

Reno Beach Howard Farms Conservancy District Flood Emergency Action Plan

Reno Beach Howard Farms Conservancy District
Jerusalem Township, Lucas, County, Ohio

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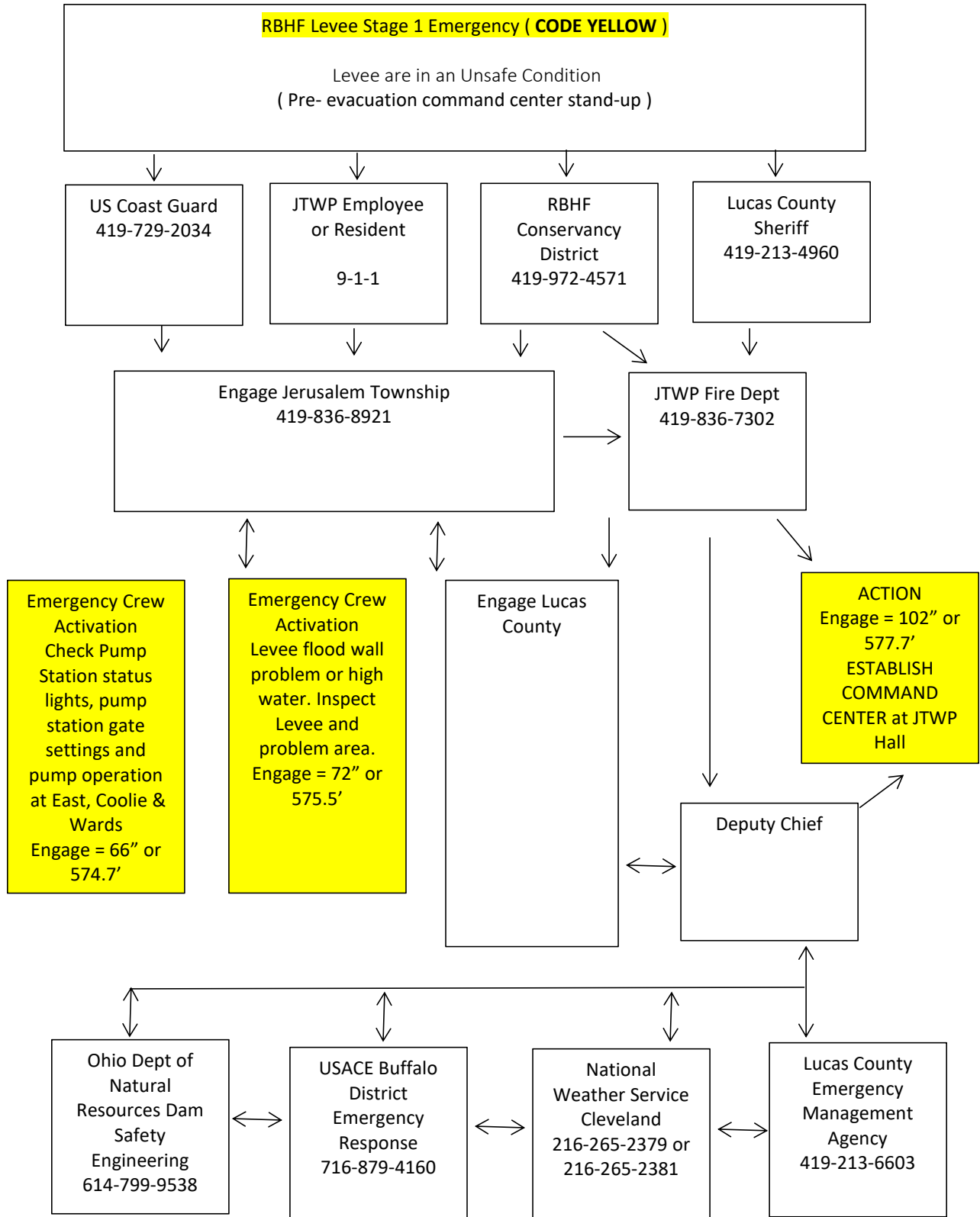
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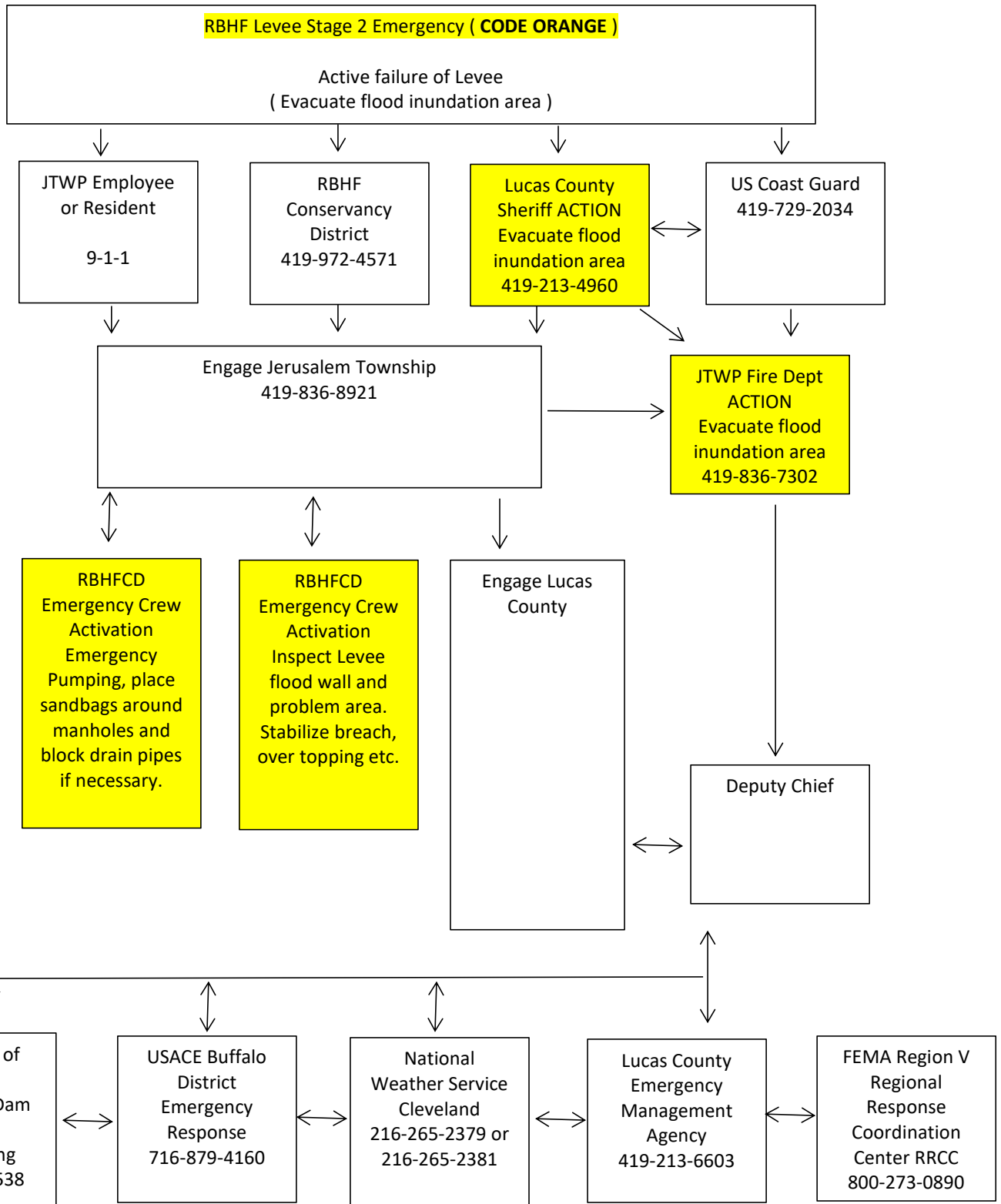
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LIST OF ABBREVIATIONS AND ACRONYMS

RBHFCD	Reno Beach Howard Farms Conservancy District
JTWP	Jerusalem Township
EAP	Emergency Action Plan
ODNR	Ohio Department of natural Resources
USACE	United States Army Corps of Engineers
FEMA	Federal Emergency Management Agency





STATEMENT OF PURPOSE

The purpose of this Emergency Action Plan (EAP) is to minimize the hazard to life and property during an emergency event within the boundaries of the Reno Beach Howard Farms Conservancy District (RBHFCD). An area approximately bordered by Lake Erie to the North, the Coolie Canal to the West, the Wards Canal to the East and an established line representing the south line of Sections 31, 32 & 33, Jerusalem Township, Lucas County, Ohio. These areas within the RBHFCD could be flooded to varying degrees depending on the water level in Lake Erie and the nature of an unusual or emergency event. Should the RBHFCD experience an emergency event portions of the area could be inundated by flood waters. In addition to residential structures (including contents) and public infrastructure (roadways & utility systems) several marinas and commercial establishments could be damaged.

Communication of the emergency situation will be on Lucas County 800MHZ radio system. All Township, County and State officials will observe rules of jurisdiction and proper chains of command. Continuous communication are to be set up between all officials to keep all entities informed for the maximum utilization of all means to protect the public.

The Reno Beach Howard Farms Board of Directors are responsible for monitoring the situation at the RBHFCD during major floods, when a potential hazardous condition is developing, and when levee and/or floodwall is imminent or has occurred.

It is the responsibility of every EAP participant to be fully aware of his or her duties and to execute those duties to the best of their ability.

PROJECT DESCRIPTION

The Reno Beach Howard Farms Conservancy District (RBHFCD) Project Levee shown in Figure 1, was designed and constructed under the direction of the United States Army Corps of Engineers (USACE), Buffalo District in the period 1993-1994. The project as it exists today, replaced temporary flood protection measures constructed by the USACE in 1972.

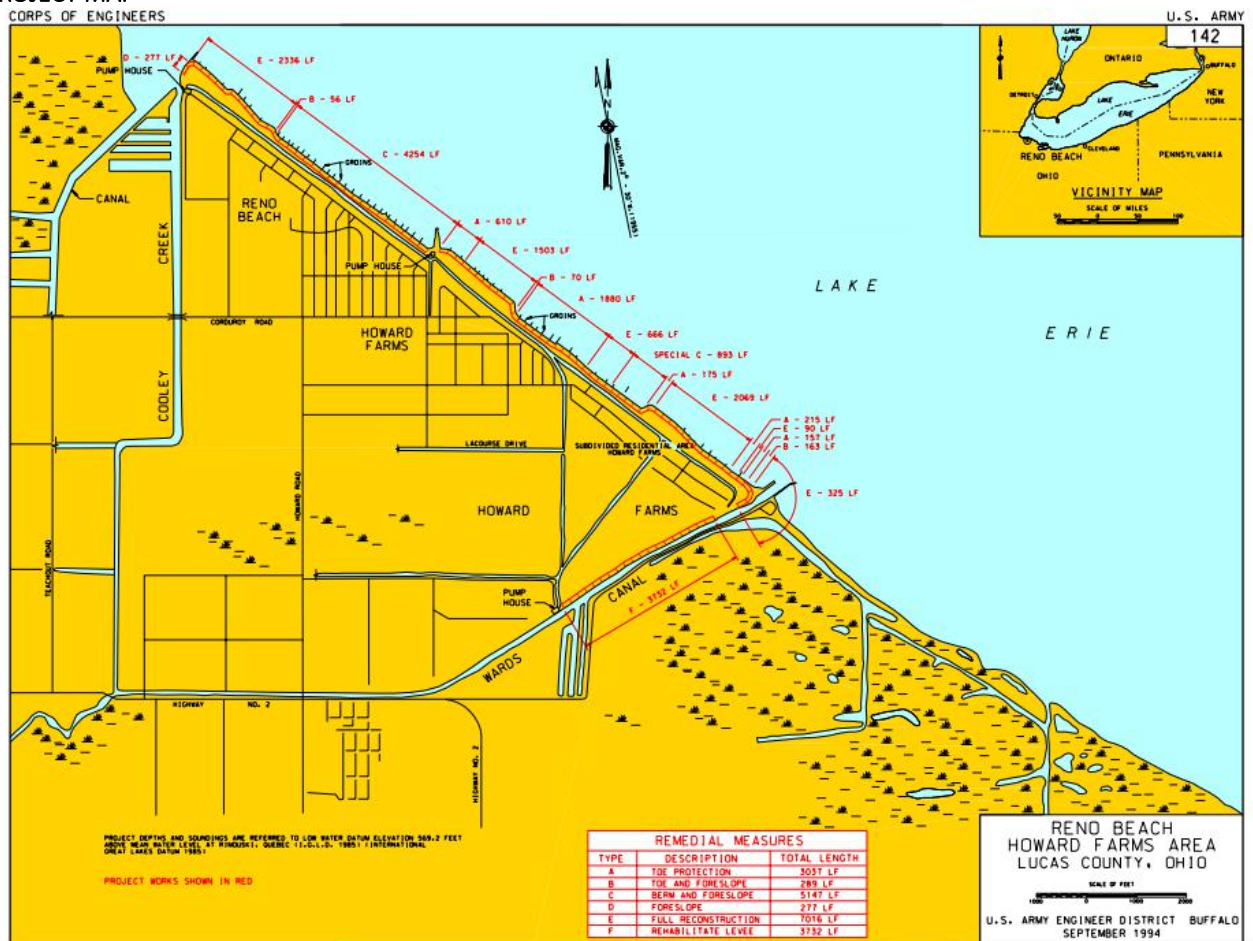
The existing RBHFCD flood protection systems include the following components.

Lake Erie Shoreline USACE Project Levee – Riprap and earthen embankment levee between the Cooley Canal on the West and the Wards Canal on the East

Interior Drainage - 3 Pump Stations (Coolie Rd Pump Station, East Rd Pump Station and Toulon DR Pump Station)

Additional Levees - Earth embankment Levee encompassing the West, South and East perimeter of the defined Flood Area as established in the early 1900's: Starts at the west end of the USACE Project Levee at the mouth of the Cooley Canal, continues south following the Cooley Canal/Creek to the southerly line of Sections 31, 32 & 33 at the bend in the creek and then east along the south line of the Sections connecting to the Metroparks Howard Farms Phase 1 Levee, just east of Howard Road.

PROJECT MAP



EMERGENCY DETECTION, EVALUATION AND CLASSIFICATION

DEFINITION OF TERMS

Stage 2 Emergency (CODE ORANGE) Water at 580 and rising. The riprap Levee floodwall, or the earth embankment Levee has failed or actual failure is in progress and immediate warnings to evacuate are Required.

Stage 1 Emergency (CODE YELLOW) Water at 579 and rising. The riprap Levee floodwall, or the earth embankment Levee are in an Unsafe Condition. The appropriate Jerusalem Township & Lucas County agencies should be notified in the event that conditions worsen justifying an upgrade to Stage 2 Emergency Condition.

Deficient: A condition exists that could potentially develop into an unsafe condition, but the immediate safety of the Levee or floodwall is not in jeopardy. The deficient condition should be monitored closely and a professional engineer familiar with Levee and floodwall safety should be contacted to recommend remedial measures.

INSPECTION

The Levee and floodwall should be inspected as required by the operations and maintenance manual for RBHFCD dated January 1994 by the USACE Buffalo District and subsequent amendments. The person(s) responsible for maintaining and/or inspecting the Levee or floodwall should be familiar with this section and the Emergency Determination Diagram.

HIGH WATER LEVELS

The RBHFCD is subject to rising water levels depending on wind direction, wind speed and duration. Strong prevailing winds out of the North, Northeast & East will cause water to back up in the western end of Lake Erie and the outlet of the Wards Canal and the Cooley Canal / Cedar Creek resulting in rising waters along the Earth embankments protecting the interior of the conservancy district area. (see map above) *There are 4 water level gauges position around the RBHFCD area to determine the current state of Lake Erie/Wards/Cooley Canal/Cedar Creek water levels. The water level staff gauges are in the following locations:*

*Cooley Canal Pump discharge
Lake Erie Pump discharge
Wards Canal Pump discharge
Cedar Creek at Rt 2 bridge*

The staff gauges provide approximately the same lake level and are graduated in inches. Several gauge levels have been established to trigger specific actions by Jerusalem Township. (Blue Italics = Proposed for 2022

(Lake Erie LWD 569.2)

Gauge water level = 58 inches (574.0') Inspect Pump Stations

Gauge water level = 66 inches (574.7') and rising monitor situation

Gauge water level = 72 inches (575.2') and rising monitor situation

Gauge water level = 90 inches (576.7') and rising notify JTWP Fire Dept

Gauge water level = 102 inches (577.7') JTWP Fire Dept begins setup Command Center at JTWP Hall.

Regular walk-by inspections should occur daily when Lake Erie, Wards & Cooley Canals are at a flood level sufficient to trigger the High Water Warning Alert by the US Coast Guard Lucas County or NOAA.

OTHER POTENTIAL PROBLEM CONDITIONS

In addition to High Water Levels, conditions that are believed to be such that would lead to imminent structural failure (Stage 2 Emergency) shall be reported as prescribed in the Emergency Notification Chart (page 2)

Any unusual conditions such as, but not limited to, Boils, Seeps, Springs, Running Muddy Water, Cracks or unusual sediment on the Levee surface or immediately adjacent to the Levee or floodwall, shall be reported immediately, day or night. Report procedures are as follows.

1. Observer should immediately report unusual conditions to JTWP Fire Dept or 9-1-1
2. JTWP Fire Dept should immediately notify Lucas County EMA
3. An appropriate engineer should make an immediate personal investigation to determine the extent and magnitude of the problem.
4. If the conditions at the RBHFCD warrant the initiation of a Levee failure Stage 1 or Stage 2 Emergency the designated engineer shall make the following contacts.
 - a) Lucas County Police, Floodplain administrator, Fire & Rescue Department.
 - b) If necessary, Ohio Department of Natural Resources, Division of Soil and Water Resources, Dam Safety Engineering Group, or USACE Buffalo District.

Almost all Levee and floodwall failures can be directly related to Seepage, Slope Failure, Settlement or problems related to the conduits through the Levee embankment and or floodwall. Each of these potential Levee and floodwall problems is discussed in the following paragraph.

POTENTIAL LEVEE AND FLOODWALL PROBLEMS

SEEPAGE

Depending on water depth and duration of a particular water depth in a canal or creek all levee's normally experience a minor degree of seepage as water from the canal or creek seeks path of least resistance through the levee embankment and the levee or floodwall foundations. However, excessive seepage or seepage that is visually different than previously observed can be indicative of major problems within the levee and or Levee or floodwall foundations. Seepage must be controlled in both velocity and quantity. At the RBHFCD, seepage is most likely to occur along the north Levee where homes exist and several drainage systems relieve lake water pressure. Also 3 pump stations (Coolie, East, Toulon) have pipes that penetrate through the levee embankment / floodwall and toe of the embankment slope.

INDICATORS

- Appearance of wet spots or springs in the protected dry face of the earth embankment or in areas immediately adjacent to the toe of the embankment.
- Areas that prematurely thaw, or where snow melts prematurely during the winter.
- Areas of wetland type vegetation (reeds cattails etc) along the protected (dry) side toe of the levee embankment.
- Boils (fine grained material being ejected in a stream of water out of a hole in the levee embankment or ground forming a small cone of material) appearing on the protected (dry) face of the levee embankment or in the area adjacent to the protected (dry) side toe of the embankment or levee / floodwall.
- Sinkholes occurring on the levee embankment or in the area adjacent to the toe of the embankment slope.
- Landslides on the protected (dry) side face of the levee embankment. Note that shallow depth landslides are not always caused by seepage.
- Depression formed in either side of the Levee embankment and the Levee crest including in the riprap protection on the canal or lake (wet) side of the Levee. Depressions could also form along the sides of the gate

well structures adjacent to each pump station and along the paths of the buried drain pipes through the Levee embankment.

- The appearance of persistent whirlpool (vortex) in the Wards or Coolie/cedar canals adjacent to the Levee embankment during a high water event.

REPORTING

When reporting seepage or boils, unless it is of a magnitude that is obviously an emergency condition, reference the location of the seepage or boils to an item of known location (example 50' north of the Toulon pump station) Estimate the amount of seepage and whether it is clear or cloudy ; the approximate size of the area involved; canal or lake water level (use staff Gage) ; Piping of foundation and or embankment material is normally indicated by a buildup of materials around the seepage area or a slope failure (e.g. boils, slumps, landslides, sinkholes) After the seepage is reported, the area should be photographed before any measures are taken to control the problem. Disturbance of any seepage indicator, such as the buildup of sediment around the seepage area, should be kept to a minimum. **Any occurrence of a persistent (not dissipating and/or moving downstream) whirlpool in the Wards or Coolie Canals adjacent to the levee and or floodwall is an emergency condition.**

CONTROLS

- **Changes in Seepage, Boils and Whirlpools** - Seepage problems boils and whirlpools have their origins on the Canal or Lake (wet) side of the Levee embankment and floodwall, within the levee embankment, in the canal bottom near the Levee embankment, or in the Levee and or floodwall foundation interface. In order to reduce seepage, the seepage must be observed for various water levels to determine the approximate elevation that initiates seepage and the location of the seepage source. If the source of the seepage can be found or a suspected location identified, a blanket of impervious material such as bentonite clay should be placed over the seepage source. If the seepage is persistent, a grout curtain installed inside the Levee embankment or along canal or lake (wet) side face of the Levee / floodwall should be considered.

- Boils: As a temporary control measure, a ring of sandbags or a large diameter pipe can be placed around the boil area. This will cause water to pond above the ground surface at the boil location and reduce the velocity of the water emanating from the boil so that piping damage is minimized until a more permanent solution can be implemented. NEVER dump sand or similar material into a boil. This may wash out and falsely indicate a more severe problem than actually exists. After an assessment of sediment associated with the seep or boil, an overlay of an approved granular material may be selected as a control measure.

- Sinkholes, settlement and depressions: Sinkholes, settlement and depressions can be the result of a loss of groundwater pressure or material beneath the ground surface. However, compaction of weak material, decay and collapse of organic material, and animal burrows can also cause the ground surface to sink. The cause of any sinkhole settlement or depression should be investigated by a qualified geotechnical engineering firm. After documenting the location of sinkholes, settlements or depressions, they should be filled with earth or rocks until more permanent measures can be taken to resolve the problem.

SLOPE FAILURE

In General, slope failure occur gradually, and if detected in the early stages, measures can be taken to prevent total embankment failure. On the canal or lake (wet) Levee embankment slope, failures may occur shortly after a rapid decrease in canal or lake level following a protracted flood, a change in prevailing wind direction, or a decrease in wind speed. On the protected (dry) Levee embankment slope failures may occur after large rainfall events following a protracted period of hot, dry weather where the Levee soils shrink and crack allowing water to penetrate the surface instead of normal filtration. Slope failures can also occur in multiple areas and at different times, but are more likely during special operating or loading conditions or during extended periods of heavy rainfall. They may be initiated by excessive vibrations, seepage, earthquakes or erosion. Massive slides can initiate catastrophic failure of a Levee embankment.

INDICATORS

- Slumping, sloughing, or sliding of soil material on either the canal or lake (wet) face or protected (dry) face of the Levee embankment.
- Displacement of riprap along the canal or lake (wet) face of the Levee embankment.
- Cracks in the Levee embankment. Transverse cracks appear across the Levee embankment and might indicate differential settlement within the embankment. Such cracks provide avenues for seepage water and piping could quickly develop. Longitudinal cracks run parallel to the Levee and may signal the early stages of a slide or slump on either face of the embankment.
- Erosion of the canal or lake (wet) side or protected (dry) side of the Levee embankment caused by rainfall, runoff, snow melt, Cedar Creek currents, wave action, lack of vegetation, foot or vehicular traffic, over-topping, or increased seepage through the Levee or its foundation. Deep erosion gullies and Levee waterline erosion can threaten the structural integrity of the embankment. Erosion along the base of the Levee indicates potential deterioration of the foundation that could result in landslides or misalignment of the embankment.

REPORTING

When reporting slides, sloughs, slumps cracks, and displaced riprap, , reference the affected area to some permanent feature of the Levee (example 50' north of the Toulon pump station and 15' down slope from the Levee crest) determine the difference in elevation from one side to the other. Note any special loading or operating conditions. Note the canal or lake water level (using staff Gage) and note the recent weather conditions.

CONTROLS

- Slumps, Sloughs, Landslides, Erosion, Settlement: All of these problems are characterized by a loss of material from the Levee embankment, foundation, or the area of the toe of the Levee embankment. The loss of material can reduce the cross-sectional area of the Levee, the length of a potential seepage path, or the freeboard of the Levee to prevent over-topping. For slumps, sloughs, erosion and settlement, on the Levee embankment or at the toe of the embankment slope, the affected area should be filled with soil, rock-fill, or sandbags until more permanent repairs can be made. On the protected (dry) face of the Levee embankment, the repaired area should be covered with plastic sheets or other erosion resistant materials to prevent subsequent erosion during storms. For landslides, the toe of the slide should be stabilized by weighting soil, rock, or gravel. If necessary fill material should be placed at the top of the slide to restore freeboard after the toe is stabilized.
- Riprap displacement: Riprap was placed along the Lake Erie shoreline and Canals (wet) side of the slope to protect the slope from the erosive forces canal / creek currents, wave action, and ice / debris impact. Riprap displacement is characterized noticeable discontinuity in the slope upon which it was placed. It can be caused by ice and debris impact, expansion of ice in the interstices of the riprap stone layer, slumps, settlement, landslides erosion, or sloughs, in the embankment soils underneath the riprap. Often riprap displacement is indicative of a loss of fine material underneath the riprap due to improper grading of the riprap stones or the lack of improper design of a filter stone material layer. Riprap displacement can expose the Levee surface being protected from ice, debris, wave, and canal / creek induced forces that can cause further deterioration of the Levee embankment. Displaced riprap should be temporarily repaired by filling the affected area with additional riprap or sandbags until the cause of the displacement can be determined and more permanent repairs made. Long term repairs may include removing the riprap, re-grading the Levee embankment slope, installing a permeable geotextile fabric filter, placing a layer of bedding gravel, and replacing the riprap stone.
- Cracks: Cracks are an indicator of excessive loading, over-stress, uplift pressure, soil shrinkage or expansion, foundation movement, seismic activity, or loss of soil strength. In a Levee embankment, cracks are caused by material movement within the embankment as might occur as a result of seepage, settlement, or seismic activity or at the Levee surface by drying and shrinking of the soils. Non leaking cracks in the Levee embankment should be filled with soil, rocks, cement grout, or sandbags until a more permanent repairs can be made. In addition, the drainage path from the crack should be improved (lined) to prevent further erosion. A

leaking crack is an emergency (warning) situation and the crack should be filled immediately with an available material including bentonite clay, soil, hay bales, sandbags, and rocks to stop or slow the flow of water until the canal / creek level recedes and a permanent repair made.

- Levee over-topping: High water surface elevation in the canals / creek can occur due to heavy precipitation, rapid snow melt, high water levels in Lake Erie, or a combination of any of these factors. High water levels in Lake Erie can occur as the result of sustained, high winds from the North, Northeast and East. The high water levels, coupled with waves, can result in over-topping of the Levee embankment and result in slope failure. If it is apparent from observation and consultation from the National Weather Service and the U.S. Coast Guard that water levels and or waves will approach the top of the Levee, the crest elevation of the Levee segments of the RBHFCD should be raised using sandbags. **If it is apparent that the floodwall segments of the RBHFCD will be over-topped, this is an emergency situation and the JTWP Fire Dept and JTWP Trustees should be notified to initiate evacuation procedures for the Reno Beach Howard Farms Conservancy District area.**

SETTLEMENT

Settlement is the decrease in elevation in soil from its original constructed elevation. To a certain degree, settlement of a Levee embankment is normal and to be expected. Often settlement occurs because the soil was not fully compacted against a concrete structure or steel sheet pile wall. Settlement is most likely to occur along the Levee crest, adjacent to the concrete gate well adjacent to the pump stations and at the interface between the Levee embankment and the floodwall. Settlement along the path of the drain pipes through the Levee and the floodwall, which could be an indication that material is being removed within the Levee or behind the floodwall along the pipe, is most likely an emergency situation.

INDICATORS

- A noticeable slump in the Levee embankment crest
- Depression in the ground along the path of the drainage pipes
- Depression in the ground along the steel or concrete floodwall.
- Depression at the interface between the Levee embankment and the steel or concrete floodwall

REPORTING

Photographs should be taken along with detailed written records of the location of any settlement or depressions in the Levee embankment. The appearance of any discharge through the Levee embankment associated with its location of the settlement or depression should be especially documented.

CONTROLS

- Conduit Repair: Effective repair of the internal surface or joints of a conduit is difficult and should not be attempted without careful planning and proper professional supervision. Various construction techniques can be applied to minor joint repairs and conduit leakage, but major repairs require plans and specifications developed by a professional engineer experienced in levee conduit design and construction. Conduit linings may be installed; however, the loss of pipe capacity as well as the structural adequacy of the composite pipe and lining should be considered in the evaluation.
- Areas where settlement has occurred that are not actively continuing to settle should be filled with clay-type soil to return the Levee crest or face to the as-constructed elevation. The clay type soil should be to 95 percent or above of maximum dry density at 1 percentage point below 3 percentage point above optimum moisture content based on the Standard Proctor Density Test. (ASTM D 698-78)

FLOODWALL MISALIGNMENT

The misalignment of the concrete or steel sheet pile backed floodwalls along the canals or lake could indicate significant foundation soil movement towards the canal, large seismic event, deterioration of the concrete or steel, impact of a large vessel or heavy floating object during a flood, and or a vehicle impact along the canals.

INDICATORS

- Cracked concrete on the protected (dry) side of the floodwall.
- Tilting or bowed section of the floodwall.
- Warped or bent sheet steel pile or visible gap between steel sheet piles.

REPORTING

The location of the misalignment section of floodwall should be located with reference to either end of the floodwall and the nearest known location. The length of the affected area should be measured and recorded. Photographs of both sides of the affected area of floodwall shall be obtained. Any gaps at the ground level or in the joints between individual steel sheet pile sections should be measured, photographed and documented.

CONTROLS

Misalignment of steel sheet pile floodwalls is usually not a fast moving problem and, therefore, should be considered a non emergency (watch) situation. If the wall is collapsing during a flood event, it is an emergency (warning) situation. Any misalignment should be evaluated by a geotechnical and structural engineer for possible repairs and realignment.

BACKFLOW DEVICE PROBLEMS

The flap gates on the ends of the drainage pipes through the Levee and floodwall segments of the RBHFCD are exposed to the flow in the Canals / Cedar Creek and wave action from Lake Erie and could be damaged or clogged by floating debris, ice and vessel impact. The flap gates in the gate well structures adjacent to the pump stations can be jammed open by floating debris and ice.

INDICATORS

- Water flowing back into ditches during high water conditions from the Wards and Cooley Canals.
- High frequency of pump station operation.

REPORTING

The location of the water backing up should be identified and documented including the time of day and the water level of the Canals, Lake Erie using the staff Gage.

CONTROLS

- Flap gates in gate well structures adjacent to pump stations: The sluice gates in the gate well should be closed until the water level subsides and the gate well dewatered. Once the gate well can be accessed , the debris and or ice clogging the gate shall be removed and the flap gates returned to service.

ADDITIONAL COMMENTS

The types of Levee and floodwall failures described above are often interrelated in a complex manner. For example, uncontrolled seepage may weaken the soil and lead to a slope failure. A slope failure may shorten the seepage path and lead to a piping failure . Minor defects, such as cracks in the Levee embankment , may be the

first visual sign of a major problem that could lead to failure of the structure. A professional engineer experienced in Levee and floodwall design and construction should evaluate the seriousness of the deficiencies. A qualified professional engineer can recommend appropriate permanent remedial measures. In order to assist in the determination of the severity of a noted deficiency, the **Emergency Determination Diagram** on the next page should be consulted.

Whenever a potential emergency situation is reported, an engineer should immediately visit the area of concern at the RBHFCD and evaluate the situation as described in the above paragraphs. If the situation is severe enough that there is any concern that there could be an uncontrolled release of water into the area protected by the RBHFCD the JTWP Fire Dept should be immediately notified and the appropriate emergency stage (1 or 2) should be followed.

If upon visiting the potential problem at the RBHFCD and it is determined that the situation can be handled without danger of an uncontrolled release of water into the area protected by the RBHFCD, the necessary work should be coordinated with appropriate entities.

Once a Levee or floodwall problem progresses to the point that the Levee and or floodwall is failing, evacuation in the flood inundation zone (see map) may be necessary if emergency actions do not appear to be adequate to prevent flooding in the protected area.

EMERGENCY DETERMINATION DIAGRAM

		Notify RBHFC	Emergency Stage 1	Emergency Stage 2		
Problem Type:	Overtopping	Seepage	Embankment Stability	Drainage	Floodwall	
Specific Condition Noted	Overtopping or near overtopping of the levee/floodwall crest (Elev 578.2 or 108")	seepage on protected (dry) levee embankment slope with muddy water and stable or increasing flow	Breach or landslide below the flood levee that reaches the levee embankment crest	Inoperative slide gates in gate well structures adjacent to pump station and along Mudjaw Creek	Floodwall is tilting	
		seepage on protected (dry) levee embankment slope with clear water	Cavities or holes in the levee embankment that could be attributed to internal erosion	Tide gates stuck open or fail to seat in the gate well structures	Floodwall is misaligned	
		Previously undetected seepage at the toe of the protected (dry) side levee embankment slope with clear water and stable flow rate	Landslide in the levee embankment without seepage that does not reach the levee crest	Tide gates stuck open or fail to seat on the ends of drainage pipes through the levee and fill sections	Concrete backing to floodwall is cracked	
		soft zones, springs, and/or wetland vegetation on the slope or at the toe of the protected (dry) side levee embankment	Cracks parallel or transverse to the levee embankment		sheet pile cap is warped or bent	
		Boils, sinkholes or depressions in the protected (dry) slope toe or immediate adjacent area or behind the floodwall	Settlement of the levee embankment crest		gaps in steel at ground level or joints	
		misalignment of the floodwall (no active movement observed)	Riprap displacement on the river or lake (wet) side of the levee embankment			
		persistent, non-moving whirlpool (vortex) in the waterway immediately adjacent to the stream (wet) side of the levee embankment or floodwall	Earthquake			
		Sinkholes, depressions or settlement on the levee or behind the floodwall along the path of a storm drain pipe				

PREPAREDNESS

LEEVE OWNER

The Reno Beach Howard Farms Conservancy District (RBHFCD) is responsible for Levee and floodwall inspections as outlined in the USACE Operations and Maintenance Manual. The RBHFCD is also responsible for detecting emergency conditions and depending on the observed conditions, they are responsible for deciding the appropriate action in cooperation with Jerusalem Township, Lucas County, Ohio Dept of Natural Resources and the United States Army Corps of Engineers (USACE) Buffalo District. The **Emergency Determination Diagram** on the preceding page should be used to assist in defining the emergency condition and the level of response.

If flood conditions are predicted based on local observations and consultation with the National Weather Service and the U. S. Coast Guard the RBHF Directors should monitor pump station operations in the Conservation District. During a high water level event on Lake Erie, Wards and Cooley Canals / Cedar Creek personnel from the RBHFCD should visit the Levee and floodwall several times per day including during the night, to ensure that no problems are occurring that would trigger an emergency response. If the water level reaches 72 inches and is continuing to rise, or if notification from the U. S. Coast Guard is received then the Levee and floodwalls should be continuously monitored until the high water levels and or storm subsides and (if necessary) remedial measures can be implemented. After the high waters recede in the Wards/Cooley Canals and Lake Erie an engineer should conduct an inspection of the Levee floodwall and drainage structures to determine if any damage has occurred that requires repair.

During times of potential emergencies at the RBHFCD, the curious public and news media can create a major obstacle to performance of necessary tasks; therefore, Levee and floodwall access control measures should be taken. In conjunction with the evacuation of residents in the area protected by the RBHFCD, it will be necessary to provide easy access for equipment, supplies and personnel involved in the effort to affect repairs. The RBHFCD should work closely with the Police Dept to prevent unauthorized access to the RBHFCD, provide security against theft and vandalism, and to facilitate movement of necessary equipment, supplies and personnel to the Levee and floodwall.

PUBLIC NOTICE

In the event of an emergency at the RBHFCD, it is the shared responsibility of the **Designated Incident Commander** (which may be the JTWP Fire Chief) to prepare and deliver a message for public release based on the existing conditions and information provided. Preparation of emergency messages should begin as soon as their potential need is apparent so that they can be issued promptly upon declaration of an emergency condition. When time is available for their preparation the initial message should contain all pertinent information. However, in some cases an emergency condition may be declared with little or no advanced notice. The following sample message provides a model for the first announcement in such case, subsequent announcement should provide additional details.

ANNOUNCEMENT OF LEEVE FAILURE IN PROGRESS

Urgent, Urgent: Jerusalem Township has announced that a portion of the Levee (and or floodwall) along Lake Erie and/or the Wards/Cooley Canals in the Reno Beach Howard Farms Conservancy District area (has failed / is in imminent danger of failure).

Attempts to stabilize the Levee (and/or Floodwall) are underway, but their success cannot be determined as yet. Residents living in the Reno Beach Howard Farms Conservancy District Area north of State Route 2 should evacuate to high ground immediately.

Additional information will be released as soon as possible.

The simple functioning means of communication will be used to maintain communication with authorities and construction contractors retained to stabilize the Levee and/or floodwall. Notification will normally be on the Lucas County 800Mhz radio system.

The Jerusalem Township Public Information Officer will provide a press release to all local radio and television stations in coordination with the Lucas County Sheriffs office and the Lucas County Emergency management Agency.

The National Weather Service can be used as a primary source through which emergency announcements are released to the news media.

National Weather Service 24 Hour Phone number 216-265-2379 or 216-265-2381

EVACUATIONS

The Jerusalem Township Fire Department and the Lucas County Sheriff are responsible for evacuation of the flood inundation area.

TERMINATION AND FOLLOW UP

Jerusalem Township should monitor the emergency situation at the RBHFCD and keep authorities informed of developing conditions. The **Designated Incident Commander** are responsible for terminating the emergency status for the area protected by the RBHF Flood Protection area.

Following the emergency situation the Reno Beach Howard Farms Conservancy District (RBHFCD) Board of Directors is responsible for performing a follow up evaluation meeting of this Emergency Action plan (EAP) with the participants involved in the emergency.

EAP COORDINATION

The RBHFCD Board of Directors is responsible for coordinating the EAP. The responsibility encompasses the following.

- Revision to the EAP
- Coordination of EAP exercises in cooperation with the Lucas County Emergency Management Agency.
- Establishment of EAP seminars for the RBHFCD
- Serving as the EAP contact for emergencies (warning) and non emergencies (watch) related to the RBHFCD

ACCESS TO THE SITE

The primary route of access to the RBHF Flood Protection Area is from State Route 2 North on Howard Road

RESPONSE DURING PERIODS OF ADVERSE WEATHER

During periods of adverse weather, the RBHFCD should be prepared to isolate and protect areas of potential Levee and floodwall repair from rainfall, ice and snow. This includes stockpiling repair materials, including sand bags, sand plastic sheets, gravel, clay soil and having a list of available equipment and equipment operators including portable lighting, generators, heavy duty electric cords, earth moving equipment, (skid steers, backhoe, front end loaders, bulldozers, etc)

SURVEILLANCE

Physical inspection of the RBHFCD Levee embankment and floodwall will be performed as a means of surveillance and detection of emergency situations. The Levee embankment, floodwall and drainage structure are to be routinely inspected to identify any deterioration or loss of function. The Levee, floodwall and drainage structures are to be inspected once per year and after heavy precipitation and high water levels in the Wards/Cooley Canal and Lake Erie. These inspections shall be conducted by personnel from the Reno Beach Howard Farms Conservancy District (RBHFCD) and include the Levee Floodwall, gate wells structures, pumps stations, drain pipes through levees and floodwalls including back-flow prevention devices.

The time from an actual emergency occurrence at the RBHFCD and the detection of the emergency situation is very crucial in the implementation of this EAP. Since there is very little time after a Levee or floodwall failure begins to affect an evacuation of the area protected by the RBHFCD, it is important to be aware of the conditions that may cause the Levee embankment and or floodwall to fail (see Emergency, Detection, Evaluation and Classification above). Routine inspections of the Levee embankment, floodwalls, and drainage structures is to be used to detect hazardous conditions at the RBHFCD and, if possible, to rectify them or notify the proper emergency officials.

The RBHFCD is located in an easily accessible location. During periods of heavy precipitation and high water levels in the Wards/Cooley Canals and Lake Erie, or previously identified serious problems RBHFCD site the RBHFCD shall provide an increase level of surveillance including more frequent visits to the site during the day and night. Round the clock surveillance shall be provided for Levee embankment, floodwall or drainage structure problems considered by the U. S. Army Corps of Engineers and the ODNR to be critical for the integrity of the flood protection project.

RESPONSE DURING PERIODS OF DARKNESS

For emergency situations that occur at night the RBHFCD shall provide lighting, either fixed or portable that is sufficient to illuminate the site. One or more portable generators, maintained in good working order, are to be provided for use in Levee, floodwall, or drainage structure failure emergencies. The generators and associated electrical cords shall be capable of providing power to any emergency electrical equipment, including emergency lighting, and have an output capacity that meets or exceeds the power required by emergency equipment.

ALTERNATE SYSTEM OF COMMUNICATION

Cellular telephones are to be used as an alternate means of communication.

EMERGENCY SUPPLIES AND RESOURCES

For emergency use the RBHFCD shall have the following materials and supplies available with sufficient transport vehicles to ensure a timely response to an emergency situation. (See Appendix C)

- Flashlights to provide lighting where emergency lighting does not illuminate and for directing traffic.
- Portable gas fueled generators.
- Extension cords (heavy duty) for use with portable generators and emergency equipment including lights.
- Fire extinguishers (preferably type ABC) for extinguishing any fire that may occur in the emergency equipment.
- Portable electric flood lights.
- Bentonite clay to dump into any Levee and or floodwall breach.
- Backhoe, trackhoe, front end loader, and or skid steer for hauling and placing fill material.
- Four wheel drive vehicle and dump truck for hauling fill material and equipment.
- One or more portable pumps with flexible hoses to assist in pumping water from the pump station wet wells in the event that one or more of the pumps become disabled.
- Plastic sheets for temporary crack repair and for protecting eroded areas on the Levee embankment.
- Rope to assist emergency personnel.
- Personnel flotation devices.
- First aid kit.
- Traffic control cones and or barriers.

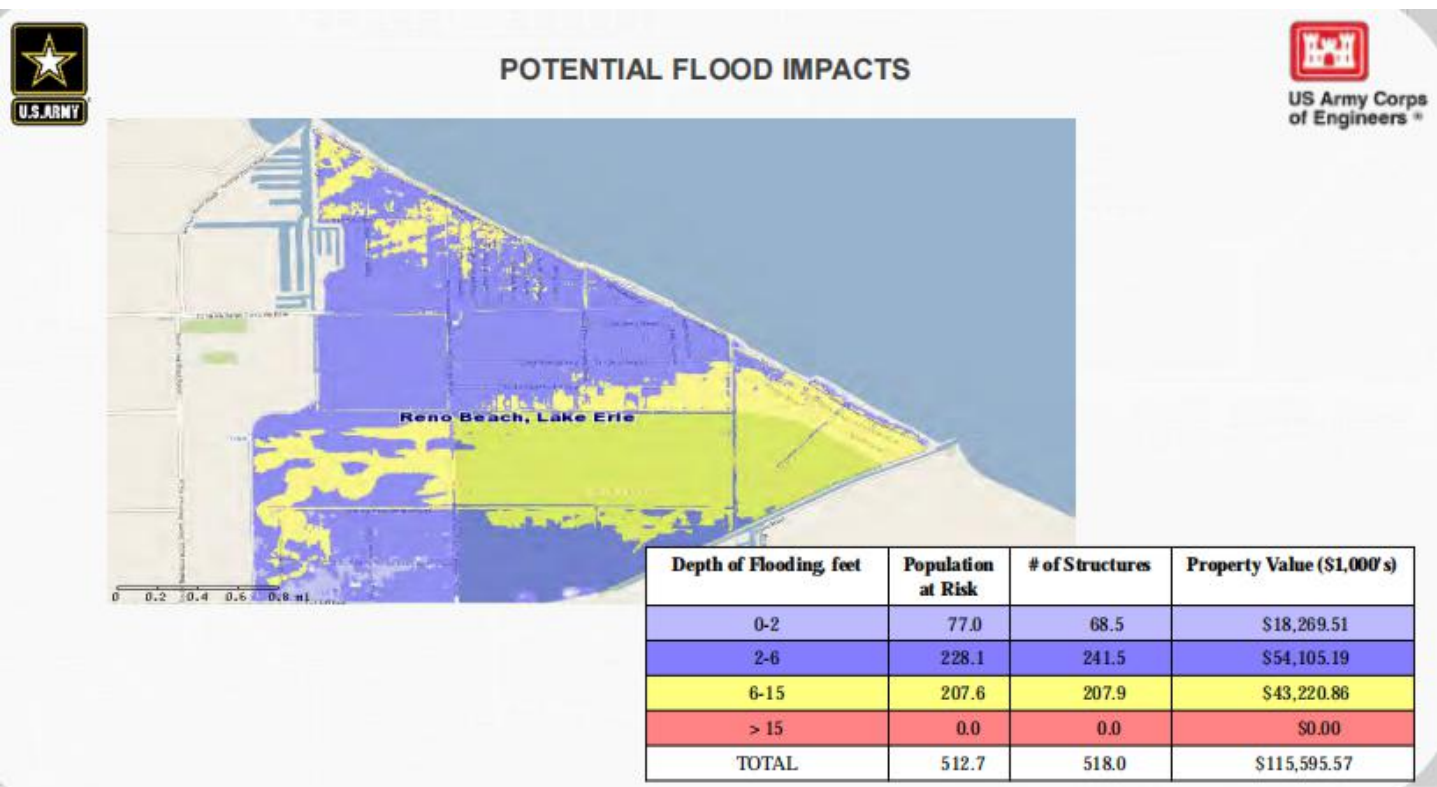
EMERGENCY CONTRACTORS AND SUPPLIERS

Jerusalem Township has personnel, equipment, and materials to respond to emergencies at the RBHFCD. In the event that additional personnel and equipment is required at the RBHFCD site, the RBHFCD shall rely on their experience with and knowledge of local earthwork and construction contractors to procure the the required services on an emergency basis. (See Appendix C)

OTHER ACTIONS DEvised TO MITIGATE THE EXTENT OF POSSIBLE EMERGENCIES

The best possible mitigation of any emergency situation at the RBHFCD is prevention. The RBHFCD is responsible for the for a complete inspection of the Levee embankment, floodwall, and drainage structures, (including gates, pumps, every year and after periods of prolonged heavy precipitation and or high water levels in the Wards/Cooley Canals and Lake Erie. Any repairs needed to the RBHFCD are to be made as soon as possible after discovery and should be coordinated with the U. S. Army Corps of Engineers and ODNR.

INUNDATION AREA



APPENDIX A

PLANS FOR TRAINING, EXERCISING, UPDATING AND POSTING EAP

ANNUAL TRAINING OF PROJECT OPERATORS AND OTHER RESPONSIBLE PERSONNEL

The Reno Beach Howard Farms Conservancy District (RBHFCD) are responsible for the training, operating and supervisory personnel to assure timely and adequate assessments of developing emergency situations and performance of their duties in the event of an emergency situation. Each individual is to be instructed as to what conditions constitute a project emergency and what specific responsibility they are to execute.

The RBHFCD are responsible for conducting annual refresher seminars, workshops or meetings, for this Emergency Action plan (EAP).

ANNUAL REVIEW AND TEST OF STATE OF REDINESS

At least once a year, the RBHFCD will meet and perform a test to simulate a levee / floodwall failure stage 1 and stage 2. The test will be initiated when the RBHFCD contacts Jerusalem Township to advise that a test of the emergency alert system for a problem at the RBHFCD is being conducted. Every participant in the EAP will execute their required actions as if it were a real emergency. When executing the drill, each person in the contact network should give their name and position and state that tis is only a drill and repeat that this is only a drill. In no case shall the media be notified.

Once everyone in the Watch or Warning networks have been contacted, the Lucas County Emergency Management Agency will notify that all contacts have been made. The RBHFCD then cancels the test and directs the RBHFCD to notify the EAP plan participants of the completion of the test.

Each year, the test of the emergency at network should be carried out at different times of the day and different months to observe the efficiency of the EAP under all situations.

After the drill the RBHFCD and the Lucas County EMA will determine if the test was successful. They will check names, titles telephone numbers, radio logs and any other information that is vital to execution of the EAP. Any revisions to the emergency contact network for a Watch or Warning condition will be made immediately after this review.

POSTING

The EAP shall be filed in an area in each participants place of work where it is easily accessed and identified. During the annual test of the EAP each participant will be asked to verify that they have been able to easily find their copy of the EAP.

Appendix B

SITE SPECIFIC CONCERNS

Site	Description	Location
Pump Station	2 - 16" PVC discharge pipe through Levee	Cooley Road at Lakeway
Pump Station	24" discharge pipe through Levee	East Road at Corduroy
Pump Station	24" discharge pipe through Levee	Toulon at LaFontaine

OTHER CONCERNS

Earth levee	Earth Levee not maintained, trees and excessive vegetation	East side of Cooley Canal/Cedar Creek from SR 2 North to Corduroy Rd
Earth levee	Earth Levee not maintained, trees and excessive vegetation	North side of Wards Canal from Cooley Canal going East turning North to Lake Erie

Appendix C

Emergency Contact and Resource document

Township Personnel Contact Information

Title	Name	Contact	Emergency #
Trustee	David Bench	419-654-9443	
Trustee	Beau Miller	419-304-8050	
Trustee	Mark Sattler	419-699-7723	
Fiscal Officer	Joel Moszkowicz	419-392-2764	
Fire Chief	Tony Parasiliti	419-261-4998	

RBHF Conservancy District Contact Information

Title	Name	Contact	Emergency #
Vice Chairman	Chris Fleitz	419-279-6204	
Chairman	Elvis Shepherd	419-967-3943	
Board of Director	Adam Hoff	419-466-3343	
Secretary Treasurer	Chrissy Shmitz	419-972-4571	

Emergency Engineer Contact (Need MOU)

George Gradel Co.	Mark Gradel	419-691-7123	
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Emergency Contact and Document

Private entity stake holders to respond in flood emergency

Name of Company	Name	Contact	Emergency #
Belkofer Excavating:	Bill John	419-392-1488 419-392-2760	Need MOU
Gradel & Sons	Mark Gradel Office	419-261-0000 419-691-7123	Need MOU
Nissen Concrete	Denny	419-691-5261	Need MOU
Meinke Marina	Vern Meinke Jeff Harvey	419-266-4443 419-466-6694	Need MOU
Luce Trucking	Chuck Luce	419-836-4317	419-466-4972
Jerusalem Township	Kevin Chapman Eric Schuffenecker	419-466-6834 419-466-8969	Need MOU

Emergency Resource document

Inventory of Emergency Resources and Location

Company	Location	Equipment / Resource
Belkofer Excavating 419-392-1488	10240 Corduroy Rd Curtice, OH 43412	2 excavators 1 backhoe 1 bulldozer 2 tandem dump trucks
Meinke Marina 419-266-4443	10955 Corduroy Rd Curtice, OH 43412	3 14' Jon boats 2 backhoes 1 front end loader 1 tandem dump truck 3 airboats 1 bulldozer
Luce Trucking 419-466-4972	11241 Beachpark Dr Curtice, OH 43412	4 tandem dump trucks 1 front end loader Bulk stone Bulk Clay
George Gradel	3135 Front St Toledo, OH 43605	Pumps Tractor Generators Portable lighting Front end Loaders Heavy equipment Bulk Clay Bulk Sand Bulk Stone
Nissen Concrete	5700 Navarre Ave Oregon, OH 43616	50 2' x 4' Concrete Block Bulk Sand
Jerusalem Township 419-466-6834	9501 Jerusalem Rd Curtice, OH 43412	2 dump trucks 1 backhoe 1 trailer 1 16" camel back pump & tractor 1 4" gas Pump 1 6" Pump tractor driven 45 2' x 4' concrete block 3000 filled sand bags 20,000 bags available for filling

Emergency Contact and Resource Document

State Emergency Management Agency (ODPS) Ohio

<https://ema.ohio.gov>

Lucas County Ohio EMA

<http://www.co.lucas.oh.us/724/Emergency-Management-Agency>

FEMA Levee Info:

http://www.fema.gov/plan/prevent/fhm/lv_intro.shtm

National Levee Database:

<http://nld.usace.army.mil/>

Buffalo District Home Page:

<http://www.lrb.usace.army.mil>

1776 Niagra Street, Buffalo NY, 14207

Phone 716-879-4330

Email LRB.Regulatory@usace.army.mil

USACE Oak Harbor Office

240 Lake Street, Unit D, Oak Harbor Ohio, 43449

Phone 419-898-3491

Email

Lake Erie Water Level

<https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forecast/Weekly-Great-Lakes-Water-Levels/>

National Flood Risk Management Program:

<http://www.nfrmp.us/>

National Weather Service:

<http://www.nws.noaa.gov>

National Weather Service Toledo Ohio

http://www.weather.gov/cle/NWR_Toledo

Quantitative Precipitation Forecasts (QPF):

<http://www.hpc.ncep.noaa.gov/qpf/qpf2.shtml>

Hydrometeorological Prediction Center (HPC):

<http://www.hpc.ncep.noaa.gov/>

State Emergency Management Agency (ODPS) Ohio

<https://ema.ohio.gov>

Lucas County Ohio EMA

<http://www.co.lucas.oh.us/724/Emergency-Management-Agency>

FEMA Levee Info:

http://www.fema.gov/plan/prevent/fhm/lv_intro.shtm

National Levee Database:

<http://nld.usace.army.mil/>

Buffalo District Home Page:

<http://www.lrb.usace.army.mil>

1776 Niagra Street, Buffalo NY, 14207

Phone 716-879-4330

Email LRB.Regulatory@usace.army.mil

USACE Oak Harbor Office

240 Lake Street, Unit D, Oak Harbor Ohio, 43449

Phone 419-898-3491

Email

Lake Erie Water Level

<https://www.lre.usace.army.mil/Missions/Great-Lakes-Information/Great-Lakes-Water-Levels/Water-Level-Forcast/Weekly-Great-Lakes-Water-Levels/>

National Flood Risk Management Program:

<http://www.nfrmp.us/>

National Weather Service:

<http://www.nws.noaa.gov>

National Weather Service Toledo Ohio

http://www.weather.gov/cle/NWR_Toledo

Quantitative Precipitation Forecasts (QPF):

<http://www.hpc.ncep.noaa.gov/qpf/qpf2.shtml>

Hydrometeorological Prediction Center (HPC):

<http://www.hpc.ncep.noaa.gov/>

APPENDIX D

ACKNOWLEDGEMENT OF RECEIPT FOR MEMO OF UNDERSTANDING

Two (2) copies of this acknowledgement page are included in this copy of the Reno Beach Howard Farms Conservancy District (RBHFCD) Emergency Action Plan (EAP). The addressee of this copy of the EAP shall sign and date as indicated below to acknowledge receipt. More importantly, the addressee by their signature that they have read the EAP and understand their role in making the necessary emergency contacts and, if appropriate, mobilizing the necessary personnel and equipment to protect the public in the event of a Levee embankment, floodwall and or drainage structure problem at the RBHFCD.

One (1) copy of this acknowledgement form, signed and dated by the appropriate person, shall be forwarded to the RBHFCD at the address shown below. The second signed and dated copy should remain with this copy of the EAP.

I _____ acknowledge receipt of a copy of the RBHFCD Emergency Action Plan. I further acknowledge that I have reviewed the plan and understand my role in the event of an emergency situation at the project.

Signature

Date:

Return one (1) signed copy to

Reno Beach Howard Farms Conservancy District