

Indigo

at North Bay Village

7914 West Drive
North Bay Village, Florida

Traffic Study

January 2014

Prepared for:
Tzadik Construction

Prepared by:
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1/13/14

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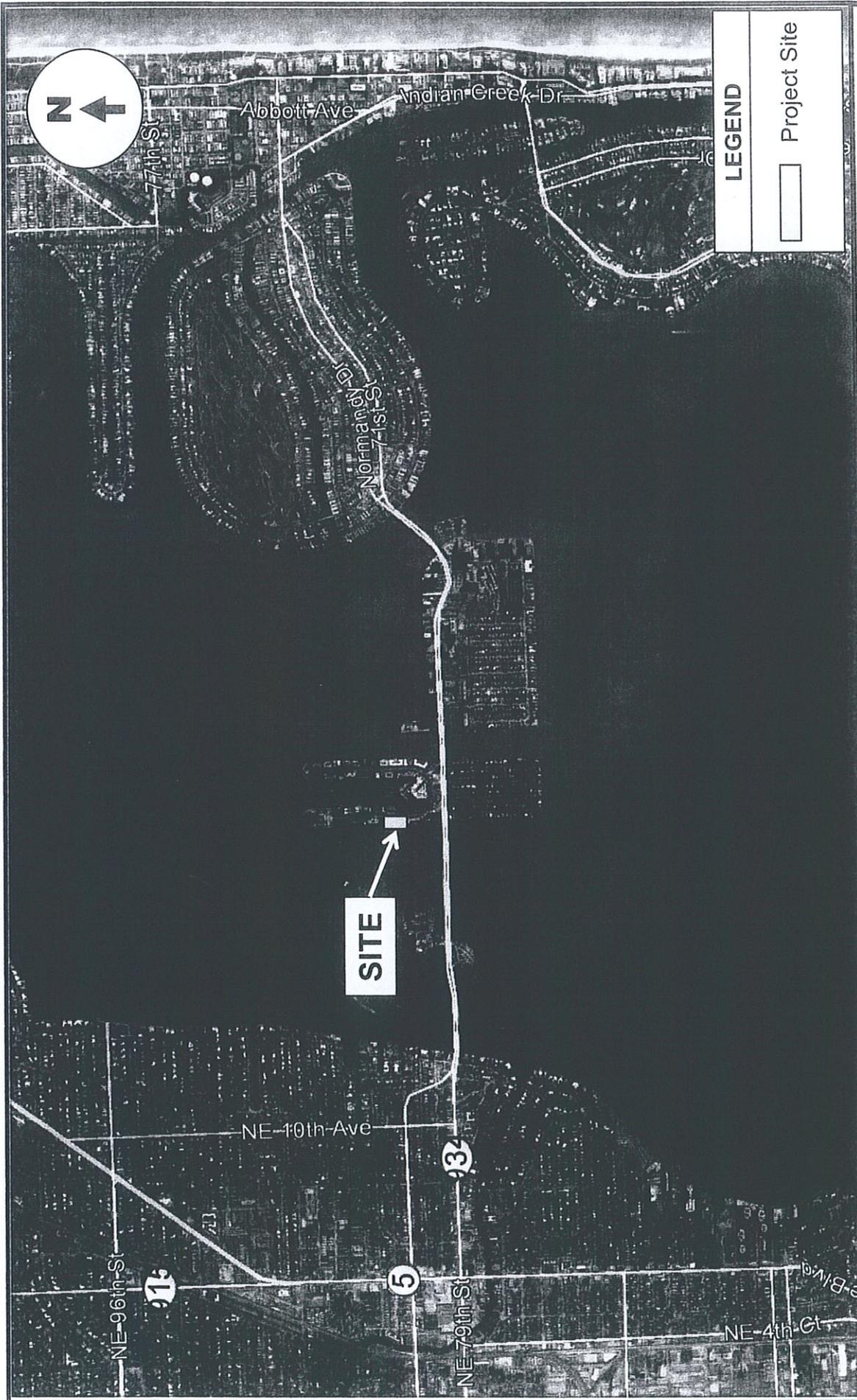
INTRODUCTION

Indigo at North Bay Village is a planned residential condominium development to be located on the west side of West Drive in North Bay Village, Miami-Dade County, Florida. More specifically, the site is located at 7914 / 7916 / 7918 West Drive. The location of this project site is illustrated in Figure 1 on the following page.

KBP Consulting, Inc. has been retained by Tzadik Construction to prepare a traffic study in connection with this proposed development project. This study addresses the vehicular traffic volumes expected to be generated by the proposed use and the resulting traffic concurrency impacts on the nearby roadway network.

This traffic study is divided into four (4) sections, as listed below:

1. Inventory
2. Trip Generation
3. Traffic Concurrency Evaluation
4. Summary & Conclusions



LEGEND

Project Site

FIGURE 1
 Indigo
 North Bay Village, Florida

Project Location Map

KBP
 CONSULTING, INC.

INVENTORY

Current Land Use and Access

The project site is currently vacant and there is no formal vehicular access to the site.

Proposed Land Uses and Access

The site will be developed with a high-rise residential condominium building containing 53 dwelling units. Vehicular access to the site will be provided via four (4) driveways located on West Drive. Two (2) of the driveways will serve the drop-off area, one (1) driveway will serve the visitor parking area, and another driveway will serve the resident parking area and loading area. Appendix A contains the preliminary site plan for the proposed project.

Roadway System

West Drive is a two-lane local roadway generally oriented in the north-south direction. A parallel roadway, East Drive, forms a connection with West Drive at their southern termini which then connects to N. Bay Causeway (State Road 934 / NE 79th Street). Within the project study area, N. Bay Causeway is a six-lane divided state-maintained principal arterial roadway oriented in the east-west direction.

TRIP GENERATION

A trip generation analysis has been conducted for the proposed residential use. The analysis was performed using the trip generation equations published in the Institute of Transportation Engineer's ITE *Trip Generation Manual (9th Edition)*. The trip generation analysis was undertaken for daily, AM peak hour, and PM peak hour conditions. According to the ITE report, the most appropriate land use category for the proposed development is as follows:

HIGH-RISE RESIDENTIAL CONDOMINIUM / TOWNHOUSE (ITE LAND USE #232)

- Weekday Trip Generation: $T = 3.77 (X) + 223.66$
where $T =$ number of trips and $X =$ number of dwelling units
- AM Peak Hour Trip Generation: $T = 0.29 (X) + 28.86$ (19% in / 81% out)
- PM Peak Hour Trip Generation: $T = 0.34 (X) + 15.47$ (62% in / 38% out)

Utilizing the above-listed trip generation equations from the referenced ITE document, a trip generation analysis was undertaken for the proposed residential development. The results of this effort are documented in Table 1 below.

Table 1 Trip Generation Summary Indigo - North Bay Village, Florida								
Land Use	Size	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
			In	Out	Total	In	Out	Total
<i>Proposed</i> High-Rise Residential Condominium - Pass-By (0%)	53 D.U.	423	8	36	44	20	13	33
		0	0	0	0	0	0	0
Total		423	8	36	44	20	13	33

Compiled by: KBP Consulting, Inc. (January 2014).

Source: Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition).

As indicated in Table 1, the proposed project is anticipated to generate 423 daily vehicle trips, 44 AM peak hour vehicle trips (8 inbound and 36 outbound) and 33 vehicle trips (20 inbound and 13 outbound) during the typical afternoon peak hour.

TRAFFIC CONCURRENCY EVALUATION

A review of the traffic concurrency stations likely to be impacted by the net new vehicle trips associated with the Indigo at North Bay Village development was performed. This was done for the purposes of determining if sufficient roadway capacity exists in order to absorb the additional vehicle trips. Table 2 below documents the results of this level of service / concurrency evaluation.

Table 2 Reserve Roadway Capacity Indigo - North Bay Village, Florida				
Station Number	Location	Peak Hour Capacity ¹	Peak Hour Trips ²	Available Peak Hour Capacity ³
142	NE 79th Street - East of N. Bayshore Drive to US 1	3,648	2,680	968
533	NE 79th Street Causeway (SR 934) - East of Treasure Drive between N. Bayshore Drive - Bay Drive	5,508	2,676	2,832

Source: Miami-Dade County MPO and Florida Department of Transportation, January 2014.

¹ Maximum level of service capacity.

² Existing traffic volumes plus peak hour trips associated with approved, but not built, developments.

³ Total capacity minus existing / committed peak hour trips (reserved trips).

As indicated in Table 2, these traffic concurrency stations all have remaining available peak hour capacity that is sufficient to absorb the net new project traffic associated with the proposed Indigo at North Bay Village development.

SUMMARY & CONCLUSIONS

Indigo at North Bay Village is a planned residential condominium development to be located on the west side of West Drive in North Bay Village, Miami-Dade County, Florida. This project will consist of 53 high-rise residential condominium units. Vehicular access to the site will be provided by four (4) driveways located on West Drive.

The trip generation analysis indicates that the proposed project is anticipated to generate approximately 423 daily vehicle trips, 44 AM peak hour vehicle trips (8 inbound and 36 outbound) and 33 vehicle trips (20 inbound and 13 outbound) during the typical afternoon peak hour.

The traffic concurrency evaluation indicates that the roadways in the immediate area of the project have sufficient capacity to absorb the vehicle trips to be generated by the Indigo at North Bay Village project.

Appendix A

Indigo Site Plan

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D

C

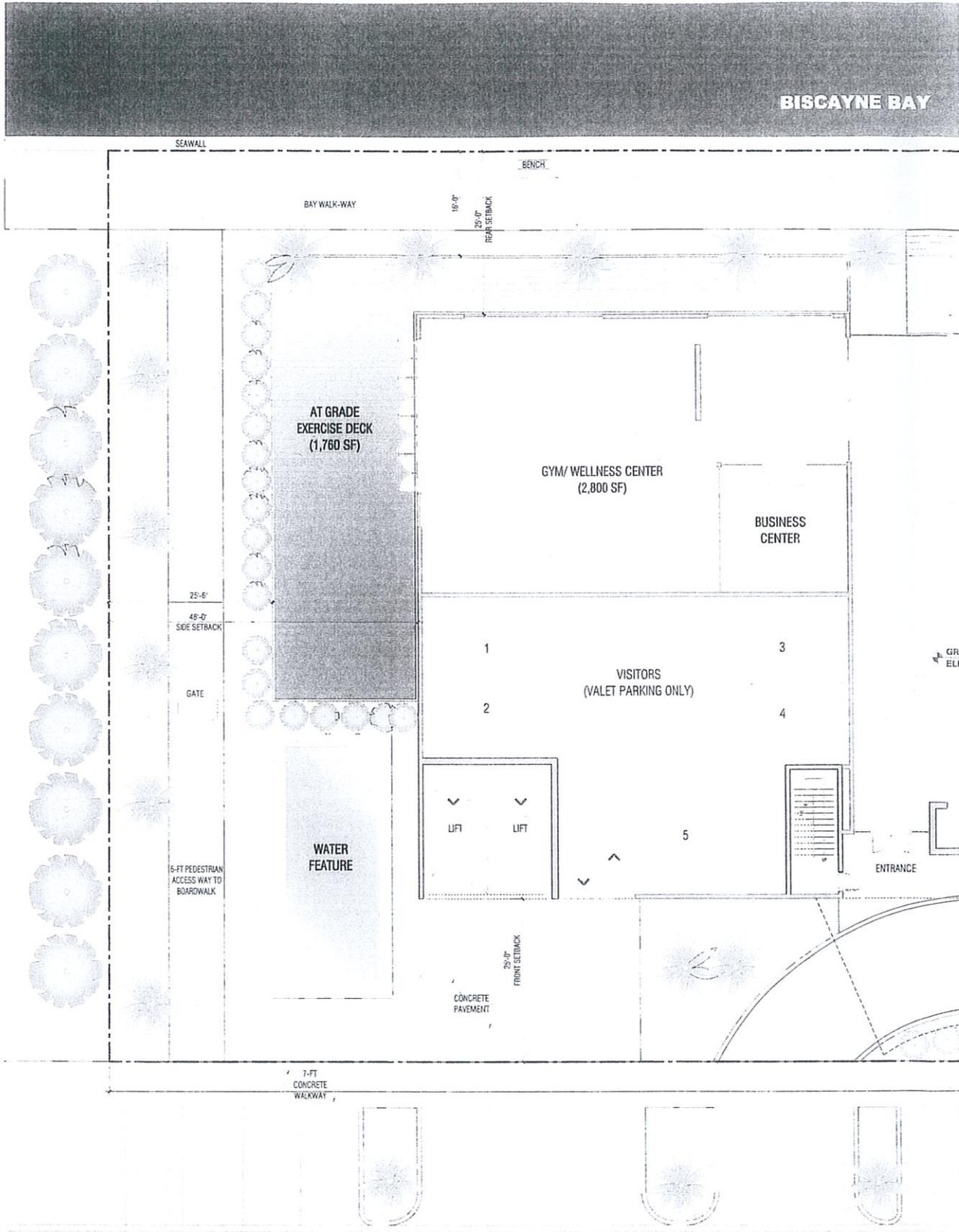
BISCAYNE BAY

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THE DESIGNS INDICATED IN THESE DRAWINGS ARE PROPERTY OF VHR Architecture ALL COPYRIGHTS RESERVED © 2013

1 PROPOSED SITE PLAN
 SCALE: 1" = 10'-0"

E

D

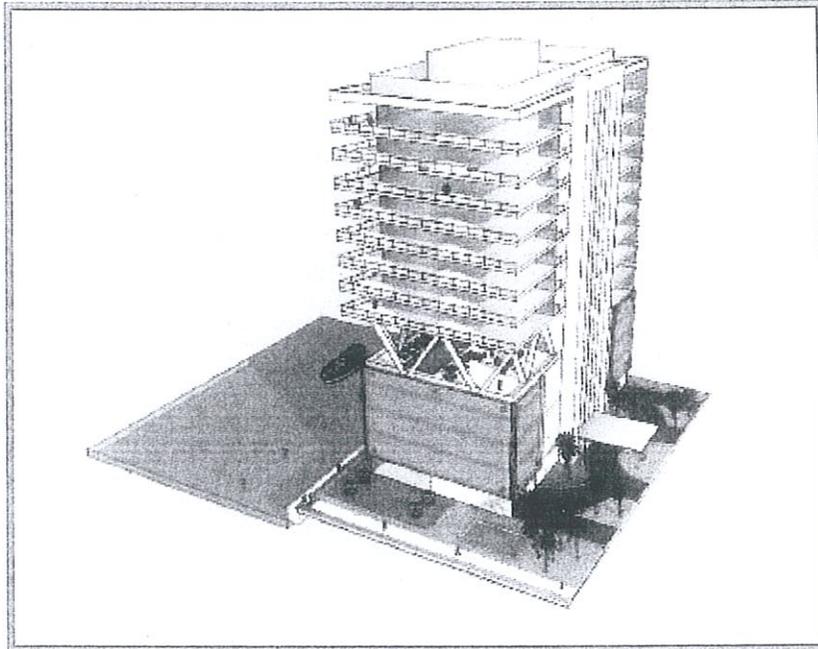
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GRO
ELEV

IMPACT ASSESSMENT STUDY

for:

INDIGO at North Bay Village



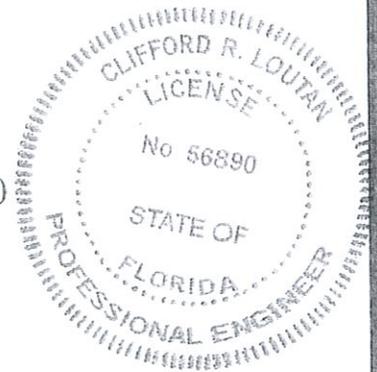
7914-16 West Drive, North Bay Village, Florida
(Harbor Island)

TECH

Engineers • Planners • Surveyors

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Project No. 14-3601
January 2014

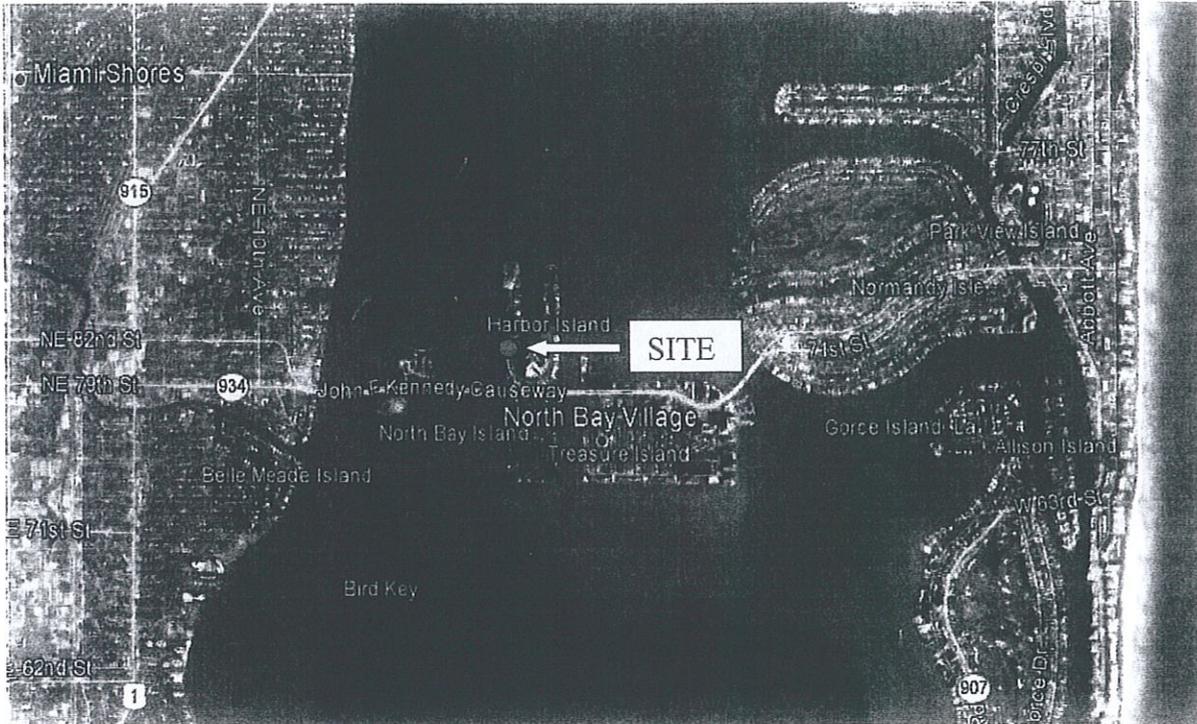


CL 01/13/14
CLIFFORD R. LOUTAN, P.E.
FL. REG. NO. 56890

INDIGO AT NORTH BAY VILLAGE

PROJECT INTRODUCTION AND OVERVIEW

INDIGO at North Bay Village is a proposed multi-family residential development, consisting of 53 apartment units, amenities and internal parking facility located at 7914-16 West Drive on Harbor Island, in North Bay Village, Florida.



The site is approximately 0.77 acres (Lot 14, 16 and 18 – Harbor Island, P.B. 44, Pg. 72, M.D.C.R.) (See Location Map / Aerial Photo – Exhibit # 1A and B) excluding approximately 0.337 acres of submerged land within Biscayne Bay. The site borders Biscayne Bay on its westerly boundary and has approximately two hundred and forty linear feet (240 L.F.) of frontage along the Bay. The site is currently vacant; however, it was previously developed and contained two (2) condominium buildings with approximately 24 residential units. Based on prior aerial photography of the site, it is estimated that the buildings were razed during the period 2003 – 2004 in preparation for re-development. (See Boundary Survey – Exhibit # 2). The property is currently zoned High density Multiple-Family Residential RM-70 (See Zoning Map - Exhibit # 3) which allows for our proposed use.

In accordance with Chapter 4 of the North Bay Village Consolidated Land Development Regulations, an impact assessment report is required to demonstrate that the proposed development does not degrade the adopted levels of service in North Bay Village (NBV). This report will analyze the impact of our proposed development on the existing NBV's infrastructure

while taking into consideration credits for the pre-existing condominiums recently razed. In addition, this report will provide assurance that the level of service remains consistent with NBV's requirements.

PROJECT POPULATION:

The existing property, currently vacant, contained two (2) condominium building with a total of approximately 24 residential units (information based on aerial maps and similar development adjacent to the site). Our development proposes 53 residential condominium units. Based on a recommended rate of 2.25 people per unit by NBV, the net population increase due to this project is 66 people. See Table 1 below.

Table 1 - Population

Description	Units	No. of people / unit	Population
Indigo at NBV	53	2.25	120
Existing Condo. (demolished)	24	2.25	54
Net Increase	29		66

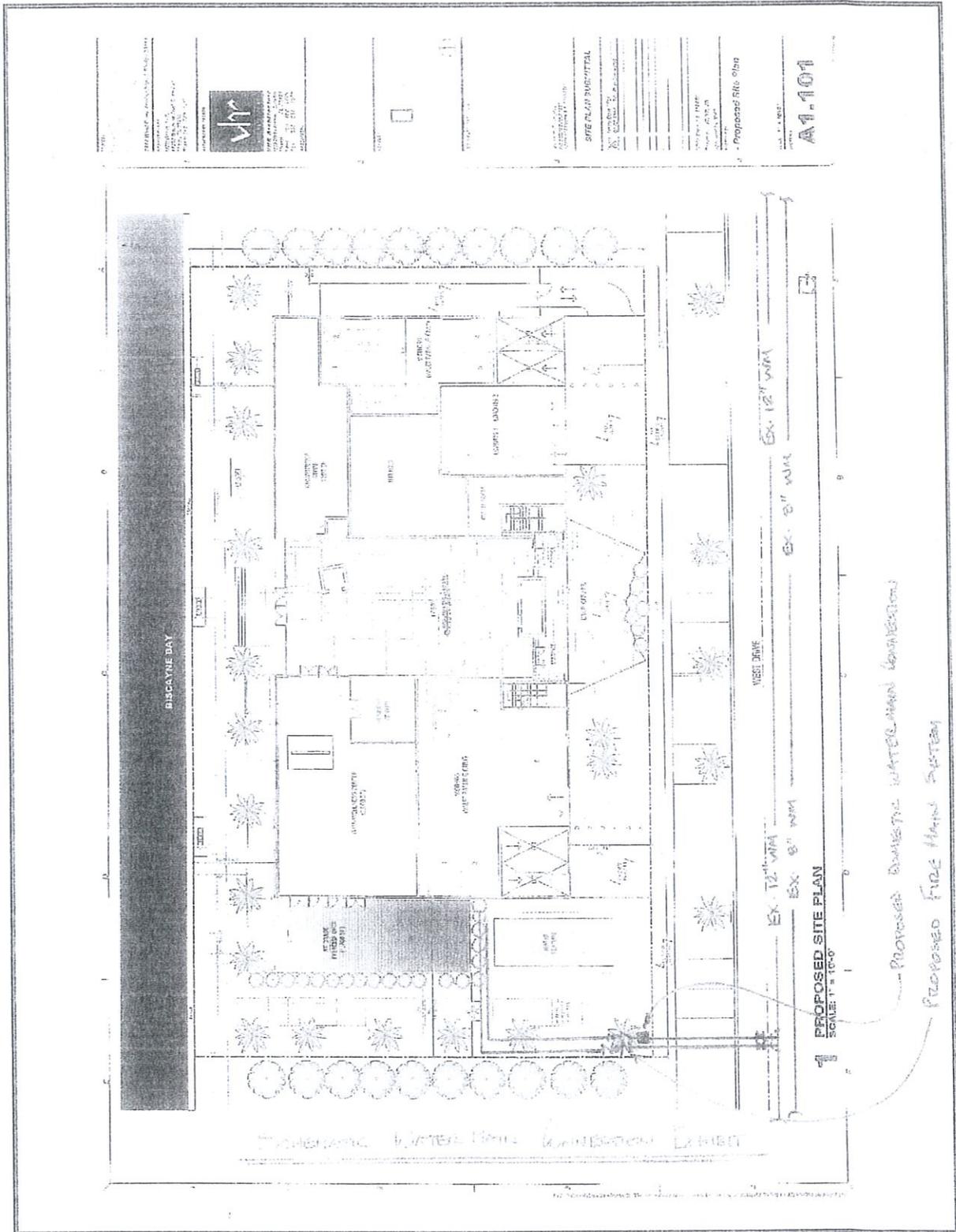
According to the United States Census Bureau (latest available data from the 2010 US Census), the population of North Bay Village is approximately 7,137 people. Indigo proposes an increase of 66 people, representing a net increase of approximately 0.92 % of the total population of North Bay Village.

POTABLE WATER DISTRIBUTION SYSTEM:

The City of North Bay Village obtains its potable water from a wholesale service agreement with the Miami-Dade Water and Sewer Department (MDWASD). Potable water is conveyed to North Bay Village via an existing 30 inch diameter water main, owned and serviced by the City of North Miami Beach Public Utilities.

Indigo at North Bay Village will be served via an existing 8" / 12" DIP water main running north-south along the east right-of-way of West Drive and connected to an existing 12" water main running along Kennedy Causeway (NE 79th Street). The proposed system (See Figure # 1 – Schematic Water Distribution Plan) will be designed in accordance with local, county and state criteria and will serve the potable and fire demand of the proposed development.

Figure 1 – Schematic Water Distribution System



Potable water consumption is calculated based on an estimation of 66.67 gpd / capita or 150 gpd / unit per the Miami-Dade County's Schedule of Daily Gallonage for Various Occupancy Regulations (See Table 2 below).

Table 2: Schedule of Daily Gallonage for Various Occupancy

<u>TYPES OF LAND USES</u>	<u>GALLONS PER DAY (GPD)</u>
RESIDENTIAL LAND USES	
Single Family Residence	220 gpd/unit (under 3000 sq. ft)
	320 gpd/unit (3001-5000 sq. ft.)
	550 gpd/unit (over 5,000 sq. ft.)
Townhouse Residence	180 gpd/unit
Apartment	150 gpd/unit
Mobile Home Residence/Park	180 gpd/unit
Duplex or Twin Home Residence	180 gpd/unit

Based on preliminary analysis of the water demand for Indigo, the proposed project would require an estimated water consumption of 7,950 GPD (53 units x 2.25 x 66.67 gpd/capita); however, a credit of 3,600 GPD (24 units x 2.25 x 66.67 gpd/capita) should be provided for the demolished twenty four (24) residential units resulting in net increase of 4,350 GPD or an increase of 0.91 % of North Bay Village's total potable water consumption. (See Table 3 below for Water Consumption calculation).

Table 3 – Water Consumption

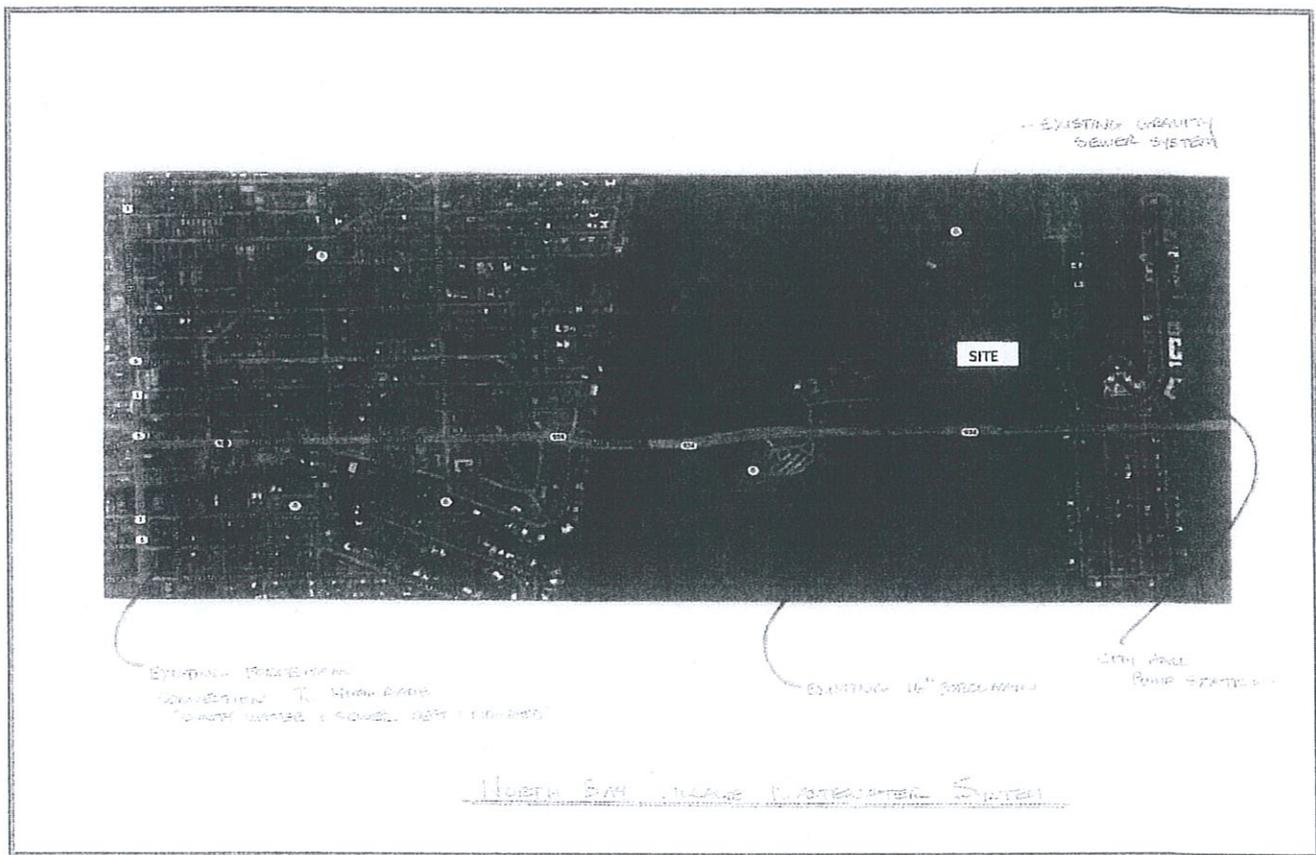
Description	Unit type	Residential units	Ave. capita per unit	Population	GPD/ Capita	Demand (GPD)
Existing Population (2010 US Census)				7,137	66.67	475,824
Water Demand from Indigo	Apartments	53	2.25	120	66.67	7,950
Credit for Demolished units	Apartments	24	2.25	54	66.67	3,600
Net Increase		29				4,350

In summary, the net increase in potable water demand due to our proposed development should have negligible impact on the City's existing water supply and distribution network.

WASTEWATER COLLECTION AND TRANSMISSION SYSTEM:

The proposed development will be served via an existing 8-inch gravity sewer system located on West Drive. Flow from the proposed development will connect to an existing system via proposed sewer lateral(s) with a direct connection to the existing 8-inch gravity main. This gravity main system, owned, operated and maintained by the City of North Bay Village, runs north-south along West Drive and conveys all flows to an existing Lift station called "City Hall Pump Station" located at 7903 East Drive. (See Figure 2- North Bay Village Wastewater System.) The City Hall Pump station is the main collector for Harbor Island. Flow from this station is then pumped west, via a 16-inch diameter forcemain to Pelican Island along NE 79th Street and then sub-aqueous, beneath Biscayne Bay, to a Miami-Dade Water and Sewer Department forcemain connection at the intersection of NE 80th Street and NE 7th Avenue. (See Figure 2 – North Bay Village Wastewater System.)

Figure 2 – North Bay Village Wastewater System



Based on a phone conversation with the City's Public Works Director, several upgrades to the City's wastewater pumping station has been made over the last several years and there is currently no moratoriums or capacity restrictions on their system. INDIGO proposes lateral sewer connections to the existing gravity sewer system on West Drive (See Figure # 3 – Schematic Sanitary Sewer Connection Exhibit)

Using an average rate of 2.25 people per unit and 66.67 gpd per person for sewage flows, the total increase in flow from Indigo at North Bay Village will be 4,350 GPD (See Table 4 – Wastewater Flow) or a flow increase of 0.91 %.

Table 4 – Wastewater Flow

Description	Unit type	Residential units	Ave. capita per unit	Population	GPD/ Capita	Demand (GPD)
Existing Population (2010 US Census)				7,137	66.67	475,824
Waste water from Indigo	Apartments	53	2.25	120	66.67	7,950
Credit for Demolished units	Apartments	24	2.25	54	66.67	3,600
Net Increase		29				4,350

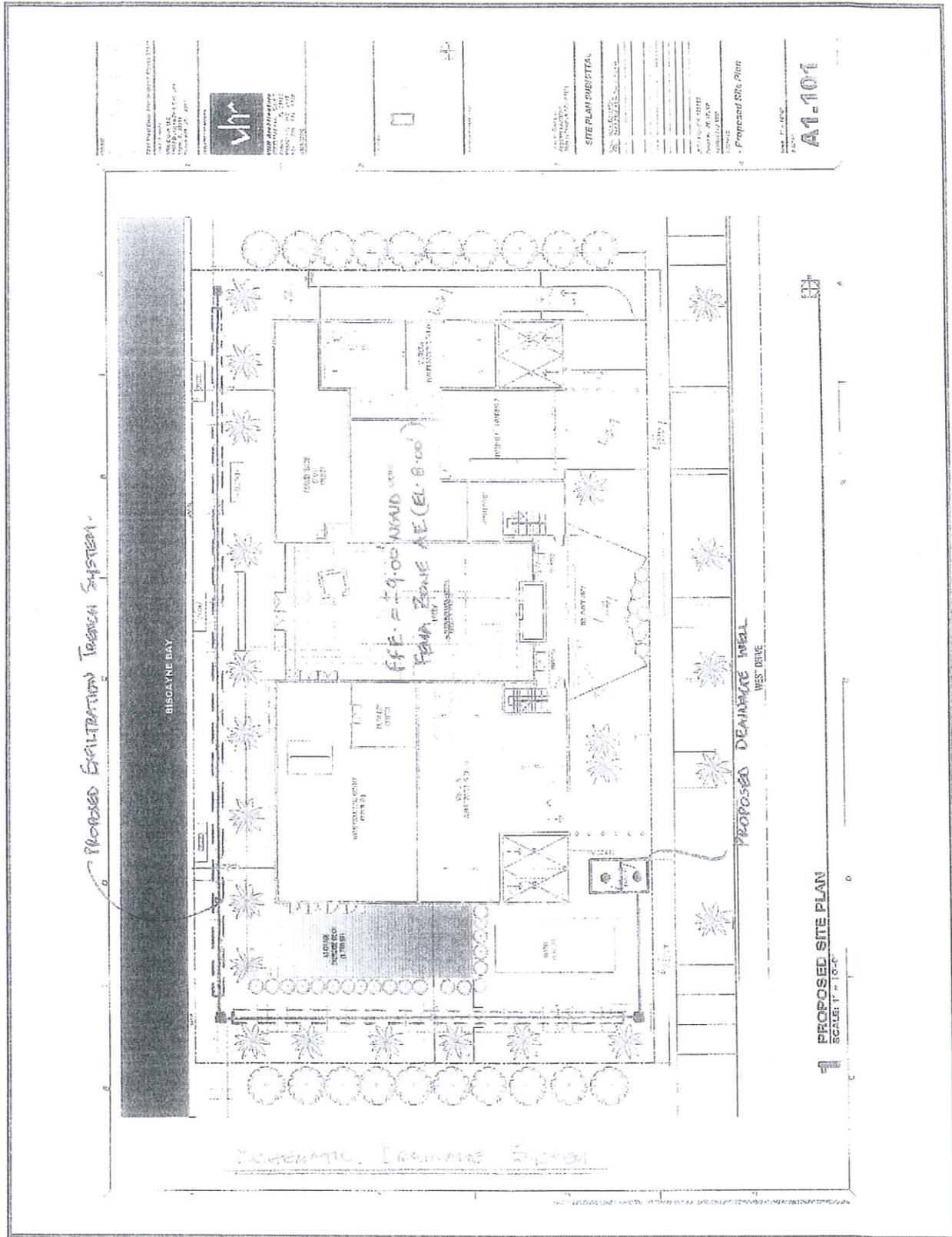
In summary, the proposed development should have minimal impact on the existing sanitary sewer system or receiving pump stations.

SURFACE WATER MANAGEMENT SYSTEM:

The proposed drainage system for INDIGO at North Bay Village will be private system and will consist of drainage wells in combination with exfiltration trench. Water quality and quantity will be provided within the exfiltration trench and drainage well systems and sized accordingly to the requirements of South Florida Water Management District (SFWMD), Miami-Dade County Permitting, Environment and Regulatory Affairs (PERA) and Florida Department of Environmental Protection (FDEP). Finish floor elevations has been set at elevation 9.00' NGVD which is higher than the FEMA Flood Zone elevation of AE = El. 8.00' (See Exhibit # 4 – FEMA Flood Zone Map). The perimeter berm elevation will be set in accordance with elevations generated by the 25 year / 3 day storm event and site grading parameters is in accordance with the previously permitted SFWMD / PERA permit issued for this site. (See Figure 4 – Schematic Drainage Plan). No discharge to Biscayne Bay is proposed at this time.

In summary, the proposed drainage system, once permitted and installed, will exceed the level of service mandated by the requirements of North Bay Village and other regulatory agencies.

Figure 4 – Schematic Drainage Plan



SOLID WASTE:

Solid waste generated from the proposed development has been calculated at 7 lbs per capita per day based on the City's Consolidate Land Development Regulations. (See Table 5 – Solid Waste Demand).

Table 5 – Solid Waste

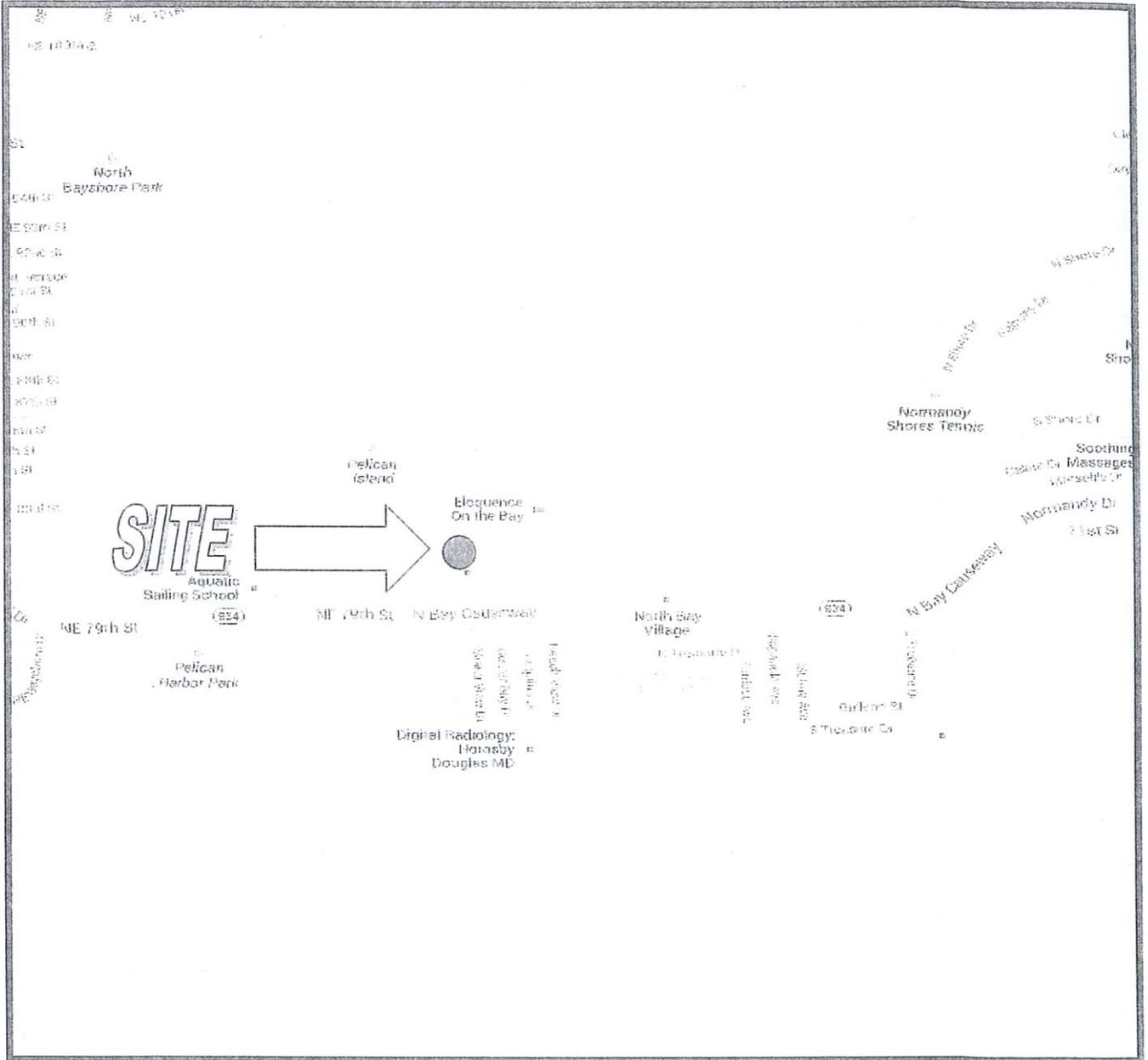
Description	Unit type	Residential units	Ave. capita per unit	Population	Lbs / capita	Demand (lbs)
Solid waste from Indigo	Apartments	53	2.25	120	7	840
Credit for Demolished units	Apartments	24	2.25	54	7	378
Net Increase		29				462

Based on the 2010 US census (7,137 people) and the above solid waste generation rate, an additional increase of 462 lbs or 0.92 % is projected. The minimal increase generated for this development should not have a detrimental impact on the existing capacity of the system.

SUMMARY:

In conclusion, based upon our review of the potable water distribution system, wastewater collection transmission system, surface water management and solid waste systems, it is our opinion that the additional demand required of the proposed development (INDIGO at North Bay Village) is not expected to adversely impact the existing infrastructure of North Bay Village and therefore recommend approval of the development based on the minimal increase to the overall system.

Exhibit 1 - Location Map / Aerial Photo



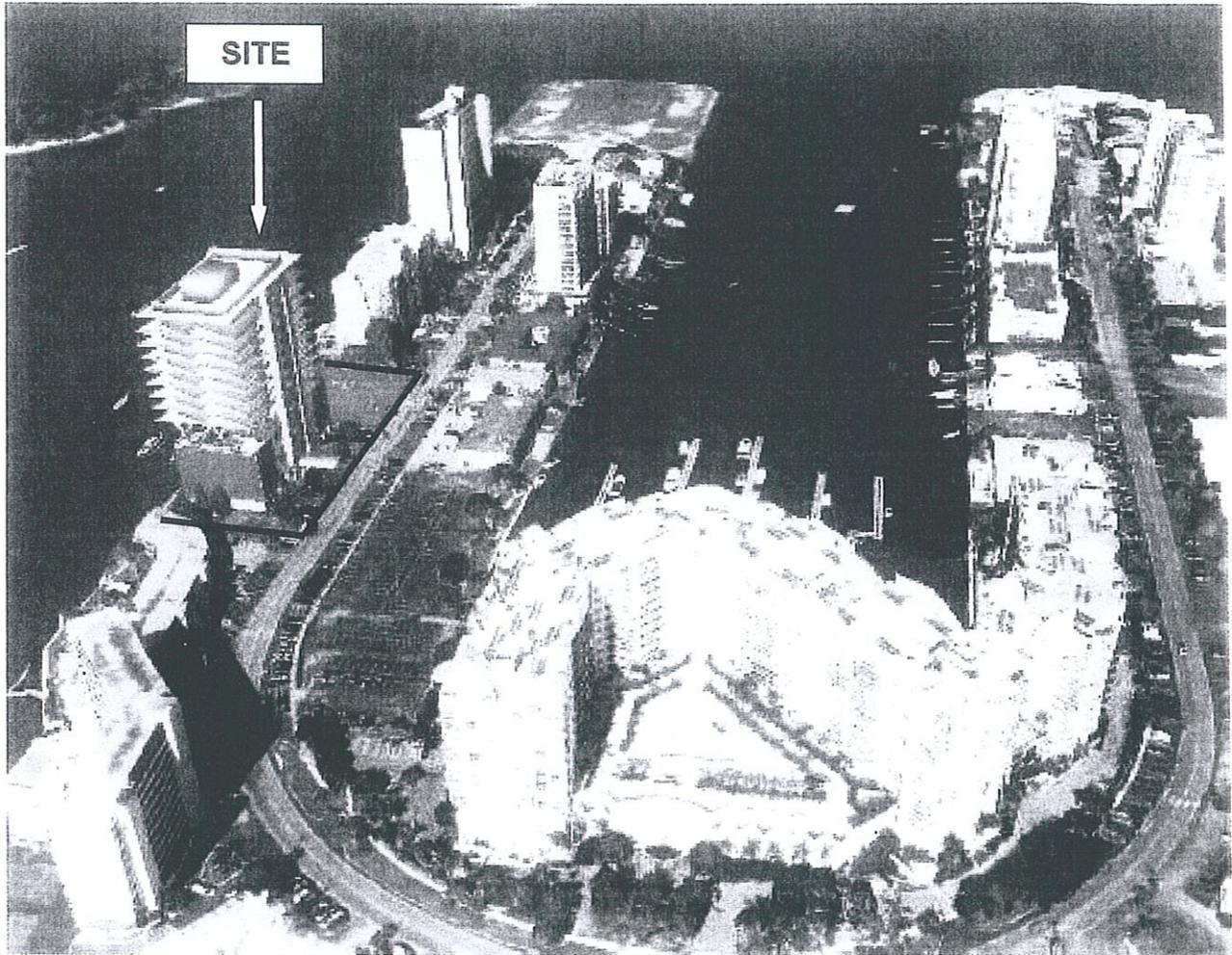


Exhibit 2 - Boundary Survey

Exhibit 2A - Boundary Survey

LEGAL DESCRIPTION:

A portion of Biscayne Bay, lying in Section 8, Township 53 South, Range 42 East, Village of North Bay Island, Miami-Dade County, Florida, being more particularly described as follows:

Commence at the Northwest corner of Lot 18, HARBOR ISLAND, according to the plat thereof, as recorded in Plat Book 44 at Page 72 of the Public Records of Miami-Dade County, Florida; thence S01°37'08"E along the West line of said Lot 18 for 14.50 feet to the Point of Beginning; thence continue S01°37'08"E along the West lines of Lots 18, 16 and 14, respectively, of said HARBOR ISLAND, for 204.00 feet; thence S88°22'52"W for 72.00 feet; thence N01°37'08"W along a 72.00 feet line West of and parallel to the West line of said Lots 14, 16 and 18, for 204.00 feet; thence N88°22'52"E for 72.00 feet to the Point of Beginning.

SURVEYOR'S NOTES:

- This site lies in Section 8, Township 53 South, Range 42 East, Village of North Bay Village, Miami-Dade County, Florida.
- All documents are recorded in the Public Records of Miami-Dade County, Florida unless otherwise noted.
- Lands shown hereon were NOT abstracted for easements and/or rights-of-way of records.
- Bearings hereon are referred to an assumed value of N 01°37'08" W for the centerline of West Drive.
- Submerged Lands shown hereon containing 14,688 square feet, or 0.337 acres, more or less.
- This is not a "Boundary Survey" but only a graphic depiction of the description shown hereon.
- Dimensions shown hereon are based on Fortin, Leavy, Skiles, sketch #2005-057.

SURVEYOR'S CERTIFICATION:

I hereby certify that this "Sketch of Description" was made under my responsible charge on October 12, 2011, and meets the applicable codes as set forth in the Florida Administrative Code, pursuant to Section 472.027, Florida Statutes.

"Not valid without the signature and the original raised seal of a Florida Licensed Surveyor and Mapper"

FORTIN, LEAVY, SKILES, INC., LB3653

By: 
 Daniel C. Fortin, For The Firm
 Surveyor and Mapper, LS2853
 State of Florida.

SUBMERGED LAND LEASE PARCEL

<table border="1"> <tr> <td>Drawn By</td> <td>REP</td> </tr> <tr> <td>Cad. No.</td> <td>100737</td> </tr> <tr> <td>Ref. Dwg.</td> <td>1006-069/060589</td> </tr> <tr> <td>REV: 10/14/11</td> <td>111029 MAP</td> </tr> <tr> <td>Plotted:</td> <td>10/14/11 4:44p</td> </tr> </table>	Drawn By	REP	Cad. No.	100737	Ref. Dwg.	1006-069/060589	REV: 10/14/11	111029 MAP	Plotted:	10/14/11 4:44p	<p>DESCRIPTION, NOTES & CERTIFICATION</p> <p>FORTIN, LEAVY, SKILES, INC. CONSULTING ENGINEERS, SURVEYORS & MAPPERS FLORIDA CERTIFICATE OF AUTHORIZATION NUMBER: 00003653 180 Northeast 168th Street / North Miami Beach, Florida 33162 Phone 305-652-4492 / Fax 305-651-7152 / Email fls@flsurvey.com</p>	<table border="1"> <tr> <td>Date</td> <td>10/12/11</td> </tr> <tr> <td>Scale</td> <td>NONE</td> </tr> <tr> <td>Job No.</td> <td>20100737</td> </tr> <tr> <td>Dwg. No.</td> <td>1010-055-1</td> </tr> <tr> <td>Sheet</td> <td>1 of 3</td> </tr> </table>	Date	10/12/11	Scale	NONE	Job No.	20100737	Dwg. No.	1010-055-1	Sheet	1 of 3
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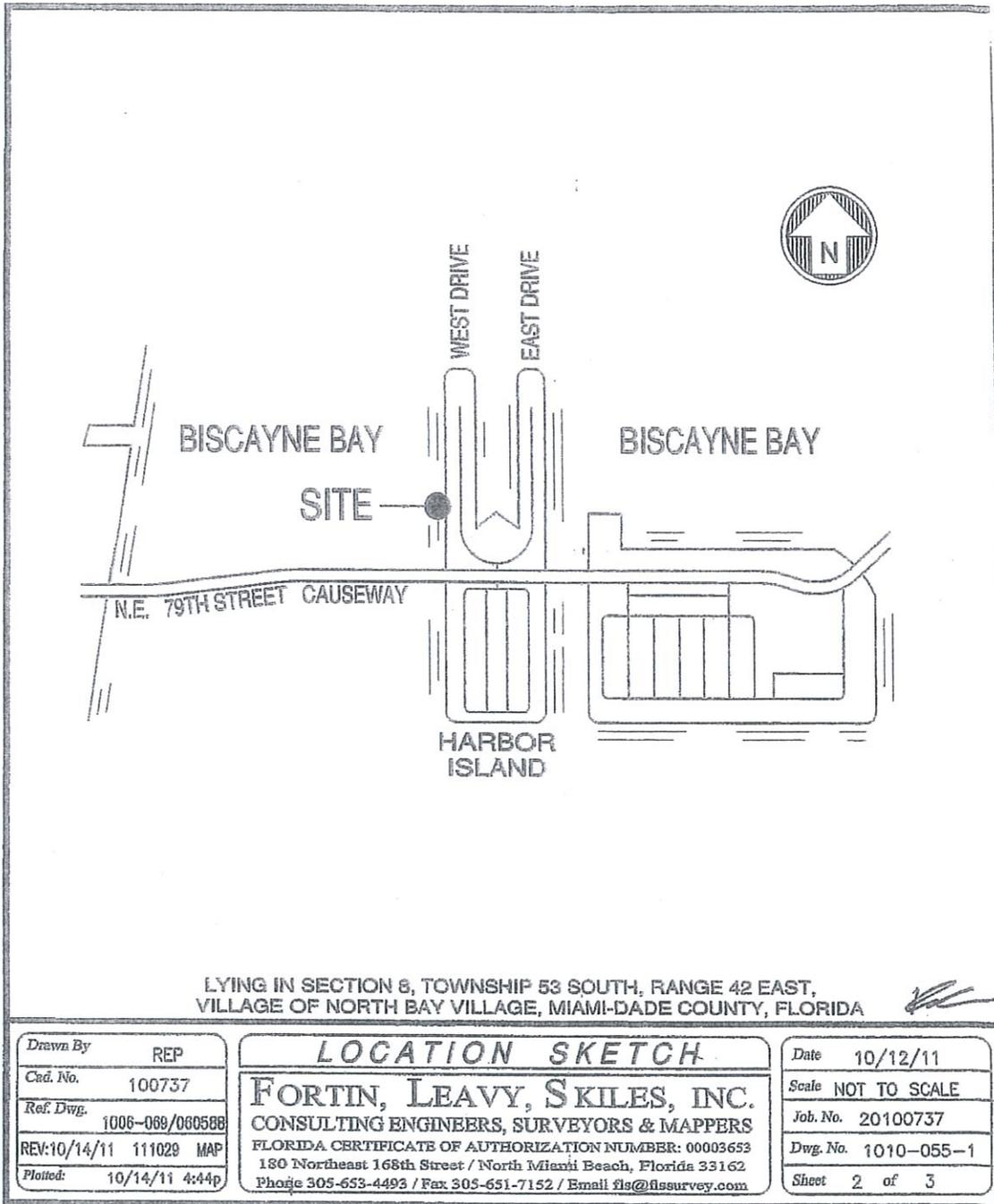
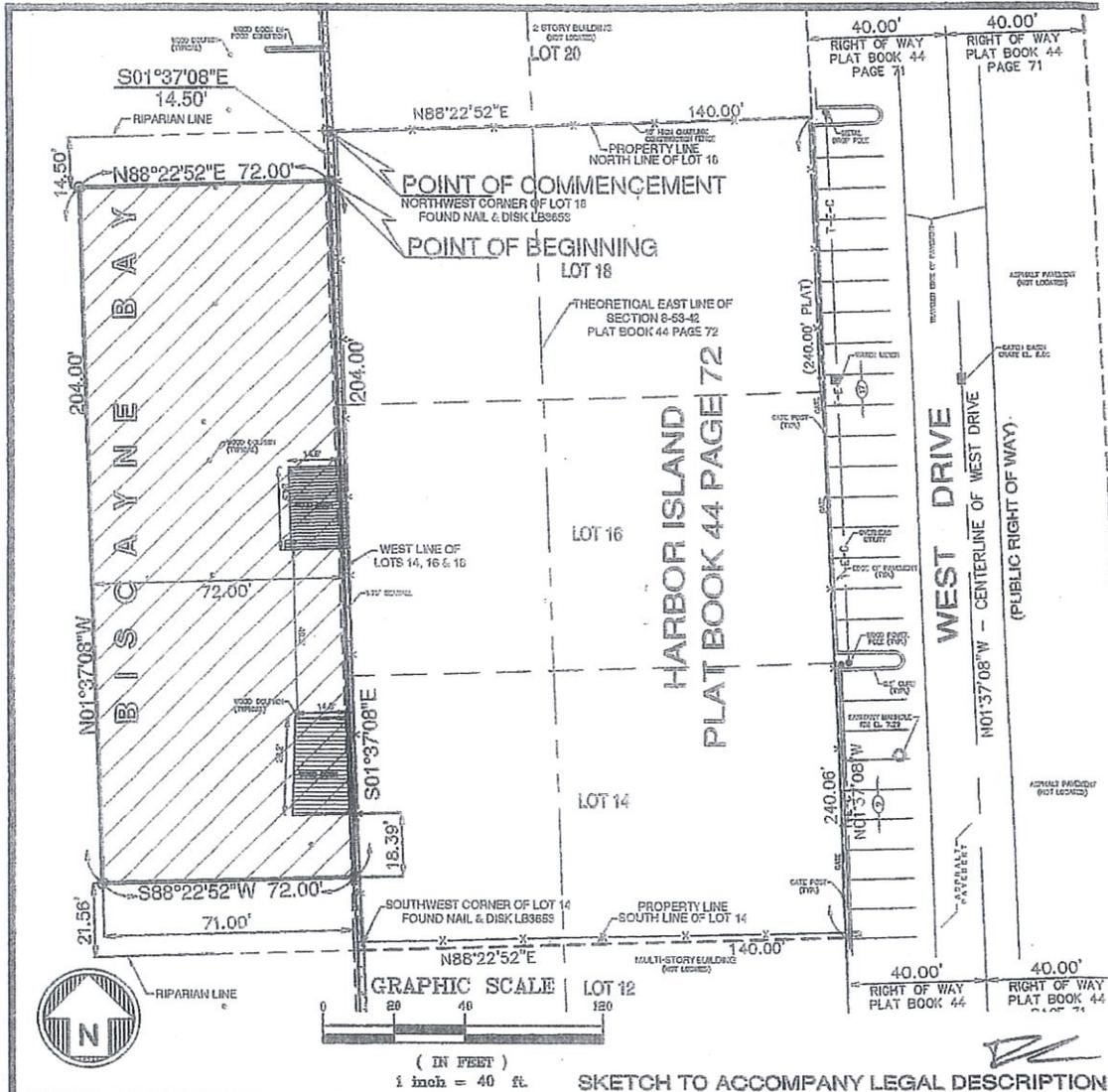


Exhibit 2C - Boundary Survey



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Cad. No.	100737
Ref. Dwg.	1006-069/060588
REV:10/14/11	111029 MAP
Plotted:	10/14/11 4:44p

SKETCH OF DESCRIPTION

FORTIN, LEAVY, SKILES, INC.
 CONSULTING ENGINEERS, SURVEYORS & MAPPERS
 FLORIDA CERTIFICATE OF AUTHORIZATION NUMBER: 00003653
 180 Northeast 168th Street / North Miami Beach, Florida 33162
 Phone 305-653-4493 / Fax 305-651-7152 / Email fls@flssurvey.com

Date	10/12/11
Scale	1" = 40'
Job. No.	20100737
Dwg. No.	1010-055-1
Sheet	3 of 3

Exhibit 3 - Zoning Map

Exhibit 3 - NBV's Zoning Map

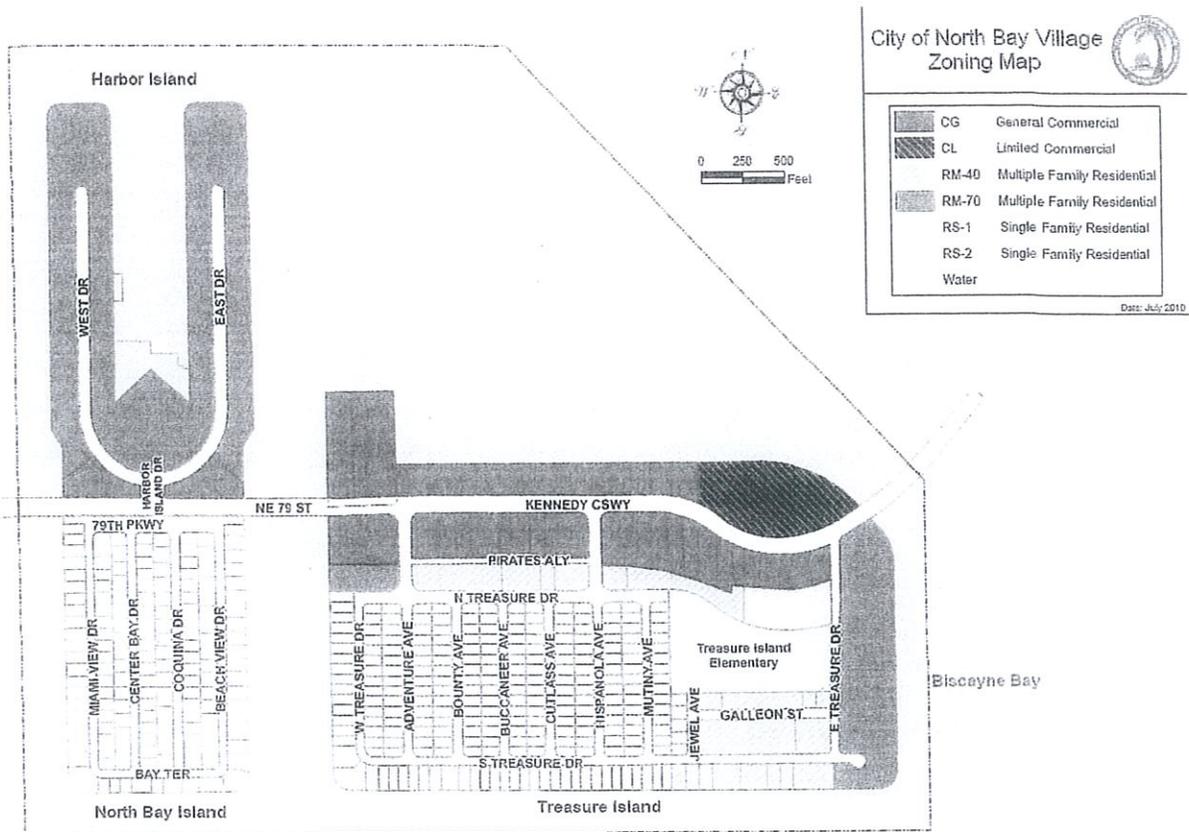


Exhibit 4 - FEMA Flood Zone Map

Exhibit 4 - FEMA Flood Zone Map

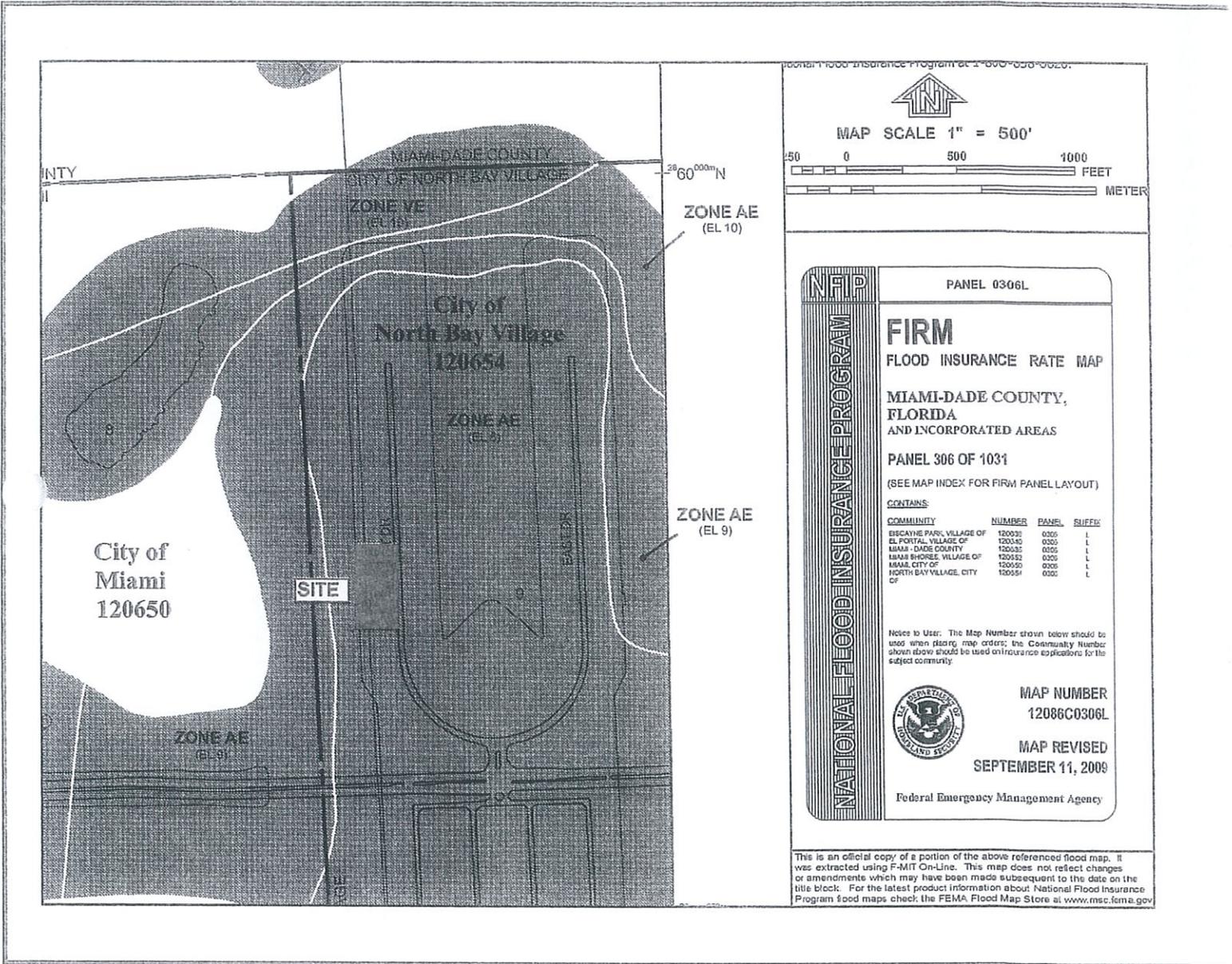


Exhibit 5 - Schematic Engineering Plans

Exhibit 5 - Schematic Engineering Plans

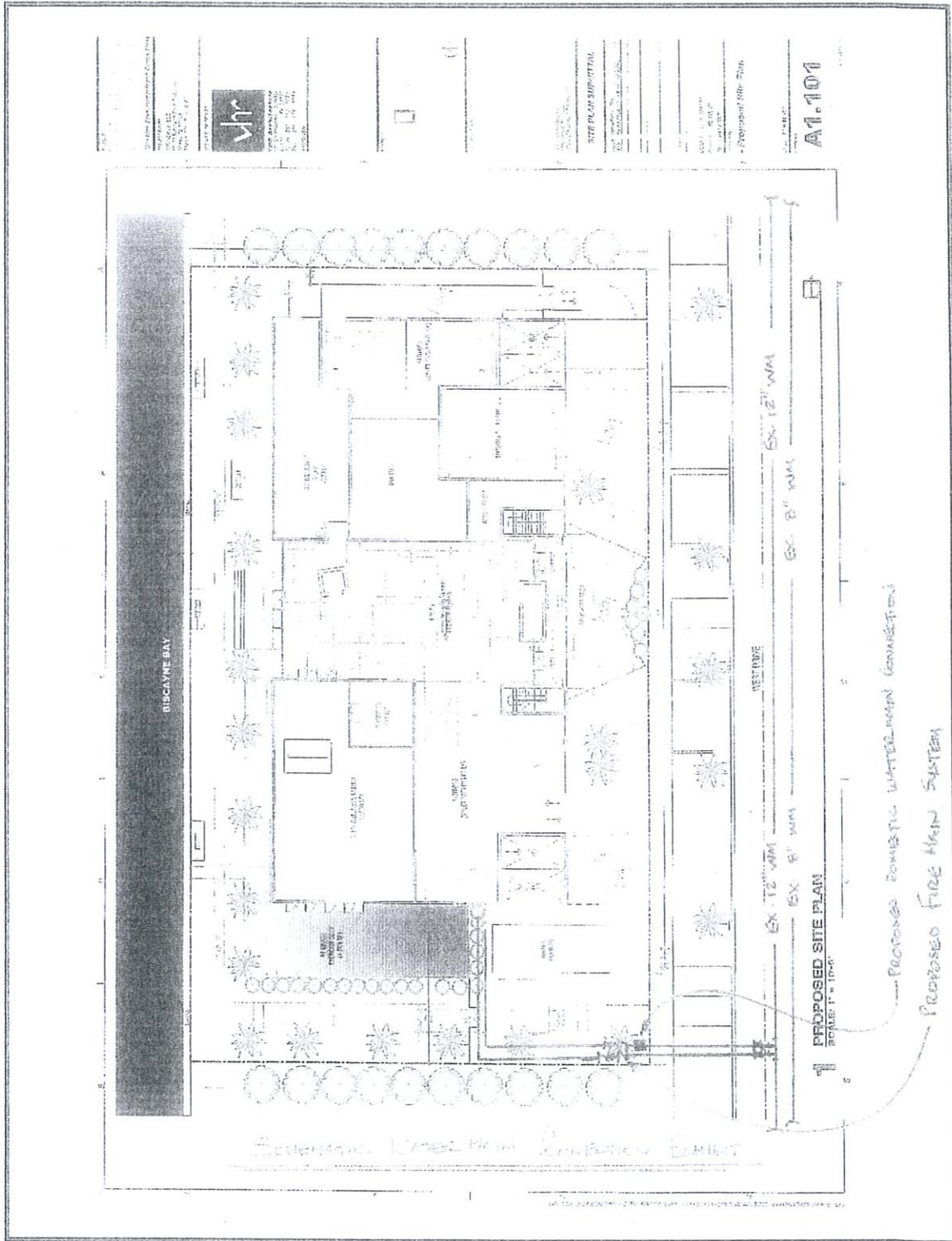


Exhibit 5 - Schematic Engineering Plans

