ENVIRONMENTAL RESOURCE SOLUTIONS, INCORPORATED

1 May 2008

Mr. Howard Goldstein
NOAA-NMFS Office of Protected Resources
1315 East-West Highway
Silver Spring, Maryland 20910

RE: Revised Request for Incidental Harassment Authorization (IHA)
Beach Boulevard AICWW Bridge Blasting Project
Duval County, Florida
ERS Job No. 07118

Dear Mr. Goldstein:

As you are aware, Incidental Harassment Authorization (IHA) for the referenced project was requested in January earlier this year. The Jacksonville Transportation Authority (JTA) desires to revise the request, effectively changing the dates of potential harassment from May-June 2008 to December 2008 through February 2009. The following narrative and attached documents constitute the revised IHA request. This letter requests IHA under the authority of Section 101(a)(5)(A-D) of the Marine Mammal Protection Act, as amended [16 U.S.C. 1371(a)(5)], for the explosive demolition of existing bridge support structures associated with the replacement of the Beach Boulevard Bridge over the Atlantic Intracoastal Waterway (AICWW) in Duval County, Florida.

The U.S. Army Corps of Engineers (COE) and St. Johns River Water Management District (SJRWMD) have issued Environmental Resource Permits to JTA for the replacement of an existing bridge (Beach Boulevard) over the AICWW (Permits No. SAJ-2003-9340-JJS and 4-031-90565-1, respectively).

The permittee, JTA, recently submitted permit modification requests to COE and SJRWMD, requesting authorization to change the method of removal of the old bridge to involve explosive demolition of twelve support structures. The permittee believes that by significantly reducing the amount of time that tugs and barges are active in the AICWW, through the use of explosive demolition, the overall risks to wildlife are reduced.

All applications for marine mammal IHA permits must address 14 points in sufficient detail for NOAA Fisheries to meet mandated requirements. These points are addressed below.

A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals.

Prior to addressing this issue in the following paragraph, we would like to emphasize that the proposed blasting activities are not expected to result in incidental taking of marine mammals; our

1597 The Greens Way, Suite 200 • Jacksonville Beach, Florida 32250 • Phone 904.285.1397 • Fax 904.285.1929
Email: mail@ersenvironmental.com

IHA application is being submitted as a precaution in the event of a worst case scenario in which marine mammals are injured or killed by the proposed blasting.

The new, fully permitted bridge will consist of separate eastbound and westbound spans. The new westbound bridge, which is 100% constructed and in use, occurs where no bridge structure previously existed. The location of the future eastbound bridge, which has not yet been started, coincides almost exactly with the existing bridge, necessitating the full removal of the latter. The existing bridge support piers are undersized, relative to the future span's requirements, and must be removed to make room for construction equipment and the new bridge, particularly its support piles. The permitted method of removal of the old bridge allows for the footers to be removed via non-explosive means from barges. The barges would have to be relocated regularly by a large tug boat for up to three months due to the quantity of concrete involved and the limited reach of the equipment.

Under the existing permits, the most practical way of demolishing the old bridge supports is to use a hydraulic hoe ram, the equivalent of a large jack hammer, mounted on a barge, maneuvered by a tug boat, and literally chip the concrete supports into tens of thousands of pieces. For demolition of the piers adjacent to the channel, a barge with a large chipper will operate from the channel and chip at an angle away from the channel. This way, nearly all of the small amount of rubble that falls toward the channel will land in the chipper barge.

There are only two practical ways of taking down the bridge supports – one method entails the aforementioned hoe ram which would chip the concrete into tens of thousands of pieces, the other involves explosives. Under a hoe ram only (i.e., no blasting) scenario, the risks to wildlife stem from tugs and barges operating in the AICWW, for a total of 900 hours ± (90 days x 10 hrs/day). An additional impact would be incurred by the protracted percussion pounding of the hammer. In a blasting scenario, risks to wildlife include the three blast events, and tug/barge activity in the AICWW totaling 400 hours (40 days x 10 hrs/day). A Blasting Plan document is attached for your review.

The date(s) and duration of such activity and the specific geographical region where it will occur.

The bi-directional bridge which is being replaced has been closed and currently is undergoing partial disassembly in preparation for demolition. Nearly all of the above water part of the bridge will be demolished via chipping. The below water portions and a small amount of the above water portions of the bridge will be demolished explosively. The first blasting event will occur on or shortly after 1 December 2008, and the subsequent two blasts will be completed by December 31, 2008.

The existing Beach Boulevard Bridge traverses the AICWW in Sections 36 & 38, Township 2 South, Ranges 28 and 29 East, Duval County, Jacksonville, Florida (Exhibit 1 of Blasting Plan). Approximate coordinates of the site are as follows: 30° 17' 17" North latitude, 81° 26' 18" West longitude.

The species and numbers of marine mammals likely to be found within the activity area.

The bottlenose dolphin (*Tursiops truncatus*) is known to occur at or within a few hundred feet of the project site several times a week. Dolphins, when present, usually occur in groups of two or three.

Also attached is an Endangered Species Biological Assessment prepared by Florida Department of Transportation (FDOT) in 1999 and a Supplemental Information Endangered Species Biological Assessment prepared in 2005 by Dial Cordy and Associates, Inc. Also attached is a Supplemental Information Endangered Species Biological Assessment and Supplemental Essential Fish Habitat Assessment for the project area.

A description of the status, distribution and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities;

Again, given our Wildlife Watch Plan, it is possible, not likely, that marine mammals will be affected by the blasting. Bottlenose dolphin occurrence in the AICWW is year-round, without significant seasonal variation. The bottlenose dolphin is not listed as an endangered or threatened species. It occurs in temperate and tropical waters worldwide.

The type of incidental taking authorization that is being requested (i.e., takes by harassment only; takes by harassment, injury and/or death) and the method of incidental taking;

While incidental take is possible as a result of pressure waves from the blast, implementation of the attached draft Marine Wildlife Safety and Watch Plan (Watch Plan) will minimize the possibility of incidental take to the fullest extent practicable. The Watch Plan has been submitted to the U.S. Fish and Wildlife Service (FWS), SJRWMD, Florida Fish and Wildlife Conservation Commission (FWC), and COE. The applicant has already expressed a desire to the COE, FWS, and FWC to meet and discuss the project and modifications to the Watch Plan, if any.

A nearly identical Watch Plan was used during demolition of the Fuller Warren Bridge, which spans approximately 3600' over open water in downtown Jacksonville. The Beach Boulevard Bridge spans approximately 300' over open water. Applying the same specifications for a project that is more than an order of magnitude smaller in scale represents an effort to provide more than adequate protection for large wildlife including bottlenose dolphins.

By significantly reducing the amount of time that tugs and barges are active in the AICWW, through the use of explosive demolition, the overall risks to wildlife are reduced. The permitted bridge removal method does not include a Watch Plan. This significantly increases the likelihood that

bottlenose dolphins, which occasionally occur in the AICWW, will enter the demolition area unobserved. In the demolition area, unobserved wildlife will be at risk from barge/tug activity.

The blasting versus non-blasting discussion, therefore, more appropriately, hinges on whether the additional 500 hours of barge/tug activity without several trained wildlife observers represents a greater risk to wildlife than the three blast events which include a Watch Plan specifically designed and implemented to minimize wildlife risk. We feel that the blasting scenario will have less risk. Though fish and invertebrates in the immediate blast area may be killed or injured by the blasts' pressure waves, the affected species will quickly re-inhabit the area.

Environmental Resource Solutions, Inc. (ERS) currently is seeking approval of the Safety & Watch Plan from FWC and FWS representatives.

By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in paragraph (a)(5) of this section, and the number of times such takings by each type of taking are likely to occur.

Implementation of an FWS- and FWC-approved Wildlife Watch Plan renders the risk of an actual take during any of the blasting events low; we anticipate that no takings will occur. However, there is a slight risk that one or two bottlenose dolphins will elude the wildlife observers and be harassed, injured or killed during each of the three blasting events. It is not possible to anticipate the age, sex or reproductive condition of dolphins possibly affected by the blasting.

The anticipated impact of the activity upon the species or stock.

The safety zone radius of the blast is determined by using the U.S Navy Dive Manual's Safety Formula for an uncontrolled blast suspended in the water column. In the current instance, the formula is conservative since the charges to be used for Beach Boulevard Bridge footers will be confined within the footers, effectively reducing both the pressure and impulse of a water shock wave. In addition, boreholes will be stemmed at the in collars to further contain the pressures.

The safety zone radius formula in feet is expressed by the following:

Safety Formula $R = 520 (W)^{1/3} + 500$

R = Exclusion Zone Radius
W = Weight of explosive in pounds per delay (9ms minimum separation)

For the designed maximum explosives per delay of 16.5 pounds, the resulting exclusion zone is 1824 feet.

Blasting is anticipated to be completed with 3 shots occurring over a two to three week period. This time frame is subject to change dependent upon weather, tides, etc.

The attached Watch Plan will be implemented for the entirety of the 1824' safety zone surrounding the project area in order to minimize wildlife impact to the fullest extent practicable; we do not anticipate the activity will impact the bottlenose dolphin. However, a slight risk that dolphins may elude observation and be injured or killed exists.

The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat.

The existing land cover and land use within the project area includes the two bridge abutments, the open water of the AICWW, salt marsh, a marina to the northeast, and a navigable water body to the southeast. The salt marsh, largely occurring north and south of the western bridge abutment, is dominated by *Spartina alterniflora* and *Juncus roemerianus.* Invertebrates (mollusks, polychaetes, crustaceans, and insects) and terrestrial vertebrates (mammals, wading birds) are common marsh associates. Fish frequent the marsh at high and mid-tides. The remainder of the submerged area is mud and sand. Polychaetes, crustaceans and mollusks likely occur in areas where tidal flow velocity is not high. Fishes occur over the bottoms. There is no submerged aquatic vegetation in the area.

As indicated in the *Demolition Debris* section and Exhibit 7 of the Blasting Plan, the vast majority of the debris will be gravel size and larger, a small amount of sand-sized and smaller pieces. The blast debris will not disperse across an area wider than 80 feet.

No components of the bridge will be purposefully placed in the AICWW; only those demolition fragments which are impractical to keep out of the water will end up on the bottom. The bascule grates and all of the rebar in those portions of the supports that will be chipped will undergo controlled removal. Most of the rebar in those portions of the supports that will be demolished explosively will remain intact and in place, and therefore will be easily cut and removed with heavy machinery. Only a small portion of the support structure rebar will end up in the AICWW.

Most of the horizontal portions of the bridges (=spans) will be deconstructed through the use of cranes, large chippers and trucks. Very little of this portion of the bridge will fall into the water. The vertical supports will be chipped to an elevation of 5', with nearly all of the concrete fragments falling into the open water away form the channel, and the steel rebar cut and hauled away for disposal or recycling. Rubble generated by the explosive demolition of the remaining above water stubs and all of the submerged portions of the supports will be removed in accordance with the Debris Removal section of the Blasting Plan.

The profile and cross-section of the channel will be re-established within 6-8 hours of each of the three blast events, as referenced in the *Debris Removal* section of the Blasting Plan. Debris in the project area but outside the channel will be removed within 30 days of the final blasting event.

It is anticipated that the blasting events will not physically impact the marine mammal habitat in the AICWW except for the blast debris which falls to the bottom. The anticipated biological impact of the explosive demolition is that benthic and water column dwelling vertebrate and invertebrate species near the blasts will be killed by pressure waves. Restoration of the physical habitat adjacent to the AICWW channel will begin within an hour or two of the two related blast events and will entail debris removal. Restoration of the physical habitat at the bridge will be completed within 30 days of the final blasting and will involve re-establishing the pre-blast contours through the use of a clamshell dredge and/or large back hoe.

The activity will have a small and inconsequential impact to the physical habitat at/near the bridge. The blasting event will have an ephemeral impact on the biological component of the near bridge habitat.

The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved.

Temporary disturbance of the project area during the proposed blasting activities is not expected to reduce post-construction use of the area by resident and transient species.

The project will not result in loss of bottlenose dolphin habitat. Habitat modifications, if any, will be inconsequential. Therefore, habitat modification, if any, will have no effect on the dolphin.

The availability and feasibility (economic and technological) of equipment, methods and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance.

No rookeries, mating grounds, or area of similar significance have been identified in or near the project area.

The blasting versus non-blasting discussion hinges on whether the additional 500 hours of permitted barge/tug activity without several trained wildlife observers represents a greater risk to wildlife than the three proposed blast events which include a Watch Plan specifically designed and implemented to minimize wildlife risk. We feel that the blasting scenario will have less risk.

Impacts to navigation in the AICWW are expected to be low whether blasting occurs or not. However, it is obvious that a project entailing 400 hours of tug/barge activity will be less impacting than 900 hours of tug/barge operations.

The only two practical means of removing the existing footers is by chipping or explosives, with chipping the no-action alternative, in this case. Chipping, while protracted, is in fact possible. However, risks to wildlife, slight risks to boat navigation and brief channel closures are all positively correlated to the demolition duration. Therefore, explosive demolition, while not risk-free, is superior to chipping.

The location and nature of the blasting combine to indicate that impacts to the AICWW will be limited. The footprint of the bridge in the blasting area comprises a channel that experiences high scour, and shallower bottoms that are covered with rip rap, gravel and rocks. It is a highly manipulated and artificial setting. The blasting will consist of three brief shock waves and result in more rubble falling on top of the existing rubble.

Five complications to further impact minimization exist. First, the area is tidally influenced with the normal tidal range over four feet. The constant ebb and flow limits turbidity control measures. Second, the AICWW is comparatively narrow at the bridge crossing, leading to strong currents. Third, the currents are bi-directional, eliminating any minimization measures that might be implementable at a uni-directional flow location. Fourth, interstitial gaps in the rip rap and general rubble all but prevent turbidity containment, particularly when combined with the three aforementioned complications. Finally, maintenance of navigation in the channel severely limits possible remediation and containment of blast rubble coming from the eight footers next to the channel.

Where the proposed activity would take place in or near a traditional Arctic subsistence hunting area and/or may affect the availability of a species or stock of marine mammal for Arctic subsistence uses, the applicant must submit either a "plan of cooperation" or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses.

Not applicable. The proposed project area is not located in or near a traditional Arctic subsistence hunting area.

The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans should include a description of the survey techniques that would be used to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding. Guidelines for developing a site-specific monitoring plan may be obtained by writing to the Director, Office of Protected Resources.

As detailed in the attached Watch Plan, within two weeks after completion of all the detonation events the Chief Observer will submit a summary report to regulatory agencies. This report will contain the observers' logs, provide the names of the observers and their positions during the event, the number and location of marine mammals sighted and the actions that were taken when the animals were observed.

Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects.

A formal Plan Coordination Meeting will be held no later than three days before the first detonation event to review the above listed items, to discuss the responsibilities of all parties, and to review and approve the schedule of events. Attendees will include the contractor's representative, the entire Marine Wildlife Safety Observer team, the blasting consultant, the USFWS, FWC, the U.S. Coast Guard (USCG), and other interested Environmental parties such as NMFS and Florida Marine Patrol. The agenda will be coordinated by Superior Construction with the blasting contractor, USFWS, and FDEP. It will include the latest information about the possible presence of marine mammals during the operation, the logistics of the detonation schedule, the communications plan, and the responsibilities of all parties involved. As described above, a summary report will be submitted to all interested parties.

If you have any questions or comments, please contact me.

Sincerely,

ENVIRONMENTAL RESOURCE SOLUTIONS, INC.

Allan Hooker
Vice President

Enclosures: Blasting Plan (December 2007)
Endangered Species Biological Assessment (ESBA) (1999)
Supplemental ESBA (September 2005)
Supplemental ESBA Assessment (November 2007)
Supplemental EFH Assessment (November 2007)
Draft Marine Wildlife Safety Plan and Draft Manatee, Marine Mammal, Sea Turtle Survey Watch Plan (November 2007)

cc: Mr. Jeremy Andrews, Superior Construction, w/out enclosures
Mr. Larry Wehner, JTA, w/out enclosures

(AFH/JK/ljd/dc/07118/noaa-nmfs-letter-5-1-08)

BEACH BOULEVARD BRIDGE
BLASTING PLAN

DECEMBER 2007

REVISED MAY 2008

Beach Boulevard (S.R. 212) Bridge
Blasting Plan
December 2007

Introduction

The Jacksonville Transportation Authority (JTA) currently is in the process of replacing the Beach Boulevard Bridge across the Atlantic Intracoastal Water Way (AICWW). The project area is depicted on the attached Location Map, Exhibit 1. The new bridge will consist of separate eastbound and westbound spans. The new westbound bridge, which is constructed and in use, occurs where no bridge structure previously existed. The location of the future eastbound bridge, which has not yet been started, coincides almost exactly with the bridge that is being replaced, necessitating the full removal of the latter. The existing bridge's support piers are undersized, relative to the future span's requirements, and must be removed to make room for construction equipment and the new bridge, particularly its support piles. JTA proposes to demolish the piers with controlled explosives.

The remainder of this narrative describes pre-blasting measures and activities that have already been undertaken as well as the proposed blasting and post-blasting measures and activities.

Baseline Conditions

The over water portion of the western side of the old bridge is supported by four piers of bent piles. The eastern, over water portion is supported by four similar piers and four bascule pier piles. Concrete coffer dams support the footers on both sides of the navigable channel. The below-water plan view of these twelve supports is indicated on Salient Features, Plan View, Exhibit 2. The supports on both sides are protected from erosional scour by much rip rap and numerous gabions. A navigation channel is between the two sets of bent pile piers. A protective fender system is in place. Over the years, much rock, gravel and rip rap has been placed in the open water under the bridge. Exhibits 3 and 4, respectively, are a plan view survey and cross-section survey of bottom elevations at and near the bridge.

Blasting Details

As preface to preparing the 12 structures (the number of supports below the mean low water elevation) for explosive demolition and consistent with the current permits, each structure will be chipped to approximately 5' N.G.V.D. Once the supports have been lowered to 5' N.G.V.D.±, the below water and remaining above water portions will be removed by explosives.

Three separate blast events will take place. The locations and sequence of the blasts are indicated on Exhibit 5. In preparation for each blasting event, floating turbidity curtains will be deployed within 40' of the structures to be blasted. The curtains will minimally be 6' long.

(Curtains longer than 6' would be torn and carried away by the currents at the bridge, and ultimately become waste.) Once the curtains are in place, the target concrete will be drilled, explosives will be placed in the drill holes, and the drill holes will be stemmed. Mats to contain debris will be draped over the above water portion of the supports. Only after all the measures described in the Marine Wildlife Safety Plan and Manatee, Marine Mammal, Sea Turtle Survey Watch Plan have been implemented (see Exhibit 7 for the location of wildlife spotters), will the blast events occur. The duration of each event will approximate two seconds. The first blast is tentatively scheduled for the first week in December 2008 and will focus on demolishing the four western supports and underlying coffer dam. The second event will occur about 10 days later and destroy the supports and coffer dam on the immediate eastern side of the channel. The final blast event will take place on or about 31 December 2008 and will eliminate the four supports situated east of the channel and west of the eastern bridge abutment. The existing fenders will be removed immediately prior to the first blasting event.

The radius of dangerous effect for underwater explosives is based on a U. S. Navy formula derived for divers. Importantly, the formula is based on an uncontrolled blast suspended in the water column; the formula yields an artificially high radius in instances of controlled or contained blasts, like the kind proposed at the Beach Boulevard Bridge. The exclusion zone formula used by the U.S. Fish and Wildlife Service is:

$R=[520\ (w)^{1/3}] + 500$

where R=safety radius and w=weight of explosive in pounds per delay (0.009 second minimum separation).
With 16.5 pounds the maximum explosives per delay, the safety radius is 1825'±. This radius is depicted on Exhibit 7.

Demolition Debris

Approximately 3,604 cubic yards of blast debris is anticipated (8 bascule piers, 2900 c.y. ±; 2 coffer dams, 440 c.y.; and the eastern four piers, 264 c.y.). (All of the debris would also have been generated by chipping demolition.) Most of the debris will remain close to its source. Some will fall along the side slopes and bottom of the AICWW channel. The average size of the blast debris will be 6" to 9". A small percentage of the debris will be finer particles, including dust. Some may approximate as much as 0.5 cubic yard in displacement. The use of mats on the above water portions of the supports will prevent fragments from travelling through the air. Due to the resistance of the water itself, none of the underwater demolition debris will be propelled beyond a 40' radius, see Exhibit 8. Unfortunately, the high water flow velocities under the bridge preclude most turbidity control measures. This problem will be largely offset by the fact that most of the debris will quickly settle due to its mass. The very fine material will not have adverse impacts since the AICWW intrinsically transports a considerable load of suspended fine materials continuously.

A modicum of rebar is embedded in the piers. This will likely remain in the place through the blasting. Some may topple into the water. All accessible rebar will be removed by heavy equipment (see the Debris Removal section below). A very small percentage of the rebar may remain in the AICWW.

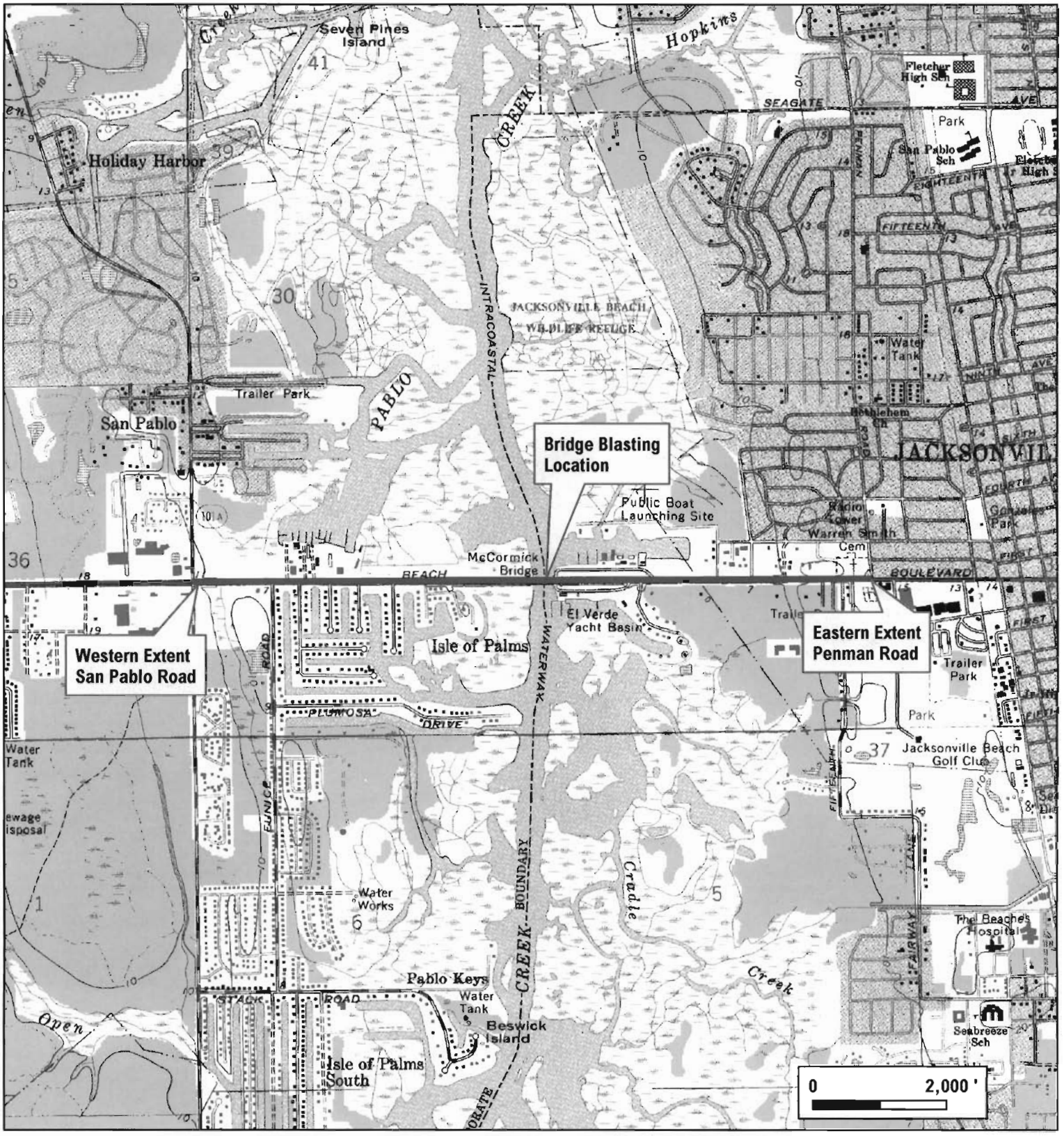
The non-explosive deconstruction of the bridge will yield mostly large disassembled pieces and large jack hammered pieces. These will be removed by using the remaining bridge. The existing grates, which directly overlie the navigation channel, will be easily removed, without impeding navigation. A small amount of the span pieces inevitably will fall into the water beneath the bridge, outside the channel. These will be removed during the removal of the blast rubble (see the Debris Removal section below).

Debris Removal

Quick removal of any blasting debris from the navigation channel is imperative. Any debris which affects the cross-sectional and profile integrity of the channel will be removed, via the dual barge method described two paragraphs below, within 6-8 hours of the blasting event.

Exhibit No. 3 indicates bottom contours as determined in 2006. The contours were generated with side scanning sonar that recorded continuously along nine east/west traverses spaced 50'± apart. A new bottom contour survey will be produced a few weeks prior to any chipping demolition. The survey will result from a side scanning sonar recording bottom depths continuously along 40 east/west traverses spaced ten feet apart. The 2008 survey will also have 5' contours and serve as the reference for all post-demolition debris removal. The survey will be forwarded to COE and SJRWMD prior to any chipping demolition. Following demolition, debris will be removed from the bottoms so that only an incidental quantity remains post-development. After debris removal, a final survey of the bottoms will be prepared and submitted to COE/SJRWMD. The survey will be generated using a side scanning sonar which records bottom depths continuously along 40 east/west traverses spaced 10' apart. The contour interval will be 5'.

Two barges will be used during debris removal. One will have either a large back hoe or a small crane that will lift debris from the water way. The second barge will hold the debris. Whether on the east or west side of the navigation channel, the paired barges will be oriented north/south, thereby keeping the navigation channel largely unobstructed. A land based back hoe or crane will empty the barge loads into awaiting dump trucks. Creosote soaked piles will be taken to Trail Ridge Land Fill in western Duval County, and concrete and rebar will be taken to one of several approved C & D land fills in Duval County. We know of no other practical means of debris removal/disposal.



Section:	38, unclassified	**Section:**	36
Township:	2 South	**Township:**	2 South
Range:	29 East	**Range:**	28 East

WESTERN EXTENT		**EASTERN EXTENT**	
Lat.:	30° 17' 17" N	**Lat.:**	30° 17' 17" N
Long.:	81° 26' 16" W	**Long.:**	81° 24' 20" W

Environmental Resource Solutions Inc.
1597 The Greens Way, Suite 200
Jacksonville Beach, FL 32250

Beach Blvd. Widening Project Location Map

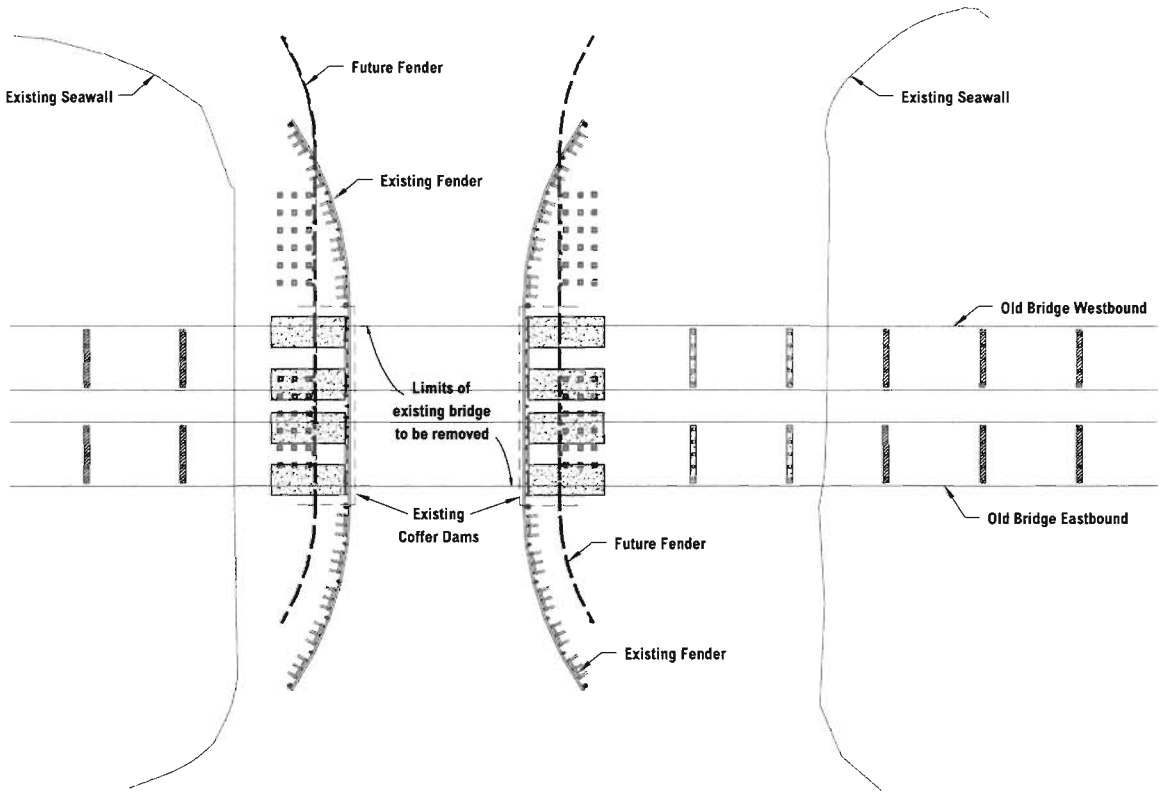
Project No.:	07118
Exhibit No.:	1
Date:	8-23-07
Rev. Date:	

Source: USGS 7.5' Jacksonville Beach, FL Topographic Quadrangle

By: JK

N W E S

X:\GIS Projects\07118\07118_location_8-23-07.mxd



Legend
- Land Based Old Bridge Supports
- Water Based Old Bridge Supports
- Water Based New Bridge Supports

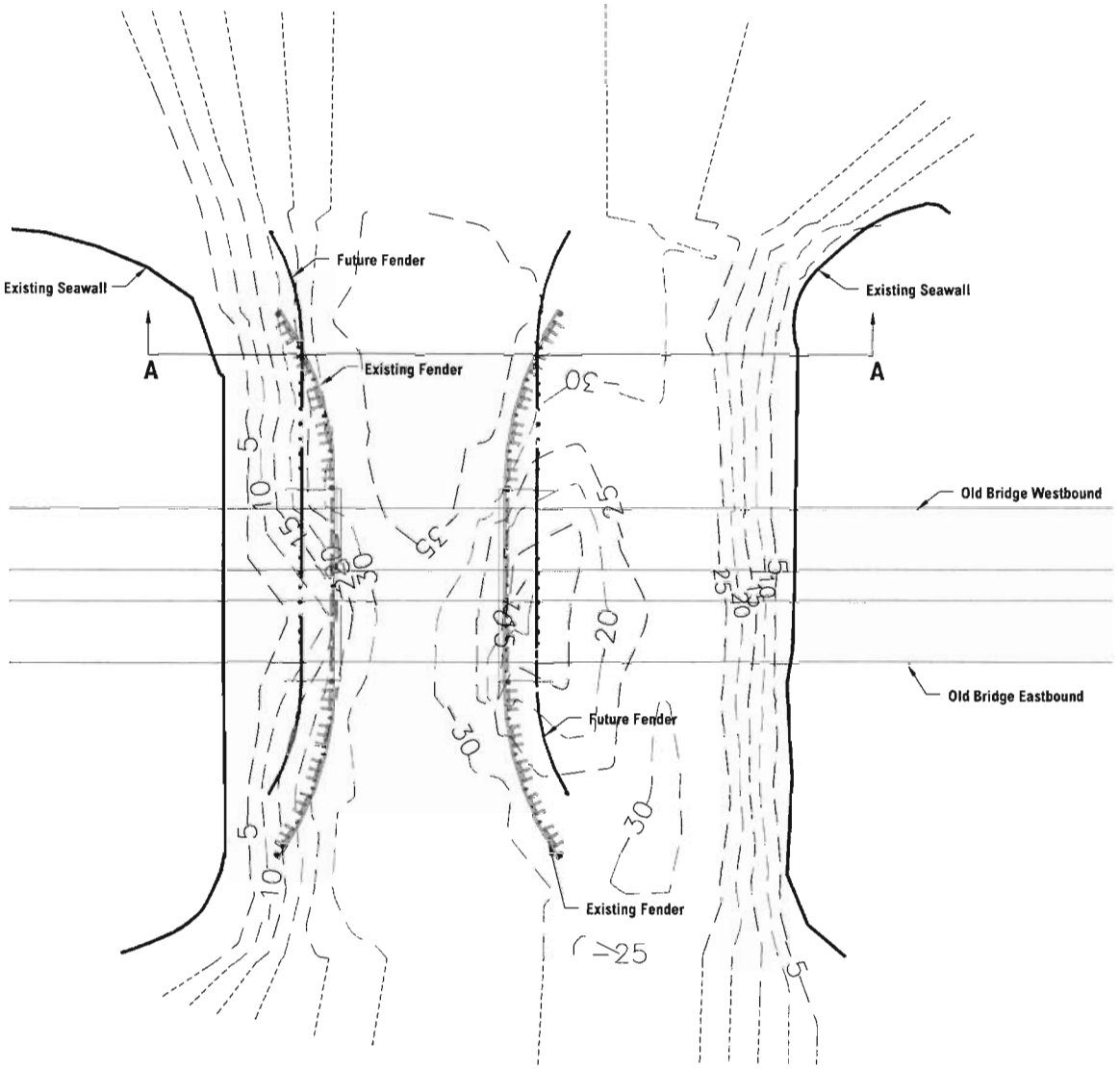
Note: This plan has been simplified-it illustrates the spatial relationship of features germane to orientation and demolition.

Scale: 1"=100'

Environmental Resource Solutions Inc.
1597 The Greens Way
Suite 200
Jacksonville Beach, FL 32250

Beach Blvd. Bridge Demolition
Salient Features, Plan View

Source:	Project No.: 07118	
	Date: 11-19-07	Rev:
File: 07118_Plan_111507	By: KC	Exhibit No: 2



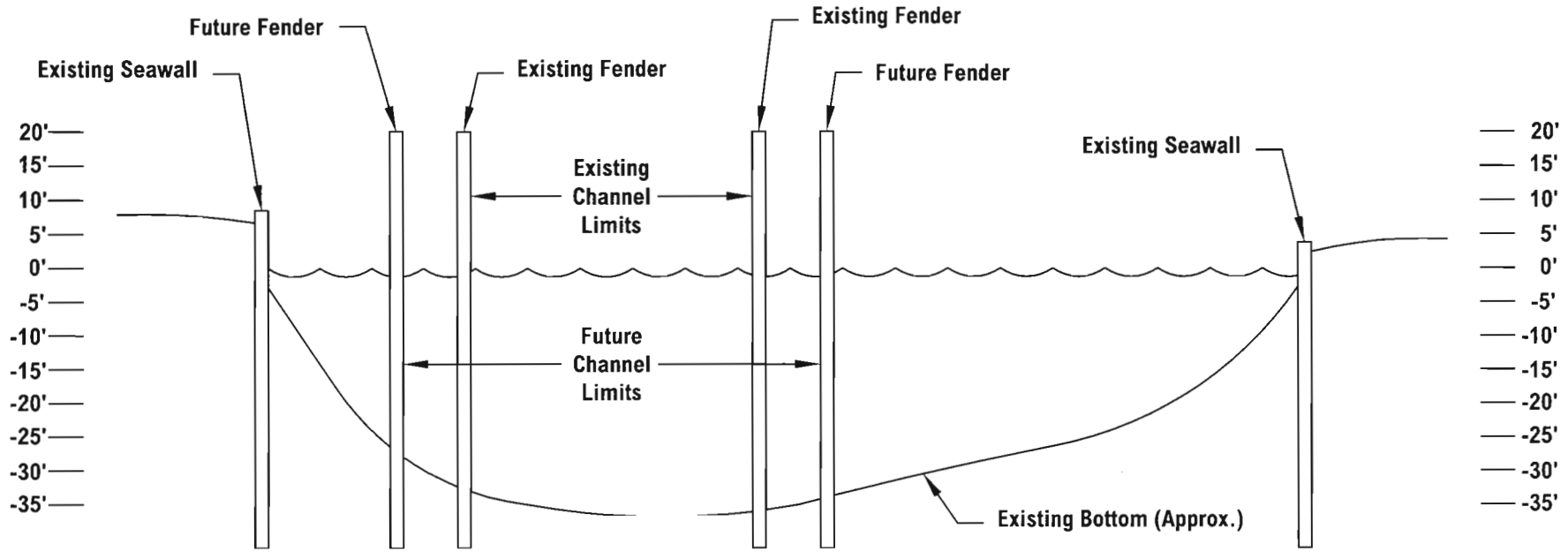
Notes: 1. This plan has been simplified-it illustrates the spatial relationship of features germane to orientation and bottom contours.
2. Depths are based on N.G.V.D.
3. See previously submitted Exhibit 4 for Cross-Section A-A.

Scale: 1"=100'

Environmental Resource Solutions Inc.
1597 The Greens Way
Suite 200
Jacksonville Beach, FL 32250

Beach Blvd. Bridge Demolition
Salient Features, Bottom Contours

Source: File: bryrd01.dwg	Project No.: 07118	
	Date: 11-19-07	Rev: 11-21-07
File: 07118_Topo_112107	By: KC	Exhibit No: 3



0' H 50'

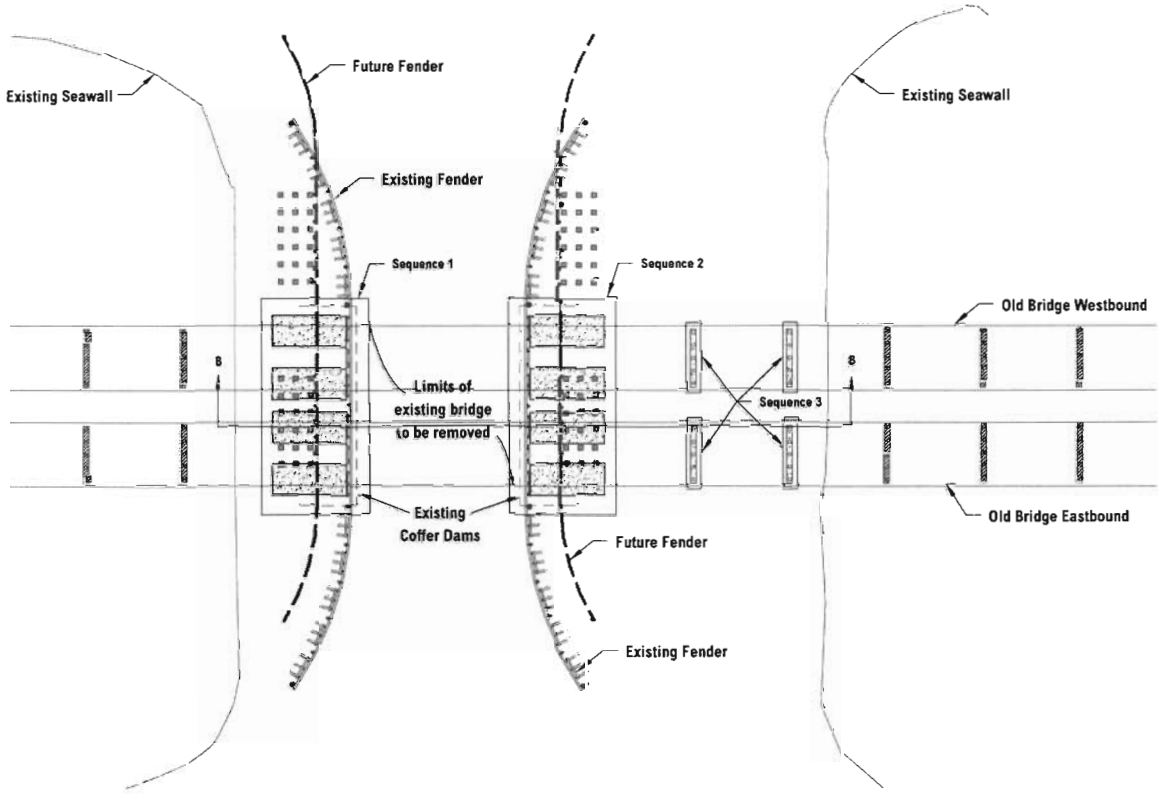
0' V 25'

Notes: 1. Elevations are based on N.G.V.D.

Environmental Resource Solutions Inc.
1597 The Greens Way
Suite 200
Jacksonville Beach, FL 32250

Beach Blvd. Bridge Demolition
Cross Section A-A (Viewing North)

Source:	Project No.: 07118	
File: bryrd.01.dwg	Date: 11-27-07	Rev: 1-27-08
File: 07118_C-S_1-27-08	By: KC	Exhibit No: 4



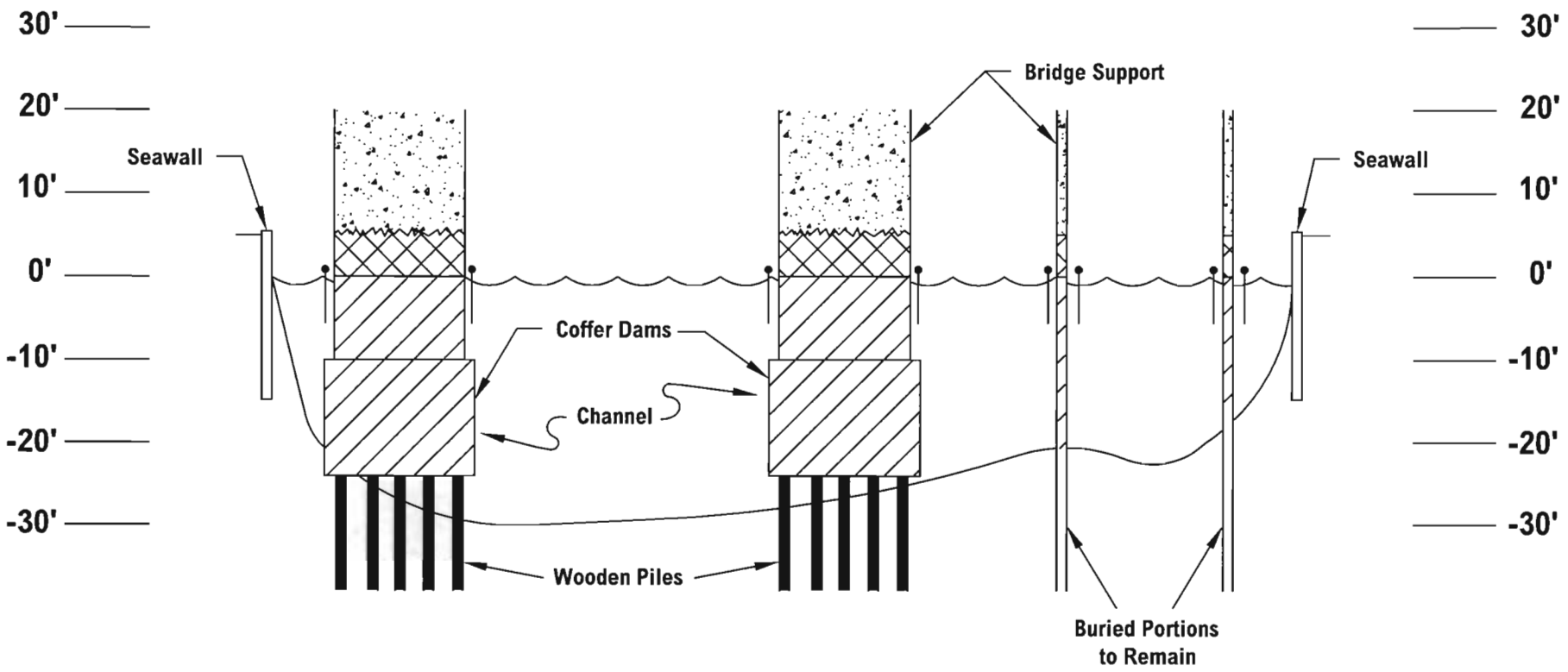
Note: 1. This plan has been simplified-it illustrates the spatial relationship of features germane to orientation and demolition.
2. The blasting sequences 1, 2, and 3 will be blasted in numeric order.

Scale: 1"=100'

Environmental Resource Solutions Inc.
1597 The Greens Way
Suite 200
Jacksonville Beach, FL 32250

Beach Blvd. Bridge Demolition
Proposed Blast Location/Sequence

Source:	Project No.: 07118	
	Date: 11-19-07	Rev:
File: 07118_sequence_111507	By: KC	Exhibit No: 5



Legend

- Proposed Explosive Demolition
- Stub to be Covered by Projectile Elimination Mats
- Previously Permitted Chipping Demolition (Chipped into Barges)
- Proposed Floating Turbidity Curtain
- Supports to be mechanically dislodged from intracoastal bottom or mechanically cut at or no more than 2' below the mud line.

Notes:
1. This plan is approximate and has been simplified. It depicts features germane to orientation and demolition.
2. Elevation Datum is N.G.V.D.
3. All indicated structures are existing.

0' H 50'
0' V 20'

Environmental Resource Solutions Inc.
1597 The Greens Way
Suite 200
Jacksonville Beach, FL 32250

Beach Blvd. Bridge Demolition
Bridge Support
Cross-Section B-B (Viewing Northward)

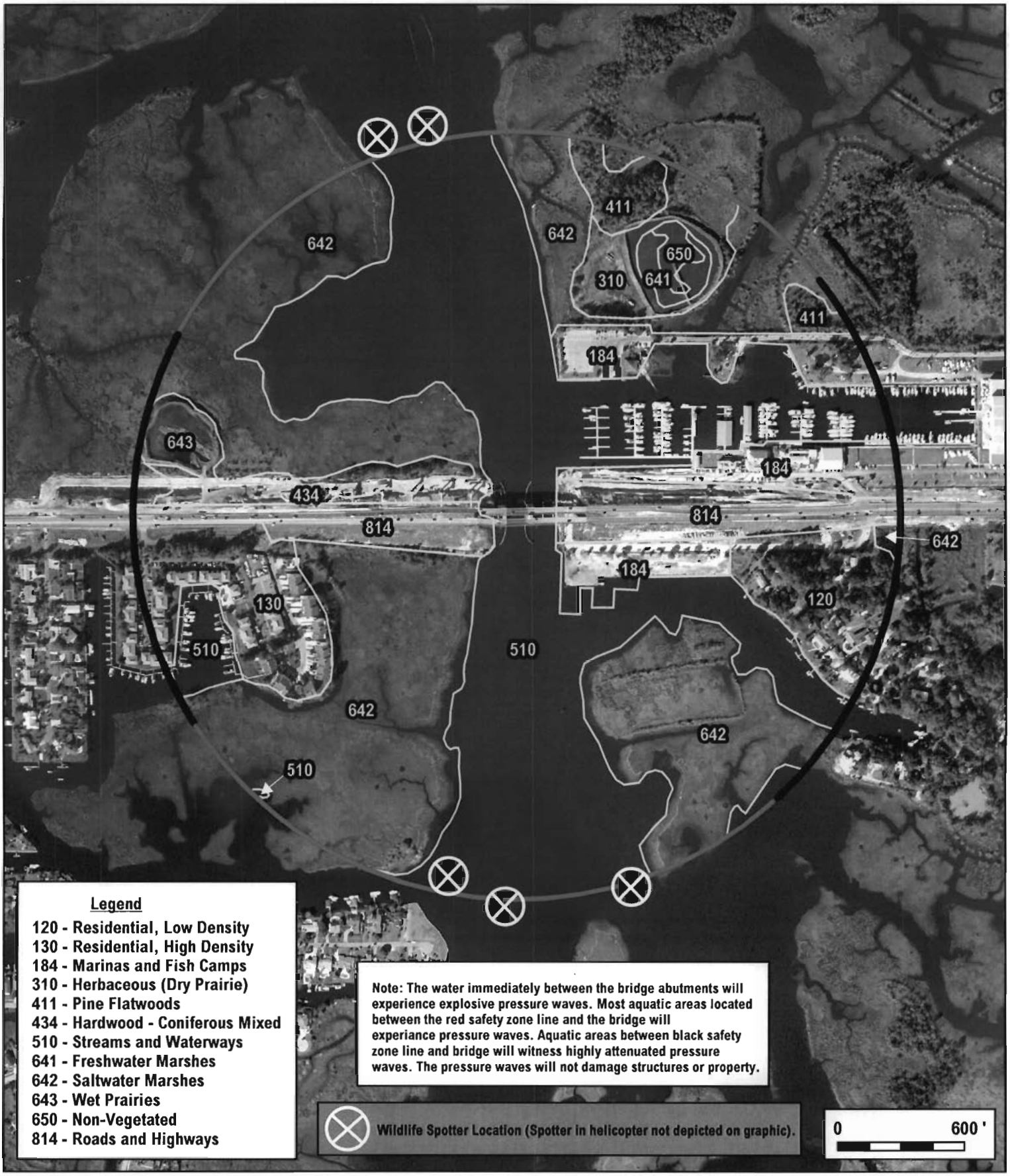
Source:

File: 07118_C-S_B-B_120507

Project No.: 07118

Date: 12-5-07 | Rev: 1-16-08

By: KC | Exhibit No: 6



Legend

- 120 - Residential, Low Density
- 130 - Residential, High Density
- 184 - Marinas and Fish Camps
- 310 - Herbaceous (Dry Prairie)
- 411 - Pine Flatwoods
- 434 - Hardwood - Coniferous Mixed
- 510 - Streams and Waterways
- 641 - Freshwater Marshes
- 642 - Saltwater Marshes
- 643 - Wet Prairies
- 650 - Non-Vegetated
- 814 - Roads and Highways

Note: The water immediately between the bridge abutments will experience explosive pressure waves. Most aquatic areas located between the red safety zone line and the bridge will experiance pressure waves. Aquatic areas between black safety zone line and bridge will witness highly attenuated pressure waves. The pressure waves will not damage structures or property.

⊗ Wildlife Spotter Location (Spotter in helicopter not depicted on graphic).

Environmental Resource Solutions Inc.
1597 The Greens Way, Suite 200
Jacksonville Beach, FL 32250

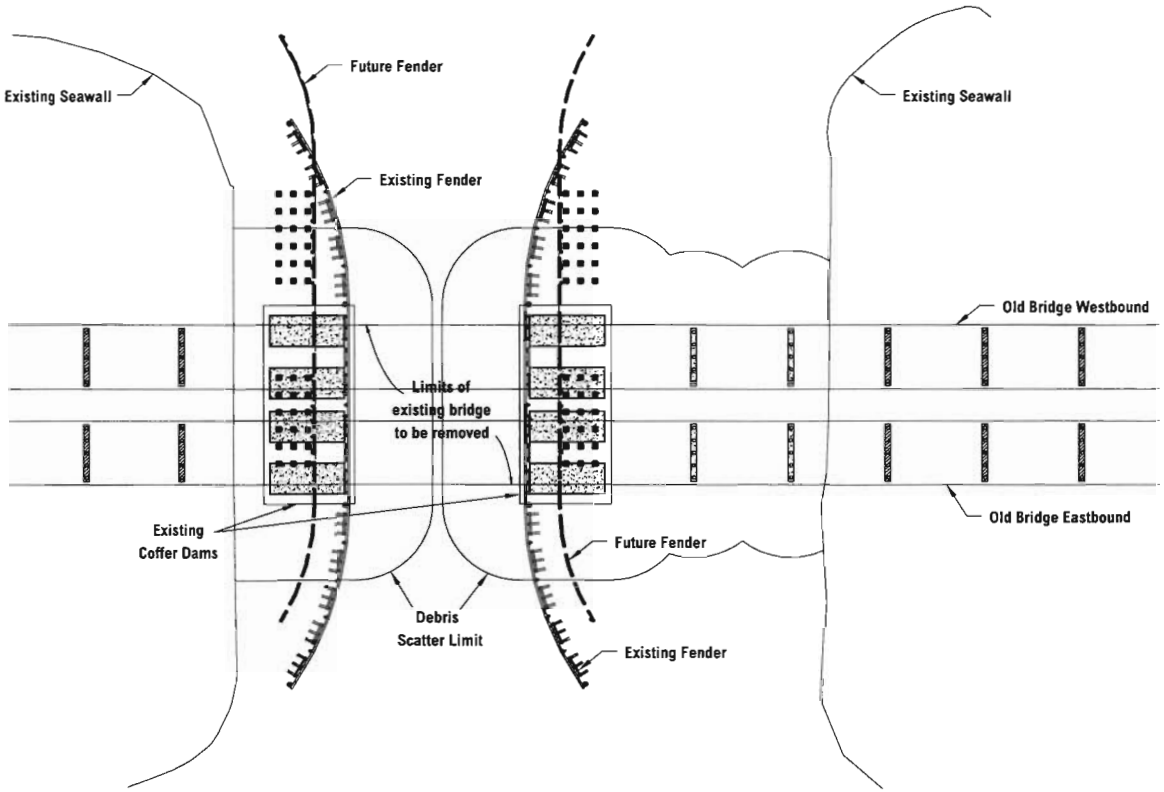
Beach Blvd. Bridge Demoltion
Aquatic Safety Zone/FLUCFCS Map

Project No.:	07118
Exhibit No.:	7
Date:	11-28-07
Rev. Date:	

Aerial Source: AerialsExpress (2007) | By: KC

N W E S

X:\GIS Projects\07118\07118_FLUCFCS_111907



Legend
- Land Based Old Bridge Supports
- Water Based Old Bridge Supports
- Water Based New Bridge Supports

Notes: 1. This plan has been simplified-it illustrates the spatial relationship of features germane to orientation and demolition.
2. Demolition debris will be recovered with a clamshell dredge and/or grappling hooks.

Scale: 1"=100'

Environmental Resource Solutions Inc.
1597 The Greens Way
Suite 200
Jacksonville Beach, FL 32250

Beach Blvd. Bridge Demolition
Underwater Debris Scatter, Plan View

Source:	Project No.: 07118	
	Date: 11-19-07	Rev: 1-15-08
File: 07118_Debris_111507	By: KC	Exhibit No: 8

ENDANGERED SPECIES BIOLOGICAL ASSESSMENT

(FLORIDA DEPARTMENT OF TRANSPORTATION, 1999)

ENV. SVC. -

Florida Department of Transportation

JEB BUSH
GOVERNOR

THOMAS F. BARRY, JR.
SECRETARY

P.O. Box 1089
Lake City, Florida 32056-1089
(904) 758-3725

RECEIVED
ENVIRONMENTAL MGMT. OFFICE
OCT 23 1999
DEPT. OF TRANSPORTATION
LAKE CITY, FLORIDA

October 18, 1999

Mr. David L. Hankla
Endangered Species Field Station
U. S. Fish and Wildlife Service
6620 Southpoint Drive, South
Suite 310
Jacksonville, Florida 32216-0912

Re: Financial Management Number: 20951312101
Federal Aid Project Number: XA-2546(18)
SR 212, Beach Boulevard
Duval County, Florida

Dear Mr. Hankla:

Enclosed is an Endangered Species Biological Assessment for your review and comment. I would appreciate a letter of "concurrence of no effect" if you agree with the conclusions of this document. I would be happy to answer any questions you might have concerning this project.

Thanks for your assistance.

Sincerely,

Peter D. Southall

Peter D. Southall
Environmental Specialist

U.S. FISH & WILDLIFE SERVICE

FWS Log. No. 00-326

The Proposed action is not likely to adversely affect resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act.

U.S. Fish & Wildlife Service
6620 Southpoint Drive South, Suite 310
Jacksonville, Florida 32216
(904) 232-2580 (FAX) (904) 232-2404

for David L. Hankla
Field Supervisor

10/21/99
Date

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312, FAX 570-5517

NOV 3 - 1999

F/SER3:JBM

Mr. Peter D. Southall
Environmental Specialist
Florida Department of Transportation
P.O. Box 1089
Lake City, Florida 33702

Dear Mr. Southall:

We have reviewed the "Endangered Species Biological Assessment" transmitted by letter of October 18, 1999, and concur with your determination that listed species under the purview of the National Marine Fisheries Service (NMFS) will not be adversely affected by the proposed replacement of the San Pablo Creek bridge on State Road 212 in Duval County, Florida.

Section 7 of the Endangered Species Act, as amended, requires consultation between NMFS and the Federal action agencies that conduct, fund, or permit actions that may affect listed species. Please forward your assessment and this response to the funding or permitting Federal agency(s) for this action. If they concur as well with your determination, then section 7 consultation responsibilities for this action will have been completed. Consultation should be reinitiated, however, if new information reveals impacts of the identified activity that may affect listed species or their critical habitat, a new species is listed, the identified activity is subsequently modified or critical habitat determined that may be affected by the proposed activity.

We look forward to continued cooperation with you in conserving our endangered and threatened resources. If you have any questions, please contact Eric Hawk, Fishery Biologist, at 727-570-5312.

Sincerely,

Charles A. Oravetz
Assistant Regional Administrator
Protected Resources Division

cc: F/PR3

O:\SECTION7\GENERIC\SanPab.fdt
File: 1514-221.1

ENDANGERED SPECIES BIOLOGICAL ASSESSMENT

SR 212, BEACH BOULEVARD

Duval County, Florida

FIN Number:20951312101

Section Number: 72190

Federal Project No.:XA-2546(18)

October 1999

ENDANGERED SPECIES BIOLOGICAL ASSESSMENT

This project will involve reconstruction of State Road 212, known also as Beach Boulevard, in Duval County, Florida. The project begins at FCCJ Drive, the entrance to the Florida Community College at Jacksonville and proceeds easterly to the intersection with State Road A1A in Jacksonville Beach (see Location Map). The project is approximately 7.4 miles long. A Preliminary Engineering Study identified that SR 212 requires six lane improvements from FCCJ Drive to 9th Street and replacement of the bridge at San Pablo Creek (ICW) with a high rise fixed span bridge.

Land use adjacent to the project is primarily urban developed for commercial use. There are some areas of upland forest and forested wetlands adjacent to the project. Associated with the Intra coastal Waterway are areas of saltmarsh.

The roadway improvements will be constructed within the existing right-of-way. Additional right-of-way will be required for stormwater treatment and at the bridge replacement site.

A compilation of Federally listed species with ranges in the geographic area of the project corridor was developed (Table 1). Literature searched includes the Official Lists of Endangered and Potentially Endangered Fauna and Flora in Florida, (Florida Game and Fresh Water Fish Commission, April, 1996); the "Redbook", (United States Fish and Wildlife Service); Rare and Endangered Biota of Florida, (Florida Committee on Rare and Endangered Plants and Animals, 1978 and 1992); and the Florida Department of Transportation computer program, SPECIES, update (04-06-93). A Landsat image of vegetative cover communities was used to identify habitats (FGFWFC, Office of Environmental Services). Pedestrian and vehicular surveys were conducted to identify habitat and search for evidence of listed species. No "Critical Habitat" as defined in the "Redbook" occurs within the study area. No listed species were observed during project site visits.

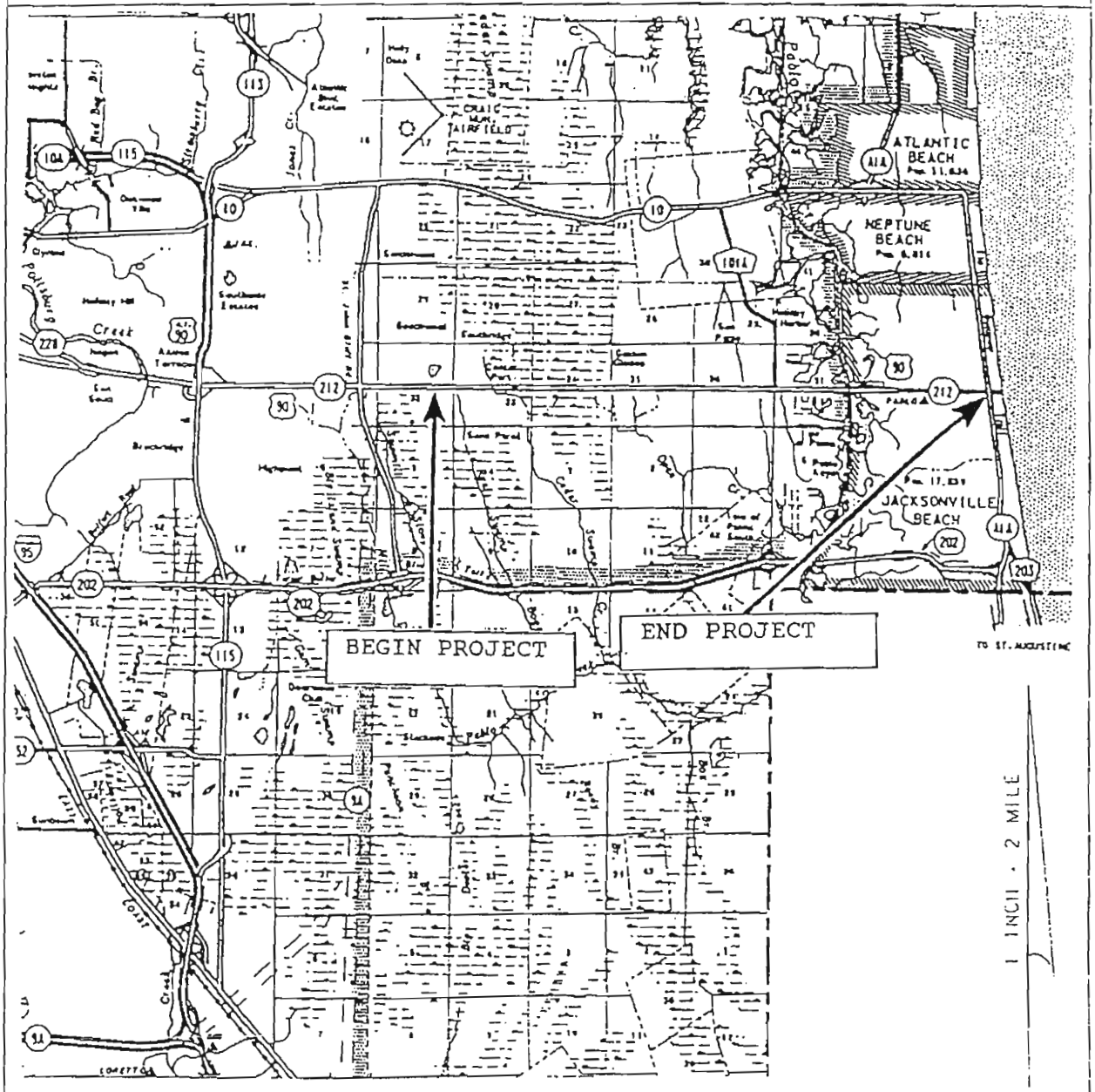
The shortnose sturgeon, Acipenser brevirostrum, has a singular Florida record from the St. Johns River. This species does not have a breeding population in Florida and north Florida is the extreme southern extent of its range. The project is not expected to impact this species.

The American alligator, Alligator mississippiensis, may use wetlands in the project area, although much of the aquatic habitat is saltwater or brackish and not preferred by alligators. The minor freshwater wetland impacts from this project are not expected to negatively effect this species.

The eastern indigo snake, Drymarchon corais couperi, may occur or travel through habitats adjacent to the project area. The presence of this species is very unlikely. As standard procedure, the construction contract will include special provisions for the eastern indigo snake. Provisions include a species description, instructions to avoid the animal if encountered and a penalty for intentional harm. These precautions and minimal habitat impact should result in no impact to this species.

The piping plover, Charadrius melodus, may use coastal Duval County for wintering habitat. This species normally utilizes outer beaches and tidal sand and mud flats. The area in proximity to the project is not habitat for piping plovers. The project will not reduce any potential piping plover habitat and should have no effect on this

LOCATION MAP



State Project Number 72190-1539
Work Program Item Number 2115063
Federal Aid Number
Duval County, Florida
State Road 212 (Beach Blvd.)
From FCCJ entrance to SR A1A

TABLE 1. Federally threatened (T) and endangered (E) species potentially occurring in the vicinity the SR 212, Beach Boulevard, Duval County, project, and the probability of occurrence.

SPECIES COMMON NAME	SPECIES SCIENTIFIC NAME	FEDERAL STATUS	PROBABILITY OF OCCURRENCE
FISH			
Shortnose sturgeon	Acipenser brevirostrum	E	Very low
HERPTILES			
American alligator	Alligator mississippiensis	T(S/A)	Low
Eastern indigo snake	Drymarchon corais couperi	T	Very low
BIRDS			
Piping plover	Charadrius melodus	T	Very low
Kirtland's warbler	Dendroica kirtlandii	E	Very low
Bald eagle	Haliaeetus leucocephalus	E	Low
Wood stork	Mycteria americana	E	Moderate
Red-cockaded woodpecker	Picoides borealis	E	None
Bachman's warbler	Vermivora bachmanii	E	Very low
MAMMALS			
Gray bat	Myotis grisescens	E	Low
West Indian manatee	Trichechus manatus latirostris	E	Moderate

species.

Two passerine species, Kirtland's warbler, Dendroica kirtlandii, and Bachman's warbler, Vermivora bachmanii, have historically been recorded in Florida very sparsely during winter migration. The occurrence of these species in the study area is highly unlikely, resulting in no project impact to these warblers.

There are no documented active bald eagle, Haliaeetus leucocephalus, nests within 1.6 km (1.0 mi) of the project corridor. The project is not anticipated to have any impact to this species.

The wood stork, Mycteria americana, could feed in the wetlands near the Intra coastal Waterway. No wood stork rookeries are located near the project area. No significant loss of foraging habitat or impact to nesting area will occur. No impact to this species is expected.

There is no suitable habitat for the red-cockaded woodpecker, Picoides borealis, within 0.8 km (0.5 miles) of the project. The project will have no impact to the species.

The gray bat, Myotis grisescens, in Florida is found primarily near colonies in the panhandle. The most significant colonies are located in Jackson County. Typically, these bats are not found in northeastern Florida. The project will have no effect on these bats.

The West Indian manatee, Trichechus manatus latirostris, frequents the Intra coastal Waterway in the project vicinity, particularly as a migration route in spring and fall. Manatees may be found in the area anytime during the year. To ensure that no manatees are harmed during construction, special provisions will be written into the construction contract. The special provisions are attached. If explosives are to be used in the water to demolish the existing bridge structures, a special blasting and manatee protection plan will be developed to the satisfaction of all concerned agencies.

There are no Federally listed plants that occur in the project corridor.

The analysis of field surveys and literature review in concert with the special provisions, indicates that the SR 212, Beach Boulevard in Duval County will have "no effect" on Federally listed threatened or endangered species.

Supplemental Information
Endangered Species Biological Assessment
SR 212, Beach Boulevard
Duval County, FL

September 13, 2005

Prepared for:
Jacksonville Transportation Authority
100 Myrtle Avenue
Jacksonville, FL 32203

Prepared by:
Dial Cordy and Associates Inc.
490 Osceola Avenue
Jacksonville Beach, FL 32250

Supplemental Information
Endangered Species Biological Assessment
SR 212, Beach Boulevard
Duval County, FL

Background. A Biological Assessment was prepared in 1999 to assess potential impacts to endangered species under the purview of the National Marine Fisheries Service (NMFS). It was noted in the report that the shortnose sturgeon (*Acipenser brevirostrum*) does not have a breeding population in Florida, although a singular record for the St. Johns River has been recorded. NMFS concurred with the assessment and issued a letter stating that none of the species under the purview of the agency, including the shortnose sturgeon, would be adversely affected by the proposed project. However, recent dialog with the NMFS determined that some additional supplemental information was required to support the statement regarding "no adverse affect" to the shortnose sturgeon.

Geographic Range. Shortnose sturgeon occupy large coastal river systems and nearshore ocean habitats along the eastern Atlantic seaboard from the St. John River in Canada to the St. Johns River in Florida. In general, adults have restricted home ranges and undergo limited movement within rivers and estuaries. Tagging data suggest that migration between river systems is low compared to other anadromous species (NMFS 1998).

From 1949 through 1999, only 11 specimens had been positively identified from the St. Johns River. Eight of these captures occurred between 1977 and 1981. In 2000, a specimen was caught by net near Racy Point just north of Palatka, an area where most previous captures had been made. The fish carried a tag that had been attached in March 1996 by the Georgia Department of Natural Resources near St. Simon Island, Georgia.

NMFS conducted sampling for the species from January 2002 through June 2003. Only one specimen was tagged during the period and was caught on the south side of Federal Point near Palatka.

Habitat/Behavior. The shortnose sturgeon spends much of its time in brackish and salt water and slow moving riverine systems, and its movements are generally restricted within their natal river or estuary. Adults may inhabit deep-water areas in lower parts of the river and estuaries during winter and migrate upstream in winter and spring to spawn. Overwintering sites are generally in deep water, and depending on geographic location, have variable salinity levels. Movement patterns may vary depending on location. Migration upriver is most likely prompted by factors such as temperature, velocity, and substrate characteristics. From February to May is typically when spawning occurs, in somewhat fast-flowing river areas and at temperatures between 9-15° C, depending on the geographical region (Gilbert 1989).

In general, preferred substrates for spawning are usually boulders, gravel, rubble, hard clay with little sand or silt, although depth and velocity may be more critical characteristics for larvae survivorship. Juveniles occupy the boundary between salt- and freshwater in most

rivers with substrates such as sand, mud, or silt supporting food items such as small crustaceans and insect larvae, usually in proximity to vegetation.

In estuarine habitats, preferred substrates may vary depending on region and salinity. Southern regions support both juvenile and adult concentrations in deep, cool thermal refugia with substrates consisting of sand and mud. Activity of the shortnose sturgeon at all life stages appears to be nocturnal. The sturgeon may move into shallow water at night but has been observed to remain in deep water habitats during the day.

Threats. Threats to the species include construction of dams, degradation of water quality, and habitat alterations. Prior to its listing, the shortnose sturgeon was commercially exploited for sale and consumption of roe.

Proposed Project. The proposed project consists of widening Beach Boulevard from San Pablo Road to Penman Road. The project will reconstruct the existing 1.954-mile four-lane rural roadway to a six-lane urban roadway. The project will replace the existing four-lane bridge with a higher six lane bridge crossing the Atlantic Intracoasal Waterway (AIWW) with a fixed span to alleviate traffic congestion (over 37,000 vehicle trips per day) due to bridge openings. The roadway on either side of the bridge will be reconstructed and widened to match the new six-lane configuration between San Pablo Road and Penman Road.

The two bascule bridges over the waterway will be removed. All structures above water will be completely removed, as well as any below water structures that are in conflict with the two proposed parallel structures. Those structural features below the water that are not in conflict with the proposed structures will be removed 2 feet below the mud line.

There are 488 piles in the water that will be completely removed. There are 252 piles in the water that will be removed (cut off) 2 feet below the mud line. There are 36 piles out of the water that will be completely removed. There will be 72 piles installed in the water and 430 piles installed out of the water.

The construction of the project will begin late in 2005 or early in 2006. The estimated time to complete the entire project is approximately 820 days. There are two major activities that will control the construction duration on the project. The first is the construction of the left proposed structure and roadway approaches, which will take around 370 days. The second is the demolition of the existing bridge and construction of the right proposed structure and roadway approaches, which will take around 350 days.

The type, number, and size of vessels to be employed during construction are not specified and will depend on the contractor's approach to certain aspects of construction. However, the contractor will be required to comply with all permit conditions from both the State and Federal agencies.

The portion of the proposed bridge structures outside the Intracoastal Waterway will have piles driven for the sub-structure of the bridges. For the roadway approach work at the proposed left structure, both west and east of the Intracoastal Waterway, there will be

temporary sheet piling installed along the north edge of the existing roadway in order to allow the existing bridge/roadway to remain in use while the left bridge structure is constructed. A large portion of the fill material in the existing roadway approaches will be removed to construct the proposed structures and the stormwater management facilities. The contractor must maintain vessel traffic in the waterway during construction. Turbidity and sedimentation effects should be minimum and localized. The construction plans detail erosion, turbidity, and sediment control features both in and out of the waterway. The expected noise on the project will come from pile driving and the operation of construction machinery on the project.

Potential Impacts. The proposed project is not expected to adversely impact the shortnose sturgeon. The species has never been recorded in the AIWW where the project is located. Although at least one specimen has traversed the St. Johns River from the Atlantic Ocean to Palatka, it is doubtful that it exists near the project area. Habitat conditions are also not optimal for spawning or supporting juvenile populations. The high velocity of currents and lack of deep refugia out of the main channel would most likely exclude the species from extended use.

In the unlikely event that the shortnose sturgeon utilizes the AIWW near or within the project area, construction activities have been designed as to minimize any short-term or long-term adverse affects. The complete removal of two current bascule bridges will result in a net gain of open water habitat. The current structures will be removed at least two feet below the existing bottom elevation by means other than blasting. A Stormwater Pollution Prevention Plan and Erosion Control Plan are included in the roadway plans and are provided as an attachment to this document.

Currently, no treatment of stormwater runoff exists for the bridge or the portion of Beach Boulevard to be widened. This project will collect and treat any future runoff discharging into the AIWW, resulting in an improvement in water quality and a net benefit to the shortnose sturgeon and/or any other species within the project area. The Environmental Resource Permit that includes the stormwater treatment design for the roadway and bridge was scheduled to be issued by the St. Johns River Water Management District on September 13, 2005. A copy of the Intent to Issue is included as an attachment to this document.

Mitigation, Conservation, and Resource Protection Measures. No specific mitigation for impacts to the shortnose sturgeon is proposed. However, construction activities have been designed as to minimize any potential adverse impact to the species. Improvement to water quality and increase of open water habitat will provide a long-term benefit to the species.

Conclusion. The proposed project is not likely to adversely affect the shortnose sturgeon. Long-term benefits may result from water quality improvements in the project area.

Literature Cited

Gilbert, C.R. (1989) "Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Mid-Atlantic): Atlantic and shortnose sturgeon," U.S. Fish and Wildlife Service Biol. Rep. 82(11). U.S. Army Corps of Engineers, TR EL-82-4.

National Marine Fisheries Service (1998) "Recovery Plan for the Shortnose Sturgeon," Prepared by the Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, Silver Springs, Maryland. 104pp.

SUPPLEMENTAL ENDANGERED SPECIES BIOLOGICAL ASSESSMENT

NOVEMBER 2007

SUPPLEMENTAL INFORMATION
ENDANGERED SPECIES BIOLOGICAL ASSESSMENT
Beach Boulevard Bridge at the Atlantic Intracoastal Waterway
Duval County, Florida

NOVEMBER 2007
REVISED MAY 2008

Prepared for:

Jacksonville Transportation Authority
100 North Myrtle Street
Jacksonville, FL 32203

Prepared By:

ENVIRONMENTAL RESOURCE SOLUTIONS, INC.
1597 THE GREENS WAY, SUITE 200
JACKSONVILLE BEACH, FLORIDA 32250

Supplemental Information
Endangered Species Biological Assessment
Beach Boulevard Bridge at the Atlantic Intracoastal Waterway
Duval County, Florida

A Biological Assessment of the impacts of Beach Boulevard improvements, including replacement of the bridge at the Atlantic Intracoastal Waterway (AICWW), related to threatened and endangered species was prepared in 1999. A supplemental assessment specifically addressing the shortnose sturgeon (*Acipenser brevirostrum*) was prepared in 2005. Copies of these assessments are attached. In response to Jacksonville Transportation Authority's (JTA's) submission of a permit modification request that would allow explosive demolition of bridge supports, U.S. Army Corps of Engineers (COE) has requested that the assessment be updated relative to the West Indian manatee (*Trichechus manatus latirostris*), Kemp's ridley sea turtle (*Lepidochelys kempii*), Loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricate*), leatherback sea turtle (*Dermochelys coriacea*), smalltooth sawfish (*Pristis pectinata*), and shortnose sturgeon (*Acipenser brevirostrum*). Below is a discussion of each species.

The shortnose sturgeon (*Acipenser brevirostrum*) has been observed in northeastern inland Florida waters twice since 2000; the St. Johns River apparently is now the southern limit of its range. It has never been recorded in the AICWW near the project site. Table 1 provides the probability of shortnose sturgeon occurrence at the project site. As concluded in the 2005 supplement, the proposed project is not expected to adversely affect the shortnose sturgeon.

The smalltooth sawfish (*Pristis pectinata*) historically was found in tropical and sub-tropical areas including Africa, the Caribbean, the Gulf of Mexico, and from Virginia to Brazil. However, recent Florida records include only the southern portion of the peninsula. It is known to ascend bays and estuaries and occasionally enter freshwater rivers. The smalltooth sawfish prefers shallow sandy or muddy bottoms, and is nocturnal. The proposed project is not likely to adversely impact the smalltooth sawfish (see Table 1).

Kemp's ridley sea turtle (*Lepidochelys kempii*) is the smallest and rarest of the world's sea turtles. Its nest sites are few; Rancho Nuevo, Mexico is the main nest site. Its diet consists largely of crabs. The project is not expected to adversely affect Kemp's ridley sea turtle (see Table 1).

The loggerhead sea turtle (*Caretta caretta*) is Florida's most common sea turtle, weighing an average of 275 pounds as adults. They mature sexually at about 35 years of age and nest from Virginia to Texas. Their diet is molluscs and crabs. The project is not expected to adversely affect the loggerhead sea turtle (see Table 1).

The green sea turtle (*Chelonia mydas*) is largely vegetarian, weighing an average of 350 pounds. It is found in tropical and sub-tropical habitats. Approximately 100 to 1,000 green sea turtles nest on Florida's beaches annually. It feeds in lagoons. An increasing number of green sea turtles south of 29ºN latitude have fibropupillomatosis. The green sea turtle is not expected to suffer adverse impacts from the project (see Table 1).

The hawksbill sea turtle (*Eretmochelys imbricate*) is a sub-tropical and tropical species which nests in Florida from Melbourne to the Keys. Its diet is mainly sponges and it attains an average weight of 150 pounds. No adverse impacts to the hawksbill sea turtle are expected (see Table 1).

The leatherback sea turtle (*Dermochelys coriacea*) is the largest, most free ranging and cold tolerant sea turtle. Its chief food is jellyfish. Between 30-60 females construct nests in Florida annually. The project is not expected to adversely impact the leatherback sea turtle (refer to Table 1).

As indicated in the 1999 Biological Assessment, West Indian manatees (*Trichechus manatus latirostrias*) can be found year round in the AICWW in the vicinity of the project. Occurrence from December through February, however, is low. Consistent with that assessment's language about the use of explosives, both a Blasting Plan and a Marine Wildlife Safety Plan and Manatee Marine Mammal, Sea Turtle Survey Watch Plan have been developed. Therefore, the project is not expected to negatively affect manatees (see Table 1).

In conclusion, neither the proposed blasting demolition nor the permitted non-explosive demolition is expected to adversely impact protected species. Due to its associated wildlife watch plan, the explosive demolition alternative has lower risk of injuring or killing protected species.

(AFH/ljd/07118/Supplemental Information Rp/REV)

Table 1. Federally threatened (T) and endangered (E) species potentially occurring at the Beach Boulevard crossing of the AICWW, Duval County, project, their probability of occurrence from December to February, and the probability of project/no project impacts on each species during December, January and February.

SPECIES COMMON NAME	SPECIES SCIENTIFIC NAME	FEDERAL STATUS	PROBABILITY OF OCCURRENCE	ADVERSE IMPACT PROBABILITY	
				With Project (Blasting)	No Project (Chipping)
FISH					
Shortnose sturgeon	*Acipenser brevirostrum*	E	Very low	Very low	Very low
Smalltooth sawfish	*Pristis pectinata*	E	Very low	Very low	Very low
HERPTILES					
Kemp's ridley sea turtle	*Lepidochelys kempii*	E	Very low	Very low	Very low
Loggerhead sea turtle	*Caretta caretta*	T	Low	Very low*	Low
Green sea turtle	*Chelonia mydas*	E	Low	Very low	Very low
Hawksbill sea turtle	*Eretmochelys imbricate*	E	Low	Very low	Very low
Leatherback sea turtle	*Dermochelys coriacea*	E	Low	Very low	Very low
MAMMALS					
West Indian manatee	*Trichechus manatus latirostris*	E	Low	Very low*	Low

* A lower risk has been assigned to the "with Project" alternative because of the concomitant wildlife watch plan.

SUPPLEMENTAL ESSENTIAL FISH HABITAT ASSESSMENT

NOVEMBER 2007

SUPPLEMENTAL INFORMATION
ESSENTIAL FISH HABITAT ASSESSMENT
for the Beach Boulevard Bridge Replacement
at the Atlantic Intracoastal Waterway
Duval County, Florida

NOVEMBER 2007

Prepared for:

Jacksonville Transportation Authority
100 North Myrtle Street
Jacksonville, FL 32203

Prepared By:

ENVIRONMENTAL RESOURCE SOLUTIONS, INC.
1597 THE GREENS WAY, SUITE 200
JACKSONVILLE BEACH, FLORIDA 32250

The Florida Department of Transportation (FDOT) in 2000 prepared an essential fish habitat (EFH) analysis, copy attached, for the proposed replacement of the Beach Boulevard Bridge at the Atlantic Intracoastal Waterway (AICWW). (Exhibit 1, a Location Map depicts the bridge.)The analysis describes temporary impacts to hard bottom and structure, and the elimination of approximately four acres of wetlands as related to EFH for five species. The analysis provided for explosive demolition (page 4, first paragraph).

The bridge replacement was fully permitted. However, both U.S. Army Corps of Engineers (COE) and St. Johns River Water Management District (SJRWMD) permits do not include the use of explosives in demolishing the old bridge. The permittee, Jacksonville Transportation Authority, in November 2007 submitted to COE and SJRWMD permit modification requests that would allow for the explosive demolition of twelve support structures, see Exhibit 2. COE has requested supplemental EFH information with respect to the proposed blasting.

The AICWW is designated EFH for Brown Shrimp (*Penaeus aztecus*), White Shrimp (*Penaeus setiferus*), Pink Shrimp (*Penaeus duorarum*), Red Drum (*Sciaenops ocellatus*), and Gray Snapper (*Lutjanus griseus*). Life histories of these species are provided in the 2000 EFH analysis.

Blasting impacts to the AICWW estuarine water column and bottoms will consist of three rapidly moving pressure waves. Excepting a very small area (approximately 40') immediately around the blasts, the substrate will not be affected. The estuarine water column will be affected for a distance less than 1825' from the blasts (according to the commonly used blasting safety formula). The impacts will be localized and instantaneous. Impacts to the Penaeid shrimp species and two fish species are not expected to be detrimental.

(AFH/ljd/07118/supplemental info-essential fish 5-08)

DRAFT MARINE WILDLIFE SAFETY PLAN
AND
Draft Manatee, Marine Mammal, Sea Turtle Survey Watch Plan

Prepared for:

Jacksonville Transportation Authority
100 North Myrtle Street
Jacksonville, FL 32203

Prepared By:

ENVIRONMENTAL RESOURCE SOLUTIONS, INC.
1597 THE GREENS WAY, SUITE 200
JACKSONVILLE BEACH, FLORIDA 32250

NOVEMBER 2007
(Revised April 2008, revisions indicated by underscoring)

DRAFT MARINE WILDLIFE SAFETY PLAN

For

Beach Boulevard Bridge

The Jacksonville Transportation Authority (JTA) has all the necessary permits, including St. Johns River Water Management District (SJRWMD) and U.S. Army Corps of Engineers (COE), to construct a new Bridge across the Atlantic Intracoastal Waterway (AIWW) at Beach Boulevard. The new bridge, which currently is under construction, will replace an existing bridge. While dismantling and discarding the existing bridge spam will be routine, the strength and mass of the bridge footers pose a dismantling problem. After careful consideration, the bridge contractor, Superior Construction, has determined that demolishing the footers with explosives is the most practical means of destroying them.

Prior to modifying the COE and SJRWMD permits so that footer blasting can occur, Superior Construction, is seeking Florida Fish and Wildlife Conservation Commission authorization of a Marine Wildlife Safety Plan that includes 1 December 2008 through 28 February 2009 blasting. The Marine Wildlife Safety Plan has been prepared to ensure the protection of those species large enough to be located visually within the zone of blasting activities influence.

Historical data from blasting underwater-buried charges is very limited. Some of the important characteristic and parameters to be considered are as follows:

- Substrata Characteristics
- The amount and type of stemming
- Decking and/or delaying
- Type of Explosives Used
- Blast Pattern and Geometry
- Geology

Note: The density, strength, and variety of the geology has a significant impact on energy attenuation and path of pressure wave being transmitted. A number of pre-blast procedures will be employed to provide the maximum level of protection for Marine Mammal Wildlife.

The danger zone radius of the blast can be determined by using the U.S Navy Dive Manual's Safety Formula for an uncontrolled blast suspended in the water column. This formula is extremely conservative since the charge(s) to be used for Beach Blvd. Bridge footers will be confined within the footers, effectively reducing both the pressure and impulse of a water shock wave. In addition, the borehole will be stemmed at the collar to further contain the pressures.

The danger zone radius formula in feet is expressed by the following:
Safety Formula **R = 520 (W) 1/3 + 500**

R = Exclusion Zone Radius
W = Weight of explosive in pounds per delay (9ms minimum separation)

For the designed maximum explosives per delay of 16.5 pounds, the resulting exclusion zone is 1824 feet.

The total explosives weight for each pier will be approximately 616 pounds.

The total explosives weight for bents 5 & 6 combined will be approximately 240 pounds.

Blasting is anticipated to be completed with 2 to 3 shots over a four week period. This time frame is subject to change due to weather, tides, etc. In no case will blasting occur after 28 February 2009.

DRAFT MANATEE, MARINE MAMMAL, AND SEA TURTLE
SURVEY WATCH PLAN
Beach Blvd. Bridge

Explosive demolition of the existing Beach Blvd. bridge footers is necessary for their removal. The blasting will occur in the AIWW, known habitat for large marine wildlife including manatees, other marine mammals and the sea turtles. This watch plan was developed and will be implemented so that potential risk to such wildlife is minimized to the greatest practicable extent. This plan is intended for use from 1 December 2008 through 28 February 2009. Changes to this plan will require written concurrence by U.S. Fish & Wildlife Service (FWS) and the Florida Fish and Wildlife Conservation Commission (FWC).

1. No less than thirty (30) days prior to the first detonation event, the following information will be provided to FWS and FWC for review and approval:

   (a) Proposed observer list with individuals' qualifications/experience.
   (b) Detailed survey procedures and aerial survey route with map.
   (c) Detonation schedule.
   (d) Communications plan and procedures.
   (e) Sample log sheets.

2. A formal Plan Coordination Meeting will be held no later than three days before the first detonation event to review the above listed items, to discuss the responsibilities of all parties, and to review and approve the schedule of events. Attendees will include the contractor's representative, the entire Marine Wildlife Safety Observer team, the blasting consultant, the USFWS, FWC, the U.S. Coast Guard (USCG), and other interested Environmental parties such as the Florida Marine Patrol. The agenda will be coordinated by Superior Construction with the blasting contractor, USFWS, and FDEP. It will include the latest information about the possible presence of manatee, other marine mammals, and sea turtles during the operation, the logistics of the detonation schedule, the communications plan, and the responsibilities of all parties involved.

3. The Marine Wildlife Safety Observer team will consist of five members. A Chief Observer, who will be the aerial observer in a helicopter, and four stationary ground and/or waterborne observers. The manatee observers will have no other duties. The Chief Observer will have prior survey experience. Inexperienced observers will be trained in methods of surveillance, and this training will be documented. Training records will be kept until the completion of the operations covered by this plan.

4. Observers shall follow the protocol established for the Plan and shall conduct the survey in good faith and to the best of their ability. Detonation events will be conducted during daylight, on or about slack tide (high or low water) to maximize the ability to observe manatees, other marine mammals and sea turtles. Weather conditions such as high winds, precipitation, fog and any other situation in which any one of the observers cannot conduct an effective search will be taken into account. The Chief Observer will make the determination as to whether acceptable observation conditions exist to allow the survey to be initiated before the detonation event.

5. The perimeter of the safety zone (**1824**' from the footers) will be marked with brightly colored which buoys must be clearly visible from the air. A 1000 ft. radius perimeter will be marked with white buoys for aerial reference. The ground observers will be positioned to maximize observations of the Safety Zone, with at least two observers at the orange **1824 ft**. radius. The observer locations will be submitted for approval to the FWC prior to the Plan Coordination Meeting.

6. The aerial survey of the safety zone will be conducted by helicopter beginning one hour prior to each detonation event and will continue for 30 minutes following each detonation event.

7. The aerial safety survey plan will be submitted prior to the Plan Coordination Meeting. It will generally include surveillance within a 1.5 mile radius (upstream and downstream) of the project site for one hour prior to the detonation event with emphasis on the safety zone. During the final 30 minutes before each detonation, the Chief Observer will concentrate on the area within the **1824 ft.** radius. At the 15 minute notice to blast, aerial concentration will be within the 1500 ft. radius. The aerial survey plan must comply with all FAA and military air restrictions.

8. All observers will be equipped with a two-way radio that will be dedicated exclusively to the Safety Watch. The Chief Observer will be equipped with both a two-way radio and a marine band radio to ensure back-up communication. Observers will be equipped with polarized sunglasses, binoculars, and a sighting log with a map to record sightings in the Safety Zone. Each observer will also have two brightly colored flags, one to indicate all clear and second color for mammals present. These flags will be used in the event of loss of radio contact.

9. The Marine Wildlife Safety Observer team will be in close communication with the Blaster in Charge in order to halt the detonation in the event that a manatee, marine mammal, or sea turtle is spotted within, or approaching the Safety Zone around the blast site. The blasting countdown will be immediately halted by the chief observer upon the request of any of the observers. The blast countdown will not resume until the animal moves away from the area of its own volition. Manatees, other marine mammals, and sea turtles must not be herded away or harassed into leaving. If the animal is not sighted a second time, the event will not resume until 30 minutes after the sighting.

10. All communications will be in accordance with the approved communications plan. Radio checks will be periodic to ensure that communication links are maintained. At the 5 and 1 Minute to Blast an All Clear must be received from all observers in order for the countdown to continue.

11. After detonation, the Chief Observer shall continue to survey the Safety Zone for 30 minutes before departing. If an injured or dead manatee, other marine mammal, or sea turtle is sighted after the detonation event, the observers will contact the FWC through the Manatee Hotline 1-800-DIAL-FMP (342-5367) and the Florida Marine Research Institute NE Field Station (904-448-4300, ext. 229).

12. Any problems encountered during blasting events shall be evaluated by the observers and contractors and logistical solutions shall be presented to the FWS and FWC. Corrections to the WP shall be made prior to the next blasting event.

13. If an injured or dead manatee, marine mammal, or sea turtle is rescued/recovered within the Safety Zone during the detonation period, operations shall be ceased until the FWC or FWS determines that the cause of injuries or mortality was not likely a result of the detonation event. If injuries are documented to be caused by detonation events occurring at the project site, all detonation events will cease until a review of the circumstances are completed and the FDEP and USFWS authorizes operations to resume.

14. Within two weeks after completion of all the detonation events the Chief Observer will submit a summary report to the FDEP and to the USFWS. This report will forward the observers' logs, provide the names of the observers and their positions during the event, the number and location of manatee, other marine mammals, or sea turtles sighted and the actions that were taken when the animals were observed.

GROUND OBSERVER PROTOCOL

1. Observers will be at their observation site at least one-hour prior to the blast event and be equipped with the previously mentioned materials.

2. Observers will look for manatees, marine turtles and bottle nosed dolphin. Observers will keep continual watch over their entire safety area using polarized sunglasses and will periodically scan the area with binoculars.

3. Observers will be located in areas that optimize both visual accuracy and coverage of ingress/egress points. A map showing observer locations is attached to this document.

4. The observer will spot any animals in the area and alert the aerial team as to their location. This includes any animals in their visual range even if they are outside the blast safety zones.

5. Observers will remain in place and on watch at all times unless there is a long delay. In the case of a long delay, observers will need to re-establish the watch one hour before the next blast will take place.

6. Observers will have a 15 minute interval check in with the aerial observer via radio. In the case of radio failure, green and red signal flags will be used to indicate clear/not clear status of the observers' position.

7. Observers will keep their green signal flag in a position that can be easily seen from the helicopter thus establishing a visual reference for the aerial crew during the aerial observations.

8. If an animal is spotted in the area, the observer will alert the helicopter via radio and give directions to the helicopter until the aerial crew confirms the sighting. If the radio is not working, the observer will wave the red signal flag, indicating to the helicopter that an animal is in the area. The observer will visually direct the aerial crew to the location of the animal and radio communication will be reestablished.

9. Immediately prior to blast (1 minute), a radio check for all observers will be done to establish an "all clear" status.

10. Data Sheets and Maps:

    All observers will have maps and aerial photos with 1000 ft. and **1824 ft.** perimeters to give a visual reference on where the danger zone is for animals. Any animal spotted will be recorded on the map using the common name of the animal (M=manatee, T=turtle, D=dolphin), the number of animals in the group, the direction the animals were traveling, and all the subsequent spottings of that group.

Additionally, written data sheets will be used to record all spotting information and weather & blasting data. One set of data sheets will be used for each blast event. There will also be comment sheets for any information important to the observers' watch. Observations will be written down every 15-min., even if no animals are seen. Weather conditions will be recorded at the beginning of the watch and every hour thereafter.

11. Observers will remain on site and observe for one-half hour after the last blast to make sure there are no animals that need help.

12. At the end of each watch, all maps, aerials, comment forms, etc. will be attached to the data sheets and turned into the aerial observer at the site trailer. The aerial observer will review all data packets and clarify any questions before retiring the observers.

13. If an animal is observed inside the **1824**' safety perimeter less than 30 minutes after a blast, it will be followed to determine its condition. The observer will be put in a boat, operations will be halted and the animal will be tracked, with the help of the aerial crew, until it is determined that the animal is fine, injured and needs rescue or dead. The observer will fill out an incident report for any of those three scenarios.

AERIAL OBSERVATION PROTOCOL

1. The primary observer will first coordinate all ground observers and be sure the entire watch team is prepared for the blasting event.

2. The aerial team will begin its watch one hour prior to the blasting event.

3. The primary observer will be seated in the front of a "bubble-type" helicopter with the doors affixed.

4. The observer will first visually confirm the locations of all ground observers and check to make sure they are all in the correct place. A radio check to all observers will be made and the time recorded as the official start time of the watch.

5. The aerial watch will be flown in a manner to progressively narrow the search area to the two safety lines up to the point of the blast event. The first twenty minutes of the aerial observations will involve flying over the AIWW, in a zig-zag pattern, between the Atlantic Blvd. bridge (to the north) and the Duval Co./St Johns Co. line (to the south), a straight line distance approximating five miles. The second twenty minutes will entail surveying a mile north and a mile south of the Beach Blvd. Bridge. The final twenty minutes will be spent flying between and 500' beyond the two safety lines. All waters will be surveyed to establish the presence and size of the general "population" in the area.

6. The aerial and ground observers will track animals near or inside the **1824 ft**. lines until the animals are in confirmed safety zones. These animals will be subsequently tracked during the normal survey until they move out of the survey area.

7. A radio and visual check will be made to the ground observers each 15 minutes.

8. Locations of all animals will be recorded on maps and on data sheets.

9. The aerial survey will continue one-half hour after the blast event to ensure that there are no injured animals.

10. Upon landing, the aerial observer will compile and review all data sheets and release the ground observers or make arrangements for the next blast event, depending on the circumstances.

Manatee, Marine Mammal, Sea Turtle Survey Watch
Standard Operating Procedure (SOP)

Prior to the formal Plan Coordination Meeting, all parties involved with SOP will have reviewed the Plan and Procedures as outlined. This is to include all key players including the Senior Blaster, Project Superintendent, Safety Coordinator(s), and JTA representative(s).

The following protocol will be followed for each detonation. Conditions and Methods of Operation are discussed in general.

At the Plan Coordination Meeting, all observers and players will be identified as to their area of responsibility (AOR).

Each observer will be required to have the following equipment:

- Data Sheets
- Maps of the Area
- Clip Boards
- Pencils
- Disposable Camera
- Signal Flags
- Written Instructions for Observation
- Communicative Radios
- Polarized Sunglasses
- Binoculars
- Watch
- Suitable clothing for inclement weather
- Steel toed boots
- A tin cup and a long length of string in case the two way radios fail

During the Plan Coordination Meeting, tide charts with preferred time of detonation for the first blast will be discussed. For future blast day(s), the report time for observers will be confirmed at the conclusion of the previous blast.

All observers are required to report on or before the designated time at the Manatee Control Station to secure company issued equipment including a two way radio.

If for some reason an observer is unable to report, then he or she is to notify the Chief Manatee Observer the evening prior to, or 24 hours in advance of a scheduled conflict with a blast so that an alternate may be called in. *Failure to do so may result in removal from the active observer list.*

Observers will be required to park in the designated parking area and will be taken to the Control Station, then positioned at their station by a company vehicle/vessel.

Each observer will be given a station number to be referred to in all communication with the chief observer, blasting contractor and all other observers.

Upon completion of the watch, all observers will return to the Control Station to submit inspection forms of the day and place their radio(s) on charge.

Prior to dismissal for the day, each observer will confirm their next report time and date with the Chief observer(s).

Communication Program

All observers, drill boats, watercraft and key personnel will be equipped with marine handheld radios.

All observers will carry two (2) brightly colored safety flags. One color will indicate an "All Clear" and the other a "Sighting". In the event of loss of radio communication the appropriate flag will be used.

Observers will "radio check" on the hour and at 15-minute intervals with an "All Clear" or status.

Should a "Sighting" occur, the observer will alert the Chief Aerial observer and track the animal as directed by the Chief Aerial Observer.

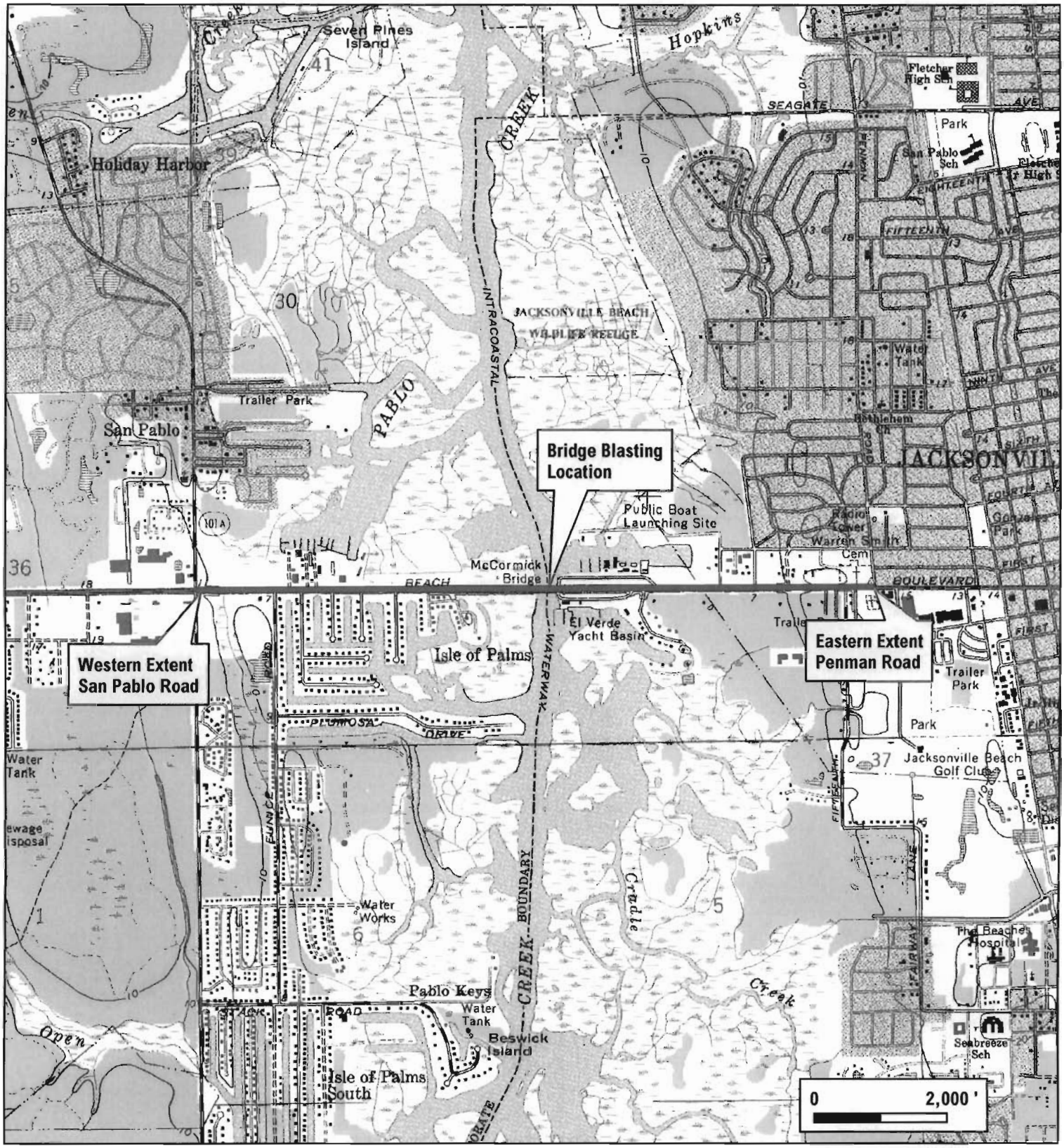
Window of Opportunity

The necessary notification for the "Window of Opportunity" is as follows:

- 2-Hour notice to blast (see call list)
- 1-Hour notice for the aerial observer and land observers
- 30-Minute warning – CH 7A
- 15-Minute warning – CH 7A, CH 13, CH 16 (VTS Marine)
- 5-Minute warning – CH 7A, Audio Signal
- 1-Minute warning – CH 7A, Audio Signal
- Countdown CH 7A
- Blast
- All Clear – CH 7, CH 13, CH 16, Audio

Note: Because of the marine environment and potential intrusion of marine mammals or vessels into the *Safety Zone,* the 15-minute and 5-minute warning maybe accelerated, *provided a full one hour survey watch has been completed; however, the 1-minute must be completed.* The last 10-seconds of the 1-minute warning will be broadcast on CH 7A beginning with 10. Counts 3 and 2

will be silent with all radios unkeyed allowing any Safety Zones or Manatee Observers to "Abort" the blast.



Section:	38, unclassified	**Section:**	36
Township:	2 South	**Township:**	2 South
Range:	29 East	**Range:**	28 East

	WESTERN EXTENT	EASTERN EXTENT
Lat.:	30° 17' 17" N	30° 17' 17" N
Long.:	81° 26' 16" W	81° 24' 20" W

Environmental Resource Solutions Inc.
1597 The Greens Way, Suite 200
Jacksonville Beach, FL 32250

Beach Blvd. Widening Project Location Map

Source: USGS 7.5' Jacksonville Beach, FL Topographic Quadrangle

By: JK

Project No.:	07118
Exhibit No.:	1
Date:	8-23-07
Rev. Date:	

N W E S

X:\GIS Projects\07118\07118_location_8-23-07.mxd

Environmental Resource Solutions Inc.
1597 The Greens Way, Suite 200
Jacksonville Beach, FL 32250

Beach Blvd. Blasting Project
True Color Aerial Photograph

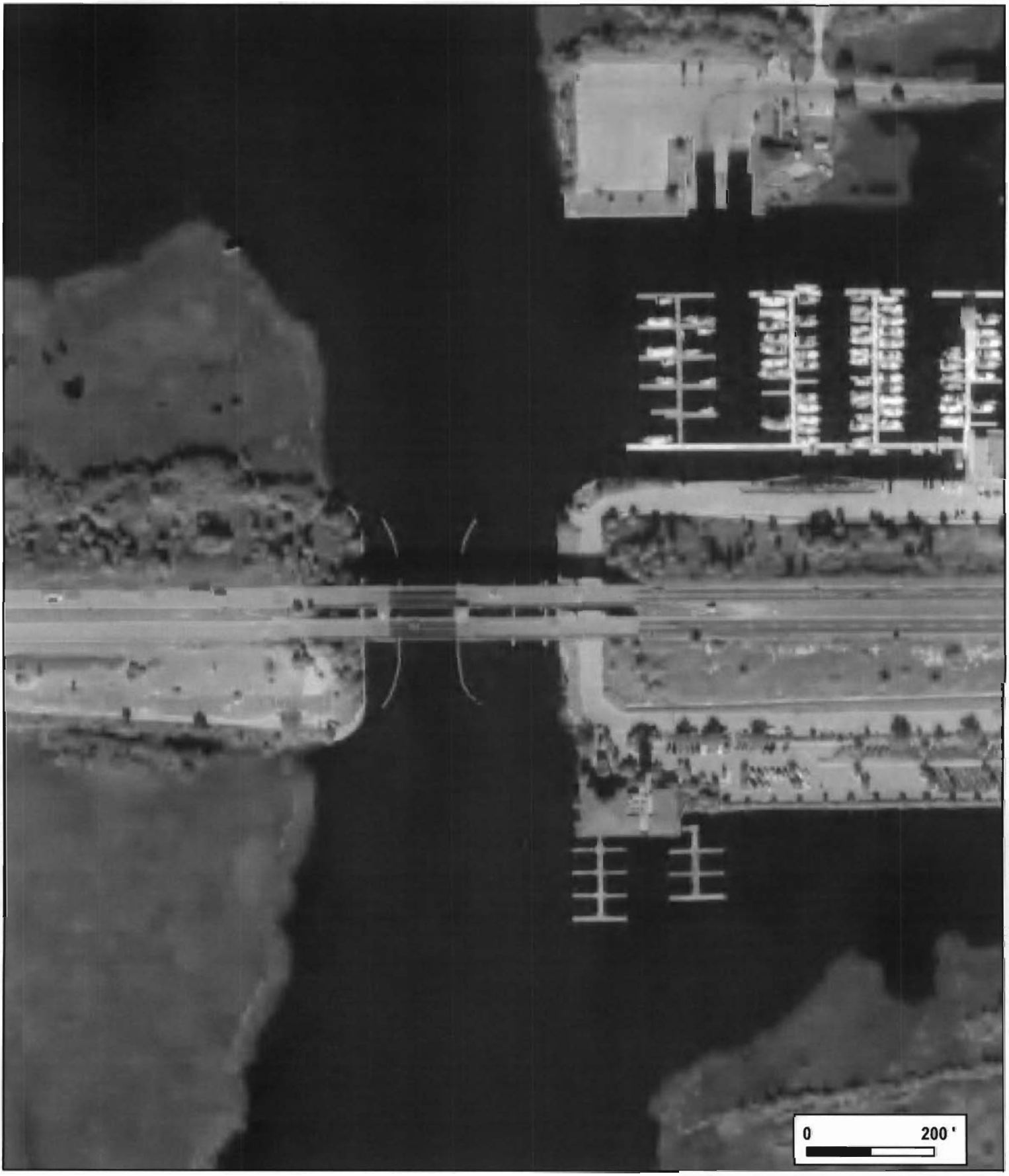
Aerial Source: AerialsExpress (2007)

By: JK

Project No.:	07118
Exhibit No.:	2
Date:	8-23-07
Rev. Date:	

N W E S

X:\GIS Projects\07118\07118_TC_8-23-07.mxd



Environmental Resource Solutions Inc.
1597 The Greens Way, Suite 200
Jacksonville Beach, FL 32250

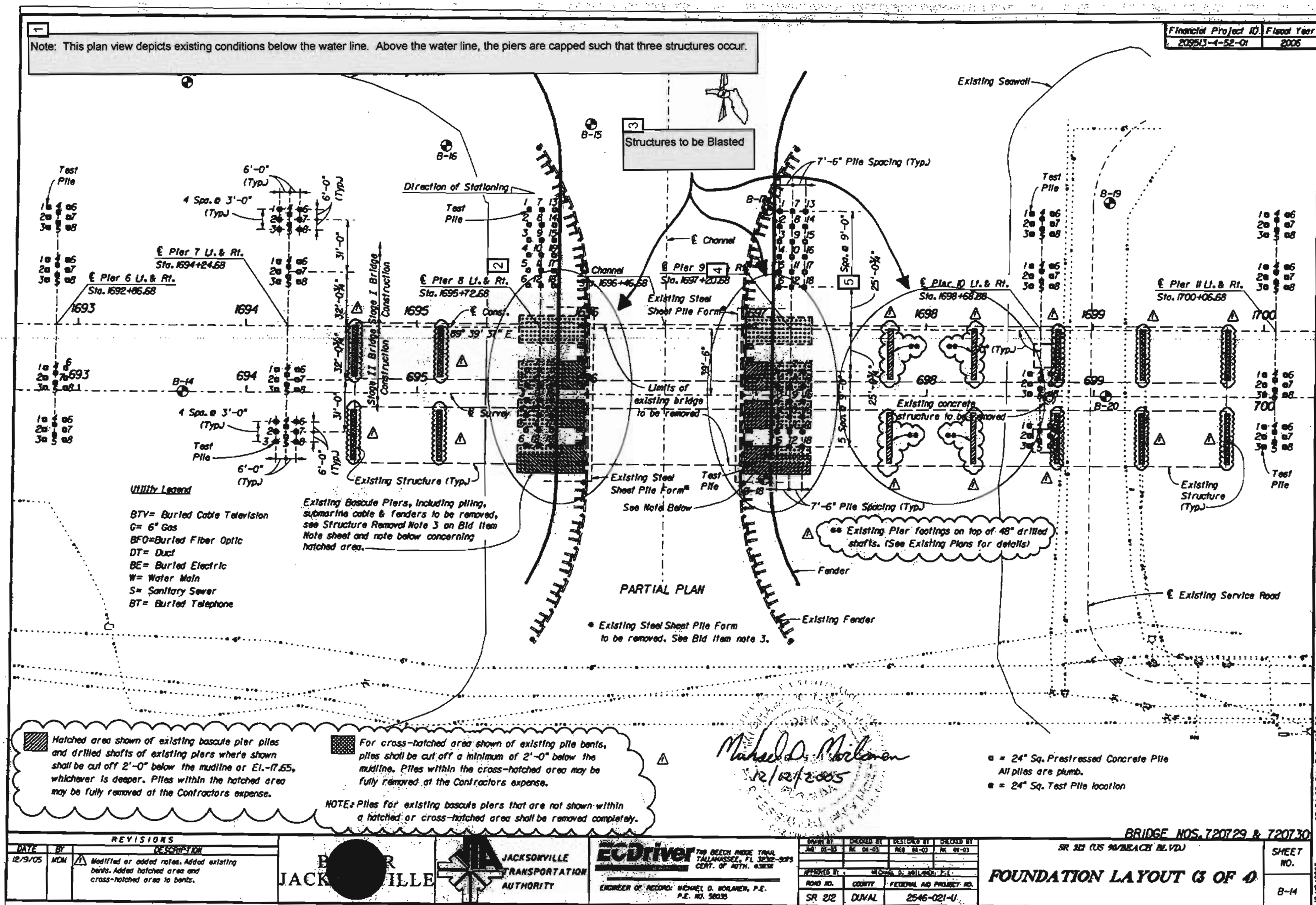
Beach Blvd. Blasting Project
Infrared Aerial Photograph Detail

Project No.:	07118
Exhibit No.:	4
Date:	10-18-07
Rev. Date:	

Aerial Source: SJRWMD (2004) | By: JK

N W E S

X:\GIS Projects\07118\07118_IR-detail_10-18-07


1
Note: This plan view depicts existing conditions below the water line. Above the water line, the piers are capped such that three structures occur.
Financial Project ID 209513-4-52-01
Fiscal Year 2006
3
Structures to be Blasted
2
4
5
Existing Seawall
Direction of Stationing
Test Pile
7'-6" Pile Spacing (Typ.)
6'-0" (Typ.)
4 Spa. @ 3'-0" (Typ.)
℄ Pier 6 Lt. & Rt. Sta. 1692+86.68
℄ Pier 7 Lt. & Rt. Sta. 1694+24.68
℄ Pier 8 Lt. & Rt. Sta. 1695+72.68
℄ Pier 9 Rt. Sta. 1697+20.88
℄ Pier 10 Lt. & Rt. Sta. 1698+68.88
℄ Pier 11 Lt. & Rt. Sta. 1700+06.68
℄ Channel Sta. 1696+46.58
℄ Channel
℄ Const.
℄ Survey
Stage II Bridge Construction
Stage I Bridge Construction
Limits of existing bridge to be removed
Existing Steel Sheet Pile Form
Existing Steel Sheet Pile Form*
See Note Below
Existing concrete structure to be removed
Existing Structure (Typ.)
Existing Bascule Piers, including piling, submarine cable & fenders to be removed, see Structure Removal Note 3 on Bid Item Note sheet and note below concerning hatched area.
** Existing Pier footings on top of 48" drilled shafts. (See Existing Plans for details)
Utility Legend
BTV= Buried Cable Television
G= 6" Gas
BFO=Buried Fiber Optic
DT= Duct
BE= Buried Electric
W= Water Main
S= Sanitary Sewer
BT= Buried Telephone
PARTIAL PLAN
Fender
Existing Fender
* Existing Steel Sheet Pile Form to be removed. See Bid Item note 3.
℄ Existing Service Road
Hatched area shown of existing bascule pier piles and drilled shafts of existing piers where shown shall be cut off 2'-0" below the mudline or El.-17.65, whichever is deeper. Piles within the hatched area may be fully removed at the Contractors expense.
For cross-hatched area shown of existing pile bents, piles shall be cut off a minimum of 2'-0" below the mudline. Piles within the cross-hatched area may be fully removed at the Contractors expense.
NOTE: Piles for existing bascule piers that are not shown within a hatched or cross-hatched area shall be removed completely.
▫ = 24" Sq. Prestressed Concrete Pile
All piles are plumb.
▪ = 24" Sq. Test Pile location
12/12/2005
BRIDGE NOS. 720729 & 720730
REVISIONS
DATE BY DESCRIPTION
12/9/05 MDM Modified or added notes. Added existing bents. Added hatched area and cross-hatched area to bents.
JACKSONVILLE TRANSPORTATION AUTHORITY
ECDriver
ENGINEER OF RECORD: MICHAEL D. MORLANEN, P.E. P.E. NO. 58035
SR 212 DUVAL 2546-021-U
SR 212 (US 90/BEACH BLVD)
FOUNDATION LAYOUT (3 OF 4)
SHEET NO. B-14