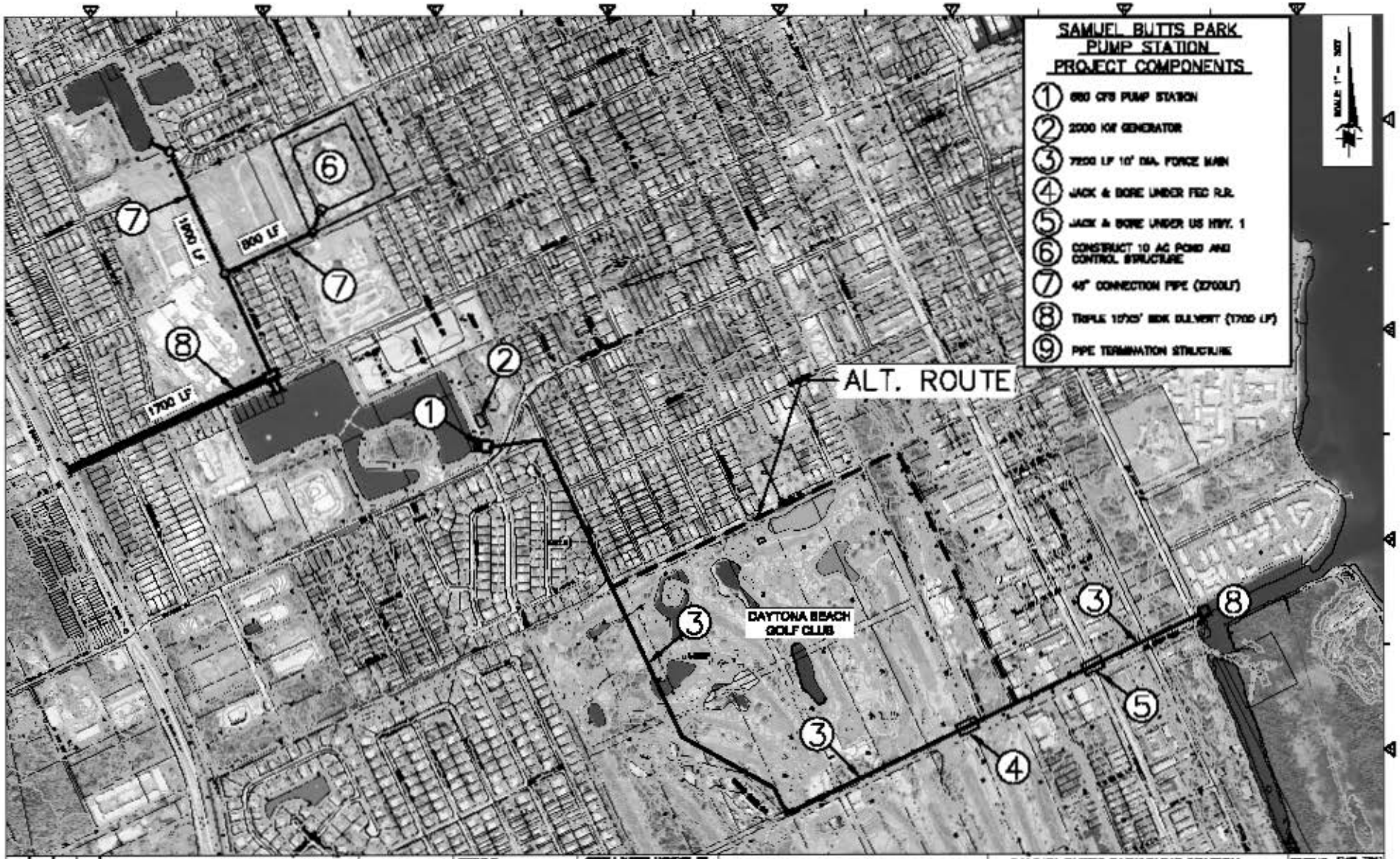
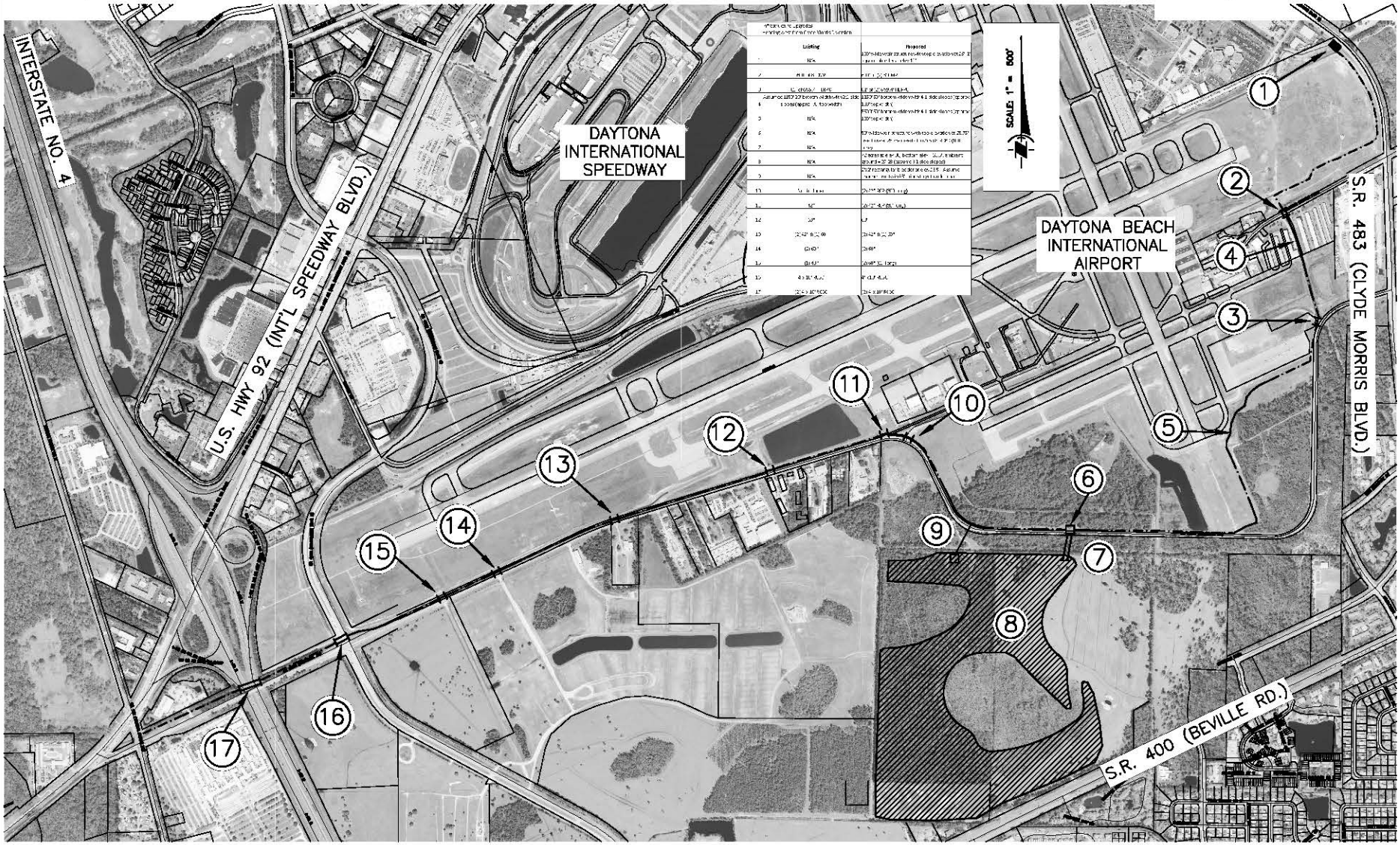

SAMUEL BUTTS PARK
PUMP STATION
PROJECT COMPONENTS
1 680 CFS PUMP STATION
2 2000 KW GENERATOR
3 7200 LF 10" DIA. FORCE MAIN
4 JACK & BORE UNDER FEC R.R.
5 JACK & BORE UNDER US HWY. 1
6 CONSTRUCT 10 AC POND AND CONTROL STRUCTURE
7 48" CONNECTION PIPE (2700LF)
8 TRIPLE 10'X5' BOX CULVERT (1700 LF)
9 PIPE TERMINATION STRUCTURE
ALT. ROUTE
DAYTONA BEACH GOLF CLUB
1700 LF
1000 LF
800 LF
NOVA CANAL FLOOD CONTROL
SAMUEL BUTTS PARK PUMP STATION
FORCE MAIN TO HALIFAX RIVER
ALONG WILDER BLVD.
(PROJECT COMPONENT 3)
10
PRELIMINARY



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3	[illegible]	[illegible]
4	[illegible]	[illegible]
5	N/A	[illegible]
6	N/A	[illegible]
7	N/A	[illegible]
8	N/A	[illegible]
9	N/A	[illegible]
10	[illegible]	[illegible]
11	[illegible]	[illegible]
12	[illegible]	[illegible]
13	[illegible]	[illegible]
14	[illegible]	[illegible]
15	[illegible]	[illegible]
16	[illegible]	[illegible]
17	[illegible]	[illegible]

REV. NO.	DATE	DRAWN	CHKD	REMARKS

DESIGNED BY: X
DRAWN BY: X
SHEET CHK'D BY: X
CROSS CHK'D BY: X
APPROVED BY: X
DATE: NOVEMBER 2008

CDM
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CHERRY L. HAMPTON ASSOCIATES, INC.
CONSULTING ENGINEERS
[illegible]

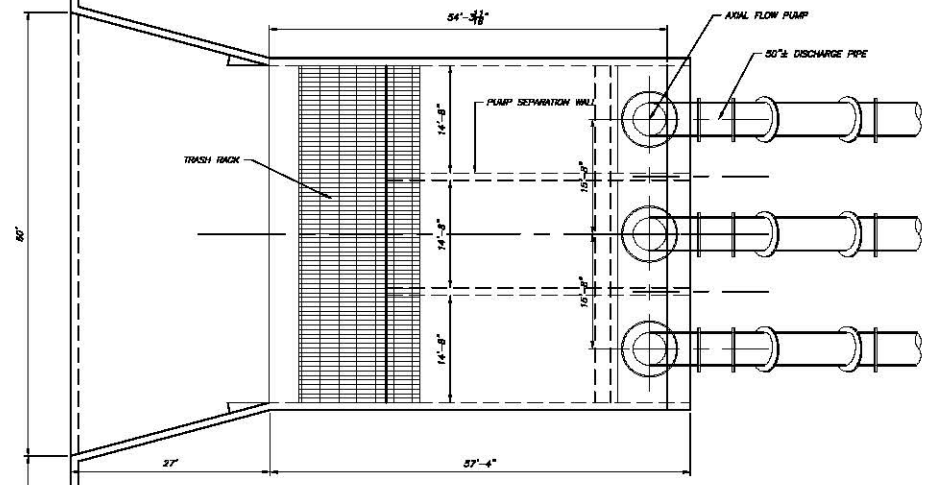
EASTERN VOLUSIA REGIONAL WATER AUTHORITY
VOLUSIA COUNTY, FLORIDA

NOVA CANAL FLOOD CONTROL

NAVY CANAL DIVERSION

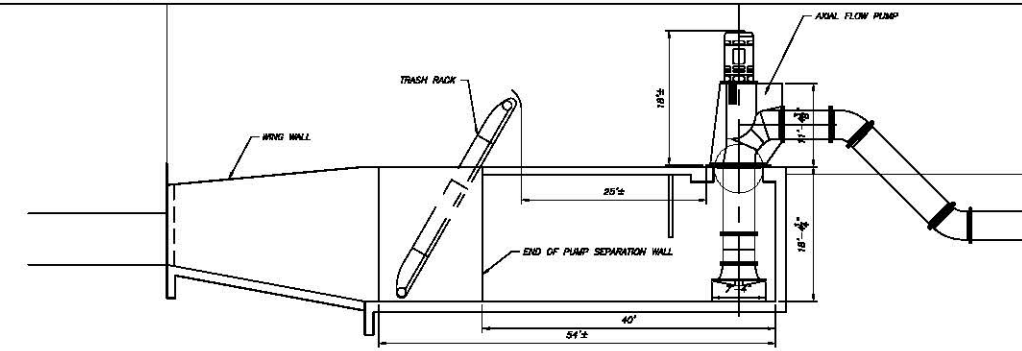
PROJECT NO. 67458-73553
FILE NAME: XXXXXXXX
SHEET NO. 11

PRELIMINARY



PLAN - TYPICAL PUMP STATION - 300 to 600 cfs

SCALE: 1-1/2"=1'



SECTION - TYPICAL PUMP STATION - 300 to 600 cfs

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: X
DRWN BY: X
SHEET CHK'D BY: X
CROSS CHK'D BY: X
APPROVED BY: X
DATE: NOVEMBER 2003

CDM
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2301 Maitland Center Parkway, Suite 300
Maitland, FL 32751
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FL COA No. EB-0000080
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CHENEY & HAMPTON ASSOCIATES INC.
CONSULTING ENGINEERS
1401 DAYTONA AVENUE, PORT ORANGE, FLORIDA 32129-6812
www.chenyinc.com
WARD A. HAMPTON, P.E. 22281
SHELLY T. BLAIR, P.E. 47136
DAVID A. KING, P.E. 52939
ANDREW S. CHENEY, P.E. 18021
FLORIDA CERTIFICATE OF AUTHORIZATION No. 5.88
PHONE (386) 761-2600 FAX (386) 761-2607
P.O. DRAWER 1000, PORT ORANGE, FLORIDA 32128-6817

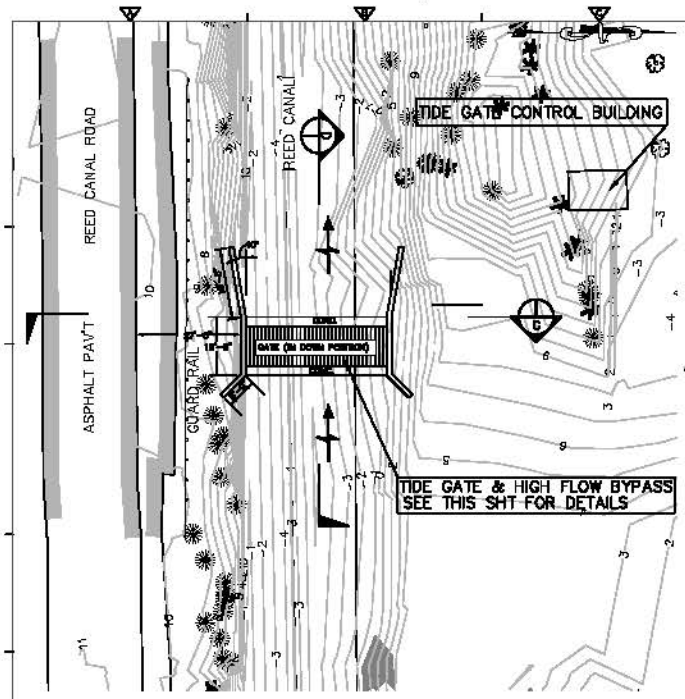
EASTERN VOLUSIA REGIONAL WATER AUTHORITY
VOLUSIA COUNTY, FLORIDA

NOVA CANAL FLOOD CONTROL

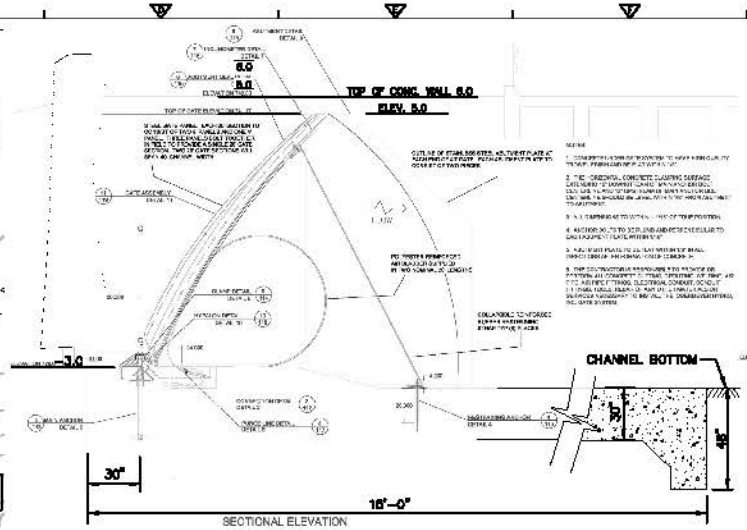
TYPICAL PUMP STATION PLAN
AND SECTION
FOR 300 TO 600 CFS PUMP
(LPGA, SAM BUTTS, NORTH ST, REED CANAL)

PROJECT NO. 87458-73653
FILE NAME: XXXXXXXX
SHEET NO.
12

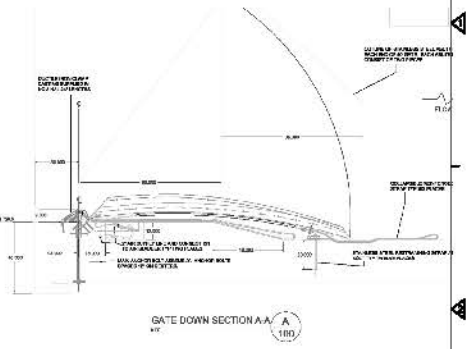
PRELIMINARY

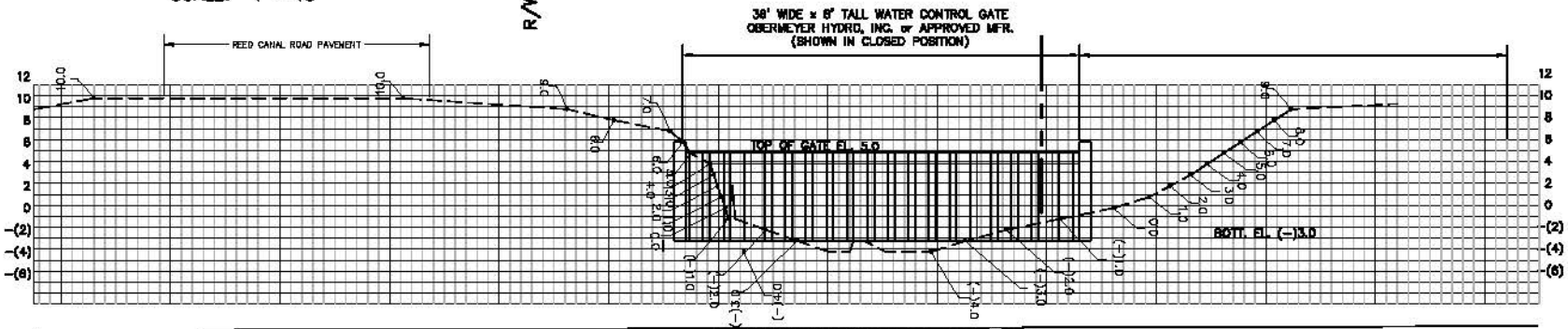


PLAN
SCALE: 1"= 15'



SECTIONAL ELEVATION (D)
NTS





REED CANAL CROSS SECTION (C)
SCALE: 1"= 5'

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K
DRAWN BY: K
SHEET CHK'D BY: K
GROUP CHK'D BY: K
APPROVED BY: K
DATE: NOVEMBER 2003

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Tel (407) 660-2600
FL COA No. 00-000666
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FAX (352) 365-4651 FAX (352) 75-4651
FLORIDA CERTIFICATE OF AUTHORIZATION NO. 00-

EASTERN VOLUSIA REGIONAL WATER AUTHORITY
VOLUSIA COUNTY, FLORIDA

NOVA CANAL FLOOD CONTROL

TIDE GATE DETAIL
REED CANAL

PROJECT NO. 87408-73383
FILE NAME: [illegible]
SHEET NO.
13

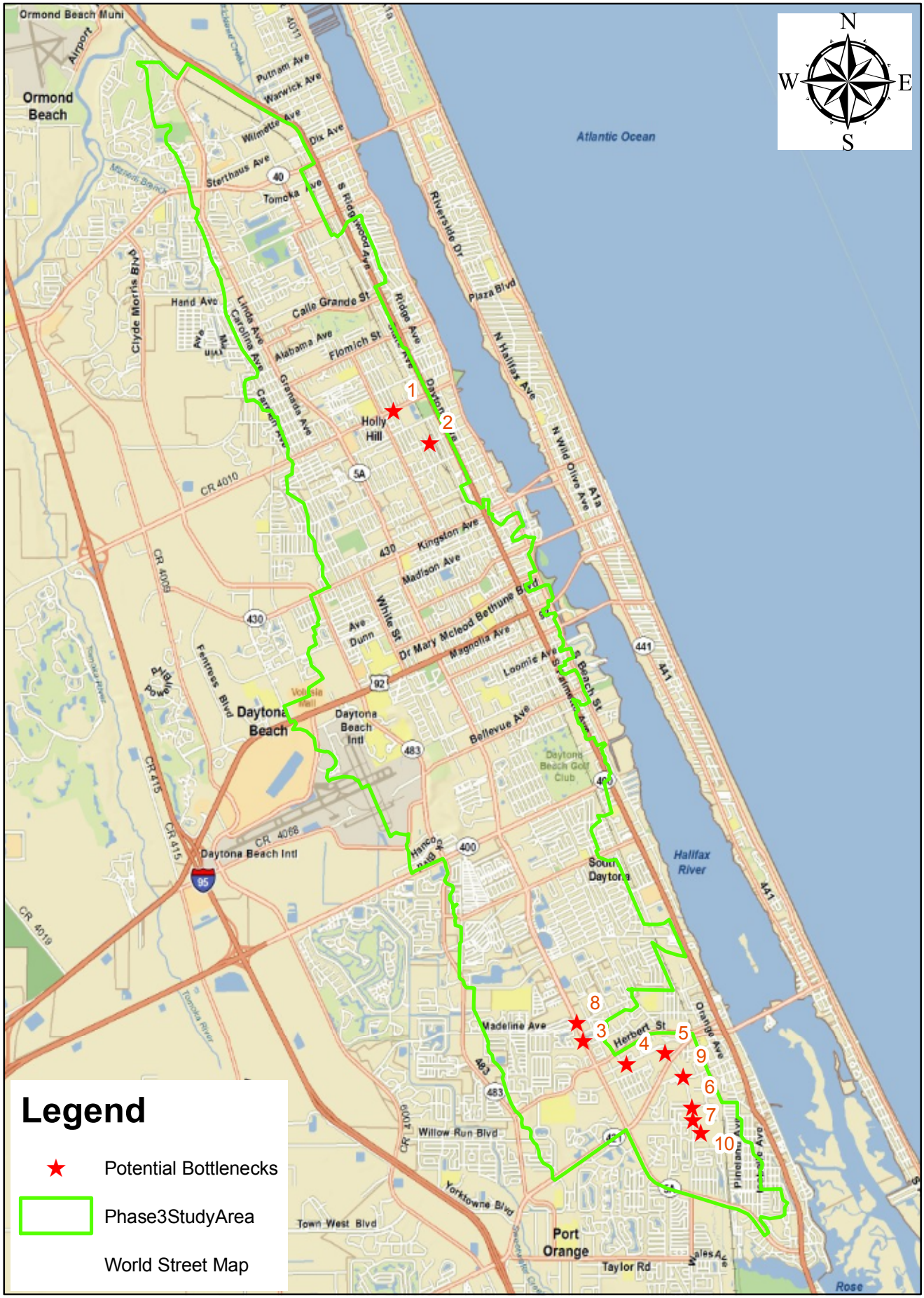
PRELIMINARY

Appendix E

Bottleneck Identification in the Primary System

Potential Bottlenecks Identified and Further Reviewed

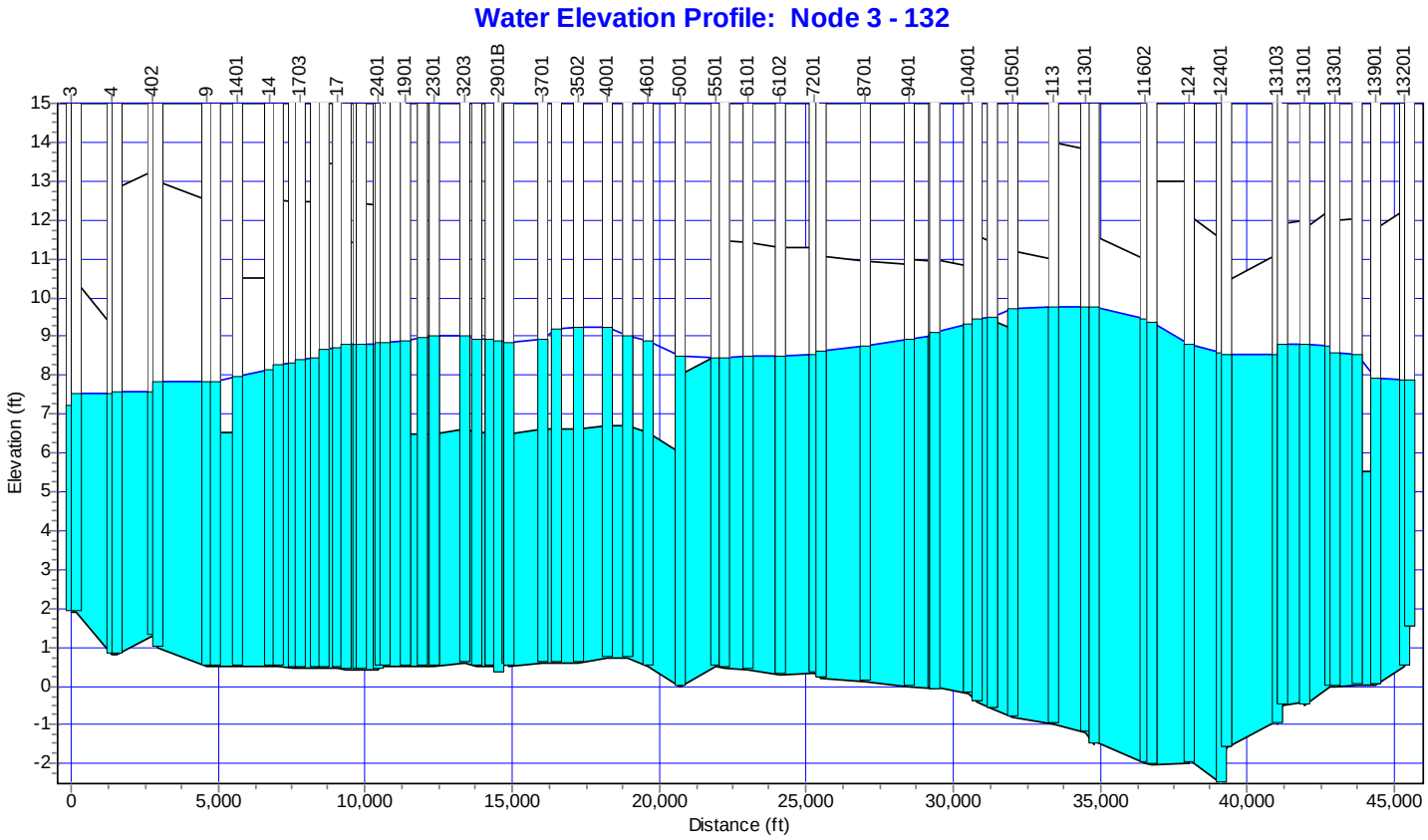
Id	Conduit	System	US_Node	DS_Node	Description	Action
1	80112	LPGA	1101	1102	5-foot by 16-foot Arch CMP under Alta Drive	Field Verified & Eliminated
2	80165	LPGA South Branch	1603	13	43-inch by 68-inch Arch CMP under 8th Street	Field Verified & Eliminated
3	81393	Nova	13902	13901	66-inch RCP under Nova Road between Madeline and Gordon	Bottleneck
4	21	Halifax	1381	138	3-foot by 6.8-foot box culvert under Ryanwood	Bottleneck
5	23	Halifax	2301HAL	134	42-inch CMP under Powers	Field Verified & Eliminated
6		Halifax	NA	NA	Halifax Canal under Eastport Parkway	Field Verified & Eliminated
7	37	Halifax	1030	150	48-inch culvert under private driveway	Field Verified & Eliminated
8	81332	Reed	13301	12901	Nova under Madeline	Field Verified & Eliminated
9	29	Halifax	141	2901HAL	Halifax under Oak Street	Field Verified & Eliminated
10	n/a	Halifax	n/a	n/a	Buschman Pond added to model	Field Verified & Eliminated



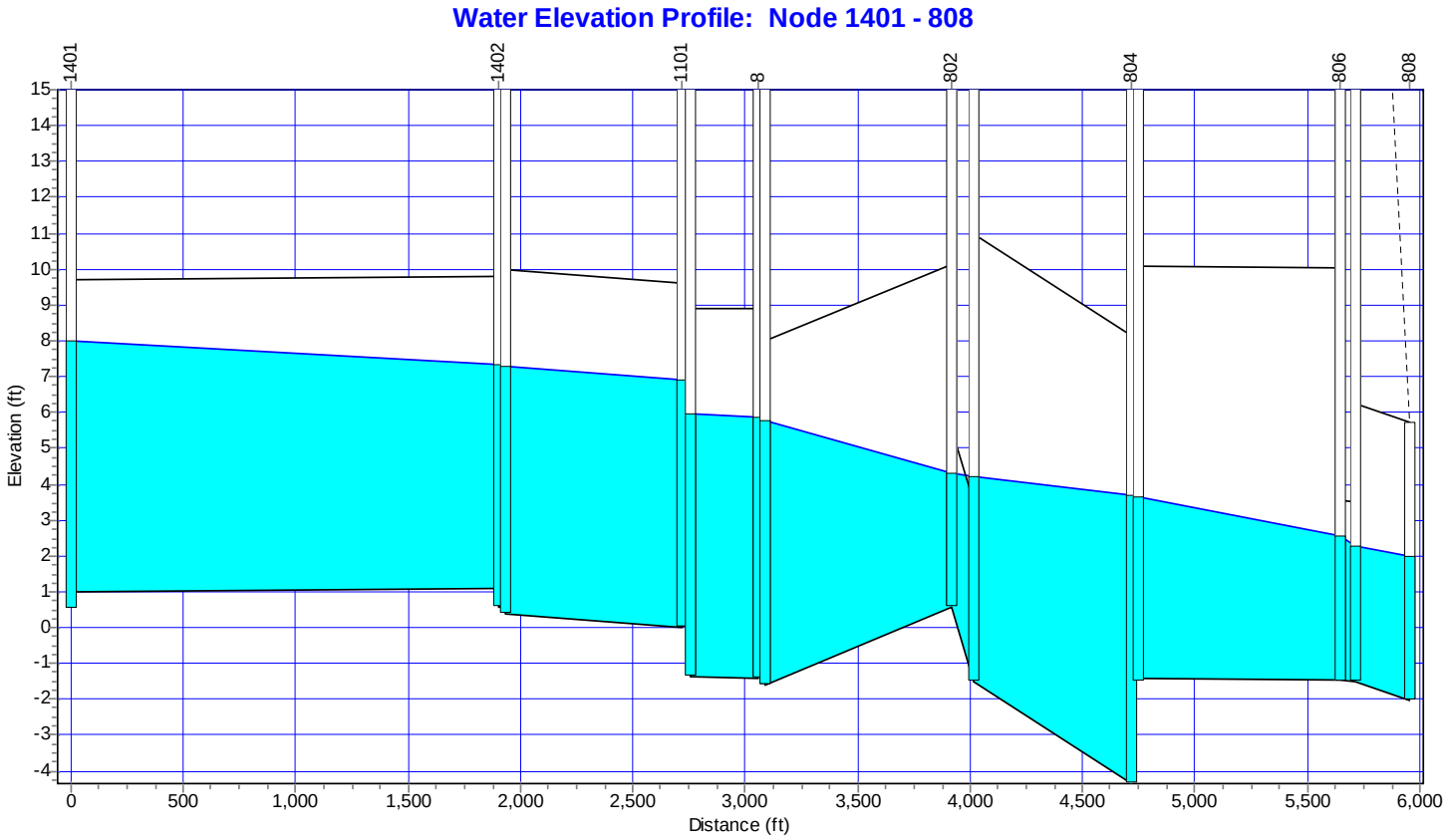
Thursday, November 5, 2009 8:38:08 AM Z:\87458_EVRWA\73553_(NovaCanal)\GIS\Base Map.mxd

CDM	East Volusia Regional Water Authority (EVRWA)	**Figure 1** Nova Canal Flood Control and Integrated Water Resources Program Potential Bottlenecks	UPDATED 8-19-10

NOVA ROAD NORTH BASIN EXISTING LAND USE



NOVA ROAD NORTH BASIN EXISTING LAND USE



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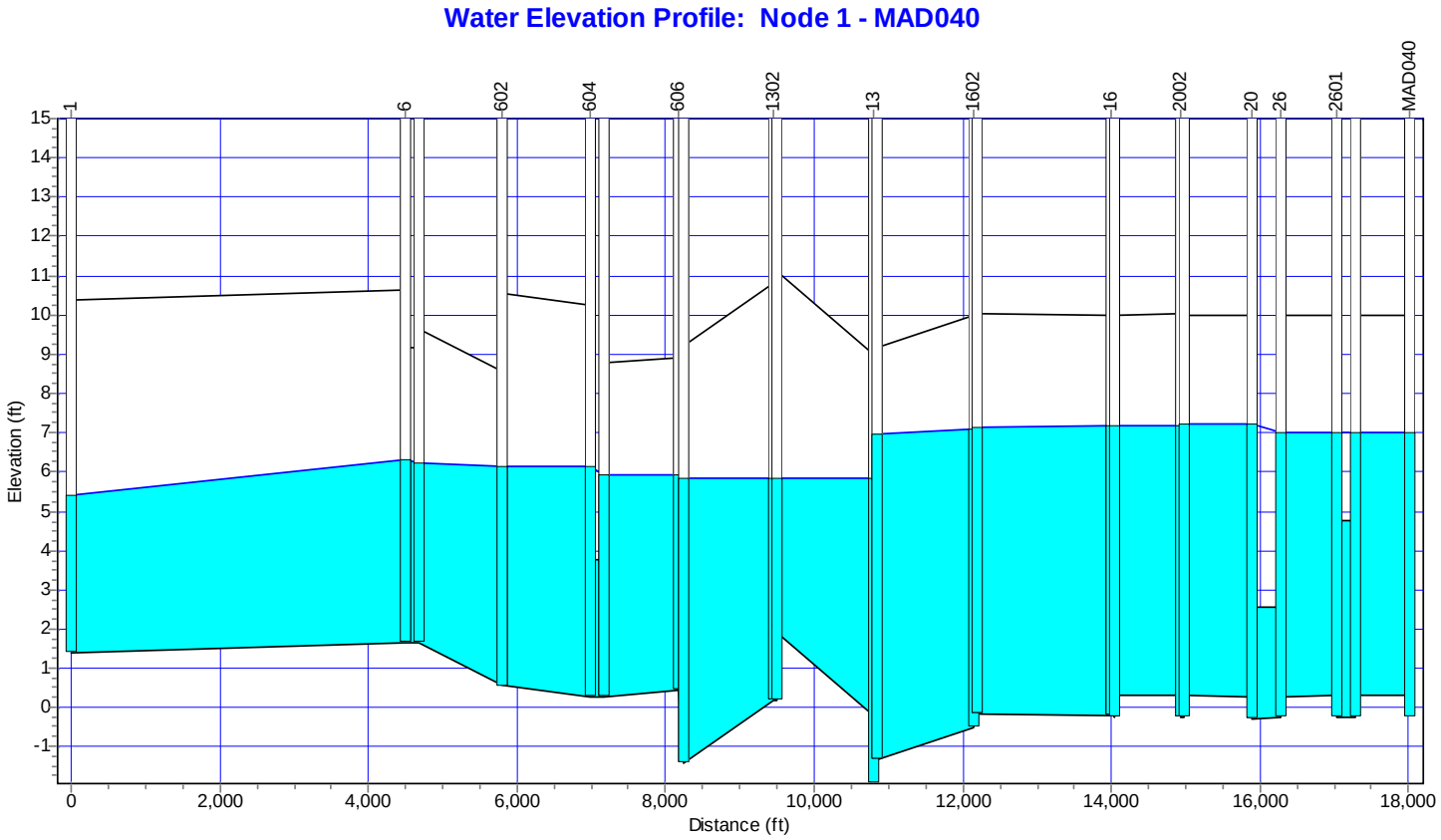
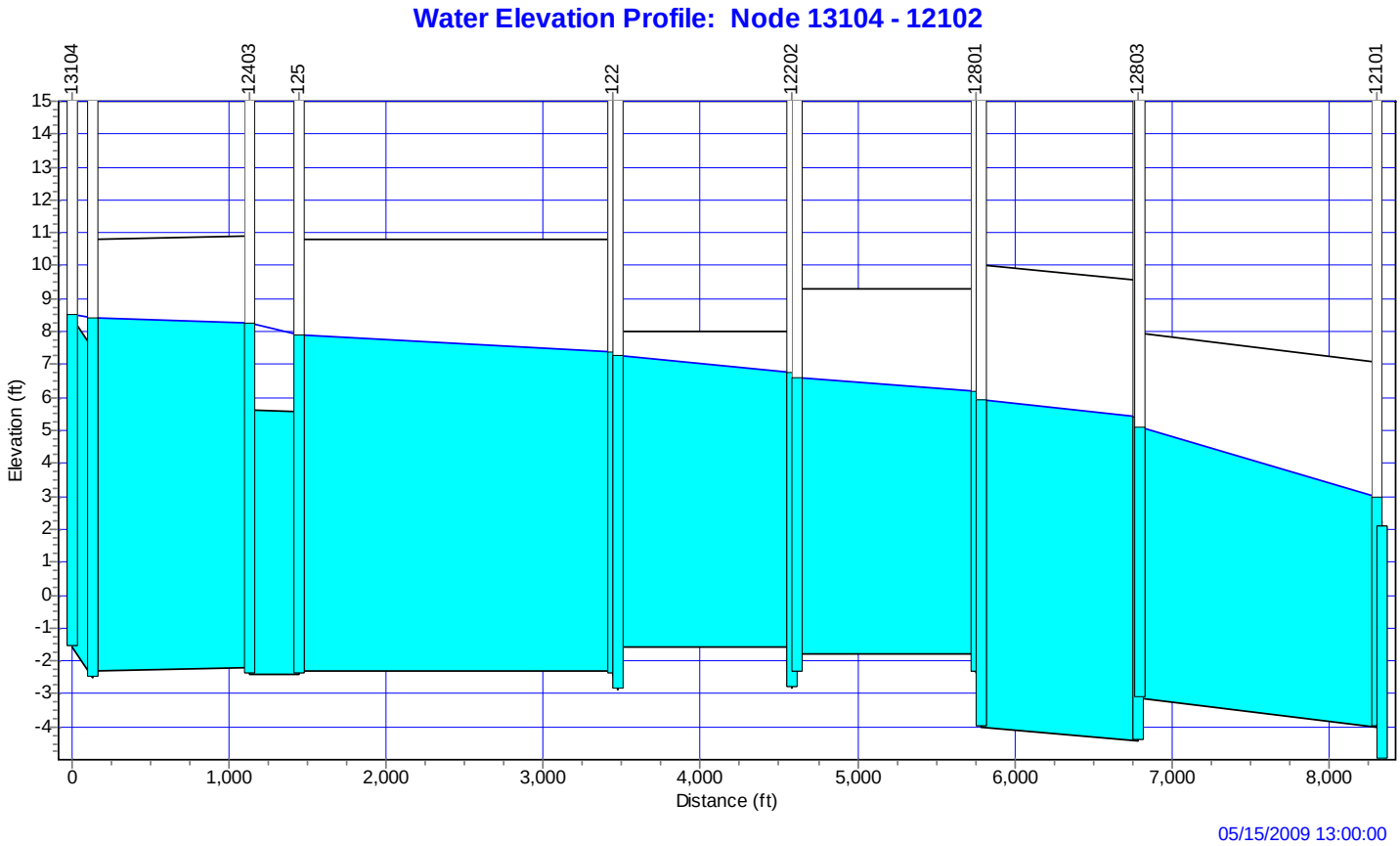


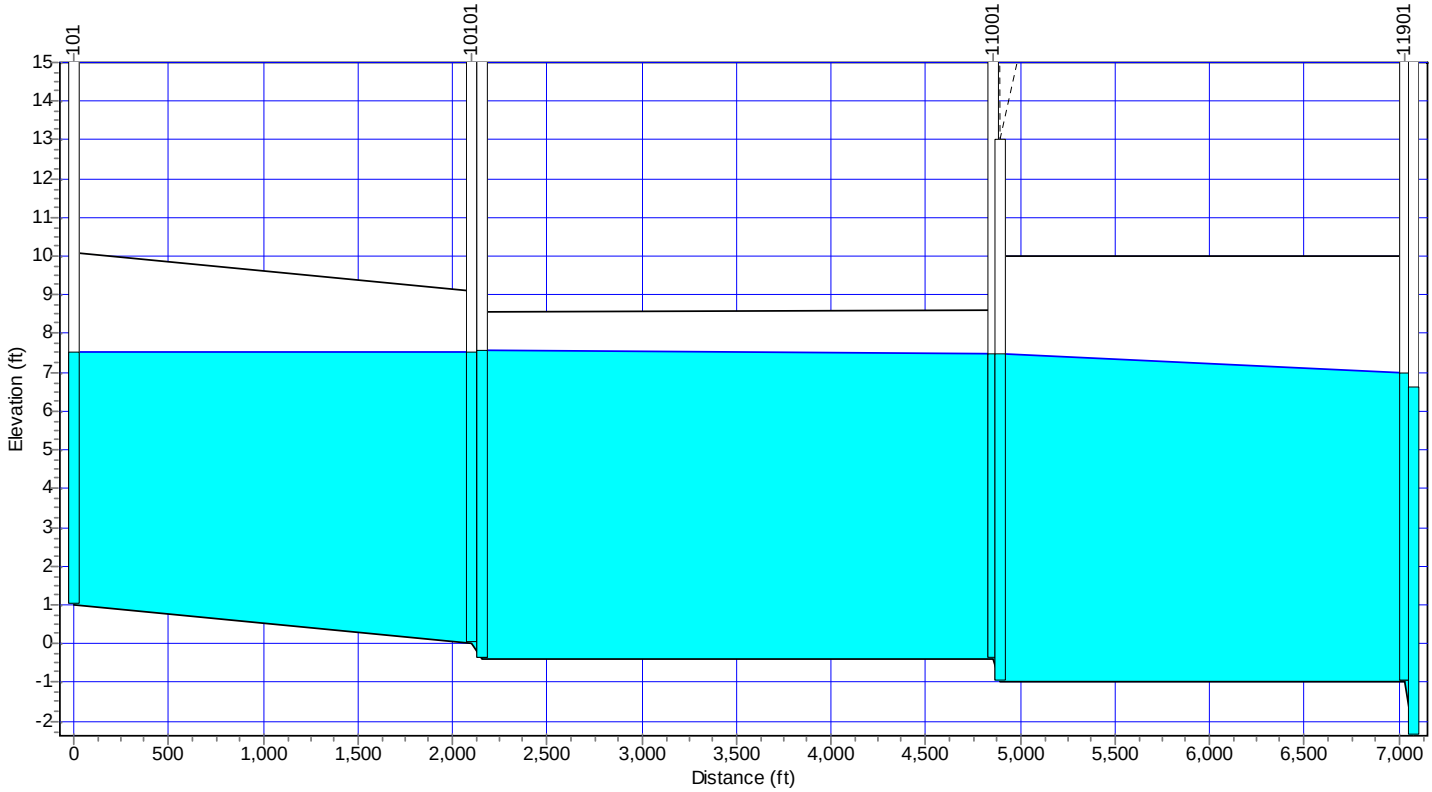
NOVA ROAD NORTH BASIN EXISTING LAND USE



05/15/2009 13:00:00

NOVA ROAD NORTH BASIN EXISTING LAND USE

Water Elevation Profile: Node 101 - 128



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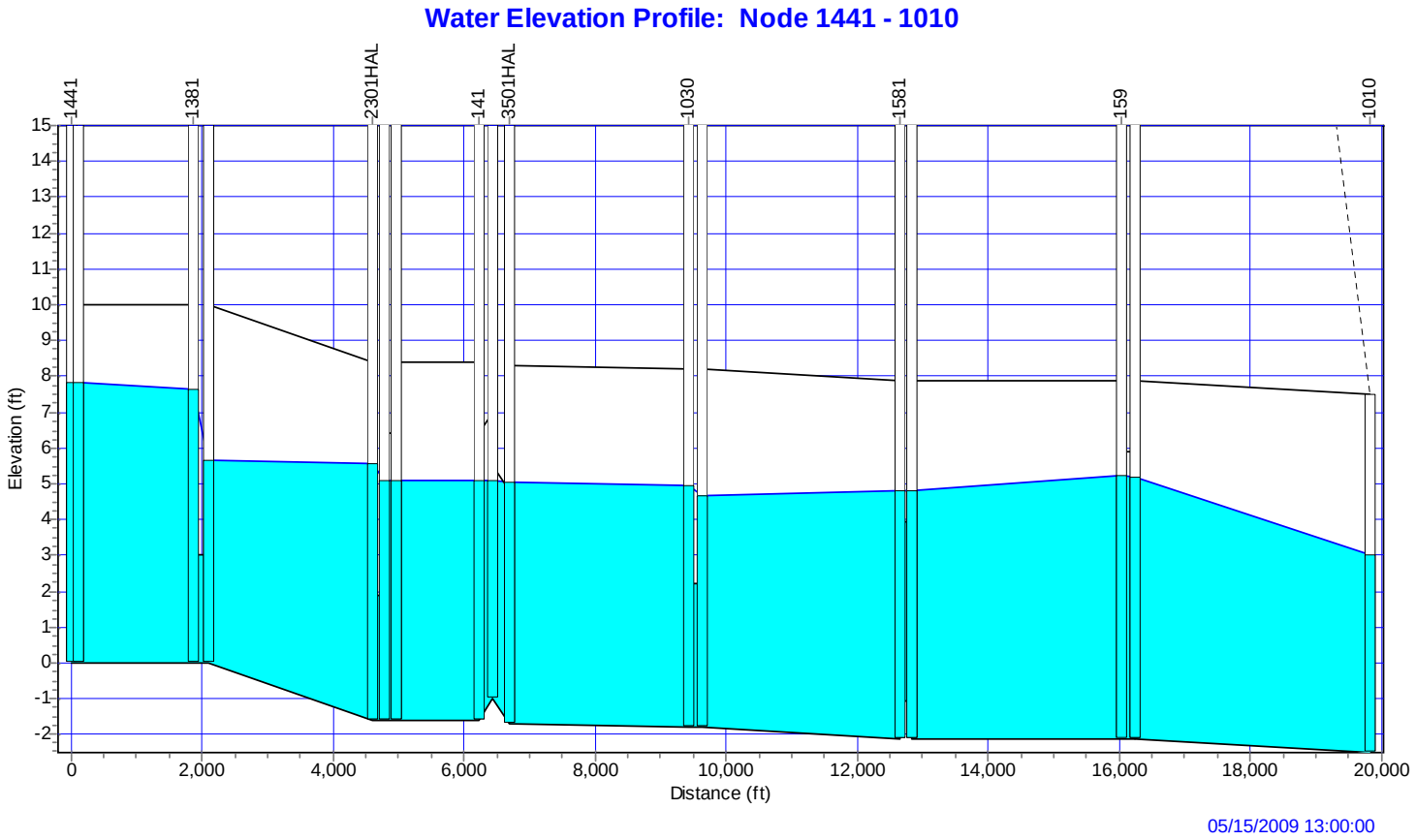
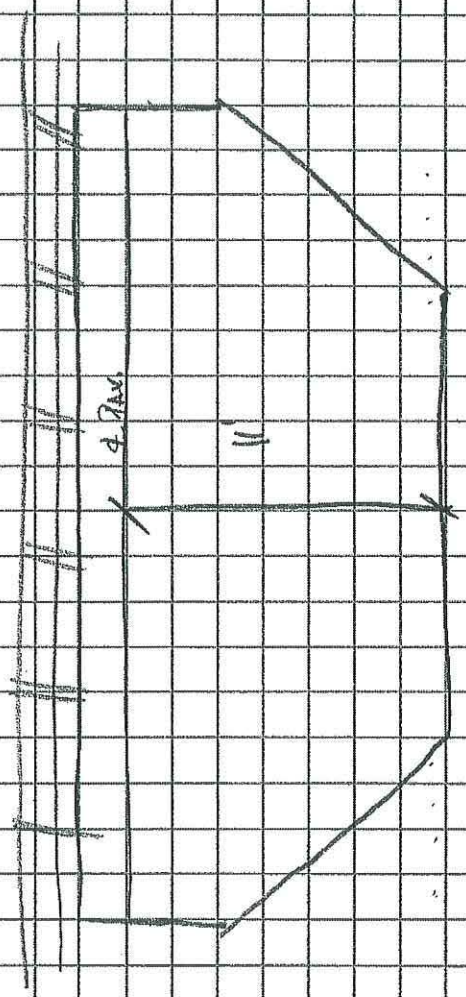


Hanson
Pipe & Products, Inc.

PROJECT•		DATE•
JOB #•	BID DATE•	CHEK'D BY•

(1) LPCA AT ALTA & TRONE



Remove Arch From model & replace w/ trapezoidal

w/s invert lowered to keep slope constant

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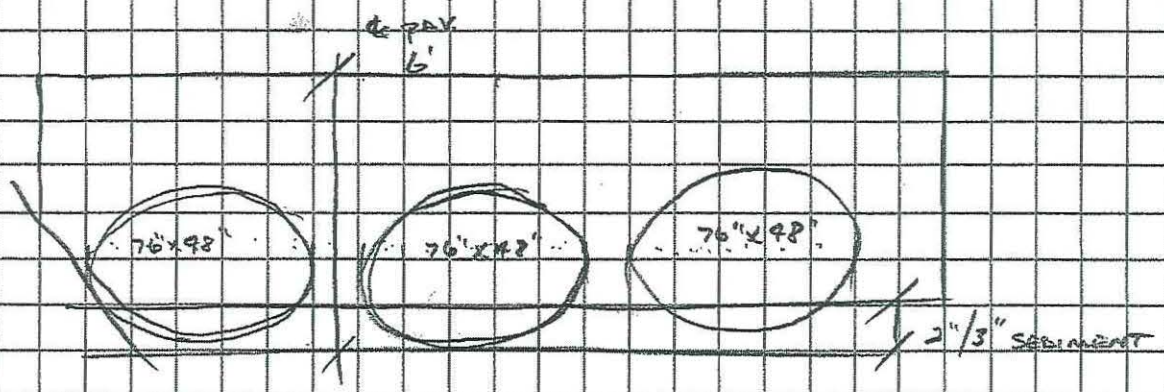
Pipe & Products, Inc.

PROJECT:
JOB #:
BID DATE:
DATE:
CHEK'D BY:

(2) RAILROAD CROSSING 8th ST.
(3x) 76"x48" RCP



Model updated → next d/s crossing under 10th st also upsized
From single (60') to (3) 76"x48" HERCP

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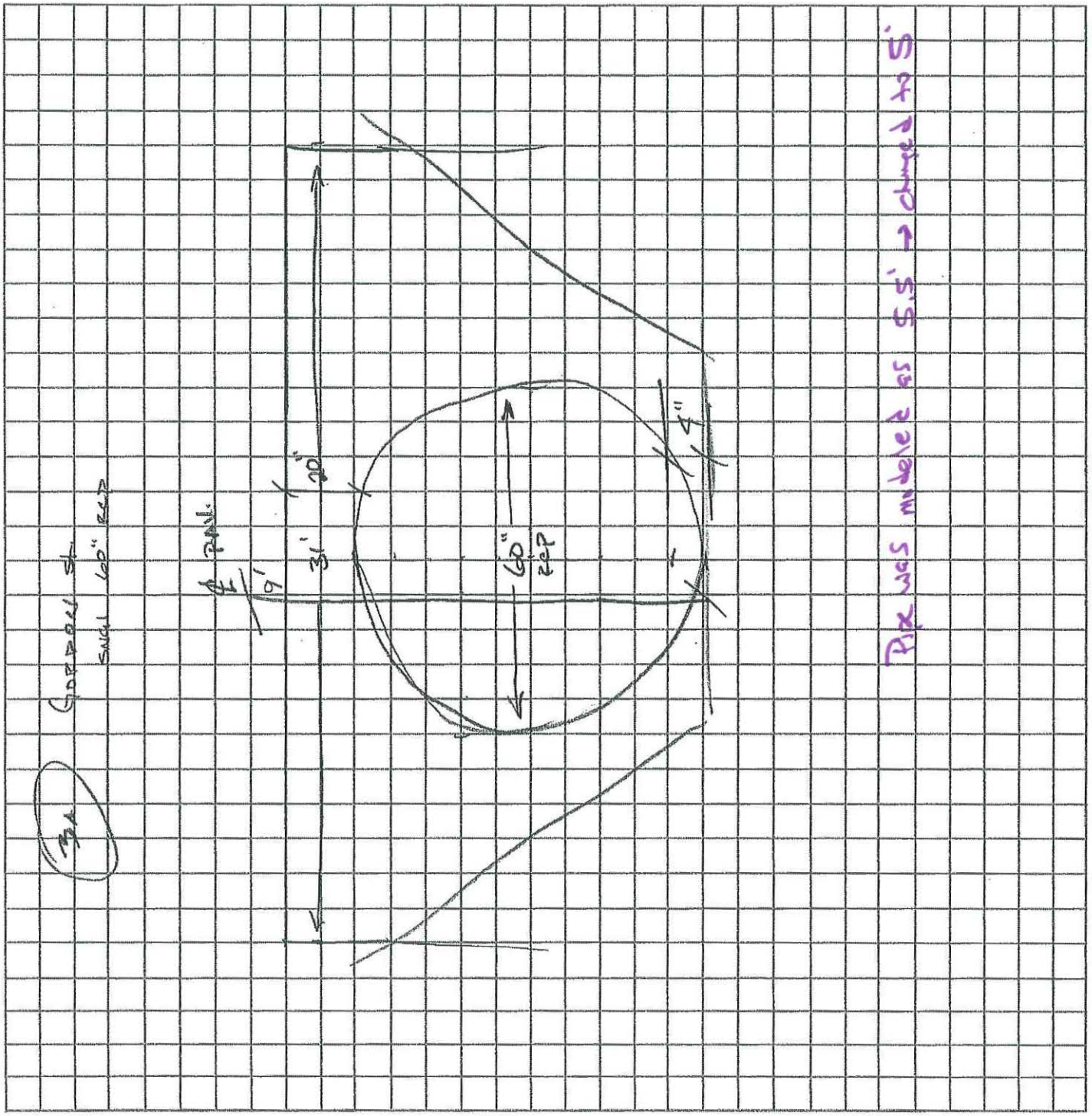
PROJECT•		DATE•
JOB #•	BID DATE•	CHEK'D BY•



Hanson
Pipe & Products, Inc.

PROJECT:

JOB #:

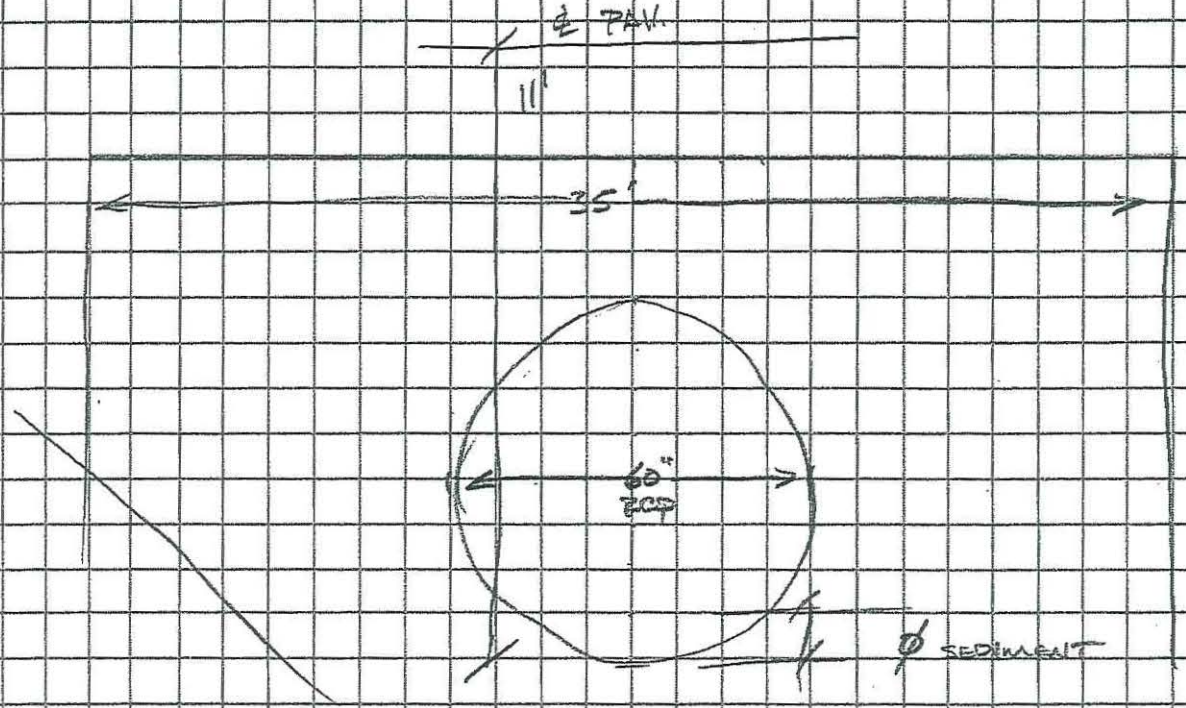
BID DATE:

DATE:

CHEK'D BY:

35

MADELINE AVE
SNGL 60" RCP



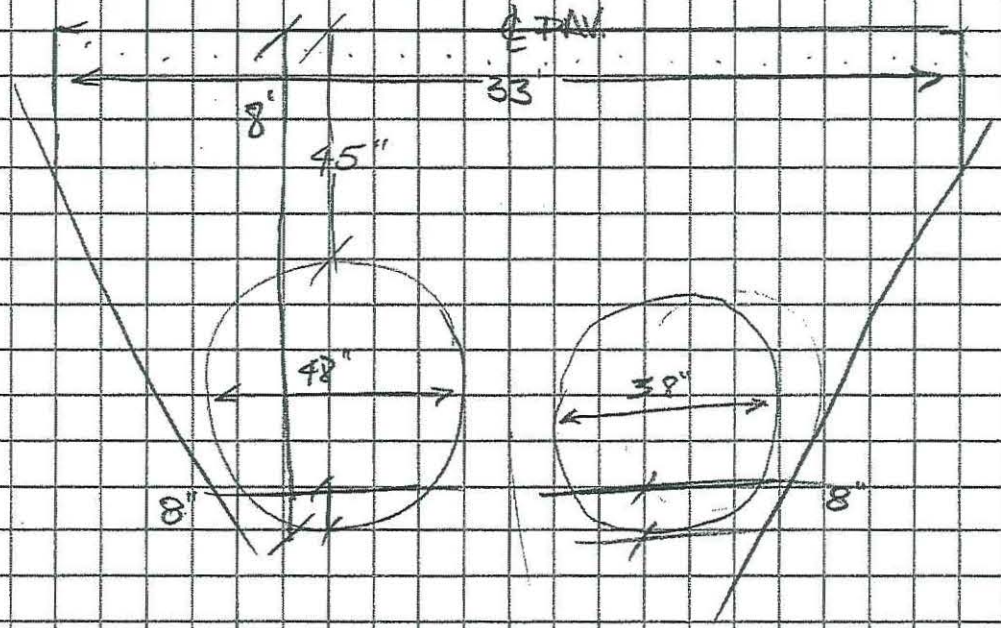
Pipe was modeled as 6'
changed to 5'

Hanson
Pipe & Products, Inc.

PROJECT:
DATE:
JOB #:
BID DATE:
CHEK'D BY:

(4)

RYANWOOD DR
TOL 48"/38" CMP



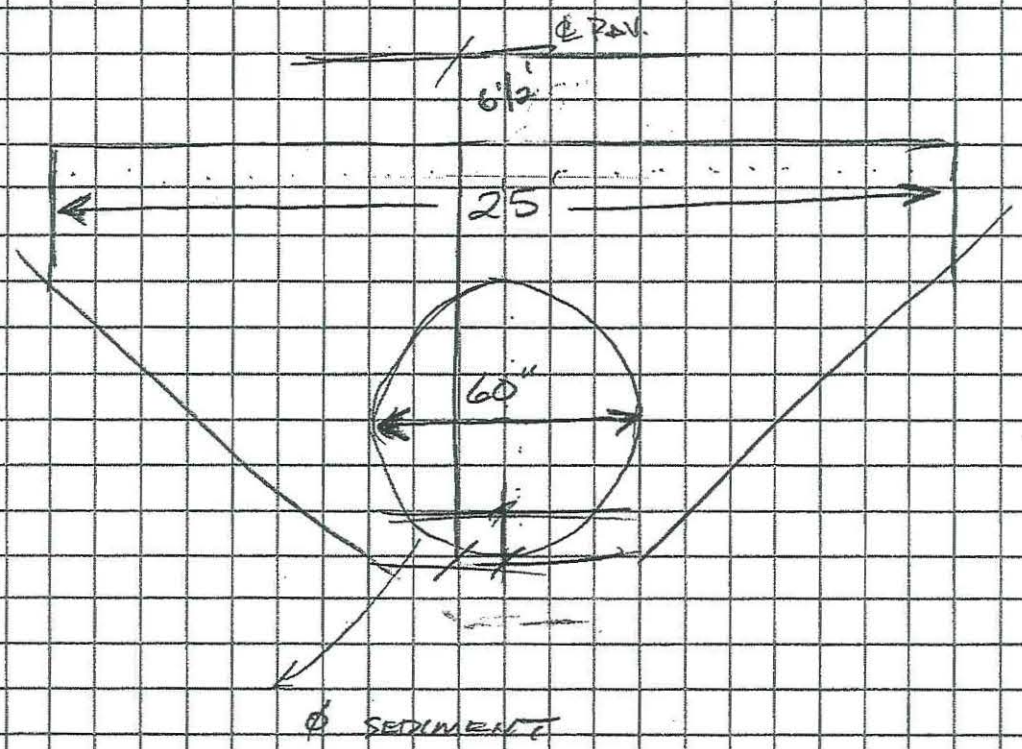
Previous email showed 30" + 42" CMP
Glennin 2-24

Hanson
Pipe & Products, Inc.

PROJECT: | DATE:
JOB #: | BID DATE: | CHEK'D BY:

5

POWERS AVE
SNGL PIPE 60" CMP

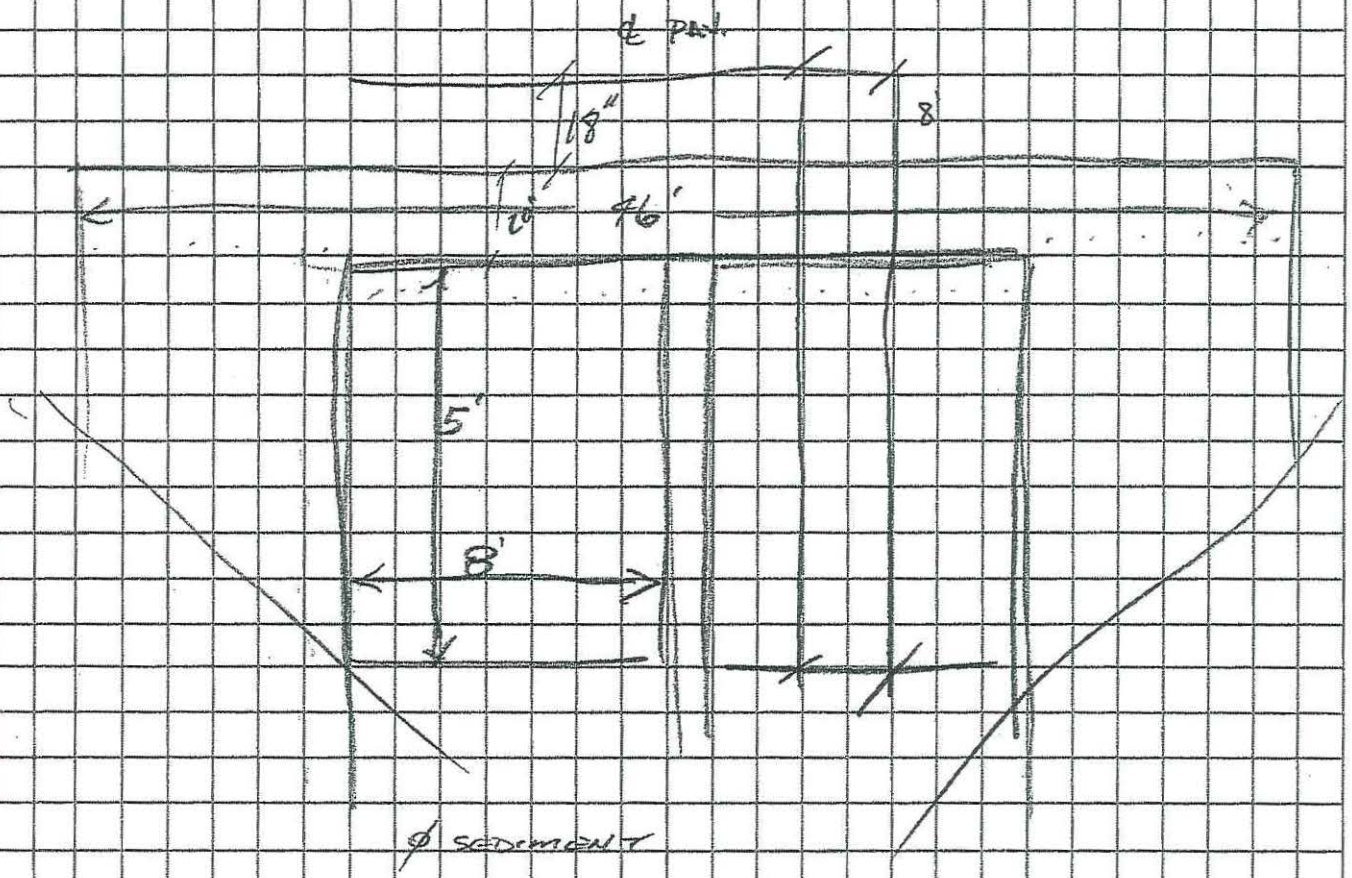


Upsized From 42" to 60"
per 2-24 Giannini email

Hanson
Pipe & Products, Inc.

PROJECT:
JOB #:
BID DATE:
DATE:
CHEK'D BY:

(6) EASTPORT PKWY
DBL BOX CULVERT



culverts not included as there are smaller d/s structures

Hanson
Pipe & Products, Inc.

PROJECT:

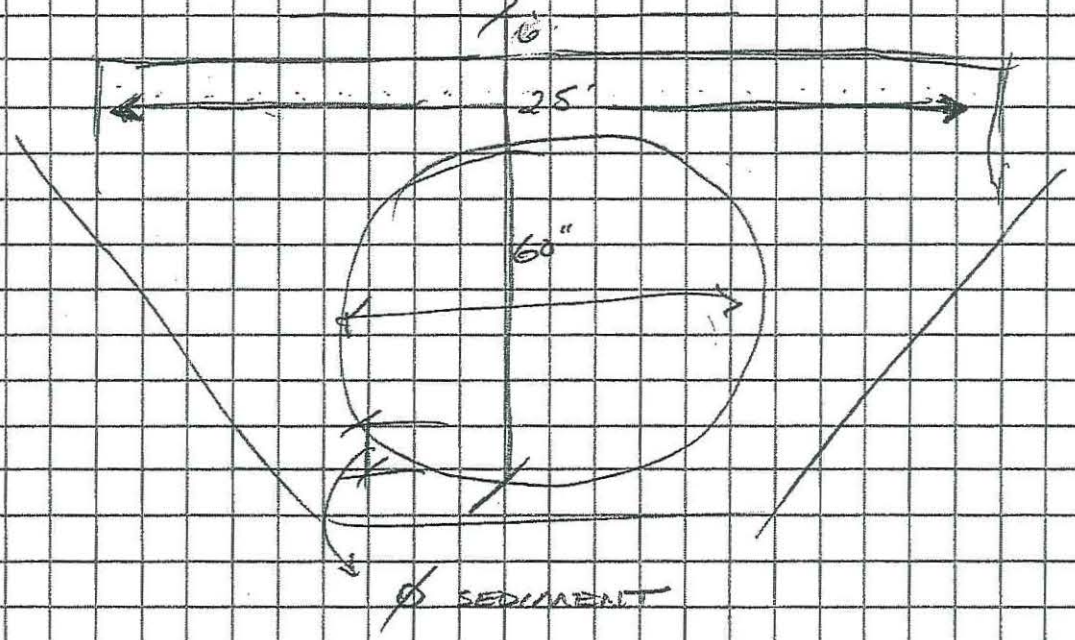
DATE:

JOB #:

BID DATE:

CHEK'D BY:

(7) PRIVATE DRIVE
SINGL PIPE 60" CMP



increased to 60" per QLH Giannini
2-24-10 email

Appendix F

Alternative Analysis Model Results

Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

LPGA Canal System

May 2009 Storm Event- LPGA Canal System																	
	SWMM5	**Indicator Elevation**	**Existing Peak Stage**	**Alternative 1**		**Alternative 2**		**Alternative 3**		**Alternative 4**		**Alternative 5**		**Alternative 6**		**Alternative 7**	
Location	**Node**	**(ft NGVD)**	**(ft-NGVD)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**
11th St Canal Outfall	808	-	3.2	3.2	0.0	3.2	0.0	3.2	0.0	3.2	0.0	3.2	0.0	3.2	0.0	3.2	0.0
Upstream of Riverside Dr	806	4.6	3.7	3.7	0.0	3.7	0.0	3.7	0.0	3.5	-0.2	3.5	-0.2	3.5	-0.2	3.2	-0.5
Upstream of Daytona Road	804	12.3	4.7	4.7	0.0	4.7	0.0	4.7	0.0	4.3	-0.4	4.3	-0.4	4.3	-0.4	3.3	-1.4
Upstream of US 1 (Ridgewood)	802	11.7	5.6	5.6	0.0	5.6	0.0	5.5	0.0	5.0	-0.6	5.0	-0.6	4.9	-0.7	4.3	-1.3
11th St Canal at Railroad Ditch and Southeast Canal	8	6.7	7.1	7.1	0.0	7.1	0.0	7.0	0.0	6.5	-0.6	6.5	-0.6	6.4	-0.7	6.4	-0.7
Upstream of Alta Drive	1101	8.7	7.2	7.2	0.0	7.2	0.0	7.1	-0.1	6.6	-0.6	6.6	-0.6	6.5	-0.7	6.5	-0.7
Upstream of Center Avenue	1402	8.6	7.6	7.5	0.0	7.6	0.0	7.5	-0.1	6.9	-0.6	6.9	-0.7	6.8	-0.8	6.8	-0.8
11th St Canal at Nova Road	1401	10.9	8.4	8.4	0.0	8.4	0.0	8.3	-0.1	7.7	-0.7	7.7	-0.7	7.6	-0.8	7.6	-0.8

Alternative 1	Weir-gates and "pump-around" pump stations on LPGA, Reed and Halifax Canals
Alternative 2	Bottleneck analysis (result was no recommended upgrades, so values are same as Existing)
Alternative 3	Navy Canal storage and flow diversion west of Clyde Morris Boulevard
Alternative 4	Pump station and force main at Laurel Creek, North Street pond, Samuel Butts pond, and Buschman pond
Alternative 5	Combination of alternatives 2, 3 and 4
Alternative 6	Combination of alternatives 1, 2, 3 and 4
Alternative 7	Combination of alternatives 2, 3 and 4, plus weir-gates on LPGA, Reed and Halifax Canals and parallel pumps on LPGA and Reed Canals

Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

LPGA Canal System

100 Year Event- LPGA Canal System																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
11th St Canal Outfall	808	-	2.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Upstream of Riverside Dr	806	4.6	3.1	3.0	0.0	3.1	0.0	3.1	0.0	3.0	-0.1	3.0	-0.1	3.0	-0.1	2.1	-0.9
Upstream of Daytona Road	804	12.3	4.5	4.5	0.0	4.5	0.0	4.5	0.0	4.4	-0.1	4.4	-0.1	4.4	-0.1	2.5	-2.0
Upstream of US 1 (Ridgewood)	802	11.7	5.4	5.4	0.0	5.4	0.0	5.4	0.0	5.3	-0.1	5.3	-0.1	5.2	-0.2	4.3	-1.1
11th St Canal at Railroad Ditch and Southeast Canal	8	6.7	7.0	6.9	-0.1	7.0	0.0	7.0	0.0	6.8	-0.2	6.8	-0.2	6.8	-0.2	6.7	-0.3
Upstream of Alta Drive	1101	8.7	7.1	7.1	0.0	7.1	0.0	7.1	0.0	7.0	-0.1	7.0	-0.1	6.9	-0.2	6.8	-0.3
Upstream of Center Avenue	1402	8.6	7.6	7.6	0.0	7.6	0.0	7.6	0.0	7.4	-0.1	7.4	-0.1	7.4	-0.2	7.3	-0.3
11th St Canal at Nova Road	1401	10.9	8.6	8.6	0.0	8.6	0.0	8.6	0.0	8.5	-0.1	8.5	-0.1	8.5	-0.2	8.4	-0.2

Alternative 1	Weir-gates and "pump-around" pump stations on LPGA, Reed and Halifax Canals
Alternative 2	Bottleneck analysis (result was no recommended upgrades, so values are same as Existing)
Alternative 3	Navy Canal storage and flow diversion west of Clyde Morris Boulevard
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Alternative 5	Combination of alternatives 2, 3 and 4
Alternative 6	Combination of alternatives 1, 2, 3 and 4
Alternative 7	Combination of alternatives 2, 3 and 4, plus weir-gates on LPGA, Reed and Halifax Canals and parallel pumps on LPGA and Reed Canals

Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

LPGA Canal System

25 Year Event- LPGA Canal System																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
11th St Canal Outfall	808	-	2.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0	0.0
Upstream of Riverside Dr	806	4.6	2.8	2.8	0.0	2.8	0.0	2.8	0.0	2.7	0.0	2.7	0.0	2.7	-0.1	2.1	-0.7
Upstream of Daytona Road	804	12.3	4.1	4.1	0.0	4.1	0.0	4.1	0.0	4.0	-0.1	4.0	-0.1	4.0	-0.1	2.3	-1.8
Upstream of US 1 (Ridgewood)	802	11.7	4.8	4.8	0.0	4.8	0.0	4.8	0.0	4.7	-0.1	4.7	-0.1	4.7	-0.1	3.6	-1.2
11th St Canal at Railroad Ditch and Southeast Canal	8	6.7	6.4	6.3	-0.1	6.4	0.0	6.4	0.0	6.3	-0.1	6.3	-0.1	6.2	-0.2	6.1	-0.2
Upstream of Alta Drive	1101	8.7	6.5	6.5	-0.1	6.5	0.0	6.5	0.0	6.4	-0.1	6.4	-0.1	6.3	-0.2	6.3	-0.2
Upstream of Center Avenue	1402	8.6	7.0	6.9	0.0	7.0	0.0	7.0	0.0	6.8	-0.1	6.8	-0.1	6.8	-0.2	6.7	-0.3
11th St Canal at Nova Road	1401	10.9	8.1	8.0	0.0	8.1	0.0	8.0	0.0	7.9	-0.2	7.9	-0.1	7.9	-0.2	7.9	-0.2

Alternative 1	Weir-gates and "pump-around" pump stations on LPGA, Reed and Halifax Canals
Alternative 2	Bottleneck analysis (result was no recommended upgrades, so values are same as Existing)
Alternative 3	Navy Canal storage and flow diversion west of Clyde Morris Boulevard
Alternative 4	Pump station and force main at Laurel Creek, North Street pond, Samuel Butts pond, and Buschman pond
Alternative 5	Combination of alternatives 2, 3 and 4
Alternative 6	Combination of alternatives 1, 2, 3 and 4
Alternative 7	Combination of alternatives 2, 3 and 4, plus weir-gates on LPGA, Reed and Halifax Canals and parallel pumps on LPGA and Reed Canals

Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

LPGA Canal Branch Systems

May 2009 Storm Event- LPGA Canal Branch Systems																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
Railroad Ditch at Walker	604	5.2	7.9	7.8	0.0	7.9	0.0	7.9	0.0	7.0	-0.9	6.9	-0.9	6.8	-1.0	6.9	-1.0
Railroad Ditch at Flomich	6	5.9	8.1	8.0	-0.1	8.1	0.0	8.1	0.0	7.2	-0.9	7.2	-0.9	7.1	-1.0	7.2	-0.9
Railroad Ditch headwater (Hand Ave)	1	5.4	8.1	8.0	-0.1	8.1	0.0	8.1	0.0	7.2	-0.9	7.2	-0.9	7.1	-1.0	7.2	-0.9
Southeast Canal at 10th St	1301	5.5	7.1	7.0	-0.1	7.1	0.0	7.1	0.0	6.6	-0.5	6.6	-0.5	6.4	-0.7	6.5	-0.6
Southeast Canal at 8th St	1603	6.5	7.2	7.1	-0.1	7.2	0.0	7.1	0.0	6.8	-0.4	6.7	-0.4	6.5	-0.6	6.6	-0.5
Southeast Canal at 6th St	1601	6.4	7.2	7.1	-0.1	7.2	0.0	7.2	0.0	6.8	-0.4	6.8	-0.4	6.6	-0.6	6.7	-0.5
Southeast Canal at 3rd St	2003	6.7	7.2	7.1	-0.1	7.2	0.0	7.2	0.0	6.8	-0.4	6.8	-0.4	6.7	-0.5	6.8	-0.4
Southeast Canal at Mason	26	7.5	7.2	7.1	-0.1	7.2	0.0	7.2	0.0	6.9	-0.3	6.9	-0.3	6.8	-0.4	6.9	-0.3
Northwest Canal at 13th St	9	8.4	8.9	8.8	0.0	8.9	0.0	8.8	-0.1	8.2	-0.7	8.1	-0.7	8.1	-0.8	8.1	-0.8
Northwest Canal at 15th St	402	7.6	8.9	8.9	0.0	8.9	0.0	8.9	0.0	8.5	-0.4	8.5	-0.4	8.5	-0.4	8.5	-0.4
Northwest Canal at Flomich	4	7.9	8.9	8.9	0.0	8.9	0.0	8.9	0.0	8.6	-0.3	8.6	-0.3	8.6	-0.4	8.6	-0.3
Northwest Canal upstream of Alabama; Calle Grande Ditch headwater (Arroyo Blvd)	3	7.5	8.7	8.7	0.0	8.7	0.0	8.7	0.0	8.6	-0.2	8.6	-0.2	8.6	-0.2	8.6	-0.2

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Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

LPGA Canal Branch Systems

100-Year Event- LPGA Canal Branch Systems																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
Railroad Ditch at Walker	604	5.2	7.1	7.0	-0.1	7.1	0.0	7.0	0.0	6.8	-0.2	6.8	-0.2	6.8	-0.3	6.7	-0.3
Railroad Ditch at Flomich	6	5.9	7.1	7.1	0.0	7.1	0.0	7.1	0.0	6.8	-0.3	6.8	-0.3	6.8	-0.3	6.8	-0.4
Railroad Ditch headwater (Hand Ave)	1	5.4	7.1	7.1	0.0	7.1	0.0	7.1	0.0	6.8	-0.3	6.8	-0.3	6.8	-0.3	6.8	-0.4
Southeast Canal at 10th St	1301	5.5	7.1	6.9	-0.1	7.1	0.0	7.0	0.0	6.9	-0.1	6.9	-0.1	6.8	-0.2	6.8	-0.2
Southeast Canal at 8th St	1603	6.5	7.1	7.0	-0.1	7.1	0.0	7.1	0.0	7.1	0.0	7.1	0.0	7.0	-0.2	7.0	-0.2
Southeast Canal at 6th St	1601	6.4	7.2	7.1	-0.2	7.2	0.0	7.2	0.0	7.2	0.0	7.2	0.0	7.1	-0.2	7.1	-0.1
Southeast Canal at 3rd St	2003	6.7	7.4	7.3	-0.1	7.4	0.0	7.4	0.0	7.3	0.0	7.3	0.0	7.3	-0.1	7.3	-0.1
Southeast Canal at Mason	26	7.5	7.4	7.4	0.0	7.4	0.0	7.4	0.0	7.4	0.0	7.4	0.0	7.4	0.0	7.4	0.0
Northwest Canal at 13th St	9	8.4	8.7	8.7	0.0	8.7	0.0	8.7	0.0	8.6	-0.1	8.6	-0.1	8.6	-0.1	8.6	-0.2
Northwest Canal at 15th St	402	7.6	8.6	8.6	0.0	8.6	0.0	8.6	0.0	8.5	-0.1	8.5	-0.1	8.5	-0.1	8.5	-0.1
Northwest Canal at Flomich	4	7.9	8.6	8.6	0.0	8.6	0.0	8.6	0.0	8.5	-0.1	8.5	-0.1	8.5	-0.1	8.5	-0.1
Northwest Canal upstream of Alabama; Calle Grande Ditch headwater (Arroyo Blvd)	3	7.5	8.3	8.3	0.0	8.3	0.0	8.3	0.0	8.2	-0.1	8.2	-0.1	8.2	-0.1	8.2	-0.1

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Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

LPGA Canal Branch Systems

25-Year Event- LPGA Canal Branch Systems																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
Railroad Ditch at Walker	604	5.2	6.4	6.3	-0.1	6.4	0.0	6.4	0.0	6.2	-0.2	6.2	-0.2	6.1	-0.3	6.1	-0.3
Railroad Ditch at Flomich	6	5.9	6.4	6.3	-0.1	6.4	0.0	6.4	0.0	6.2	-0.2	6.2	-0.2	6.2	-0.2	6.1	-0.3
Railroad Ditch headwater (Hand Ave)	1	5.4	6.4	6.3	-0.1	6.4	0.0	6.4	0.0	6.2	-0.2	6.2	-0.2	6.2	-0.2	6.1	-0.3
Southeast Canal at 10th St	1301	5.5	6.5	6.3	-0.2	6.5	0.0	6.5	0.0	6.4	-0.1	6.4	-0.1	6.2	-0.2	6.3	-0.2
Southeast Canal at 8th St	1603	6.5	6.6	6.5	-0.2	6.6	0.0	6.6	0.0	6.6	0.0	6.6	0.0	6.4	-0.2	6.5	-0.2
Southeast Canal at 6th St	1601	6.4	6.7	6.6	-0.1	6.7	0.0	6.7	0.0	6.7	0.0	6.7	0.0	6.6	-0.1	6.6	-0.1
Southeast Canal at 3rd St	2003	6.7	6.9	6.9	0.0	6.9	0.0	6.9	0.0	6.9	0.0	6.9	0.0	6.9	0.0	6.9	0.0
Southeast Canal at Mason	26	7.5	7.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0	0.0
Northwest Canal at 13th St	9	8.4	8.2	8.1	0.0	8.2	0.0	8.2	0.0	8.0	-0.1	8.0	-0.1	8.0	-0.2	8.0	-0.2
Northwest Canal at 15th St	402	7.6	8.1	8.1	0.0	8.1	0.0	8.1	0.0	8.0	-0.1	8.0	-0.1	8.0	-0.1	7.9	-0.2
Northwest Canal at Flomich	4	7.9	8.1	8.1	0.0	8.1	0.0	8.1	0.0	8.0	-0.1	8.0	-0.1	8.0	-0.1	7.9	-0.1
Northwest Canal upstream of Alabama; Calle Grande Ditch headwater (Arroyo Blvd)	3	7.5	7.9	7.9	0.0	7.9	0.0	7.9	0.0	7.8	-0.1	7.8	-0.1	7.8	-0.1	7.8	-0.1

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Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

Reed Canal System

May 2009 Storm Event- Reed Canal System																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
Reed Canal Outfall	12102	-	3.6	3.6	0.0	3.6	0.0	3.6	0.0	3.6	0.0	3.6	0.0	3.6	0.0	3.6	0.0
Upstream of US 1	12101	7.5	3.9	4.0	0.1	3.9	0.0	3.9	0.0	3.8	-0.1	3.8	-0.1	4.1	0.3	3.6	-0.3
Proposed Pond	REED_SITE	--	--	2.2	--	#N/A	--	#N/A	--	#N/A	--	#N/A	--	2.2	--	3.2	--
Downstream of RR / Upstream of Proposed Gate	12804	11.5	4.7	3.9	-0.8	4.7	0.0	4.7	0.0	4.5	-0.2	4.5	-0.2	3.6	-1.1	3.6	-1.1
Reed Canal at Stevens Canal	128	8.8	5.8	5.5	-0.4	5.8	0.0	5.8	-0.1	5.6	-0.2	5.6	-0.3	5.1	-0.7	4.8	-1.1
Saul Drive	122	9.6	6.7	6.4	-0.2	6.7	0.0	6.6	-0.1	6.4	-0.3	6.3	-0.4	6.1	-0.6	5.9	-0.8
Reed Canal at Nova Road	13104	9.2	7.9	7.7	-0.1	7.9	0.0	7.7	-0.1	7.4	-0.4	7.3	-0.6	7.2	-0.7	7.1	-0.7
Stevens Canal at Ridge Drive	11001	6.9	6.4	6.1	-0.3	6.4	0.0	6.3	0.0	6.2	-0.1	6.2	-0.2	5.9	-0.5	5.8	-0.6
Stevens Canal at Big Tree Road	10101	8.6	6.8	6.6	-0.2	6.8	0.0	6.7	0.0	6.7	-0.1	6.7	-0.1	6.5	-0.2	6.5	-0.3
Upstream end of Stevens Canal	101	6.6	6.8	6.7	-0.1	6.8	0.0	6.8	0.0	6.8	0.0	6.8	-0.1	6.7	-0.1	6.7	-0.2

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Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

Reed Canal System

100 Year Event- Reed Canal System																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
Reed Canal Outfall	12102	-	2.2	2.2	0.0	2.2	0.0	2.2	0.0	2.2	0.0	2.2	0.0	2.2	0.0	2.2	0.0
Upstream of US 1	12101	7.5	3.2	3.1	-0.1	3.2	0.0	3.2	0.0	3.1	0.0	3.1	0.0	3.2	0.0	2.6	-0.6
Proposed Pond	REED_SITE	--	--	5.6	--	#N/A	--	#N/A	--	#N/A	--	#N/A	--	5.6	--	3.9	--
Downstream of RR / Upstream of Proposed Gate	12804	11.5	5.4	6.0	0.6	5.4	0.0	5.4	0.0	5.4	0.0	5.4	0.0	6.0	0.6	4.1	-1.3
Reed Canal at Stevens Canal	128	8.8	7.0	7.1	0.1	7.0	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.1	0.1	6.4	-0.5
Saul Drive	122	9.6	7.8	7.8	0.0	7.8	0.0	7.8	0.0	7.8	0.0	7.8	0.0	7.8	0.0	7.5	-0.3
Reed Canal at Nova Road	13104	9.2	9.0	9.0	0.0	9.0	0.0	9.0	0.0	8.9	-0.1	8.9	-0.1	8.9	-0.1	8.8	-0.2
Stevens Canal at Ridge Drive	11001	6.9	7.7	7.6	-0.1	7.7	0.0	7.7	0.0	7.7	0.0	7.6	0.0	7.6	-0.1	7.4	-0.3
Stevens Canal at Big Tree Road	10101	8.6	8.1	8.1	0.0	8.1	0.0	8.1	0.0	8.1	0.0	8.1	0.0	8.1	0.0	8.0	-0.1
Upstream end of Stevens Canal	101	6.6	8.2	8.2	0.0	8.2	0.0	8.2	0.0	8.2	0.0	8.2	0.0	8.2	-0.1	8.1	-0.1

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Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

Reed Canal System

25 Year Event- Reed Canal System																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
Reed Canal Outfall	12102	-	2.2	2.2	0.0	2.2	0.0	2.2	0.0	2.2	0.0	2.2	0.0	2.2	0.0	2.2	0.0
Upstream of US 1	12101	7.5	2.8	2.9	0.1	2.8	0.0	2.8	0.0	2.8	0.0	2.8	0.0	3.0	0.1	2.5	-0.4
Proposed Pond	REED_SITE	--	--	4.3	--	#N/A	--	#N/A	--	#N/A	--	#N/A	--	4.4	--	2.7	--
Downstream of RR / Upstream of Proposed Gate	12804	11.5	4.9	5.0	0.1	4.9	0.0	4.9	0.0	4.9	0.0	4.9	0.0	5.0	0.1	3.2	-1.7
Reed Canal at Stevens Canal	128	8.8	6.4	6.2	-0.2	6.4	0.0	6.3	0.0	6.3	0.0	6.3	0.0	6.2	-0.2	5.7	-0.7
Saul Drive	122	9.6	7.1	6.9	-0.2	7.1	0.0	7.1	0.0	7.1	0.0	7.1	0.0	6.9	-0.2	6.7	-0.4
Reed Canal at Nova Road	13104	9.2	8.1	8.0	-0.1	8.1	0.0	8.1	0.0	8.1	-0.1	8.0	-0.1	8.0	-0.2	7.9	-0.2
Stevens Canal at Ridge Drive	11001	6.9	6.9	6.7	-0.3	6.9	0.0	6.9	0.0	6.9	0.0	6.9	0.0	6.7	-0.3	6.6	-0.4
Stevens Canal at Big Tree Road	10101	8.6	7.3	7.2	-0.1	7.3	0.0	7.3	0.0	7.3	0.0	7.3	0.0	7.2	-0.1	7.2	-0.2
Upstream end of Stevens Canal	101	6.6	7.4	7.4	-0.1	7.4	0.0	7.4	0.0	7.4	0.0	7.4	0.0	7.3	-0.1	7.3	-0.1

Alternative 1	Weir-gates and "pump-around" pump stations on LPGA, Reed and Halifax Canals
Alternative 2	Bottleneck analysis (result was no recommended upgrades, so values are same as Existing)
Alternative 3	Navy Canal storage and flow diversion west of Clyde Morris Boulevard
Alternative 4	Pump station and force main at Laurel Creek, North Street pond, Samuel Butts pond, and Buschman pond
Alternative 5	Combination of alternatives 2, 3 and 4
Alternative 6	Combination of alternatives 1, 2, 3 and 4
Alternative 7	Combination of alternatives 2, 3 and 4, plus weir-gates on LPGA, Reed and Halifax Canals and parallel pumps on LPGA and Reed Canals

Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

Halifax Canal System

May 2009 Storm Event- Halifax Canal System																	
	SWMM5	**Indicator Elevation**	**Existing Peak Stage**	**Alternative 1**		**Alternative 2**		**Alternative 3**		**Alternative 4**		**Alternative 5**		**Alternative 6**		**Alternative 7**	
Location	**Node**	**(ft NGVD)**	**(ft-NGVD)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**
Outfall	1010	-	3.7	3.7	0.0	3.7	0.0	3.7	0.0	3.7	0.0	3.7	0.0	3.7	0.0	3.7	0.0
Pump Station Site	HAL_SITE	--	--	3.0	--	#N/A	--	#N/A	--	#N/A	--	#N/A	--	3.0	--	#N/A	--
Nova Road d/s	1591	11	4.0	3.4	-0.7	4.0	0.0	4.0	0.0	3.7	-0.3	3.7	-0.3	3.1	-1.0	3.7	-0.3
Nova Road u/s	159	11	4.1	3.5	-0.6	4.1	0.0	4.0	0.0	3.9	-0.2	3.9	-0.2	3.1	-1.0	3.7	-0.4
Near Jackson Street	150	5.3	5.9	5.8	-0.1	5.9	0.0	5.9	0.0	4.2	-1.7	4.2	-1.7	3.6	-2.3	3.8	-2.1
Oak Street	141	6	6.8	6.8	0.0	6.8	0.0	6.8	0.0	6.0	-0.9	5.9	-0.9	5.9	-0.9	5.8	-1.1
Powers Avenue	2301HAL	6.6	7.1	7.1	0.0	7.1	0.0	7.1	0.0	6.7	-0.4	6.7	-0.4	6.7	-0.4	6.6	-0.5
Ryanwood Ave	1381	8.5	8.2	8.2	0.0	8.2	0.0	8.2	0.0	8.0	-0.2	8.0	-0.3	7.9	-0.3	7.9	-0.3
Nova Road	132	9.1	8.4	8.3	0.0	8.4	0.0	8.3	0.0	8.2	-0.2	8.1	-0.2	8.1	-0.3	8.1	-0.3

Alternative 1	Weir-gates and "pump-around" pump stations on LPGA, Reed and Halifax Canals
Alternative 2	Bottleneck analysis (result was no recommended upgrades, so values are same as Existing)
Alternative 3	Navy Canal storage and flow diversion west of Clyde Morris Boulevard
Alternative 4	Pump station and force main at Laurel Creek, North Street pond, Samuel Butts pond, and Buschman pond
Alternative 5	Combination of alternatives 2, 3 and 4
Alternative 6	Combination of alternatives 1, 2, 3 and 4
Alternative 7	Combination of alternatives 2, 3 and 4, plus weir-gates on LPGA, Reed and Halifax Canals and parallel pumps on LPGA and Reed Canals

Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

Halifax Canal System

100-Year Event- Halifax Canal System																	
	SWMM5	**Indicator Elevation**	**Existing Peak Stage**	**Alternative 1**		**Alternative 2**		**Alternative 3**		**Alternative 4**		**Alternative 5**		**Alternative 6**		**Alternative 7**	
Location	**Node**	**(ft NGVD)**	**(ft-NGVD)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**
Outfall	1010	-	3.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Pump Station Site	HAL_SITE	--	--	4.2	--	#N/A	--	#N/A	--	#N/A	--	#N/A	--	3.1	--	#N/A	--
Nova Road d/s	1591	11	4.6	4.6	0.0	4.6	0.0	4.6	0.0	4.6	0.0	4.6	0.0	4.6	-0.1	4.6	0.0
Nova Road u/s	159	11	4.9	4.8	-0.1	4.9	0.0	4.9	0.0	5.0	0.1	5.0	0.1	4.9	-0.1	4.9	0.0
Near Jackson Street	150	5.3	6.0	6.0	0.0	6.0	0.0	6.0	0.0	5.1	-0.9	5.1	-0.9	5.0	-1.0	5.0	-1.0
Oak Street	141	6	6.8	6.7	0.0	6.8	0.0	6.8	0.0	6.2	-0.5	6.2	-0.5	6.2	-0.6	6.2	-0.6
Powers Avenue	2301HAL	6.6	7.1	7.1	0.0	7.1	0.0	7.1	0.0	6.9	-0.2	6.9	-0.2	6.9	-0.2	6.9	-0.2
Ryanwood Ave	1381	8.5	8.6	8.6	0.0	8.6	0.0	8.6	0.0	8.5	0.0	8.5	0.0	8.5	-0.1	8.5	-0.1
Nova Road	132	9.1	8.8	8.8	0.0	8.8	0.0	8.8	0.0	8.8	0.0	8.8	0.0	8.8	-0.1	8.7	-0.1

Alternative 1	Weir-gates and "pump-around" pump stations on LPGA, Reed and Halifax Canals
Alternative 2	Bottleneck analysis (result was no recommended upgrades, so values are same as Existing)
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Alternative 5	Combination of alternatives 2, 3 and 4
Alternative 6	Combination of alternatives 1, 2, 3 and 4
Alternative 7	Combination of alternatives 2, 3 and 4, plus weir-gates on LPGA, Reed and Halifax Canals and parallel pumps on LPGA and Reed Canals

Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

Halifax Canal System

25-Year Event- Halifax Canal System																	
	SWMM5	**Indicator Elevation**	**Existing Peak Stage**	**Alternative 1**		**Alternative 2**		**Alternative 3**		**Alternative 4**		**Alternative 5**		**Alternative 6**		**Alternative 7**	
Location	**Node**	**(ft NGVD)**	**(ft-NGVD)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**	**Peak Stage (ft-NGVD)**	**Change (ft)**
Outfall	1010	-	3.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0
Pump Station Site	HAL_SITE	--	--	3.2	--	#N/A	--	#N/A	--	#N/A	--	#N/A	--	3.0	--	#N/A	--
Nova Road d/s	1591	11	4.3	4.1	-0.2	4.3	0.0	4.3	0.0	4.1	-0.2	4.1	-0.2	4.2	-0.1	4.2	-0.1
Nova Road u/s	159	11	4.5	4.3	-0.2	4.5	0.0	4.5	0.0	4.5	0.1	4.5	0.0	4.4	-0.1	4.4	-0.1
Near Jackson Street	150	5.3	5.4	5.3	-0.1	5.4	0.0	5.4	0.0	4.6	-0.8	4.6	-0.9	4.5	-0.9	4.5	-0.9
Oak Street	141	6	6.4	6.3	0.0	6.4	0.0	6.3	0.0	5.7	-0.6	5.7	-0.6	5.7	-0.6	5.7	-0.7
Powers Avenue	2301HAL	6.6	6.7	6.7	0.0	6.7	0.0	6.7	0.0	6.6	-0.1	6.6	-0.1	6.6	-0.2	6.6	-0.2
Ryanwood Ave	1381	8.5	8.1	8.1	0.0	8.1	0.0	8.1	0.0	8.1	-0.1	8.1	0.0	8.0	-0.1	8.0	-0.1
Nova Road	132	9.1	8.3	8.3	0.0	8.3	0.0	8.3	0.0	8.3	-0.1	8.3	0.0	8.2	-0.1	8.2	-0.1

Alternative 1	Weir-gates and "pump-around" pump stations on LPGA, Reed and Halifax Canals
Alternative 2	Bottleneck analysis (result was no recommended upgrades, so values are same as Existing)
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Alternative 7	Combination of alternatives 2, 3 and 4, plus weir-gates on LPGA, Reed and Halifax Canals and parallel pumps on LPGA and Reed Canals

Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

Nova Canal System

May 2009 Storm Event- Nova Canal System																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
10th Street	14	8.3	8.5	8.5	0.0	8.5	0.0	8.4	-0.1	7.8	-0.7	7.7	-0.8	7.6	-0.9	7.7	-0.8
3rd Street	1901	10.8	9.0	9.0	0.0	9.0	0.0	8.9	-0.1	7.9	-1.1	7.8	-1.2	7.7	-1.3	7.8	-1.2
Mason Avenue	3203	10.9	9.2	9.2	0.0	9.2	0.0	9.0	-0.2	7.7	-1.5	7.6	-1.6	7.5	-1.7	7.6	-1.7
Madison Avenue	3201	8.7	9.3	9.3	0.0	9.3	0.0	9.1	-0.2	7.4	-1.9	7.2	-2.0	7.1	-2.1	7.2	-2.1
George W. Engram Boulevard	3501	9.5	9.3	9.3	0.0	9.3	0.0	9.1	-0.2	7.9	-1.4	7.6	-1.7	7.6	-1.8	7.6	-1.7
West International Speedway Boulevard	4601	8.9	9.3	9.3	0.0	9.3	0.0	9.1	-0.2	8.2	-1.1	7.9	-1.4	7.9	-1.5	7.9	-1.5
Sutton Place Apartment Complex	5501	*	9.3	9.3	0.0	9.3	0.0	9.1	-0.2	8.2	-1.1	7.9	-1.4	7.9	-1.5	7.9	-1.4
Museum Boulevard/Navy Canal	6102	8.4	9.4	9.3	0.0	9.4	0.0	9.1	-0.2	8.3	-1.0	8.0	-1.4	8.0	-1.4	8.0	-1.4
Bellevue Avenue	7201	8.4	9.3	9.3	0.0	9.3	0.0	9.1	-0.3	8.3	-1.0	8.0	-1.3	8.0	-1.4	8.0	-1.3
Woodcliff Drive	8701	8.4	9.3	9.3	0.0	9.3	0.0	9.0	-0.3	8.4	-0.9	8.2	-1.1	8.1	-1.2	8.1	-1.2
Beville Road	10401	9.4	9.2	9.2	0.0	9.2	0.0	9.0	-0.3	8.4	-0.8	8.2	-1.0	8.2	-1.0	8.2	-1.0
Big Tree Road	11601	9.4	9.0	9.0	-0.1	9.0	0.0	8.8	-0.2	8.4	-0.6	8.2	-0.8	8.1	-0.9	8.1	-0.9
Reed Canal Road	12401	9.4	7.9	7.8	-0.1	7.9	0.0	7.8	-0.2	7.5	-0.4	7.3	-0.6	7.2	-0.7	7.2	-0.7
Moonstone Court	13901	6.5	8.4	8.3	0.0	8.4	0.0	8.3	0.0	8.2	-0.2	8.1	-0.2	8.1	-0.3	8.1	-0.3
Madeline Avenue	12901	9.4	8.4	8.3	-0.1	8.4	0.0	8.3	-0.1	8.1	-0.3	8.1	-0.3	8.0	-0.3	8.0	-0.4

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Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

Nova Canal System

100-Year Event- Nova Canal System																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
10th Street	14	8.3	8.7	8.7	0.0	8.7	0.0	8.7	0.0	8.6	-0.2	8.6	-0.2	8.6	-0.2	8.5	-0.2
3rd Street	1901	10.8	9.4	9.4	0.0	9.4	0.0	9.4	0.0	9.1	-0.3	9.1	-0.3	9.1	-0.3	9.1	-0.3
Mason Avenue	3203	10.9	9.6	9.6	0.0	9.6	0.0	9.5	-0.1	9.0	-0.5	9.0	-0.5	9.0	-0.5	9.0	-0.6
Madison Avenue	3201	8.7	9.6	9.6	0.0	9.6	0.0	9.5	-0.1	8.9	-0.7	8.9	-0.7	8.9	-0.7	8.8	-0.8
George W. Engram Boulevard	3501	9.5	9.6	9.6	0.0	9.6	0.0	9.5	-0.1	9.1	-0.5	9.1	-0.5	9.1	-0.6	9.0	-0.6
West International Speedway Boulevard	4601	8.9	9.6	9.6	0.0	9.6	0.0	9.4	-0.2	9.0	-0.6	8.8	-0.8	8.8	-0.9	8.8	-0.9
Sutton Place Apartment Complex	5501	*	9.6	9.6	0.0	9.6	0.0	9.4	-0.2	9.0	-0.6	8.8	-0.9	8.7	-0.9	8.7	-0.9
Museum Boulevard/Navy Canal	6102	8.4	9.6	9.6	0.0	9.6	0.0	9.4	-0.2	9.1	-0.5	8.8	-0.8	8.8	-0.8	8.8	-0.8
Bellevue Avenue	7201	8.4	9.6	9.6	0.0	9.6	0.0	9.4	-0.2	9.1	-0.5	8.8	-0.8	8.8	-0.8	8.8	-0.8
Woodcliff Drive	8701	8.4	9.7	9.7	0.0	9.7	0.0	9.6	-0.1	9.4	-0.3	9.3	-0.4	9.3	-0.4	9.3	-0.4
Beville Road	10401	9.4	9.8	9.8	0.0	9.8	0.0	9.8	-0.1	9.8	-0.1	9.7	-0.1	9.7	-0.1	9.7	-0.2
Big Tree Road	11601	9.4	10.1	10.1	0.0	10.1	0.0	10.1	-0.1	10.1	-0.1	10.0	-0.1	10.0	-0.1	10.0	-0.1
Reed Canal Road	12401	9.4	9.1	9.0	0.0	9.1	0.0	9.0	0.0	9.0	-0.1	9.0	-0.1	9.0	-0.1	8.9	-0.2
Moonstone Court	13901	6.5	8.8	8.8	0.0	8.8	0.0	8.8	0.0	8.8	0.0	8.8	0.0	8.8	-0.1	8.7	-0.1
Madeline Avenue	12901	9.4	9.4	9.4	0.0	9.4	0.0	9.4	0.0	9.4	-0.1	9.4	0.0	9.5	0.0	9.4	0.0

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Nova Canal Flood Control and Integrated Water Resources Project

Summary of Modeling Results

Nova Canal System

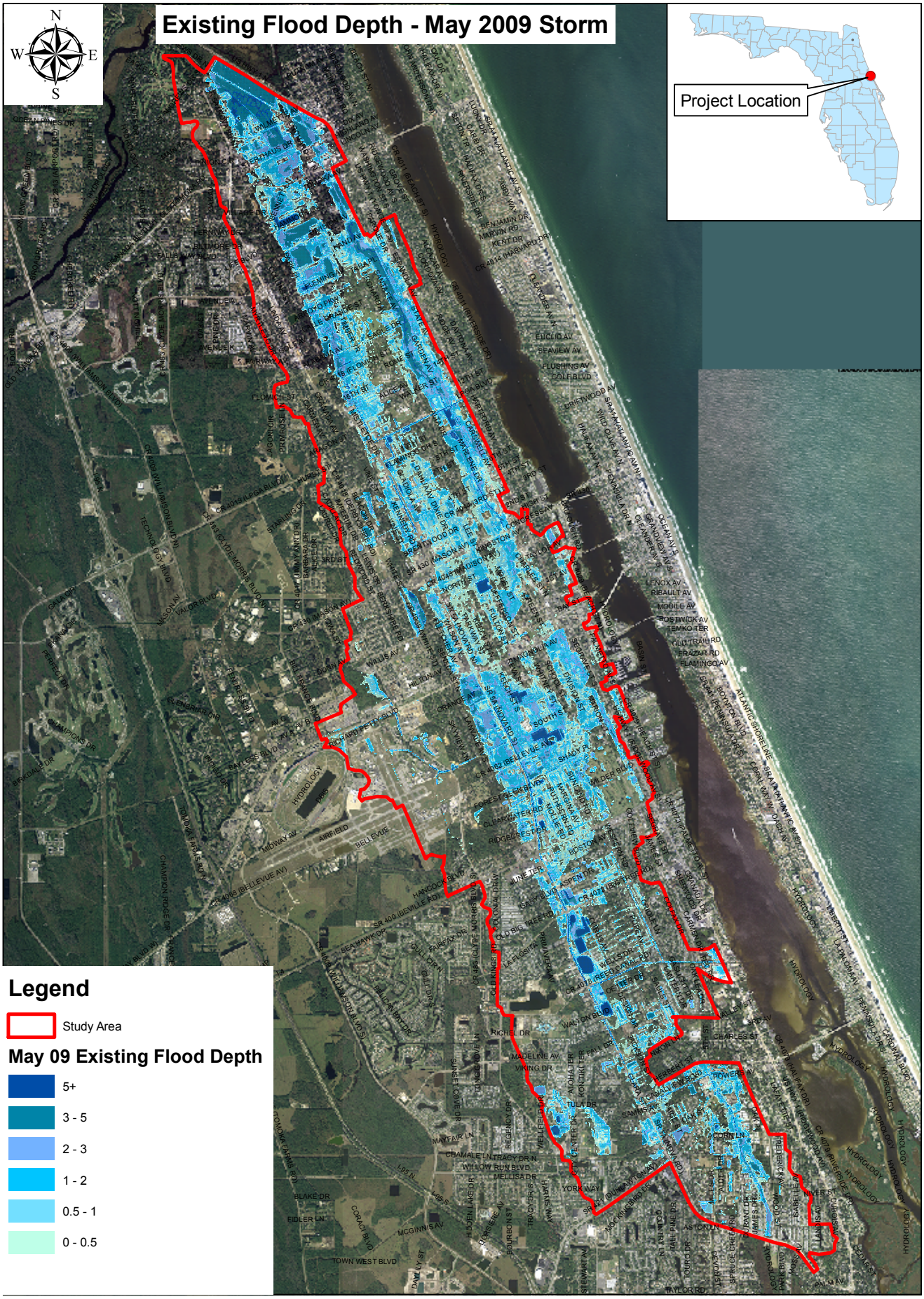
25-Year Event- Nova Canal System																	
	SWMM5	Indicator Elevation	Existing Peak Stage	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
Location	Node	(ft NGVD)	(ft-NGVD)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)	Peak Stage (ft-NGVD)	Change (ft)
10th Street	14	8.3	8.2	8.2	0.0	8.2	0.0	8.2	0.0	8.0	-0.2	8.0	-0.2	8.0	-0.2	8.0	-0.2
3rd Street	1901	10.8	8.9	8.9	0.0	8.9	0.0	8.8	0.0	8.4	-0.4	8.5	-0.4	8.5	-0.4	8.4	-0.4
Mason Avenue	3203	10.9	9.1	9.0	0.0	9.1	0.0	9.0	-0.1	8.4	-0.7	8.5	-0.6	8.5	-0.6	8.4	-0.7
Madison Avenue	3201	8.7	9.1	9.1	0.0	9.1	0.0	9.0	-0.1	8.1	-1.0	8.3	-0.8	8.3	-0.8	8.1	-0.9
George W. Engram Boulevard	3501	9.5	9.1	9.1	0.0	9.1	0.0	9.0	-0.1	8.4	-0.7	8.5	-0.7	8.5	-0.7	8.4	-0.8
West International Speedway Boulevard	4601	8.9	9.2	9.2	0.0	9.2	0.0	8.8	-0.3	8.5	-0.7	8.2	-0.9	8.3	-0.9	8.2	-1.0
Sutton Place Apartment Complex	5501	*	9.2	9.2	0.0	9.2	0.0	8.8	-0.4	8.5	-0.7	8.1	-1.1	8.1	-1.1	8.1	-1.1
Museum Boulevard/Navy Canal	6102	8.4	9.2	9.2	0.0	9.2	0.0	8.8	-0.4	8.6	-0.6	8.1	-1.1	8.1	-1.1	8.1	-1.1
Bellevue Avenue	7201	8.4	9.2	9.2	0.0	9.2	0.0	8.8	-0.4	8.6	-0.5	8.2	-0.9	8.2	-0.9	8.2	-0.9
Woodcliff Drive	8701	8.4	9.1	9.1	0.0	9.1	0.0	8.9	-0.3	8.8	-0.3	8.7	-0.5	8.7	-0.5	8.7	-0.5
Beville Road	10401	9.4	9.1	9.1	0.0	9.1	0.0	9.0	-0.1	9.0	-0.1	8.9	-0.2	8.9	-0.2	8.9	-0.2
Big Tree Road	11601	9.4	9.1	9.1	0.0	9.1	0.0	9.1	-0.1	9.0	-0.1	9.0	-0.1	9.0	-0.1	8.9	-0.2
Reed Canal Road	12401	9.4	8.2	8.1	-0.1	8.2	0.0	8.1	0.0	8.1	-0.1	8.1	-0.1	8.0	-0.2	7.9	-0.2
Moonstone Court	13901	6.5	8.3	8.3	0.0	8.3	0.0	8.3	0.0	8.3	-0.1	8.3	0.0	8.3	-0.1	8.2	-0.1
Madeline Avenue	12901	9.4	8.6	8.6	-0.1	8.6	0.0	8.6	0.0	8.5	-0.1	8.6	-0.1	8.6	0.0	8.6	-0.1

Alternative 1	Weir-gates and "pump-around" pump stations on LPGA, Reed and Halifax Canals
Alternative 2	Bottleneck analysis (result was no recommended upgrades, so values are same as Existing)
Alternative 3	Navy Canal storage and flow diversion west of Clyde Morris Boulevard
Alternative 4	Pump station and force main at Laurel Creek, North Street pond, Samuel Butts pond, and Buschman pond
Alternative 5	Combination of alternatives 2, 3 and 4
Alternative 6	Combination of alternatives 1, 2, 3 and 4
Alternative 7	Combination of alternatives 2, 3 and 4, plus weir-gates on LPGA, Reed and Halifax Canals and parallel pumps on LPGA and Reed Canals

Appendix G

Flood Inundation Maps

Existing Flood Depth - May 2009 Storm



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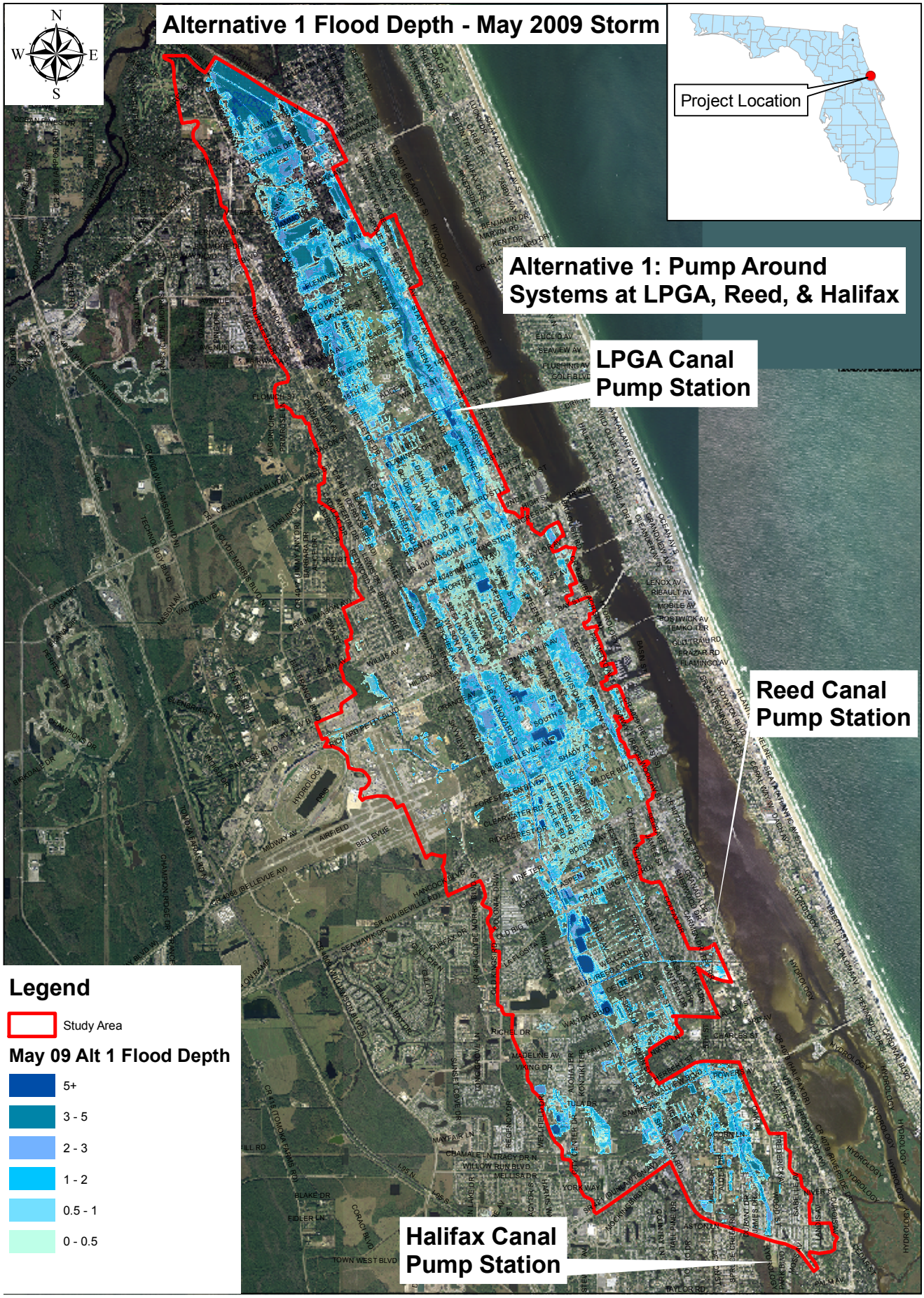
CDM	East Volusia Regional Water Authority (EVRWA)	**Figure May Ex** Nova Canal Flood Control and Integrated Water Resources Program Nova Canal Existing Flooding May 2009 Storm	UPDATED 05-05-10

Alternative 1 Flood Depth - May 2009 Storm



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CDM	East Volusia Regional Water Authority (EVRWA)	**Figure May Alt 1** Nova Canal Flood Control and Integrated Water Resources Program Nova Canal Alternative 1 Flooding May 2009 Storm	UPDATED 05-05-10