Grant Funded Public, Private, Partnership Brownfields to Community Trails

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PADEP Brownfields
October 3, 2018

PIDC 60 YEARS
Driving growth to every corner of Philadelphia

Driving growth to every corner of Philadelphia

WHO WE ARE . . .

- Philadelphia's public-private economic dev. corporation
- Mission – Spur investment, growth & development that creates new jobs, revitalizes neighborhoods & drives growth to every corner of Philadelphia
- How we can help:
  - Flexible financing programs
  - Real estate & development opportunities

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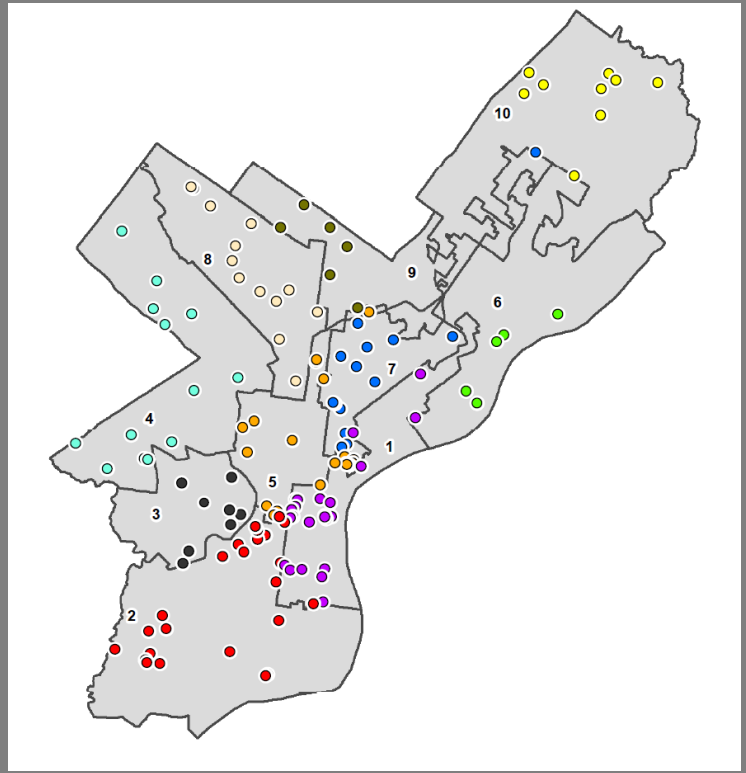
FLEXIBLE FINANCING PROGRAMS

BUSINESS LOANS
- Working Capital and Equipment Loans
- Capital Project Loans
- Contract Lines of Credit

PROJECT FINANCE
- Bridge Loans
- Subordinate Term Loans
- Welcome Fund (EB-5)
- Brownfield Remediation Loans

TAX ADVANTAGED FINANCING
- New Markets Tax Credits (NMTC)
- Tax Exempt Bond Program
- Tax Increment Financing (TIF)

GRANTS ADMINISTRATION
- PA Redevelopment Assistance Capital Program (RACP)
- Stormwater Management Incentives Program (SMIP)
- Brownfield Assessment & Remediation Grants



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REAL ESTATE & DEVELOPMENT OPPORTUNITIES

- **Industrial & Commercial Sites**
  - 175 acres in 6 industrial parks
  - City surplus properties
- **Lower Schuylkill**
  - 46 acres of riverfront property
- **Navy Yard**
  - 1,200-acre mixed-use campus
  - 7.5M SF, 150+ companies & 13K employees

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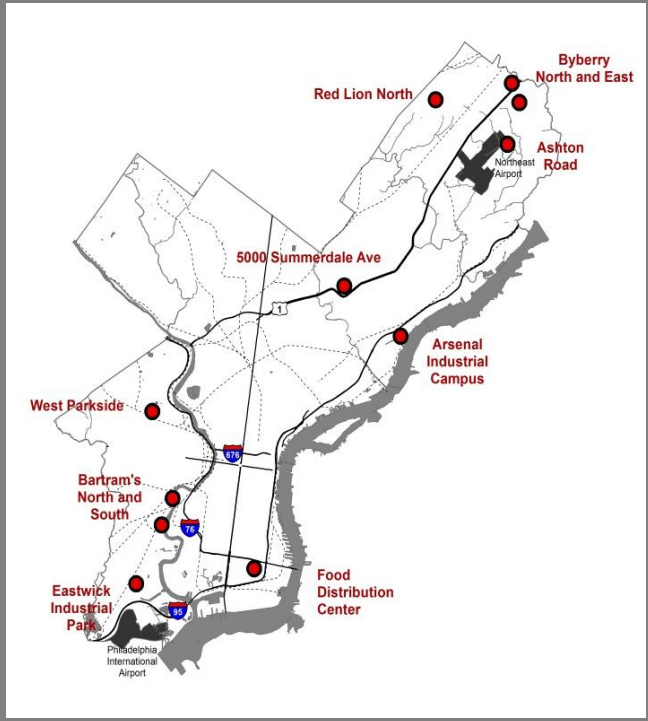
ASSISTANCE WITH REAL ESTATE AND DEVELOPMENT INCENTIVES

- **Keystone Opportunity Zones**
- **City's 10 Year Real Estate Tax Abatement**
- **Other City & State Programs**
  - RACP grant program
  - SMIP grant program
  - ISRP
  - Business in our Sites
  - Brownfield Assessment & Remediation Loans/Grants



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Former CSX Site

- Operations from 1800's - 1940
- Vacant since late 1940's
- Situated along existing Schuylkill River Trail
- PIDC US EPA Brownfields Grant
- Site provided opportunity to continue Schuylkill Banks River Trail
- Phase I and Phase II
- PIDC and Schuylkill River Development Corporation partnership

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Former CSX Site

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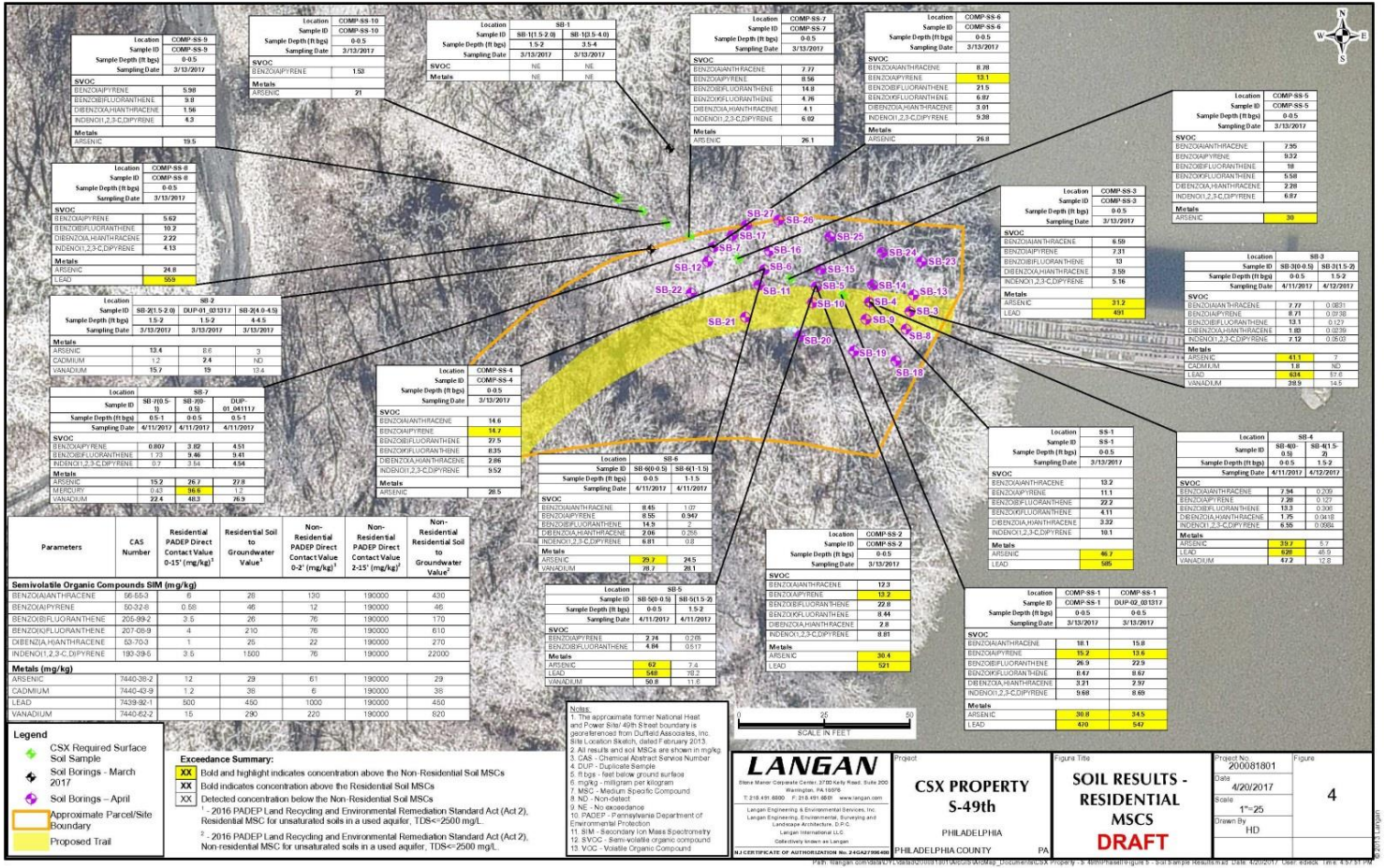
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DIBENZO(A,H)ANTHRACENE 1.56
INDENO(1,2,3-C,D)PYRENE 4.3
ARSENIC 19.5
COMP-SS-10
COMP-SS-10
0-0.5
3/13/2017
BENZO(A)PYRENE 1.53
ARSENIC 21
SB-1
SB-1(1.5-2.0)
SB-1(3.5-4.0)
1.5-2
3.5-4
3/13/2017
3/13/2017
NE
NE
NE
NE
COMP-SS-7
COMP-SS-7
0-0.5
3/13/2017
BENZO(A)ANTHRACENE 7.77
BENZO(A)PYRENE 8.56
BENZO(B)FLUORANTHENE 14.9
BENZO(K)FLUORANTHENE 4.76
DIBENZO(A,H)ANTHRACENE 4.1
INDENO(1,2,3-C,D)PYRENE 6.02
ARSENIC 26.1
COMP-SS-6
COMP-SS-6
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3/13/2017
BENZO(A)ANTHRACENE 8.78
BENZO(A)PYRENE 13.1
BENZO(B)FLUORANTHENE 21.5
BENZO(K)FLUORANTHENE 6.87
DIBENZO(A,H)ANTHRACENE 3.01
INDENO(1,2,3-C,D)PYRENE 9.38
ARSENIC 26.8
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COMP-SS-8
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BENZO(A)PYRENE 5.67
BENZO(B)FLUORANTHENE 10.2
DIBENZO(A,H)ANTHRACENE 2.22
INDENO(1,2,3-C,D)PYRENE 4.13
ARSENIC 24.8
LEAD 559
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COMP-SS-5
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BENZO(A)PYRENE 9.32
BENZO(B)FLUORANTHENE 18
BENZO(K)FLUORANTHENE 5.58
DIBENZO(A,H)ANTHRACENE 2.28
INDENO(1,2,3-C,D)PYRENE 6.87
ARSENIC 30
COMP-SS-3
COMP-SS-3
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BENZO(A)PYRENE 7.31
BENZO(B)FLUORANTHENE 13
DIBENZO(A,H)ANTHRACENE 3.59
INDENO(1,2,3-C,D)PYRENE 5.16
ARSENIC 31.2
LEAD 491
SB-2
SB-2(1.5-2.0)
DUP-01_031317
SB-2(4.0-4.5)
1.5-2
1.5-2
4-4.5
3/13/2017
3/13/2017
3/13/2017
ARSENIC 13.4 8.6 3
CADMIUM 1.2 2.4 ND
VANADIUM 15.7 19 13.4
SB-3
SB-3(0-0.5)
SB-3(1.5-2)
0-0.5
1.5-2
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4/12/2017
BENZO(A)ANTHRACENE 7.77 0.0831
BENZO(A)PYRENE 8.71 0.0738
BENZO(B)FLUORANTHENE 13.1 0.127
DIBENZO(A,H)ANTHRACENE 1.88 0.0239
INDENO(1,2,3-C,D)PYRENE 7.12 0.0808
ARSENIC 41.1 7
CADMIUM 1.8 ND
LEAD 634 57.6
VANADIUM 28.9 14.5
SB-7
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SB-7(0.5-0.5)
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4/11/2017
4/11/2017
BENZO(A)PYRENE 0.807 3.02 4.51
BENZO(B)FLUORANTHENE 1.73 3.46 5.41
INDENO(1,2,3-C,D)PYRENE 0.7 3.54 4.54
ARSENIC 15.2 26.7 27.8
MERCURY 0.43 36.5 1.2
VANADIUM 22.4 48.3 76.9
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BENZO(A)PYRENE 14.7
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BENZO(K)FLUORANTHENE 8.35
DIBENZO(A,H)ANTHRACENE 2.86
INDENO(1,2,3-C,D)PYRENE 9.52
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1-1.5
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4/11/2017
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BENZO(A)PYRENE 8.55 0.947
BENZO(B)FLUORANTHENE 14.5 2
DIBENZO(A,H)ANTHRACENE 2.06 0.256
INDENO(1,2,3-C,D)PYRENE 6.81 0.8
ARSENIC 29.7 24.5
VANADIUM 78.7 28.1
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SS-1
0-0.5
3/13/2017
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BENZO(A)PYRENE 11.1
BENZO(B)FLUORANTHENE 22.2
BENZO(K)FLUORANTHENE 4.11
DIBENZO(A,H)ANTHRACENE 3.22
INDENO(1,2,3-C,D)PYRENE 10.1
ARSENIC 46.7
LEAD 585
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SB-4(0-0.5)
SB-4(1.5-2)
0-0.5
1.5-2
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4/12/2017
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BENZO(A)PYRENE 7.88 0.127
BENZO(B)FLUORANTHENE 13.3 0.306
DIBENZO(A,H)ANTHRACENE 1.75 0.0418
INDENO(1,2,3-C,D)PYRENE 6.55 0.0984
ARSENIC 39.7 5.7
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VANADIUM 47.2 12.8
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COMP-SS-2
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BENZO(A)PYRENE 13.2
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BENZO(K)FLUORANTHENE 8.44
DIBENZO(A,H)ANTHRACENE 2.8
INDENO(1,2,3-C,D)PYRENE 8.81
ARSENIC 30.4
LEAD 521
SB-5
SB-5(0-0.5)
SB-5(1.5-2)
0-0.5
1.5-2
4/11/2017
4/11/2017
BENZO(A)PYRENE 2.74 0.218
BENZO(B)FLUORANTHENE 4.84 0.517
ARSENIC 62 7.4
LEAD 548 18.2
VANADIUM 50.8 11.6
COMP-SS-1
COMP-SS-1
DUP-02_031317
0-0.5
3/13/2017
BENZO(A)ANTHRACENE 18.1 15.8
BENZO(A)PYRENE 15.2 13.6
BENZO(B)FLUORANTHENE 26.9 22.9
BENZO(K)FLUORANTHENE 8.47 8.67
DIBENZO(A,H)ANTHRACENE 3.21 2.97
INDENO(1,2,3-C,D)PYRENE 9.68 8.69
ARSENIC 30.8 34.5
LEAD 470 547
Parameters
CAS Number
Residential PADEP Direct Contact Value 0-15' (mg/kg)[1]
Residential Soil to Groundwater Value[1]
Non-Residential PADEP Direct Contact Value 0-2' (mg/kg)[1]
Non-Residential PADEP Direct Contact Value 2-15' (mg/kg)[1]
Non-Residential Residential Soil to Groundwater Value[2]
Semivolatile Organic Compounds SIM (mg/kg)
BENZO(A)ANTHRACENE 56-55-3 6 28 130 190000 430
BENZO(A)PYRENE 50-32-8 0.68 46 12 190000 46
BENZO(B)FLUORANTHENE 205-99-2 3.5 26 76 190000 170
BENZO(K)FLUORANTHENE 207-08-9 4 210 76 190000 610
DIBENZ(A,H)ANTHRACENE 53-70-3 1 26 22 190000 270
INDENO(1,2,3-C,D)PYRENE 193-39-5 3.5 1000 76 190000 22000
Metals (mg/kg)
ARSENIC 7440-38-2 12 29 61 190000 29
CADMIUM 7440-43-9 1.2 38 6 190000 38
LEAD 7439-92-1 500 450 1000 190000 450
VANADIUM 7440-62-2 15 290 220 190000 820
Legend
CSX Required Surface Soil Sample
Soil Borings - March 2017
Soil Borings – April
Approximate Parcel/Site Boundary
Proposed Trail
Exceedance Summary:
XX Bold and highlight indicates concentration above the Non-Residential Soil MSCs
XX Bold indicates concentration above the Residential Soil MSCs
XX Detected concentration below the Non-Residential Soil MSCs
1 - 2016 PADEP Land Recycling and Environmental Remediation Standard Act (Act 2), Residential MSC for unsaturated soils in a used aquifer, TDS<=2500 mg/L.
2 - 2016 PADEP Land Recycling and Environmental Remediation Standard Act (Act 2), Non-residential MSC for unsaturated soils in a used aquifer, TDS<=2500 mg/L.
Notes:
1. The approximate former National Heat and Power Site/ 49th Street boundary is generalized from Duffield Associates, Inc. Site Location Sketch, dated February 2013.
2. All results and soil MSCs are shown in mg/kg.
3. CAS - Chemical Abstract Service Number
4. DUP - Duplicate Sample
5. ft bgs - feet below ground surface
6. mg/kg - milligram per kilogram
7. MSC - Medium Specific Compound
8. ND - Non-detect
9. NE - No exceedance
10. PADEP - Pennsylvania Department of Environmental Protection
11. SIM - Secondary Ion Mass Spectrometry
12. SVOC - Semi-volatile organic compound
13. VOC - Volatile Organic Compound
SB-27 SB-26 SB-17 SB-25 SB-7 SB-16 SB-24 SB-23 SB-12 SB-6 SB-15 SB-22 SB-11 SB-5 SB-14 SB-13 SB-10 SB-4 SB-3 SB-21 SB-9 SB-8 SB-20 SB-19 SB-18
0 25 50
SCALE IN FEET
LANGAN
Project
CSX PROPERTY S-49th
PHILADELPHIA
PHILADELPHIA COUNTY PA
Figure Title
SOIL RESULTS - RESIDENTIAL MSCS
DRAFT
Project No. 200081801
Date 4/20/2017
Scale 1"=25
Drawn By HD
Figure 4
©2017 Langan

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Technical Requirements: Site Specific Standard

- **Cumulative risk assessment**
  - Sum incremental lifetime cancer risks
  - Sum hazard quotients for non-carcinogens
- PADEP adopts USEPA's NCP risk management range for carcinogens of 1E-06 to 1E-04 ***incremental*** risk
- Hazard Index must be less than one for chemicals with the same target organ or systemic effect

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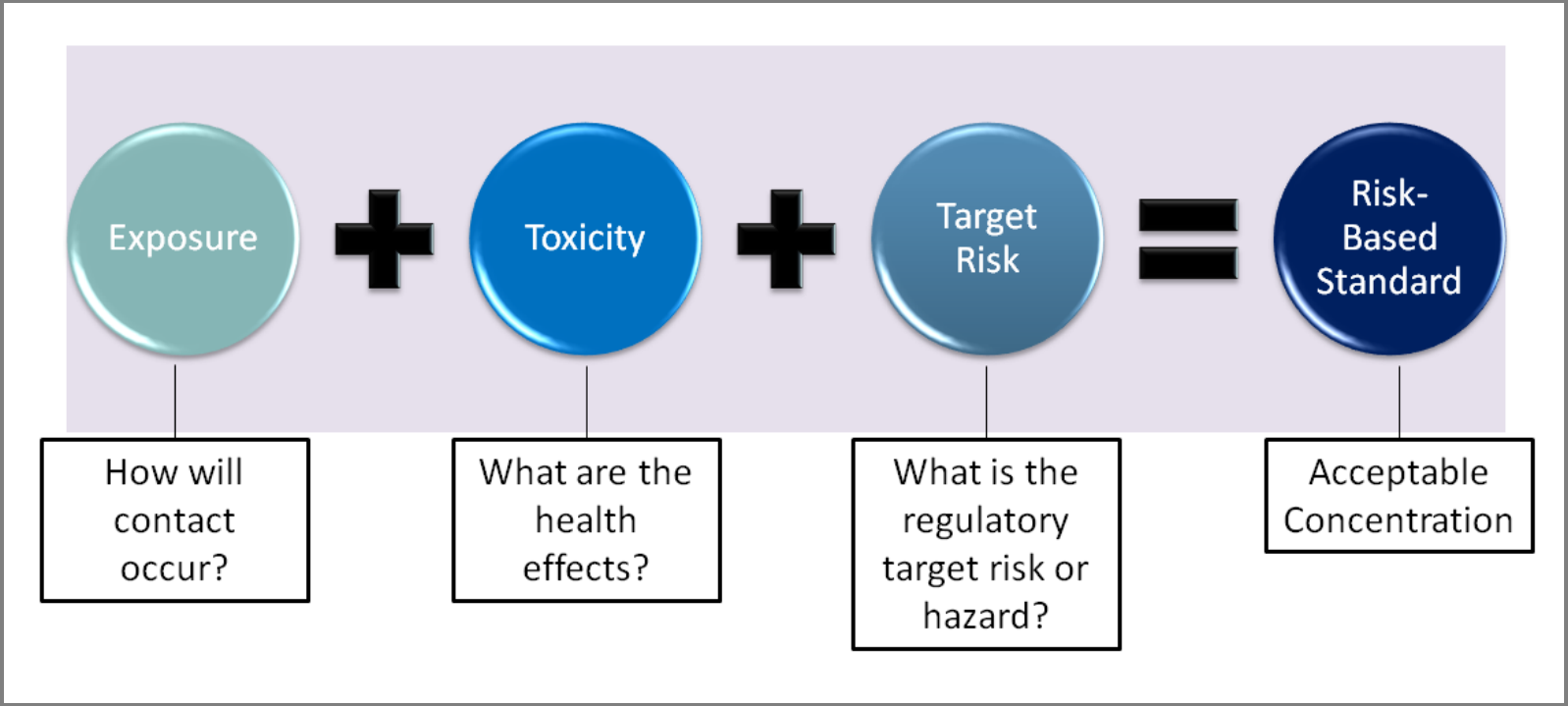
Risk-Based Standard



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Conceptual Site Model

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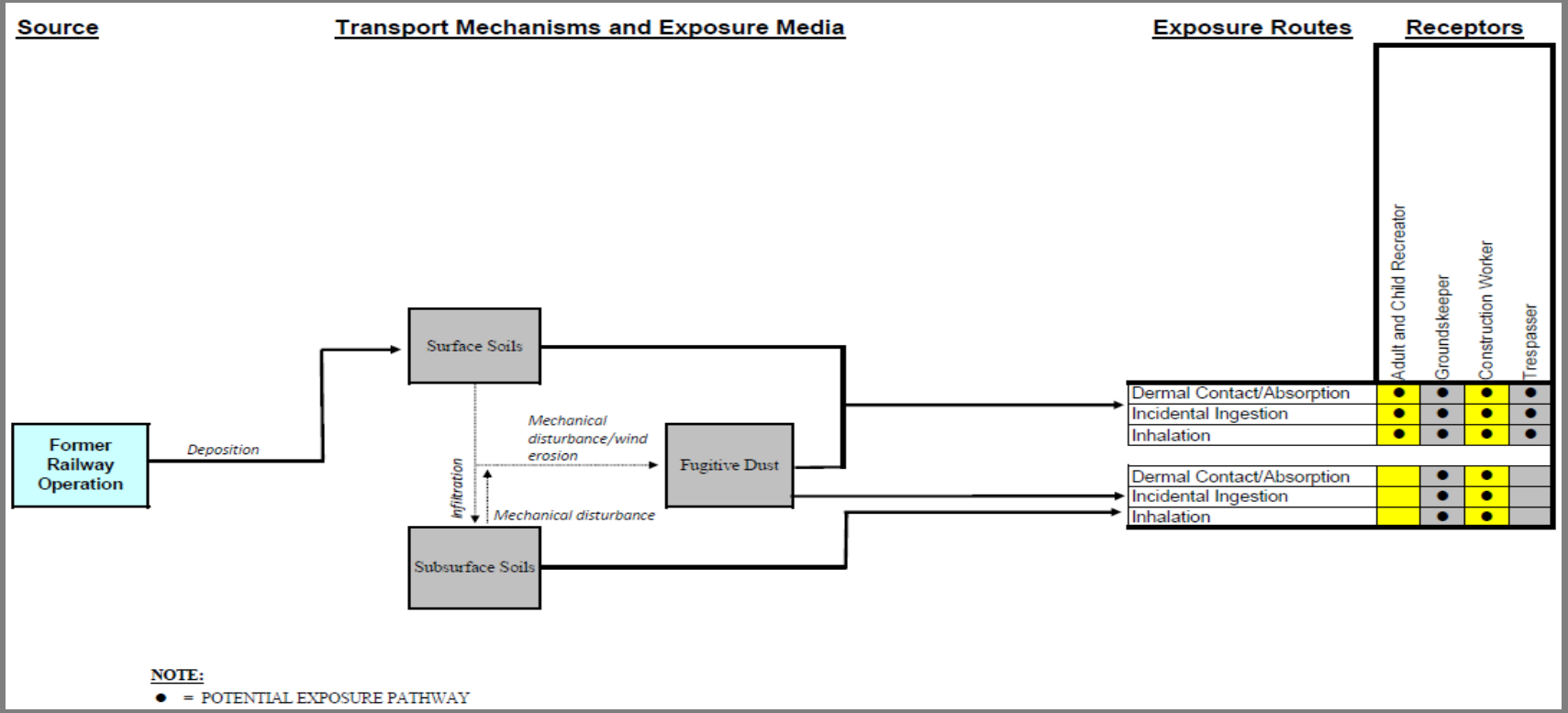
Exposure Assessment



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Risk Characterization: Cancer Risk

$$\text{Cumulative Risk} = \sum_{i} \text{Risk}_i$$

Chemical	Concentration (mg/kg)	Ingestion Risk	Dermal Risk	Inhalation Risk	Carcinogenic Risk
Antimony (metallic)	10.1	-	-	-	-
Arsenic, Inorganic	29.6	8.21E-06	1.15E-06	1.25E-10	9.36E-06
Benz[a]anthracene	5	6.99E-07	2.33E-07	2.53E-08	9.58E-07
Benzo[a]pyrene	4.76	6.66E-06	2.22E-06	7.78E-12	8.89E-06
Benzo[b]fluoranthene	8.82	1.23E-06	4.12E-07	1.44E-12	1.65E-06
Benzo[k]fluoranthene	1.92	2.68E-08	8.94E-09	3.13E-14	3.57E-08
Cobalt	9.78	-	-	8.66E-11	8.66E-11
Copper	154	-	-	-	-
Dibenz[a,h]anthracene	1.22	1.71E-06	5.71E-07	2.00E-12	2.28E-06
Indeno[1,2,3-cd]pyrene	5.69	7.96E-07	2.66E-07	9.29E-13	1.06E-06
Mercuric Chloride	20.9	-	-	-	-
Vanadium and Compounds	38.8	-	-	-	-
Zinc and Compounds	1170	-	-	-	
*Total Risk	-	1.93E-05	4.87E-06	2.55E-08	2.42E-05

Results indicated all receptors would incur an acceptable incremental increase in cancer risk from exposure to chemicals at the site

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Risk Characterization: Non-cancer Hazard

$$HI = \sum_i HQ_i$$

Chemical	Concentration (mg/kg)	Ingestion Child HQ	Dermal Child HQ	Inhalation Child HQ	Non-cancer Child HI	Ingestion Adult HQ	Dermal Adult HQ	Inhalation Adult HQ	Non-cancer Adult HI
Antimony (metallic)	10.1	0.07	-	-	0.07	0.007	-	-	0.007
Arsenic, Inorganic	29.6	0.2	0.02	0.000005	0.2	0.02	0.003	0.000005	0.02
Benz[a]anthracene	5	-	-	-	-	-	-	-	-
Benzo[a]pyrene	4.76	0.04	0.01	0.000006	0.06	0.004	0.002	0.000006	0.006
Benzo[b]fluoranthene	8.82	-	-	-	-	-	-	-	-
Benzo[k]fluoranthene	1.92	-	-	-	-	-	-	-	-
Cobalt	9.78	0.09	-	0.000004	0.09	0.008	-	0.000004	0.008
Copper	154	0.01	-	-	0.01	0.001	-	-	0.001
Dibenz[a,h]anthracene	1.22	-	-	-	-	-	-	-	-
Indeno[1,2,3-cd]pyrene	5.69	-	-	-	-	-	-	-	-
Mercuric Chloride	20.9	0.2	-	0.0000002	0.2	0.02	-	0.0000002	0.02
Vanadium and Compounds	38.8	0.02	-	0.000001	0.02	0.002	-	0.000001	0.002
Zinc and Compounds	1170	0.01	-	-	0.01	0.001	-	-	0.001
*Total Risk	-	0.6	0.03	0.00002	0.6	0.06	0.005	0.00002	0.06

Results indicated the health hazard index was below the threshold level of one for all receptors

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Former CSX Site - Proposed Final Grade

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