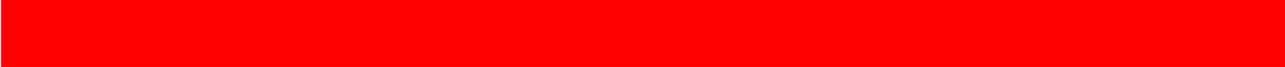


U.S. Army Corps of Engineers, Kansas City District

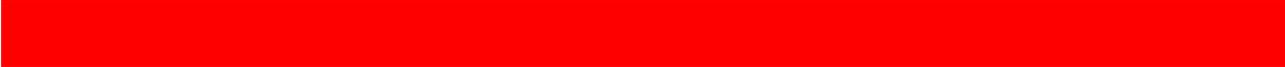


Final Feasibility Report

APPENDIX D

HAZARDOUS, TOXIC, AND RADIOLOGICAL WASTE

*Kansas Citys, Missouri and Kansas
Flood Risk Management Project
Final Feasibility Report*



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LIST OF ACRONYMS

AIRS - Aerometric Information Retrieval System
AKA – also known as
AST – Aboveground Storage Tank
BPU – Board of Public Utilities
CERCLIS – Comprehensive Environmental Response, Compensation, and Liability Information System
CID – Central Industrial District
EPA – Environmental Protection Agency
ERIIS - Environmental Risk Information and Imaging Services
HTRW – Hazardous, Toxic, and Radioactive Waste
K.C. – Kansas City
KCD – Kansas City District
KDHE – Kansas Department of Health and the Environment
LNAPL – Light Non Aqueous Phase Liquid
LUST –Leaky Underground Storage Tank
MCL – Maximum Contaminant Limit
NPDES – National Pollutant Discharge Elimination System
PA – Preliminary Assessment
PAH – polyaromatic hydrocarbons
PCBs – polychlorinated biphenyl
P&G – Procter & Gamble
RCRA – Resource Conservation Recovery Act
RFA – RCRA Field Assessment
ROD – Record of Decision
ROW – Right of Way
RSK – Risk-based Standards
SVOC – semivolatile organic compounds
SWMU – Solid Waste Management Units
TRIS –Toxic Release Inventory System
TSS – Total Suspended Solids
UPRR – Union Pacific Railroad
USACE – United States Army Corps of Engineers
UST - Underground Storage Tank
VOC - volatile organic compounds

1.0 INTRODUCTION

The Kansas City District performed a Hazardous, Toxic, and Radiological Waste (HTRW) site assessment as part of the Feasibility Study for the Kansas City Levees Project in accordance with ER 1165-2-132 “Hazardous, Toxic and Radioactive Waste Guidance For Civil Works Projects”. The Project includes seven existing levees in the Kansas City area. A map of the Study Area is shown in Figure 1.0. The levee system has been divided into two phases for the Feasibility Report, as follows:

Phase I

- Argentine Levee Unit
- Fairfax-Jersey Creek Levee Unit
- North Kansas City Levee Unit
- East Bottoms Levee Unit

Phase II

- Armourdale Levee Unit
- Central Industrial District (CID) Levee Unit

Some areas adjacent to the existing levee units are industrialized and potentially have contamination in the soil or groundwater resulting from past industrial activities. The primary purpose of this assessment is to identify any hazardous and toxic waste areas of concern within the Armourdale Unit and to determine how these areas may impact the proposed levee construction alternatives described in the Feasibility Study.

In accordance with ER 1165-2-132, known HTRW contamination will be avoided where possible. If avoidance is not feasible, the removal of contaminated soil or materials required for implementation of the Recommended Plan will be the sole responsibility of the local project sponsor, including all costs. All removal actions on a contaminated property must take place before any construction can begin on that property.

2.0 PREVIOUS STUDIES

A Reconnaissance Report - HTRW Assessment and HTRW Site Follow-up Investigation were performed on the Kansas City Levee Units prior to the Feasibility Study.

2.1 Reconnaissance Report - HTRW Assessment

The Reconnaissance Report for the Flood Reduction Study was completed in August of 1999. The HTRW Assessment can be found in Appendix I of the Reconnaissance Report. During the reconnaissance phase, a preliminary HTRW Assessment was performed to identify any hazardous and toxic waste sites that could directly impact construction. The preliminary HTRW Assessment included a database search and site visits. The database search was performed by Environmental Risk Information and Imaging Services (ERIIS). It identified all industries whose addresses fell within 500 feet of the levee units that were listed in either the federal or state databases. Based on

the database search, the Reconnaissance Report – HTRW Assessment identified only Great Lakes Container Corporation, a.k.a. Container Recycling Inc. as an area of concern which needed further investigations.

2.2 HTRW Follow-up Investigation Report

In November 1999, Hydrogeologic, Inc. performed a follow-up investigation of the areas of concern identified in the Reconnaissance Report – HTRW Assessment. The Follow-up Investigation consisted of the following:

- 1) Performing additional database searches
- 2) Reviewing aerial photographs
- 3) Reviewing Sanborn Fire Insurance Maps
- 4) Reviewing site documents from Environmental Protection Agency (EPA) and the Kansas Department of Health and the Environment (KDHE)
- 5) Conducting personal interviews.

The database searches, which were performed by VISTA Information Solutions, Inc, included the area within a 1- mile radius of each area of concern identified during the Reconnaissance Report. The Follow-up Investigation Report summarizes the investigations and findings for each area of concern, as identified in the Reconnaissance Report.

3.0 HTRW SITE ASSESSMENT

This HTRW Site Assessment performed as part of the Feasibility Study evaluated the HTRW areas of concern with respect to the proposed Feasibility Study alternatives. This assessment identifies the nature and extent of contamination, which could directly impact the proposed Feasibility Study alternatives. The assessment includes a document search, a site evaluation, and a field investigation for select areas.

In order to identify all the HTRW areas of concerns, the following activities were performed as part of the document search and site evaluation:

- Reviewed the Reconnaissance Report – HTRW Assessment dated August 1999 and the corresponding database search dated January 22, 1999.
- Reviewed the HTRW Follow-up Investigation dated November 1999 and the corresponding database search dated September 1999.
- Reviewed information obtained from an EPA and KDHE website database searches.

- Reviewed documents obtained from EPA – Region VII files and conducted personal interviews with EPA representatives concerning Proctor & Gamble and Container Recycling.
- Reviewed documents obtained from KDHE files and conducted personal interviews with the KDHE representatives concerning underground storage tanks found in the levee area, Proctor and Gamble and PBI Gordon Corporation.
- Reviewed the following aerial photographs:
 1951 and 1993 Flood photos for Armourdale
 Armourdale Levee - 1960, 1970, 1978, 1983, 1995
- Reviewed Corps of Engineer correspondence files for the Armourdale Levee Unit. The files included correspondence from adjacent landowners on work performed within 500 feet of the levee centerline.
- Performed a site visit to the Armourdale Levee Unit

4.0 SITE EVALUATIONS

Site evaluations have been performed on all properties adjacent to the levee units to determine if there are HTRW concerns that could directly impact proposed levee improvement alternative evaluated in the Feasibility Study.

4.1 Armourdale Unit

The Armourdale Levee Unit is being reevaluated as part of the Feasibility Study for overtopping and underseepage concerns based on observation made during the 1993 flood. The 500 year + 3 feet alternative was evaluated for the entire levee unit for the hazardous waste study. This alternative includes a combination of alternatives such as levee raises, T-walls, floodwalls, underseepage control and relief wells for the various reaches along the levee. Currently, three existing systems of relief wells are located at stations 190+75 to 246+35, 268+11 to 282+29, and 296+23 to 302+57.

For the HTRW Site Assessment, the area evaluated was based on the July 2007 figures for the 500 year +3 feet alternative with an additional 40 feet beyond the proposed construction limits to account for temporary easements. Within the Kaw Valley existing right-of-way, no contamination is expected to be encountered. However, there are many areas where the alternative extends outside the existing right-of-way and impacts properties in close proximity to the levee. The areas adjacent to the Armourdale Levee are highly industrialized. There are sites which have soil or groundwater contamination that directly impacts the Feasibility Study alternative. Figure 2.0 shows the overall levee unit with the adjacent properties identified. The following summarizes the evaluation and conclusions relating to specific properties within the Armourdale Unit.

4.1.1 Procter & Gamble Manufacturing Company (P&G)

Address: 1900 Kansas Ave.
 Kansas City, KS 66105
 Stationing: 43+00 to 63+00
 Figure No.: 2.0, 3.0

The Procter & Gamble facility has been in operation since 1911. A portion of the western property boundary lies within the construction limit established for this assessment for the Armourdale levee. Procter & Gamble manufactures various types of soaps, detergents, cleaning products, and industrial organic chemicals. Procter & Gamble is a RCRA permitted hazardous waste treatment, storage, and disposal facility. A RCRA Facility Assessment completed in May 1998 identified 13 Solid Waste Management Unit (SWMUs) and eight Areas of Concern (AOCs) and identified evidence of releases of hazardous waste and hazardous constituents. Only one SWMU and one AOC are located within the area affected by the levee improvements. A fire-fighting practice area (see Figure 3.0) is located on the riverward side of the levee and is listed as SWMU 7. One spill from a storm drain into the Kansas River is identified as AOC 6 and is located at an outfall to the River. No other SWMUs are located within the area required to complete the levee improvements. No RCRA corrective action has occurred at the facility at this time.

Groundwater beneath P&G travels to the south-southwest and discharges to the Kansas River. Beginning in 1919, P&G drilled a number of wells for industrial use for the facility. Two wells, #11 and #12, were located within the levee easement, (see Figure 3.0). During an investigation of the Kansas Groundwater Quality Monitoring Network in 1988 by KDHE, both of these wells were found to contain concentrations of volatile organic chemicals (VOCs) significantly above Kansas Action Levels (KALs) and MCLs. Both wells had a large turbine pump head on a concrete pump base. Small containers of lubricant or solvents were located next to the wellhead turbine and spilled oil was present in the cracks of the concrete pad and this was considered as one but not the sole source of the groundwater contamination. These wells were sampled again in 1990, 1991, and 1992 as part of Preliminary Assessment of Well #11 (1990), Screening Site Assessment (1991) and Site Inspection Prioritization (1994) by KDHE. On-site monitoring wells were found to have much lower concentrations. The chemical concentrations above action levels are found in the below table.

Table 1.0: Procter & Gamble Supply Well #11 Groundwater Concentrations

Chemical	Action Level KAL/MCL in ug/L	1988 ug/L	1990 ug/L	1991 ug/L	1992 ug/L
Vinyl Chloride	2	36.6	10	30.9	117
1,1 DCE	5/7	705	412.0	469	386

Table 2.0: Procter & Gamble Supply Well #12 Groundwater Concentrations

Chemical	Action Level KAL/MCL in ug/L	1990 ug/L	1991 ug/L
Vinyl Chloride	2	ND	2.3
1,1 DCE	5/7	383.0	578

In 1994's Site Inspection Prioritization, KDHE recommend No Further Remedial Action for the groundwater issues at these wells. KDHE planned negotiations with the potentially responsible parties for further characterization and remediation of the site. Since that time, the two wells were removed. The wells extended to a depth of 98 feet below ground surface. No remedial action has occurred to address the groundwater; therefore contamination potentially still is present beneath this area.

The KDHE LUST database lists two underground storage tanks that were considered closed. One tank was closed in 1988 by filling the tank in place after siphoning out any remaining gasoline. The other tank was removed in 1997, and no contamination was found.

During the site visit on August 12, 2005 with representatives of the Kaw Valley Drainage District (KVDD), numerous above ground storage tanks were seen near the property fence line. According to Corps of Engineers letter of correspondence with Kaw Valley Drainage District, the construction of the fire training area (SWMU 7) occurred in the summer of 1991. According to KVDD, a large amount of debris and solid waste was dumped and buried in this area as well, prior to the training area construction.

Based on the groundwater data collected by KDHE, the installation of relief wells as underseepage controls between station 45+00 and 75+00 may result in the discharge or migration of VOC contaminated groundwater and should be avoided. Since the plume has not been clearly identified, a smaller restrictive area could be established with additional investigations if relief wells are required. Since the 500+3 alternative does not require relief wells, no additional testing is recommended at this time. A few ASTs on the southern portion of the property are very close to the 40-foot construction limits. They may require removal and, depending on their contents, tank closure procedures may be required before construction commences. Also, if construction occurs on the riverward side near the SWMU 7 at approximately Station 50+00, the debris and dumped solid waste should be removed and replaced with suitable fill material. All waste should be sampled and characterized prior to disposal. The material is likely either construction or solid waste and must be taken to a solid waste landfill or appropriate disposal locations based on sampling results.

4.1.2 Inland Container Corporation

Address: 2107 Kansas Ave.
Kansas City, KS 66105
Stationing: 63+00 to 75+50
Figure No.: 2.0, 3.0

Inland Container Corporation processes and handles paper, boxes, and large cardboard drums, according the KDHE Site Screening Evaluation for Proctor & Gamble. The Reconnaissance Report stated that a LUST was removed in 1989. In an interview with personnel of the KDHE Storage Tank Section on August 2, 2005, it was stated that two 20,000 gallons tank full of heating oil were removed in 1989. Inland Container has previously used 1,1,1-TCA in their past processes, according to a KDHE information request. No information on current contamination was found for

this site. Neither the Follow-Up Study nor the KDHE LUST database mentions any other hazardous waste issues for the property. No levee construction would occur on Inland Container property. The property would only be encroached on if there was a need for a temporary easement. Based on information evaluated, no impacts to levee improvements resulting from HTRW concerns were identified. No further investigation is necessary.

4.1.3 Kaw Power Station

Address: 2015 Kansas Ave.
Kansas City, KS 66105
Stationing: 75+50 to 76+00
Figure No.: 2.0, 3.0

Kaw Power Station is a fossil fuel powered station that is currently inactive. It is run by the Board of Public Utilities to provide electricity for Kansas City, Kansas. Only the southwest portion of the site is within the area of concern for the levee improvements. The Reconnaissance Study lists 6 ASTs as currently in use. Capacities for the tanks range from 12,000 gallons for diesel to 564 gallons for used oil. A NPDES permit for wastewater established discharge limits for total suspended solids (TSS), bacteria, oils and grease. According to the AIRS database for air releases, it was listed as a major air discharger. It is a Kansas Sub-Class 1 Generator of hazardous waste. It also has a permitted UST onsite.

From aerial photographs, the power plant has been at this location since 1970, a large coal pile used to fill the exterior yard of the site. Currently, coal is no longer required to generate power at the facility. From the site visit, a few ASTs are present as well as a large transformer, but are outside the construction limits. The facility also has a small structure on the levee, which is believed to be a wastewater discharge point. Records indicate no concerns regarding soil or groundwater contamination, which would impact levee improvements. Based on information evaluated, no impacts to levee improvements resulting from HTRW concerns were identified. No further investigation is required.

4.1.4 KC Hardwood Corporation (a.k.a. American Walnut)

Address: 1021 S. 18th St.
Kansas City, KS 66105
Stationing: 98+00 to 111+00
Figure No.: 2.0

KC Hardwoods is adjacent to the levee. It was also known as American Walnut Company. The Reconnaissance Report, Follow-Up Report and KDHE LUST database list three LUSTs, which were removed in 1991. The tanks were removed with no contamination present. It lists four inactive USTs that were removed from the site. The Follow-Up Report also lists the site for No

Further Action. This site is no longer located on the CERCLIS database on the EPA website. It is a permitted site for minor air releases.

There is no longer evidence of contamination associated with this property. The property would only be encroached on if there was a need for a temporary easement. Therefore no further investigation is necessary.

4.1.5 Auto Salvage Yards

Address: 1162 S. 14th St.
Kansas City, KS 66105
Stationing: 111+00 to 116+50
Figure No.: 2.0, 4.0

The auto salvage yards lie next to the levee toe. A portion of the property will be used for construction of a new levee section. The Reconnaissance Report and Follow-Up Investigation did not contain any information on these sites. They were not listed as areas of concern in any EPA or KDHE databases. Aerial photographs show the auto salvage yards have been at their current location since 1970. Their operation had not moved beyond the property boundaries. Property which falls into the limits of disturbance for the selected alternative should be more fully investigated during the Design Stage to ensure that the surface and subsurface soil are not contaminated and to determine how to dispose of any contaminated soil.

4.1.6 Kansas City Railcar Services

Address: 1147 S. 14th St.
Kansas City, KS 66105
Stationing: 116+50 to 124+00
Figure No.: 2.0

A portion of Kansas City Railcar Services will be used for construction of a new levee section. This property had numerous railroad cars parked in close proximity to the levee toe. Kansas City Railcar repairs and cleans railroad cars. Kansas City Railcar is listed as a hazardous waste permitted facility in the EPA database RCRAInfo or in KDHE files. Aerial photographs from 1970 and 1978 show that the property was either a storage yard or salvage yard. During the Flood of 1993, photos show that the property was cleared out, perhaps as a precaution in the event of a levee failure or overtopping. In the 1995 aerial photographs, railcars returned for storage. During the site visit, railroad cars were seen set back away from the levee toe. Their operation had not moved beyond the property boundaries. Due to past use as a salvage yard, the property which falls into the limits of disturbance for the selected alternative should be more fully investigated during the Design Stage to ensure that the surface and subsurface soil are not contaminated and to determine how to dispose of any contaminated soil.

4.1.7 Auto Salvage Yard, Formerly A to Z Production Plating

Address: 1142 S. 12th St.
Kansas City, KS 66105
Stationing: 124+00 to 130+00
Figure No.: 2.0, 4.0

This property is adjacent to the levee with a fence separating it from the levee toe by only a matter of a few feet. A portion of the property will be used for construction of a new levee section. The current owner is Hansen Property Development. The address was found in the Follow-Up Investigation (Hydrogeologic, 1999) database search under the name A to Z Production Plating. In 1980, the facility started operations as a electroplating and polishing facility. It plated chrome, copper, nickel, zinc and cadmium onto brass and steel parts. The production process involves chemicals listed as hazardous waste and generates sludge containing high levels of metals. It was a Kansas small quantity generator and had numerous RCRA violations. The site was cited by the EPA for not having a permit for storage of hazardous waste or for having a closure plan in place. By 1991, A to Z Production Plating had ceased operations. The property owners entered into a cleanup agreement with the EPA to dispose of the plating process waste that had accumulated in their warehouse and contaminated equipment. Under EPA direction, soil was excavated outside on the south side of the building to check for any heavy metals contamination. Tests showed no elevated levels of metals in the soils. The EPA designated the site to have no further action required and considered it clean in 1994.

A review of the aerial photographs from 1970 and the following years shows that the site had some form of industrial activity, with the exception of the 1993 photo when the property was vacant during the flood. Following the cleanup of A to Z plating operations, the site was used a salvage yard. During the site visit, the salvage yard was completely cleared and an asphalt and lot was placed over the top of the whole yard.

Due to past use as a salvage yard, the property which falls into the limits of disturbance for the selected alternative should be more fully investigated during the Design Stage to ensure that the surface and subsurface soil are not contaminated and to determine how to dispose of any contaminated soil.

4.1.8 Trimodal (a.k.a Container Recycling Inc.)

Address: 1161 S. 12th St.
Kansas City, KS 66105
Stationing: 130+00 to 157+00
Figure No.: 2.0, 4.0

This property is in very close proximity to the levee, with trailers stored at the levee toe. The property has gone by many names since it started in 1965 including: Great Lakes Container Corporation, Container Recycling, Inc., and Trimodal. The facility was used for drum storage and cleaning. Past practices have contaminated the site. In the Reconnaissance Report, the site was

listed as an area of concern with a recommendation for further investigation. It was also listed in the CERCLIS database as a Superfund site, but is currently listed as no further action planned. In the Follow-Up Investigation, the company was listed in many EPA databases for LUSTs, RCRA violations, and USTs. Two USTs that stored recovered oil and diesel fuel were removed from the site in 1990. One LUST was removed in 1990 and ground remediated. The facility was a RCRA EPA generator of hazardous waste, generating over 1,000 kg/month. It also had numerous RCRA violations from 1986 to 1994. Prior to Great Lakes Container, the property had a steel mill on the site from the 1950s to 1960.

Aerial photographs give an excellent representation of the widespread placement of drums and trailers over the site. Buildings present during 1960 photographs have been removed. By 1970 photographs the Great Lakes Container Corporation is active. Drums were seen covering the entire site, right up to the levee embankment. In the 1978 photos, some drums were seen near the 7th St. Bridge. By the 1983 photos, they are gone. Drums and trailers were still seen in the 1995 photographs.

As previously stated, the property is a Superfund site. When Container Recycling shut down operations in 1996, drums and trailers were left in place. The EPA led clean up actions at the site. The initial investigation showed elevated lead concentrations in the soil. Additional investigations of the drums were performed. From the KDHE database for the identified sites list, abandoned drums were found out in the elements as wells as stored in trailers. According to an EPA action memorandum from 1999, over 4,100 buried drums were found on-site. An estimate by the owner in 1997 had over 30,000 drums being stored on the property. Another 90 semi trailers were on site as well. The conditions of the drums varied from rusty and partially crushed to excellent. Surface soils were visibly stained with a petroleum-like substance. Inside the process building, process waste was present in floor drains. Caustic solids from the drum cleaning process were found on the floor in piles. Previous attempts to remove contaminated soils were visible at the site. From the Phase I assessment, concrete chunks were also found on the north side of the site. In 2000, a time-critical removal action was performed to remove all the drums and to remediate the site. Due to the larger than expected number of buried drums, plans to remove the soil was halted. Instead, the site was capped to prevent exposure to the contaminants remaining onsite.

According to the KDHE documents and conversations with EPA personnel, automobile fluff, which is a mixture of shredded plastic, foam, textiles, rubber, and glass, was placed as the sub grade fill over the contaminated natural soil. Subsurface drainage piping and stormwater drains were installed throughout the site to collect surface water and channel it off-site. On top of the autofluff sub grade, nonwoven geotextile fabric was placed. The cap extends up to the levee itself. A foot of crushed limestone gravel with a large percentage of fines was installed over the geotextile. In 2004, a restrictive covenant agreement was placed prohibiting excavations at the property. It states: “Except for minor excavations necessary to install, maintain or repair utility poles, fence posts, sidewalks, paving, and other comparable activities, as well as minor excavations necessary to maintain or repair existing underground utilities, the Property owners shall not engage in any excavation activities on the cap area that may damage the cap, without the previous written permission of KDHE such permission not to be unreasonably withheld or delayed.” The property owner also agreed to restrict use to industrial or commercial use, notify the appropriate agency if

construction occurs, to place no wells for any purpose on the site, and to have inspections of the cap. In August of 2004, an inspection found only minor problems with erosion and siltation at the drains of the drainage system. The site is currently used to store shipping containers and semi trailers.

From EPA reports and letters, it is evident that some soil contamination from lead and PCBs still exists beneath the Container Recycling Corp. property. Any excavation on the property would require excavation of the cap and into the fill and would require KDHE approval due to the restrictive covenant. It is recommended any type of excavation or installation of relief wells for subsurface underseepage control be avoided. The current 500+3 alternative has no construction activity occurring outside the existing right of way. Rick Bean, a section chief in KDHE Bureau of Environmental Remediation stated KDHE would allow a construction easement through the property provided no excavation would occur and any damage to the existing cap is repaired. Coordination with the KDHE and EPA is recommended for any work on site.

4.1.9 Midwest Cold Storage (formerly Williams Meat Company)

Address: 1101 S. 5th St.
Kansas City, KS 66105
Stationing: 185+00 to 200+00
Figure No.: 2.0

Midwest Cold Storage property lies adjacent to the levee toe and is partially within the construction limit. This property operates a food storage facility. Prior to Midwest Cold Storage, the facility was a meat packing plant called Williams Meat Company. The Reconnaissance Report and the Follow-Up Investigation did not have any information listed for either property. During a visit to KDHE for a records search, a temporary-out-of-service UST was found at this location. KDHE's compliance section stated that according to KDHE's records, one UST was present on site and was out of compliance. Numerous letters to Williams Meat Co. asked for compliance fees as well as line and tank checks. These were all returned. It was later found that as of 1989, Williams Meat Company was no longer in business. A call was placed to Farley Hill with Midwest Cold Storage. He indicated that the UST, located on the north side of the levee, had been removed by the early 1990s.

From aerial photos, the site has been industrialized since the 1960s at the latest. During the site visit, a large propane tank and a transformer were seen on the landside of the levee. If removal of the transformer is required, the area around the transformer may require further inspection before construction to ensure that PCB contamination is not present. No other concerns were identified with the site.

4.1.10 Schock Truck & Leasing

Address: 51 Osage Ave.
Kansas City, KS 66105
Stationing: 205+10 to 215+25
Figure No.: 2.0, 5.0

Schock Truck & Leasing is located outside the construction limits but may be impacted by temporary construction easements. The facility repairs semi-trailer trucks. While no information was found for this property in the Reconnaissance Report or the Follow-Up Investigation, the KDHE LUST database did have a listing. KDHE also corroborated the database information in an interview. A diesel fuel spill in November of 2004 brought the tank to KDHE's attention. After the lines failed a tightness test for a fuel tank, the pipes and tank were removed. Stained soil was found to have a concentration of 5500 mg/kg and subsequently removed. The tank was considered closed by KDHE in 2004.

Aerial photographs show the site was industrialized after 1970. The 1983 photographs show trailers stored on the property in close proximity to the levee. Photos from 1995 show the trailer storage area is still present and appears to be very clean. The floods of 1951 and 1993 did not impact the property. During the site visit, two ASTs were seen from the levee road. The tanks were in good condition. A pile of debris lies between the tanks and jersey barriers that denote the edge of the property. It appears to be random construction debris. No other soil or groundwater contamination appears to be present at the site; therefore no further investigation is planned.

4.1.11 Sambol Packing Co.

Address: 13 Shawnee Ave.
Kansas City, KS 66105
Stationing: 227+00 to 230+00
Figure No.: 2.0, 5.0

Sambol Packing Company lies partially within the construction limits of the proposed alternative. Their operations include meatpacking and packaging. There is no mention of this property in either the Reconnaissance Report or the Follow-Up Investigation. According to KDHE, Sambol was listed as having two USTs removed after the previous investigations were published. These were removed in 2000. KDHE found no evidence of contamination and considered the site closed.

During the site visit, no contamination issues were seen. No HTRW concerns exist for the site; therefore, no further investigation is required.

4.1.12 SELCO (formerly Chromium, Inc)

Address 10 Shawnee Ave.
Kansas City, KS 66105
Stationing: 232+00 to 242+00
Figure No.: 2.0, 5.0

SELCO currently occupies the former Chromium, Inc. property. The property lies partially within the construction limits of the proposed alternative. SELCO manufactures car parts. It is not a permitted RCRA facility. No known contamination is associated with the current company. Chromium Inc. was listed as a KDHE Identified Site. A Preliminary Assessment (PA) was performed in 1994. Chromium Inc. operated from 1952 to 1972. The company allegedly disposed

of chromium wastes in on-site lagoons and directly discharged wastes into the Kansas River. Before the Flood of 1951, the site was the Cudahy Packing Plant. The construction debris from both Chromium, Inc. and Cudahy demolition was buried approximately 10 to 15 feet below the surface. Past disposal practices at Chromium, Inc include the pumping of lagoons into the Kansas River. By the late 1960s, the City of Kansas City ordered Chromium Inc. to cease the discharge of its industrial wastes into the sewer system and to close the lagoons with backfill. Subsequently, Chromium Inc. began discharging the industrial waste into Cudahy's former lard pit. It too was backfilled with demolition debris and soil before the facility closed. In 1990, an investigation of the subsurface soils found detectable levels of lead and chromium. Eight borings were drilled. Levels were below Kansas' action levels. These results did not warrant further soil investigation. A groundwater sample was taken from a monitoring well on-site and showed only low concentrations of barium and cadmium. Again in 1994, KDHE collected another groundwater sample. In this sample, chromium, 1,2-DCE and 1,1-DCA were all detected below the MCLs. Geoprobe samples were collected near the former surface impoundments to a depth of approximately 33 feet. These soil samples were also below the action levels. KDHE's recommendation was no further action was warranted at this site. There appears to be no immediate threat to the soil or groundwater from the site's past practices.

The aerial photographs show the site was industrialize before 1951, as KDHE records had said. The current building for SELCO was in existence by 1983. The site visit did not indicate any current hazardous waste issues occurring at the site. As only very low concentrations of metals and VOCs below KDHE action levels exist at the site, no further investigation is required at this location. The previous buried construction debris, if excavated, may be taken to a solid waste landfill.

4.1.13 PBI Gordon Corporation

Address: 300 S. 3rd St.
Kansas City, KS 66118
Stationing: 278+00 to 293+00
Figure No.: 1.0, 6.0

PBI Gordon is adjacent to the current floodway. The facility manufactures various pesticides and other agricultural chemicals, as wells as clay and brick products. Neither the Reconnaissance Report nor the Follow-Up Investigation had any information regarding the property. The EPA databases list it as permitted RCRA hazardous waste treatment, storage and disposal facility. Numerous air releases occurred between 1987 and 2003, according to the Toxic Release Inventory System (TRIS).

In 1990, approximately 250 pounds of xylene spilled into the Kansas River. No further information was given in the EPA database. Another spill listed in the EPA RCRA Facility Assessment Final Sampling Summary Report occurred in 1980. Over 11,000 gallons of dimethylamine (DMA) were spilled. The Kaw Valley Drainage District was asked to shut their floodgates to prevent migration to the Kansas River. The Kansas City, Kansas Fire Department flushed the chemical into a deep ditch. A 7,000-gallon transport truck was used to pump the fluids into the collection lagoons. Some water did discharge through the storm water sewer system and into the river. The EPA attempted to strip

the effluent before it reached the river by placing 2 bags of activated carbon at the entrance to the storm drain. It was estimated that 500 gallons per minute of diluted chemicals were discharged over a 3-hour period.

The State of Kansas also has the facility listed on its Identified Sites list. The EPA conducted a site investigation and a RCRA Facility Assessment (RFA) in 1989 and 1997, respectively. Fourteen SWMUs were identified during this process. Of these, SWMU #8, former surface impoundments, is no longer in use. These impoundments, which consisted of partial cement and impervious soil floors, were closed in 1981. All residual soils were removed and tested for toxicity. The soils were found to be below action levels. The impoundments were then backfilled with soil. The RFA did not classify a 11,000 gallon DMA spill as a SWMU. As result of inadequate sampling for releases from SWMUs and the DMA spill, EPA collected soil samples from 5 locations around the site. Three samples were taken from drainage ditches to determine if DMA still was present from the spill. Samples were grabbed from a depth of 6 inches to 1 foot below ground surface. Only two samples contained elevated levels of pesticides above Region 9 Preliminary Remedial Goals (PRGs). The results are found in the table below.

Table 3.0: PBI Gordon RFA Soil Investigation Results

Chemical	Sample 100 (µg/kg)	Sample 101 (µg/kg)	Region 9 PRGs (µg/kg)
Alpha BHC	500	ND	300
Aldrin	4,100	43,000	110
Dieldrin	30	260,000	120
4,4-DDE	6,000	28,000	5,600
4,4-DDD	12,000	ND	7,900
Heptachlor Epoxide	2,400	ND	210

Sample 100 and 101 are located close to a set of railroad tracks that run adjacent to the facility. The status of corrective action for the soil contamination has not progressed past the completion of the RFA. Also, the RFA recommended a groundwater investigation be conducted at the site. No groundwater sampling has occurred. Although groundwater contamination has not been identified at this location, based on past activities, the potential for such contamination exists.

It is recommended that ground disturbance in this area be avoided if possible. The current proposed alternative does not involve excavation at PBI Gordon. However, if soil excavation is required from this area during the construction phase, soil testing will be required prior to disposal. Some of the soil may require disposal of hazardous waste. Additional groundwater investigation is warranted prior to the any expansion of the existing subsurface relief well system.

4.1.14 APAC - Wilkerson

Address: Central Ave.
 Kansas City, KS 66118
 Stationing: 296+00 to 310+00
 Figure No.: 2.0

A portion of the APAC – Wilkerson properties lie the construction limit. The property is mainly used of equipment storage. There are few structures on the site. These properties were listed in the Reconnaissance Report as a small quantity generator in the RCRIS database. Four inactive underground storage tanks were also listed for the site, each having a capacity between 3000 to 6000 gallons. The Follow-Up Investigation did not list APAC, as it was located outside the radius given for the database. A search of the EPA Envirofacts database only lists APAC as a small quantity generator. There was no listing for any of the tanks listed in either the EPA databases or the KDHE LUST database.

From the aerial photographs, the properties currently owned by APAC have historically been industrial. Older buildings were present on the various properties. The 1983 photographs did not cover this section. By 1993, APAC had equipment stored on the site. Trailers were stored all the way to the levee. The remainder of the land was vacant.

During the site visit, APAC was still using the properties as a storage yard for their construction equipment. No contamination is known to be present at this site. Based on information evaluated, no impacts to levee improvements resulting from HTRW concerns were identified. Therefore, no further investigation is necessary.

4.1.15 Union Pacific Railroad

Address: Numerous rail yards and spurs in Armourdale
 Stationing: 0+00 to 75+00, 274+00 to 277+00, and 305+00 to 320+00
 Figure No.: 2.0

Union Pacific Railroad (UPRR) operates many rail yards in the Armourdale area, of which lie within the 40-foot construction limit. Around Proctor & Gamble to the edge of the Kaw Power Plant and PBI Gordon to APAC, rail spurs run the length of the levee. The Reconnaissance Report and Follow-Up Investigation did not have any information concerning the rail yards in the Armourdale area. Numerous LUSTs were reported in KDHE LUST Database and have been remediated and closed. The following chart lists the closed LUSTs for the Union Pacific Railroad.

Table 4.0: UPRR Leaky Underground Storage Tanks

Location	Year	KDHE status	Contamination present
UPRR 18 th St. Yard	1994	Closed	Yes, soil removed to roadway
UPRR 334 S. 5 th St.	1994	Closed	Yes, soil removed
UPRR Wastewater Treatment Plant	1994	Closed	Yes, soil removed
UPRR Mill St. Shanty	1993	Closed	None above action levels, UST abandoned in place
UPRR Armstrong Yard	1993	Closed	None above action levels, UST abandoned in place

Another tank is listed for the Armstrong Yard. This tank was removed in 1992 with no leaks or contamination seen. Two other tanks were not found on the LUST database, but were also found to

have been closed in 1995 with no impacts to the soil or groundwater. These tanks were most likely not near the levee.

During a review of EPA documents, a permit for discharging wastewater and sludges was requested by UPRR. A 1982 document states that test results of the wastewater classified it as non-hazardous. The UPRR withdrew its permit application. While a potential exists for previous contamination resulting from spills along the railroad lines, all known contamination has been remediated from various UPRR sites. Therefore, no further investigation is warranted for the railroad yards.

4.2 Central Industrial District Unit

The Central Industrial District (CID) Unit is being reevaluated as part of the Feasibility Study for overtopping and underseepage concerns based on observation made during the 1993 flood. The 500 year + 3 feet alternative was evaluated for the entire levee unit for the hazardous waste study. This alternative includes a combination of alternatives such as levee and floodwall raises, underseepage control and relief wells, and a new floodwall tieback. Currently, there is one existing system of relief wells located at stations 79+00 to 97+00.

For the HTRW Site Assessment, the area evaluated was based on the July 2007 figures for the 500 year +3 feet alternative with an additional 40 feet beyond the proposed construction limits to account for temporary easements. Within the Kaw Valley existing right-of-way, no contamination is expected to be encountered. However, there are many areas where the alternative extends outside the existing right-of-way and impacts properties in close proximity to the levee. The areas adjacent to the CID Unit are highly industrialized. There are sites which have soil or groundwater contamination that directly impacts the Feasibility Study alternative. Figure X.0 shows the overall levee unit with the adjacent properties identified. The following summarizes the evaluation and conclusions relating to specific properties within the CID Unit.

4.2.1 River View Properties Inc.

Address: James Street, Kansas City, Kansas
Stationing: 40+31.25 to 51+00
Figure No.:

Potential HTRW concerns have been identified within the study area between station 40+31 and 51+00. Potential encroachment into this area associated with the levee raise is proposed to be avoided by steepening the landside levee slope rather than extending the landside toe. No other locations of HTRW concerns have been identified at this time.

5.0 REFERENCES

Reconnaissance Report, Kansas City, Missouri and Kansas Flood Reduction Project; Appendix I: Hazardous, Toxic and Radioactive Waste Assessment; USACE Kansas City District; August 1999.

Final Report HTRW Site Follow-Up Investigations, Cities of Kansas City, Missouri and Kansas Flood Damage Reduction Study; Hydrogeologic; November 1999.

KDHE LUST database; <http://www.kdhe.state.ks.us/tanks/>; Storage Tank Section updated December 2004.

EPA ENVIROFACTs database; <http://www.epa.gov>; updated February 25, 2005

USACE aerial photographs, years 1951, 1960, 1970, 1978, 1983, 1993, and 1995

Preliminary Assessment, Chromium, Inc. Site; Kansas Department of Health and the Environment; December 1994.

Preliminary Assessment, Proctor & Gamble Well #11 Site; Kansas Department of Health and the Environment; July 1990.

RCRA Facility Assessment, PBI Gordon Corporation; B & V Waste Science, December 1990.

Screening Site Investigation, Proctor & Gamble Well #11 Site; Kansas Department of Health and Environment; September 1991.

Phase I Assessment Report, Container Recycling, Inc. Property; Barr Engineering; April 1997.

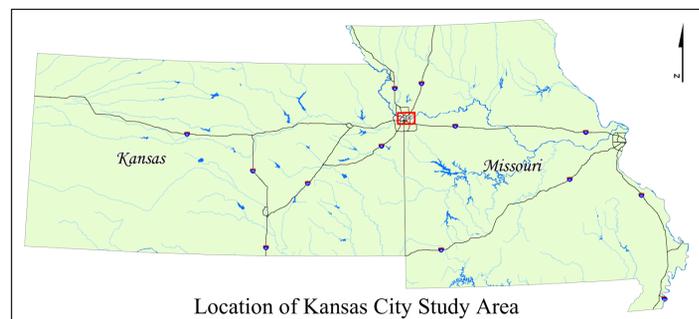
RCRA Facility Assessment Sampling Visit, PBI Gordon Corporation; PRC Environmental Management Company; January 1997.

RCRA Facility Assessment, Procter & Gamble; Tetra Tech EM Inc., May 1998

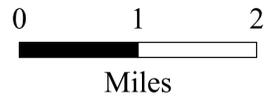
USACE correspondence from Kaw Valley Drainage District, various dates

KDHE correspondence with property owners for Container Recycling and A to Z Plating, various dates

HTRW FIGURES



- River Miles
- Levees
- Highways
- Roads
- Levee Zones
- Counties



Projection: GCS - Latitude/Longitude
Datum: 1983 North American
Spheroid: GRS 1980
Semi-major axis: 6378137

- | | | |
|-------------------|------------|-----------------|
| Kansas City | Riverside | Parkville |
| Gladstone | Liberty | Pleasant Valley |
| North Kansas City | Birmingham | River Bend |
| Independence | Claycomo | Sugar Creek |
| | Avondale | Randolph |

Kansas City, Missouri & Kansas Levee Units



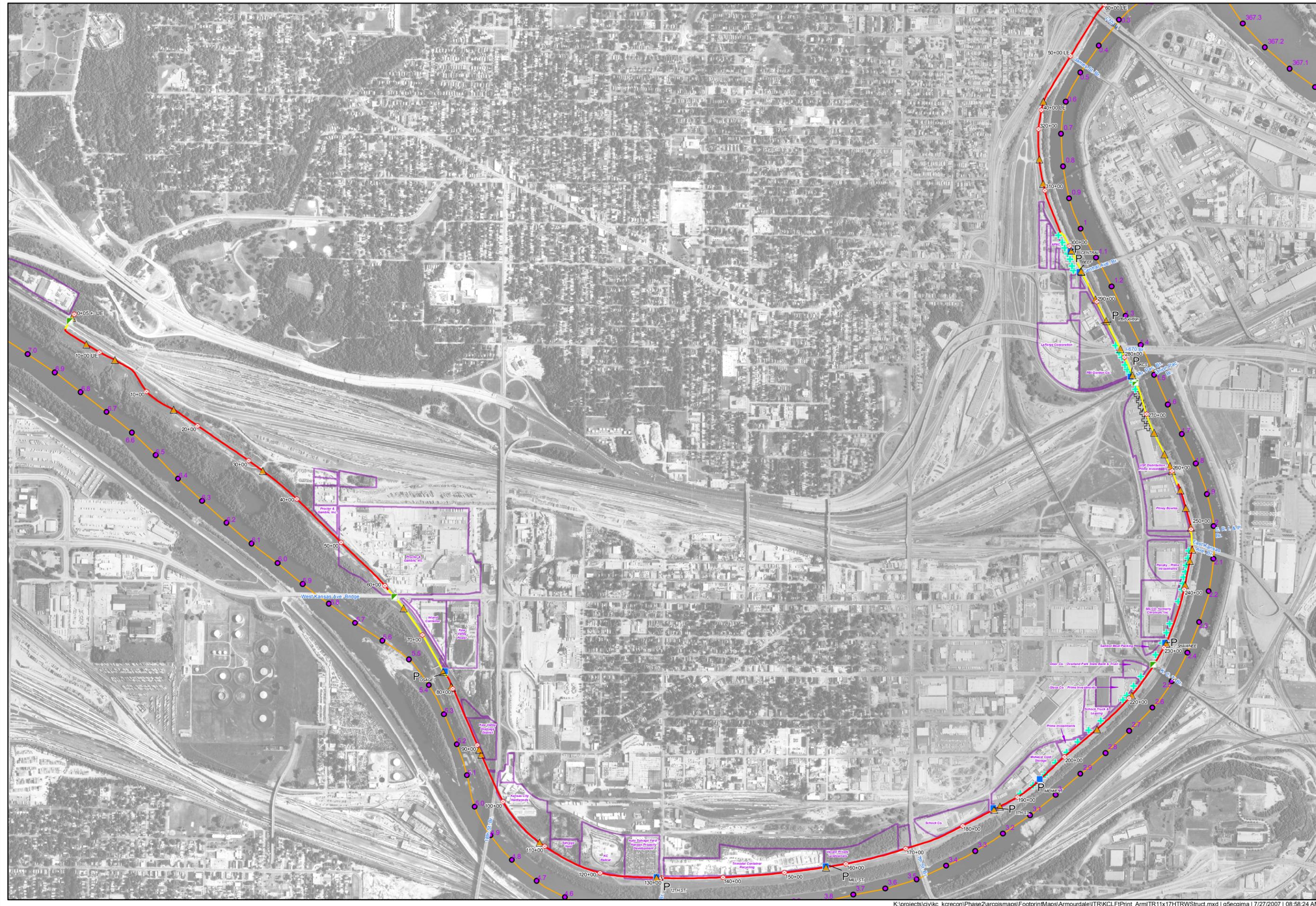
Mapped and edited by the
U.S. Army Corps of Engineers,
Kansas City District,
Geospatial Data Systems Team
Date: 09 JAN 2004
File Name: sevenlevees_overview.mxd

**Kansas City,
Missouri and Kansas
Flood Damage
Reduction Project**
Feasibility Study
JULY 2007

ITR Submission
Existing Features

Armourdale Unit

DRAFT
Working document
Not for public release



Key

- Station Tick Mark
- ▭ Parcels

Existing Levee Features

- Pump Plant
- ▲ Closure Structure
- ▲ Gate well
- ⊕ Abandoned Relief Wells
- ⊕ Active Relief Wells
- Floodwall
- Levee

N

US Army Corps of Engineers
Kansas City District

Photography Date: 2006

Projection: UTM Zone 15, Feet
Datum: NAD 83

Created by:
U.S. Army Corps of Engineers
Kansas City District, GDS Team

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Kansas City, Missouri, 64106

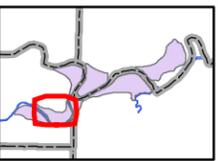
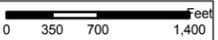


Fig. 2.0

ITR Submission

Armourdale Unit

DRAFT
 Working document
 Not for public release

NOTES:

1. This map does not include utility modifications or relocations. Refer to utility mapping for those items.
2. Current Right of Way lines were developed using current O&M manuals

KEY

- Pump Plant
- Parcels
- Right of Way
- Abandoned Relief Well
- Active Relief Well
- Areas of Concern
 - Contamination
 - Debris
- HTRW 40ft Investigation Zone
- Existing Levee Features
 - Closure Structure
 - Gatewell
 - Floodwall
 - Levee
 - Station Tick Marks
- Proposed Features
 - Closure Structure
 - Levee_raise
 - Twall
 - Floodwall
- 52' Distance (ft.) toe will be from existing centerline
- 52' Distance (ft.) toe will be from existing centerline



Photography Date: 2006

Projection: UTM Zone 15, Feet
 Datum: NAD 83

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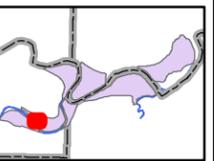
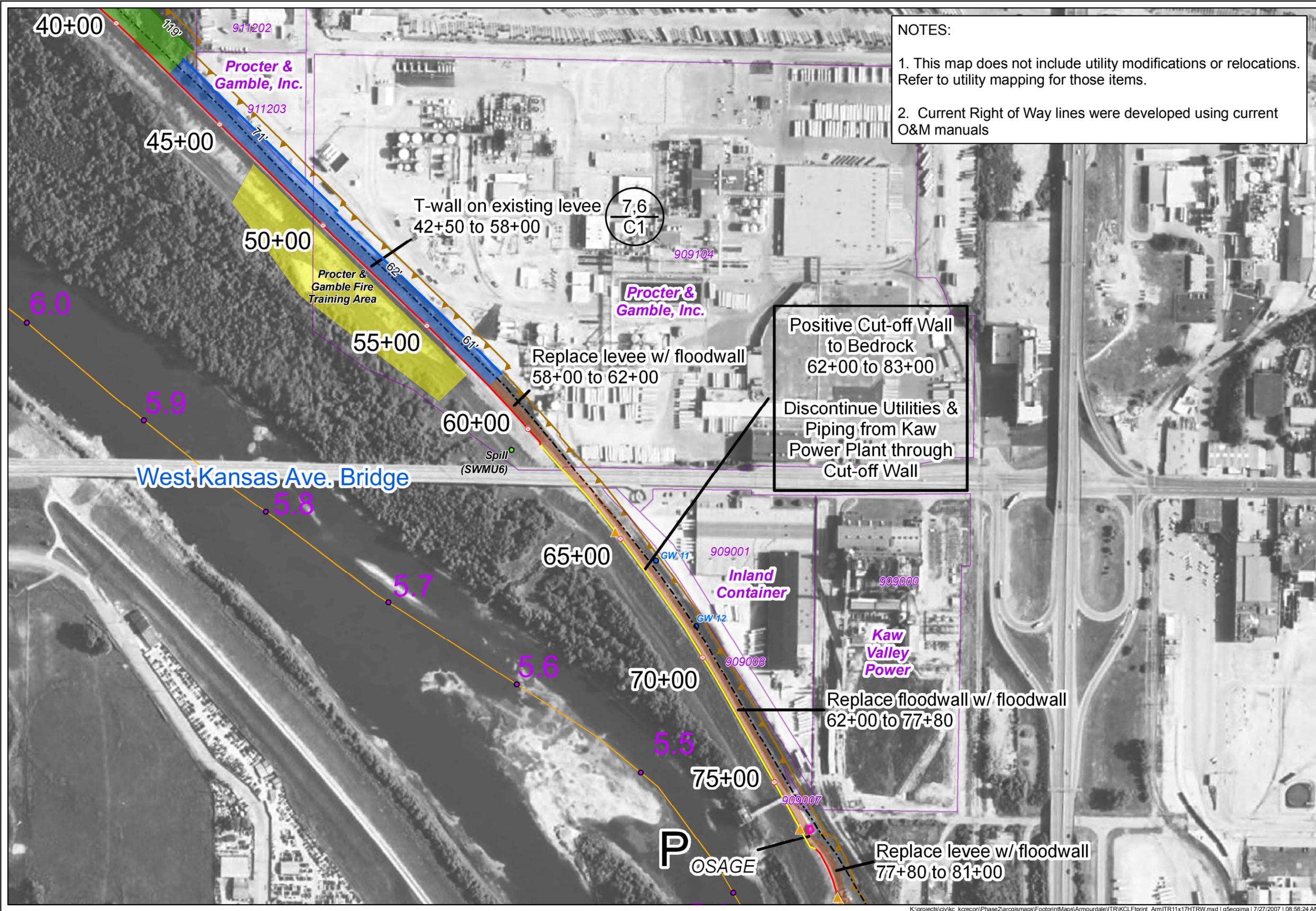


Fig. 3.0



ITR Submission

Armourdale Unit

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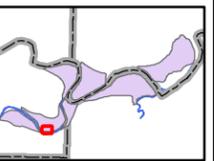
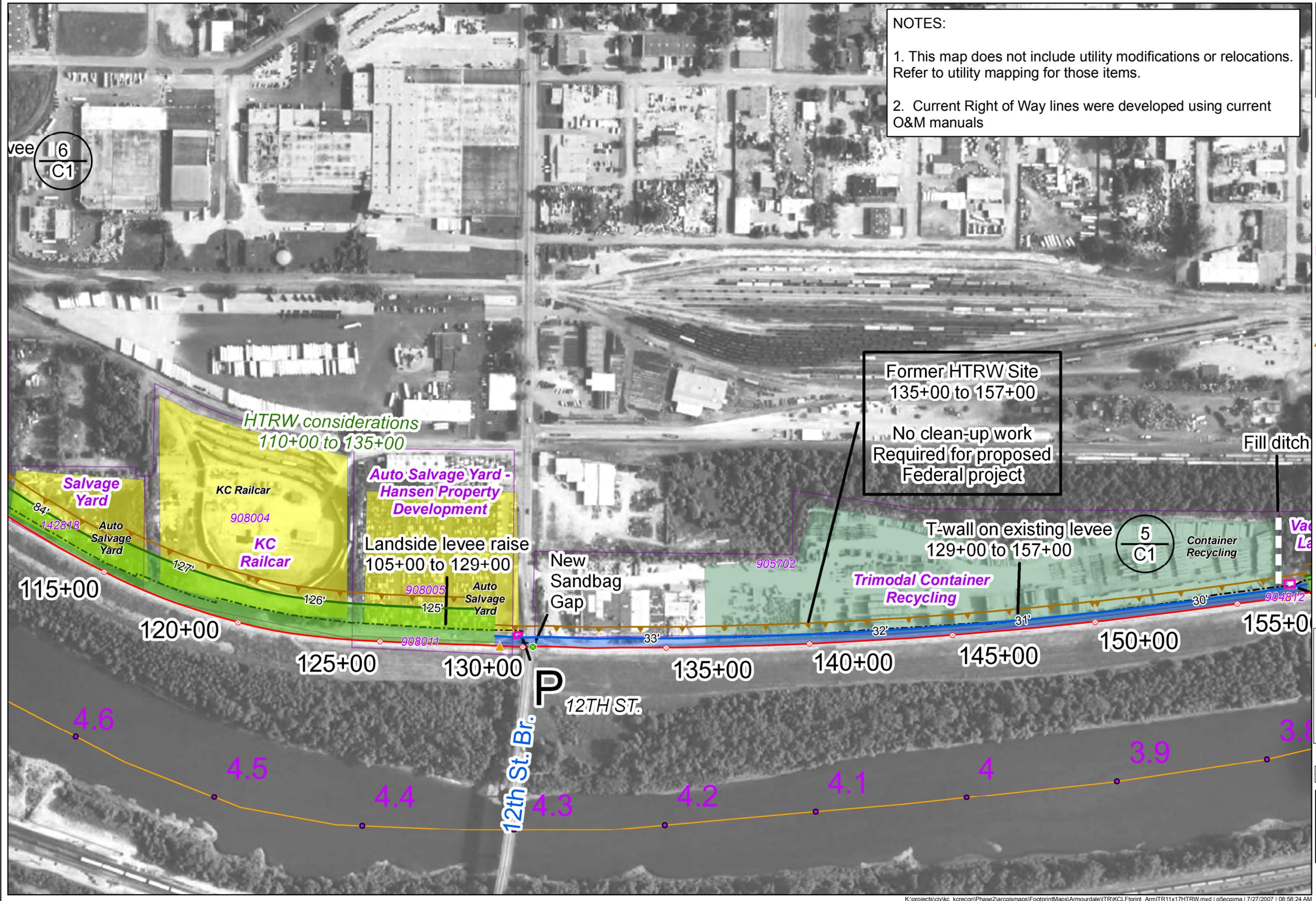


Fig. 4.0



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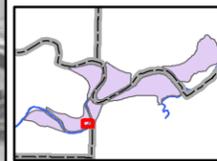
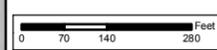
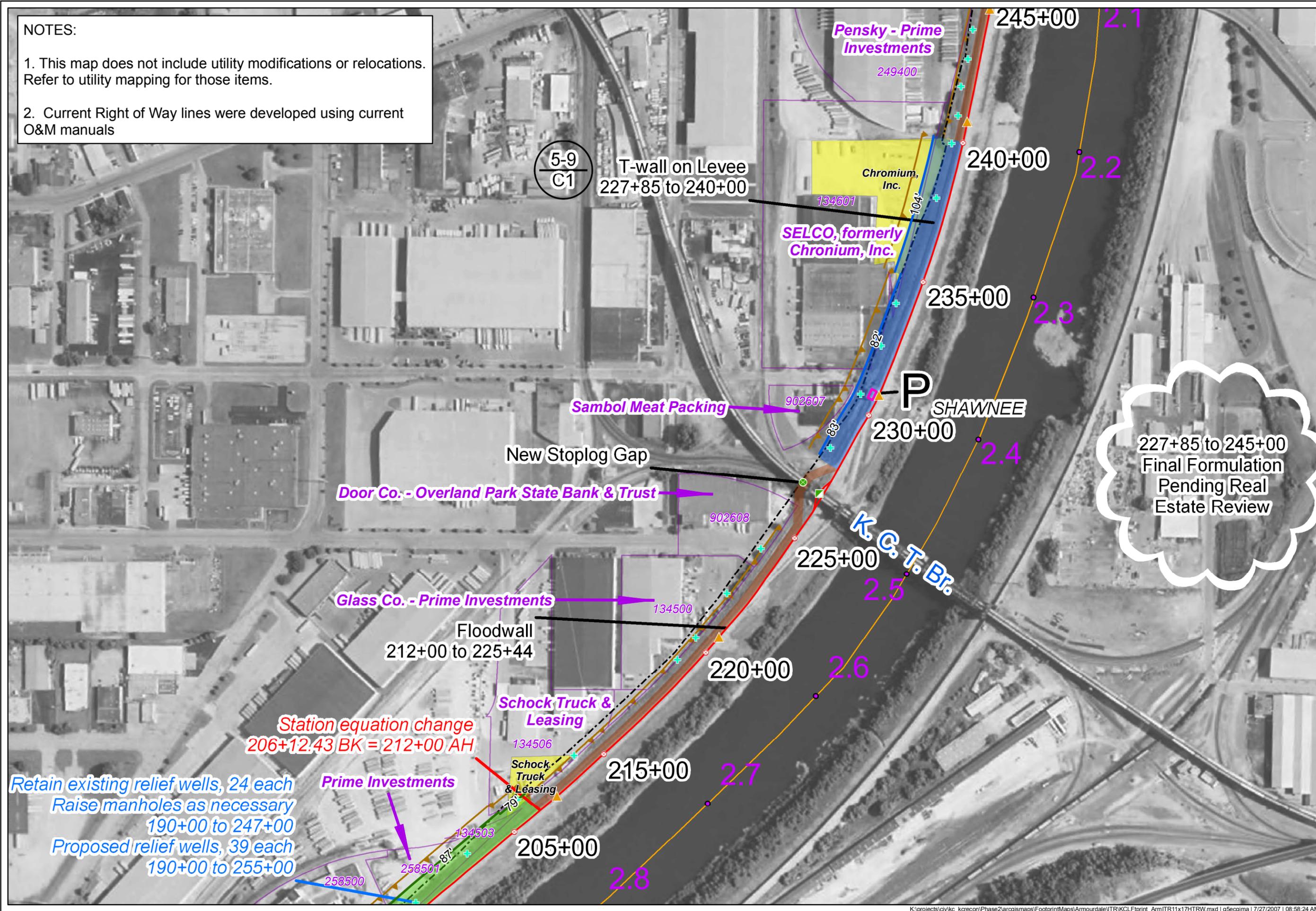


Fig. 5.0



ITR Submission

Armourdale Unit

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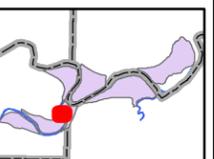


Fig. 6.0

