

Flood Response Plan

Ramsey County Riverfront Properties Deconstruction

12, 14 & 50 West Kellogg Boulevard
Saint Paul, Minnesota

Prepared by Loucks Associates
March 5, 2015 (Revised March 9, 2015)

Loucks Associates Project No. 13511.00

Flood Response Plan Certification Page

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

A handwritten signature in black ink, reading "Jeffrey A. Shopek". The signature is written in a cursive style with a horizontal line above the text.

Jeffrey A. Shopek, P.E., fNSPE
Minnesota License No.19624
March 5, 2015

Ramsey County
Riverfront Properties Deconstruction
12, 14 & 50 West Kellogg Boulevard
Saint Paul, Minnesota

Flood Response Plan
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1.0 Introduction

Ramsey County is proposing to demolish the buildings located at 12, 14, and 50 East Kellogg Boulevard, otherwise known as the Riverfront Properties, to make way for future development on the site.

The Riverfront Properties lie within the City of Saint Paul Flood Fringe Overlay District (Article VII-72.70). Although the City standards pertain to structures and developed properties, this Flood Response Plan has been prepared to address concerns regarding flooding during the deconstruction phase and interim use of the site prior to development (proposed conditions as part of this plan).

This Flood Response Plan (Plan) provides guidance for actions that need to be taken by the Contractor during demolition activities and the Owner during interim use, when river water levels reach certain flood stages. The Contractor and Owner will designate a flood response coordinator for the site who will be the point of contact for flood information and coordination in preparation of a flood event.

The purpose of the Plan is to provide guidance for the safe and orderly preparation for, response to, and recovery from river flooding at or around the site. The Plan anticipates that the Contractor and Owner will coordinate with the City of Saint Paul and other governmental agencies as necessary in order to accomplish the Plan's purpose.

2.0 Background

2.1 Definitions

The National Oceanic and Atmospheric Administration's National Weather Service (NWS) glossary defines the following terms (<http://w1.weather.gov/glossary>):

Action Stage – The stage which, when reached by a rising stream, represents the level where the NWS or a partner/user needs to take some type of mitigation action in preparation for possible significant hydrologic activity. The appropriate action is usually defined in a weather forecast office (WFO) hydrologic services manual. Action stage can be the same as forecast issuance stage.

Base Flood – In hydrologic terms, the national standard for floodplain management is the base, or one percent chance flood. This flood has at least one chance in 100 of occurring in any given year. It is also called a 100 year flood.

Flood – Any high flow, overflow, or inundation by water which causes or threatens damage.

Flood Stage – an established gauge height for a given location at which a rise in water surface level begins to impact lives, property, or commerce. The issuance of flood (and in some cases flash flood) warnings is linked to flood stage.

Flood Categories – Terms defined for each forecast point which describe or categorize the severity of flood impacts in the corresponding river/stream reach. The severity of flooding at a given stage is not necessarily the same at all locations along a river reach due to varying channel/bank characteristics or presence of levees on portions of the reach. Therefore, the upper and lower stages for a given flood category are usually associated with water levels corresponding to the most significant flood impacts somewhere in the reach. The flood categories used in the NWS are:

Minor Flooding – minimal or no property damage, but possibly some public threat.

Moderate Flooding – some inundation of structures and roads near stream. Some evacuations of people and/or transfer of property to higher elevations.

Major Flooding – extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.

Record Flooding – flooding which equals or exceeds the highest stage or discharge observed at a given site during the period of record keeping.

Note: all three of the lower flood categories (minor, moderate and major) do not necessarily exist for a given forecast point. For example, at the level where a river reaches flood stage, it may be considered moderate flooding. However, at least one of these three flood categories must start at flood stage.

Flood Stage – An established gage height for a given location above which a rise in water surface level begins to create a hazard to lives, property, or commerce. The issuance of flood (or in some cases flash flood) warnings is linked to flood stage. Not necessarily the same as bankfull stage.

Flood Statement (FLS) – In hydrologic terms, a statement issued by the NWS to inform the public of flooding along major streams in which there is not a serious threat to life or property. It may also follow a flood warning to give later information.

Flood Warning (FLW) – In hydrologic terms, a release by the NWS to inform the public of flooding along larger streams in which there is a serious threat to life or property. A flood warning will usually contain river stage (level) forecasts.

Flood Watch – Issued to inform the public and cooperating agencies that current and developing hydrometeorological conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.

Forecast Issuance Stage – The stage which, when reached by a rising stream, represents the level where River Forecast Center's (RFCs) need to begin issuing forecasts for a non-routine (flood-only) forecast point. This stage is coordinated between WFO and RFC personnel and is not necessarily the same as action or alert stage. The needs of WFO/RFC partners and other users are considered in determining this stage.

River Forecast Center (RFC) – Centers that serve groups of Weather Service Forecast offices and Weather Forecast offices, in providing hydrologic guidance and is the first echelon office for the preparation of river and flood forecasts and warnings.

River Gage Datum – The arbitrary zero datum elevation which all stage measurements are made from.

Weather Forecast Office (WFO) – This type of National Weather Service office is responsible for issuing advisories, warnings, statements, and short term forecasts for its county warning area

2.2 River Level Data

Mississippi River water level information is available from the United States Geological Survey (USGS) gage “USGS 05331000 Mississippi River at Saint Paul, MN.” Data from this gage available at:

http://waterdata.usgs.gov/mn/nwis/uv/?site_no=05331000

Flood conditions and river elevation information is posted on the NWS Advanced Hydrologic Prediction Service website:

<http://water.weather.gov/ahps2/hydrograph.php?wfo=mpx&gage=stpm5>.

The City of St. Paul website for flood information is:

<http://www.stpaul.gov/index.aspx?NID=3742>. The City maintains a Daily Flood Update email notification that shall be monitored for additional information. This email subscription is accessible through the above City website.

Data from the USGS and NWS is officially reported relative to a “Gage 0 Datum” of 683.768 feet (NAVD 88 Datum). The following table depicts the flood categories for the site as defined by the NWS and equates the gage height to other datum relevant to the site.

Flood Category	Gage Height (ft.)	NAVD 88 Datum (ft.)	NGVD 29* Datum (ft.)	City of St. Paul** Datum (ft.)
Action Stage	10.0	693.768	693.568	-0.532
Minor Flood Stage	14.0	697.768	697.568	3.468
Moderate Flood Stage	15.0	698.768	698.568	4.468
Major Flood Stage	17.0	700.768	700.568	6.468

*NGVD 29 Datum = NAVD 88 – 0.20 ft

**City of Saint Paul Datum = NGVD 29 – 694.10 ft.

Historical crests as documented by the NWS are as follows:

Rank	Gage Height (ft.)	Date
1	26.01	04/16/1965
2	24.52	04/15/1969

3	23.76	04/18/2001
4	23.20	04/30/2001
5	22.37	04/13/1997
6	22.02	04/16/1952
7	20.13	06/26/2014
8	19.15	06/26/1993
9	19.02	03/29/2011
10	18.79	04/16/1951

2.3 Base Flood Elevation

The base flood (100-yr) elevation for the site is 708.30 ft. (NAVD 88 Datum) as defined by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Map (FIRM) 27123C103G and 27123C104G. The following table equates the base flood elevation gage height to other datum relevant to the site:

Gage Height (ft.)	NAVD 88 Datum (ft.)	NGVD 29 Datum (ft.)	City of St. Paul Datum (ft.)
24.53	708.30	708.10	14.20

The base flood areas are depicted on Figures 1 and 2.

2.4 Flood Control Regulations

The Capitol Region Watershed District (CRWD) regulates flood control for the site. Placement of fill within the 100-yr floodplain is prohibited unless compensatory storage is provided. Compensatory storage must be provided on the development or immediately adjacent to the development within the affected floodplain.

The existing site provides a 100-yr volume of 3.57 ac-ft. (below 14.20 ft. elev.) The proposed volume for the interim use of the site (prior to development) is 5.06 ac-ft (below 14.20 ft. elev.). Demolition activities will result in an increase of flood storage volume on-site. Future development will be designed to match the existing volume (3.57 ac-ft) on-site unless compensatory storage is provided.

3.0 Flood Response Operations

Flood response operations will be coordinated and facilitated by the Flood Response Coordinator (Coordinator). The Contractor shall identify a Coordinator for deconstruction activities and the Owner shall designate a Coordinator for the interim use of the site (prior to development). The Coordinator shall oversee the implementation of this plan as needed and shall take on the following roles:

- Serve as the point of contact with the City of Saint Paul and other governmental agencies on issues related to flood preparedness, response and recovery;
- Monitor flood conditions;
- Operate flood control systems as described in this plan;
- Take steps to protect and restore any property elements under the control of the Owner;
- Coordinate after action review and lessons-learned process.

Flood response operations may be triggered by a number of actions, including these trigger points.

3.1 Trigger Point: NWS Flood Watch – Action Steps

A flood watch issued by NWS for the Mississippi River indicates that flooding is possible. Flood Response Coordinator shall:

- notify all workers/individuals on-site of the potential for flooding;
- confirm that designated personnel are prepared to operate flood control measures at the site and direct implementation of plans to relocate equipment, vehicles and personal belongings.

3.2 Trigger Point: NWS Flood Warning – Action Steps

A flood warning issued by the NWS for the Mississippi River indicates that flooding will occur and that the site may be impacted. Upon the issuance of a flood warning by the NWS, the Coordinator shall be fully prepared to:

- implement all flood control measures at flood stage 14 feet;
- direct removal of equipment, vehicles and personal belongings at flood stage 14 feet.

3.3 Trigger Point: Gauge Levels – Action Steps

The following actions are to be taken at the site in preparation for a flood event. The elevation listed is the trigger for the events shown. When the river reaches these elevations the listed activities shall be completed. The Coordinator will be responsible for monitoring flood conditions and river elevations and shall provide notice to the City of Saint Paul Water Resource Coordinator (651-266-9112) that listed activities have commenced. Site access may be restricted due to flooding of low areas on Shepard Road at Ontario St..

River Elevation Gage Height (ft.)	River Elevation City Datum (ft.)	Activity
14	3.67	<ul style="list-style-type: none">▪ Inspect site and clean any spilled material.▪ Remove trash, debris and floatables from storm sewer manholes and catch basins.▪ Move all equipment, vehicles and personnel belongings at gage elevation
15	4.67	<ul style="list-style-type: none">▪ Inspect site and clean any spilled material.▪ Remove trash, debris and floatables from site.▪ Move all equipment, vehicles and personnel belongings at gage elevation
17	6.67	<ul style="list-style-type: none">▪ Inspect site and clean any spilled material.▪ Remove trash, debris and floatables from site.▪ Inspect swales, and slopes for stability deficiencies that could be exacerbated by flood waters. Perform any necessary repairs.▪ Move all equipment, vehicles and personnel belongings at gage elevation

4.0 Post Flood Recovery

Once it is safe to do so, the Flood Response Coordinator will authorize reoccupation of the site based on recommendations or orders, if any, from appropriate public officials and subject to property and occupancy assessments by Owner's representative.

5.0 Emergency Contact List

Contractor

To Be Determined (TBD)

Ramsey County Property Management (Owner)

Bruce Thompson
Director of Property Management
Office: 651-266-2262
E-Mail: bruce.thompson@co.ramsey.mn.us

James Homolka
Project Manager
Office: 651-266-2793
E-Mail: james.homolka@co.ramsey.mn.us

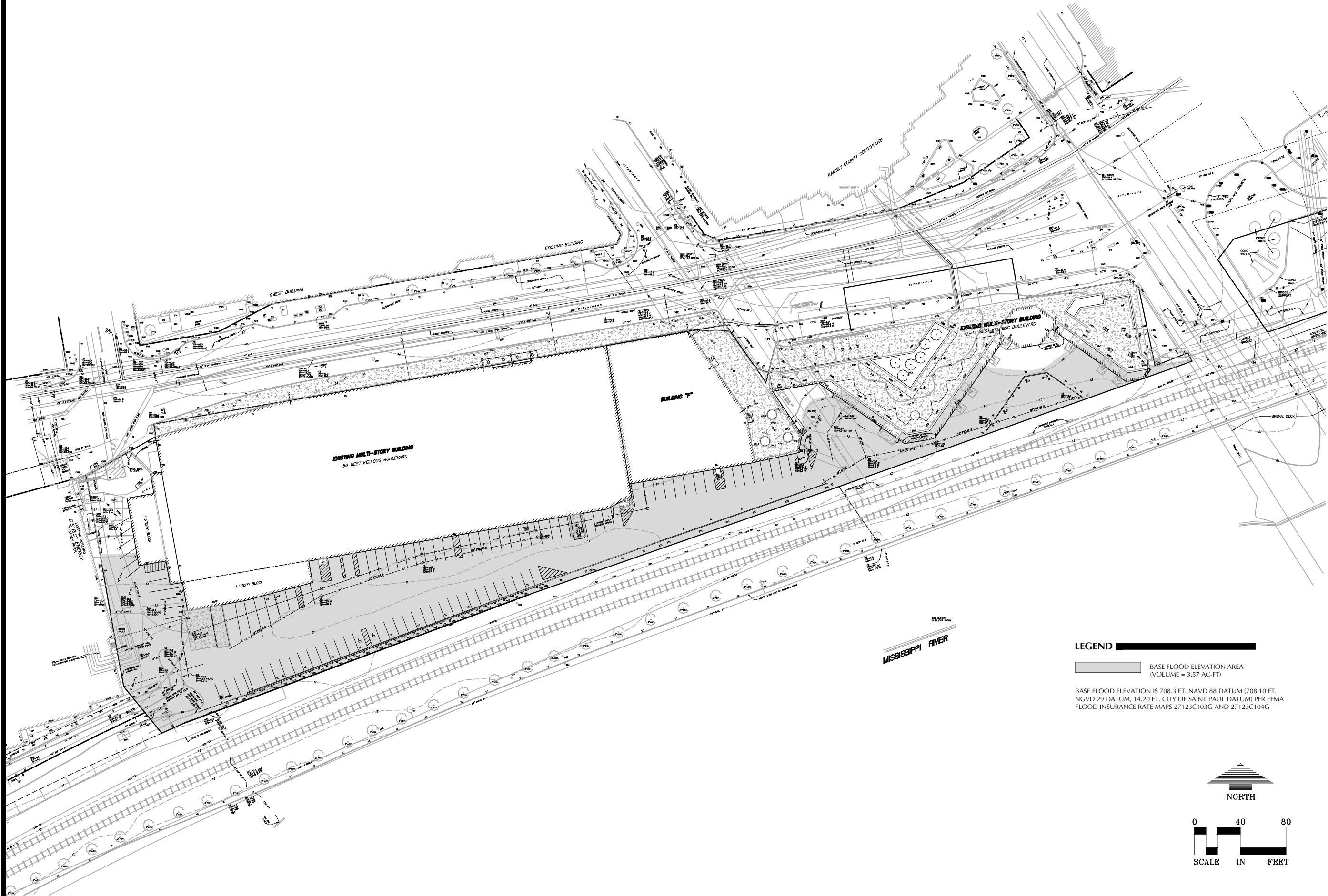
City of Saint Paul

Water Resource Coordinator
Wes Saunders-Pierce
Office: 651-266-9112
E-Mail: wes.saunders-pierce@ci.stpaul.mn.us

Capitol Region Watershed District

Forrest Kelley
Permit Program Coordinator
Office: 651-644-8888
E-Mail: forrest@capitolregionwd.org

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Project Name:

RAMSEY COUNTY
RIVERFRONT PROPERTIES
DECONSTRUCTION

SAINT PAUL, MINNESOTA

Owner/Developer:

RAMSEY COUNTY
PROPERTY MANAGEMENT
121 SEVENTH PLACE EAST
SUITE 2200
SAINT PAUL, MN 55101-2146



Professional Services:

**LOUCKS
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Landscape Architecture • Environmental

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Quality Control:

Project Lead:	TDG	Drawn By:	TRG
Checked By:	JAS	Review Date:	03/09/15

Sheet Index:

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EXISTING
BASE FLOOD ELEVATION
EXHIBIT

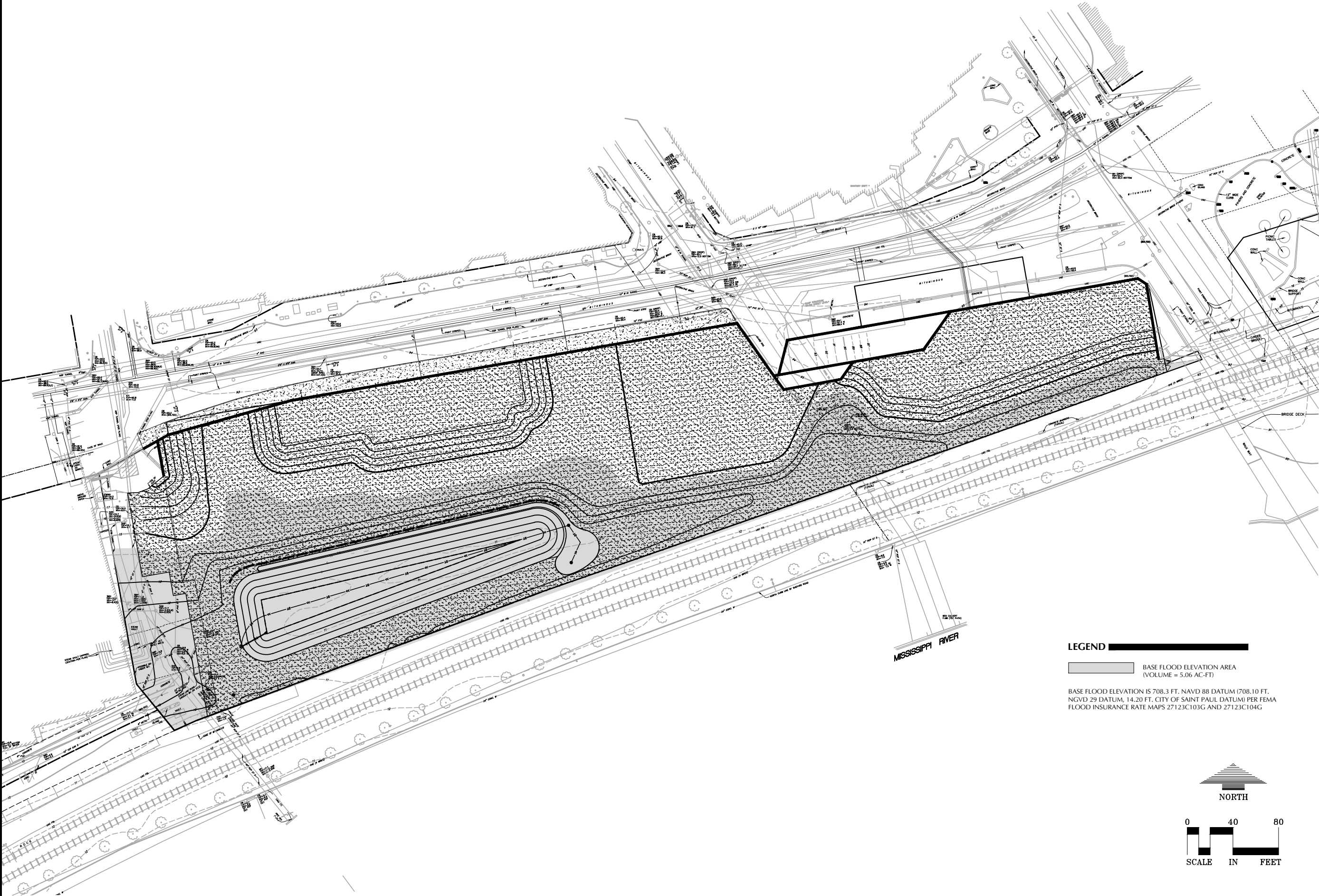
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Figure 1

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LEGEND

BASE FLOOD ELEVATION AREA
(VOLUME = 5.06 AC-FT)

BASE FLOOD ELEVATION IS 708.3 FT. NAVD 88 DATUM (708.10 FT. NGVD 29 DATUM, 14.20 FT. CITY OF SAINT PAUL DATUM) PER FEMA FLOOD INSURANCE RATE MAPS 27123C103G AND 27123C104G



0 40 80
SCALE IN FEET

Project Name:

RAMSEY COUNTY
RIVERFRONT PROPERTIES
DECONSTRUCTION

SAINT PAUL, MINNESOTA

Owner/Developer:

RAMSEY COUNTY
PROPERTY MANAGEMENT
121 SEVENTH PLACE EAST
SUITE 2200
SAINT PAUL, MN 55101-2146



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Figure 2