

### **III. BACKGROUND**

Background information on each of the SLS is presented hereafter by site. The locations of the SLS in relation to each other and the City of St. Louis are shown on Figure III-1.

#### **ST. LOUIS DOWNTOWN SITE**

The Mallinckrodt, Inc. plants and Vicinity Properties (VPs) that comprise the SLDS are shown on Figure III-2 and are listed in Table III-1. The VPs are also listed according to their associated USACE property designation number (e.g., DT-1). It should be noted that as new data were obtained and new civil land survey information became available during the ongoing pre-design investigation efforts, the size, designation, and number of VPs have increased subsequent to signature of the SLDS ROD (USACE 1998c). Such information indicated that certain property boundaries and, in some cases, the associated property owners, were incorrect when originally identified. The property boundaries shown on Figure III-2 reflect the current understanding of the SLDS property boundaries. The SLDS is defined in the SLDS ROD (USACE 1998c) as consisting of the Mallinckrodt, Inc. Property and the VPs.

The final remedial action for the accessible soil and ground-water operable unit contaminated as the result of MED/AEC uranium manufacturing and processing activities at the SLDS is discussed in detail in the SLDS ROD. As agreed to under the FFA, hazardous wastes resulting from releases on the site during the Mallinckrodt, Inc. operations for the MED/AEC are the subject of the remedial action at the SLDS. The SLDS has been separated into two OUs: (1) the Accessible Soil and Ground-Water OU and (2) the Inaccessible Soil OU. The Accessible Soil and Ground-Water OU consists of the accessible soil and ground water contaminated as the result of MED/AEC uranium processing activities at the Mallinckrodt, Inc. plant. The Inaccessible OU consists of buildings within the site perimeter (including Buildings 25 and 101 on the Mallinckrodt Property) and contaminated soil that is currently inaccessible due to the presence of buildings, active rail lines, roadways, the levee, and other permanent structures. The Inaccessible Soil OU was excluded from the scope of the SLDS ROD (USACE 1998c) because the inaccessible soil did not present a significant threat in its current configuration and because activities critical to the continued operation of Mallinckrodt, Inc. prevented excavation beneath the encumbrances (e.g., roads, active railroads, Buildings 25 and 101). Contamination present within Building 25 also did not present an excessive risk under its current configuration. Because land use has remained the same on the Mallinckrodt, Inc. Property and VPs since the SLDS ROD (USACE 1998c) was signed, these determinations hold true today. As stated previously, this five-year review report addresses only the Accessible Soil and Ground-Water OU of the SLDS.

#### **SLDS Physical Characteristics**

The SLDS comprises a 45-acre chemical manufacturing complex owned by Mallinckrodt, Inc. and over 30 adjacent vicinity properties located in an industrialized area about 2 miles north of the St. Louis downtown area (see Figure III-2). The SLDS is situated within the floodplain adjacent to the western bank of the Mississippi River and is separated from the river by the St. Louis Flood Protection system (a combination of man-made levees and floodwall structures). The local topography of the site is generally flat. Surface drainage is directed through ditches and catchment basins into an extensive storm drainage system that discharges to a nearby sewage treatment plant. Extensive industrial and commercial development has largely obliterated the upper portion of the native soil column. Fill was placed on top of the original floodplain as the area was being developed. A generalized stratigraphic column for the SLDS is shown on Figure III-3.





**Table III-1. St. Louis Downtown Site Properties**

<b>Property</b>	<b>ID</b>	<b>City Block/ Tract Number and/or Address</b>
Mallinckrodt, Inc.	N/A	Multiple
Archer Daniels Midland (ADM)	DT-1	2543; 2544
City Properties	DT-2	Multiple
Norfolk Southern Railroad	DT-3	1198; 1200; 1201
Gunther Salt	DT-4	1198-E; 101 Buchanan St.
AmerenUE	DT-5	660-W
Heintz Steel & Manufacturing	DT-6	2541; 2542; 3300 Hall St.
Midwest Waste	DT-7	2543
PSC Metals, Inc.	DT-8	Multiple; 3620 Hall St.
Terminal Railroad Association	DT-9	2520
Thomas & Proetz Lumber Company	DT-10	2540; 3400 Hall St.
McKinley Bridge	DT-11	2536; 2540; 2541
Burlington-Northern Santa Fe Railroad	DT-12	2526; 2540; 2541
Cash's Scrap Metal	DT-13	304-W; 3144 N. Broadway
Cotto-Waxo Company	DT-14	1197; 3330 N. Broadway
City Properties (MSD Lift Station)	DT-15	2543; 2544
Star Bedding Company	DT-16	308-W; 3240 N. Broadway
Christiana Court, LLC	DT-17	309-E
Curley Collins Recycling	DT-18	308-E
City Streets	DT-19	Multiple
Richey	DT-20	1196; 3301 N. Broadway
Favre	DT-21	1196; 3319 N. Broadway
Tobin Electric	DT-22	1196; 3321 N. Broadway
InterChem	DT-23	1196; 3501 N. Broadway
Bremen Bank	DT-24	1205; 3529 N. Broadway
Eirten's Parlors (aka O.T. Hodges)	DT-25	1205; 3523 N. Broadway
UAAA Local 1887	DT-26	1214; 3607 N. Broadway
Dillon	DT-27	1217; 3707 N. Broadway
Challenge Enterprise	DT-28	309-W; 3237 N. Broadway
Midtown Garage	DT-29	2545; 309-W; 3227 N. Broadway
ZamZow Manufacturing	DT-30	2545; 309-W; 3201 N. Broadway
Porter Poultry	DT-31	309-W; 3123 N. Broadway
Westerheide Tobacco Store (purchased by Mallinckrodt)	DT-32	1213
MoDOT	DT-33	1204/1215
Hjersted	DT-34	2526
Factory Tire Outlet	DT-35	2536; 3812 N. Broadway
OJM, Inc.	DT-36	1217; 3737 N. Broadway
Lange-Stegmann	DT-37	2520; #1 Angelica St.

Ground water at the SLDS is found within the following three hydrostratigraphic units (HUs):

- HU-A, the upper unit that consists of fill material on top of naturally deposited clays and silts;
- HU-B, the lower unit referred to as the Mississippi Alluvial Aquifer, which consists of naturally deposited alluvium; and
- HU-C, limestone bedrock

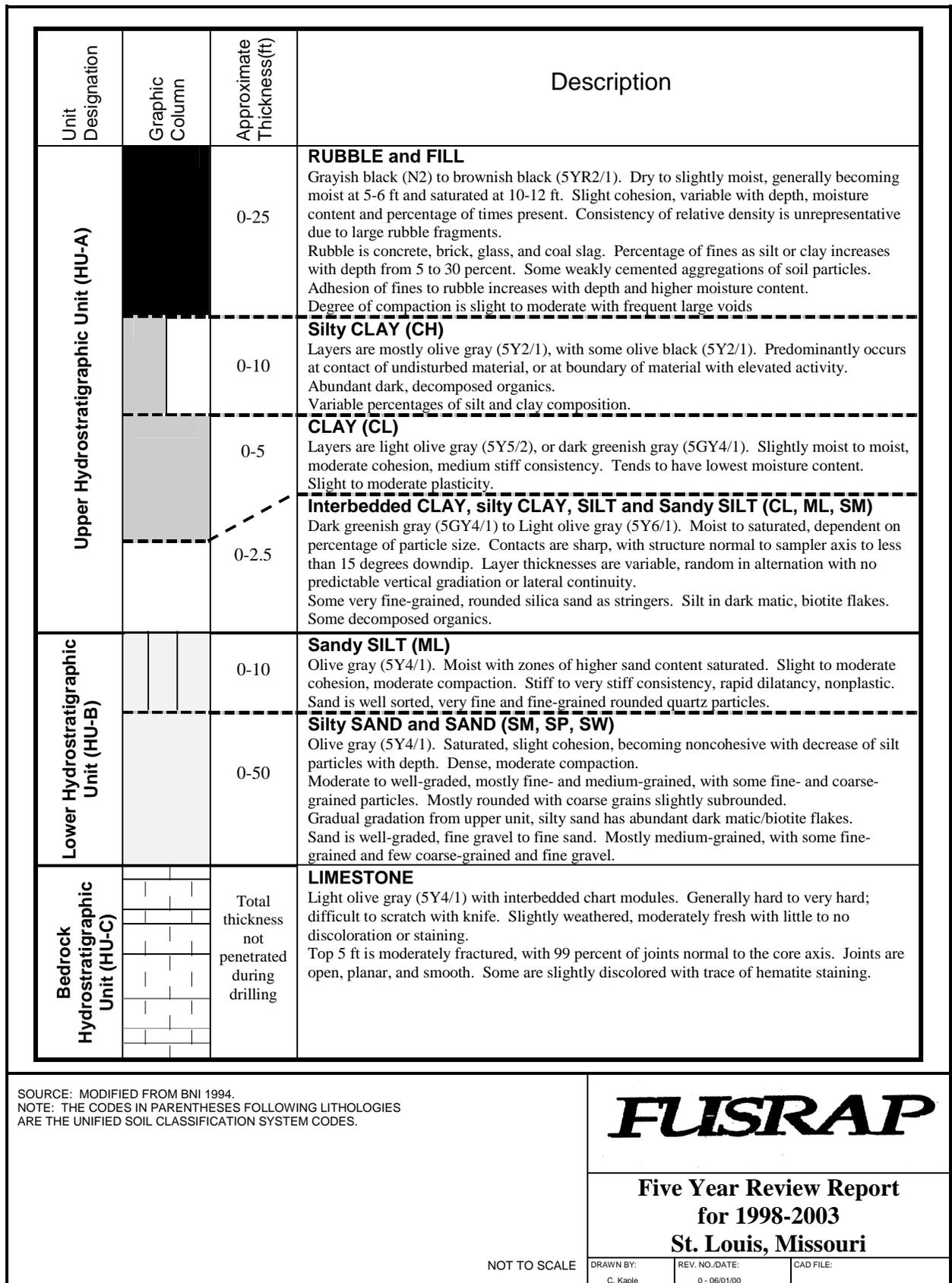


Figure III-3. Generalized Stratigraphic Column for the SLDS

## **SLDS Land and Resource Use**

The SLDS comprises a large chemical manufacturing complex owned and operated by Mallinckrodt, Inc., and adjacent commercial and city-owned VPs. The VPs encompass over 165 acres of land surrounding the 45-acre Mallinckrodt, Inc. Property. Mallinckrodt, Inc. has used the property for chemical manufacturing and related operations since 1867. Mallinckrodt currently maintains 24-hour security at the property and limits site access to employees, subcontract employees, and authorized visitors. The Mallinckrodt Property is enclosed by a well-maintained and patrolled security fence.

The land usages and physical features at the VPs are varied and include active businesses (e.g., lumber yard, metal salvage, and steel fabrication), inactive/abandoned businesses [e.g., the ADM VP (DT-1)] railroad lines, bridge structures (the McKinley Bridge), and a portion of the earthen levee and concrete floodwall that protects the St. Louis area from Mississippi River floodwaters. The SLDS has been used as an industrial area for well over a century. The SLDS is currently zoned industrial, which does not allow residential land use. The long-term plans for the SLDS area are to retain the industrial uses; encourage the wholesale produce district; and phase out the remaining, marginal residential uses.

HU-A is not an aquifer and is not considered a potential source of drinking water because it has insufficient yield, poor natural water quality, and susceptibility to surface water contaminants due to the industrial setting of the SLDS. The Mississippi Alluvial Aquifer (HU-B) is a principal aquifer in the St. Louis area, including the SLDS. Aquifers in this area also exist in the bedrock formations underlying the alluvial deposits. Ground-water aquifers in the St. Louis area are often mineralized (resulting in poor quality) and do not meet drinking water standards without treatment. HU-B is currently not used as a source of drinking water. The future use of HU-B as a drinking water source at the SLDS is expected to be minimal for several reasons: the Mississippi and Missouri rivers provide a readily available source of drinking water; the SLDS is located in an industrial setting; and the SLDS is bordered to the east by the Mississippi River. HU-C would be an unlikely water supply source, as it is deeper and a less productive HU. The expected future use of ground water at the SLDS is not expected to change from current use.

## **History of Contamination at the SLDS**

Mallinckrodt was contracted by the MED/AEC from 1942 to 1957 to process uranium ore for the production of uranium metal. From 1942 to 1945, Plants 1, 2, and 4 (where Plant 10 is now located) were involved in the development of uranium-processing techniques, uranium compounds and metal production and uranium metal recovery from residues and scrap.

Plant 6 produced uranium dioxide from pitchblende ore starting in 1946. During 1950 and 1951, Plant 4 was modified and used as a metallurgical pilot plant for processing uranium metal. Plant 4 continued to operate until 1956 when it was closed and operations began at Plants 6 and 7. MED/AEC operations in Plant 6 ended in 1957. Residuals of the process, including spent pitchblende ore; process chemicals; and radium (Ra), thorium (Th), and uranium (U), were inadvertently released from the Mallinckrodt Property and into the environment through handling and disposal practices. Radioactive materials, specifically those involved in the processing of columbium and tantalum (C-T), were used in activities for commercial clients within the Mallinckrodt Property from approximately 1961 to 1990. The radiological contamination in soil on the VPs may be attributed to inadvertent releases of radionuclides to the environment during the MED/AEC uranium processing operations, Mallinckrodt's C-T

processing operations, or operations unique to the VP itself. Buildings and/or other structures on the VPs may also have been affected by the inadvertent release of radionuclides during both the MED/AEC and C-T operations. AEC managed decontamination efforts (removal of radiologically contaminated buildings, equipment, and soil disposed off-site) in Plants 4, 7, and 6 to meet AEC criteria and returned the plants to Mallinckrodt in 1962 for use without radiological restrictions.

A radiological survey conducted at the SLDS in 1977 found radiological contamination that exceeded existing guidelines. Elevated gamma radiation levels were measured at outdoor locations and within some of the historical processing buildings. Additionally, Ra-226 and U-238 concentrations in certain soil samples significantly exceeded background concentrations. In response to this survey, it was determined that further investigation of the site was necessary to characterize the nature and extent of the contamination. In 1990, USEPA Region VII and the DOE entered into the FFA that established schedules and deliverables for the CERCLA process at the SLS. In 1994, DOE submitted the RI report for the SLS.

### **SLDS Interim Actions**

Four interim actions were performed by DOE at the SLDS prior to signing of the 1998 SLDS ROD. The first interim action consisted of the decontamination, demolition, and crushing of the 50-Series Buildings (Buildings 50, 51, 51A, 52, and 52A). In this action, 1,000 cubic yard (yd<sup>3</sup>) of contaminated material were shipped off-site, and 1,000 yd<sup>3</sup> of crushed concrete (crushate) were generated. In the second interim action, asbestos abatement, decontamination, demolition to floor elevation, grading, and crushing operations were conducted at Plants 6 and 7 (Buildings 100, 116, 116B, 117, 700, 704, 705, 706, 707, and 708). In this interim action, 2,673 yd<sup>3</sup> of contaminated material were shipped off-site and 7,000 yd<sup>3</sup> of crushate were generated. The third interim action consisted of contaminated soil excavation in Plant 4 (currently Plant 10). A total of 15,043 yd<sup>3</sup> of contaminated material was shipped off-site. In the fourth interim action, 750 yd<sup>3</sup> of contaminated material were excavated from the Riverfront Trail area and shipped off-site.

### **SLDS Basis for Taking Action**

Characterization activities at the SLDS have determined that contamination related to MED/AEC activities is present in the accessible surface and subsurface soil of the Mallinckrodt plant and VPs at levels that require remedial action. The contamination detected likely resulted from both MED/AEC and C-T activities. In addition, other contaminants have likely leached from the coal slag and cinders used as fill in the area. As agreed to under the FFA, all wastes resulting from or associated with uranium manufacturing or processing activities conducted at the SLDS for the MED/AEC are the subject of the remedial action selected in the SLDS ROD (USACE 1998c). Other chemical or radiological wastes that are mixed or commingled with wastes resulting from or associated with MED/AEC uranium manufacturing or processing activities conducted at the SLDS are also subject to this remedial action. Contaminants resulting from other actions or pre-existing contaminants at the SLDS are being addressed through actions being carried out by other authorities. This includes both radioactive and hazardous substances that are the responsibility of other parties. The other actions being carried out include termination of a Mallinckrodt NRC license for Plant 5 (C-T processing) and a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) for the entire Mallinckrodt facility. Mallinckrodt currently addresses air emissions and wastewater/stormwater monitoring

requirements at the facility. USEPA, MDNR, USACE, NRC, and Mallinckrodt are working together to assure that the non-FUSRAP potential hazards at the SLDS are properly addressed.

### **NORTH ST. LOUIS COUNTY SITES**

The general location of the North St. Louis County sites including the HISS, the SLAPS, and the VPs is shown on Figure III-4. The VPs are also listed according to their associated USACE property designation number (e.g., VP-24) in Table III-2, III-3, and III-4. Additional detail of the HISS is shown on Figure III-5.

The North St. Louis County sites are located in St. Louis County, Missouri throughout an area immediately north of Lambert-St. Louis International Airport and about 11 miles northwest of the SLDS. The North St. Louis County sites are composed of the following properties:

- SLAPS
- Latty Avenue Properties, which include the HISS/Futura, and eight VPs
- SLAPS VPs, which include approximately 78 properties near the SLAPS and properties along Coldwater Creek



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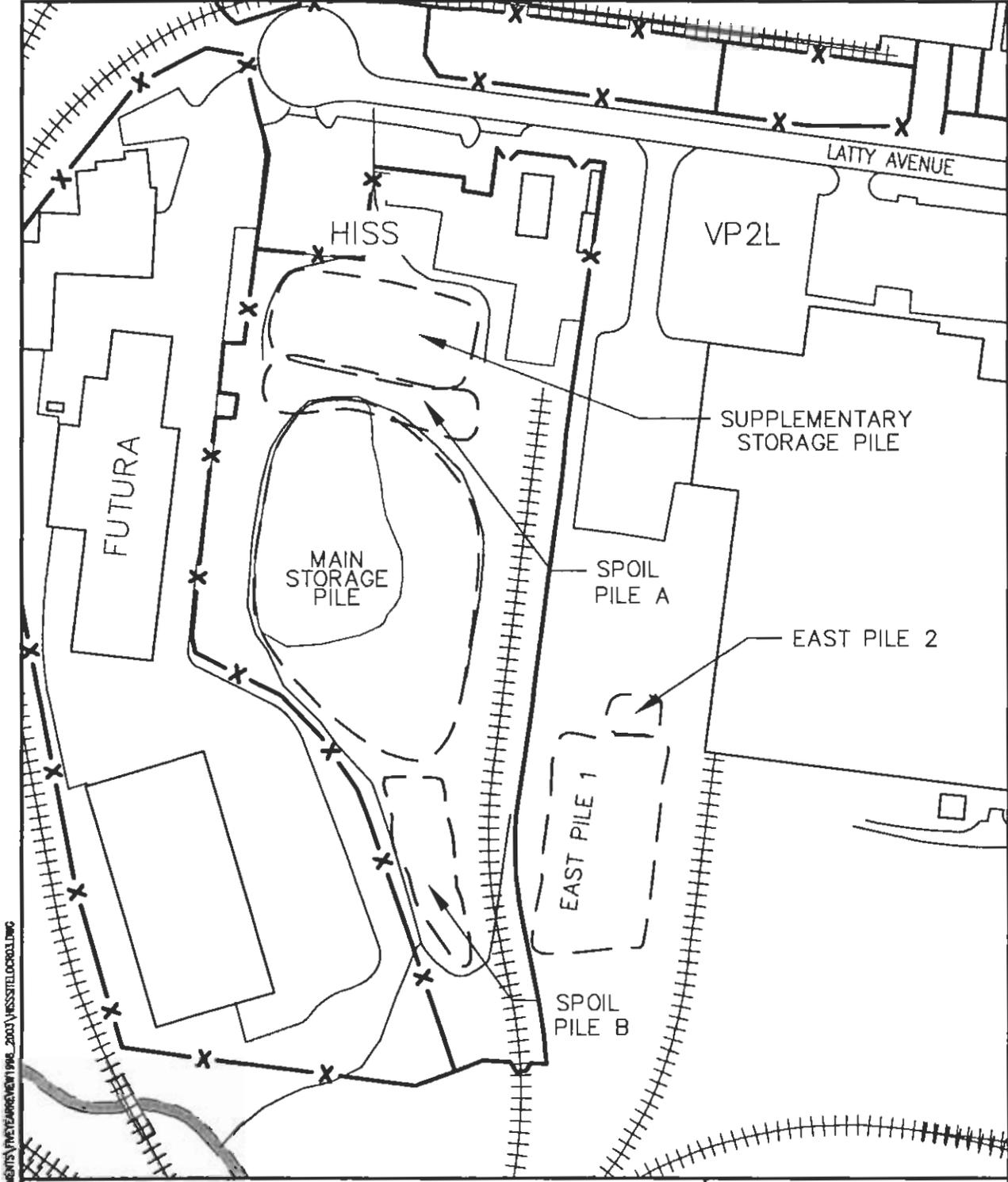
- ..... ASPHALT ROADS
- +++++ RAILROAD TRACKS
- ~~~~~ STREAM OR TRIBUTARY
- ~~~~~ RIVER OR CHANNEL

**FUSRAP**

Five Year Review Report  
for 1998-2003  
St. Louis, Missouri

DRAWN BY: F. Bauer	REV. NO./DATE: 0 - 08/26/03
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Figure III-4. North St. Louis County Site Map



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- LEGEND:**
- PRIMARY BUILDING
  - ASPHALT ROAD
  - RAILROAD TRACKS
  - FENCE LINE
  - STREAM/DITCH
  - POND

\*Note: The stockpiles shown on this map are no longer present at the site. Their removal was completed in 2001.

**FUSRAP**

Hazelwood Interim Storage Site  
and Futura Coatings Location  
St. Louis, Missouri

DRAWN BY:  
S. Kirching

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Figure III-5. Location of Hazelwood Interim Storage Site (HISS)

**Table III-2. North St. Louis County Site Properties – SLAPS and SLAPS VPs**

<b>Site Location</b>	<b>Property Owner</b>	<b>VP Number</b>	<b>County Locator Number</b>
SLAPS VPs	Boeing/McDonnell	1	10L220893 5800 N. Lindbergh Boulevard Hazelwood, Missouri
SLAPS VPs	Boeing/McDonnell	2	10L240093 32 McDonnell Boulevard Hazelwood, Missouri
SLAPS VPs	Boeing/McDonnell	3	10L330123 5900 N. Lindbergh Boulevard Hazelwood, Missouri
SLAPS VPs	Boeing/McDonnell	4 and 5	10L330114 183 McDonnell Boulevard Hazelwood, Missouri
SLAPS VPs	Boeing/McDonnell	6	10L330040 163 McDonnell Boulevard Hazelwood, Missouri
SLAPS VPs	Boeing/McDonnell	7	10L330031 153 McDonnell Boulevard Hazelwood, Missouri
SLAPS VPs	Boeing/McDonnell	N/A	11L630022
SLAPS VPs	Florissant Valley Sheltered Workshop	8	10L330022 143 McDonnell Boulevard Hazelwood, Missouri
SLAPS VPs	Union Electric Co.	9	10L330073 141 McDonnell Boulevard Hazelwood, Missouri
SLAPS VPs	St. Louis Steel Products, Inc.	10 and 11	10L340151 133 McDonnell Boulevard Hazelwood, Missouri 63042
SLAPS VPs	Mijon IV, L.L.C.	12	10L340142 123 McDonnell Boulevard Hazelwood, Missouri
SLAPS VPs	GKN Aerospace Sciences, Inc.	13	10L310011 5290 Banshee Road Hazelwood, Missouri
SLAPS VPs	City of St. Louis	Wells	Lambert International Airport
SLAPS VPs	City of St. Louis Properties Manager	NE Corner of Airport Airfield	Lambert International Airport
SLAPS VPs	St. Louis Co. Department of Highways and Traffic (MoDOT)	McDonnell Boulevard from Lindbergh to ~2,500 feet south of Banshee	McDonnell Boulevard
SLAPS VPs	Norfolk Southern Railway Company	Railway in and around the SLAPS, the Latty/HISS, and the SLAPS VPs	Railway right-of-way in and around the SLAPS, the Latty/HISS, and the SLAPS VPs and County Parcel ID No. 10K520143

**Table III-2. North St. Louis County Site Properties – SLAPS and SLAPS VPs (Cont'd)**

<b>Site Location</b>	<b>Property Owner</b>	<b>VP Number</b>	<b>County Locator Number</b>
SLAPS VPs	Boeing/McDonnell	14	11K510035 6367 McDonnell Boulevard Hazelwood, Missouri 63042
SLAPS VPs	Boeing/McDonnell	15	11K520056 8901 Airport Road Berkeley, Missouri 63134
SLAPS VPs	MoDOT	31	Locator Number not available. SE Corner Jonas Place and Frost Berkeley, Missouri 63134
SLAPS VPs	Norfolk Southern Railway Company	40A	10L340041
SLAPS VPs	Midwestern Corporation	40	09K220140 7275 Hazelwood Avenue Hazelwood, Missouri 63042
SLAPS VPs	Ronald Schacht, Trustee	42	09K220041 7301 Hazelwood Avenue Hazelwood, MO 63042
SLAPS VPs	Jamestown Investment Corporation	44	09K220030 8841 Heather Lane Hazelwood, Missouri 63042
SLAPS VPs	Sydney Kurtz	45	09K220195 7310 Hazelwood Ave Hazelwood, Missouri 63042
SLAPS VPs	Bi-State Loading Dock Specialists Inc	46	09K220074 7314 Hazelwood Avenue Hazelwood, Missouri 63042
SLAPS VPs	ProLogis	47	09K220085 7351 Hazelwood Avenue Hazelwood, Missouri 63042
SLAPS VPs	John J. Steuby Company	48 and 48A	09K220184 and 09K220173 7320 Hazelwood Avenue Hazelwood, Missouri 63042
SLAPS VPs	Jamestown Investment Corporation	49	09K220195 7310 Hazelwood Avenue Hazelwood, Missouri 63042
SLAPS VPs	Billy and Dorothy Coleman	50 and 51	09K310197 8784 Pershall Road Hazelwood, Missouri 63042
SLAPS VPs	Schnucks Markets, Inc.	52	09K324475 8780 Pershall Road Hazelwood, Missouri 63042
SLAPS VPs	Delaware Golden Arch Limited Ptosp	52	09K324486 8700 Pershall Road Hazelwood, MO 63042
SLAPS VPs	Ralph A. Petersen, Trustee and Marie C. Petersen, Trustee	53	09K220162 7373 Hazelwood Avenue Hazelwood, Missouri 63042
SLAPS VPs	The Pillsbury Company	54	09K220205 8840 Pershall Road Hazelwood, Missouri 63042
SLAPS VPs	Metro Partners, L.L.C.	55	09K210217 8900 Pershall Road Hazelwood, Missouri 63042

**Table III-2. North St. Louis County Site Properties – SLAPS and SLAPS VPs (Cont'd)**

Site Location	Property Owner	VP Number	County Locator Number
SLAPS VPs	Supervalu Holdings, Inc.	55	09K210228 8880 Pershall Road Hazelwood, Missouri 63042
SLAPS VPs	Bernadette Business Forms, Inc.	56	09K210064 8950 Pershall Road Hazelwood, Missouri 63042
SLAPS VPs	Allied Systems, Ltd.	57 and 58	09K140015 and 09K140026 9050 Pershall Road Hazelwood, Missouri 63042
SLAPS VPs	Tayco Three Oaks, L.P.	59	09K110304 9124 Pershall Road Hazelwood, Missouri 63042
SLAPS VPs	MoDOT	Pershall Road from east of Lindbergh to just west of Hazelwood Avenue	Location number not available
SLAPS VPs	United Automobile Workers Local 325	60 and 61	09K130104 161 Ford Lane Hazelwood, Missouri 63042
SLAPS VPs	Emerson Community Credit Union	62	09K130038 9150 Pershall Road Hazelwood, Missouri 63042
SLAPS VPs	City of Florissant	VP Number not assigned	County Bridge No. 14650211

**Table III-3. North St. Louis County Site Properties – The HISS and HISS/Latty VPs**

Site Location	Property Owner	Bechtel Locator Number	County Locator # and Address
HISS	N/A	N/A	Location number not available
HISS/Latty	Federal Mogul Corp.	1L	10K530087 and 10K530098 9151 Latty Avenue Berkeley, Missouri 63134
HISS/Latty	General Investment Funds Real Estate Holding Company (GIFREHC)	2 L	10K510012 9150 Latty Avenue Hazelwood, Missouri 63134
HISS/Latty	SLT Development Corp.	3L	10K520022 9060 Latty Avenue Berkeley, Missouri 63134
HISS/Latty	Graham Packaging Company, L.P.	4L and 5L	10K520033, 10K520044, and 10K520165 8942 and 8966 Latty Avenue Berkeley, Missouri
HISS/Latty	Van Waters & Rogers, Inc.	6L	10K510067 8999 Seeger Ind. Drive Berkeley, Missouri 63134
HISS/Latty	Jarboe Realty & Investment Company	Futura	10K510023 9200 Latty Avenue Berkeley, Missouri 63134
HISS/Latty	Jarboe Realty & Investment Company	HISS	10K510090 9170 Latty Avenue Berkeley, Missouri 63134

**Table III-3. North St. Louis County Site Properties – The HISS and HISS/Latty VPs (Cont'd)**

<b>Site Location</b>	<b>Property Owner</b>	<b>Bechtel Locator Number</b>	<b>County Locator # and Address</b>
SLAPS VPs	City of St. Louis	Ballfields	10K11-0021 and 10K130014 McDonnell Boulevard and Eva Avenue
SLAPS VPs	City of St. Louis	16	10K210064 6685 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Boeing/McDonnell	17	10K210053 6709 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Boeing/McDonnell	18	10K230051 6745 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Leo & Velma Vasquez	19	10K230031 9080 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Boeing/McDonnell	20A	10K210031 9060 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Leo & Velma Vasquez	20	10K230040 9040 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	First Industrial, L.P.	21 and 23	10K230073 and 10K240094 9043 and 8921 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	STL Distribution Services, LLC	22	10K240106 9015 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Chart Automotive Group, Inc.	(See VP-37) 24	10K330360 8801 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Edo, L.C.	24 (Part)	10K330360 8875 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Boeing/McDonnell	25	10K210031 and 10K220195 8900 and 9060 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Sutton & Son's Refuse Disposal Service	26	10K240207 8870 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Alfred Fleischer & Eva Fleischer	27 and 28	10K330030 and 10K330351 8838 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	Jacqueline Gutman Stern, Trustee	29	10K330223 8822 Frost Avenue Berkeley, Missouri 63134
SLAPS VPs	a. Stern Bros (Gutman) b. Barron	30	10K330232 8810 Frost Avenue Berkeley, Missouri 63134

**Table III-3. North St. Louis County Site Properties – The HISS and HISS/Latty VPs (Cont'd)**

Site Location	Property Owner	Bechtel Locator Number	County Locator # and Address
SLAPS VPs	Sid Boedeker Safety Shoe Co.	31a	10K330342 and 10K330131 6822 and 6824 Hazelwood Avenue Berkeley, Missouri 63134
SLAPS VPs	T.M. Properties L.L.C.	32	10K330241 8801 Seeger Ind. Drive Berkeley, Missouri 63134
SLAPS VPs	Supervalu Holdings Inc.	33, 34, 35, 35a, 38, 39, and 55 (Part)	10K330333 (6826 Haz)VP-33 10K330324 (6830 Haz)VP-34 10K610178(6850 Haz) VP-35 and VP-35a 10K540097 (7101 Haz)VP-38 10K630363 (7100 Haz)VP-39 09K210228 (8880 Pershall Rd.) VP 55pt
SLAPS VPs	Fr Development Services, Inc.	36	10K520198 6857 Hazelwood Avenue Berkeley, Missouri 63134
SLAPS VPs	Chart Automotive Group, Inc.	(See VP-24) 37	10K520066 8920 Latty Avenue Berkeley, Missouri 63134
SLAPS VPs	Dale Anthony Lakenburger	41	10K540031 8827 Nyflot St. Louis, Missouri 63140
SLAPS VPs	Laurie Porter	43	10K540075 8834 Heather Lane, Suite A Hazelwood, Missouri 63042
SLAPS VPs	Ford Motor Co.	63	10K430042 6250 N. Lindbergh Boulevard Hazelwood, Missouri 63042

**Table III-4. North St. Louis County Site Properties – Coldwater Creek**

Site Location	Property Owner	Bechtel Locator Number	County Locator Number
Coldwater Creek	Bernadette Business Forms, Inc.	1-C	09K210064 8950 Pershall Road Hazelwood, Missouri 63042
Coldwater Creek	Norfolk Southern Railway Company	2-C	N/A
Coldwater Creek	Tubular Steel, Inc.	3-C	09K120040
Coldwater Creek	Cortrol Process Systems, Inc.	4-C	09K120127
Coldwater Creek	Cortrol Process Systems, Inc.	5-C	09K120116
Coldwater Creek	Norfolk Southern Railway Company	6-C (Part)	10K440113
Coldwater Creek	Robert Matulewic Rln, Inc.	6-C (Part)	10K440104
Coldwater Creek	Tubular Steel, Inc.	7-C	10K440096
Coldwater Creek	Alois G. Hutter	8-C	10K440074
Coldwater Creek	Contico International, L.L.C	9-C	10K420010
Coldwater Creek	Contico International, L.L.C.	10-C	10K140024
Coldwater Creek	M&M Ellenbracht, Trs		07J520900

These properties are located within the City of Hazelwood and the City of Berkeley, and include the airport property owned by the City of St. Louis. The SLAPS VPs consist of the properties between the SLAPS and the HISS, along Coldwater Creek, and the open fields immediately north of the SLAPS (the former Ballfields area). These properties were formally designated by DOE as VPs based on preliminary characterizations. Properties contiguous to the SLAPS were grouped into investigation areas (IAs) to facilitate implementation of characterization studies. These areas were designated as IA-8 through IA-13. Although the SLAPS was initially subdivided into IAs, this subdivision was later changed to subdivision by phases. The Latty Avenue properties include the HISS, Futura, and eight VPs [designated 1(L) – 6(L), 40A, and 10k530087]. For those North St. Louis County sites VPs that have split into multiple parcels for sale subsequent to designation, a letter designation is added after the VP identifying number (e.g., VP-24a, VP-24b, and VP-24c).

### **North St. Louis County Sites Physical Characteristics**

The SLAPS covers 22 acres bounded by McDonnell Boulevard on the north, Coldwater Creek on the west, and Norfolk Southern railroad tracks on the south. A 1,000-foot-long railroad spur, constructed in 1998, parallels and connects to these tracks. The local topography of the SLAPS is relatively flat due to previous construction, demolition, and grading activities. The native soil column has been largely disturbed or covered by fill during the previous activities. Depth to bedrock ranges from about 55 feet on the eastern portion of the SLAPS to a maximum of 90 feet on the western portion of the SLAPS near Coldwater Creek. A generalized stratigraphic column for the SLAPS and the HISS is shown on Figure III-6. Surface drainage from the SLAPS is directed through four drainage ditches that ultimately discharge to Coldwater Creek.

The local terrain of the remainder of the North St. Louis County sites (i.e., Latty Avenue properties and the SLAPS VPs) is generally flat with surface run-off toward Coldwater Creek, either directly or via intermittent tributaries. Coldwater Creek is the main drainage for the North St. Louis County sites. Flooding occurs annually in Coldwater Creek. Water quality in the creek is generally poor and has been affected by industrial discharges from multiple facilities, including storm-water run-off and discharges from three sewage treatment facilities.

Five hydrostratigraphic zones (HZs) are present at the North St. Louis County sites. These HZs are the shallow ground-water zone, HZ-A; the underlying HZ-B and HZ-C; and the underlying shale (HZ-D) and limestone bedrock (HZ-E). HZ-E is the protected aquifer for the North St. Louis County sites. All five HZs (HZ-A through HZ-E) occur beneath the SLAPS. However, HZ-D (shale) is not present beneath the HISS or Futura. A highly impermeable clay aquitard separates HZ-A from the remaining underlying HZs at the SLAPS and the HISS. The presence of this aquitard, along with available analytical data, indicates there is little to no communication between ground water in HZ-A and the lower HZs at the SLAPS. This interpretation of negligible communication between HZ-A and the lower HZs is supported by anion and cation compositions of ground-water samples, differing piezometric surfaces, and tritium data. Additionally, the available ground-water monitoring data indicate localized effects on ground water in HZ-A and an absence of these effects in lower HZ ground water (USACE 2003b). The total dissolved solids values in HZ-A ground water, combined with poor water extraction rates due to low hydraulic conductivities [on the order of  $10^{-6}$  to  $10^{-8}$  centimeter/second (cm/s)], provide confirmation that HZ-A does not produce water in sufficient quantities to fit the definition of an aquifer or to serve as a drinking water supply. Furthermore, the low yields of HZ-A preclude the discharge from HZ-A to Coldwater Creek from contributing an important

part of the base flow for the creek and from resulting in contaminant levels above water quality standards in creek surface water.

### **North St. Louis County Sites Land and Resource Use**

Approximately 50% of the contaminated soil at the SLAPS has been removed and the excavations backfilled and covered with either recently established turf or temporary crushed stone surfacing. Removal actions are in progress on the site. Temporary construction operation and support facilities are located on the site and include a modular field office complex, parking areas, and water storage and treatment facilities, as well as a sedimentation basin located on the west end of the site.

Typical Latty Avenue properties consist of commercial, industrial and warehouse facilities, and buildings with adjoining paved and turfed areas. The HISS/Futura property covers an 11-acre tract. Stockpiled material was removed from the HISS and shipped to an out-of-state disposal facility during the period of this five-year review. A 700-foot long rail spur, constructed in 1999, extends along the eastern edge of the property and, though not currently in use, remains operational. The Futura Coatings portion of the site consists of a manufacturing facility surrounded by paved and turfed areas.

The SLAPS VPs consist of 78 properties between the SLAPS and the HISS, as well as railroad lines, the open field area immediately north of the SLAPS (the former ballfield area), and Coldwater Creek. Generally, the SLAPS VPs are used similarly to the Latty Avenue properties. The former ballfield area is covered with grass and is not used, except for one portion occupied by the City of Berkeley Shooting Range and Mulch Storage Area. Coldwater Creek, from Highway 67 to the Missouri River, is a Class C waterway (periodic no-flow conditions) designated for livestock and aquatic life use.

HZ-A is not an aquifer and is not considered a current or potential future source of drinking water because it has insufficient yield and has been affected by broad-scale human activity. HZ-B through HZ-D are not considered protected aquifers, but HZ-E is a protected aquifer at the North St. Louis County sites. Given the proximity of the Missouri and Mississippi rivers and the availability of treated water, HZ-E is not used as a drinking water source at the North St. Louis County sites. The expected future use of ground water at the North St. Louis County sites is not expected to change from current use.

### **North St. Louis County Sites History of Contamination**

In 1946, MED/AEC acquired the 22-acre tract of land now known as the SLAPS to store residues and scrap resulting from uranium processing at the SLDS. Several wastes and by-products were transported to the SLAPS for storage, including radium-bearing residues, raffinate cake, barium sulfate cake, and C-liner slag. The MED/AEC ultimately obtained title to the SLAPS by condemnation proceedings on January 3, 1947. By 1960 there were approximately 50,000 empty drums and 3,500 tons of contaminated steel and alloy scrap stored at the SLAPS.

Continental Mining and Milling Company of Chicago purchased uranium-bearing residues from the Manhattan Engineer District (MED) and removed them from SLAPS in 1966. The company placed the residues in storage at a property on Latty Avenue (later known as the HISS/Futura properties) under an Atomic Energy Commission (AEC) license. In January 1967, the Commercial Discount Corporation of Chicago, Illinois, purchased the residues. Much of the

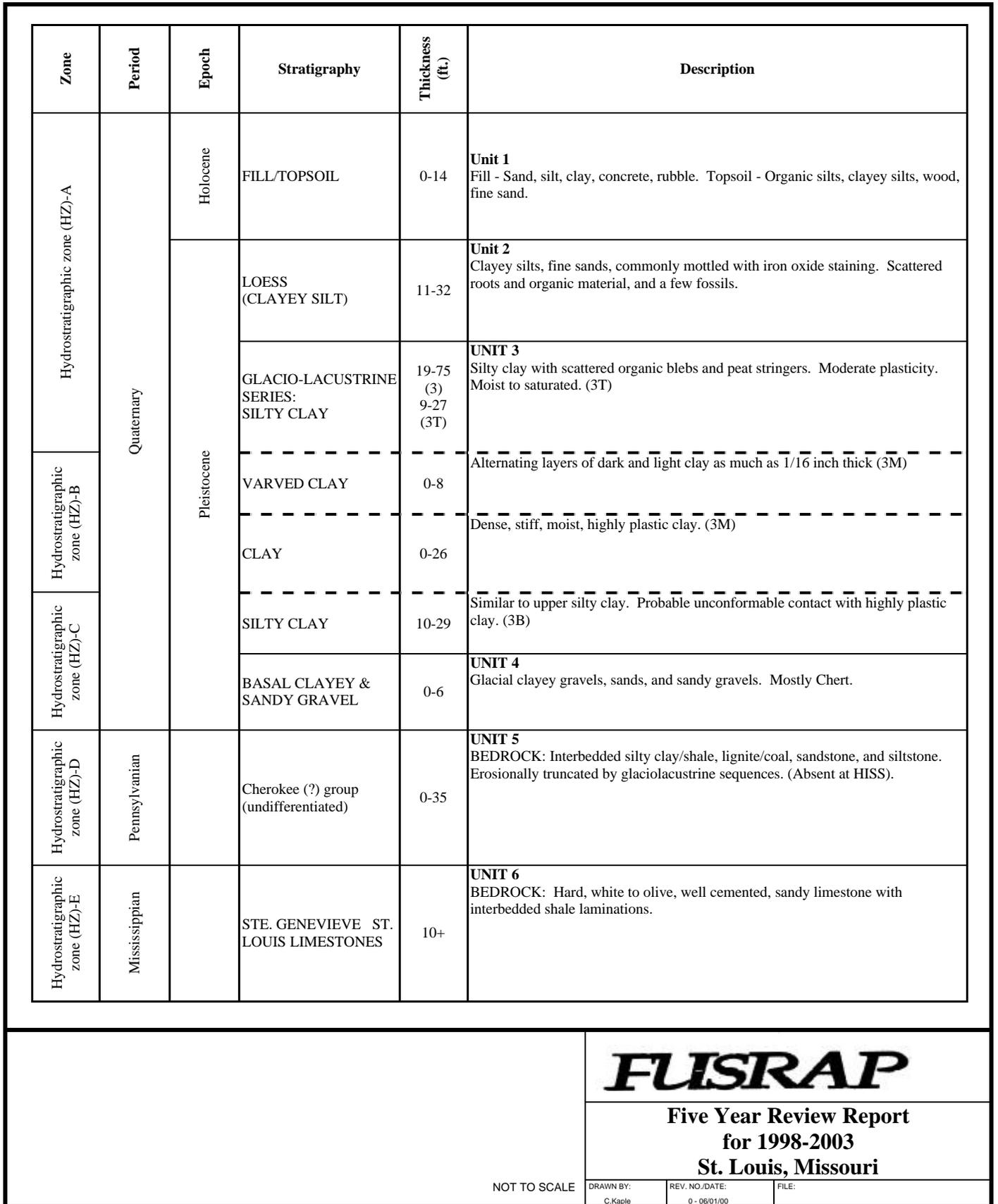


Figure III-6. Generalized Stratigraphic Column for the SLAPS and the HISS

material was dried and shipped to Canon City, Colorado. The material remaining at the Latty Avenue storage site was sold to Cotter Corporation in December 1969. From August through November 1970, Cotter Corporation dried some of the remaining residues and shipped them to its mill in Canon City. Over time, residues migrated from other sites or were deposited as the residues were hauled along transportation routes, contaminating the soils and sediments of the vicinity properties.

In 1979, the owner of the Futura property excavated approximately 13,000 yd<sup>3</sup> of soil and debris from the western portion of the property prior to constructing a manufacturing facility. This excavated material was placed at the eastern end of the HISS property in a storage pile, subsequently referred to as the Main Pile.

With regard to the Latty Avenue properties, DOE supported construction activities at the Futura property in 1984. These activities resulted in the generation of approximately 14,000 yd<sup>3</sup> of contaminated soil that were added to the Main Pile at the HISS. In 1986, the DOE provided radiological support to the cities of Hazelwood and Berkeley for a drainage and road improvement project along Latty Avenue. This project generated another approximately 4,600 yd<sup>3</sup> of contaminated material that was placed in a storage pile at the HISS. This storage pile later became known as the Supplemental Pile.

At the SLAPS, the first removal action was conducted by DOE in the spring of 1985. To mitigate gully erosion that had occurred in the western portion of the SLAPS along the bank of Coldwater Creek, a gabion retaining wall was constructed along the bank.

In 1996, the owner of the property to the east of the HISS/Futura Site, GIFREHC, in consultation with DOE, made commercial parking and drainage improvements on the property. These actions resulted in the creation of two contaminated soil piles on the southwest portion of the property, now referred to as VP-2(L). These piles were known as East Piles 1 and 2. A high-density polyethylene liner was placed over the material in both piles, followed by “clean” soil and a vegetative cover. In addition, two small piles, referred to as the HISS Railroad Spur Spoil Piles A and B (contaminated soil and debris), were generated during construction of the railroad spur onto the HISS in early 1999. Spoil Pile A was located between the Main Pile and the Supplemental Pile (created as a result of a 1986 drainage and road improvement project along Latty Avenue) and Spoil Pile B was located south of the Main Pile.

### **North St. Louis County Sites Initial Responses**

The USACE conducted a second removal action in the fall of 1997 to address contamination in an area immediately east of the gabion wall. Approximately 5,100 in-situ yd<sup>3</sup> of contaminated material were removed under this action and transported off-site pursuant to the 1997 EE/CA (DOE 1997a) and Action Memorandum (DOE 1997b).

Removal actions have also been conducted at several of the SLAPS VPs and other Latty Avenue VPs. In 1995, DOE excavated contaminated soil from six residential SLAPS VPs and two industrial Latty Avenue VPs pursuant to the 1992 EE/CA (DOE 1992) and 1995 Action Memorandum (DOE 1995).

## **North St. Louis County Sites Basis for Taking Action**

Previous characterization activities conducted at the North St. Louis County sites have determined that contamination related to MED/AEC activities is present in the accessible surface and subsurface soil of the site properties that requires response actions. The contamination detected resulted from the uncontrolled storage and subsequent transportation of MED/AEC affected materials generated at the SLDS. As agreed to under the FFA, all wastes resulting from or associated with uranium manufacturing or processing activities conducted at the SLDS are also subject to the response actions conducted at the North St. Louis County sites.