322
P6	12.56	14.20	37.00	151224
P5	11.99	16.52	37.01	97072
MCA	12.00	4.83	35.16	27141
B-WETL1	12.00	12.86	37.21	75795
B-WETL2	12.00	2.81	34.86	15654
DS-NR	12.00	2.87	37.50	16951
US-T10	12.00	4.17	37.50	24676
DS-T10	12.00	1.97	37.50	11626
2-CHA	12.00	3.28	37.50	19426
N-PTF	11.99	3.86	37.10	22628
DS-MCA	12.00	2.60	35.16	14590
S-WETL	11.99	1.62	35.93	9305
P-AC	12.04	6.17	27.53	33038
S-STOR	12.00	5.08	33.16	28052
PP12	12.00	5.15	35.85	29755
PP10	12.00	4.03	35.85	23302
NGC-1	12.00	12.39	30.77	64923
NGC-2	12.00	1.09	29.37	5669
NGC-3	12.00	2.64	31.38	14025
NGC-4	12.00	0.32	36.19	1846
NGC-5	12.00	0.93	36.09	5341
NGC-6	12.00	1.92	31.77	10165
NGC-7	12.00	12.53	32.48	67398
MARBELLA	12.00	19.83	36.49	114768
SUNRISE	12.00	6.38	36.49	36894
DS-SUNRI	12.00	3.83	36.49	22151
US-PP17	12.00	2.96	35.85	16849
DS-PP17	12.00	3.02	35.85	17208
RIOCAND	12.18	147.16	33.51	1072184
WEST	12.04	29.59	33.49	172816
NORWEST	12.08	104.87	33.48	647541

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Hydrology Results
Palmas del Mar Commercial Center
Post development conditions

********** Basin Results Summary - 100-2 **********

Basin Name	Time Max (hrs)	Flow Max (m3/s)	Runoff Volume (cm)	Runoff Volume (m3)
NORTH	12.06	21.41	33.51	134023
SITE1	12.00	6.37	28.23	36698
SOUTH	12.04	31.88	33.51	184282
N-CAND1	12.00	24.00	33.16	132634
N-CAND2	12.03	42.26	31.69	245268
N-CAND3	12.12	49.34	31.74	303074
SUNRISE1	12.00	7.70	34.92	42954
SUNRISE2	12.16	22.66	34.93	155502
SITE2	12.00	5.88	28.23	33875

APPENDIX C:

Hydraulic Modeling and Reults
Pre-development Conditions

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [1]
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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
Pre-development Conditions

********** Input Report **********

--------Class: Node--------
Name: BR-PR53 Base Flow(m3/s): 0 Init Stage(m): 16
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: CONFLU1 Base Flow(m3/s): 0 Init Stage(m): 13.02
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: CONFLU2 Base Flow(m3/s): 0 Init Stage(m): 10.51
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: CONFLU3 Base Flow(m3/s): 0 Init Stage(m): 10.19
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: CULV-53 Base Flow(m3/s): 0 Init Stage(m): 15.86
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: DS-906 Base Flow(m3/s): 0 Init Stage(m): 9.6
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: DS-906-C Base Flow(m3/s): 0 Init Stage(m): 18.58
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: DS-ACAD Base Flow(m3/s): 0 Init Stage(m): 6.01
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

Advanced Interconnected Channel & Pond Routing (ICPR Ver 2.20) [2]
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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
Pre-development Conditions

********** Input Report **********

--------Class: Node--------

Name: DS-CCD Base Flow(m3/s): 0 Init Stage(m): 1.93
Group: BASE Warn Stage(m): 0
Comment:

Stage(m)	Area(ha)

--------Class: Node--------

Name: END-LEV Base Flow(m3/s): 0 Init Stage(m): -0.92
Group: BASE Warn Stage(m): 0
Comment:

Stage(m)	Area(ha)

--------Class: Node--------

Name: INTERIOR Base Flow(m3/s): 0 Init Stage(m): 0
Group: BASE Warn Stage(m): 0
Comment:

Stage(m)	Area(ha)
-1	0.05
0	1.334
0.1	3.49
0.4	5.49
1	48.3
2	60.8
3	67.7

--------Class: Node--------

Name: MIDSITE Base Flow(m3/s): 0 Init Stage(m): 16.5
Group: BASE Warn Stage(m): 0
Comment:

Stage(m)	Area(ha)

--------Class: Node--------

Name: N-PP12 Base Flow(m3/s): 0 Init Stage(m): 4.52
Group: BASE Warn Stage(m): 0
Comment:

Stage(m)	Area(ha)

--------Class: Node--------

Name: OCEAN Base Flow(m3/s): 0 Init Stage(m): 2.5
Group: BASE Warn Stage(m): 0
Comment:

Time(hrs)	Stage(m)
0	2.5
24	2.5

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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
Pre-development Conditions

********** Input Report **********

--------Class: Node--------
Name: US-906 Base Flow(m3/s): 0 Init Stage(m): 9.84
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: US-906-C Base Flow(m3/s): 0 Init Stage(m): 19.03
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: US-ACAD Base Flow(m3/s): 0 Init Stage(m): 6.8
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: US-CCD Base Flow(m3/s): 0 Init Stage(m): 2.49
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: US-SITE Base Flow(m3/s): 0 Init Stage(m): 14.47
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------
Name: WETL Base Flow(m3/s): 0 Init Stage(m): 1.17
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
Pre-development Conditions

********** Input Report **********
--------Class: Cross Section--------
Name: 0.0 Group: BASE
Comment: DS section of CH14

X-Station(m)	Y-Elevation(m)	Manning's N
248.93	1.47	0.08
270.26	1.57	0.08
291.49	1.48	0.08
312.32	1.54	0.08
332.94	1.49	0.08
353.4	1.65	0.08
373.46	1.5	0.08
394.44	1.5	0.08
415.9	1.5	0.08
436.48	1.5	0.08
450.76	1.5	0.08
457.51	1.2	0.08
478.39	1.33	0.08
481.43	1.11	0.08
484.15	0.32	0.035
496.52	0.14	0.035
504.89	-0.45	0.035
512.73	-0.49	0.035
520.77	0.14	0.035
525.94	0.72	0.035
548.61	0.79	0.08
569.3	0.89	0.08
589.74	1.32	0.08
610.82	1.27	0.08
631.7	1.45	0.08
652.58	1.43	0.08
672.44	1.67	0.08
686.59	1.57	0.08
707.02	1.52	0.08
726.98	1.58	0.08
747.34	1.66	0.08
767.82	1.63	0.08
787.61	1.58	0.08
808.29	1.57	0.08
828.02	1.54	0.08
848.73	1.61	0.08
869.74	1.61	0.08
890.22	1.58	0.08
912.09	1.78	0.08

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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
Pre-development Conditions

********** Input Report **********
--------Class: Cross Section--------
Name: 0.499 Group: BASE
Comment: US section of CH14

X-Station(m)	Y-Elevation(m)	Manning's N
200	1.58	0.05
370.2	1.58	0.05
374.3	1.62	0.05
378.2	1.64	0.05
381.6	-0.48	0.035
384.1	-0.75	0.035
388.1	-0.89	0.035
393.3	-0.92	0.035
396.2	-0.61	0.035
400.5	1	0.035
430	1	0.05
432	0.5	0.05
542	0.5	0.05

--------Class: Cross Section--------
Name: 0.614 Group: BASE
Comment: DS section for CH13

X-Station(m)	Y-Elevation(m)	Manning's N
0	2.145	0.05
70	2.14	0.05
90	1.48	0.05
91	0.48	0.035
95	0.48	0.035
101	0.48	0.035
102	1.78	0.035
120	2.29	0.05
146	2.4	0.05
154	4.4	0.05

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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
Pre-development Conditions

********** Input Report **********
--------Class: Cross Section--------
Name: 1.072 Group: BASE
Comment: DS section for CH12 & US section for CH13

X-Station(m)	Y-Elevation(m)	Manning's N
0	2.05	0.05
49	1.95	0.05
64	1.84	0.05
77	1.76	0.05
90	1.33	0.05
91	1.17	0.035
93	1.17	0.035
96	1.17	0.035
97	1.77	0.035
117	1.98	0.05
136	2.18	0.05
159	2.34	0.05
166	4.24	0.05
167	4.5	0.05

--------Class: Cross Section--------
Name: 1.255 Group: BASE
Comment: US section for CH12

X-Station(m)	Y-Elevation(m)	Manning's N
40	5.34	0.05
49	5.04	0.05
61	2.9	0.05
94	2.2	0.05
95	1.93	0.035
99	1.93	0.035
103	1.93	0.035
104	2.43	0.035
163	2.76	0.05
177	4.76	0.05

--------Class: Cross Section--------
Name: 1.353 Group: BASE
Comment: US & DS section for CH11

X-Station(m)	Y-Elevation(m)	Manning's N
35	6.75	0.05
51	3.01	0.05
65	3.01	0.05
66	2.49	0.035
72	2.49	0.035
77	2.49	0.035
78	2.99	0.035
143	3.25	0.05
151	4.81	0.05
163	7.81	0.05

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********** Input Report **********
--------Class: Cross Section----------
Name: 1.448 Group: BASE
Comment: DS section for CH10 (set at el=2.49)

X-Station(m)	Y-Elevation(m)	Manning's N
30	6.71	0.05
37	6.7	0.05
50	3.42	0.05
64	3.42	0.05
65	2.95	0.035
68	2.95	0.035
71	2.95	0.035
72	3.45	0.035
83	3.43	0.05
112	3.75	0.05
148	4.1	0.05
153	5.23	0.05
157	6.23	0.05

--------Class: Cross Section----------
Name: 1.821 Group: BASE
Comment: DS-section for CH9 & US section for CH10

X-Station(m)	Y-Elevation(m)	Manning's N
60	7.4	0.05
74	7.34	0.05
78	7.57	0.05
88	5.1	0.05
89	4.52	0.035
95	4.52	0.035
99	4.52	0.035
100	5.02	0.035
110	4.73	0.05
123	4.91	0.05
135	5.19	0.05
144	7.33	0.05

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********** Input Report **********
--------Class: Cross Section--------
Name: 2.159 Group: BASE
Comment: US-section for CH9

X-Station(m)	Y-Elevation(m)	Manning's N
70	10.81	0.05
76	10.8	0.05
87	6.85	0.05
91	6.53	0.05
92	6.01	0.035
94	6.01	0.035
103	6.01	0.035
108	6.01	0.035
109	6.16	0.035
133	7.1	0.05
160	7.93	0.05
166	9.15	0.05

--------Class: Cross Section--------
Name: 2.265 Group: BASE
Comment: DS section for CH8

X-Station(m)	Y-Elevation(m)	Manning's N
0	10.45	0.05
23	10.45	0.05
27	9.45	0.05
35	7.43	0.05
38	7.43	0.05
39	7.17	0.05
45	6.7	0.035
50	6.7	0.035
51	7.31	0.035
79	7.6	0.05
100	7.98	0.05
148	9	0.05
153	10	0.05
169	11	0.05

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********** Input Report **********
--------Class: Cross Section----------
Name: 2.275 Group: BASE
Comment: US section for CH8

X-Station(m)	Y-Elevation(m)	Manning's N
19	11.47	0.05
23	10.47	0.05
27	9.47	0.05
36	7.43	0.05
40	7.02	0.05
41	6.8	0.035
50	6.8	0.035
51	7.4	0.035
76	7.6	0.05
99	7.92	0.05
145	9	0.05
150	10	0.05
153	11	0.05
176	11.05	0.05

--------Class: Cross Section----------
Name: 2.516 Group: BASE
Comment: US & DS section for CH7

X-Station(m)	Y-Elevation(m)	Manning's N
64	11.2	0.05
75	9.11	0.05
83	8.7	0.05
84	8.31	0.035
88	8.31	0.035
92	8.313	0.035
93	8.88	0.035
120	8.83	0.05
151	9.25	0.05
161	11.87	0.05

--------Class: Cross Section----------
Name: 2.960 Group: BASE
Comment: DS section for CH6

X-Station(m)	Y-Elevation(m)	Manning's N
78.17	15.97	0.05
83.7	15.73	0.05
86.86	13.61	0.05
91.76	10.59	0.035
102.37	10.01	0.035
110.13	10.34	0.035
115.44	14.16	0.05
124.12	16.31	0.05

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********** Input Report **********
--------Class: Cross Section--------
Name: 2.988 Group: BASE
Comment: US section for CH6

X-Station(m)	Y-Elevation(m)	Manning's N
77.72	15.87	0.05
83.7	15.19	0.05
90.9	10.99	0.05
102.96	10.17	0.035
112.72	10.64	0.035
129.4	15.01	0.05
152.68	16.02	0.05

--------Class: Cross Section--------
Name: 3.001 Group: BASE
Comment: DS section for CH5

X-Station(m)	Y-Elevation(m)	Manning's N
50	15	0.05
71.36	15	0.05
90	10.34	0.05
94	10.34	0.035
96	9.84	0.035
104	9.84	0.035
106	10.34	0.035
110	10.34	0.05
128.64	15	0.05
150	15	0.05

--------Class: Cross Section--------
Name: 3.181 Group: BASE
Comment: US section for proposed condition's CH5

X-Station(m)	Y-Elevation(m)	Manning's N
50	15.6	0.035
73	15.5	0.035
90	11.36	0.035
94	11.36	0.035
96	10.86	0.035
104	10.86	0.035
106	11.36	0.035
110	11.36	0.035
127	15.5	0.035
160	15.6	0.035

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********** Input Report **********
--------Class: Cross Section--------
Name: INT-EXIT Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	0.12	0.05
45	0.1	0.05
47	-0.92	0.035
60	-0.92	0.035
62	0.1	0.05
109	0.12	0.05

--------Class: Cross Section--------
Name: SECT-A Group: BASE
Comment: Channel just D/S of PR-53 culvert

X-Station(m)	Y-Elevation(m)	Manning's N
0	17.5	0.05
1.5	16	0.05
3.5	15.5	0.035
5	15.25	0.035
5.5	15.5	0.035
8.5	16	0.035
10.5	17.5	0.05

--------Class: Cross Section--------
Name: SECT-B1 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	21.5	0.05
0.6	21	0.05
2	20.5	0.05
3	20	0.05
3.5	19.5	0.05
5	19	0.05
6	19	0.05
9	19.5	0.05
10.25	20	0.05
19	20.5	0.05

--------Class: Cross Section--------
Name: SECT-B2 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	18.23	0.05
11.5	18	0.05
24	17.5	0.05
26	18	0.05
41	18.1	0.05

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********** Input Report **********
--------Class: Cross Section----------
Name: SECT-B3 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	13	0.05
2	12.5	0.05
2.75	12	0.05
3.75	11.5	0.05
4.75	11	0.05
5.4	10.9	0.035
6	11	0.035
6.75	11.5	0.05
7.5	12	0.05
8.5	12.5	0.05
12.5	13	0.05
16.5	13.5	0.05

--------Class: Cross Section----------
Name: SURVEY10 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	13.43	0.05
15.75	13.05	0.05
21.23	13.61	0.05
27.56	13.61	0.05
44.07	12.98	0.05
58.2	12.95	0.05
61.23	10.73	0.035
65.98	10.69	0.035
72.66	10.73	0.035
79.2	10.19	0.035
83.67	10.83	0.035
93.95	13.58	0.035
104.53	14.18	0.05
113.57	14.28	0.05
117.15	15.99	0.05
129.86	13.97	0.05
146.56	13.64	0.05

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********** Input Report **********
--------Class: Cross Section--------
Name: SURVEY2 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	26.59	0.05
6.06	23.84	0.05
7.42	23.47	0.05
14.93	20.2	0.05
23.8	19.9	0.035
30.47	15.81	0.035
40.6	15.69	0.035
48.31	15.48	0.035
55.12	20.12	0.035
61.2	20.21	0.05
66.59	22.42	0.05
67.75	23.17	0.05
73.71	27.52	0.05
76.65	27.51	0.05
87.8	27.18	0.05

--------Class: Cross Section--------
Name: SURVEY4 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	25.09	0.05
18.56	17.47	0.05
28.46	17.17	0.05
40.76	17.65	0.05
49.78	17.7	0.05
58.68	17.7	0.05
60.28	17.46	0.035
65.25	14.5	0.035
70.46	14.47	0.035
73.05	14.48	0.035
76.96	17	0.035
79.9	17.21	0.05
94.45	17.12	0.05
113.87	17.03	0.05
132.07	16.91	0.05

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********** Input Report **********
--------Class: Cross Section----------
Name: SURVEY6 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	16.01	0.05
15.57	15.92	0.05
29.17	16.13	0.05
43.13	16.28	0.05
43.9	16.6	0.05
53.89	13.02	0.035
56.99	13.16	0.035
60.81	13.48	0.035
63.38	15.62	0.035
65.67	15.32	0.05
80.91	15.89	0.05
83.59	16.02	0.05
100.02	15.79	0.05
117.72	15.59	0.05

--------Class: Cross Section----------
Name: SURVEY9 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	13.15	0.05
11	12.99	0.05
22.16	12.92	0.05
36.17	12.72	0.05
51.33	12.74	0.05
51.84	10.67	0.035
52.95	11.24	0.035
55.35	10.51	0.035
59.52	11.18	0.035
64.19	10.88	0.035
66.52	13.22	0.035
68.68	13.22	0.05
83.03	12.98	0.05
97.97	12.85	0.05
116.46	12.97	0.05

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********** Input Report **********
--------Class: Cross Section----------
Name: X-0.249 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	9.61	0.05
20.73	7.7	0.05
40.47	5.74	0.05
60.62	3.97	0.05
80.86	2.42	0.05
85.89	-0.18	0.05
90.16	-0.02	0.05
92.63	1.39	0.05
95.47	1.57	0.05
106.04	1.5	0.05
114.99	1.16	0.05
117.2	1.16	0.05
132.89	1.14	0.05
154.64	1.27	0.05
176.4	1.37	0.05
197.52	1.37	0.05
218.31	1.49	0.05
239.74	1.66	0.05
260.01	1.64	0.05
280.1	1.67	0.05
286.1	1.32	0.05
296.08	1.26	0.05
299.74	1.27	0.05
300.72	-0.08	0.035
306.58	-1.95	0.035
309.36	-2.09	0.035
312.62	-1.91	0.035
316.3	-0.1	0.035
317.66	1.43	0.035
321.24	1.33	0.05
330.87	1.47	0.05
343.25	1.35	0.05
355.85	1	0.05
377.36	1	0.05
398.67	1	0.05
420.35	1	0.05
441.63	1	0.05
462.83	1	0.05
484.16	1	0.05
504.92	1	0.05
526.04	1	0.05
547.47	1	0.05
568.65	1	0.05
590.09	1	0.05
611.03	1	0.05
632.56	1	0.05

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********** Input Report **********

653.81	1	0.05
674.73	1	0.05
677.53	-0.58	0.035
681.31	-0.41	0.035
683.74	1.01	0.035
688.33	1.2	0.05
703.17	1.13	0.05
709.58	1.13	0.05
712.97	1.05	0.05
719.59	0.88	0.05
739.97	1.04	0.05

--------Class: Cross Section----------
Name: X-1.547 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
40	6.3	0.05
49	6.07	0.05
58	3.77	0.05
68	3.77	0.05
69	3.02	0.035
75	3.02	0.035
80	3.02	0.035
81	3.58	0.035
113	3.9	0.05
129	4.16	0.05
146	4.26	0.05
153	5.79	0.05
157	6.79	0.05

--------Class: Cross Section----------
Name: X-2.190 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
50	11.8	0.05
60.88	11.4	0.05
70	6.84	0.05
75	6.34	0.035
95	6.34	0.035
96	6.84	0.035
106	6.84	0.05
130	6.84	0.05
139.12	11.4	0.05
150	11.8	0.05

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********** Input Report **********
--------Class: Cross Section--------
Name: X-2.2 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
50	11.7	0.05
60.88	11.61	0.05
70	7.05	0.05
75	6.4	0.035
95	6.4	0.035
96	7.05	0.035
106	7.05	0.05
130	7.05	0.05
139.12	11.61	0.05
150	11.7	0.05

--------Class: Cross Section--------
Name: X-3.191 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	16.4	0.035
217	13.3	0.035
223	13.2	0.035
251	13.9	0.035
272	13.7	0.035
291	13.9	0.035
304.7	13.7	0.035
309.1	11	0.035
312.5	10.9	0.035
315.9	11.3	0.035
319.6	11.6	0.035
323.3	14.1	0.035
342	13.4	0.035
380	13.7	0.035
400	13.2	0.035
421	14.1	0.035
440	17.3	0.035

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********** Input Report **********

--------Class: Pipe--------

Name: PIPES2
Group: BASE

From Node: US-906-C
To Node: DS-906-C

Length(m): 45
Count: 2

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(cm):	152.4	152.4
Rise(cm):	152.4	152.4
Invert(m):	19.03	18.58
Manning's N:	0.013	0.013
Top Clip(cm):	0	0
Bottom Clip(cm):	0	0

Equation: Average K
Flow: Both
Entrance Loss Coef: 0.4
Exit Loss Coef: 0.2
Bend Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

--------Class: Channel--------

Name: CH-A
Group: BASE

From Node: CULV-53
To Node: CONFLU1

Length(m): 105
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	15.86	13.02
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	SECT-A	SECT-A
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

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********** Input Report **********

--------Class: Channel--------

Name: CH-B1
Group: BASE
From Node: DS-906-C
To Node: MIDSITE
Length(m): 165
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	18.58	16.5
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	SECT-B1	SECT-B1
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

--------Class: Channel--------

Name: CH-B2
Group: BASE
From Node: MIDSITE
To Node: CONFLU3
Length(m): 475
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	16.5	10.19
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	SECT-B2	SECT-B2
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

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********** Input Report **********

--------Class: Channel--------

Name: CH1 From Node: BR-PR53 Length(m): 135
Group: BASE To Node: US-SITE Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	15.48	14.47
TclpInitZ(m):	99990	99990
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	SURVEY2	SURVEY4
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation:	Aver Conveyance
Flow:	Both
Eddy Contrac Coef:	0
Eddy Expans Coef:	0
Entrance Loss Coef:	0
Exit Loss Coef:	0
Outlet Cntrl Spec:	Use dc or tw
Inlet Cntrl Spec:	Use dn
Stabilizer Option:	None

--------Class: Channel--------

Name: CH2 From Node: US-SITE Length(m): 70
Group: BASE To Node: CONFLU1 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	14.47	13.02
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	SURVEY4	SURVEY6
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation:	Aver Conveyance
Flow:	Both
Eddy Contrac Coef:	0.3
Eddy Expans Coef:	0.1
Entrance Loss Coef:	0
Exit Loss Coef:	0
Outlet Cntrl Spec:	Use dc or tw
Inlet Cntrl Spec:	Use dn
Stabilizer Option:	None

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********** Input Report **********

--------Class: Channel--------

Name: CH3
Group: BASE

From Node: CONFLU1
To Node: CONFLU2

Length(m): 360
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	13.02	10.51
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	SURVEY6	SURVEY9
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0.3
Eddy Expans Coef: 0.1
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

--------Class: Channel--------

Name: CH4
Group: BASE

From Node: CONFLU2
To Node: CONFLU3

Length(m): 70
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	10.51	10.19
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	SURVEY9	SURVEY10
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0.3
Eddy Expans Coef: 0.1
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
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********** Input Report **********

--------Class: Channel--------

Name: CH5
Group: BASE

From Node: CONFLU3
To Node: US-906

Length(m): 45
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	10.19	9.84
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	SURVEY10	3.001
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0.3
Eddy Expans Coef: 0.1
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

--------Class: Channel--------

Name: CH6
Group: BASE

From Node: US-906
To Node: DS-906

Length(m): 45
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	9.84	9.6
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	2.988	2.960
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

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********** Input Report **********

--------Class: Channel--------

Name: CH7
Group: BASE

From Node: DS-906
To Node: US-ACAD

Length(m): 695
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	9.6	6.8
TclpInitZ(m):	8888	8888
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	2.516	2.516
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

--------Class: Channel--------

Name: CH8
Group: BASE

From Node: US-ACAD
To Node: DS-ACAD

Length(m): 18
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	6.8	6.7
TclpInitZ(m):	99996	99996
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	2.275	2.265
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
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********** Input Report **********

--------Class: Channel--------

Name: CH9
Group: BASE

From Node: DS-ACAD
To Node: N-PP12

Length(m): 369
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	6.01	4.52
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	2.159	1.821
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

--------Class: Channel--------

Name: CHA10
Group: BASE

From Node: N-PP12
To Node: US-CCD

Length(m): 488
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	4.52	2.49
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	1.821	1.448
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

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Hydraulics Inputs Report
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********** Input Report **********

--------Class: Channel--------

Name: CHA11
Group: BASE

From Node: US-CCD
To Node: DS-CCD

Length(m): 12
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	2.49	2.49
TclpInitZ(m):	99992	99992
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	1.353	1.353
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

--------Class: Channel--------

Name: CHA12
Group: BASE

From Node: DS-CCD
To Node: WETL

Length(m): 265
Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	1.93	1.17
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	1.255	1.072
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

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Hydraulics Inputs Report
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Pre-development Conditions

********** Input Report **********

--------Class: Channel--------

Name: CHA13 From Node: WETL Length(m): 482
Group: BASE To Node: END-LEV Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	1.17	0.48
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	1.072	0.614
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

--------Class: Channel--------

Name: CHA14 From Node: END-LEV Length(m): 90
Group: BASE To Node: OCEAN Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Irregular	Irregular
Invert(m):	-0.92	-0.45
TclpInitZ(m):	9999	9999
Manning's N:		
TClip(m):	0	0
BClip(m):	0	0
Main Xsec:	0.499	0.0
AxEll(m):	0	0
Aux Xsec1:		
AxEll(m):	0	0
Aux Xsec2:		
TWidth(m):		
Depth(m):		
BWidth(m):		
LSdSlp(h/v):		
RSdSlp(h/v):		

Equation: Aver Conveyance
Flow: Both
Eddy Contrac Coef: 0
Eddy Expans Coef: 0
Entrance Loss Coef: 0
Exit Loss Coef: 0
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
Pre-development Conditions

********** Input Report **********

--------Class: Weir--------

Name: W-EXIT
Group: BASE
Count: 1

From Node: INTERIOR
To Node: END-LEV

Type: Mavis Flow: Both Geometry: Irregular

XSec Name: INT-EXIT

Invert(m): -0.92
Control Elev(m): -0.92
StructOpeningDim(m): 9999
Bottom Clip(m): 0
Top Clip(m): 0
Weir Discharge Coef: 2.85
Orifice Discharge Coef: 0.6

TABLE

--------Class: Weir--------

Name: W-P2
Group: BASE
Count: 1

From Node: US-906-C
To Node: DS-906-C

Type: Mavis Flow: Both Geometry: Rectangular

Span(cm): 3000
Rise(cm): 9999
Invert(m): 21.89
Control Elev(m): 21.89

TABLE

Bottom Clip(cm): 0
Top Clip(cm): 0
Weir Discharge Coef: 2.83
Orifice Discharge Coef: 0.6

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Hydraulics Inputs Report
Palmas del Mar Commercial Parcel
Pre-development Conditions

********** Input Report **********
--------Class: Simulation--------
C:\PROJECTS\HUMACAO\PALMAS\COMMER~1\PRE-D
Execution: Both
Header:

---------HYDRAULICS----------HYDROLOGY----------

```
         Max Delta Z (m): 0.3
          Delta Z Factor: 0.01          Override Defaults: No
     Time Step Optimizer: 0
Drop Structure Optimizer: 0
     Sim Start Time(hrs): 0
       Sim End Time(hrs): 24
      Min Calc Time(sec): 0.5
      Max Calc Time(sec): 60
        To Hour:   PInc(min):                 To Hour:   PInc(min):
        24         5                          24         5
```

---------GROUP SELECTIONS----------

+ BASE [06/05/01]

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Hydraulic Results
Palmas del Mar Commercial Center
Pre-development conditions

********** Node Maximum Conditions - 100-YR **********

(Time units - hours)

Node Name	Group Name	Max Time Conditions	Max Stage (m)	Warning Stage (m)	Max Delta Stage (m)	Max Surface Area (m2)	Max Time Inflow	Max Inflow (m3/s)	Max Time Outflow	Max Outflow (m3/s)
BR-PR53	BASE	12.09	17.85	0.00	-0.0038	2690.68	12.08	104.52	12.09	104.33
CONFLU1	BASE	12.12	16.14	0.00	0.0030	23081.42	12.09	132.79	12.11	130.86
CONFLU2	BASE	12.19	13.88	0.00	-0.0030	24253.24	12.09	161.01	11.97	224.95
CONFLU3	BASE	12.19	13.82	0.00	-0.0041	15672.83	11.97	257.79	12.20	176.02
CULV-53	BASE	12.03	17.89	0.00	-0.0201	541.99	12.00	29.21	12.35	32.64
DS-906	BASE	12.23	12.02	0.00	-0.0016	32147.36	12.19	321.51	12.23	319.54
DS-906-C	BASE	12.09	20.25	0.00	0.0029	1391.31	12.08	21.38	12.09	21.31
DS-ACAD	BASE	12.24	8.79	0.00	-0.0016	15463.64	12.23	331.37	12.25	331.11
DS-CCD	BASE	12.30	4.55	0.00	0.0029	18455.60	12.26	357.13	12.28	355.72
END-LEV	BASE	12.39	2.62	0.00	0.0128	55983.70	12.38	515.30	12.39	515.18
INTERIOR	BASE	12.48	2.72	0.00	0.0027	657337.86	12.25	166.80	12.66	160.13
MIDSITE	BASE	12.13	17.38	0.00	0.0003	10983.37	12.09	21.31	12.13	20.96
N-PP12	BASE	12.26	7.18	0.00	0.0018	30996.24	12.25	331.11	12.27	330.83
OCEAN	BASE	0.00	2.50	0.00	0.0000	24143.36	12.39	515.18	0.00	0.00
US-906	BASE	12.19	13.75	0.00	0.0080	2242.86	12.19	321.54	12.19	321.51
US-906-C	BASE	12.08	22.13	0.00	-0.1489	13.93	12.08	21.38	12.08	21.38
US-ACAD	BASE	12.23	9.39	0.00	0.0011	32816.11	12.20	332.11	12.23	331.37
US-CCD	BASE	12.29	4.69	0.00	0.0012	24577.24	12.24	359.40	12.26	357.13
US-SITE	BASE	12.10	17.40	0.00	0.0053	7857.81	12.09	104.33	12.10	103.86
WETL	BASE	12.31	4.37	0.00	0.0018	59738.48	12.25	394.65	12.31	389.96

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Hydraulic Results
Palmas del Mar Commercial Center
Pre-development conditions

********** Link Maximum Conditions - 100-YR **********

(Time units - hours)

Link Name	Group Name	Max Time Flow	Max Flow (m3/s)	Max Delta Q (m3/s)	Max Time U/S Stage	Max US Stage (m)	Max Time D/S Stage	Max DS Stage (m)
CH-A	BASE	12.35	32.64	-19.98	12.03	17.89	12.12	16.14
CH-B1	BASE	12.09	21.31	0.07	12.09	20.25	12.09	17.86
CH-B2	BASE	12.13	20.96	-0.17	12.13	17.38	12.19	13.82
CH1	BASE	12.09	104.33	8.67	12.09	17.85	12.10	17.40
CH2	BASE	12.10	103.86	-23.92	12.10	17.40	12.12	16.14
CH3	BASE	12.11	130.86	25.66	12.12	16.14	12.19	13.88
CH4	BASE	11.97	224.95	-113.46	12.19	13.88	12.19	13.82
CH5	BASE	12.20	176.02	-21.90	12.19	13.82	12.19	13.75
CH6	BASE	12.19	321.51	0.49	12.19	13.75	12.19	12.83
CH7	BASE	12.23	319.54	-20.95	12.23	12.02	12.23	9.39
CH8	BASE	12.23	331.37	0.32	12.23	9.39	12.21	9.03
CH9	BASE	12.25	331.11	0.36	12.24	8.79	12.26	7.18
CHA10	BASE	12.27	330.83	0.43	12.26	7.18	12.29	4.69
CHA11	BASE	12.26	357.13	0.69	12.29	4.69	12.30	4.55
CHA12	BASE	12.28	355.72	-33.84	12.30	4.55	12.31	4.37
CHA13	BASE	12.31	389.96	50.79	12.31	4.37	12.31	3.18
CHA14	BASE	12.39	515.18	-325.89	12.39	2.62	0.00	2.50
PIPES2	BASE	11.80	19.57	6.27	12.08	22.13	12.09	20.25
W-EXIT	BASE	12.66	160.13	20.05	12.48	2.72	12.39	2.62
W-P2	BASE	12.08	5.45	-0.09	12.08	22.13	12.09	20.25

APPENDIX D:

Hydraulic Modeling and Reults
Post-development Conditions

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Hydraulics Input Report
Palmas del Mar Commercial Parcel
Future Conditions

********** Input Report **********
--------Class: Cross Section--------
Name: 0.0 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
248.93	1.47	0.08
270.26	1.57	0.08
291.49	1.48	0.08
312.32	1.54	0.08
332.94	1.49	0.08
353.4	1.65	0.08
373.46	1.5	0.08
394.44	1.5	0.08
415.9	1.5	0.08
436.48	1.5	0.08
450.76	1.5	0.08
457.51	1.2	0.08
478.39	1.33	0.08
481.43	1.11	0.08
484.15	0.32	0.035
496.52	0.14	0.035
504.89	-0.45	0.035
512.73	-0.49	0.035
520.77	0.14	0.035
525.94	0.72	0.035
548.61	0.79	0.08
569.3	0.89	0.08
589.74	1.32	0.08
610.82	1.27	0.08
631.7	1.45	0.08
652.58	1.43	0.08
672.44	1.67	0.08
686.59	1.57	0.08
707.02	1.52	0.08
726.98	1.58	0.08
747.34	1.66	0.08
767.82	1.63	0.08
787.61	1.58	0.08
808.29	1.57	0.08
828.02	1.54	0.08
848.73	1.61	0.08
869.74	1.61	0.08
890.22	1.58	0.08
912.09	1.78	0.08

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Hydraulics Input Report
Palmas del Mar Commercial Parcel
Future Conditions

********** Input Report **********
--------Class: Cross Section--------
Name: 0.499 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
200	1.58	0.05
370.2	1.58	0.05
374.3	1.62	0.05
378.2	1.64	0.05
381.6	-0.48	0.035
384.1	-0.75	0.035
388.1	-0.89	0.035
393.3	-0.92	0.035
396.2	-0.61	0.035
400.5	1	0.035
430	1	0.05
432	0.5	0.05
542	0.5	0.05

--------Class: Cross Section--------
Name: 0.614 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	2.145	0.05
70	2.14	0.05
90	1.48	0.05
91	0.48	0.035
95	0.48	0.035
101	0.48	0.035
102	1.78	0.035
120	2.29	0.05
146	2.4	0.05
154	4.4	0.05

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Hydraulics Input Report
Palmas del Mar Commercial Parcel
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********** Input Report **********
--------Class: Cross Section--------
Name: 1.072 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	2.05	0.05
49	1.95	0.05
64	1.84	0.05
77	1.76	0.05
90	1.33	0.05
91	1.17	0.035
93	1.17	0.035
96	1.17	0.035
97	1.77	0.035
117	1.98	0.05
136	2.18	0.05
159	2.34	0.05
166	4.24	0.05
167	4.5	0.05

--------Class: Cross Section--------
Name: 1.255 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
40	5.34	0.05
49	5.04	0.05
61	2.9	0.05
94	2.2	0.05
95	1.93	0.035
99	1.93	0.035
103	1.93	0.035
104	2.43	0.035
163	2.76	0.05
177	4.76	0.05

--------Class: Cross Section--------
Name: 1.353 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
35	6.75	0.05
51	3.01	0.05
65	3.01	0.05
66	2.49	0.035
72	2.49	0.035
77	2.49	0.035
78	2.99	0.035
143	3.25	0.05
151	4.81	0.05
163	7.81	0.05

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********** Input Report **********
--------Class: Cross Section--------
Name: 1.448 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
30	6.71	0.05
37	6.7	0.05
50	3.42	0.05
64	3.42	0.05
65	2.95	0.035
68	2.95	0.035
71	2.95	0.035
72	3.45	0.035
83	3.43	0.05
112	3.75	0.05
148	4.1	0.05
153	5.23	0.05
157	6.23	0.05

--------Class: Cross Section--------
Name: 1.821 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
60	7.4	0.05
74	7.34	0.05
78	7.57	0.05
88	5.1	0.05
89	4.52	0.035
95	4.52	0.035
99	4.52	0.035
100	5.02	0.035
110	4.73	0.05
123	4.91	0.05
135	5.19	0.05
144	7.33	0.05

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********** Input Report **********
--------Class: Cross Section--------
Name: 2.159 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
70	10.81	0.05
76	10.8	0.05
87	6.85	0.05
91	6.53	0.05
92	6.01	0.035
94	6.01	0.035
103	6.01	0.035
108	6.01	0.035
109	6.16	0.035
133	7.1	0.05
160	7.93	0.05
166	9.15	0.05

--------Class: Cross Section--------
Name: 2.265 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	10.45	0.05
23	10.45	0.05
27	9.45	0.05
35	7.43	0.05
38	7.43	0.05
39	7.17	0.05
45	6.7	0.035
50	6.7	0.035
51	7.31	0.035
79	7.6	0.05
100	7.98	0.05
148	9	0.05
153	10	0.05
169	11	0.05

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********** Input Report **********
--------Class: Cross Section----------
Name: 2.275 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
19	11.47	0.05
23	10.47	0.05
27	9.47	0.05
36	7.43	0.05
40	7.02	0.05
41	6.8	0.035
50	6.8	0.035
51	7.4	0.035
76	7.6	0.05
99	7.92	0.05
145	9	0.05
150	10	0.05
153	11	0.05
176	11.05	0.05

--------Class: Cross Section----------
Name: 2.516 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
64	11.2	0.05
75	9.11	0.05
83	8.7	0.05
84	8.31	0.035
88	8.31	0.035
92	8.313	0.035
93	8.88	0.035
120	8.83	0.05
151	9.25	0.05
161	11.87	0.05

--------Class: Cross Section----------
Name: 2.960 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
78.17	15.97	0.05
83.7	15.73	0.05
86.86	13.61	0.05
91.76	10.59	0.035
102.37	10.01	0.035
110.13	10.34	0.035
115.44	14.16	0.05
124.12	16.31	0.05

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********** Input Report **********
--------Class: Cross Section--------
Name: 2.988 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
77.72	15.87	0.05
83.7	15.19	0.05
90.9	10.99	0.05
102.96	10.17	0.035
112.72	19.64	0.035
129.4	15.01	0.05
152.68	16.02	0.05

--------Class: Cross Section--------
Name: 3.001 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
50	15	0.05
71.36	15	0.05
90	10.34	0.05
94	10.34	0.035
96	9.84	0.035
104	9.84	0.035
106	10.34	0.035
110	10.34	0.05
128.64	15	0.05
150	15	0.05

--------Class: Cross Section--------
Name: 3.101 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
50	15.6	0.035
73	15.5	0.035
90	11.36	0.035
94	11.36	0.035
96	10.86	0.035
104	10.86	0.035
106	11.36	0.035
110	11.36	0.035
127	15.5	0.035
160	15.6	0.035

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********** Input Report **********
--------Class: Cross Section----------
Name: CCDR Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	5.52	0.04
27.5	5.2	0.04
30	5.19	0.04
50	5.26	0.04
72	5.16	0.04
92.5	5.1	0.04
114	4.99	0.04
134	5.12	0.04
154	5	0.04
181	5.23	0.04
210	5.41	0.04
227	5.49	0.04
245	5.55	0.04

--------Class: Cross Section----------
Name: SEC-C Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
106.04	4.309	0.04
113.124	4.309	0.04
121.386	4.264	0.04
128.923	3.363	0.04
139.792	3	0.04
159.846	3.4	0.04
161.662	3.446	0.04
174.482	3.692	0.04
193.424	4.146	0.04
212.844	4.496	0.04
231.383	5	0.04
234.184	4.78	0.04
239.793	4.8	0.04
257.497	4.684	0.04
272.925	4.465	0.04
282.587	6.115	0.04
296.133	6.375	0.04
312.498	6.305	0.04

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********** Input Report **********
--------Class: Cross Section----------
Name: SEC-D Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	6.349	0.04
9.024	6.297	0.04
19.77	6.069	0.04
30.26	3.762	0.04
44.353	3.714	0.04
58.519	4.049	0.04
66.495	4.528	0.04
74.783	4.045	0.04
92.706	3.978	0.04
104.395	4.22	0.04
108.473	3.289	0.04
110.395	3.243	0.04
117.704	2.712	0.04
129.587	4.049	0.04
134.243	4.075	0.04
141.708	4.002	0.04
147.8	2.949	0.04

--------Class: Cross Section----------
Name: SEC-E Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	5.689	0.04
16.454	5.512	0.04
36.92	5.226	0.04
46.135	2.778	0.04
51.087	2.66	0.04
61.463	3.359	0.04
64.597	4.032	0.04
67.482	4.139	0.04
73.673	4.888	0.04
85.032	4.832	0.04
97.277	2.594	0.04
100.77	2.269	0.04
106.8	2.482	0.04
114.06	3.389	0.04
119.589	3.491	0.04
127.405	3.479	0.04
133	2.718	0.04

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********** Input Report **********
--------Class: Cross Section--------
Name: SECT-A Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	17.5	0.05
1.5	16	0.05
3.5	15.5	0.035
5	15.25	0.035
5.5	15.5	0.035
8.5	16	0.035
10.5	17.5	0.05

--------Class: Cross Section--------
Name: SECT-B1 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	21.5	0.05
0.6	21	0.05
2	20.5	0.05
3	20	0.05
3.5	19.5	0.05
5	19	0.05
6	19	0.05
9	19.5	0.05
10.25	20	0.05
19	20.5	0.05

--------Class: Cross Section--------
Name: SECT-B2 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	18.23	0.05
11.5	18	0.05
24	17.5	0.05
26	18	0.05
41	18.1	0.05

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********** Input Report **********
--------Class: Cross Section----------
Name: SECT-B3 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	13	0.05
2	12.5	0.05
2.75	12	0.05
3.75	11.5	0.05
4.75	11	0.05
5.4	10.9	0.035
6	11	0.035
6.75	11.5	0.05
7.5	12	0.05
8.5	12.5	0.05
12.5	13	0.05
16.5	13.5	0.05

--------Class: Cross Section----------
Name: SURVEY10 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	13.43	0.05
15.75	13.05	0.05
21.23	13.61	0.05
27.56	13.61	0.05
44.07	12.98	0.05
58.2	12.95	0.05
61.23	10.73	0.035
65.98	10.69	0.035
72.66	10.73	0.035
79.2	10.19	0.035
83.67	10.83	0.035
93.95	13.58	0.035
104.53	14.18	0.05
113.57	14.28	0.05
117.15	15.99	0.05
129.86	13.97	0.05
146.56	13.64	0.05

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********** Input Report **********
--------Class: Cross Section----------
Name: SURVEY2 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	26.59	0.05
6.06	23.84	0.05
7.42	23.47	0.05
14.93	20.2	0.05
23.8	19.9	0.035
30.47	15.81	0.035
40.6	15.69	0.035
48.31	15.48	0.035
55.12	20.12	0.035
61.2	20.21	0.05
66.59	22.42	0.05
67.75	23.17	0.05
73.71	27.52	0.05
76.65	27.51	0.05
87.8	27.18	0.05

--------Class: Cross Section----------
Name: SURVEY4 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	25.09	0.05
18.56	17.47	0.05
28.46	17.17	0.05
40.76	17.65	0.05
49.78	17.7	0.05
58.68	17.7	0.05
60.28	17.46	0.035
65.25	14.5	0.035
70.46	14.47	0.035
73.05	14.48	0.035
76.96	17	0.035
79.9	17.21	0.05
94.45	17.12	0.05
113.87	17.03	0.05
132.07	16.91	0.05

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********** Input Report **********
--------Class: Cross Section----------
Name: SURVEY6 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	16.01	0.05
15.57	15.92	0.05
29.17	16.13	0.05
43.13	16.28	0.05
43.9	16.6	0.05
53.89	13.02	0.035
56.99	13.16	0.035
60.81	13.48	0.035
63.38	15.62	0.035
65.67	15.32	0.05
80.91	15.89	0.05
83.59	16.02	0.05
100.02	15.79	0.05
117.72	15.59	0.05

--------Class: Cross Section----------
Name: SURVEY9 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	13.15	0.05
11	12.99	0.05
22.16	12.92	0.05
36.17	12.72	0.05
51.33	12.74	0.05
51.84	10.67	0.035
52.95	11.24	0.035
55.35	10.51	0.035
59.52	11.18	0.035
64.19	10.88	0.035
66.52	13.22	0.035
68.68	13.22	0.05
83.03	12.98	0.05
97.97	12.85	0.05
116.46	12.97	0.05

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********** Input Report **********

--------Class: Cross Section--------
Name: SW-A Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	7.08	0.04
1	6.16	0.04
4	5.99	0.04
9.5	5.99	0.04
16.5	6.45	0.04
20	6.37	0.04

--------Class: Cross Section--------
Name: SW-A' Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	6.68	0.04
3	5.65	0.04
4	5.5	0.04
4.5	5.5	0.04
8	5.5	0.04
15	6.02	0.04
25	7.32	0.04

--------Class: Cross Section--------
Name: SW-A1 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	7.08	0.04
1	6.16	0.04
4	5.8	0.04
9.5	5.8	0.04
16.5	6.45	0.04
20	6.37	0.04

--------Class: Cross Section--------
Name: SW-A2 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	7.1	0.04
3	5.63	0.04
6	5.63	0.04
10	5.63	0.04
18	6.08	0.04
22.5	6.22	0.04
26	6.32	0.04

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********** Input Report **********

--------Class: Cross Section--------
Name: SW-A3 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	6.76	0.04
2.5	5.6	0.04
5	5.6	0.04
7	5.9	0.04
7.75	6.22	0.04
12.5	6.55	0.04

--------Class: Cross Section--------
Name: SW-B Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	7.03	0.04
3	5.7	0.04
6	5.43	0.04
8	5.43	0.04
14	5.43	0.04
23.5	5.99	0.04
31.5	6.51	0.04

--------Class: Cross Section--------
Name: SW-C Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	6.81	0.04
4	5.84	0.04
10	5.45	0.04
19	5.37	0.04
30	7	0.04

--------Class: Cross Section--------
Name: SW-D Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	6.37	0.04
4.5	5.63	0.04
14.5	5.35	0.04
20	5.48	0.04
27	6.02	0.04
31	7.05	0.04

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********** Input Report **********
--------Class: Cross Section--------
Name: SW-E Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	6.53	0.04
2.5	5.51	0.04
6.5	5.34	0.04
8	5.37	0.04
12.5	5.45	0.04
18.5	6.71	0.04
19	6.44	0.04

--------Class: Cross Section--------
Name: SW-F Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	6.5	0.04
2.5	6.44	0.04
5.5	5.5	0.04
14	5.3	0.04
26	6.63	0.04
32	7.49	0.04

--------Class: Cross Section--------
Name: SW-F1 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
-2	6.5	0.04
0	6.32	0.04
4	5.4	0.04
15	5.25	0.04
21	5.93	0.04
28	7.3	0.04

--------Class: Cross Section--------
Name: SW-G Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
-2	6.61	0.04
0	6.47	0.04
5	5.1	0.04
13	5.2	0.04
16	5.25	0.04
22.5	5.9	0.04
27.5	6.17	0.04

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********** Input Report **********
--------Class: Cross Section----------
Name: SW-G1 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
-2	6.61	0.04
0	6.47	0.04
5	5.01	0.04
13	5.25	0.04
16	5.3	0.04
22.5	5.9	0.04
27.5	6.17	0.04

--------Class: Cross Section----------
Name: SW-G2 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	6.6	0.04
10	5.13	0.04
27.5	4.9	0.04
40	5.2	0.04

--------Class: Cross Section----------
Name: SW-G3 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	6.84	0.04
7	4.46	0.04
22	4.55	0.04
28	4.65	0.04
55	5.07	0.04
61	5.21	0.04

--------Class: Cross Section----------
Name: SW-G4 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	5.03	0.04
4	4.81	0.04
11.5	4.53	0.04
15.5	4.5	0.04
17	4.45	0.04
19	4.55	0.04
24.5	4.75	0.04
26	4.8	0.04
27	4.95	0.04
33	5.08	0.04

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********** Input Report **********
--------Class: Cross Section--------
Name: SW-H Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	5.13	0.04
5.5	4.89	0.04
7.5	5	0.04
10.5	4.6	0.04
13	4.36	0.04
15	4.85	0.04
19	5.25	0.04
21.5	5.22	0.04

--------Class: Cross Section--------
Name: SW-I Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	5.63	0.04
3.5	5.64	0.04
15	6.49	0.04
20.5	5.5	0.04
34	6.89	0.04
36	6.99	0.04

--------Class: Cross Section--------
Name: X-CCD Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
343.97	5.395	0.04
365.85	5.36	0.04
386.22	5.307	0.04
410.645	5.133	0.04
430.223	5.078	0.04
439.167	5.025	0.04
458	4.926	0.04
478.148	4.801	0.04
499.431	4.714	0.04
505.446	4.686	0.04
528.147	4.692	0.04
548.854	4.806	0.04
568.911	4.95	0.04
588.857	5.114	0.04
601.631	5.155	0.04
630.749	5.303	0.04
643.821	5.473	0.04
667.312	5.62	0.04
687.312	5.743	0.04

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--------Class: Cross Section----------

Name: X-CCD1 Group: BASE

Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	5.1	0.02
20	5.25	0.02
40	5.39	0.02
60	5.5	0.02
80	5.67	0.02
100	5.81	0.02
120	5.95	0.02
140	6.15	0.02

--------Class: Cross Section----------

Name: X-CCD2 Group: BASE

Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	4.53	0.02
20	4.68	0.02
40	4.82	0.02
60	4.96	0.02
80	5.1	0.02

--------Class: Cross Section----------

Name: X-CCD3 Group: BASE

Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
343.97	5.395	0.04
365.85	5.36	0.04
386.22	5.307	0.04
410.645	5.133	0.04
430.223	5.078	0.04
439.167	5.025	0.04
458	4.99	0.04
478.148	4.99	0.04
499.431	4.99	0.04
505.446	4.99	0.04
528.147	4.99	0.04
548.854	4.99	0.04
568.911	4.99	0.04
588.857	5.114	0.04
601.631	5.155	0.04
630.749	5.303	0.04
643.821	5.473	0.04
667.312	5.62	0.04
687.312	5.743	0.04

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********** Input Report **********
--------Class: Cross Section----------
Name: X-CCD4 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
343.97	5.395	0.04
365.85	5.36	0.04
386.22	5.307	0.04
410.645	5.14	0.04
430.223	5.14	0.04
439.167	5.14	0.04
458	5.14	0.04
478.148	5.14	0.04
499.431	5.14	0.04
505.446	5.14	0.04
528.147	5.14	0.04
548.854	5.14	0.04
568.911	5.14	0.04
588.857	5.14	0.04
601.631	5.155	0.04
630.749	5.303	0.04
643.821	5.473	0.04
667.312	5.62	0.04
687.312	5.743	0.04

--------Class: Cross Section----------
Name: X-CH-2 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
-0.5	0	0.05
-0.5	-2.5	0.05
6	-2.5	0.05
7	-3	0.035
8	-3	0.035
9	-2.5	0.035
15.5	-2.5	0.05
15.5	0	0.05

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********** Input Report **********
--------Class: Cross Section--------
Name: X-CH-3 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
-1.5	0	0.05
-1.5	-2.5	0.05
6.5	-2.5	0.05
7.5	-3	0.035
10.5	-3	0.035
11.5	-2.5	0.035
19.5	-3.5	0.05
19.5	0	0.05

--------Class: Cross Section--------
Name: X-CH-4 Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
-1.5	0	0.05
-1.5	-2.5	0.05
6.5	-2.5	0.05
7.5	-3	0.035
10.5	-3	0.035
11.5	-2.5	0.035
19.5	-3.5	0.05
19.5	0	0.05

--------Class: Cross Section--------
Name: X-CH-A Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	0	0.05
0	-1.5	0.05
4.5	-1.5	0.05
5.5	-2	0.035
6.5	-2	0.035
7.5	-1.5	0.035
12	-1.5	0.05
12	0	0.05

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********** Input Report **********

--------Class: Cross Section----------

Name: X-NEWRD Group: BASE
Comment:

X-Station(m)	Y-Elevation(m)	Manning's N
0	4.59	0.01
4.49	4.59	0.01
18.37	4.59	0.01
34.792	4.59	0.01
52.665	4.633	0.01
74	4.648	0.01
93.527	4.642	0.01
102.686	4.663	0.01
121.028	4.749	0.01
139.325	4.834	0.01
157.6	4.93	0.01
178.98	5.04	0.01
196.5	5.137	0.01
215.64	5.27	0.01
226.55	5.373	0.01

--------Class: Pipe----------

Name: 1-36 From Node: PP-12 Length(m): 20
Group: BASE To Node: US-PP17 Count: 1

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(cm):	91.44	91.44
Rise(cm):	91.44	91.44
Invert(m):	5.65	5.58
Manning's N:	0.013	0.013
Top Clip(cm):	0	0
Bottom Clip(cm):	0	0

Equation: Average K
Flow: Positive
Entrance Loss Coef: 0.1
Exit Loss Coef: 1
Bend Loss Coef: 0.3
Outlet Cntrl Spec: Use dc or tw
Inlet Cntrl Spec: Use dn
Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall 1 1

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********** Input Report **********

--------Class: Node--------

Name: 2-3WAY Base Flow(m3/s): 0 Init Stage(m): 12.56
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha) [Manhole, Flat Floor]

--------Class: Node--------

Name: 2-CHA Base Flow(m3/s): 0 Init Stage(m): 0.68
Group: BASE Warn Stage(m): 3
Comment: MID POINT OF DALTY AND DRAINAGE CHANNEL

Stage(m) Area(ha)

--------Class: Node--------

Name: A Base Flow(m3/s): 0 Init Stage(m): 5.8
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------

Name: AEE-RD Base Flow(m3/s): 0 Init Stage(m): 14.35
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------

Name: B Base Flow(m3/s): 0 Init Stage(m): 5.63
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------

Name: BIG-WETL Base Flow(m3/s): 0 Init Stage(m): 0.68
Group: BASE Warn Stage(m): 3
Comment: BIG DETENTION AREA BETWEEN THE RIVER AND MAINTENAN

Stage(m)	Area(ha)
0	0.001
0.5	0.64
1	4.35
1.5	8.87
2	9.35
2.5	10.1

--------Class: Node--------

Name: BR-PR53 Base Flow(m3/s): 0 Init Stage(m): 16
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

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********** Input Report **********
--------Class: Node--------
Name: C Base Flow(m3/s): 0 Init Stage(m): 5.6
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)
--------Class: Node--------
Name: CONFLU1 Base Flow(m3/s): 0 Init Stage(m): 13.02
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)
--------Class: Node--------
Name: CONFLU2 Base Flow(m3/s): 0 Init Stage(m): 11.7
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)
--------Class: Node--------
Name: CONFLU3 Base Flow(m3/s): 0 Init Stage(m): 10.86
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)
--------Class: Node--------
Name: CULV-53 Base Flow(m3/s): 0 Init Stage(m): 15.86
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)
--------Class: Node--------
Name: D Base Flow(m3/s): 0 Init Stage(m): 5.5
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)
--------Class: Node--------
Name: D-CANAL Base Flow(m3/s): 0 Init Stage(m): 0.68
Group: BASE Warn Stage(m): 3
Comment: UPSTREAM THE ROAD TO THE HOTEL

Stage(m)	Area(ha)
-0.19	0.03
0	0.033
1	0.043
2	0.053
3	0.063

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********** Input Report **********

--------Class: Node--------

Name: DET-POND Base Flow(m3/s): 0 Init Stage(m): 5.4
Group: BASE Warn Stage(m): 7
Comment: detention pond d/s existing pipes

Stage(m)	Area(ha)
4	0.15779998
5	0.44109995
6	1.01979989
7	1.47719984

--------Class: Node--------

Name: DETPOND1 Base Flow(m3/s): 0 Init Stage(m): 35
Group: BASE Warn Stage(m): 0
Comment:

Bottom Area(ha): 0

Stage(m)	Volume(m3)
35	0
36	4123.5
37	8726.92
38	13828.62
39	19464.42
40	84085.92

--------Class: Node--------

Name: DETPOND2 Base Flow(m3/s): 0 Init Stage(m): 15
Group: BASE Warn Stage(m): 0
Comment:

Bottom Area(ha): 0

Stage(m)	Volume(m3)
15	0
16	5844.26
17	12424.91
18	19776.49
19	27947.11

--------Class: Node--------

Name: DETPOND3 Base Flow(m3/s): 0 Init Stage(m): 10
Group: BASE Warn Stage(m): 0
Comment:

Bottom Area(ha): 0

Stage(m)	Volume(m3)
10	0
11	3558.61
12	7701.89
13	12461.92
14	17884.32
15	23965.41

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********** Input Report **********

--------Class: Node--------

Name: DIVERT Base Flow(m3/s): 0 Init Stage(m): 1
Group: BASE Warn Stage(m): 3.5
Comment: node to divert water to the canal and wetland

Stage(m)	Area(ha)
-0.6999999	0.1
2	0.3
3	0.64

--------Class: Node--------

Name: DS-2-36 Base Flow(m3/s): 0 Init Stage(m): 12
Group: BASE Warn Stage(m): 14
Comment: D/S END OF THE EXISTING CULVERT NEAR MAIN ENTRANCE

Stage(m) Area(ha)

--------Class: Node--------

Name: DS-906 Base Flow(m3/s): 0 Init Stage(m): 9.6
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------

Name: DS-906-C Base Flow(m3/s): 0 Init Stage(m): 18.58
Group: BASE Warn Stage(m): 0
Comment:

Stage(m)	Area(ha)
18	0.0001
20.75	0.0002
21	0.0002

--------Class: Node--------

Name: DS-ACAD Base Flow(m3/s): 0 Init Stage(m): 6.01
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)

--------Class: Node--------

Name: DS-CCD Base Flow(m3/s): 0 Init Stage(m): 1.93
Group: BASE Warn Stage(m): 0
Comment:

Stage(m) Area(ha)