

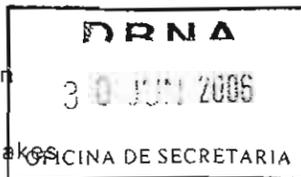
**FEDERAL AND COMMONWEALTH JOINT PERMIT APPLICATION FORM FOR
WATER RESOURCE ALTERATIONS IN WATERS, INCLUDING WETLANDS,
OF PUERTO RICO**

FOR AGENCY USE ONLY

USACE Application # _____ Date Application Received _____
 PRPB CZM Application # _____ Date Application Received _____
 EQB WQC Application # _____ Date Application Received _____
 DNER SLUC Application # _____ Date Application Received _____
 DNER WF Application # _____ Date Application Received _____
 DNER WC&WI Application # _____ Date Application Received _____
 DNER ECEFP Application # _____ Date Application Received _____
 Government Agency Acting as Sponsor in accordance with Section 4C of Law: _____

1. Type of Permit or Certification Requested (check all that apply):

- U.S. Army Corps of Engineers Permit to place Fill in Waters of the U.S. (Section 404) ,
Work in Navigable Waters of the U.S. (Section 10) and/or Transport Dredged Material
for Ocean Disposal (Section 103)
- CZM Certification
- Water Quality Certification
- Submerged Land Use Concession
- Water Franchises
- Well Construction and Water Intakes
- Earth Crust Extraction Formal Permit - include information requested in Enclosure A



**SOL-CONJ.
7 8 8**

2. Type of activity for which you are applying (check all that apply)

- New construction or work including dredging or filling in, on or over waters of the
U.S., including wetlands, navigable waters and/or other surface waters.
- Alteration or operation of an existing work, construction or system which was not
previously permitted.
- Modification of previously permitted project. Provide previous permit numbers.
- Removal, Extraction, Excavation and dredging of earth crust components.
- Extraction of water

3. Applicant's Name and Address

Name Mr. José Valdés

Last Name, First Name (if individual). Corporate Name. Name of Government Agency

Address VRM Enterprises, Apartado 20868

Municipality San Juan, Zip 00928

Telephone 787-781-0025 Fax 787-781-1465

Name of the Property Owner (If different from applicant): _____

(If applicant not the owner, explain contractual relationships. Include Owner's address):

JOINT PERMIT APPLICATION – Puerto Rico

4. Agent's Name and Address

Name José A. Torres / JAT Wetland Research, Inc.

Address PO Box 371209

Municipality Cayey Zip 00737

Telephone 787-263-7588 Fax 787-738-3689

5. Name of Waterway at Work

Site Intermiten Creek & Associated Wetland

6. Name of project, including phase if applicable:

Palacios de Gurabo

Is this application a part of a multi-phase project? yes no

Project location (Indicate Wards, Municipality; etc. Use additional sheets, if needed);

Ward and Municipality (ies) Celada Ward, Gurabo Municipality

"Finca" _____

Road PR-9945, Km. 1.5, Hm. _____

Street address, road, or other location

Coordinates in Center of Project: Latitude: 18° 16' 36.334" N

Longitude: 65° 58' 57.039" W

Lambert Coordinates: X 49135 N

Y 200070 E

Directions to locate Site:

JOINT PERMIT APPLICATION – Puerto Rico

7. If there have been any pre-application meetings, including at the project site, with regulatory staff, please list the date(s), location(s), and names of key staff and project representatives.

July 21, 2005 Jurisdictional Determination Verification with Mrs. Vivian Gerena
form the US Corps of Engineers and Mr. Julio Toro form the Department of Natural
& Environmental Resources.

8. Please identify by number any Commonwealth and/or Federal permit pending, issued or denied for projects at the location, and any related enforcement actions. (Provide Copies)

Agency	Date	No.\Type of Application	Action Taken
	Included		

9. Please provide the names, addresses and zip codes of property owners whose property directly adjoins the project (excluding applicant). Please attach a plan view showing the owner's names and adjoining property lines. Attach additional sheets if necessary.

- a. _____ c. _____

- b. **Included** _____ d. _____

- e. _____ f. _____

- g. _____ h. _____

10. Proposed Use (Check one or more as applicable) Private Public Commercial
 Industrial Agricultural

Explain:

This is a private residential development of the VRM Enterprises.

ANSWER TO BLOCK 9

North

1. Departamento de Transportación y Obras Públicas
Apartado 20868
San Juan, PR 00928-0868
2. Alvarado Pérez Tomas
El Señorial Mail Station
Suite 305
San Juan, PR 00926
3. Toledo Ramos German
HC1 Box 8269
Gurabo, PR 00778
4. Gonzalez Vda. De Medina Elena
K1 BO. Celada
Gurabo, PR 00778
5. Oscar Carrasquillo Quintero
1833 Galear Way Port
Coquitalea BC V3B-2R3

South

1. AAA Ave. Barbosa, Hato Rey
PO Box 70101
San Juan, PR 00936-8101
2. Departamento de Transportación y Obras Públicas
Apartado 20868
San Juan, PR 00928-0868
3. WGO Faros Inc.
PO Box 1279
Gurabo, PR 00778

East

1. WGO Faros Inc.
PO Box 1279
Gurabo, PR 00778

2. Abigail Arroyo
PO Box 290
Luquillo, PR 00773

West

1. Sucn. Carrasquillo Quintero
HC-01 Box 10691
Gurabo, PR 00778
2. Zilma Quiñónez Roldan
Calle Juan B. Quillonez
Gurabo, PR 00778



ESTADO LIBRE ASOCIADO DE PUERTO RICO
MUNICIPIO DE GURABO

24 de octubre de 2005

Sr. José A. Valdés
Presidente
P.O. Box 20868
San Juan, Puerto Rico 00928-0868

RE: CASO 2005-47-0289-JPT
Proyecto Palacios de Gurabo
Carr. # 9945 Km. 1.5
Ba. Ciénaga Gurabo, P.R.

Estimado señor Valdés:

Reciba saludos cordiales. Mediante carta fechada el 25 de octubre de 2005 sometió a la consideración de esta Administración Municipal los planos para la construcción del Proyecto Palacios de Gurabo.

Los planos han sido revisados y no tenemos objeción a la construcción del proyecto según propuesto condicionado a lo siguiente:

1. Que las aguas de escorrentía de las calles descarguen a desagües en las áreas verdes provistas para ello en la urbanización y sean canalizadas hasta el Río Gurabo o sus afluentes.

Este Municipio no se hace responsable del mantenimiento de dichos sistemas, los cuales serán responsabilidad del urbanizador y/o entidad a cargo del mantenimiento y protección de estas áreas.

Deberán advertir a las personas o entidades responsables que en dichas áreas pueden existir desagües naturales y que los mismos no habrán de alterarse bajo condición alguna. Esta advertencia deberá formar parte de las escrituras del proyecto y en la dedicación a uso público para las Vías Municipales.

Página 2

Caso: # 2005-47-0209-JPU

2. Esta Administración tiene la responsabilidad de llevar a cabo la inspección de las calles para su aceptación final, es por tanto que al comienzo de la construcción de ellas se notificará al Municipio para inspeccionar las mismas durante la construcción o someter al Municipio certificación del inspector que las calles han sido construidas de acuerdo al plano de construcción y a las mejores prácticas de ingeniería.
3. El urbanizador y/o entidad a cargo será responsable del recogido y disposición de la basura generada en el Proyecto durante la construcción del mismo y posteriormente durante la ocupación de las viviendas.
4. El urbanizador y/o entidad a cargo será responsable de la instalación de luminarias en el interior y exterior inmediato del proyecto.

Estarán sujetos a las siguientes Ordenanzas Municipales: la Ordenanza Municipal # 24 serie 2004-2005 donde establece el pago por la cantidad de \$2,000.00 dólares por cada unidad de vivienda y la Ordenanza Municipal # 1 serie 2001-2002 donde establece el pago de \$100.00 dólares por segregación.

Sin nada más a que referirme quedo,

Cordialmente,

VICTOR M. ORTIZ DIAZ
Alcalde

De estar de acuerdo con los términos de este endoso el representante autorizado del proyecto Palacios de Gurabo deberá firmar en el espacio que se le provee abajo.

JORGE CINTRON
Representante Autorizado
Palacios de Gurabo





DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS, ANTILLES OFFICE
400 FERNANDEZ JUNCOS AVENUE
SAN JUAN, PUERTO RICO 00901-3299

REPLY TO
ATTENTION OF

Antilles Regulatory Section
SAJ-2005-3661 (JF-VG)

AUG -8 2005

Mr. José A. Torres
Wetland Research, Inc.
P.O. Box 371209
Cayey, Puerto Rico 00737

PRELIMINARY JURISDICTIONAL DETERMINATION

Dear Mr. Torres:

Reference is made to the Jurisdictional Determination (JD) study submitted by you on behalf of Empresas VRM, for an approximately 233-acre property, located north and south of Hwy. PR-9945, Km. 1.5, Celada Ward, Gurabo, Puerto Rico. This parcel is being proposed for the construction of a new residential development known as "Palacios de Gurabo". Please refer to number SAJ-2005-3661 (JF-VG) in future correspondence regarding this case.

On July 21, 2005, the U.S. Army Corps of Engineers (Corps) inspected the site in order to corroborate jurisdictional lines presented in the JD report. Subsequently, as requested by Mrs. Vivian Gerena from our staff during the verification visit, you submitted a revised plan, which incorporate some modifications that were agreed to on the site. The revised plan shows an approximate location and extent of the waters of the United States within the studied area, as verified during our field visit. Accordingly, we accept the JD plan, as modified.

The present letter constitutes a **preliminary jurisdictional determination**. This determination and corresponding drawing represent the approximate extent of the Corps regulated wetlands on the referenced site. The Corps will keep the preliminary jurisdictional determination, while you are responsible of making a copy of the signed original.

Please be advised that if the project envisions the discharge of fill material within waters of the United States, the Corps may request you to provide a certified land survey of the delineated areas for an approved jurisdictional determination. In order to obtain an approved jurisdictional determination, you will need to provide a copy of a property survey, including the delineated wetland areas. The survey may be performed by means of a Global Positioning System (GPS) or by conventional methodology. Regardless of which method is utilized to perform the survey, all jurisdictional

delineation surveys shall be referenced to the property boundary, and each page of the survey shall be signed and sealed by a registered surveyor licensed in the Commonwealth of Puerto Rico. If a GPS is used to perform the survey, the accuracy of the equipment shall be at the submeter level, and a statement to that effect must appear on each page of the signed, sealed survey. Each individual flag or stake denoting wetland boundaries must be left on the site for verification. These points shall be depicted in the survey and labeled with its corresponding attributes.

This jurisdictional determination reflects current policy and regulations and is valid for a period no longer than five years from the date of this letter, unless new information warrants revision of the determination before that date. If after the five-year period, this determination has not been specifically revalidated by the Corps, it shall automatically expire,

Please be advised that the preliminary jurisdictional determination shows the presence of waters of the United States, including wetlands. Various developmental activities within jurisdictional wetlands, such as filling, mechanized landclearing, and construction of some pile-supported structures, are regulated by the Corps. A Department of the Army permit must be obtained prior to the commencement of any of these activities.

This determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

If you have any questions, please contact Mrs. Vivian Gerena from our Regulatory Section at telephone numbers (787) 729-6905/6944, extension 3058, or at the letterhead address.

Sincerely,



Sindulfo Castillo
Chief, Antilles Regulatory Section

Enclosure



Autoridad de Aguas
y Alcantarillados

Ave. Gautier Benítez
Consolidated Medical Plaza
Piso 4, Suite 605
P.O. Box 8729, Caguas, PR 00726-8729
Tel. (787) 748-1221
Fax (787) 748-8270

PROYECTOS PÚBLICOS Y PRIVADOS

27 de enero de 2005

Sr. Jorge Cintrón Valdés
Urb. Maños Rivera #37
Guzmán, PR 00969

RE: AAA-C-04-33-21
CASO NUM. 04XB2-CET08-07606
PALACIOS DE GURABO
(1,103 UNIDADES EQUIVALENTES)
CARRETERA PR-9945, KM. 1.5
BARRIO CELADA
GURABO

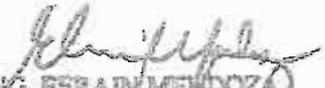
Post-It Fax Note	7871	Date	01/14/05
To	J. Cintrón	From	Jorge Cintrón
Phone #	393-0620	Phone #	790-9783
Fax #	760-0496	Fax #	790-7178

Estimado señor Cintrón:

Nos referimos al plano del proyecto de referencia, sometido por usted a nuestra consideración para su estudio y evaluación.

Le informamos que el Área de Operaciones de Caguas nos indica que los sistemas de distribución de agua y alcantarillado sanitario que pueden servir a este proyecto están operando a su máxima capacidad, razón por la cual no se puede aceptar más conexiones.

Cordialmente,


ING. EFRAIM MENDOZA
Gerente, Proyectos Públicos y Privados
Región Este

EM/MAGM/mrp

Cf Ing. Mendoza
Director Área Caguas
Centro Expreso de Trámites
Ing. Guzmán
File Proyecto
W:Reading File

ESTE



ESTADO LIBRE ASOCIADO DE PUERTO RICO

DEPARTAMENTO DE AGRICULTURA

P.O. BOX 10163, SAN JUAN, PR 00908-1163

14 DIC 2004

1 de diciembre de 2004

Ing. Carlos J. González
Centro Expreso de Tramite, ARPE
P. O. Box 41179
San Juan, Puerto Rico 00940-1179

Asunto: 04XF2-CET00-07609
Dueño: José A. Valdés
Proponente: Jorge Cintrón
Barrio/Pueblo: Celada, Gurabo

Propuesta: Segregar 1,095 solares de 450 mc, de una finca de 239 cuerdas

Localización: Carr. 9945, km 1.5, Bo. Celada, Gurabo

Uso Propuesto: Residencial

Suelos:	%	Serie	Declive	Capacidad de uso agrícola
A	35	Naranjito limo arcilloso lómico	40-60%	VIIe
B	30	Caguabo arcilloso lómico	40-60%	VII-s
D	25	Múcara arcilloso	12-20%	IVe
D	10	Acañunas arcilloso	5-12%	IIIe

Descripción de los Suelos:

Suelos que varían de moderadamente inclinado a muy inclinados, de buen drenaje. La permeabilidad y la capacidad de retención de agua son moderadas. La fertilidad natural es mediana. Son adecuados para pastos y diversos cultivos.

Descripción General de la Finca y el Area Aledaña:

La finca objeto de consulta ubica en una zona agrícola. Estos terrenos son de topografía inclinada, amplia cabida, diversidad de suelos, lo cual hace viable para cualquier cultivo. Esta finca colinda con una vaquería y dos proyectos de viviendas en fase inicial. La zona se caracteriza por la actividad ganadera. Por esta razón entendemos que la aprobación de la propuesta estimularía la fragmentación de unidades agrícolas. Es monitorio indicar que el Departamento de Agricultura pretende desalentar el desplazamiento de terrenos agrícolas mediante la introducción de otros usos. Por todo lo antes expuesto, este Departamento objeta el uso propuesto.

Agricultura, la esperanza del futuro.

Ing. Carlos J. González
Consulta 04XF2-CET00-07609
1 de diciembre de 2004
Página - 1 -

Recomendación del Departamento de Agricultura Sobre la Consulta de Referencia:

No Objetada _____ Objetada X Estudiada _____

La parte afectada por la orden o resolución administrativa podrá, dentro del término de 20 días desde la fecha de archivo en autos, presentar una moción de reconsideración, según lo dispone la Ley Núm. 170, del 12 de agosto de 1988, Ley de Procedimiento Administrativo Uniforme de Puerto Rico



Ing. Yolanda Flores Santos
Directora
Oficina de Preservación
de Terranos Agrícolas

NSM/7-

CONFIDENTIAL: Que he enviado copia fiel y exacta de esta comunicación, por correo certificado con acuse de recibo a: José A. Valdes, Apartado 20868, San Juan PR 00928-0868 / José Cintron, Urb. Muñoz Rivera, Calle Tomasol 37, Guaynabo PR 00969.



RFE

27 de octubre de 2004

Ing. Luis A. Vélez Roché
Administrador
Centro Expreso de Trámite
Administración de Reglamentos y Permisos
Apartado 41179
San Juan, Puerto Rico 00940-1179

CASO NÚM: 04X12-CET00-07607
PALACIOS DE GURABO
(1,105 UNIDADES DE VIVIENDA)
CARRETERA PR-9945, KM 1.5
HARRIO CELADA, GURABO

DAI

Estimado ingeniero Vélez Roché:

Hacemos referencia a su comunicación recibida el 5 de octubre de 2004, a través del Centro Expreso de Trámite (CET).

Se estima que el desarrollo propuesto generará un gran número de viajes adicionales al tránsito existente en las carreteras circundantes al área de influencia del desarrollo, por lo que será necesario que el proponente someta un estudio de tránsito en donde se evalúen las condiciones del tránsito presente y futuro en el sector de influencia de éste y se determine el impacto que el mismo tendrá en el sistema vial que le sirve de acceso. Se deberá considerar en el análisis de tránsito a realizarse el efecto de otros desarrollos propuestos en el área como también la necesidad de la instalación de sistemas de semáforos en el sector. Se deberán incluir en los planos las mejoras a proveerse por este desarrollo en dicho sistema vial para mantener un nivel de servicio adecuado en el mismo. Se deberá dar especial consideración a los accesos para servir a este desarrollo de manera que cumplan con el Reglamento para Control de Accesos a las Vías Públicas de Puerto Rico, vigente.

El Reglamento 11-001, conocido como Normas para la Imposición de la Aportación por Concepto de Exacción por Impacto faculta a la Autoridad de Carreteras y Transportación a establecer un programa de Exacción por Impacto. Este conlleva que nuevos desarrollos deberán tener participación equitativa de los costos de infraestructura y los usos comunales diseñados para prestar servicio al nuevo crecimiento y desarrollo, y así evitar efectos acumulativos negativos sobre la calidad de vida de los desarrollos existentes. Por lo tanto, el desarrollo de referencia estará sujeto al pago de una aportación. La aportación será calculada cuando se sometan los planos corregidos y se tengan detalles adicionales de la magnitud del proyecto y su impacto a la infraestructura de transportación. Para más detalles relacionados con la aportación deberá comunicarse con el Sr. Renny Parrilla Navarro al 787-721-8787, extensión 2675.



Ing. Luis A. Vélez Roché
CH04-00005178
Página 2

El proponente deberá someter a la Oficina de Control de Accesos del Área de Ingeniería de Tránsito y Operaciones de esta Autoridad cuatro copias de los planos corregidos para la evaluación final o endoso correspondiente. En los mismos se deberán incluir los detalles del ensanche, accesos, obras de desagüe y cualquier otra obra que pueda impactar la vía estatal. Recordarnos que los planos a someterse para poderlos procesar deberán estar firmados y sellados por el profesional que los prepare y estén en cumplimiento con las Normas y Reglamentos vigentes de esta Agencia.

Esta comunicación tiene un año de vigencia, no constituye una autorización para comenzar obra de construcción alguna y aplica a Palacios de Gurabo, de 1,105 unidades de vivienda, a ser construido en el predio de terreno de referencia. Cualquier otro proyecto a desarrollarse en este predio de terreno deberá ser sometido a esta Autoridad para la revisión y comentarios que apliquen.

Para cualquier aclaración o información adicional, favor de comunicarse con este servidor al 787-721-8787, extensión 2826 o en el Centro Expreso de Trámite (CET) al 787-721-8282, extensión 7044, haciendo referencia al número de control de esta carta y con mucho gusto se le atenderá.

Cordialmente,



Oriando Almodóvar López
Coordinador
Centro Expreso de Trámite

K05/2H-STM-dm



Hon. José M. Rivera
Alcalde

21 de octubre del 2004

Ing. Jorge Cintrón
Urb. Muñoz Rivera
Calle Fontanaol #37
Guaynabo, Puerto Rico 00

Rta. Desarrollo Propuesto
Urb. Palacios de Gurabo
Carr. PR # 9945 Km. 1.3
Barrio Celada

Estimado Ingeniero Cintrón:

Le refero a su carta del 1 de septiembre de 2004, mediante el cual solicita el endoso para el desarrollo de un proyecto residencial a ubicarse en la Carr. PR # 9945 en el Barrio Celada de esta municipalidad.

El desarrollo de este complejo de viviendas propuesto consiste de ciento ochenta (180) apartamentos tipo walk-up distribuido en cinco (5) edificios de seis (6) pisos de alto y ochocientos veinticinco (825) residencias unifamiliares en solares con cabida mínima de cuatrocientos veinticinco (425) metros cuadrados. La finca a desarrollarse tiene una cabida de doscientas treinta y nueve (239) cuerdas.

Es nuestro interés expresar que esta Administración tiene como política emitir sus recomendaciones, endosos, u autorizaciones a proyectos cuando tenemos todos los elementos de juicio que nos permiten tomar una decisión sabia, responsable y objetiva sobre el mismo en beneficio de nuestro pueblo. En este proceso es indispensable que se haya radicado a la Junta de Planificación y se nos presente la Declaración de Impacto Ambiental de manera que a juicio de todos sea viable el desarrollo propuesto.

No obstante, haremos de hacer observaciones u opiniones que deben considerarse para que podamos mas adelante emitir un juicio objetivo.

Nuestras observaciones son las siguientes:

- 1. Nuestra administración se encuentra en la tercera etapa (Avance) del Plan de Ordenación Territorial y de acuerdo a las políticas establecidas en el memorial del plan estos terrenos estarían clasificados como Suelo Rústico Común y Áreas Desarrolladas. No obstante el área habrá de ser*

revaluada en la etapa de AYANCE en la medida que el área ha sido impactada y son los terrenos al norte del Río Gurabo los que quedarían de remanente para el futuro desarrollo del Municipio de Gurabo.

2. Se reconocen la construcción del proyecto Lomas del Sol y el desarrollo aprobado conocido por La Aurora (98-47-866-JPU/ARPE 00DX2-00000-06015). El proyecto Lomas del Sol fue endorsed por esta administración.
3. La Junta de Planificación, autorizó el desarrollo de un proyecto residencial unifamiliar conocido como La Aurora (Caso número 98-47-0866 JPU / ARPE 00DX2-00000-06013). Este proyecto inicialmente fue denegado por la Junta de Planificación sin embargo, posteriormente se autoriza como un proyecto de interés social. Una vez se autorizó el proyecto se solicita un cambio para familias de altos ingresos. Este proyecto no ha comenzado y solo tiene una extensión en tiempo para someter los planos de construcción.
4. Colindando al oeste de la Urbanización La Aurora (Caso 98-47-866 JPU) se propone el desarrollo de otro proyecto de vivienda conocido como Alborada del Río (antes Big River Village), el cual fue radicado a la Junta de Planificación bajo el número 2000-47-1021-JPU y se encuentra bajo estudio por la Junta de Calidad Ambiental.
5. Existe otro desarrollo propuesto conocido como La Aventura (2001-47-1021-JPU) que ubica al oeste del proyecto y que lo separara la Carr. PR #942. Este proyecto esta bajo la consideración de la Junta de Calidad Ambiental. En el plano por usted sometido aparece como La Aurora, lo cual es incorrecto. Aunque pudiesen ser del mismo dueño son desarrollos separados.
6. La Junta de Planificación autoriza otro proyecto de interés social mediante el Caso número 96-47-0407 JPU-IFX, Urbanización Colinas de Alegría de 150 unidades de viviendas ubicado en el Barrio Jaguas, Carretera número 941 en el km 6.6.
7. En el sector inmediato a este proyecto existe una comunidad de personas de bajos ingresos conocida como Comunidad Celada constituida por más de 700 parcelas. En el área se ha venido desarrollando terrenos mediante el proceso de lotificación simple.
8. En el plano se indica un área "varios vecinos". En este lugar hay propuesto un proyecto de lotificación y otro al norte colindando con la Parcela Buonomo que consta de aproximadamente 35 lotes.



Es recomendable que para facilitar la posibilidad de este desarrollo se incorporen estos dentro de la propuesta de desarrollo de manera que se vinculen las características del sector con la posible propuesta de este proyecto. El proyecto de segregación esta dedicado a uso público un camino de 11.00 metros y que se conoce como el camino "Los Chinos".

8. Existe un camino que conecta la Carretera PR #943 y el PR # 941 que queda por la propiedad cuya titularidad hoy que definiría pues dicho camino era existente por las comunidades al norte cuando no existía la Carretera PR # 943 y que era conocido como el camino Los Chinos. Se recomienda que se sea correcto se debe considerar la construcción de este camino que se está como servidumbre de 11.00 metros en proyectos de segregación en áreas rurales. Allora estaríamos en un área predominantemente agrícola que se podría así servidumbre mejor.
9. El desarrollo propuesto en terrenos como otros terrenos del sector a ser vendidos, una acción jurídica que ha dejado de serlo por la acción propia de las inundaciones del Departamento de Agricultura y Recursos Naturales al evaluar las propuestas, por lo cual es imperativo que estas Agencias estén al tanto previo al nuestro. Esta finca colinda con otra finca agrícola propiedad de Sr. William Gonzalez.
10. Su propuesta fue discutida por personal de esta Administración y se le expuso que los sitios terrenos disponibles y terrenos para el futuro desarrollo de Garabo están en el lado norte del Río Garabo y se le explicaron las implicaciones de estos desarrollos inclusive en términos de aumento por las inundaciones propias del Río Garabo y que vienen afectando la comunidad en cada ocasión de una actividad de la naturaleza.
11. Debe ser operable el desarrollador que tanto la Carretera PR # 943, como la Carretera PR #941 y la PR # 181 con vías que dejan de ser accesible por la acción de las inundaciones que se producen por el Río Garabo y que afectan esta comunidad en días y estas una propuesta de esta administración al Departamento de Transportación y Obras Públicas, la cual ha sido presentada al comité de Política Pública (MPO) y el cual aprobó la inclusión de estas propuestas para estudio como parte del Sistema de Transportación Inter modal. La viabilidad de este desarrollo debe considerar la propuesta municipal.
12. Los terrenos colindan con la Dique propiedad de la Autoridad de Acueductos y Alcantarillados (A.A.) para lo cual debe obtenerse el endoso de esta agencia.



14. Los endosos de Fish and Wildlife son necesarios en la medida que ya han expresado su posición a proyectos colindantes radicados y no aprobados aún por estar en la etapa de la DLA.

15. Debe considerarse que no existe la infraestructura vial apropiada, como tampoco los sistemas de abastecimiento de agua y sanitaria para este proyecto y los otros contiguos así que las mismas sean provistas a costo del urbanizador y aguas a que existe la capacidad de los sistemas, para cubrir, en forma, la comunidad existente.

16. El proyecto y sus anexos que al igual que en el desarrollo de vivienda en el Barrio Ceñala y Jigala se da tal naturaleza que de ser endosados por el Departamento de Agricultura y Recursos Naturales deben considerarse bajo un desarrollo de área de reserva que se haga posible cubrir una necesidad de la infraestructura de agua, sanitaria y de comunicaciones, entre las mismas vías.

17. Es recomendable que se propicie una la posible viabilidad de estos proyectos en conjunto para hacer posible la construcción de la infraestructura común, que se facilite recibir la infraestructura para el mejoramiento de las Parcelas del Barrio Ceñala y los proyectos llamados de Barrio Ceñala.

18. El Barrio Jigala y Ceñala se parte del Valle del Turabo y comenzando por el Municipio de Caguas, la Junta de Planificación con el Municipio optaron por proteger los terrenos que estarían sobre la cota de nivel de 100 metros y pendientes mayores del 18%. El Valle del Turabo que comprenden las áreas de Caguas y Curabé, en lo que respecta a nuestra jurisdicción, ha tenido un impacto de desarrollo considerable sobre las áreas agrícolas y se propone afectar prácticamente la totalidad de los remanentes agrícolas. Es evidente, entonces que deben protegerse los pocos terrenos que permanecen intactos y que no son propios para desarrollar terrenos porque requerirían alterar considerablemente la cubierta terrestre, la flora y la fauna.

19. Este proyecto y los proyectos no proveer vivienda asequible para que personas de esta municipalidad puedan lograr una vivienda adecuada ante la necesidad que existe actualmente. Este tipo de proyecto está ubicado en un mercado regional y nacional y no responde al mercado local. Es fundamental que se tome en consideración el que el mismo pueda ofrecer un tipo de vivienda asequible a los distintos sectores. Los estudios que se hayan realizado posiblemente justificaran la viabilidad económica para el proyecto y el desarrollador pero no que se proveerán viviendas de necesidad para esta comunidad. Es necesario señalar que la integración comunitaria no es posible porque este tipo de proyecto responde a una visión actual de comunidades aisladas del entorno social existente.



Asimismo, se proveen como parte del proyecto un por ciento de los recursos que beneficiar las familias de esta comunidad de Toluca.

Después de lo que se ha visto en materia de gestión de parte de las autoridades y recursos de esta comunidad, se ha visto que se ha estado en un momento de desarrollo y de crecimiento para lograr el mejoramiento de la vida comunitaria y de brindar un ambiente propicio de bienestar y progreso.

Atentamente,


Jefe de la
Comunidad



JOINT PERMIT APPLICATION – Puerto Rico

11. Description of Work (Be specific, use additional sheets as necessary; Include Purpose and Need of the Project)

Included

ANSWER TO BLOCK # 11

The VRM Enterprises by conduit of the Eng. José A. Melendez Firm submits a "Consulta de Ubicación" before the consideration of the Planning Board for the construction of a residential project for the single family and multi-family, in a farm with total room of 254.2467 cords, located in the PR-9945 Km. 1.5 in Celada Ward, in the Municipality of Gurabo.

It is proposed to develop the farm in 5 phases for a total of 1,097 residential units, of which 180 will be walk-ups.

Section # 1 – This area count with 56.5472 cords of land, which will be develop 241 residential units with a room of 450 square meters. This sector will have controlled access toward the PR-9945 and the recreational facilities will be built according to the regulations. Trough this area flows an intermittent creek from north to south, and it will be maintained in its natural state with a total area of 7.2162 cords. To cross this creek it is proposed to construct a bridge, which will be located outside the jurisdictional area to minimize the impacts.

Section # 2 - This area count with 47.2715 cords of land, which will be develop 196 residential units with a room of 450 square meters. This sector will have controlled access toward the PR-9945 and the recreational facilities will be built according to the regulations. Trough this area flows two intermittent creeks from West to Southeast, and they will be maintained in their natural state. The creek at the West has an area of 6.8116 cords and the one that's flows trough the East is the one that was mentioned in section #1.

Section # 3 – The total area of this section is 62.4834 cords of land, which includes the 14.7023 cords expropriated by the AAA for the construction of the "Dique B" of Carraizo. This parcel will be develop in 337 residential units with a room of 450 square meters. This sector will have controlled access toward the PR-942 and the recreational facilities will be built according to the regulations.

Section # 4 – The area for this section is 32.0127 cords of land, which will be develop 143 residential units with a minimum area of 450 square meters. This sector will have controlled access toward the PR-9945 and the recreational facilities will be built according to the regulations. Adjacent to this section trough out the West, flow an intermittent creek that will be maintained in its natural states with an area of 3.3030 cords.

Section # 5 – This section have an area of 17.1487 cords of land, which will be develop in 180 units of walk-up of 6 floors with elevators. This sector will have controlled access trough the section # 4 and with exit to the PR-9945. It will be provided 360 parking lots for the residents, 36 for the visitors, 8 for handicap people, 4 for charges and unloads and for the waste disposal.

The remnant of the property that counts with 38.7832 cords of land will be constituted in perpetuity.

In order to make possible the proposed project it is contemplated the dredge of approximately 22,300 cubic meters and fill material of approximately 35,000 cubic meters.

The need and purpose of this project is to respond the primary demand of dwellings in the Municipality of Gurabo and in Caguas region. This demand comes from the increase in population that has suffered the municipality in the last decade.

Furthermore the dwellings demand in Puerto Rico enlarges and reduce the available lands through the time, which united to the population growth carries the increase in the residential construction areas in a vertical form. The proposed area has the potential to use a combined construction for horizontal and vertical form, with the protection and enjoyment of the natural elements in its surroundings. By this mean is avoided the construction of the flooded valleys that are characteristic of this municipality.

By another side, the available lands for the urban growth in the area of San Juan and Caguas have diminished and the tendency of growth has been given in the direction of the neighboring municipality's to the metropolitan zone.

JOINT PERMIT APPLICATION – Puerto Rico

12. Total Extent of Work in USACE Jurisdictional Open Waters or Wetlands: (Use additional sheets and provide complete breakdown of each category if more space is needed) **Included**

- Fill: _____ acres _____ cuerdas _____ cubic yards _____ cubic meters
- Excavation: _____ acres _____ cuerdas _____ cubic yards _____ cubic meters
- Dredging: _____ acres _____ cuerdas _____ cubic yards _____ cubic meters
- Docks, Piers, and Over Water Structures:
Dimensions _____

- Total Number of Slips _____ Total Number of Mooring Pilings _____
- Total area of structure over water and wetlands/seagrasses _____
- Seawall length _____ ft (mts) Seawall material _____
- Riprap length _____ ft (mts) Type of riprap material _____

13. Proposed Submerged Land Use:

Submerged Land _____ sf _____ sm Maritime Zone _____ sf _____ sm
Length of use requested (months, years, ect.): _____

14. Proposed Mining: _____ Sand _____ Gravel _____ Stone _____ Fill _____ Other _____

Excavation: _____ cuerdas/acres Rate: _____ m³ _____ day _____ week _____ month

Total amount:: _____ m³ Duration: _____ years Slope: _____ V: _____ H Depth: _____ mts

Equipment: _____

15. Water Extraction:

Amount of proposed extraction: _____ MGD _____ GPD
_____ hrs/day _____ days/week _____ weeks/year

Safe Yield (Q 99): _____ MGD

Method of extraction: Surface Water: _____ pipe diameter (in) _____ pump capacity(gpm)

Source: _____ River _____ Sea _____ Stream

Name of the Source: _____ Number of people served: _____

Other Water extractions located upstream and downstream from proposed intake:

ANSWER TO BLOCK # 12

In order to make possible the proposed project it is contemplated the dredge of 22,300 cubic meters and the fill material of 35,000 cubic meters

JOINT PERMIT APPLICATION – Puerto Rico

15. (Continued)

Water Discharges/Outfalls located upstream and downstream from proposed intake: _____

Proposed use of Water: Domestic Government Fisheries Commercial Institutional
 Industrial Agricultural Recreational Other

Brief Description of the proposed use of the water. Specify as applicable the type of crop, acreage number of animals, products, merchandize, number of dwellings, number of employees, etc:

For water intakes include the following information:

Intake Dimensions: Height _____ (ft) Width _____ (ft)
Pipe Diameter _____ (inches)

Type of Structure: Dam Gallery Other _____

Note (Hydraulic - Hydrology Study (H&H): For intake structures, dam or gallery, etc, which alters the natural water level, the applicant should submit an H&H study describing the actual water level and the projected change in water levels after the work is completed.

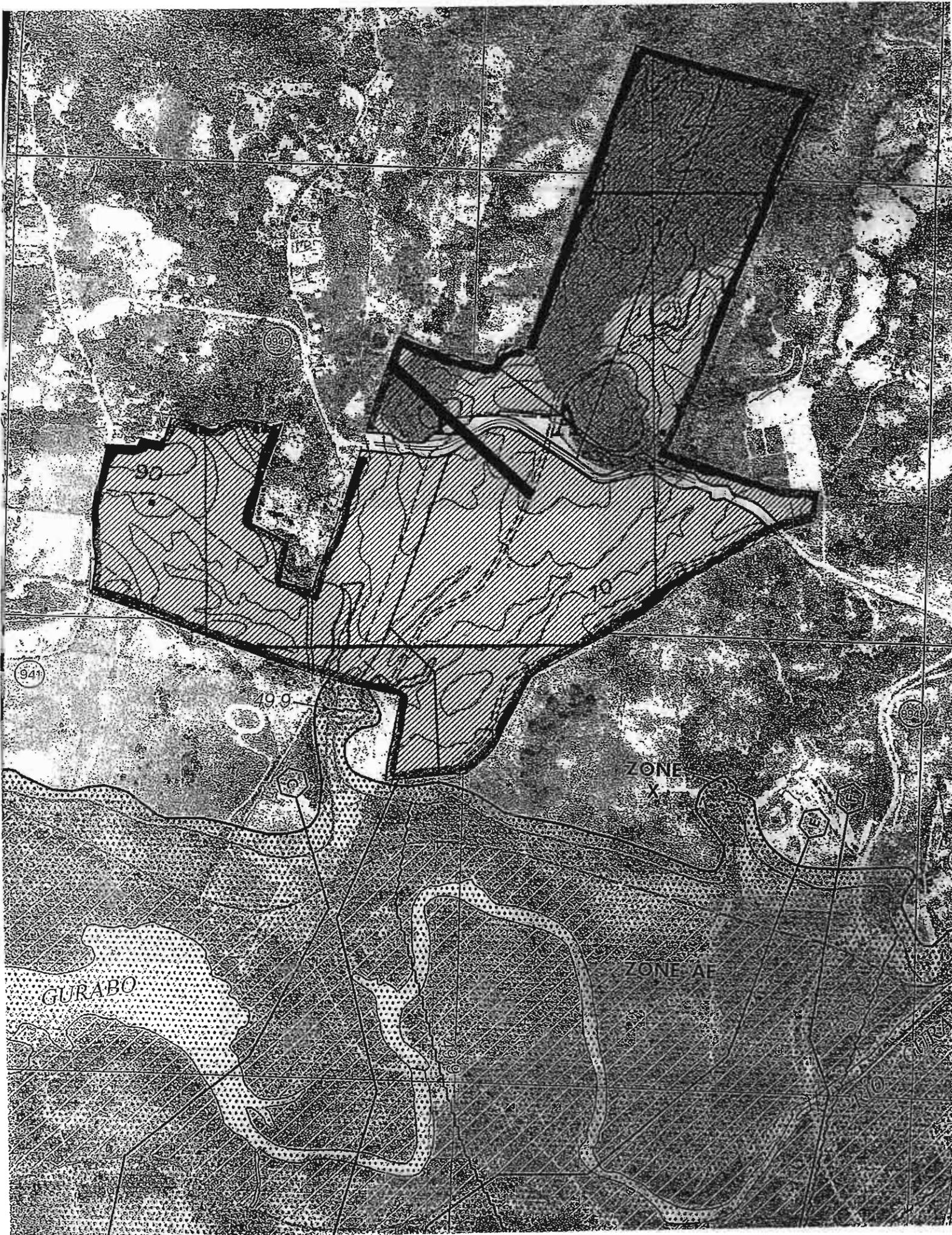
16. Indicate the zoning of the project site: SRC "Suelo Rustico Común",

Plan de Ordenancia Territorial del Municipio de Gurabo.

Indicate the current land use of the project site: _____

Indicate the current floodzone classification of the project site: Zone X

Specify if the proposed project is in compliance with the Puerto Rico Planning Board Regulation Number 13: _____



JOINT PERMIT APPLICATION – Puerto Rico

17. Indicate the proponent Agency with respect to compliance with Article 4(c) of Law #9 of June 18, 1970: “Departamento de Vivienda”

(Please provide evidence of compliance with Article 4(c) to expedite the process)

18. Indicate if any of the following natural or artificial systems are located within the proposed project site or in the sites adjacent to the project (Use Additional Sheets as necessary):

<u>System</u>	<u>Location (Indicate distance from proposed project)</u>
Rivers and streams with continuous flow	
Rivers and/or streams with intermittent flow	X Within
Maritime Zone/ Submerged Lands	
Lakes or Lagoons	
State and Federal Natural Reserves	
Coral Reefs	
Mangroves and Salt Flats	
Seagrasses	
Other Wetlands (Swamps, bogs, marshes)	X Within
Mudflats, riffles, pools	
Wildlife Refuges	
Areas of Special Interest	
Springs	
Estuaries	
Artificial ponds	
Irrigation Systems	
Dams	
Bridges	
Cultural Resources	
Coastal Dunes/Barriers	
Other:	

Describe those systems identified that are located within the proposed project site or adjacent to the project site (Use additional sheets as Necessary):

Through this area flow several intermittent creeks, that at the same time possess associated wetlands

JOINT PERMIT APPLICATION – Puerto Rico

By signing this application form, I am applying, or I am applying on behalf of the applicant, for the permit and any proprietary authorizations identified above, according to the supporting data and other incidental information filed with this application. I am familiar with the information contained in this application and represent that such information is true, complete and accurate. I understand this is an application and not a permit, and that work prior to approval is a violation. I understand that this application and any permit issued or proprietary authorization issued pursuant thereto, does not relieve me of any obligation for obtaining any other required Federal or Commonwealth permit prior to commencement of construction. I agree, or I agree on behalf of my corporation, to operate and maintain the permitted system unless the permitting agency authorizes transfer of the permit to a responsible operation entity. I understand that knowingly making any false statement or representation in this application is a violation of 18 U.S.C. Section 1001.

José A. Torres

Typed/Printed Name of Applicant (If no Agent is used) or Agent (If one is so authorized below)


Signature of Applicant/Agent

06/29/2006
Date

JAT Wetland Research, Inc.

(Corporate Title if applicable)

Page 6 of 8

AN AGENT MAY SIGN ABOVE ONLY IF THE APPLICANT COMPLETES THE FOLLOWING:

I hereby designate and authorize the agent listed above to act on my behalf, or on behalf of my corporation, as the agent in the processing of this application for the permit and/or proprietary authorization indicated above; and to furnish, on request, supplemental information in support of the application. In addition, I authorize the above-listed agent to bind me, or my corporation, to perform any requirement which may be necessary to procure the permit or authorization indicated above. I understand that knowingly making any false statement or representation in this application is a violation of 18 U.S.C. Section 1001.

José Valdés

Typed/Printed Name of Applicant


Signature of Applicant

06/29/2006
Date

VRM Entreprises

(Corporate Title if applicable)

JOINT PERMIT APPLICATION – Puerto Rico

**CERTIFICATION OF CONSISTENCY WITH THE PUERTO RICO COASTAL ZONE
MANAGEMENT PROGRAM**

I certify that the proposed activity complies with the enforceable policies of the Puerto Rico approved coastal management program and will be conducted in a manner consistent with such program.

José A. Torres
Typed/Printed Name of Applicant


Signature of Applicant/Agent Date

JAT Wetland Research, Inc.
(Corporate Title if applicable)

Please note: The applicant's original signature (not a copy) is required above.

PERSON AUTHORIZING ACCESS TO THE PROPERTY MUST COMPLETE THE FOLLOWING:

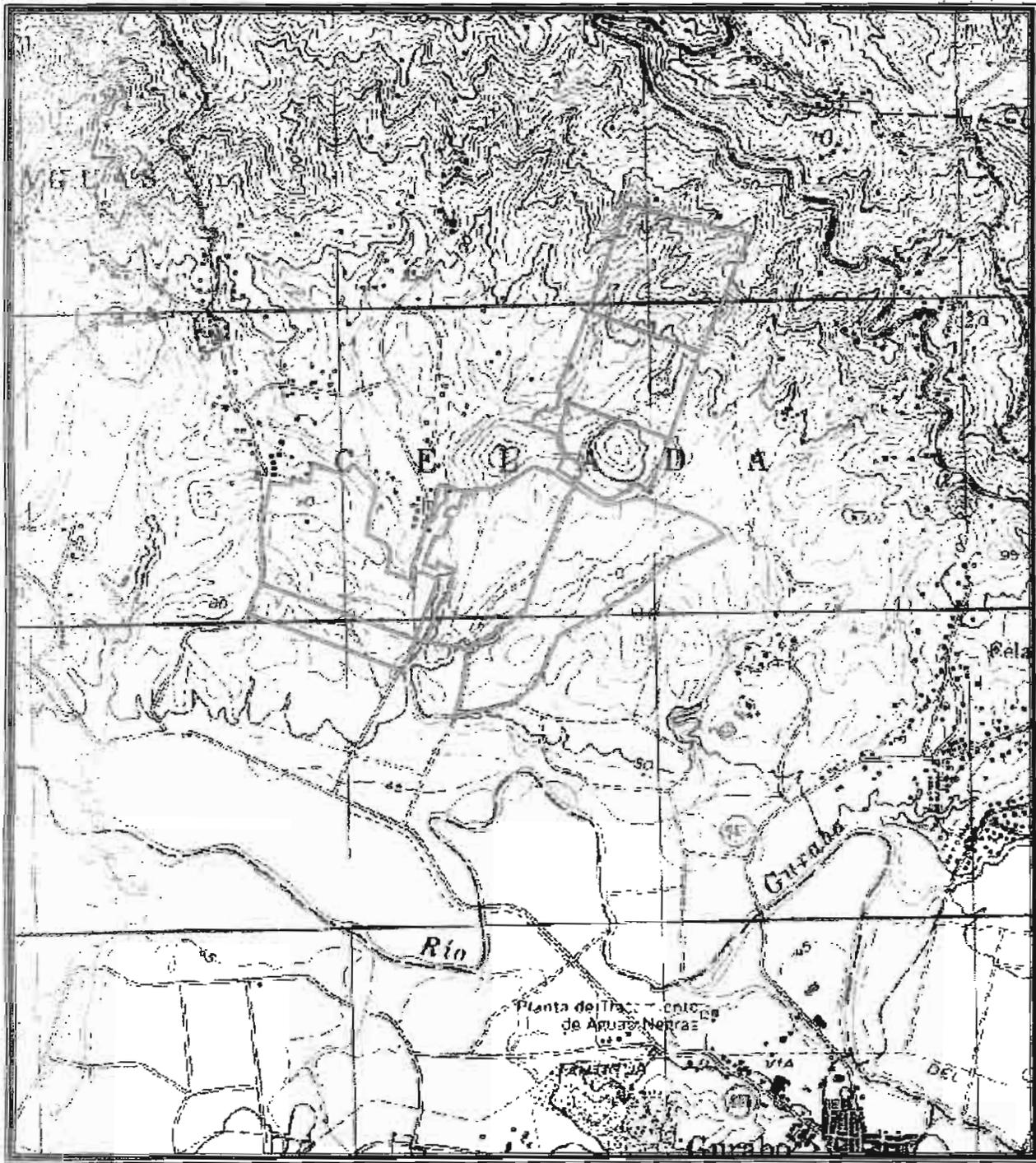
I either own the property described in this application or I have legal authority to allow access to the property, and I consent, after receiving prior notification, to any site visit on the property by agents or personnel from the PRPB, EQB, DNER, and the USACE necessary for the review and inspection of the proposed project specified in this application. I authorize these agents or personnel to enter the property as many times as may be necessary to make such review and inspection. Further, I agree to provide entry to the project site for such agents or personnel to monitor permitted work if a permit is granted.

José Valdés
Typed/Printed Name


Signature Date

VRM Entreprises
Corporate Title (If applicable)

**LOCATION MAP
PALACIOS DE GURABO
GURABO, PR**



0 0.25 0.5 1 1.5 2 Kilómetros

1:20,000

**PROJECT LAYOUT
PALACIOS DE GURABO
GURABO, PR**

HOJA 9

HOJA 10

HOJA 7

HOJA 8

HOJA 4

HOJA 2

HOJA 6

HOJA 1

HOJA 3

RIO CELADA
ELENA MEDINA VDA. DE GONZALEZ
200-000-001-20-000

SILVIA CARRASQUILLO QUINTERO
175-000-007-00-000

ERIBAL ANROYO
175-000-007-45-000

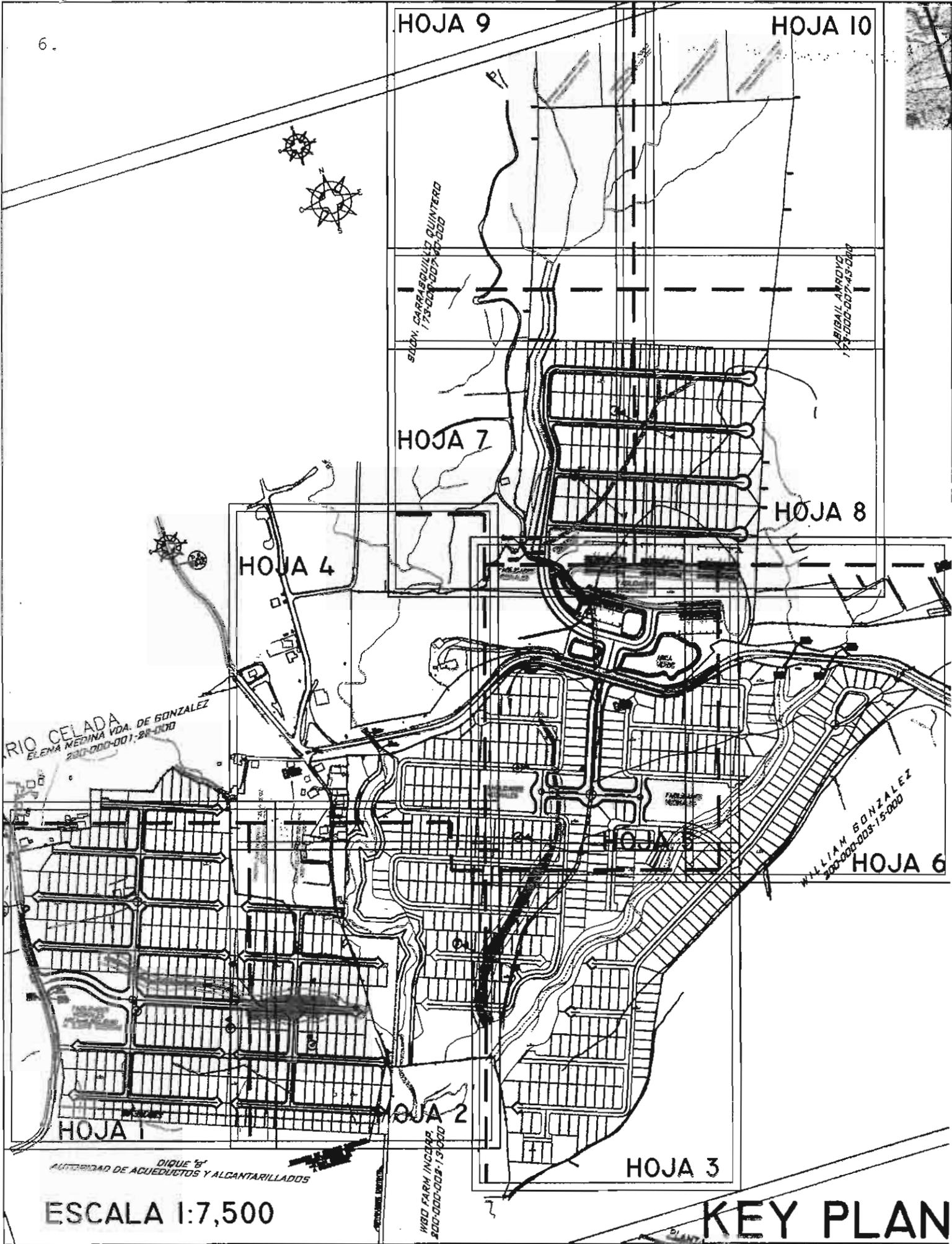
WILLIAM GONZALEZ
200-000-003-15-000

WBO FARM INCORP
200-000-008-13-000

DIQUE 'B'
AUTORIDAD DE ACUEDUCTOS Y ALCANTARILLADOS

ESCALA 1:7,500

KEY PLAN





HOJA I

ESCALA 1:2,000

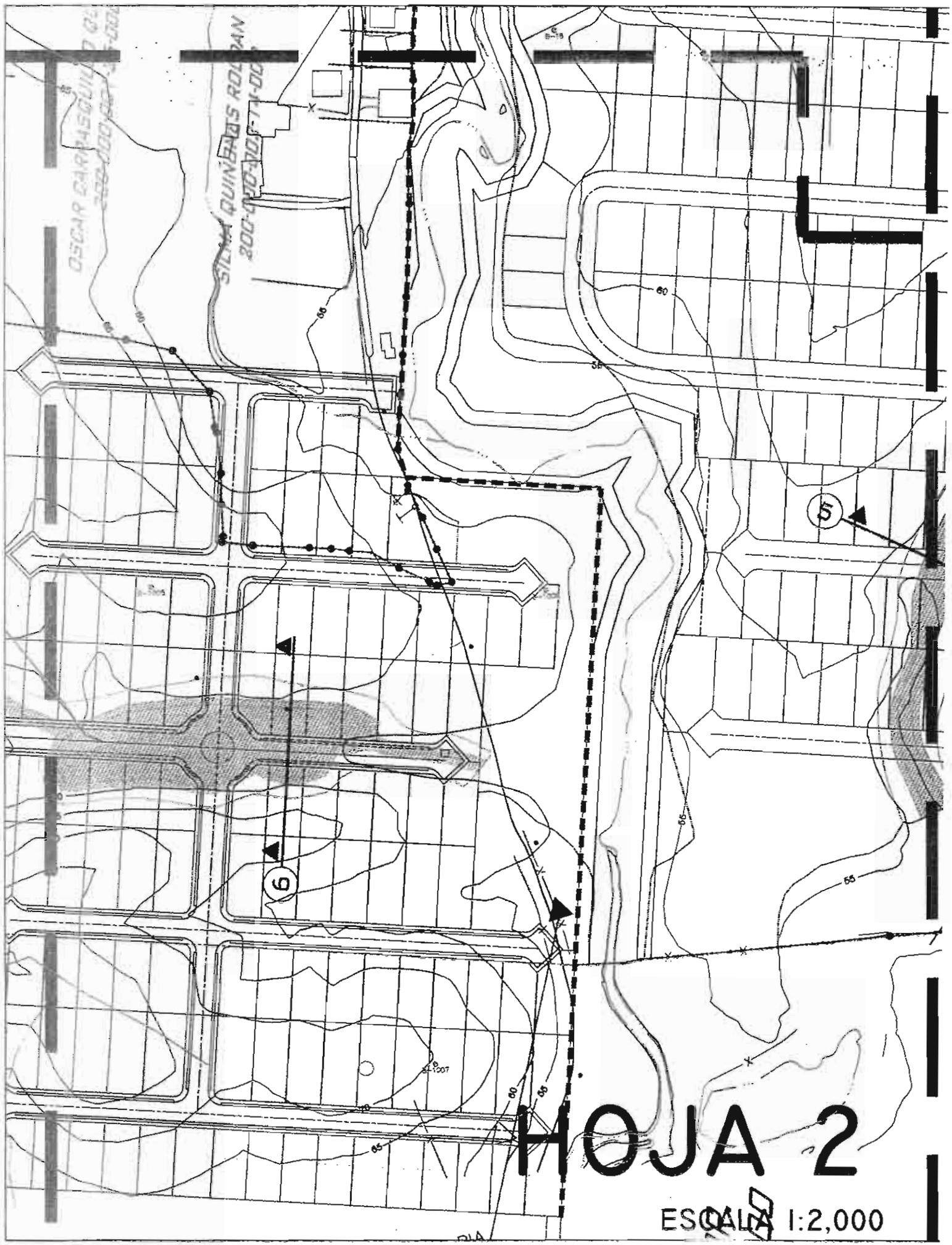
20 SOLARES

FACILIDADES VECINALES
AREA=8,653.8180
= 2,201.8 CUERDAS

MURO DE CONTENIMIENTO
LE=75.80

CATCH BASIN
LE=5.82

OSCAR CARRASQUILLA
288-100-887



OSCAR CARRASQUILLO
300-110-700-71-00

SILVA QUINEROS ROLDAN
300-110-700-71-00

5

6

8.1007

HOJA 2

ESCALA 1:2,000



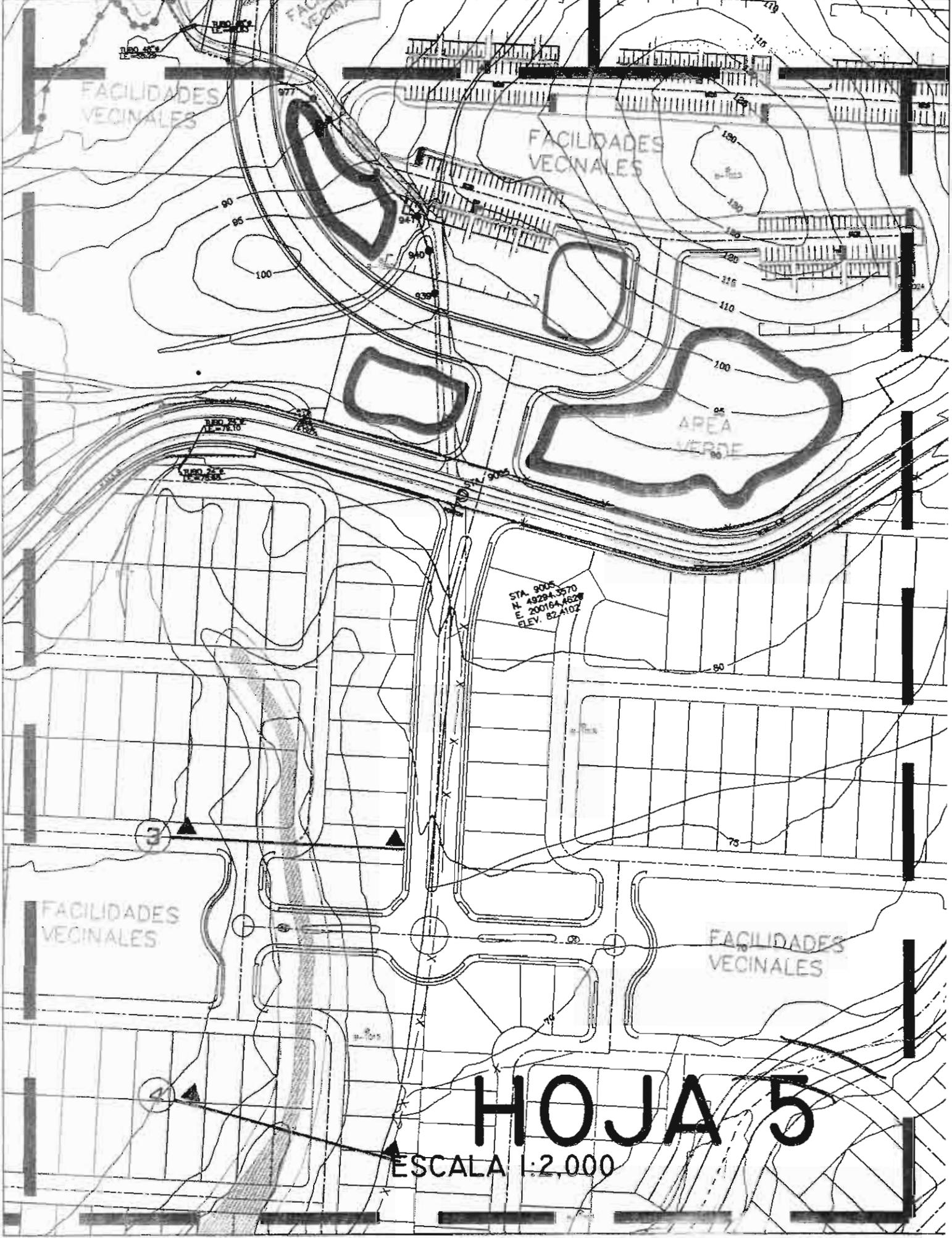
ESCALA 1:2,000

HOJA 3

HOJA 4



ESCALA 1:2 000



FACILIDADES VECINALES

FACILIDADES VECINALES

AREA VERDE

FACILIDADES VECINALES

FACILIDADES VECINALES

HOJA 5

ESCALA 1:2,000

STA. 9005
N. 49294.3570
E. 200164.4628
ELEV. 82.4102

3

4

REC. 254
10-7-80

REC. 254
10-7-80

90
95
100

100
105
110

95
100

90
75

9.705

10.705

X
X
X
X
X

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940
939

109

115

1024

1024

1024

1024

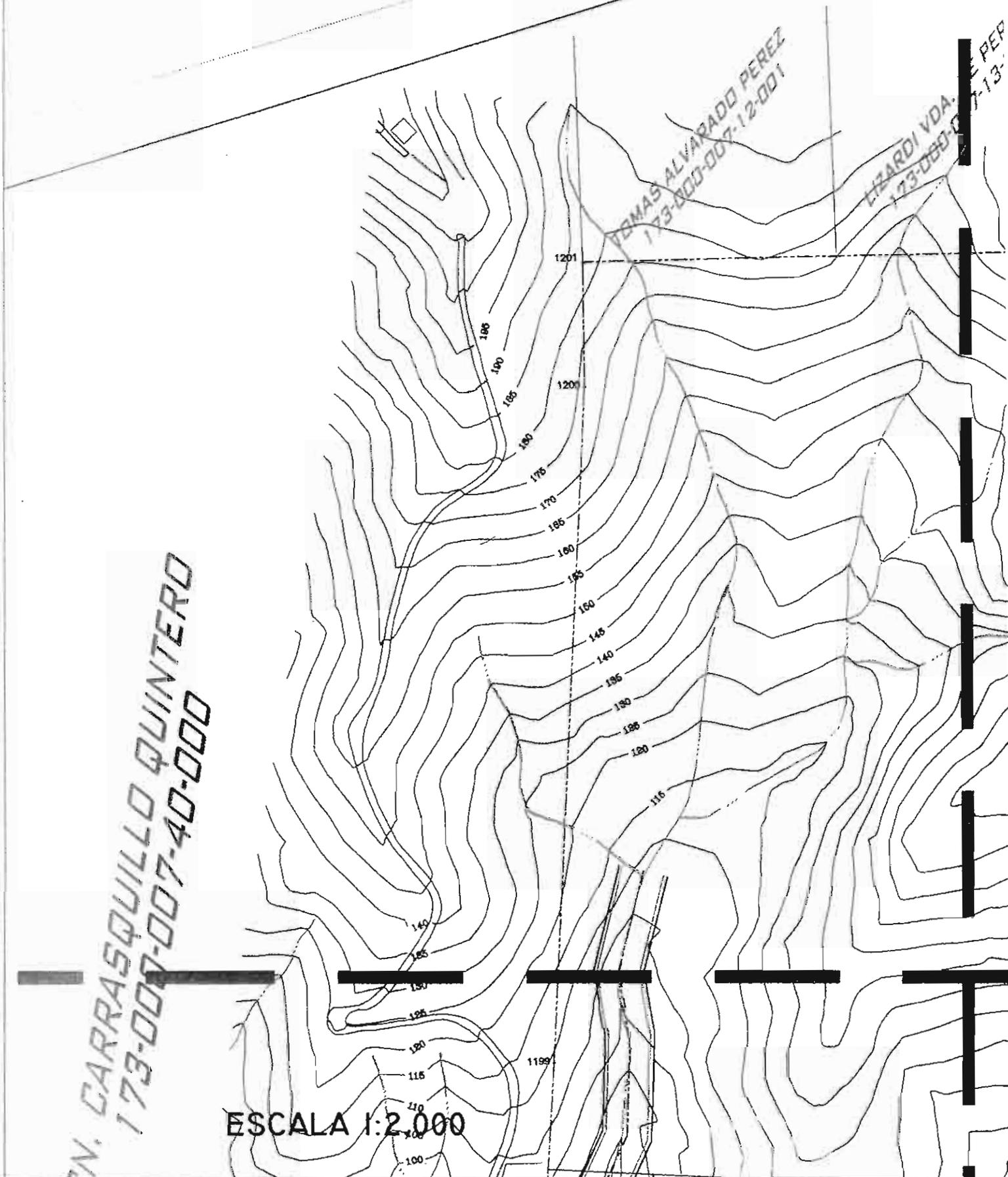
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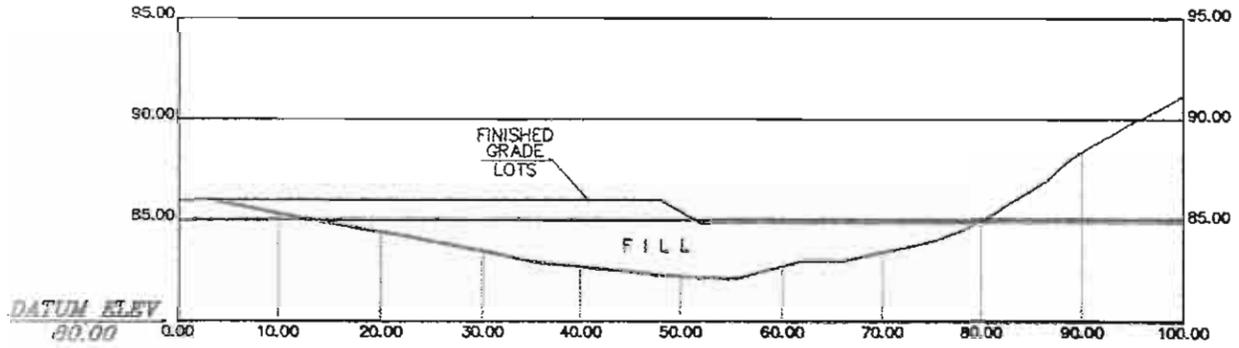
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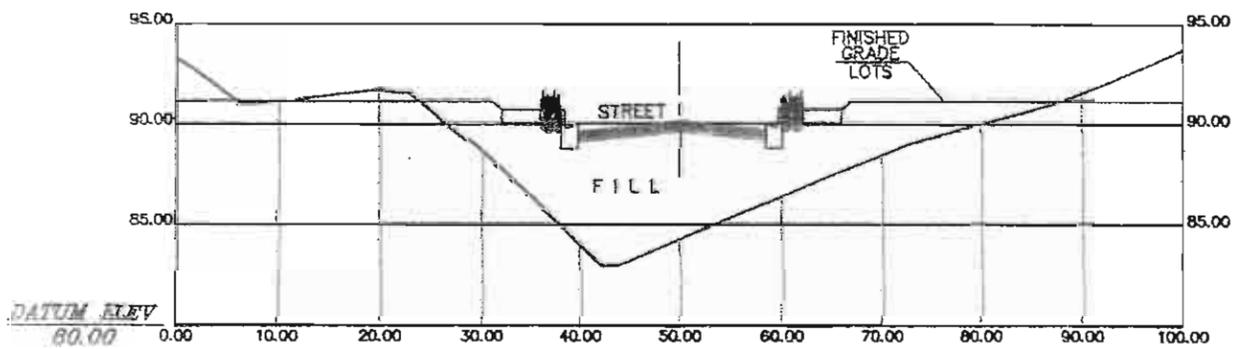
HOJA 9



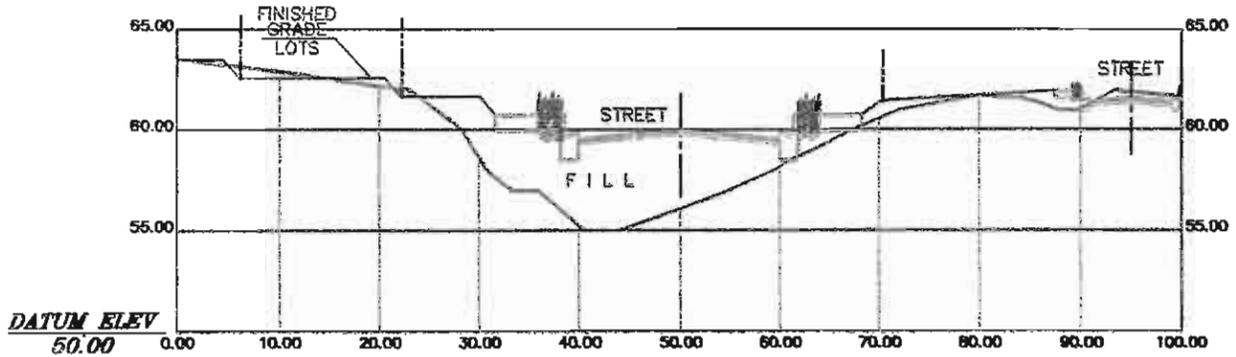
**CROSS-SECTION
PALACIOS DE GURABO
GURABO, PR**



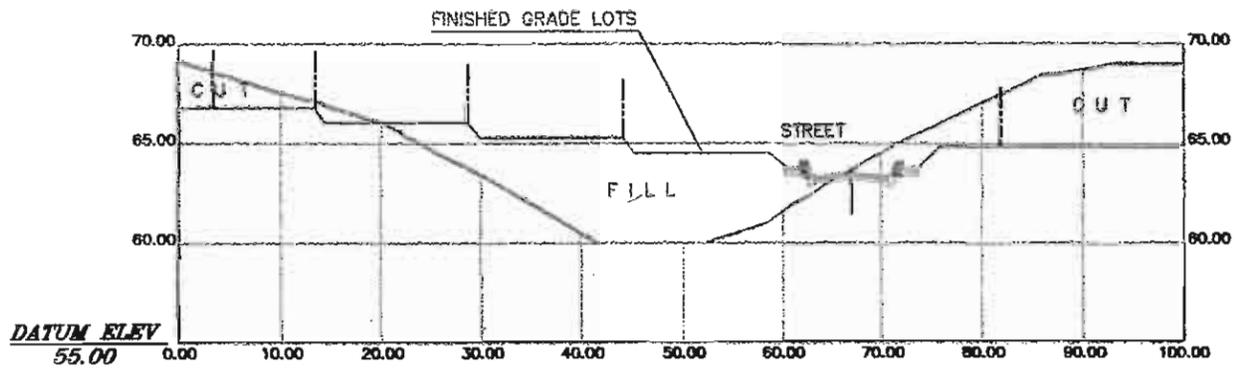
SECTION NUMBER 2



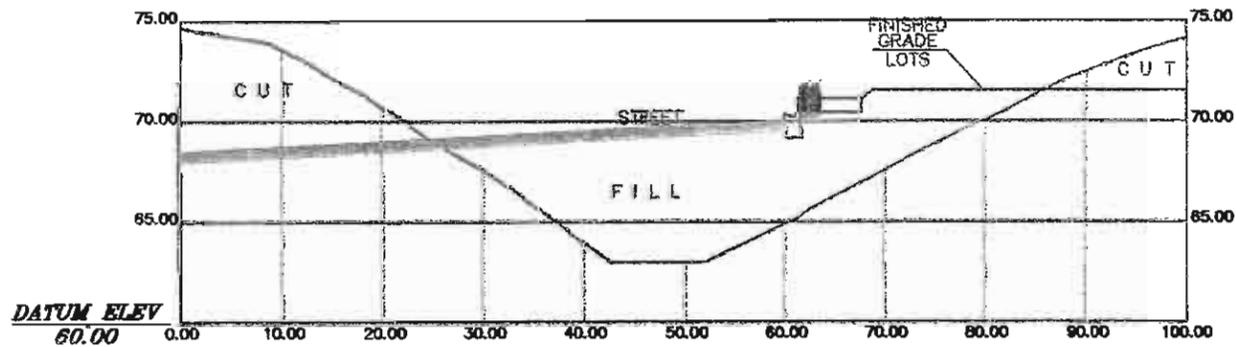
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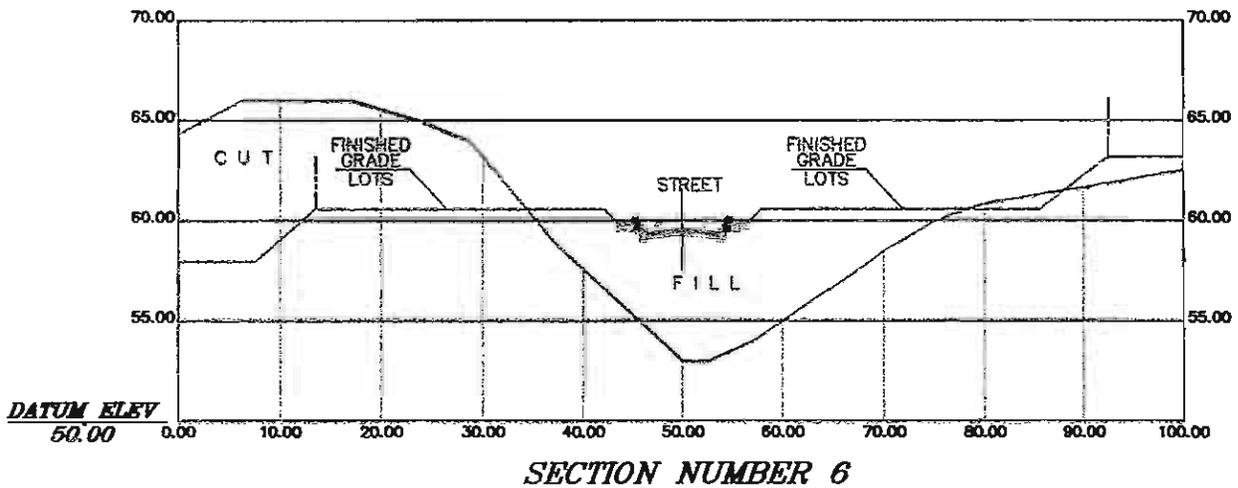
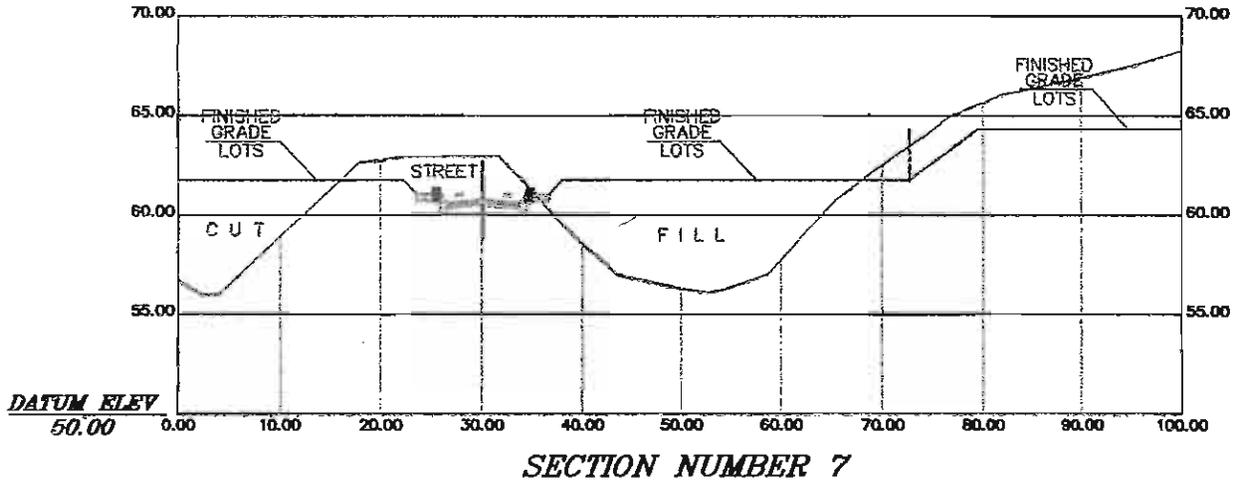
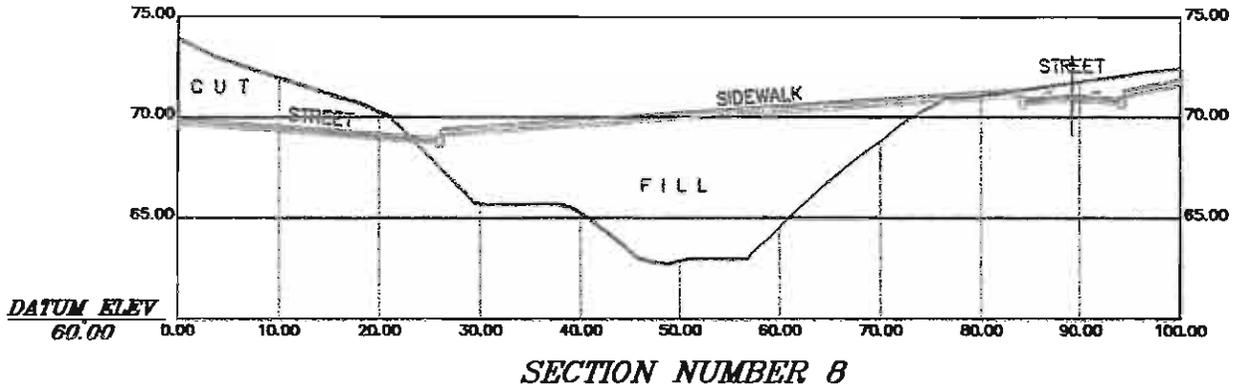
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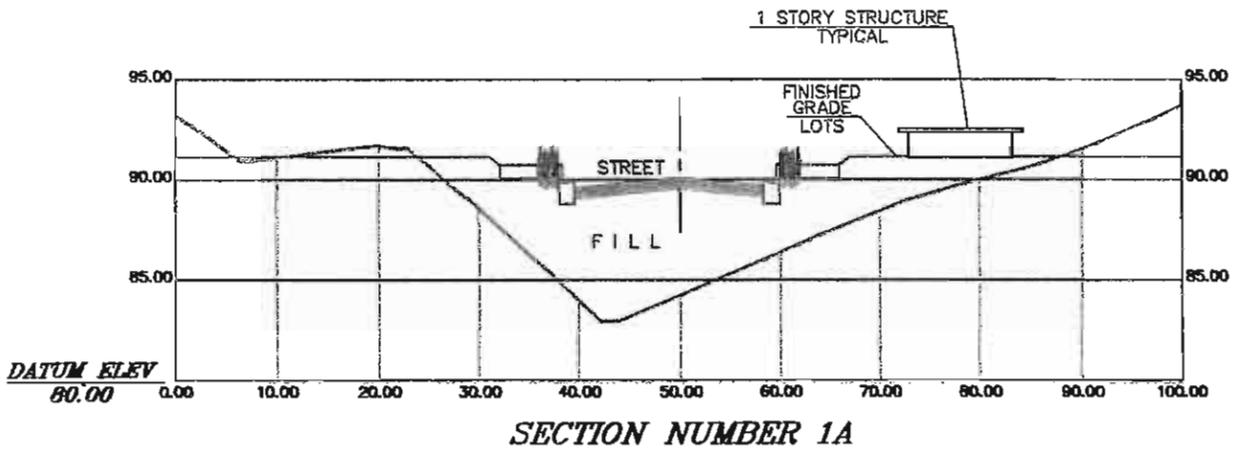
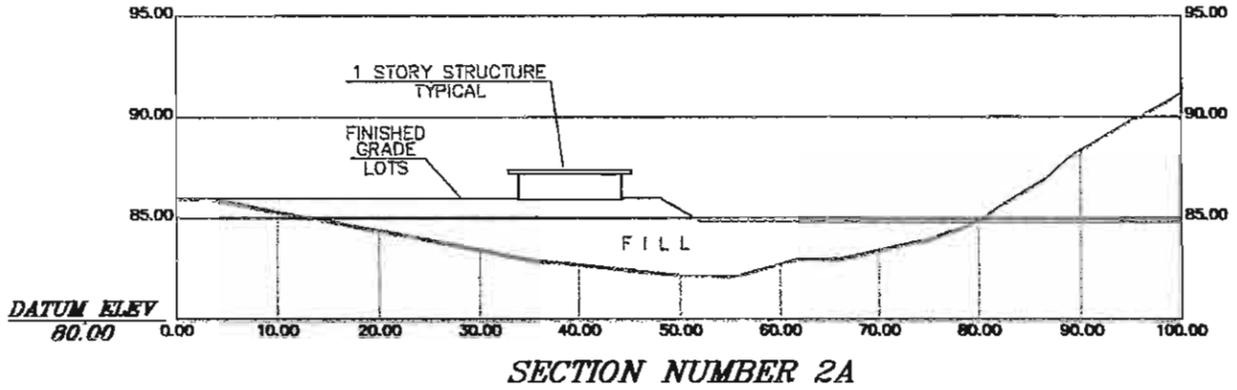
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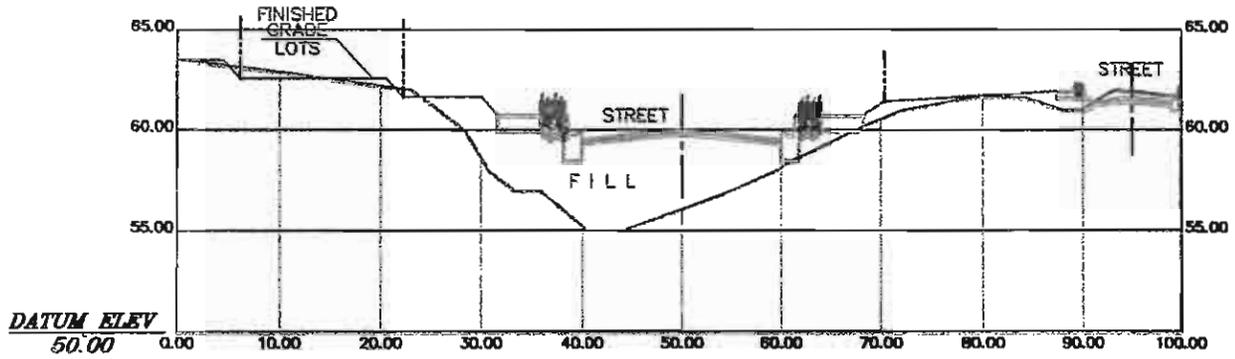
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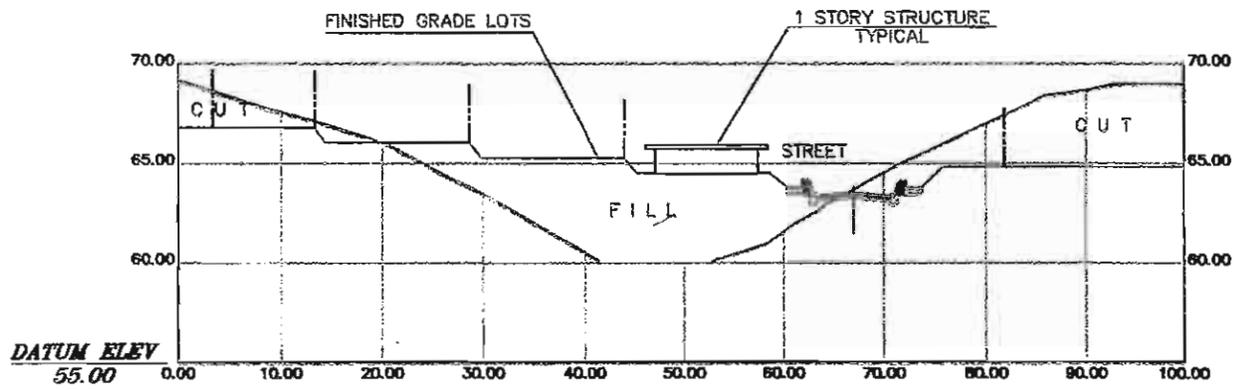
**CROSS-SECTION SHOWING THE STRUCTURES
PALACIOS DE GURABO
GURABO, PR**



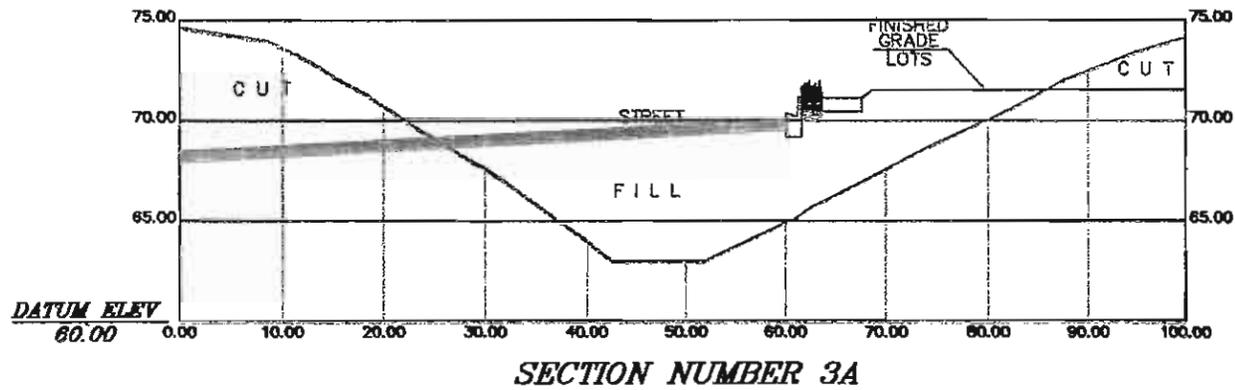
SECTIONS SHOWING STRUCTURES



SECTION NUMBER 5A

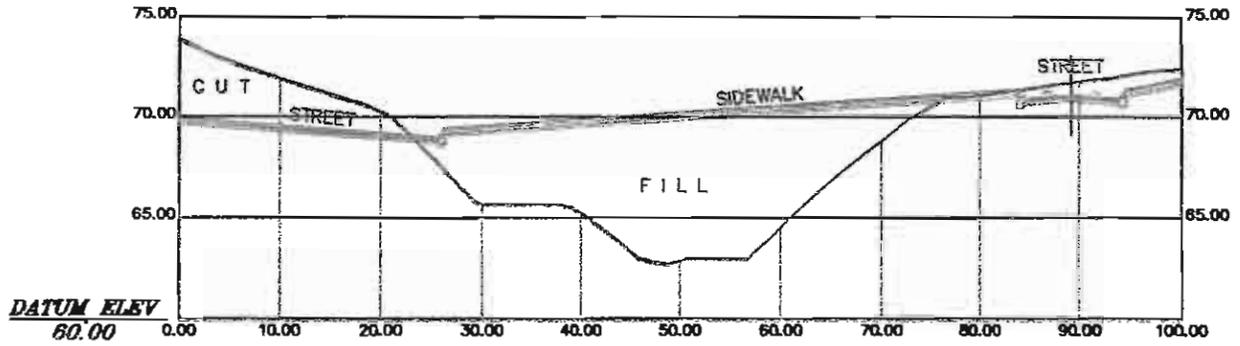


SECTION NUMBER 4A

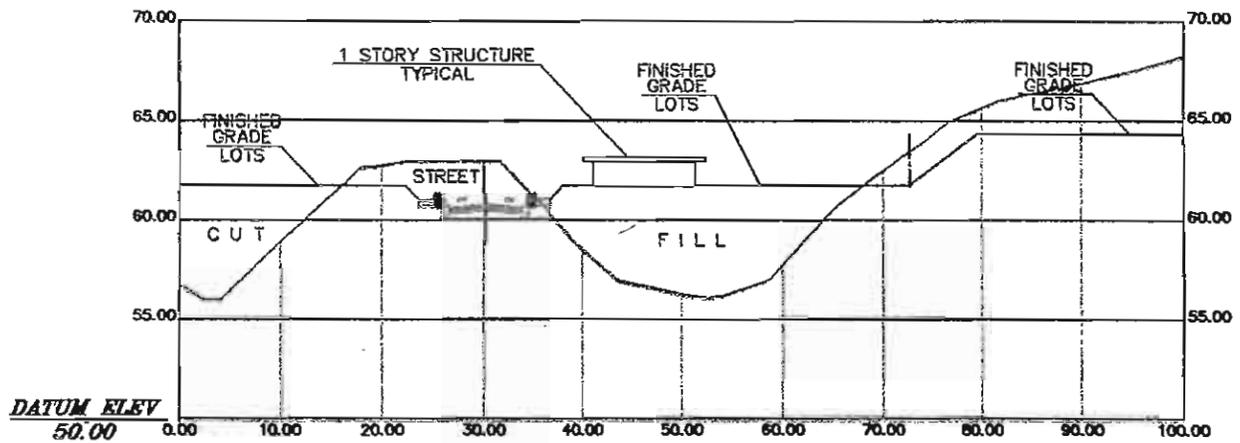


SECTION NUMBER 3A

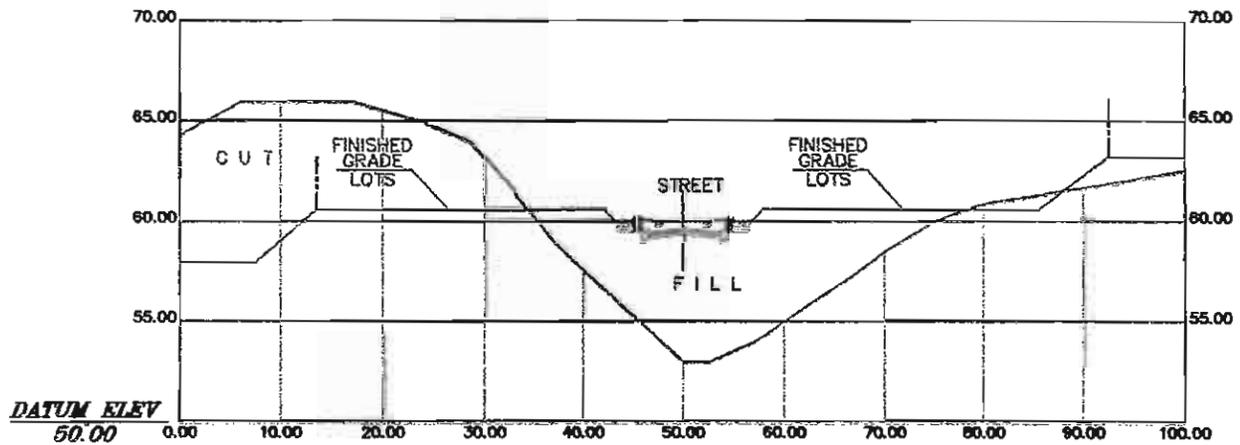
SECTIONS SHOWING STRUCTURES



SECTION NUMBER 8A



SECTION NUMBER 7A



SECTION NUMBER 6A

SECTIONS SHOWING STRUCTURES



WETLAND RESEARCH, INC.

P.O. Box 371209 - Cayey, P. R. 00737
Tel. 787-263-7588 / Fax 787-738-3689
Email: jwri@prtc.net

COMPLIANCE WITH 404 (b) (1) GUIDELINES

**PALACIOS DE GURABO
PR-9945, K.M. 1.5
CELADA WARD
GURABO, PR**

PREPARED FOR:

**VRM ENTERPRISES
BOX 20868
SAN JUAN, PR 00928**

JUNE 2006

INTRODUCTION

The Corps of Engineers regulations direct that a permit application involving the discharge of fill materials into water of the United States, be analyzed in conformity with the 404 (b)(1) guidelines of the Clean Water Act. See 33 CFR 325.2 (a)(6)(1992). These regulations recognize that information in excess that is contained in the standard application form may be required to support such analysis. The purpose of complying with the 404 (b) guidelines is to analyze all possible alternatives with lesser impacts that exist when the permit application is received. See 40 CFR Section 230.1(a)(1992). In addition, the analysis in conformity with the guidelines should demonstrate that appropriate and practicable steps have been taken in consideration to minimize adverse impacts of the discharge on the aquatic ecosystem. See 40 CFR Sections 230.10(d)

According to the 404 (b)(1) guidelines, an alternative is practicable if it is “available and capable of being done after taking in consideration cost, existing technology, and logistics in light of overall project purposes” 40 CFR Section 230 (a)(2). It is the purpose of this document to provide the Corps with sufficient information to allow analysis of the application for consistency with all applicable factors, including the 404 (b)(1) guidelines. The alternatives analysis must be based on through understanding the purpose of the applicant’s project.

In the current case the applicant’s propose to develop a residential project located at the PR-9945, Km. 1.5, Celada Ward, Gurabo, Puerto Rico.

COMPLIANCE WITH 404 (B)(1) GUIDELINES

The purpose of these guidelines it is to restored and maintains the chemical, physical and biological integrity of water of the United States, through the control of discharges of dredge or fill material.

These guidelines are a substantive part of the Corps of Engineers permits evaluation criteria. No permit can be issued if it does not comply with the guidelines (33 CFR 320.4 (a)(1), and it is the Corps who determines compliance with the guidelines. The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. This evaluation requires a careful weighing of each one factor relevant in each particular case. The benefits expected to accrue from the proposal must balance against foreseeable detriments. The decision whether to permit a specific proposal, and the conditions under which it will be allowed to occur, are determined by the outcome of this balancing process. This decision should reflect the national concern for both protection and utilization of important resources. All factors which may be relevant to the proposal must be considered, including the cumulative effects thereof. How important a factor is, and how much consideration it deserves, will vary with each proposal.

The applicant proposes to construct a residential project for single family and multi-family in a farm with a total room of 254.2467 cords, located in the PR-9945, k.m. 1.5 in Celada Ward, in the Municipality of Gurabo. According to the Environmental Studies carried out for the development of this project, confirms that this construction will not cause impacts to historic resources, flood plain and/or endangered species. Also a Jurisdictional Determination Study was prepared in 2005, revealed that in this land exist wetland areas and Water of the United States. For such reason it is prepared this Permit Application to request authorization from the Agency to cause minimal impacts to the natural system.

Most wetlands constitute a productive and valuable public resource. Wetland considered to perform important functions to the public interest includes: wetlands which serve as a significant natural biological functions, including food chain production, general habitat and nesting,

spawning, rearing and resting for the aquatic and land species; wetlands set aside for study of the aquatic environment or as sanctuaries or refuges; wetlands which a destruction or alteration could affect detrimentally the natural drainage characteristics, sedimentations patterns, salinity distribution, and flushing characteristics; wetlands which are significant in shielding other areas from wave action, erosion, or storm damage; wetlands which serve as valuable storage areas for storm and flood waters; wetlands which occur ground water discharge that maintain a minimum flows base that it is important to the aquatic resources and those which are prime natural recharge area; wetlands that serves as a significant water purification functions; and wetlands which are unique in nature or scarce in quantity to the region or local area. Although a particular alteration of a wetland may constitute a minor change, the cumulative effects of numerous piecemeal changes can result in a major impairment of important wetland resources. No permit will be granted which will be involving the alteration of wetlands resources considered important.

Consideration will be given also to fish and wildlife resources, water quality, historic cultural, scenic and recreational values, effects on limits of territorial seas, coastal zone, marine sanctuaries, and consideration of property right, either in real estate or material, or any exclusive privileges. Furthermore, it does not authorize any injury to property of invasion of other rights or any infringement of Federal State or local laws. By applying for a Department of the Army permit, the applicant makes an affirmation that he possesses or will process the requisite property interest to undertake the activity proposed in the application.

The Memorandum of Agreement (MOA) between the Department of the Army and the Environmental Protection Agency (EPA) expresses that is the explicit intent of the Corps and the EPA to implement the objective of the Clean Water Act., and to restore and maintain the chemical, physical, and biological integrity of the National waters, including wetlands. This MOA provides guidance for implementing the guidelines and must by adhere when it is considering mitigation requirements. The Corps will be using these guidelines at the moment of making its compliance determination with the mitigation. The guidelines establish environmental criteria which must be met for the activities to be permitted. The three points of greater importance at the moment to evaluate a permission request are: avoidance, minimization and

compensatory mitigation, and will be applied sequentially. The Corps will strive to avoid adverse and offset unavoidable adverse impacts to existing aquatic resources; and for wetlands, will strive to achieve a goal of no overall net loss of values and functions. The Corps first makes a determination that all the potential impacts have been avoided to the maximum extent practicable, remaining unavoidable impacts which will be then mitigated to the extent practicable by requiring to minimized impacts and finally compensate for aquatic resource values.

The sequence is the following:

Avoidance – Section 231.10 (a) allows the permit issuance for only the least environmentally damaging practicable alternative. The term practicable means an area available and capable of being done taking in consideration cost, existing technology, and logistics in light of overall project purposes.

Minimization – Section 231.10 (d) states that appropriate and practicable steps to minimize the adverse impacts. These will require through the modifications and the permit conditions.

Compensation – Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all the appropriate and practicable minimizations have been analyzed. Compensatory actions, such as restorations of an existing degraded wetland or creation of wetlands should be undertaken, when it is practicable in areas adjacent or contiguous to the same geographic area. In determining compensatory mitigation the functional values lost by the resource to be impacted must be considered. Generally, on site, in-kind compensatory mitigation is preferred. Mitigation banking may be an acceptable form of compensatory mitigation under specific criteria designed to ensure an environmentally successful bank.

PROPOSED PROJECT

It is proposed the construction of a residential project for single family or multi-family in Gurabo Municipality. This development is divided in 5 phases for a total 1,097 residential units which 180 will be walk-ups.

Section # 1 – This area counts with 56.5472 cords of land, which will be developed 241 residential units with a room of 450 square meters. This sector will have controlled access toward the PR-9945 and the recreational facilities will be built according to the regulations. Through this area flows an intermittent creek from north to south, and will be maintained in its natural state with a total area of 7.2162 cords. To cross this creek it is proposed to construct a bridge, which will be located outside the jurisdictional area to minimize the impacts.

Section # 2 – This area counts with 47.2715 cords of land, which will be developed 196 residential units with a room of 450 square meters. This sector will have controlled access toward the PR-9945 and the recreational facilities will be built according to the regulations. Through this area flows two intermittent creeks from west to southeast, and they will be maintained in their natural state. The creek at the west side of the property has an area of 6.8116 cords and the one that flows through the east is the one mentioned in section # 1.

Section # 3 – The total area of this section is 62.4834 cords of land, which includes the 14.7023 cords expropriated by the AAA for the construction of the “Dique B” of Carraizo. This parcel will be developed in 337 residential units with a room of 450 square meters. This sector will have controlled access toward the PR-942 and the recreational facilities will be built according to the regulations.

Section # 4 – The area for this section is 32.0127 cords of land, which will be developed 143 residential units with a minimum area of 450 square meters. This sector will have controlled access through the section # 4 and with the exit to the PR-9945. It will provide 360 parking lots for the residents, 36 for visitors, 8 for handicap people, 4 for charges and unloads and for the waste disposal.

The remnant of the property that's count with an area of 38.7832 cords of land will be constituted in a conservation easement. The proponent will work in conjunction with the Department of Natural and Environmental Resources to carry out this process.

The storm waters or runoff flows trough this area in their natural forms following the topography of the land. The water reflects generally toward the south. Three of the unnamed creeks are tributaries of the Gurabo River and these collect the water of the property and from the adjacent farms of greater height.

According to the Hydrologic-Hydraulic study carried out for the purpose of establishing a management system for the project runoff, is recommended the construction of three retention ponds. These will collect the runoff before it is discharged to creeks. The systems design will be provided with velocity reducers to protect the creeks and wetland areas from the erosion that can be caused by the runoff at large velocities. Also, these will count with hydrocarbons traps system. The hydrocarbons trap system consists in an inverted "trapezoidal" channel. Its walls are formed by strip ("grama") and vegetation and with a rock fund that will direct the waters toward the retention pond and latter on toward the creeks.

NEED OF THE PROJECT

The need and purpose of this project is to respond the primary demand of dwellings in the Municipality of Gurabo and in Caguas region. This demand comes from the increase in population that has suffered the municipality in the last decade.

Furthermore the dwellings demand in Puerto Rico enlarges and reduce the available lands through the time, which united to the population growth carries the increase in the residential construction areas in a vertical form. The proposed area has the potential to use a combined construction for horizontal and vertical form, with the protection and enjoyment of the natural elements in its surroundings. By this mean is avoided the construction of the flooded valleys that are characteristic of this municipality.

By another side, the available lands for the urban growth in the area of San Juan and Caguas have diminished and the tendency of growth has been given in the direction of the neighboring municipality's to the metropolitan zone.

ALTERNATIVES ANALYSIS

Avoid - For the purpose of avoiding and/or to minimize the impacts to the environment as to rivers; creeks; wetlands; forests; endangered species; cultural resources; and among others natural resources, a series of criteria has been prepared to evaluate the potential use of viable alternative places for the development of the proposed project. To each one of the criteria it has been assigned a minimum value of one (1) and a maximum of three (3) for a total of thirty (30) points. The value of one (1) will be assigned to that place where the criterion considered has a great deal of effect or impact; the value of two (2) for that criterion that will have a poor effect or impact and the value of three (3) to that criterion that do not have effect or impact. The area, in which the total sum of the criteria's values was greater, is then the place selected for the development of the residential project. It was proceeded to evaluate places where it was viable the development taking in consideration the logistics, economic cost, and the environmental criteria that will be mentioned it subsequently.

The criteria are the following; **Location:** The area is located at or near the PR-9945 and count with access road to minimize effects in traffic. **Geology:** Is an area that do not have mob deposits and/or unstable material so that it can be guarantee that by means of the existing technology (Structural Engineering) it can be built dwellings which will not be affected for the acts of God as: earthquakes, floods, etc. **Soils:** The soils should be stable so that they can be handled and/or compacted with the use of the present technology, and in other cases can be removed and/or improved. An example of these is soils with expansive clay. **Hydrology:** Superficial water - should be an area where it would cause the less impact possible of the superficial water as: perennial stream or intermittent and/or rivers. Besides, the areas should not be flooded so that the citizens life's will not seen affected and the property. **Flora and Fauna** - An area that be disturbed that do not have natural flora and/or species threatened or in danger of extinction. **Wetland** - An area where will not impact a wetland or that the impact will be minimum.

Critical Areas for the wild Life - An area where will be guaranteed that this project will not affect the critical areas in the region. **Flooded zones** - The project should not be located in susceptible areas to floods. **Cultural and/or Archaeological resources** - An area where do not exist cultural or archaeological resources that can be affected for the proposed development. **Available infrastructure** - The area should comply with all the basic facilities of infrastructure, whether that they exist in the area or that there they be the nearby facilities to the ones that the project can be connected, as: electric Energy, potable water, system for the used water, telephone connection and access highways to the area, among others.

We proceed to analyze the available areas in the municipality of Gurabo that was found near the urban zone of Caguas and Gurabo, for the purpose of compensate the dwellings demand of this region but far of the metropolitan areas. The majority of these lands are plains areas that were used for the sugar cane productions, which now in days some of them are dedicated to the cattle breeding. Also, given that the alluvial valleys are flooded areas, the high lands begun to absorb the urban growth. *It is for this that the new dwelling projects are concentrating in the Celada Ward.*

Besides, the demand of dwelling in Puerto Rico enlarges and the available lands are reduced through the time, which united to the population growth it's carries an increase in the vertical dwellings construction forms. In this way the impact upon the soils is reduced, because of less area used if the project were horizontally. By another side, the available lands for the urban growth in the San Juan and Caguas area have diminished and the tendency of growth has been given in direction to the adjacent municipalities to the metropolitan zone.

To evaluate the alternate places where it would be able to develop the project, we study all the South, North, East and West areas in regard to the proposed site in the Municipality of Gurabo, utilizing topographical maps and aerial photograph. Descriptions of these areas are detailed:

Subsequently the analysis of the possible alternate places, (Maps Enclose):

1. Area # 1 – this area is located more to the North of the proposed site. Through all these areas the soils are very steep which the earth movement or preparation of the area will be highly expensive. Also this area is at a more distance of the malls and schools, which limits one of the purposes of this kind of project that is to develop near these sectors. After analyzing the aerial photographs through the years of 1937, 1967, 1977, 1985, and 2002, it can be seen that most of these areas have not been disturbed.

Location:

The areas should be in or near the Highway PR - 9945, since is a main way and counts with all the necessary infrastructure facilities for the development of the proposed project.

1-3

1

Geology: The area is not upon deposits or in unstable matter, for which can be guaranteed through the existing technology (Structural Engineering) that is viable this construction without being affected by acts of the nature as: earthquakes, the floods, etc.

1-3

2

Soils: The soils are stable for which can be handled and/or compressed with the use of the existing technology, and in other cases can be removed and/or improved. Examples of these are soils with expansive clay.

1-3

1

Hydrology: Is an area where the impact to the superficial water is it more minimum possible as in the perennial or intermittent currents and/or the rivers.

1-3

2

Flora and Fauna: The area does not possess species catalogued in danger or threatened in being it and is an area that will be affected it but most minimum possible in the resources of habitat of fauna for the natural processes as nesting, breeding, and a place to rest for the aquatic and terrestrial species;

1-3

2

Wetlands: Is an area that will not impacts wetlands or the impacts are minimums. Areas identified like critical habitat of Wild life: Is an area where is guaranteed that the project proposed did not affect areas identified as critical habitat for Wild life in the region.

1-3 2

Critical Areas for the wild Life - An area where will be guaranteed that this project will not affect the critical areas in the region

1-3 3

Flooding Zones:

The area should not be located in floods zones.

1-3 3

Cultural and/or Archaeological resources: In the area do not exists cultural and/or archaeological resources that can be affected for the development proposed.

1-3 2

Available infrastructure: The area complies with the basic facilities of infrastructure, whether that these exist in the area or in the proximity of the project to be connected as: electric Energy, water potable, used water, telephone lines of connection and access to the area, among others.

1-3 2

Total: 20

Legend:

1-10 Great effect or impact

11-20 Poor effect or impact

21-30 None effect or impact

2. Area # 2 – this area is located more to the East of the proposed project. Through this area have been proposed other residential projects which most of the available lands are too small to develop the proposed project. This site is more far from the Caguas region which limits another purpose of the proposed project to compensate the dwellings demand of that region. Also, some available areas are located in flooded zones.

Location:

The areas should be in or near the Highway PR - 9945, since is a main way and counts with all the necessary infrastructure facilities for the development of the proposed project.

1-3 1

Geology: The area is not upon deposits or in unstable matter, for which can be guaranteed through the existing technology (Structural Engineering) that is viable this construction without being affected by acts of the nature as: earthquakes, the floods, etc.

1-3 2

Soils: The soils are stable for which can be handled and/or compressed with the use of the existing technology, and in other cases can be removed and/or improved. Examples of these are soils with expansive clay.

1-3 2

Hydrology: Is an area where the impact to the superficial water is it more minimum possible as in the perennial or intermittent currents and/or the rivers. Besides, the area is not susceptible to floods to guarantee that they be not seen affected the lives of the citizens of the sector.

1-3 1

Flora and Fauna: The area does not possess species catalogued in danger or threatened in being it and is an area that will be affected it but most minimum possible in the resources of habitat of fauna for the natural processes as nesting, breeding, and a place to rest for the aquatic and terrestrial species;

1-3 2

Wetlands: Is an area that will not impacts wetlands or the impacts are minimums. Areas identified like critical habitat of Wild life: Is an area where is guaranteed that the project proposed did not affect areas identified as critical habitat for Wild life in the region.

1-3 1

Critical Areas for the wild Life - An area where will be guaranteed that this project will not affect the critical areas in the region

1-3 3

Flooding Zones:

The area should not be located in floods zones.

1-3 2

Cultural and/or Archaeological resources: In the area do not exists cultural and/or archaeological resources that can be affected for the development proposed.

1-3 2

Available infrastructure: The area complies with the basic facilities of infrastructure, whether that these exist in the area or in the proximity of the project to be connected as: electric Energy, water potable, used water, telephone lines of connection and access to the area, among others.

1-3 2

Total: 18

Legend:

1-11 Great effect or impact

11-21 Poor effect or impact

21-30 None effect or impact

3. Area # 3 – this area is located to the West of the proposed project. It was proceed to analyzed this area because is located near the Celada Ward. However trough these areas the available land are to small for the development of the proposed project. Also, we can found several creeks tributaries of the “Río Grande de Loíza” and Gurabo River, as the presence of these rivers, for which the impacts to these areas would be grater.

Location:

The areas should be in or near the Highway PR - 9945, since is a main way and counts with all the necessary infrastructure facilities for the development of the proposed project.

1-3 1

Geology: The area is not upon deposits or in unstable matter, for which can be guaranteed through the existing technology (Structural Engineering) that is viable this construction without being affected by acts of the nature as: earthquakes, the floods, etc.

1-3 2

Soils: The soils are stable for which can be handled and/or compressed with the use of the existing technology, and in other cases can be removed and/or improved. Examples of these are soils with expansive clay.

1-3 2

Hydrology: Is an area where the impact to the superficial water is it more minimum possible as in the perennial or intermittent currents and/or the rivers. Besides, the area is not susceptible to floods to guarantee that they be not seen affected the lives of the citizens of the sector.

1-3 1

Flora and Fauna: The area does not possess species catalogued in danger or threatened in being it and is an area that will be affected it but most minimum possible in the resources of habitat of fauna for the natural processes as nesting, breeding, and a place to rest for the aquatic and terrestrial species;

1-3 2

Wetlands: Is an area that will not impacts wetlands or the impacts are minimums. Areas identified like critical habitat of Wild life: Is an area where is guaranteed that the project proposed did not affect areas identified as critical habitat for Wild life in the region.

1-3 2

Critical Areas for the wild Life - An area where will be guaranteed that this project will not affect the critical areas in the region

1-3 2

Flooding Zones:

The area should not be located in floods zones.

1-3 1

Cultural and/or Archaeological resources: In the area do not exists cultural and/or archaeological resources that can be affected for the development proposed.

1-3 2

Available infrastructure: The area complies with the basic facilities of infrastructure, whether that these exist in the area or in the proximity of the project to be connected as: electric Energy, water potable, used water, telephone lines of connection and access to the area, among others.

1-3 2

Total: 17

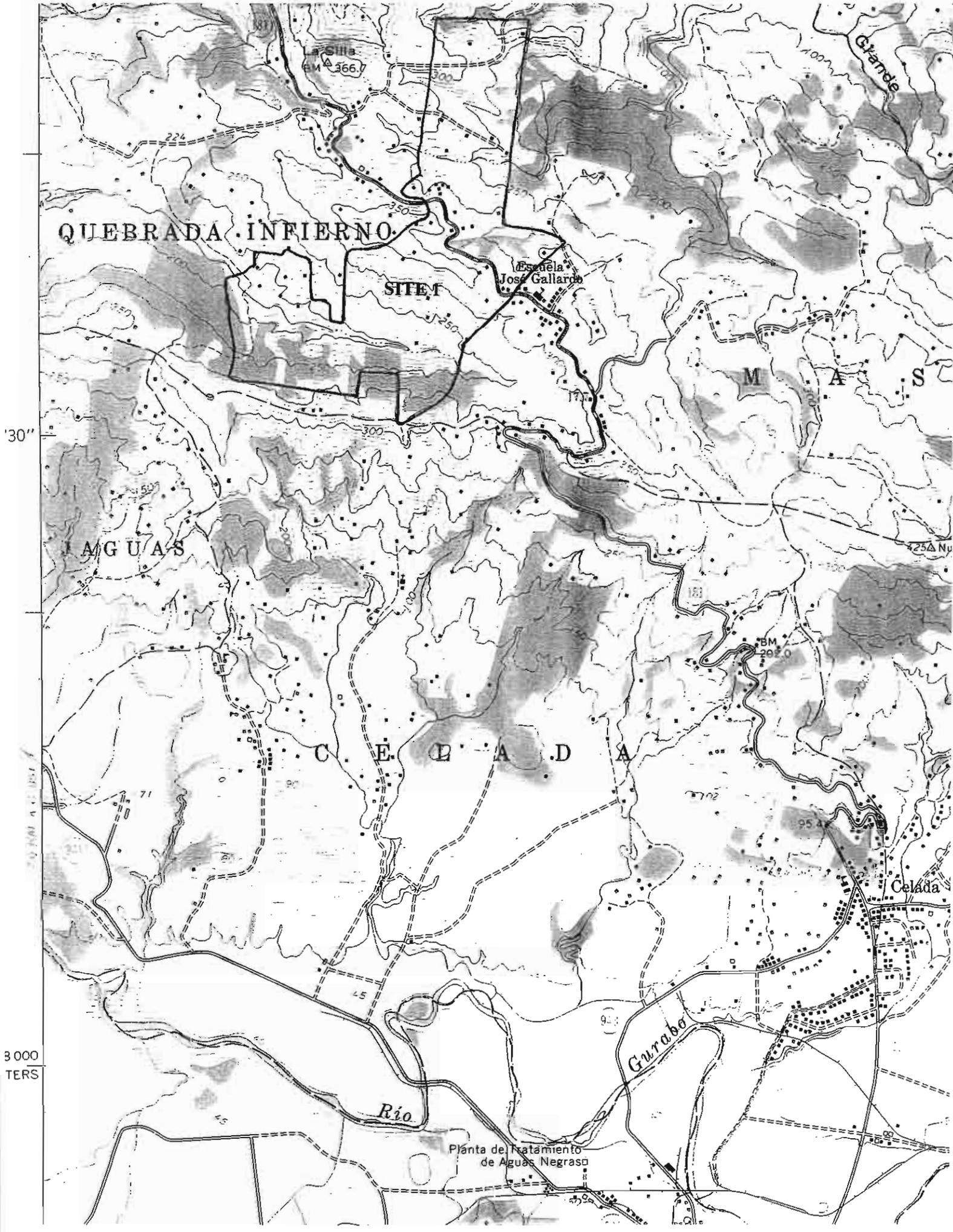
Legend:

1-12 Great effect or impact

11-22 Poor effect or impact

21-30 None effect or impact

**ALTERNATIVE SITE ANALYSIS
PALACIOS DE GURABO
GURABO, PR**



QUEBRADA INFIERNO

SITE

Escuela José Gallardo

MANS

AGUAS NEGRAS

CELADA

Celada

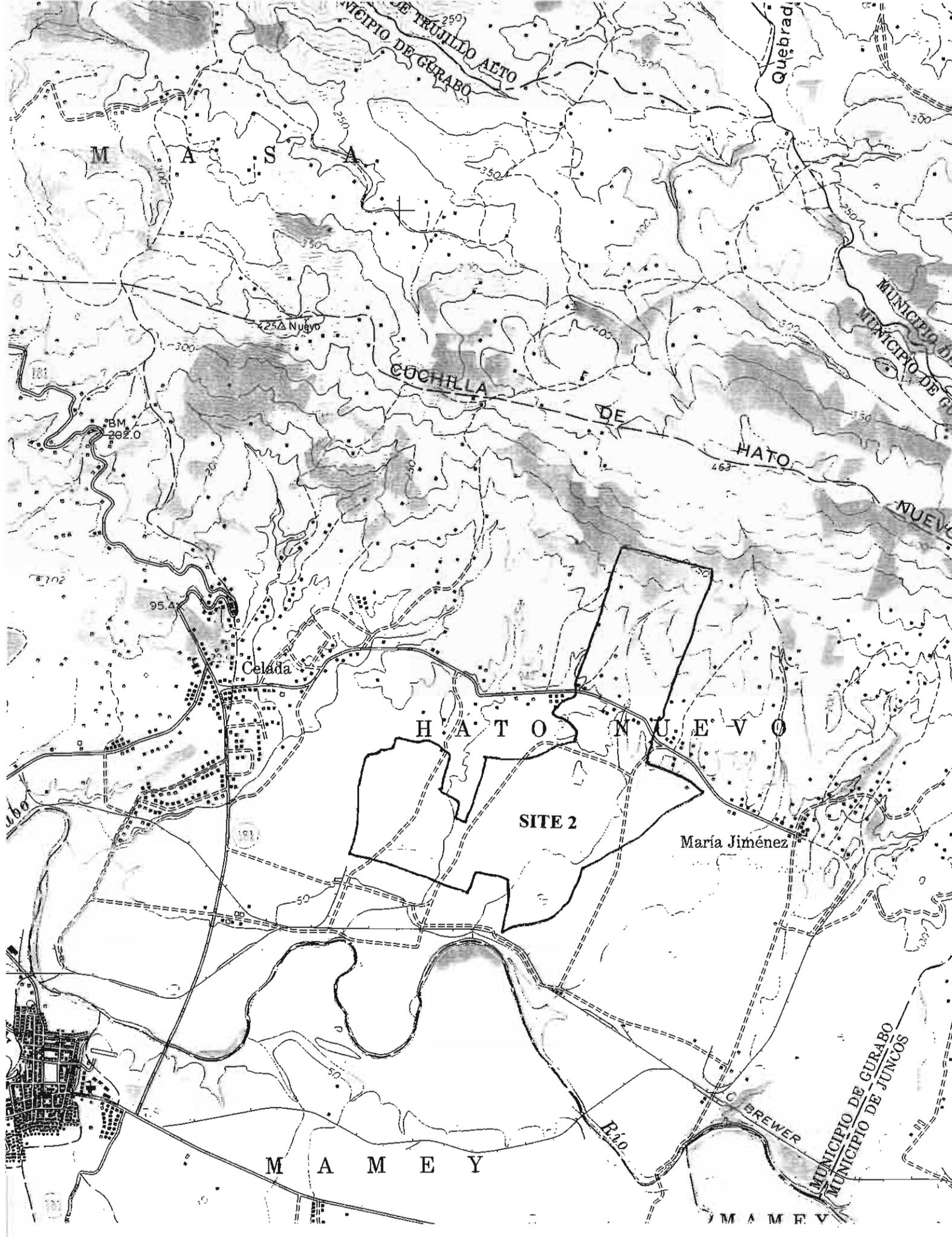
Rio

Garabito

Planta de Tratamiento de Aguas Negras

30''

3000 METERS



MUNICIPIO DE TRUJILLO AETO
MUNICIPIO DE GUAYANA

M A M A S

Quebrada

254 Nuevo

COCHILLA

DE

HATO

MUNICIPIO DE
MUNICIPIO DE G

NUEVO

BM
202.0

Celada

H A T O N U E V O

SITE 2

María Jiménez

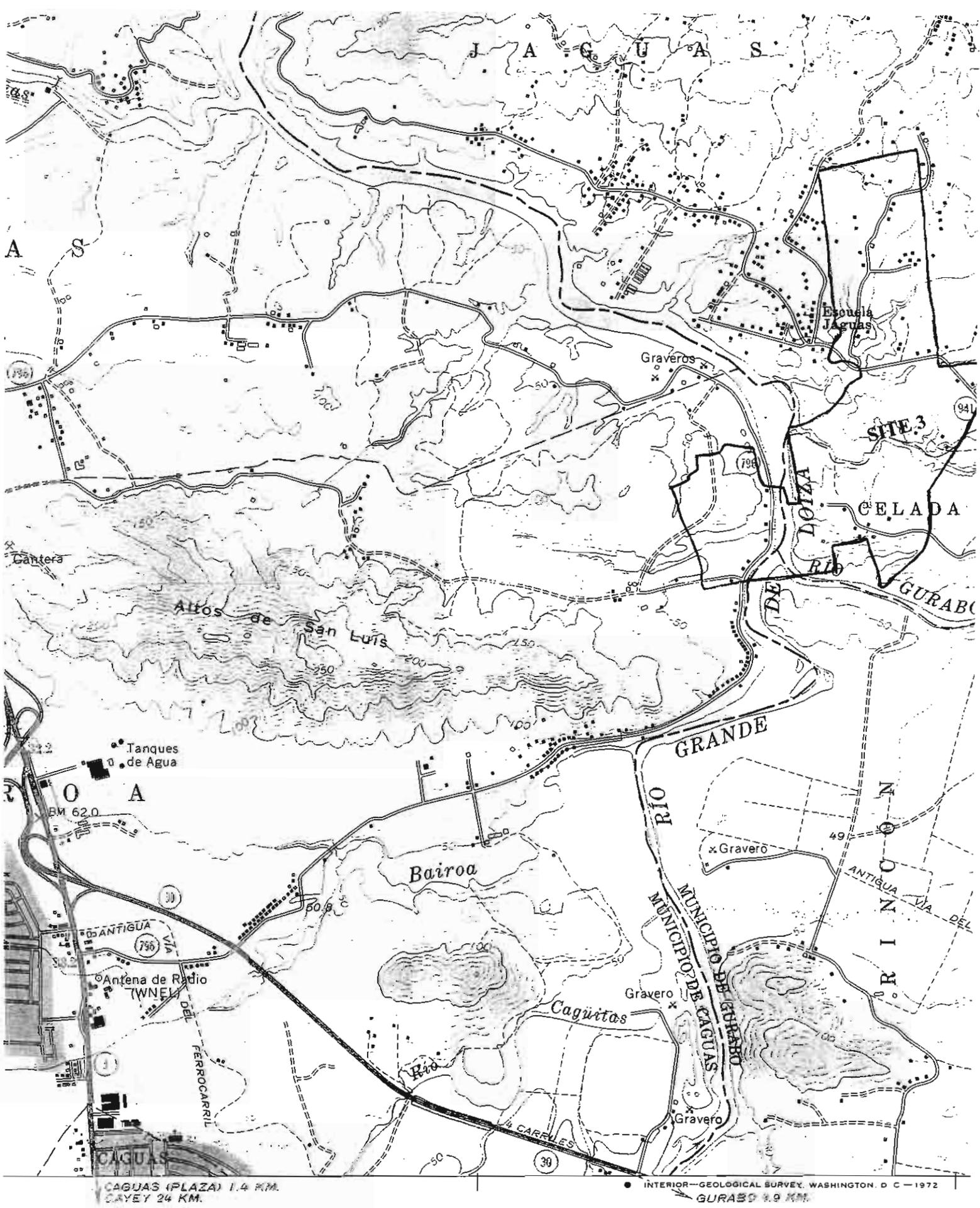
M A M E Y

Río

BREWER

MUNICIPIO DE GUAYANA
MUNICIPIO DE JUNCOS

M A M E Y



● INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D C —1972
 GURABO 4.9 KM.

ROAD CLASSIFICATION

Primary highway, all weather, hard surface... Light-duty road, all weather improved surface

PROPOSED AREA FOR DEVELOPMENT

The land object of this consultation is located in the PR-9945, in the Celada Ward of the Municipality of Gurabo. Trough the North the project abuts with the lands properties of Tomás Alvarado Pérez, Germán Toledo Branches and Lizardi Vda. of Pérez; through the South with the WGO Farm Inc. and the land of the AAA used in part for the dike B of the Loíza Lake. In the West with the PR-942, the Aurora farm, the lands properties of Oscar Carrasquillo Quintero and Silma Quiñónez Roldán, the Buonomo plot and the Carrasquillo Quintero Succession and by the East with the lands of Abigail Arroyo and William González.

Location:

The areas should be in or near the Highway PR - 9945, since is a main way and counts with all the necessary infrastructure facilities for the development of the proposed project.

1-3 3

Geology: The area is not upon deposits or in unstable matter, for which can be guaranteed through the existing technology (Structural Engineering) that is viable this construction without being affected by acts of the nature as: earthquakes, the floods, etc.

1-3 2

Soils: The soils are stable for which can be handled and/or compressed with the use of the existing technology, and in other cases can be removed and/or improved. Examples of these are soils with expansive clay.

1-3 3

***Hydrology:** Is an area where the impact to the superficial water is it more minimum possible as in the perennial or intermittent currents and/or the rivers. Besides, the area is not susceptible to floods to guarantee that they be not seen affected the lives of the citizens of the sector.

1-3 3

Flora and Fauna: The area does not possess species catalogued in danger or threatened in being it and is an area that will be affected it but most minimum possible in the resources of habitat of fauna for the natural processes as nesting, breeding, and a place to rest for the aquatic and terrestrial species;

1-3 3

Wetlands: Is an area that will not impacts wetlands or the impacts are minimums. Areas identified like critical habitat of Wild life: Is an area where is guaranteed that the project proposed did not affect areas identified as critical habitat for Wild life in the region.

1-3 2

Critical Areas for the wild Life - An area where will be guaranteed that this project will not affect the critical areas in the region

1-3 3

Flooding Zones:

The area should not be located in floods zones.

1-3 3

Cultural and/or Archaeological resources: In the area do not exists cultural and/or archaeological resources that can be affected for the development proposed.

1-3 3

Available infrastructure: The area complies with the basic facilities of infrastructure, whether that these exist in the area or in the proximity of the project to be connected as: electric Energy, water potable, used water, telephone lines of connection and access to the area, among others.

1-3 3

Total: 28

Legend:

1-13 Great effect or impact

11-23 Poor effect or impact

21-30 None effect or impact

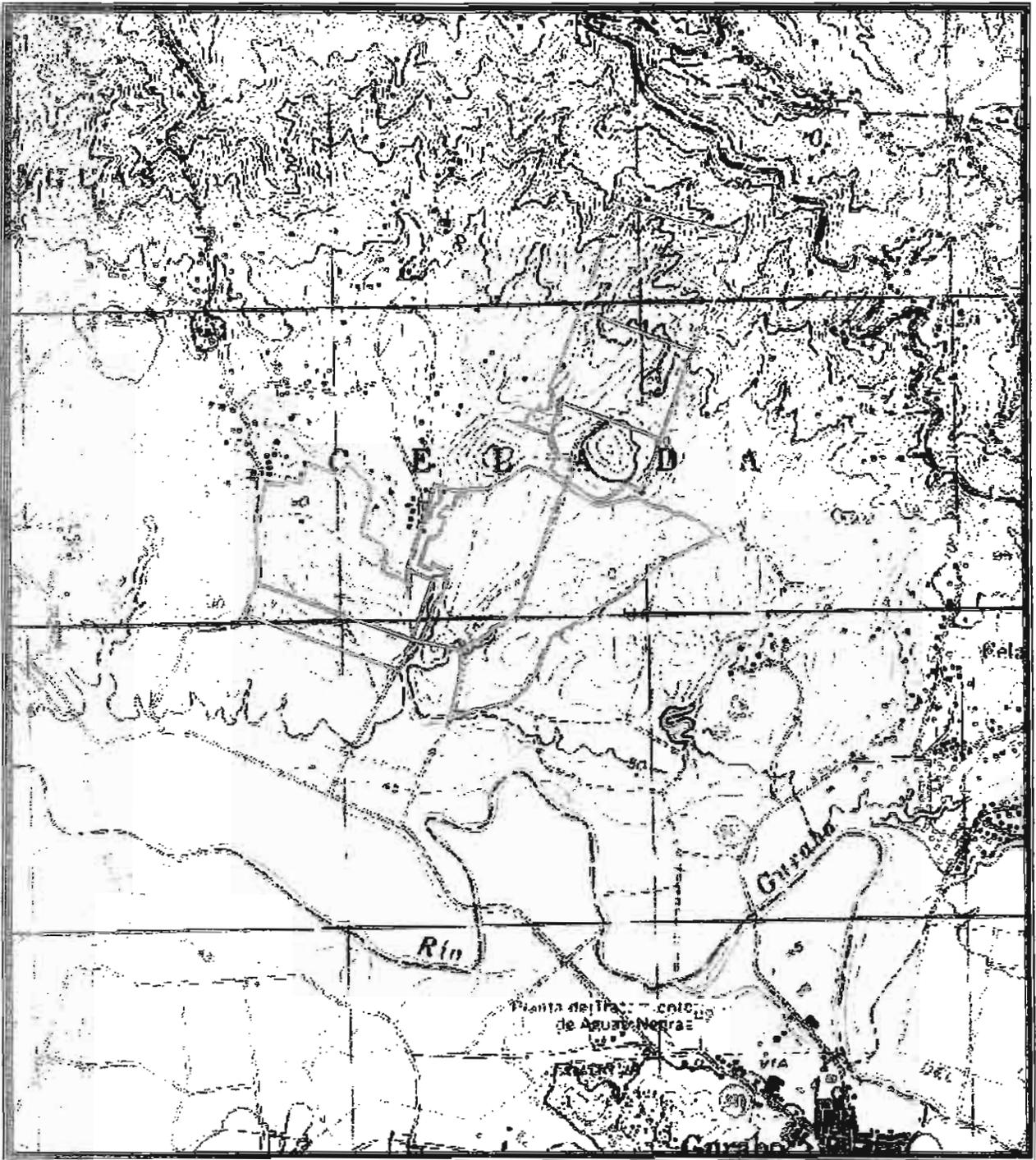
* Through the proposed site flow several unnamed intermittent creeks which will be maintained in their natural state. To avoid accidental impacts to these water bodies it will be prepared a Plan CES at the Environmental Quality Board and a request the permission under NPDES associated with Construction General Permit, before beginning the construction phase. Besides, in the storm water system to be constructed it will be installed hydrocarbons traps to filter the water that will arrive at these creeks to avoid contamination.

The proposed area is located in the hills that serve as a transition among the mountains to the north and to the south with the plains of the Gurabo River south. The topography 60% plain, 30% semi-plane and 10% steep. The project will be built according to the land contour, since the intermediate topography area will be used for multi-family dwelling (walk-up), and the flattest zone for singles families dwelling and the steep area will be maintained in its natural state.

According to the environmental and protocol studies carried out confirms that the development of the proposed project will not cause effects and/or adverse impacts to historic resources, flood plain values, endangered species, transit flow, and to the water quality.

And above all these areas contains all the factors to make this attractive to families, such as pleasant scenic view, proximity to the main jobs centers, educations institutions university and the industrial zone of Juncos-Humacao, and areas that can be development into passive recreation areas; among others, and the size of the lot is ideal for the type of development desired.

**LOCATION MAP
PALACIOS DE GURABO
GURABO, PR**



0 0.25 0.5 1 1.5 2 Kilómetros

1:20,000

**INFRASTRUCTURE AVAILABLE MAP
PALACIOS DE GURABO
GURABO, PR**



Leyenda

- Alcantarillado
- == Líneas Principales de Transmisión-AEE
- Líneas de Distribución de Agua Potable
- Predio

0 0.25 0.5 1 1.5 2 Kilómetros

1:20,000

**MINIMIZATION
PALACIOS DE GURABO
GURABO, PR**

MINIMIZATION

According to the fulfillment with the Regulatory Guidelines 404 (b)(1) of the Clean Water Act of the United States, it should be carried out the minimization and mitigation of the impacts, having in consideration the function and values of the areas to be impacted, restored and/ or to mitigate.

For the purpose in determining the minimization process to follow it was conducted several inspections to the proposed area in coordination with representatives of the project and with the environmental consultant to determinate the impacts to the areas. After taking in consideration several alternatives for the development of the proposed project, it was chose the minimization of the impacts by redesigning the project. The descriptions of these changes are described below:

Original project:

The project proposed that will carry the name of “Palacios de Gurabo”, initially consisted in the complete development of the farm, causing the impacts in approximately 90,035.0254 square meters (22.24 acres) of wetlands areas. Also, it was proposed the canalization of the threes unnamed creeks through a concrete canal with a total area of 6.64 acres of Water of the United States. This was necessary in order to develop a total of 1,206 dwellings. In this alternative it was not visualize the alternative of compensating the impacts to these areas by the construction of a mitigation area. (See enclosed layout)

First modification:

The first modification consisted in maintaining in its natural states the three creeks including a buffer zone for a total of 16.826 acres. The option of depositing fill material in wetlands still remains, causing great impacts to jurisdictional areas. Also, it was proposed the construction of a river crossing to access other area of the project. This was necessary in order to develop a residential project of 1, 144 dwellings 62 houses less of was what proposed. In this alternative it was not visualize the alternative of compensating the impacts to these areas by the construction of a mitigation area. (See enclosed layout)

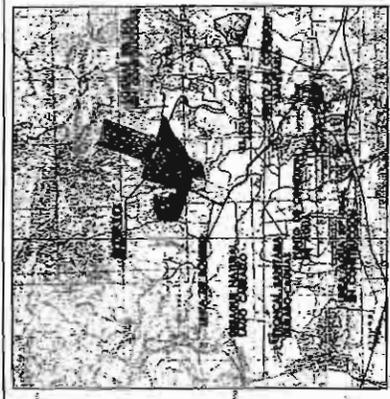
Second modification and final project:

The second modification consisted in maintaining in its natural states the three creeks including the buffer zones for a total area of 16.826 acres. Also, it is proposed the construction of a river crossing to access other area of the project. The project was redesign again in order to minimize the impacts to wetlands areas present in this site. This is why the project after minimization will contemplate the deposit of fill material in approximately 14,851.6969 square meters (3.369 acres). It is proposed to maintain in its natural state approximately 75,183.3285 square meters (18.577 acres) of wetland areas. Also, it is proposed to conserve under a conservation easement the portion northeast of the property, which was classify as a secondary forest of 37.653 acres. This is necessary to develop a residential project of 1,097 dwellings units, 109 less houses. (See enclosed layout)

As opposed to the other alternatives, this new modification proposes to compensate for the inevitable impacts to the jurisdictional areas by creating a mitigation area as wetland of 15,999.0141 square meters (3.953 acres) inside the project. This areas will be planted with herbaceous and wetlands trees.

**ORIGINAL PROJECT
PALACIOS DE GURABO
GURABO, PR**

**FIRST MODIFICATION
PALACIOS DE GURABO
GURABO, PR**



PLANO DE LOCALIZACION

RESUMEN DE DATOS DEL TERRENO

ITEM	UNIDAD DE MEDIDA	VALOR
AREA TOTAL	M ²	17.905.437,2
AREA CONSTRUIDA	M ²	4.555,7
AREA LIBRE	M ²	17.899.881,5
AREA DE VERDE	M ²	1.144
TOTAL	M ²	17.905.437,2

BARRIO CELADA

PROYECTO LOMAS DEL SOL

PARCELA PEREZ
AREA = 17.905.437,2 M²
= 4.555,7 CUERDAS

PLANTA



QUEBRADA A MANTENERSE
EN SU ESTADO NATURAL
AREA = 28.342.522 M²
= 7.216,5 CUERDAS

QUEBRADA A MANTENERSE
EN SU ESTADO NATURAL
AREA = 12.982.202 M²
= 3.303,0 CUERDAS

QUEBRADA A MANTENERSE
EN SU ESTADO NATURAL
AREA = 54.720.944 M²
= 15.116,5 CUERDAS



BARRIO CELADA

FINCA AURORA
CONSULTA NUM. 98-87-0554 JPU
CASO NUM. 000X-0000-98013
1.500 UNIDADES

COMUNIDAD DE ACQUEDUCTOS Y ALCANTARILLADOS

ELEVA MEDIANA VDA. DE GONZALEZ
1.200-000-007-22-000

REG. FREN. INDEPR
200-000-003-13-000

COMUNIDAD DE ACQUEDUCTOS Y ALCANTARILLADOS

SIGN. CARASOLLO DANIERO
125-000-003-30-000

PARCELA PEREZ
AREA = 17.905.437,2 M²
= 4.555,7 CUERDAS

AREA = 17.905.437,2 M²
= 4.555,7 CUERDAS

**FINAL MODIFICATION
PALACIOS DE GURABO
GURABO, PR**



WETLAND RESEARCH, INC.

P.O. Box 371209 - Cayey, P. R. 00737
Tel. 787-263-7588 / Fax 787-738-3689
Email: jwri@prtc.net

MITIGATION PLAN

**PALACIOS DE GURABO
PR-9945, K.M. 1.5
CELADA WARD
GURABO, PR**

PREPARED FOR:

**VRM ENTERPRISES
BOX 20868
SAN JUAN, PR 00928**

JUNE 2006

MITIGATION PLAN
PALACIOS DE GURABO
GURABO, PUERTO RICO

I. Baseline Information

a. Location

1. Impacts - The Project is located at the PR-9945, Km. 1.5, Celada ward, Municipality of Gurabo, Puerto Rico.

The project after the minimization will impact approximately 14,851.6969 square meters of wetland located inside the project.

Functions & Values of the Impacted Areas

Type of vegetation Impacted: Wetland

Wetland hydrology indicator: Unnamed creek

1. Wetlands that serve significantly for the natural biological functions, including production of the alimentary chain, general habitat and nesting, breeding areas and a place to rest the terrestrial and aquatic species;

1-35 20

2. Wetlands separated for the study of the aquatic environment or as sanctuary or refuge;

1-5 1

3. Wetlands whose destruction or alteration would affect the natural characteristics of drainage, sedimentation or other environmental characteristics;

1-10 3

4. Wetlands that is significant in the production of areas for the action of the waves, erosion and the damage by storms. These wetlands are associates with beach barriers, islands, and banks;

1-10 1

5. Wetlands that serve like valuable areas of water rain deposit and floods;

1-10 5

6. Wetlands that are for the recharge of subterranean water in areas that maintain a most minimum flow of base, value for the aquatic resources and those are primaries in the natural recharge of the areas;

1-10 2

7. Wetlands that have important functions in the water purification;

1-10 3

8. Wetlands those are unique in its nature or rare in quantity in the region or local area;

1-10 3

Total: 38 (Most maximum of 100)

Legend:

0-33 Low Value

34-66 Medium Value

67-100 High Value

This table was created as an aid to the wetland determination that is considered to carry out important functions by the public interest. The punctuation given to each criterion is based on the available information and the observation in the field.

2. Mitigation – The mitigation area will be located trough out the South side of the project.

Functions & Values Estimated for the Mitigation Area

Type of vegetation: Wetland

Wetland hydrology indicator: Unnamed creek

Type of soil: RoC2

Soil hydric: NOT

Criteria of hydric soil: NOT

Data obtained: SCS 1978

1. Wetlands that serve significantly for the natural biological functions, including production of the alimentary chain, general habitat and nesting, breeding areas and a place to rest the terrestrial and aquatic species;

1-35 32

2. Wetlands separated for the study of the aquatic environment or as sanctuary or refuge;

1-5 2

3. Wetlands whose destruction or alteration would affect the natural characteristics of drainage, sedimentation or other environmental characteristics;

1-10 6

4. Wetlands that is significant in the production of areas for the action of the waves, erosion and the damage by storms. These wetlands are associates with beach barriers, islands, and banks;

1-10 1

5. Wetlands that serve like valuable areas of water rain deposit and floods;

1-10 8

6. Wetlands that are for the recharge of subterranean water in areas that maintain a most minimum flow of base, value for the aquatic resources and those are primaries in the natural recharge of the areas;

1-10 5

7. Wetlands that have important functions in the water purification;

1-10

8

8. Wetlands those are unique in its nature or rare in quantity in the region or local area;

1-10

6

Total: 68 (Most maximum of 100)

Legend:

0-33 Low Value

34-66 Medium Value

67-100 High Value

This table was created as an aid to the wetland determination that is considered to carry out important functions by the public interest. The punctuation given to each criterion is based on the available information and what is expected for the mitigation area that is going to be created. The value was determined given our experience in mitigations construction after 5 years of sown and/or built the area.

b. Functions

1. Project – The purpose of this project is to construct a residential project to respond the primary demand of dwellings in the Municipality of Gurabo and in Caguas region.
2. Mitigation – To serve as a biological functions as; production of the food chain, habitat, nesting, a place of rest for the aquatic and terrestrial species, increasing the biodiversity of the area. Also, it would serve as a deposit area of rain and flood to ensure the water quality.

c. Acreage of wetland to be created

1. It is proposed the creation of 3.953 acres of wetland through the South side of the project. This area is going to be planted with herbaceous and wetlands trees.
2. It is proposed to maintain in its natural state 18.577 acres of wetland located inside the property.
3. It is proposed to conserve approximately 37.653 acres of a secondary forest located at the Northeast portion of the property.

d. Ground elevations that will be at the mitigation site

1. 0 to 2%

e. Soils conditions

1. RoC2 - Rio arriba clay = This is a sloping, moderately well drained soil on alluvial fans and terraces above the river flood plains. Typically the surface layer is brown, firm clay about 8 inches thick. The subsoil from 8 to 28 inches is yellowish brown, firm clay and from 28 to 60 inches is reddish yellow, firm clay. Below a depth of 16 inches, the subsoil is mottle with yellowish red and red. Permeability is moderately slow, and the available water capacity is high.

f. Type of aquatic resource and functions of the proposed area for the mitigation.

1. The mitigation area will be created as wetland, located at the South side of the property. This area will serve for the natural biological functions as: production of the food chain, create news habitat for the terrestrial and aquatic species, which at the same time creates an increase in the biodiversity of the area.

g. Selection of the area

1. Consideration of the divider lines - The area chosen for the mitigation project is found in the divider lines of the water bodies or wetland areas impacted, guaranteeing its hydrology and by means of the topography modifications enlarged the values and original functions and at the same time, will guarantee an increase in the biodiversity of the water body located in the divider lines.
2. Viability - Accessibility to machineries, lands, mitigation and species to be sown.

II. Mitigation Plan of Job

- a. Limit of the restoration proposed, establishment, increase or areas preserved. (See enclose – Location Map of the proposed area) (See enclose – Mitigation Plan) (See enclose - Cross-section of the Mitigation area) (See Enclose – Planting Guides)

b. Methods of construction, time and sequence.

1. Mitigation Timing

Area surveying – 30 days

Remove of the fill material – 90 days

Mitigation construction – 90 days

Planting – 60 days

** Approximately duration of 270 days.

2. Equipment (If applies)

Transportation Vehicle

Digger (extra-size) to remove the fill material

D-6

Truck

3. Source that will provide hydrology to the mitigation area

The unnamed creek

4. Vegetation to be planted in the mitigation area

Area # 1 (15,999.0141 square meters)

Trees (2,666)

Pterocarpus officinalis

Annona glabra

Bontia dapnoides

Stahlia monosperma

Machaerium lunatum

Enallagma latifolia

Herbaceous (13,333)

Canna glauca

Cyperus haspan

Eleocharis spp

Nymphoides indica

Cyperus giganteus

Sagittaria lancifolia

Acrostichum spp.

Scirpus validus

Spartina patens

Panicum laxum

Polygonum spp.

5. Concessions for the natural regeneration of an existing bank of seeds or to sow.
 - a. Species to be planted should comply with the hydrology regions.
 - b. Ideal Ph
 - c. Guarantee the soil conditions so that the growth be effective.

6. Plans for the harmful species control
 - a. The harmful species will be controlled removing it by hand or utilizing an herbicide for a chemical control.

7. Measurement for the erosion control
 - a. The mitigation area will be stabilized with native plants to avoid the erosion.
 - b. During the construction phase, all the jurisdictional areas will be protected with silt curtains for the erosion control and sedimentation of the mitigation area. To the silt fence, it will be given an appropriate maintenance, since the cleaning of the material that has been placed in the areas and the reinstatement if it is necessary. All material that has been placed in the lower part of the silt fence will be removed, to avoid if an extraordinary event occur, be dragged toward water bodies or other areas. The silt fence will be removed when according to the inspection carried out by a specialist, it is determinate that is no longer necessary; if all the areas has been stabilized.

8. Delineated plan for the management and maintenance of the mitigation area.
 - a. The monitoring process will be carried out every tree months for the first year; every 6 moths for the next two year and annually for the last two year.

c. Fulfillment Standards

Taking in considerations the area, vegetation, hydrology, and other aspects that compose the mitigation area, we have established some standards of effectiveness.

1. Thirty days - The caduceus trees should have a growth in their sprouts of $\frac{1}{4}$ to $\frac{1}{2}$ inches. The herbaceous plants should be producing new sprouts

and/or leaves. It is natural to observe lost of leaves in the trees and/or effects in the plants caused by the transplant.

2. Three months - The herbaceous plants should possess from six to twelve stems and/or additional leaves and the ones that have an individual growth should have from four to six leaves and have a cover range of 15% by square meter. The trees should have a growth of six inches in its sprouts. During this adaptation period of the plants it is peculiar to observe associated growth and/or harmful species.
3. Six months - The herbaceous plants should have an approximate growth from 75 to 100% of their natural size, to guarantee their establishment in the area. Besides, the area should possess a 25% of plants cover such as associated species, in this way is guarantees the biodiversity, including the fauna, which should show the efficiency of the mitigation as habitat and nesting of the terrestrial species. The trees should have a growth approximately nine to ten inches in its sprouts and have a size of approximately of 6 feet.
4. (1) Year - The herbaceous plants should have their natural height average. It can be observe a 50% cover of the species and an increase in the fauna. The growing of the trees is slower than the herbaceous species but they should have a caliper of 1.5 to 2.0 inches of caliper and a height of 6.5 feet.
5. (2) Year - The herbaceous plants will maintain their height average, besides producing new sprouts and/or seeds to guarantee the 75% of cover of the place. The tree should have a caliper from 2.5 or 3.0 inches, and a height of approximately 7 feet.
6. (3) Years - The trees should have a caliper from 3 to 5 inches, with ramifications and an average height of 7.5 feet. The growth of the herbaceous plants will be maintained constant, that is to say, its height will be similar or equal to the previous year, for which will be more notable the growth of the stems or leaves.
7. (4) Years - The same as the previous year, the trees should have a caliper from 3 to 4 inches with 3 to 5 ramifications and have a height average of 8 feet. The growth of the herbaceous plants will be maintained constant and should have a range cover from an 80% of the area.
8. (5) Years - The plants should have a range cover of a 90% or more in the area and the trees should have reached an average height of 9-10 feet.

**** These standards are subject to change on account of extraordinary events out of our reach such as: hurricanes, floods or droughts, etc.**

III. Mitigation Success

- a. The mitigation will be considered successful when it is complied with the standards established. That is to say that in a period of five (5) years a 90% or more of cover should be achieved, to guarantee that the environment is one ecologically sustainable with values and functions that exceed the existing prior the creation of the mitigation area, providing a biodiversity in the area, with efficient aquatic habitat, to guarantee an adequate place for nesting, breeding and rest for the aquatic and terrestrial species.

IV. Protection of the area

- a. The mitigation area and the areas that will be conserved in its natural states will be maintained in perpetuity by the legal document known as Conservation Easement

V. Contingency Plan, monitoring and long-term management.

- a. The parties responsible to deal with any extraordinary event (hurricanes, floods or droughts) it have not been established. To ours knowledge the responsibilities go to the place owner until this is transmitted to a second or third party.
- b. The initial sows process will be:
 1. Plants each 1 meter
 2. Trees each 3 meters
- c. The trees to be sown should have a minimum height from 3 to 6 feet and it can not be branched. It should have a straight growth, and there can not be infections (plague) (See enclose – Planting Guides)
- d. The herbaceous plants should not be more than 2/3 o height of their natural size.
- e. ALL the Planting process should comply with the ANSI Z60-1996 Code. (See enclose – ANSI Z60-1996 Code)
- f. The inspections will be carried out to observe:
 1. Leaves color.
 2. New sprouts of the trees
 3. Hardness
 4. Possible plague that can affect the plants

5. The loss of leaves in the trees is caused by the transplant.
6. In the herbaceous plants it can be observed;
 - a. Color of leaves
 - b. Size of the new stems
7. Florescence
 - a. Color of the stem
8. Verify the soil conditions to guarantee the growth of the species
9. Establish a control plan of the harmful species
10. If an extraordinary event occur (hurricanes, floods, or droughts) an emergency inspection will be carry on to determinate the action plan and to remediate the event effects.
11. Corroborate the status of the species sown according to the standards established in the section II, point c.
12. Remedial Action will be taken applying chemical or organic plant food and establishment of pH of the soil.
13. If there is not an effective adaptation, the species will be replace by another type that can adapt better to the existing specific conditions in the area. (pH, hydrology).
14. If the trees have not been established or does not have any growth after 3 months of sown, we will commence the sowing process again.

NOTE: When sows are seen to be affected by a plague, but this does not cause the death of the plant, no action will be taken, since these contribute in the alimentary chain. In the case that the death occurs, (degradation), a product will be utilized approved by EPA for special aquatics areas. Under no concept will be able to utilize biological controls.

15. In the case of presence of harmful species, it will be initiated a control management.

16. If in the mitigation area occur some damage, occasionally by extraordinary events (hurricanes, floods or droughts), the affected area will be inspected immediately, whenever the time conditions permits it. After thirty days (30) it will be determined the damages by erosion, sedimentation, or any another effect. After repairing these damages, it will be determined the quantities of affected plants and trees to begin the planting process.

17. Financial Guarantees

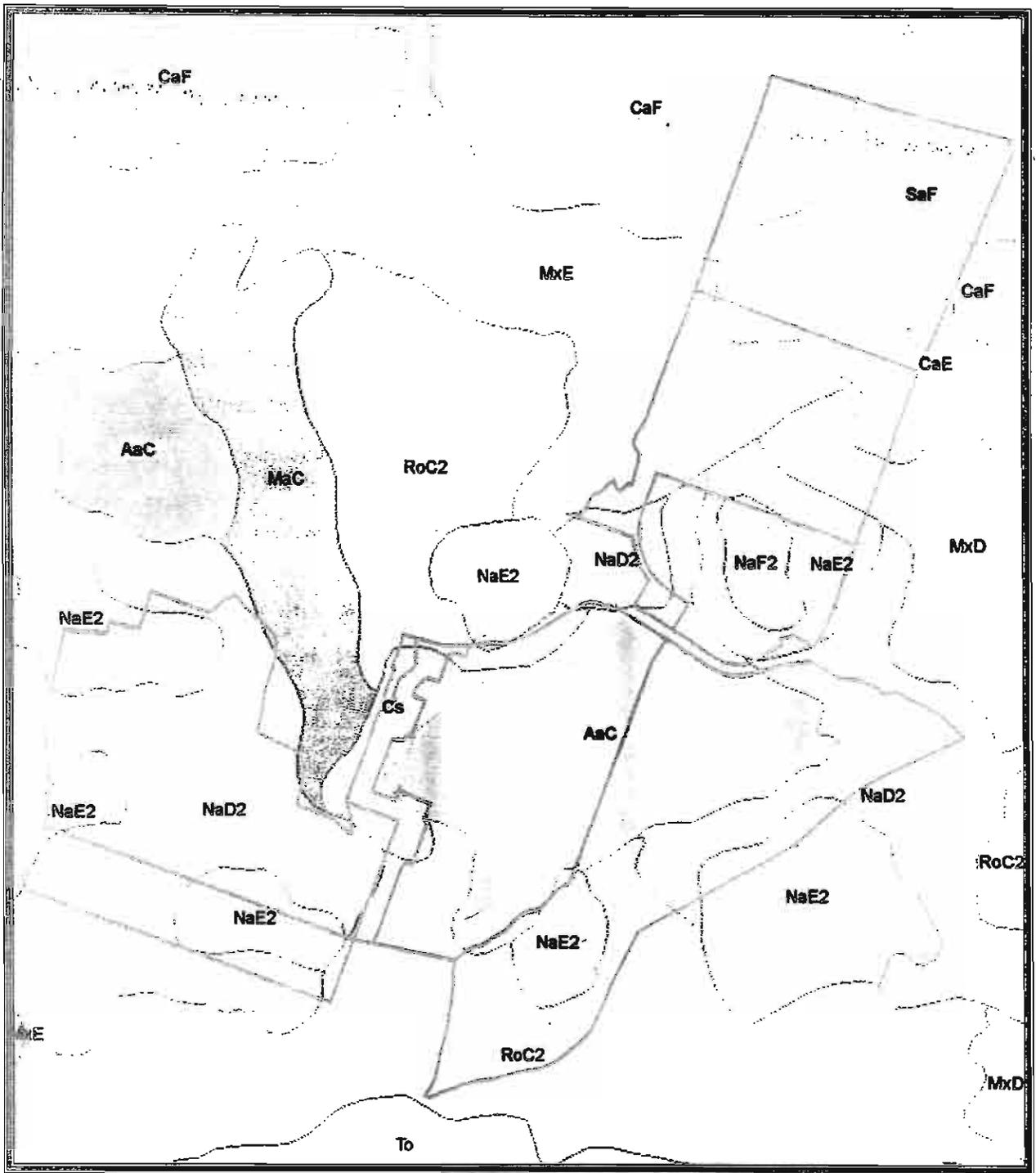
Accident insurance

This Mitigation Plan has been prepared to comply with the Regulatory Guidelines 404 (b) (1), of the 404 Permit Applications to the United States Corps of Engineer, under de Clean Water Act.



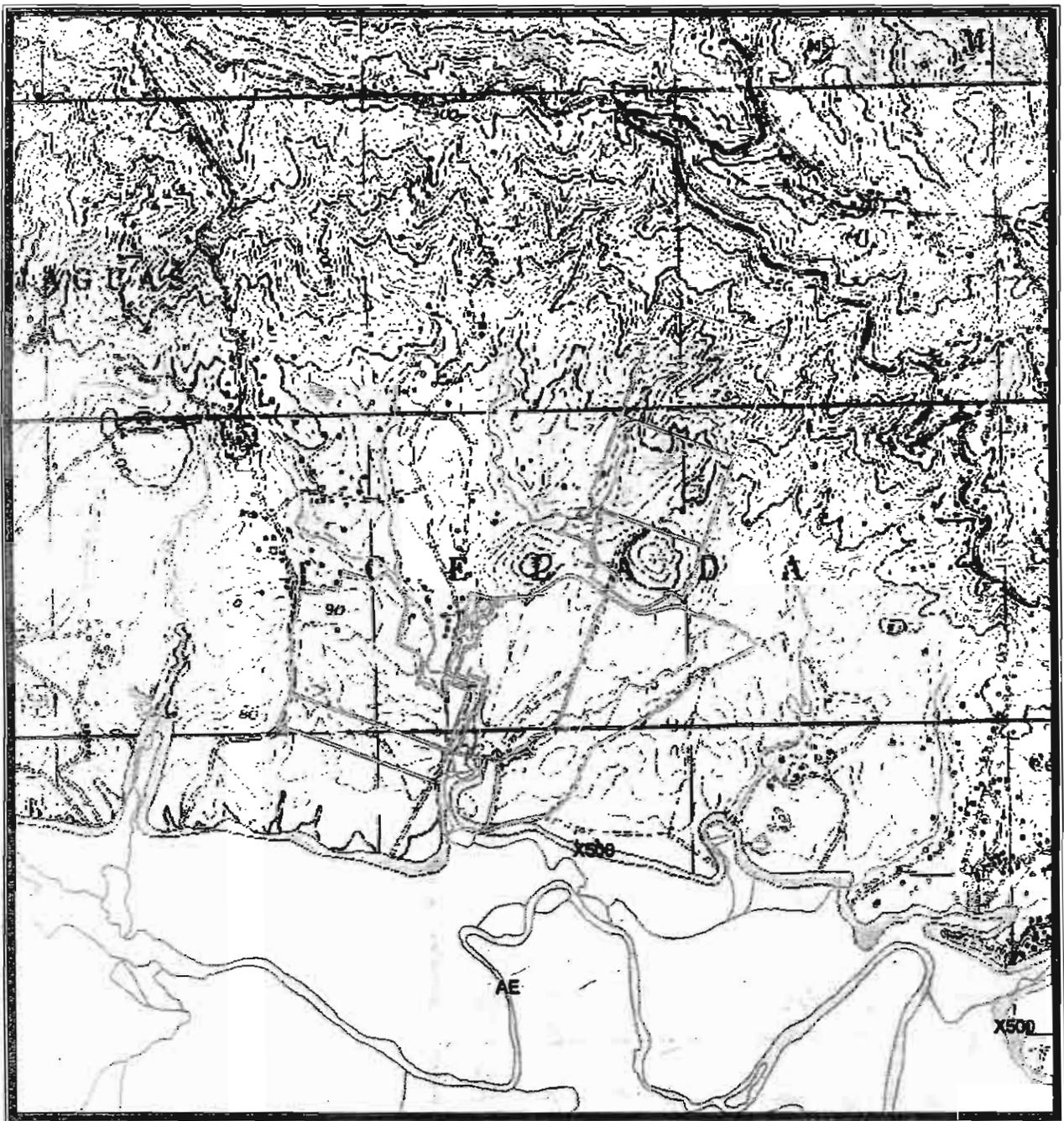
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**SOIL SURVEY MAP
PALACIOS DE GURABO
GURABO, PR**



0 0.125 0.25 0.5 0.75 1 Kilómetros 1:10,000

**FLOOD MAP
PALACIOS DE GURABO
GURABO, PR**



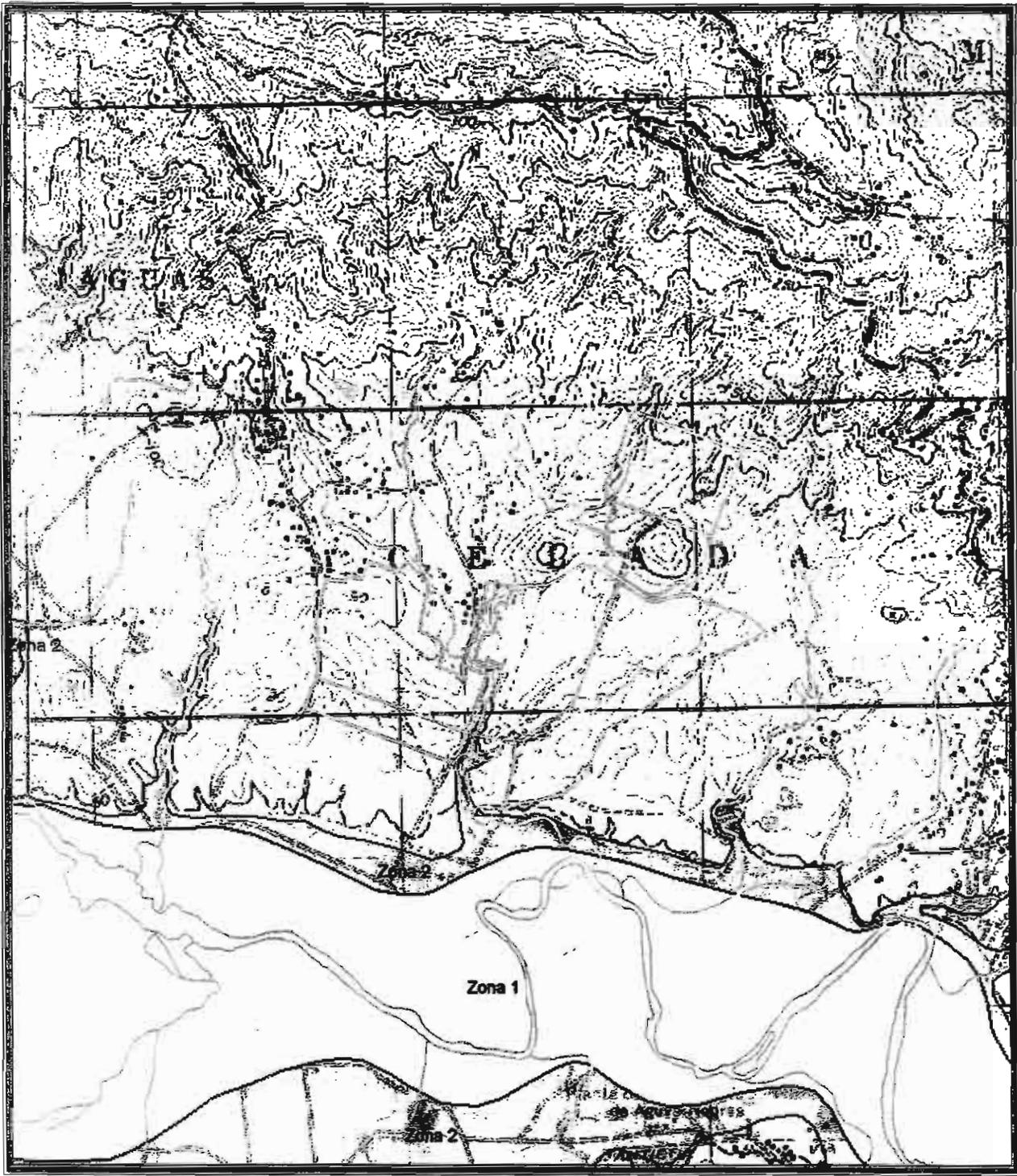
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Leyenda

AE- Elevación de inundación base determinada

X500- Areas de inundación de 500 años o 100 años con profundidades menor de 0.3 m o áreas de drenaje menor de 2.6 km²

**FLOOD MAP, (JP)
PALACIOS DE GURABO
GURABO, PR**

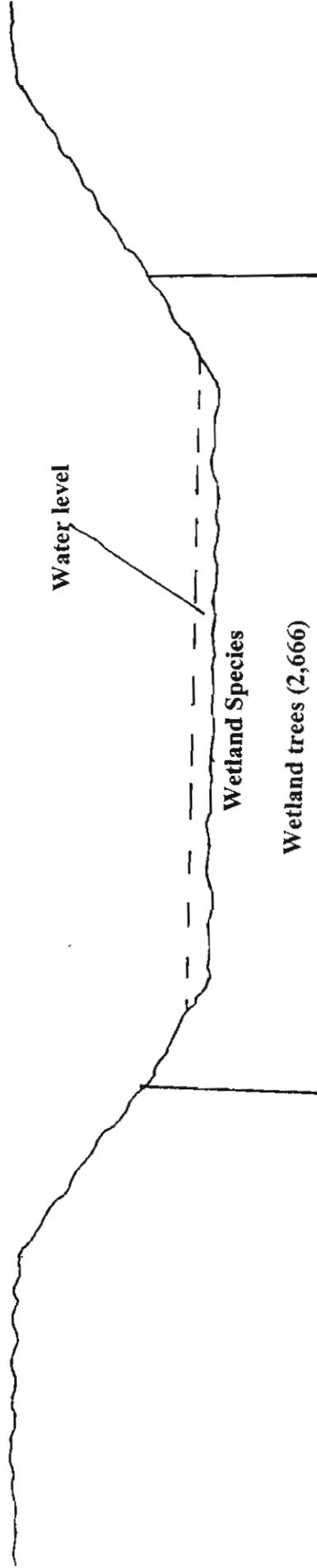


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**MITIGATION AREA
TYPICAL CROSS-SECTION
PALACIOS DE GURABO
GURABO, PR**

**PALACIOS DE GURABO
MITIGATION AREA
TYPICAL CROSS-SECTION**

Area (15,999.0141 square meters)



- Pterocarpus officinalis* *Annona glabra*
Bontia daphnoides *Stahlia monosperma*
Machaerium lunatum *Enallagma latifolia*

Herbaceous (13,333)

- Canna glauca* *Cyperus haspan*
Eleocharis spp *Nymphoides indica*
Cyperus giganteus *Sagittaria lancifolia*
Acrostichum spp. *Scirpus validus*
Spartina patens *Panicum laxum*
Polygonum spp.

NOT TO SCALE

**MITIGATION PLAN
SOWING GUIDES
PALACIOS DE GURABO
GURABO, PR**

Sowing Guides

1. Grade, Standards and Quality

The size of the trees to be planted shall be 3 to 5 feet, and shall comply with the grades, standards and quality 90 days before being planted at the mitigation site. The minimum grade for all trees and plant material to be used in the mitigation shall be sound, healthy and vigorous, well branched, and shaped within normal habit of growth, of proper color, and densely foliated when in leaf. They should also have healthy, well developed root systems, and shall be free of disease and insect, eggs or larvae.

2. Plant Material Designation

Plants to be used at the mitigation site have been classified under the following designations:

- a. Container Grown (CG)
- b. Bare Root Equivalent (BR)

3. Container Grown Plants

Container Grown Plants, including those materials derived from tissue culture samples, are grown in containers large enough and for sufficient time for the root system to have developed enough to hold its soil together firm and whole. For planting purposes, all containers shall be cut and open fully, in such manner to avoid damaging the root system. Container growth plants shall not be taken to prevent damage or dehydration to the root system. A maximum of seven days between removal from the nursery and plant material is watered sufficiently to prevent desiccation and/or other form of damage.

4. Bare Root Plants

These are plant materials removed from man-made wetlands, and transported to the mitigation site as bare root plants. Provisions to protect this material, specially the roots, shall be taken, and will be installed in the mitigation site within seven days from the time of removal from the collection site. Plants designated as bare root spread at least one-third greater than the equivalent balled and bur lapped plant; have well spread roots, and are in general considered a healthy specimen of the species. All provisions to protect them from drying out shall be taken, such as the use of moist straws or other materials free of nuisance seeds, propangules, insects, pests and disease. Deciduous bare root plants may also be used, but will be handled only when in dormant or stripped condition. Any bare root plant with evidence of fresh growth prior to installation will be rejected for use in the mitigation site.

5. Plant Substitution

A list of alternate plant material(s) species that can be substitute is found in the US Department of Interior, Fish and Wildlife Service, National List of Plant Species that occur in Wetlands, Caribbean Area (Region C) May 1988. This document will be used until such time that a revised list is published by the US Fish and Wildlife Service. Substitute plant species will be of the same wetter indicator Category (as defines in the above publication) as the substituted species.

6. Topsoil/Organic Enhancement

Topsoil is going to be used to plant the species; however, in some cases, fertilizer or organic enhancement may need to be added to the soil. Such exceptions shall be identified by JAT Wetland Research, Inc.

7. Fertilizer

When recommended, fertilizer shall be added during tree, shrub and/or herbaceous installation. No broadcasting of fertilizers in the mitigation site will be performed.

8. Standard Planting Wrapping Material

When needed and used, wrapping will be first quality, heavy, waterproof crepe paper, or other approved material manufactured for this purpose.

9. Wire

Will be used and appropriate, for bracing and gaging, and shall be pliable No. 12 or 14 gauge galvanized soft steel wire.

Periodic inspections of planted material will be performed to determine watering requirements to ensure survivability of planted material. Ropes or other material on which planting intervals marked will be used to ensure proper planting distances and average spacing will be maintained for each planting unit. Spacing between individual plants will vary by no more than 50% from the agreed upon center distance for species with centers less than 76.2 centimeters. Basically, agreement is to normal human spaces.

Plants will be planted in holes no less than the size (3-15 inches) of the root plug and conforming to the size of the root plug with ample space to accommodate addition of topsoil/organic enhancement. Holes will be sufficiently deep that roots will extend to dull causing shock and/or die-back.

10. Stacking and Guying of Trees

Stacking of trees shall be performed as necessary to ensure the stability of trees and shrubs. For small trees and shrubs of less than 2.54 centimeters (1.0 inches) caliper, the

size of stakes and the method of tying shall be such as to rigidly support the staked plant against damage caused by wind action or other effects. Trees larger than 2.54 centimeters and smaller than 5.08 centimeters (2.0 inches) in the ground it should be extending to the crown of the plant. The plant shall be firmly fastened to the stake with two (2) strands of No. 12 or No. 14 gauge soft wire, enclosed in rubber hose, or other appropriate covering. The wire shall be nailed or stapled to prevent slippage.

11. Supplement Planting

Joint monthly inspections of the planted areas will be performed by JAT Wetland Research, Inc., to check for plant survival using mutually agreed upon methods of estimation. If the number of individuals of planted species fall below 85% of the original number planted, that area will be replanted within the following 90 days (or at the first instance of suitable planting conditions after a 90 days period). If conditions are unsuitable during the period with sufficient plants to bring the number of plants present back to the originally planted number. Reasons for mortality will be evaluated, and adjustment or corrective measures will be implemented prior to any replanting.

12. Sources of Plant Materials and Seed

All plants materials and seed to be used in the mitigation site boundaries are to originate from Puerto Rico (including the islands of Vieques, Culebra and Mona), accordance with Commonwealth Agricultural Regulations.

**ANSI Z60-1996
PALACIOS DE GURABO
GURABO, PR**

American Standard for Nursery Stock

Section 1: Shade and Flowering Trees

This section applies to plants generally sold to the retail and landscape trade. For liner grades see section 6.

1.1 General specifications

1.1.1 Caliper and height measurement

In size grading balled & burlapped shade trees (Types 1 and 2), caliper shall take precedence over height. In size grading balled & burlapped small and flowering trees (Types 3 and 4), height shall take precedence up to 6 feet; thereafter, caliper takes precedence.

In size grading bare root and container-grown trees, height shall take precedence to 6 feet for Types 3 and 4, and 8 feet for Types 1 and 2; thereafter, caliper takes precedence.

In size-grading trees grown in in-ground fabric bags, caliper shall take precedence.

Caliper of the trunk shall be taken 6 inches above the ground up to and including 4-inch caliper size, and 12 inches above the ground for larger sizes.

Seldom are tree trunks perfectly round. Caliper measurement may be taken with "slot" type caliper, "pincer" type caliper, or diameter tape.

For purposes of simplicity, only one size per "grade" will be listed. That size will be the minimum size allowable for that grade and shall include plants from that size up to but not including the next larger grade size.

Example: *Acer rubrum*, 2-inch caliper. This could include *Acer rubrum* calipered 2 inches up to but not including 2½ inches in caliper, measured 6 inches above the ground line.

1.1.2 Height of branching—street trees

Bid specifications for trees for street plantings should specify the height to which the tree should be free

of branching. Height of branching should bear a relationship to the size and kind of tree, also, so that the crown of the tree will be in good balance with the trunk as the tree grows.

Examples:

Acer platanoides, 2 in. cal., 12 to 14 ft., branches 6 to 7 ft.

Quercus rubra 3½ in. cal., 14 to 18 ft., branched 7 to 8 ft.

Trees with ascending branches (example — *Ulmus americana* and *Tilia tomentosa*) may be branched 1 foot or more below the standard height and still provide proper clearance, which is the purpose of this specification.

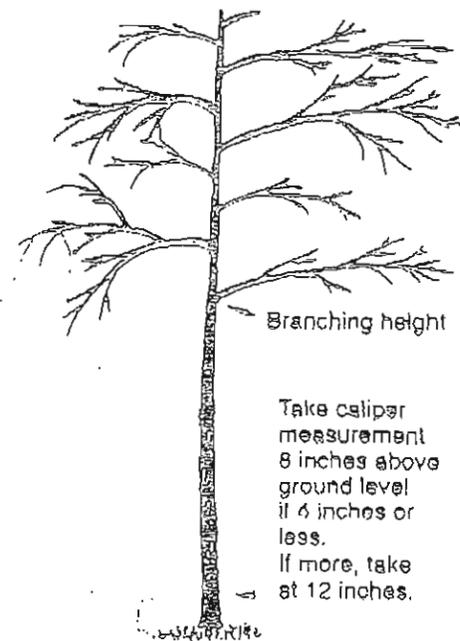


Figure 1— Caliper and branching height

1.1.3 Height relationship to caliper by types

It is recognized that climatic conditions in different sections of the country produce trees of different caliper-height proportions. Trees from one region of the country may have less caliper in proportion to height while trees from another section may have greater caliper in proportion to height than shown

in the following table. The table shows the average height range and the maximum heights permitted (See 1.1.3.1).

1.1.3.1 Type 1. Shade trees

The height relationship to caliper, for most standard shade trees, will be as follows:

Table 1- Height/caliper relationship for Type 1 shade trees

Caliper	Average height range	Maximum height
½ in.	5 to 6 ft.	8 ft.
¾ in.	6 to 8 ft.	10 ft.
1 in.	8 to 10 ft.	11 ft.
1¼ in.	8 to 10 ft.	12 ft.
1½ in.	10 to 12 ft.	14 ft.
1¾ in.	10 to 12 ft.	14 ft.
2 in.	12 to 14 ft.	16 ft.
2½ in.	12 to 14 ft.	16 ft.
3 in.	14 to 18 ft.	18 ft.
3½ in.	14 to 18 ft.	18 ft.
4 in.	16 to 18 ft.	22 ft.
5 in.	18 ft. and up	28 ft.

Sizes under one inch may be calipered if desired.

Examples:

- Acer rubrum*, *A. saccharinum*
- Betula*
- Cinnamomum camphora*
- Fraxinus americana*, *F. pennsylvanica*, *F. uhdei*
- Ginkgo*
- Gleditsia*
- Liriodendron*
- Platanus*
- Populus*
- Quercus macrocarpa*, *Q. palustris*, *Q. phellos*,
Q. virginiana
- Salix*
- Tilia americana*
- Zelkova serrata*

1.1.3.2 Type 2. Shade trees

Trees of slower growth which will not usually attain the height measurement in relation to caliper as in Type 1. The height, however, should not be less than two-thirds the height relationship given for Type 1. (See 1.1.3.1)

Examples:

- Aesculus*
- Celtis*
- Cladrastis lutea*
- Fagus sylvatica*
- Koeleruteria*
- Laburnum*
- Liquidambar*
- Magnolia grandiflora*
- Nyssa*
- Olea europae*
- Quercus alba*
- Sorbus*
- Tilia cordata*, *T. euchlora*

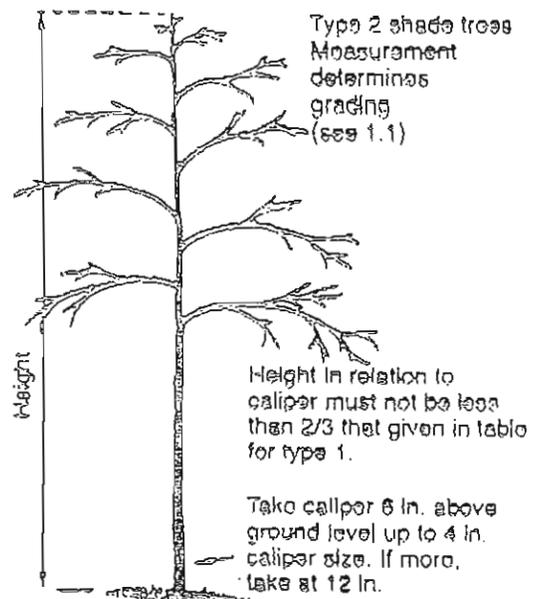


Figure 2—Measurement—Type 2 shade trees

1.1.3.3 Type 3. Small upright trees

This is a broad group including small, upright trees which may be grown as single-stem plants, as clumps, or as shrubs.

Up to 6 feet, height shall be the governing measurement. Sizing shall be in 1-foot intervals.

At 6 feet and over, caliper takes precedence. A height relative to caliper may be specified but shall not be considered in determining minimum diameter ball sizes.

For single-stem plants, the minimum relationship for height, caliper and branching will usually be as follows:

- 2 ft., $\frac{1}{16}$ in. caliper, three or more branches
- 3 ft., $\frac{1}{16}$ in. caliper, four or more branches
- 4 ft., $\frac{1}{16}$ in. caliper, five or more branches
- 5 ft., $\frac{1}{16}$ in. caliper, six or more branches
- $\frac{3}{4}$ in. caliper, seven or more branches

Examples:

Acer campestre, *A. circinatum*
Cercis
Crataegus
Halesia
Malus (most crabapples)
Prunus cerasifera 'Thundercloud'
Prunus serrulata, *P. subhirtella*
Pyrus calleryana 'Whitehouse,' 'Capitol'
Styrax
Syringa raticulata

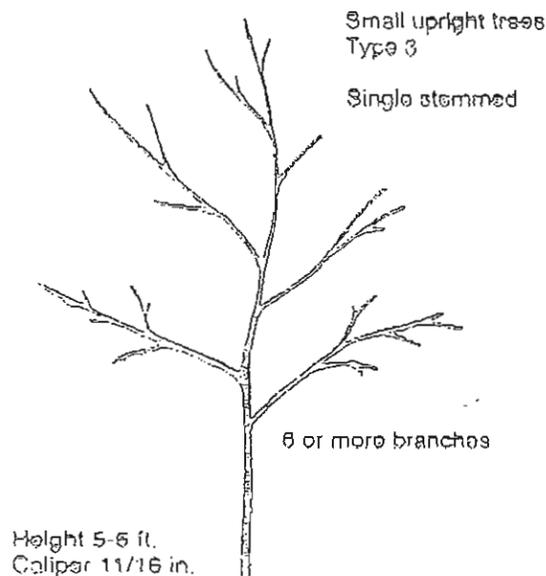


Figure 3—Small upright trees—
Type 3—single stemmed

1.1.3.4 Type 4. Small spreading trees

This is a broad group including small, spreading trees of dwarf growth habit and certain large shrubs grown in tree or multi-stem form.

Up to 6 feet, height shall be the governing measurement. Sizing shall be in 1-foot intervals.

At 6 feet and over, caliper takes precedence. A height relative to caliper may be specified but shall not be considered in determining minimum diameter ball sizes.

For single-stem plants, the minimum branching will be as follows:

- 2 ft., four or more branches
- 3 ft., five or more branches
- 4 ft., seven or more branches
- 5 ft., eight or more branches
- $\frac{3}{4}$ in. caliper, eight or more branches

Examples:

Acer palmatum, *A. griseum*
Cornus
Lagerstroemia indica
Ligustrum japonicum (tree forms), *L. lucidum*
Magnolia soulangeana, *M. stellata*
Malus sargentii
Pyrus calleryana 'Bradford,' 'Aristocrat'
Viburnum prunifolium

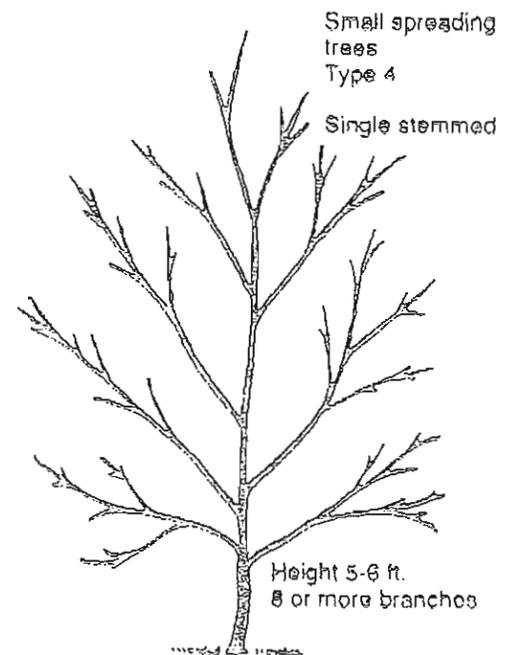


Figure 4—Small spreading trees—
Type 4—single stemmed

1.1.4 Trees for other uses

Trees for special uses should be branched or pruned naturally according to type. Where a form of growth is desired which is not in accordance with a natural growth habit, this form should be so specified.

Examples:

Cut back or sheared — trees that have been pruned back so as to multiply the branching structure and to develop a more formal effect.

Topiary — sheared or trimmed closely in a formal geometric pattern.

1.1.5 Multi-stem trees

Multi-stem trees occur naturally in many genera, and other kinds may be grown multi-stem in the nursery. Multi-stem trees may be further defined as Clump form and Shrub form.

Clump form: Having two or more main stems arising from the root crown or from the main trunk not more than 6 inches from the ground level. The main stems shall have branching typical for the species or cultivar.

Shrub form: A tree with multiple stems arising from the root crown in the manner of a shrub.

Examples:

Clump form:

- Acer ginnala*, *A. rubrum*
- Alnus glutinosa*
- Amelanchier laevis*
- Betula nigra*
- Carpinus caroliniana*
- Cercis canadensis*
- Cornus alternifolia*, *C. florida*
- Corylus avellana*
- Crataegus punctata*
- Fraxinus pennsylvanica* var. *lanceolata*
- Gleditsia triacanthos inermis*
- Hamamelis virginiana*
- Magnolia soulangeana*, *M. virginiana*
- Malus floribunda*
- Prunus padus*
- Syringa reticulata*
- Tilia cordata*, *T. euchlora*
- Viburnum plicatum*, *V. prunifolium*

Shrub form:

- Amelanchier arborea*, *A. grandiflora*
- Cornus kousa*, *C. mas*
- Corylus americana*
- Cotoneaster multiflorus*
- Crataegus cordata*, *C. crus-galli*

- Hamamelis vernalis*
- Lagerstroemia Indica*
- Magnolia stellata*
- Malus sargentii*
- Prunus cistena*
- Syringa vulgaris*
- Viburnum lantana*, *V. lentago*, *V. opulus*

1.1.5.1 Measurement of multi-stem trees

In size grading multi-stem trees, height shall be the governing measurement. Height shall be defined as the measurement taken from the ground level to the average uppermost point of growth of the plant.

Sizes shall be listed in 1-foot increments to 8 feet and 2-foot increments thereafter. For purposes of simplicity, only one size per "grade" will be listed. That size will be the minimum size allowable for that grade and shall include plants from that size up to, but not including, the next larger size.

Example: *Acer ginnala*, 8'. This would include *Acer ginnala* 8 feet high up to, but not including, 7 feet high, from the ground level to the average uppermost point of growth of the plant.

Although height will be the determining factor, for landscape specifications other definitive measurements may be used to further "picture" the desired plant. Such added factors as the number of stems and plant width may be specified.

Table 2—Ball sizes for multi-stem trees

Average Height	Minimum Diameter Ball
4 ft.	14 in.
5 ft.	16 in.
6 ft.	18 in.
7 ft.	20 in.
8 ft.	22 in.
10 ft.	24 in.
12 ft.	26 in.
14 ft.	32 in.
16 ft.	38 in.
18 ft.	42 in.
20 ft.	48 in.

Note: Specifications for balling and burdapping multi-stem trees with a spreading growth habit shall provide for balls one size larger than sizes specified above for multi-stem trees with ascending growth habit.

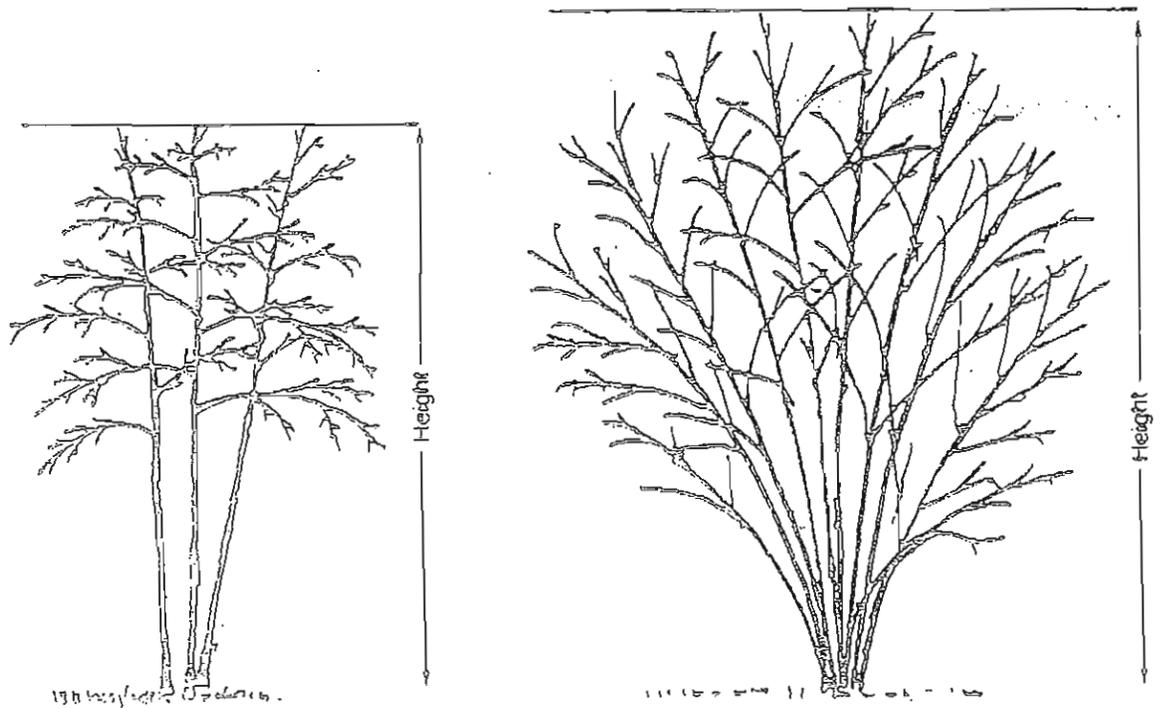


Figure 5—Measurement—multi-stem trees—clump form and shrub form

1.1.6 Palms

In size grading palm trees, height shall take precedence. Either of two heights may be specified: overall height or trunk height.

Overall height is the perpendicular height from the ground to the top of the arc made by the uppermost arching frond with the tree standing in natural position.

Trunk height is measured from the ground line to the base of the heart leaf.

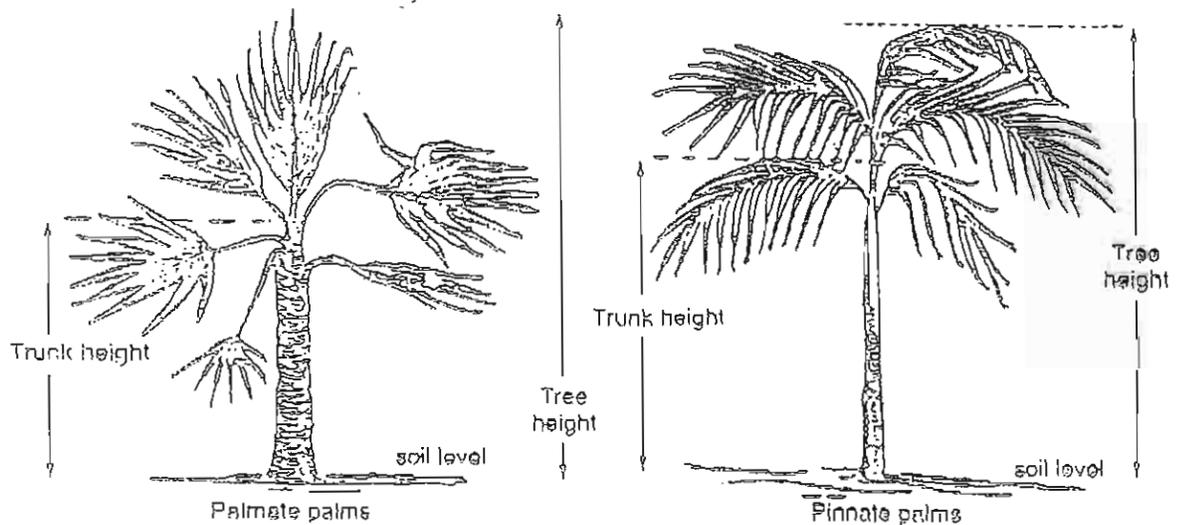


Figure 6—Measurement—palms

1.1.7 Specimen trees

This recommendation for specification writers applies to both deciduous and evergreen trees. When "specimen" trees are called for in landscape specifications, the desired specimen characteristics must be stated, including deviations from standard minimums for caliper, height, fullness of branching, rootball, etc.

1.1.7.1 Box specimen trees

Table 3—Box size for specimen trees

Box Size (Inches)							
20	24	30	36	42	48	60	
Caliper (Inches)							
Group I							
1½	1½	2½	3	3½	4	4½	
Group II							
1½	2	3	3½	4	4½	5	
Group III							
1½	1¾	2	2½	3	3½	4	
Group IV							
1½	2	2½	3	3½	4	4½	
Group V							
2	2½	3	3½	4	5	6	

Examples:

Group I: *Tipuana*, *Sophora*, *Ulmus parvifolia*, *Zelkova*, *Parkinsonia*

Group II: *Acer*, *Albizia*, *Alnus*, *Eryobotrya*, *Cedrus*, *Celtis*, *Fraxinus*, *Liquidambar*, *Liriodendron*, *Magnolia*, *Platanus*, *Populus canadensis*, *Prunus*, *Lagerstroemia*

Group III: *Acer palmatum*, *Betula*, *Cercis*, *Cupania*, *Erythrina corallodas*, *E. nuneana*, *Ficus retusa*, *F. rubiginosa*, *Ginkgo*, *Gleditsia*, *Jacaranda*, *Koeleruteria*, *Nerium oleander*, *Photinia*, *Platacia*, *Pittosporum undulatum*, *Raphirolepis*, *Rhus lancea*, *Schinus*

Group IV: *Acacia*, *Arbutus*, *Ceratonia cinnamomum*, *Diospylos chilensis*, *Eucalyptus*, *Ficus florida*, *F. macrophylla*, *Harpophyllum cañum*, *Pyrus*, *Quercus*, *Robinia*, *Salix umbraculifera*

Group V: *Erythrina caffra*, *Morus*, *Populus italica*, *Salix*

1.2 Bare root specifications

1.2.1 Nursery grown—spread of roots

All bare root trees shall have a well branched root system characteristic of the species. The following table represents the approved minimum root spread for nursery grown shade trees.

Table 4—Bare root trees

Caliper	Average height range	Minimum root spread
½ in.	5 to 6 ft.	12 in.
¾ in.	6 to 8 ft.	18 in.
1 in.	8 to 10 ft.	18 in.
1¼ in.	8 to 10 ft.	20 in.
1½ in.	10 to 12 ft.	22 in.
1¾ in.	10 to 12 ft.	24 in.
2 in.	12 to 14 ft.	28 in.
2½ in.	12 to 14 ft.	32 in.
3 in.	14 to 16 ft.	38 in.

1.2.2 Collected—Spread of roots

Trees collected from native stands or established plantings must be so designated. The spread of roots, bare root collected trees, shall be ½ greater than the spread of roots, bare root nursery grown (Table 4).

For the purposes of this standard, trees collected from wild or native stands may be considered nursery grown when they have been successfully reestablished in the nursery row and grown under regular nursery cultural practices for a minimum of two growing seasons and have attained adequate root and top growth to indicate full recovery from transplanting into the nursery row.

1.3 Baling and burlopping specifications

Ball sizes should always be of a diameter and depth to encompass enough of the fibrous and feeding root system as necessary for the full recovery of the plant.

It is recognized that balling of nursery grown stock can be accomplished by hand digging or by mechanical devices especially designed for nursery conditions. The use of digging machines is an acceptable nursery practice.

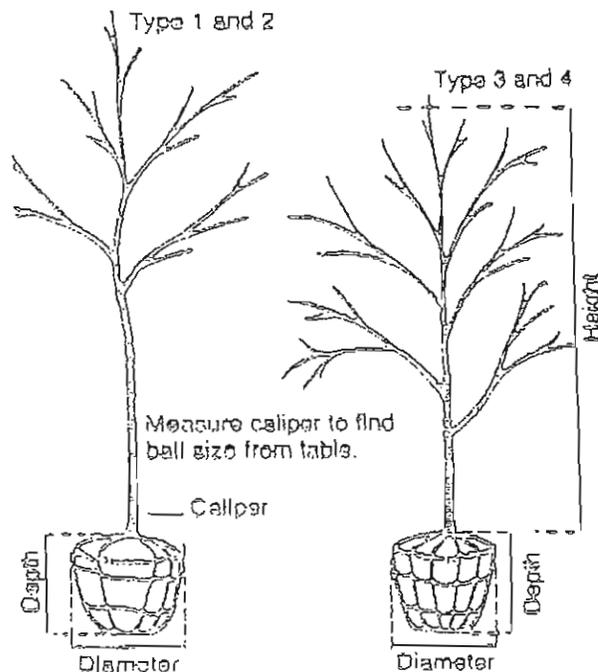


Figure 7—Measurements—trees

1.3.1 Nursery grown

The following table represents the recommended minimum sizes of balls for trees which are being grown in the nursery under favorable growing conditions and which have received the proper cultural treatment to develop a well branched root system.

These specifications are for plants either hand dug or machine dug with the ball of earth in which they are growing.

Plants dug to specifications in the table should have the trunk or stem of the plant in the center of the earth ball. A tolerance of 10% of the diameter is the maximum deviation allowable.

Example: For a tree with a 30-inch rootball, the center of the plant at ground level must be within a circle 13½ inches from the outer edge of the ball.

It is recognized that plants having a coarse or wide-spreading root system because of natural habit of growth, soil condition, infrequent transplanting practice, or plants which are moved out of season, would require a ball in excess of the recommended sizes.

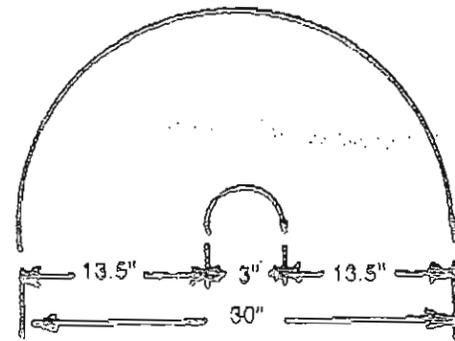


Figure 8—Example: trunk in center of earth ball

Table 6—Ball sizes—nursery grown trees

Shade trees Types 1 and 2		Small trees Types 3 and 4	
Caliper	Minimum diameter ball	Height (up to 8 ft.) Caliper (8 ft. & over)	Minimum diameter ball
Inches	Inches	Foot/Inches	Inches
½	12	2 ft.	10
¾	14	3 ft.	12
1	16	4 ft.	14
1¼	18	5 ft.	16
1½	20	¾ in.	16
1¾	22	1 in.	18
2	24	1¼ in.	20
2½	28	1¾ in.	22
3	32	2 in.	24
3½	38	2½ in.	28
4	42	3 in.	32
4½	48	3½ in.	38
5	54	4 in.	42
5½	57	4½ in.	48
6	60	5 in.	54
7	70	5½ in.	57
8	80	6 in.	60
		7 in.	70
		8 in.	80

1.3.2 Collected

It is generally recognized that plants growing in their native state will sustain a much more severe shock when transplanted than the same kinds of plants when nursery grown. If collected material is moved, a considerably larger ball than that recommended

for transplanted nursery stock is required, because of the unrestricted root development and the varying conditions of soil in which such material is found.

The minimum ball sizes shall be equal to those specified in Table 5 for the next larger size nursery grown stock.

For the purposes of this standard, trees collected from wild or native stands may be considered nursery grown when they have been successfully re-established in the nursery row and grown under regular nursery cultural practices for a minimum of two growing seasons and have attained adequate root and top growth to indicate full recovery from transplanting into the nursery row.

1.3.3 Plantation grown

Plants which have been systematically planted in fertile, friable soil which is relatively free of stones and foreign matter, but where plants have had a minimum of after-care.

The minimum ball sizes shall be equal to those specified in Table 5 for the next larger size nursery grown stock.

1.3.4 Ball depths

Under certain soil and regional conditions, plants have root systems of proportionately less depth and greater diameter. These require a more shallow but wider ball to properly encompass the roots. Conversely, in other soils and in certain regions roots develop greater depth and less spread, requiring an exceptionally deep ball which may be smaller in diameter and greater in depth than the size recommended.

For the greater part of the country, ball depths will carry the following ratios:

Balls with diameters less than 20 inches — depth not less than 75% of diameter.

Balls with diameters of 20 inches to 30 inches inclusive — depth not less than 66 2/3% of diameter.

Balls with diameters of 30 inches to 48 inches inclusive — depth not less than 60% of diameter.

Balls with diameters over 48 inches will have the depth scaled down proportionately.



Diameter less than 20 in. Depth not less than 75% of diameter or 3/4 of width



Diameter 20 to 30 in. Depth not less than 66-2/3% or 2/3 of width



Diameter 31 to 48 in. Depth not less than 60% or 3/5 of width. Balls with a diameter of 30 in. or more should be drum-faced

Figure 9—Ball depth: diameter ratios

1.3.5 Burlapping

Burlap or other suitable material shall completely cover the root ball. This wrapping shall be between the earth ball and the facing or ball supporting device.

1.3.6 Ball supporting devices

Ball supporting devices, such as wire baskets, shall hold the ball in a firm, rigid condition.

1.4 Container grown specifications

All container grown trees shall be healthy, vigorous, well rooted, and established in the container in which they are growing. They shall have tops of good quality and be in a healthy growing condition. A container grown tree shall have a well-established root system reaching the sides of the container to maintain a firm ball.

All container grown trees sold in containers shall be graded by plant size (height or caliper designated) and container size. The plant size shall be consistent with sizes specified in Section 1.1.3 of this chapter, and the container size shall agree with the container class table on page II of the Foreword. When size grading trees in containers, height shall take precedence to 8 ft. for Types 1 and 2 (shade trees), and to 6 ft. for Types 3 and 4 (small upright and small spreading trees); thereafter, caliper takes precedence. Plant size refers to the minimum size for each grade.

Under certain climate conditions and with certain production methods and species that develop root systems more quickly, container sizes may be one to several sizes larger than the minimums listed below. Likewise, species such as *Betula*, *Eucalyptus*, *Salix*, and *Populus* that develop height more rapidly may be taller for a given container size. Dwarf and light growing varieties may be one or two sizes smaller than standard for a given size container.

The container shall be sufficiently rigid to hold the ball shape, protecting the root mass during shipping.

The following table gives tree sizes and recommended minimum container sizes:

1.5 Balled and potted

Balled and potted plants are field-grown nursery plants, dug with a ball of earth still intact in which they are growing, and which, in lieu of burlapping, are placed in a container to retain the ball unbroken.

Ball sizes shall always be of a diameter and depth to encompass enough of the fibrous and feeding root system as necessary for the full recovery of the plant.

The minimum ball size specification for "balled and potted" plants shall be the same as for "balled and burlapped" plants (Table 5).

Table 5—Container sizes—trees

Tree height		Tree caliper		Recommended minimum container size
Types 1 & 2	Types 3 & 4	Types 1 & 2	Types 3 & 4	
12 in.	12 in.			#1
18 in.	18 in.			#1
2 ft.	2 ft.			#1
3 ft.	3 ft.			#1
4 ft.	4 ft.			#2
5 ft.	5 ft.			#5
6 ft.	6 ft.		¾ in.	#5
7 ft.			1 in.	#7
8 ft.		1¼ in.	1¼ in.	#10
		1½ in.	1½ in.	#15
		1¾ in.	1¾ in.	#25
		2 in.	2 in.	#25
		2½ in.	2½ in.	#25

1.6 Processed balled

A processed balled shade or flowering tree is one dug bare root, while dormant, to which a growing medium is added around the roots to form a ball designed to sustain plant growth.

The following table represents the recommended minimum sizes of processed balls for trees processed by machine or hand.

All trees shall have a root system which has been developed by proper cultural practices.

Table 7—Ball sizes—processed balled trees

Single stem trees Types 1,2,3		Spreading trees Type 4	
Caliper	Minimum diameter ball	Height/ Caliper	Minimum diameter ball
Inches	Inches	Feet/Inches	Inches
½	10	2 ft.	10
¾	10	3 ft.	10
1	12	4 ft.	12
1¼	14	5 ft.	12
1½	15	¾ in.	12
1¾	18	1 in.	14
2	20	1¼ in.	14
2½	20	1½ in.	14
3	28	1¾ in.	18

1.7 In-ground fabric bag-grown

These specifications are for shade and flowering trees field grown in fabric bags, commonly called grow bags. Fabric bag size specifications are provided on page II of the Foreword.

The following table represents the recommended maximum tree caliper for shade and flowering trees, (Types 1,2,3, and 4), and multi stem trees, grown in in-ground fabric bags.

Table 8—Fabric bag sizes—trees

Maximum recommended tree caliper	Minimum recommended fabric bag size (diameter)
1¼ in.	10 in.
1½ in.	12 in.
1¾ in.	14 in.
2 in.	18 in.
2½ in.	18 in.
3 in.	20 in.
3½ in.	22 in.
4 in.	24 in.

Nursery plant container or pot sizes

All container-grown plant specifications based on the *American Standard for Nursery Stock* should reference both plant size and container size. Plant size takes precedence, as it is the most descriptive reference point for both buyers and sellers. Container size should also be stated, using the container class table shown below.

The *American Standard for Nursery Stock* container class table has been revised to (1) classify containers based on volume; and (2) incorporate new container sizes that have become prevalent in the trade, including five small plant containers (#SP 1-5), as well as #10, #20, and #25 sizes.

The following plant container maximum and minimum volumes are the limits recommended for each container class:

Container class	Container volume	
	Cubic inches min.-max.	Cubic centimeters min.-max.
#SP1	6.5-8.0	106-131
#SP2	13.0-15.0	213-248
#SP3	20.0-30.0	328-492
#SP4	51-63	836-1033
#SP5	93-136	1524-2229
#1	152-251	2492-4115
#2	320-474	5246-7770
#3	628-742	10285-12164
#5	785-1242	12860-20360
#7	1337-1760	21913-29343
#10	2080-2646	34090-43378
#15	2768-3696	45378-60589
#20	4520-5152	74096-84457
#25	5775-6861	94889-112472

Unclassified: Any container which does not fall within the above specifications.

In-ground fabric bag specifications

Recommended minimum fabric bag diameters, depths and cubic volumes are as follows:

Fabric bag diameter	Fabric bag depth	Fabric bag volume
10 inches	11 inches	864 cubic inches
12 inches	11 inches	1244 cubic inches
14 inches	13 inches	2001 cubic inches
16 inches	13 inches	2814 cubic inches
18 inches	15 inches	3817 cubic inches
20 inches	15 inches	4712 cubic inches
22 inches	17 inches	6462 cubic inches
24 inches	17 inches	7691 cubic inches