Site Status Report
Patrick Bayou Superfund Site
Deer Park, TX

Prepared by:

US Environmental Protection Agency

Region 6

Executive Summary

- The Patrick Bayou Superfund site is a 2.5 mile long tributary of the Houston Ship Channel located in an industrial area of Deer Park, TX, surrounded by operating petro-chemical plants and receives run-off from residential, commercial, and industrial properties in the drainage basin.
- Historical investigations have been conducted since 1993 by the TMDL group, TCEQ & others
- Superfund investigations began after the AOC was signed in 2006
- Several phases of field investigation activities (from 2006 – 2011) have been completed and evaluation of site risk is currently under progress.

Executive Summary

- The lead agency is the US EPA; cooperatively working with TCEQ, NOAA, US Fish and Wildlife, TX GLO and TX Parks & Wildlife.
- The Respondents include Shell, Lubrizol and Occidental Chemical, who are working cooperatively with EPA, TCEQ, state and federal Trustees and who have also worked cooperatively with regulators on other TMDL-related projects.

Remedial Investigation Timeline
2006 - 2012

Oct 2006
Hydrodynamic data collection and sediment coring

Nov 2008
Sediment mixing zone evaluation

Oct 2009
Surface water & sediment COPC delineation

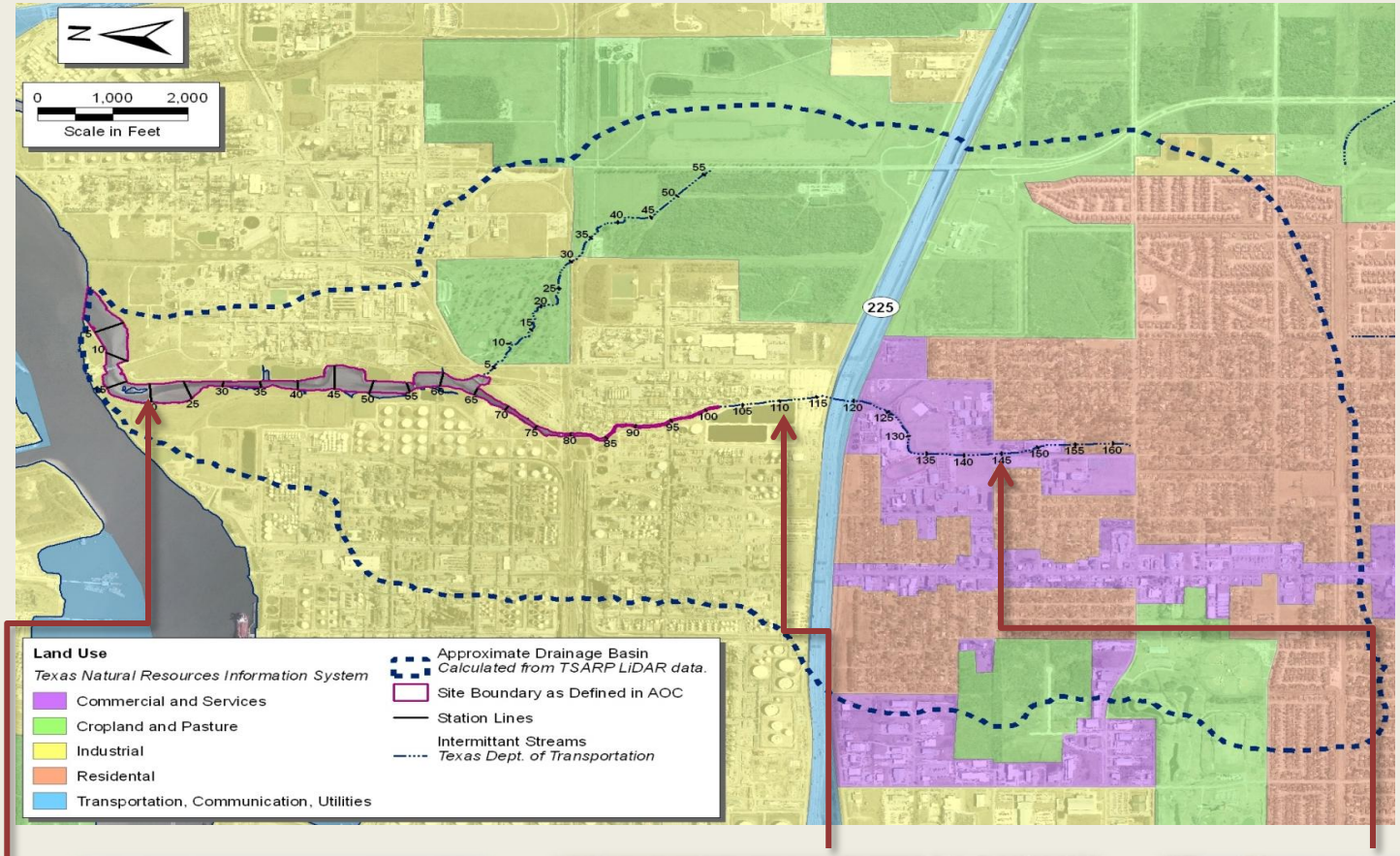
June – Oct 2011
Fish and shellfish sampling for Eco and Human Health Risk Assessment

Aug 2007
Sediment transport model data collection and pore water sampling

June 2009
Stormwater sampling & upstream source evaluation

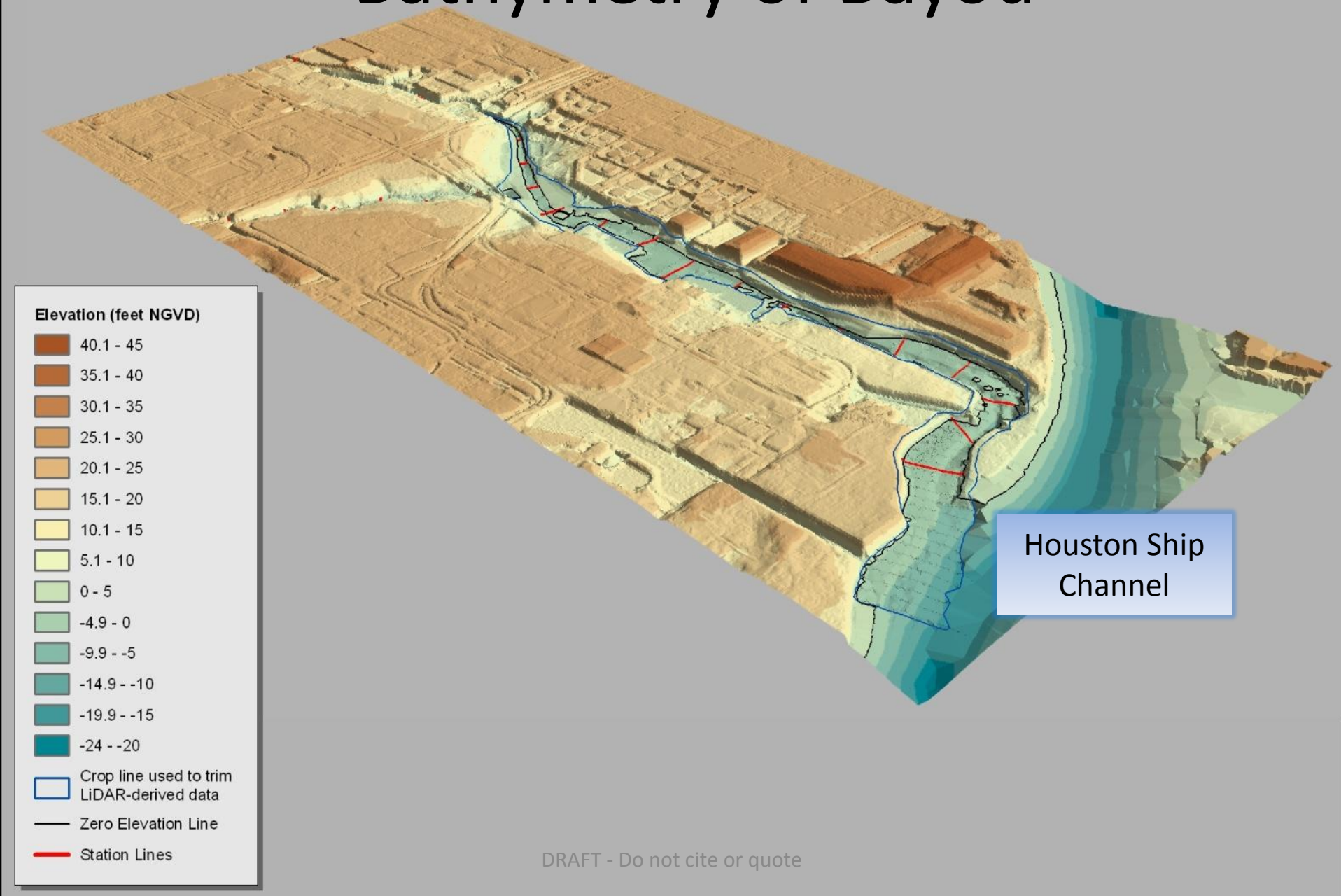
Aug 2011
Upstream source characterization sampling

Surrounding Land Use



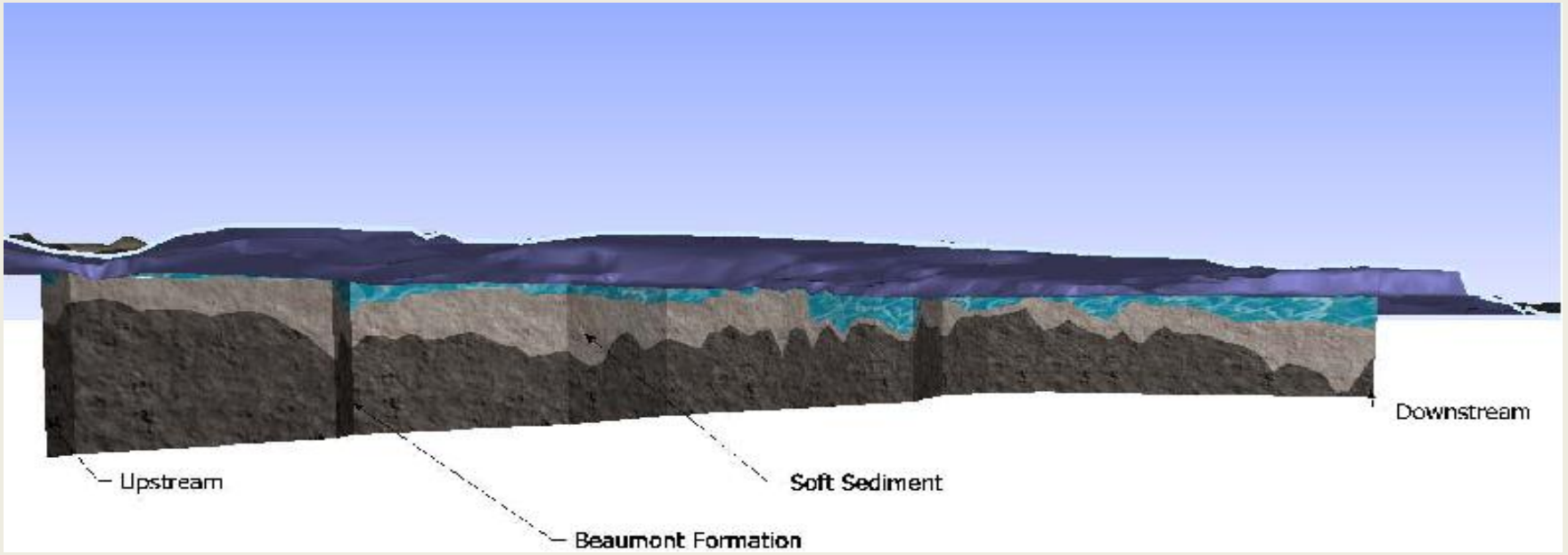
- Upstream areas serve as primary storm water conveyance for City of Deer Park
- Downstream areas are bordered by industrial facilities
- The Bayou ranges from 40 to 450 feet wide

Bathymetry of Bayou

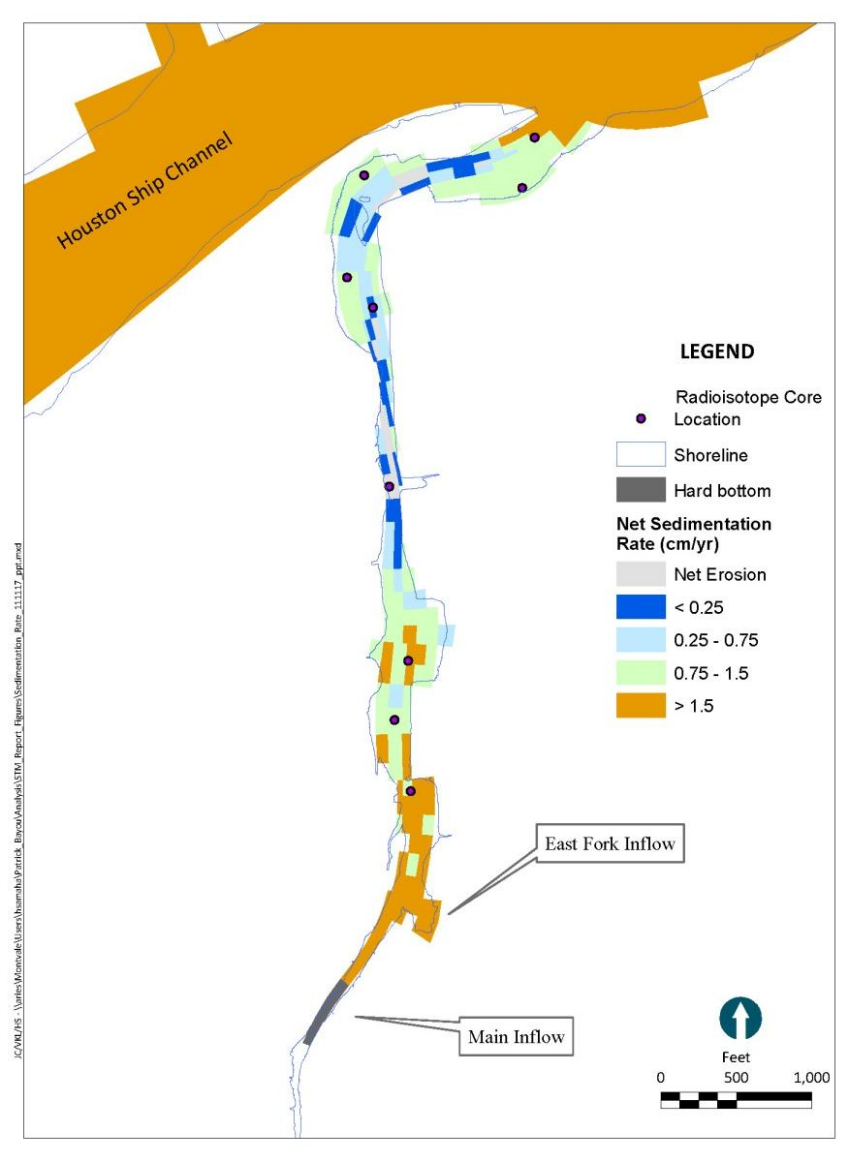


Site Description

- Soft sediments are primarily silty sands and clays
- Soft sediment thickness generally 2 to 6 feet

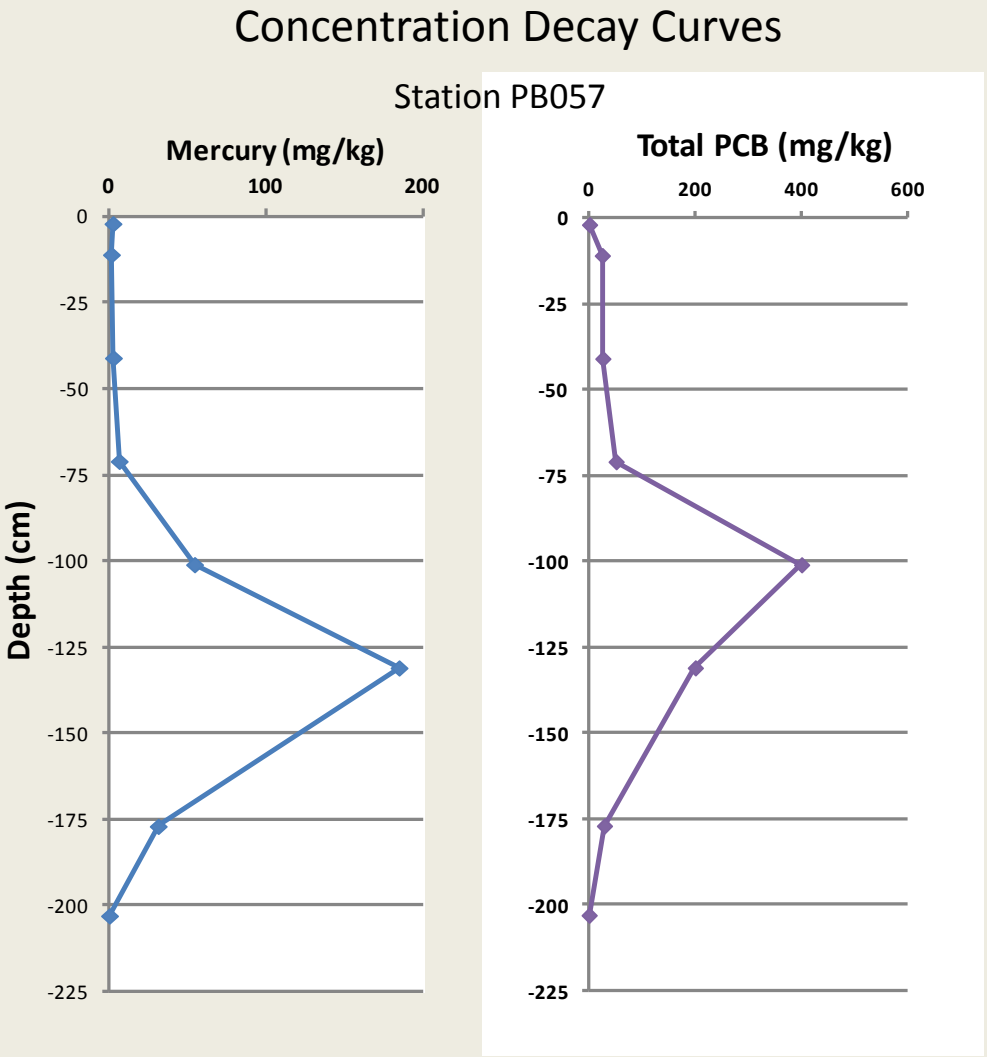


Sediment Deposition Rates



- The Bayou is nearly an entirely depositional environment, reducing risk of exposure to contaminated sediments
- Deposition rates vary across the Bayou

Subsurface Contaminant Levels



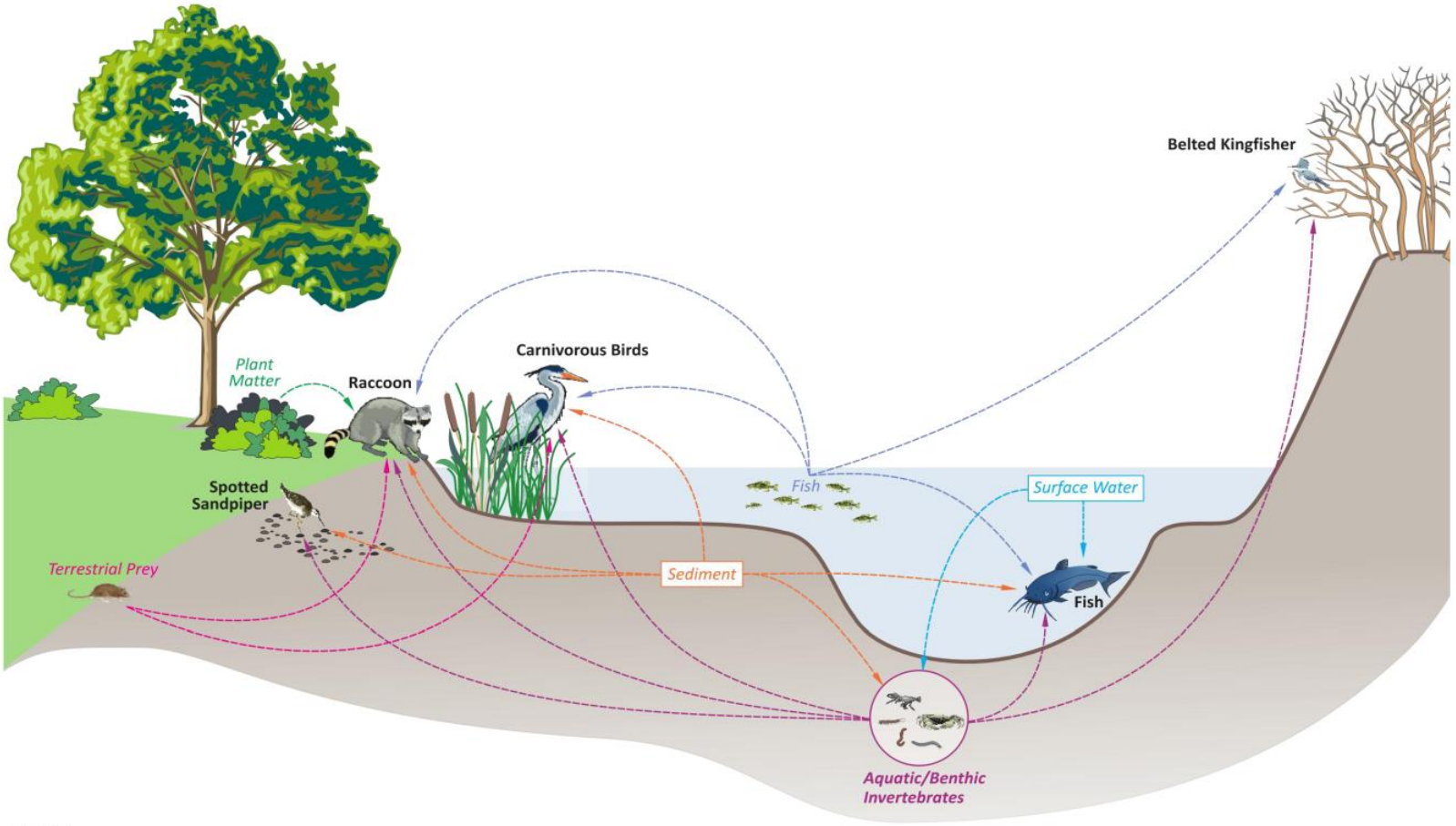
- Contamination is associated with historical discharges.
- Surface levels of contaminants are decreasing at an observable and predictable rate.

Risk Assessment

- Contaminants of Potential Concern (COPC) have been identified for human and ecological receptors
- Assessment of current risks is in progress using sediment, surface water, and fish & shellfish tissue data collected from the site

Risk Assessment Sampling Locations

Potential Ecological Receptors for Evaluation



NOTES:

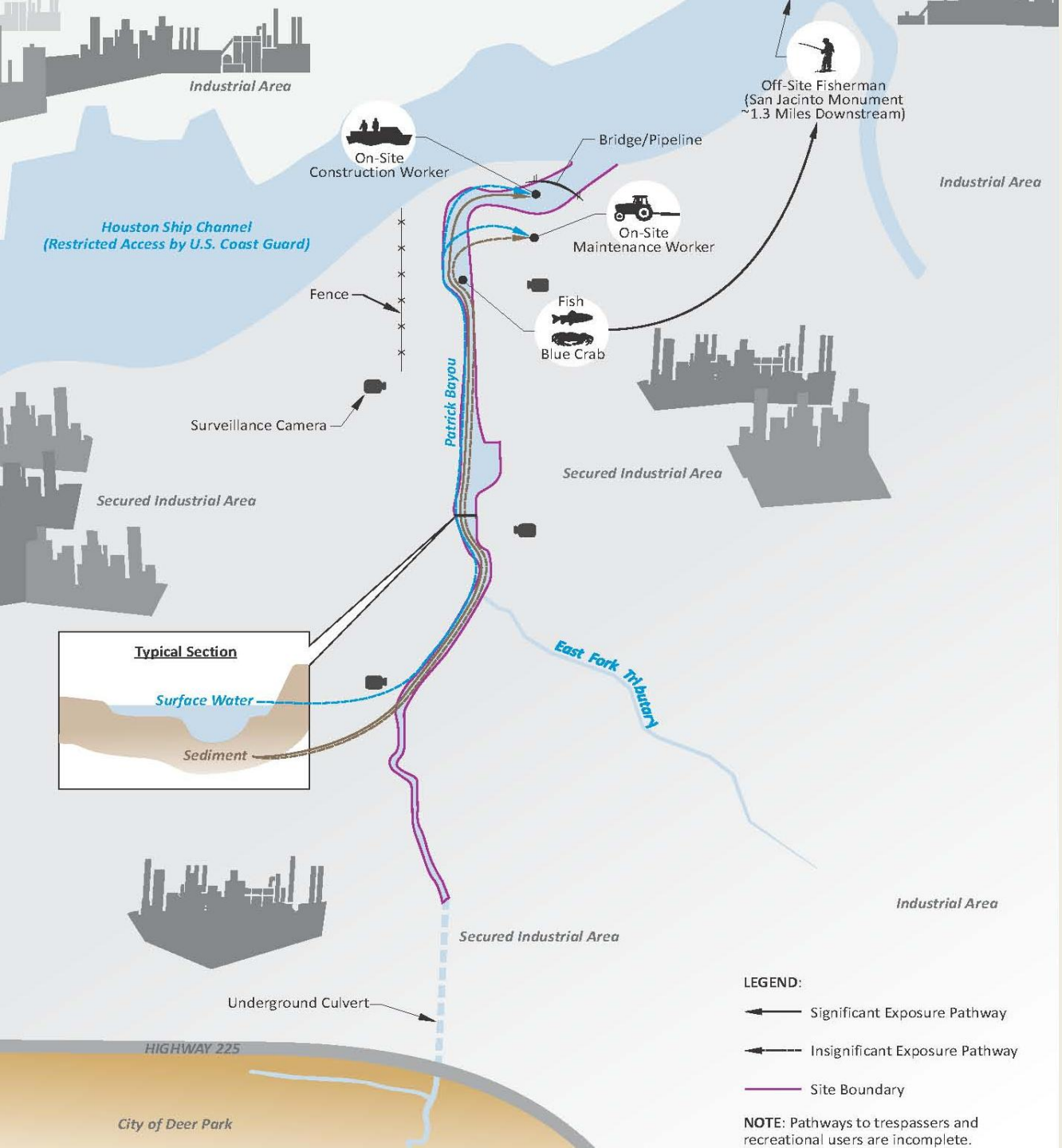
1. Only complete and major pathways are illustrated. Receptors (i.e. mink/otter, omnivorous birds, reptiles/amphibians), media (i.e. air), and incomplete/minor pathways that are not illustrated will not be assessed quantitatively in the BERA.
2. Aquatic/Benthic Invertebrates are are both prey items and receptors.

LEGEND:

Exposure Media/Prey are *Italicized*

Receptors are **Bolded**

Patrick Bayou Superfund Site Ecological Conceptual Site Model



Human Health Conceptual Exposure Model

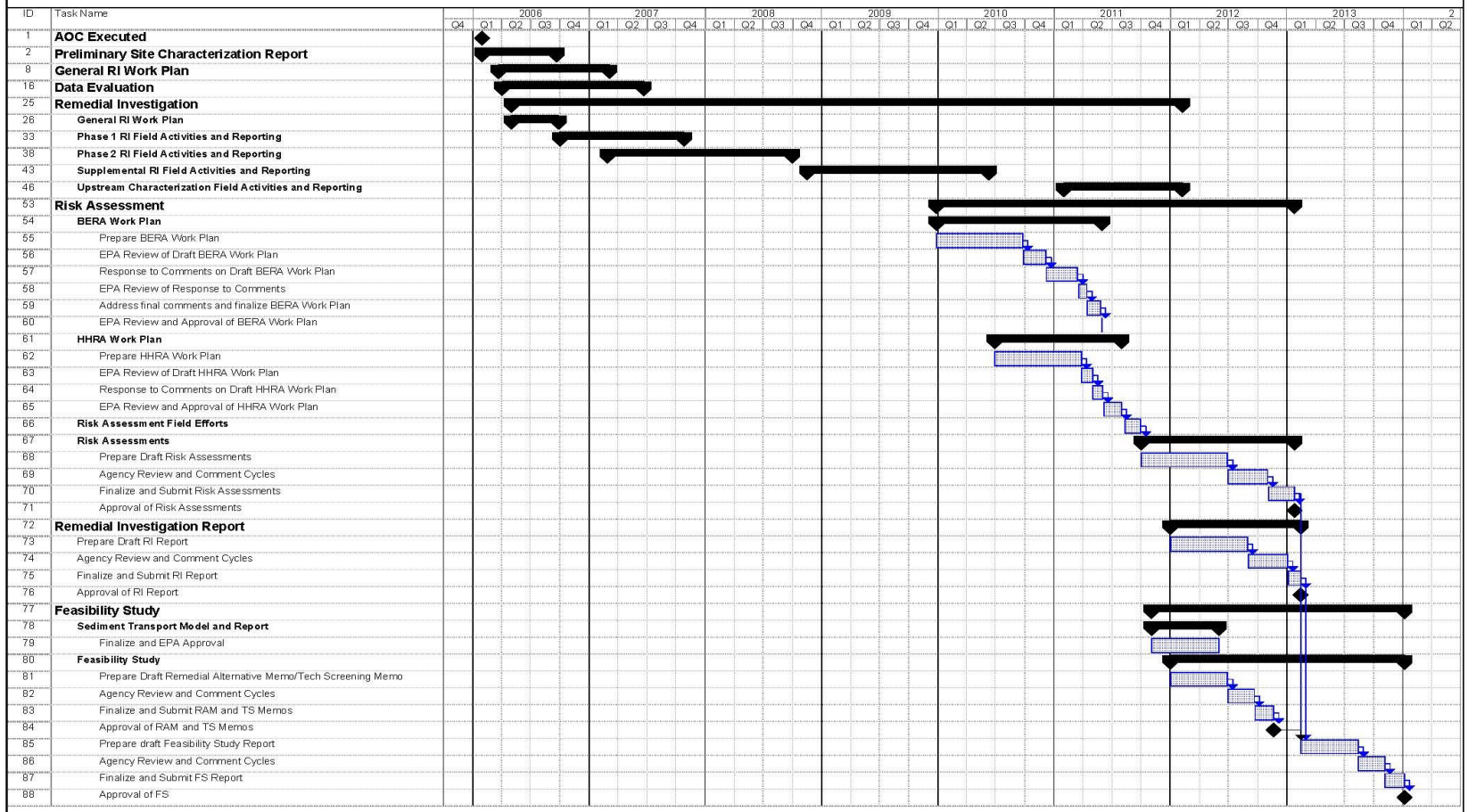
Next Steps

- Complete the evaluation phase of the remedial investigation in mid-2012
  - Draft Remedial Investigation Report
  - Draft Baseline Human Health Risk Assessment
  - Draft Baseline Ecological Risk Assessment
- Initiate Feasibility Study activities – January 2012

Schedule

Project Schedule — Patrick Bayou Superfund Site — Patrick Bayou JDG RI/FS

ID	Task Name
1	**AOC Executed**
2	**Preliminary Site Characterization Report**
8	**General RI Work Plan**
16	**Data Evaluation**
25	**Remedial Investigation**
26	**General RI Work Plan**
33	**Phase 1 RI Field Activities and Reporting**
38	**Phase 2 RI Field Activities and Reporting**
43	**Supplemental RI Field Activities and Reporting**
46	**Upstream Characterization Field Activities and Reporting**
53	**Risk Assessment**
54	**BERA Work Plan**
55	Prepare BERA Work Plan
56	EPA Review of Draft BERA Work Plan
57	Response to Comments on Draft BERA Work Plan
58	EPA Review of Response to Comments
59	Address final comments and finalize BERA Work Plan
60	EPA Review and Approval of BERA Work Plan
61	**HHRA Work Plan**
62	Prepare HHRA Work Plan
63	EPA Review of Draft HHRA Work Plan
64	Response to Comments on Draft HHRA Work Plan
65	EPA Review and Approval of HHRA Work Plan
66	**Risk Assessment Field Efforts**
67	**Risk Assessments**
68	Prepare Draft Risk Assessments
69	Agency Review and Comment Cycles
70	Finalize and Submit Risk Assessments
71	Approval of Risk Assessments
72	**Remedial Investigation Report**
73	Prepare Draft RI Report
74	Agency Review and Comment Cycles
75	Finalize and Submit RI Report
76	Approval of RI Report
77	**Feasibility Study**
78	**Sediment Transport Model and Report**
79	Finalize and EPA Approval
80	**Feasibility Study**
81	Prepare Draft Remedial Alternative Memo/Tech Screening Memo
82	Agency Review and Comment Cycles
83	Finalize and Submit RAM and TS Memos
84	Approval of RAM and TS Memos
85	Prepare draft Feasibility Study Report
86	Agency Review and Comment Cycles
87	Finalize and Submit FS Report
88	Approval of FS



Project: Patrick Bayou
Date: Mon 3/26/12

Task — Progress — Summary — External Tasks — Split
Split — Milestone — Project Summary — External MileTask