January 18, 2010 Ormond Beach Lagoon Emergency Breach Incident Report

I) Applicant and applicant's agent name, address, and telephone number

Applicant:
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II) Full description of the activity

1. Description of the emergency and the potential for loss of life or property

Overview: At about 7 am on January 18, 2010 the District was informed that both the International Paper and Oxnard Waste Water Treatment Plants (hereafter referred to as IPP and OWWTP, respectively) were experiencing 3 to 4 feet of flooding (see attached photos and map). The J Street Drain (JSD) lies along the OWWTP west boundary and the Oxnard Industrial Drain (OID) flows within 120 feet of the IPP's southeast corner. OID bisects the Halaco Superfund site, where an estimated 4 to 5 feet of flooding had occurred and drums were observed floating within the fence line. Flooding was also observed at the Surfside III condominium complex west of JSD (parking areas and approaching patios), on Perkins Road (located between the two plants), and at both the Hueneme and Cypress Road intersections with OID.

Both JSD and OID flow into the Ormond Beach Lagoon, which is intermittently connected during the rainy season to the Pacific Ocean. This occurs when freshwater inputs raise the lagoon elevation sufficiently to carve a channel across Ormond Beach. Most recently, the Lagoon breached naturally on December 7, 2009 when the southern Oxnard/Port Hueneme area received 0.79 inch of rainfall over a 13-hour period. This is based on preliminary data collected at the District's nearby Silverstrand Beach (H403) Automated Local Evaluation in Real Time (ALERT) system gage. The breach channel established that day was subsequently plugged with beach sand pushed into it by waves and wind. Lack of rainfall and associated surface runoff in the intervening weeks also contributed to plugging of the breach channel, but this is not unusual.

The 12-hour rainfall total recorded by the ALERT system between 1:50 pm on Sunday, January 17 and 1:50 am on Monday, January 18, 2010 was 1.14 inches at the Silverstrand Beach gage. When compared to rainfall frequency information for the Oxnard Airport, which has over 50 years of record, the event experienced during this period is less than the 12-hour, 2-year rainfall depth of 2.03 inches. The record for the OWWTP gage (not part of the ALERT system) is

less than 20 years and identifies a 12-hour, 2-year rainfall depth of 1.74 inches, which is also greater than the amount of rainfall received at Silverstrand Beach on January 17-18, 2010. The flooding observed on January 18 was surprising given the relatively low amount of rainfall received.

It is interesting to note that the 12-hour rainfall depth experienced at Silverstrand Beach on January 17-18 has been exceeded nearly every year since 1991, with the exception of 1999, when the maximum 12-hour rainfall recorded was 0.93 inches. The largest 12-hour rainfall totals recorded at Silverstrand Beach between 1991 and the present occurred in 1998 (3.75 inches) and 2003 (3.03 inches). There is no record of flooding between 1991 and 2009 to the extent observed January 17-18, 2010.

The District was fully aware of the multiple storms forecast for the period between January 17 and 22, 2010. However, given that the lagoon had breached naturally only 5 weeks before during a smaller event than those forecast January 17-22, the District expected it would easily breach again without human interference. Moreover, the lagoon has breached naturally since 1992, when the District ceased its annual mechanical breaching activities by order of the U.S. Fish and Wildlife Service (USFWS).

The District thus saw no need to coordinate an emergency action with regulatory agencies the week before the storms. However, as a result of high surf (approximately 15-foot swells) and high tide conditions in early January the Ormond Beach sand berm was taller than it has been during past years (Table 1). The water surface elevation as measured at the OWWTP entrance sign was 7.75 feet NGVD. In the future, the District plans to monitor the beach elevation in addition to water surface elevations at the lagoon.

Regulatory agencies, including the USFWS, California Department of Fish and Game (CDFG), U.S. Army Corps of Engineers (USACE), and Los Angeles Regional Water Quality Control Board (RWQCB) were notified of the emergency by email at approximately noon on January 18. The USACE immediately coordinated with the above agencies as well as the San Francisco Office of the California Coastal Commission (CCC). Coordination with the local CCC office began January 20.

Table 1

Year	Approximate Berm Elevation*	Source
1997	8 feet	Aerial Topography
2001	7.5 feet	LIDAR
2005	8 feet	LIDAR
2007	9 feet	Aerial Topography
2010	10 feet	Ground Survey

*National Geodetic Vertical Datum 1929. LIDAR contours were adjusted to NGVD 29.

***International Paper Plant*[1]:** According to District Operations and Maintenance staff, this was the first time IPP had ever requested flood assistance. IPP staff observed on Monday morning at 3:00 am that a surge of water had rapidly flooded 50 - 60% of their property up to 4 feet deep in areas. OID had overtopped its banks and flooded adjacent open space as well as the IPP. IPP's storm water drainage system was overwhelmed and water could not be pumped off the property, as it would just return. Five diesel pumps were activated to remove the water, but were quickly overwhelmed. Based on observation of the sand elevation at Ormond Beach, IPP staff estimated that 3 to 4 feet of additional water surface elevation increase was needed for the lagoon to overtop the beach.

Between 8 am and 10 am floodwaters started to recede a bit, then rain began to fall again and flooded 80% of the IPP, causing 900- to 1200-pound bales of paper to float around the property, a safety hazard. Perkins Road essentially functioned as a river from McWane Boulevard to its south terminus as a result of overflow from OID. The IPP motor control center, which had never been inundated before, was short-circuited by floodwaters around 2 pm (this was after the breach channel was completed). With the motor control center off line, equipment was shutting down automatically. To prevent further damage to the plant's electrical system, workers shut down all remaining equipment.

IPP provides secondary treatment of its industrial process water before discharging it to the OWWTP. Prior to discharge, effluent is monitored daily for pH, total suspended solids (TSS), total dissolved solids (TDS), biological oxygen demand (BOD), and chemical oxygen demand (COD). Fiber and starch arising from the breakdown of cardboard and other paper are the sources of solids and of nutrients that raise BOD/COD. Treatment occurs at the IPP to avoid overwhelming the OWWTP system. Other constituents such as metals, chlorides, sulfates are monitored monthly, and hydrocarbons and pesticides are monitored annually. As these constituents have never been detected above regulatory thresholds listed in the plant's Regional Water Quality Control Board discharge permit, the the IPP is not required to treat them.

Because electricity was disrupted, water levels in the secondary treatment tank could not be controlled and the tank was in danger of overflowing directly into the lagoon. Also, the biological treatment process was compromised because blowers could not introduce oxygen to the tank.

The District created a breach channel through Ormond Beach at around 1 pm and the floodwaters began to recede by 4 pm. Fortunately, this occurred before the secondary containment areas around the plant's tanks were inundated. Secondary containment collects paper fibers and starch originating from the glue in cardboard boxes. An electrician was able to bring equipment back on line by 9 pm and uncontrolled releases from the tank were avoided. According to the plant manager, if the floodwater depth had continued to increase until a natural breach could occur, all equipment at the property would have been damaged, resulting in a complete loss of the plant from which the company likely would not have been able to recover economically.

[1] Rudy Rehbein, Plant Manager, International Paper, personal communication, 01-19-10

The plant's emergency response, such as installing sandbags, represented a significant safety hazard for its workers both through contact with poor quality floodwaters and risk of electrical injury.

IPP lost approximately $250,000 in production and $50,000 in equipment.

***Oxnard Waste Water Treatment Plant[2]*:** According to the plant manager, high surf and tides in early January 2010 pushed beach sand up and created a very large sandbar between the lagoon and the shoreline. JSD and OID were backing up due to significant rain and runoff ponded in the lagoon as a result of the higher than normal berm. Backwater overflowed the banks of the OID, encroached onto Perkins Road, and began flooding OWWTP at 8 am the morning of Monday, January 18. More than 4 feet of flooding was observed in some areas of OWWTP.

The maintenance shop and equipment storage building received 2 feet of water, which ruined some equipment (transformers, pumps, and motors) essential to plant function. The primary concern was inundation of the main electrical switch gear building, which is the plant's power distribution center, including emergency power.

Average dry weather waste water flow into the plant is 23 million gallons per day. During rain events, infiltration through manhole covers increases inflow, in this case estimated at approximately 40 million gallons in one day. Waste water is usually treated to the tertiary level before it is pumped to an ocean outfall approximately 1.5 miles off the Port Hueneme coastline. Without power, waste water would bypass the treatment tanks and spill in an uncontrolled manner directly onto the OWWTP, lagoon, beach, ocean, and adjacent residential and industrial lands. Fortunately, the breach channel was created in time to relieve the flooding and avoid an untreated sewage spill.

In 15 years of plant oversight, Mr. Miller has not observed this level of flooding, including 2005. Mr. Miller believes the flooding was caused by the unprecedented height of the beach berm.

Surfside III Community: This community is located immediately west of lower JSD, opposite the OWWTP. Residents observed flooding of parking areas. Floodwaters were also approaching the patios of first floor units nearest JSD and threatened to enter the units themselves if the water level continued to rise. Residents phoned 911 and City of Oxnard and Port Hueneme police responded. Residents interviewed could not recall experiencing flooding to this degree.

2. Purpose of the activity

Create a temporary breach channel from the north end of Ormond Beach Lagoon (edge closest to the ocean) southward across the beach toward the ocean. It was critical to extend the temporary channel beyond the point of highest elevation on the beach to permit unimpeded movement of water out of the lagoon.

[2] Jeffrey S. Miller, Wastewater Maintenance Manager, City of Oxnard, personal communication, 01-19-10.

3. Final goal of the entire activity

Reconnect the lagoon to the ocean and lower the lagoon's water surface elevation in a manner that mimics a natural breach event. Relieve flooding of public, residential, and industrial properties.

4. Location

Latitude, Longitude: 34º8'19.139" North, 119º11'15.309" West

5. Size and description of project area (include maps/drawings of areal and lineal extent and pre- and post-work photos)

The equipment access route began at the easternmost Port Hueneme Beach Park parking lot (see attached aerial photo map). Although the District has identified an Emergency Access Plan route in its J Street Drain Draft Environmental Impact Report (public review period November 2, 2009 through January 15, 2010), this route was not used on January 18 for several reasons identified below.

First, the DEIR is not yet final, and the District has not reached agreement with the City of Port Hueneme to use this route, and the District is currently revising the route defined in the DEIR. Second, this route contains beach infrastructure (sidewalks, landscaping, Alaska Airlines memorial, light posts) that would likely have been damaged. Third, private vehicles were parked adjacent to the access point, blocking equipment passage. Fourth, the severity of the flood emergency required that the excavator be delivered as close as possible to the lagoon, and the route identified in the DEIR was an additional 600 feet to the east. The assumption in the DEIR was that the route would be taken during dry weather conditions preceding a specifically defined threshold event (forecast 10-year storm in combination with high lagoon surface water elevation and lack of prior lagoon breaching during the current rainy season). The District did not have the luxury of advanced planning on January 18, 2010.

The route taken by the excavator was 15 feet wide and approximately 1,750 feet long. Approximately the first 890 linear feet crossed existing access road and disturbed habitat almost entirely composed of non-native species (0.30 acre). The remaining 860 linear feet traversed both southern foredune habitat and unvegetated sandy beach (0.30 acre). Native plant species observed in the southern foredune habitat include sand verbena (*Abronia maritima*), beach bur (*Ambrosia chamissonis*), and beach evening primrose (*Camissonia cheiranthifolia*). Giant reed (*Arundo donax*), European searocket (*Cakile maritima*), Bermuda grass (*Cynodon dactylon*), iceplant (*Carpobrotus* spp.), and tamarisk (*Tamarix* spp.), all non-native species, also occur within the foredune habitat at Ormond Beach.

The access route ended at the selected emergency breach channel location. Beginning near the edge of the ocean and working toward the lagoon, an excavator bucket was used to dig a 6-foot-wide channel between the two water bodies. As initially dug, the channel was not deep enough to allow water to flow through it, and the excavator retraced its path to carve out the channel a bit more

near the tallest part of the berm. The breach channel was approximately 295 feet long and varied from 1 to 5 feet deep, the greatest depth coinciding with the sand berm peak.

The total temporary impact to unvegetated beach and southern foredune resulting from the breach channel is estimated at 0.14 acre. This includes the 15-foot-wide equipment access area immediately west of the channel that also received sidecast sand. Impacts were quantified and assessed by District environmental staff on January 25, 2010

Indirect impacts to federal and state waters occurred by way of surface water release from the lagoon to the ocean. Direct impacts to Waters of the U.S. and State amounted to approximately 18 square feet where the excavator removed sand from the lagoon edge to complete the breach channel. The ocean side of the breach channel was excavated during low tide, and as work proceeded toward the lagoon it became apparent the channel terminus was below the high tide line. The impact area below the high tide line is estimated to be 525 square feet.

Work began at noon, the breach occurred at approximately 1:00 pm, and all work was completed by 3 pm. See attached photos.

6. Quantities of materials used

No imported fill materials were placed during the breaching.

7. Information on the impacted receiving waterbody

a) Name of waterbody: Ormond Beach Lagoon, which receives runoff from J Street Drain, Oxnard Industrial Drain, and Hueneme Drain

b) Type of receiving waterbody: brackish coastal lagoon

c) Temporary/permanent adverse impacts in acres/cubic yards/linear feet

Direct impacts to the lagoon amount to 18 square feet, 2 cubic yards of excavation, 6 linear feet measured parallel to the lagoon shoreline, and 3 linear feet measured perpendicular to the lagoon shoreline.

The estimated impact below the high tide line is 525 square feet (0.01 acre), 17 cubic yards, 25 linear feet measured perpendicular to the shoreline, and 6 linear feet measured parallel to the shoreline.

d) Compensatory mitigation in acres/cubic yards/linear feet

See 8b below.

e) Other mitigation steps to avoid, minimize, and/or compensate

See 8b below.

8. Federally listed/proposed threatened and endangered species and critical habitat designations

a) Temporary/permanent adverse impacts

No permanent impacts resulted from the emergency action, however approximately 0.44 acre of critical habitat for threatened western snowy plover was temporarily impacted by the excavator's passage over the sand dunes and by creation of the breach channel. No direct impacts to plovers occurred because they were not present during the emergency work.

Endangered tidewater gobies were likely released from the lagoon to the ocean, however this effect mimics what would have occurred if the lagoon had breached naturally, as expected in a storm of this magnitude. Release of lagoon water also indirectly impacted tidewater goby critical habitat and foraging habitat of the endangered California least tern, but as described above this effect mimics natural processes during storm events of sufficient size. No direct impacts to terns occurred because they were not present during the emergency work.

b) Compensatory mitigation

The District proposes a one-time removal of all iceplant, including pieces uprooted during passage of the tracked excavator, as soon as possible either prior to or immediately following the plover and tern nesting season. The removal would occur in a 1.9-acre area of southern foredune habitat bounded by the lagoon on the north and the temporary access route created on January 18, 2010 on all other sides (see attached aerial map). The method of removal will be worked out with the USFWS, as this area is within western snowy plover critical habitat. The primary issue is herbicide use versus digging out iceplant roots in critical habitat (in some cases, iceplant is growing within patches of native plants).

In addition, the District proposes to distribute native plant seed throughout the 1.9-acre iceplant removal area as soon as possible, either during the current or the next rainy season. Species will include sand verbena, beach bur, and beach evening primrose.

c) Other mitigation steps to avoid, minimize, and/or compensate

A tracked excavator was utilized to minimize ground pressure in sensitive habitat areas. The excavator took the same route in and out of the work area to avoid excessive disturbance.

A biological monitor was on site prior to and during the action to ensure that impacts to threatened/endangered species, sensitive dune and wetland habitat, and federal/state waters were minimized to the extent feasible. The biologist originally sought to direct the equipment to the natural breaching area approximately 3,200 feet southeast of the JSD (see attached aerial map), as this area does not contain dune habitat. However, this would have resulted in the excavator traversing surface water that had escaped the

lagoon but became trapped behind the tall sand berm. This water was flowing northwest toward the JSD. Crossing this water may have resulted in unsafe conditions for the excavator operator had the equipment sunk in the waterlogged sand.

Instead, the biologist selected a point of low elevation along the southwestern margin of the lagoon to minimize the need for excavation and avoid disturbance of wetland vegetation such as California bulrush (*Scirpus californicus*) (see Photo 5).

January 18, 2010 Ormond Beach Lagoon Emergency Breach Incident Photos

Photo 1: Flooding at the IPP threatened its electrical systems and employees attempting to protect the facility.

Photo 2: View southwest from the IPP toward flooded lands. The OWWTP lies along the right edge of the photo. Perkins Road separates the two properties and functioned as a secondary channel for OID. (Photo taken at 4 pm, 01-18-10)

Photo 3: View east toward Perkins Road and the IPP. The structure on the left whose entrance is protected by sandbags is the Main Electrical Building for OWWTP. Inundation of equipment in this building would have caused release of untreated sewage to residential, commercial, lagoon, beach, and ocean areas.

Photo 4: View northeast toward JSD, which was close to overtopping its banks and contributing additional floodwaters to the OWWTP, already flooded by OID.

Photo 5: Selected breach channel location prior to the beginning of work, view northeast toward Ormond Beach Lagoon. This site was chosen because the beach elevation was lower than surrounding areas and most of the wetland vegetation along the lagoon margin could be avoided. The biological monitor is on site.

Photo 6: Excavation of the emergency breach channel, view southwest toward the Pacific Ocean. Work began at the ocean shoreline and progressed toward the lagoon shoreline.

Photo 7: View southeast toward the excavator as it approached the lagoon.

Photo 8: View southwest toward the excavator as it carved the end of the channel a bit deeper. Water that had escaped the lagoon near the natural breach location but still remained trapped behind the tall berm appears in the photo. This flow swept north along the coast, but could not reach the ocean, and was not observed to alleviate flooding at either plant property.

Photo 9: View northeast toward the junction of the excavated breach channel and the lagoon. This surface water release alleviated flooding at the IPP, OWWTP, Surfside III community, and streets within the City of Oxnard.

Photo 10: View south along the excavated breach channel toward its junction with the ocean.

Photo 11: This photo was taken the day after the emergency action and shows that flow exiting the lagoon had considerably widened the excavated breach channel. View northeast toward the lagoon.

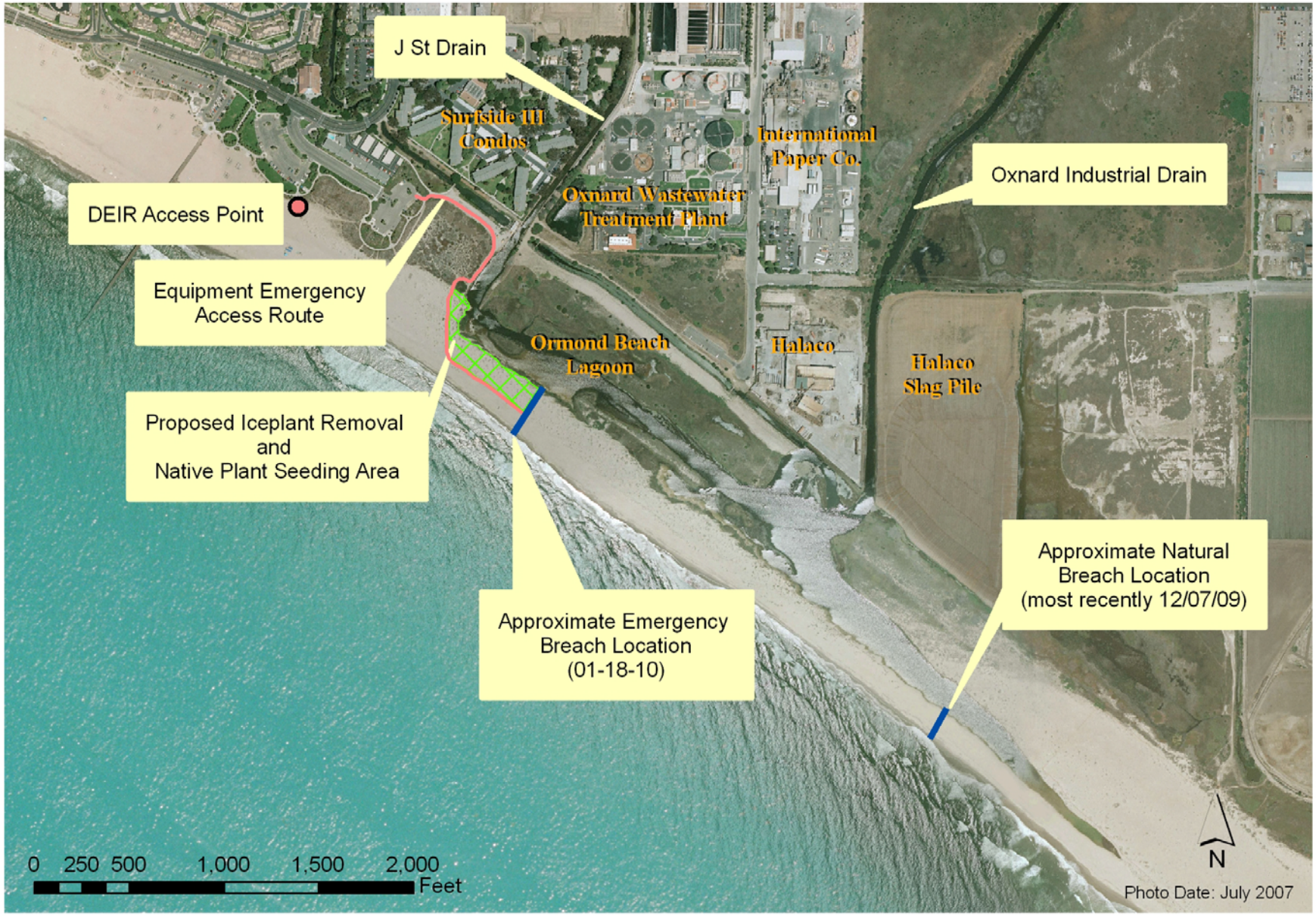
Photo 12: View north toward the lagoon and JSD the day after the emergency action. The lagoon surface water elevation had been lowered, but the lagoon still retained aquatic habitat.

Photo 13: View southwest along the portion of the excavator access route on existing dirt road adjacent to the JSD. This and all subsequent photos were taken one week after the emergency breach action.

Photo 14: View southwest along the excavator access route at the point where it diverted from the existing dirt road onto a field of iceplant.

Photo 15: View northeast along the excavator access route at the point where it departs from the iceplant field and crosses beach dunes. The Surfside III community is at the top of the photo, and the OWWTP is at the top right corner.

Photo 16: View south toward excavator tracks across the beach dunes.



Ormond Beach Lagoon Emergency Breaching - January 18, 2010