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**St. John's River Power Park
CCR Rule Public Meeting**



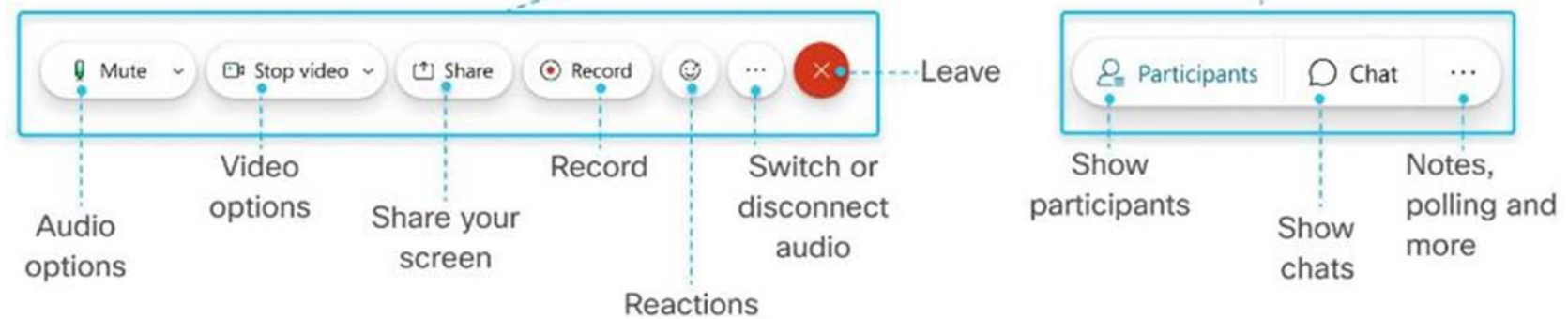
LOGISTICS

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**JEA SJRPP
CCR Public Meeting**

WebEx Overview





AGENDA

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**JEA SJRPP
CCR Public Meeting**

Overview

- Introductions
- Purpose
- Technical presentation
- Public Comments
- Conclusion

Meeting Purpose

- To discuss potential groundwater corrective measures in a public meeting at least 30 days prior to selecting a remedy.
- 40 CFR 257.96



TECHNICAL PRESENTATION

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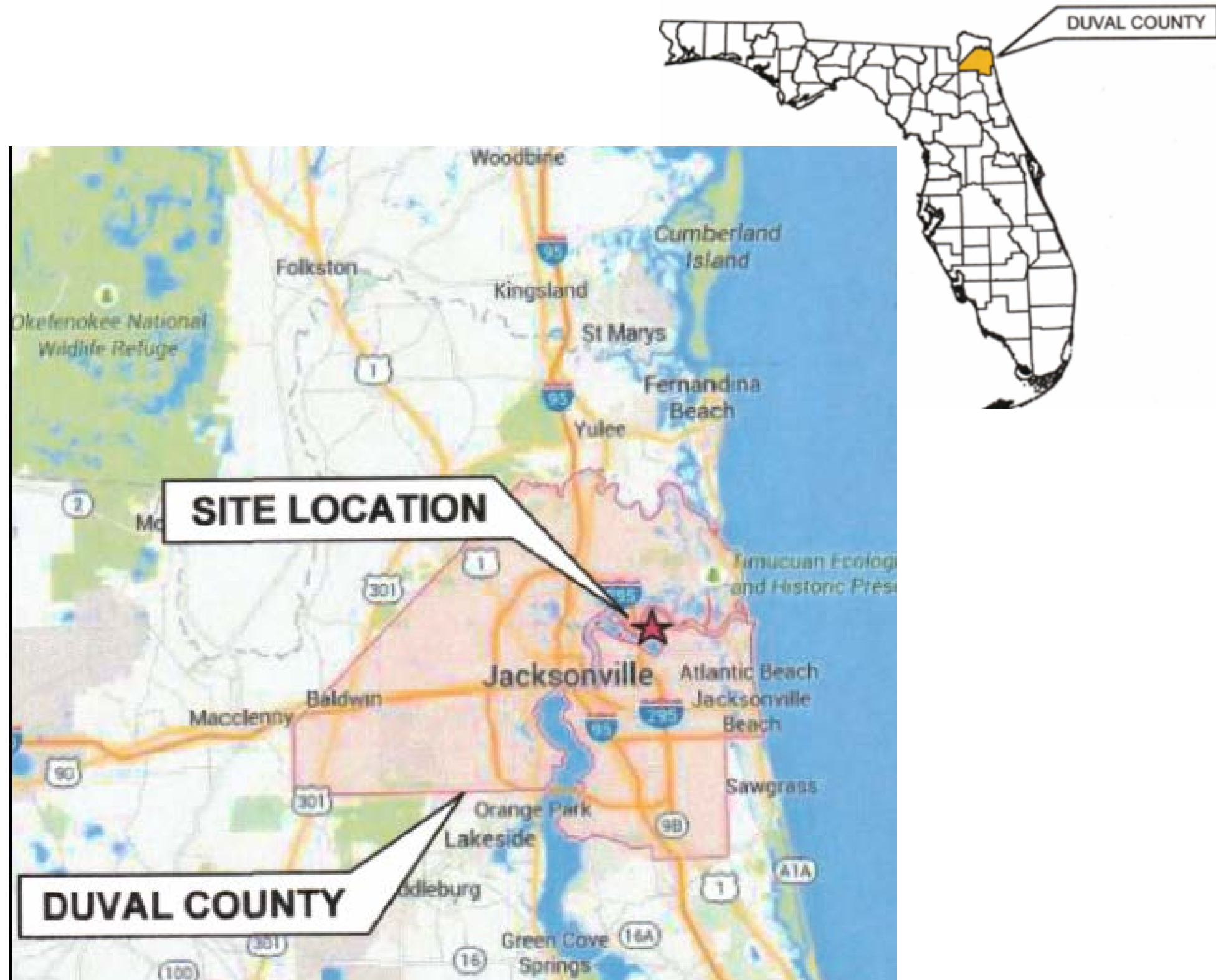


**JEA SJRPP
CCR Public Meeting**

Overview

- Introduction
- Groundwater Monitoring Network
- Detection Monitoring Program
- Assessment Monitoring Program
- Assessment of Corrective Measures (ACM)
- Remedy Selection Process

- Community owned utility providing electric, water and sewer.
- 478,000 electric, 357,000 water, 279,000 sewer and 15,000 reclaimed water customers.
- SJRPP is jointly owned by JEA & FP&L.



- Placed in service in 1987.
- Two coal-fired steam electric generation units with 1360 MW electric capacity.
- Decommission in 2018, completion 2021.
- Area B began operation in January 2009.



Coal Combustion Residuals (CCR) Rule

CCR Rule 40 CFR 257

- April 2015, US EPA finalized the Disposal of Coal Combustion Residuals Rule for Electric Utilities.
- Established federal requirements on the management of CCRs and additional groundwater monitoring and corrective action requirements.
- CCRs are byproducts generated from the combustion of coal.

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INTRODUCTION

Coal Combustion Residuals (CCR) Rule

CCR Rule 40 CFR 257

- Fly ash, bottom ash and synthetic gypsum were primary CCRs generated at SJRPP.
- CCRs not beneficially reused were managed at the onsite Byproduct Storage Area – Area B.
- JEA monitored groundwater conditions at the site, installed additional MWs, and implemented monitoring programs in accordance with the CCR rule.

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INTRODUCTION

CCR groundwater monitoring well network comprised of:

- 3 upgradient/background wells (CCR-1, CCR-2 & CCR-3)
- 4 downgradient/detection wells (CCR-4, CCR-5, CCR-6 & CCR-7)
- Screened in upper surficial aquifer
- Downgradient wells located as close a practical to waste boundary,
- Upgradient wells in areas not impacted by CCR unit.

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GROUNDWATER MONITORING



Detection Monitoring Program

Background Monitoring

Collection of minimum of eight independent groundwater samples for Appendix III and Appendix IV parameters. Establish background groundwater conditions.

Detection Monitoring

Semi-annual groundwater monitoring of Appendix III parameters

Statistical Analysis

Statistical analysis of downgradient well results identified statistically significant increases (SSIs) of boron, calcium, chloride, fluoride, sulfate and total dissolved solids over background (upgradient) conditions.

Appendix III

Boron
Calcium
Chloride
Fluoride

pH
Sulfate
Total Dissolved
Solids

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**GROUNDWATER
MONITORING**

Assessment Monitoring Program

Annual Event

Analyzes for all Appendix IV parameters.

Establish groundwater protection standards (GWPS)

Semi-Annual Monitoring

Subsequent semi-annual events analyze for detected Appendix IV parameters and all Appendix III parameters.

Statistical Analysis

October 2018 – Radium 226+228 at CCR-6 identified at SSL above GWPS

May 2020 – Radium 226+228 at CCR-7 identified at SSL above GWPS

September 2020 – Molybdenum at CCR-6 identified at SSL above GWPS

Appendix IV

Antimony
Arsenic
Barium
Beryllium
Cadmium

Cobalt
Fluoride
Lead
Lithium
Mercury

Molybdenum
Selenium
Thallium
Radium 226+228

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**GROUNDWATER
MONITORING**

CHARACTERIZATION SAMPLING

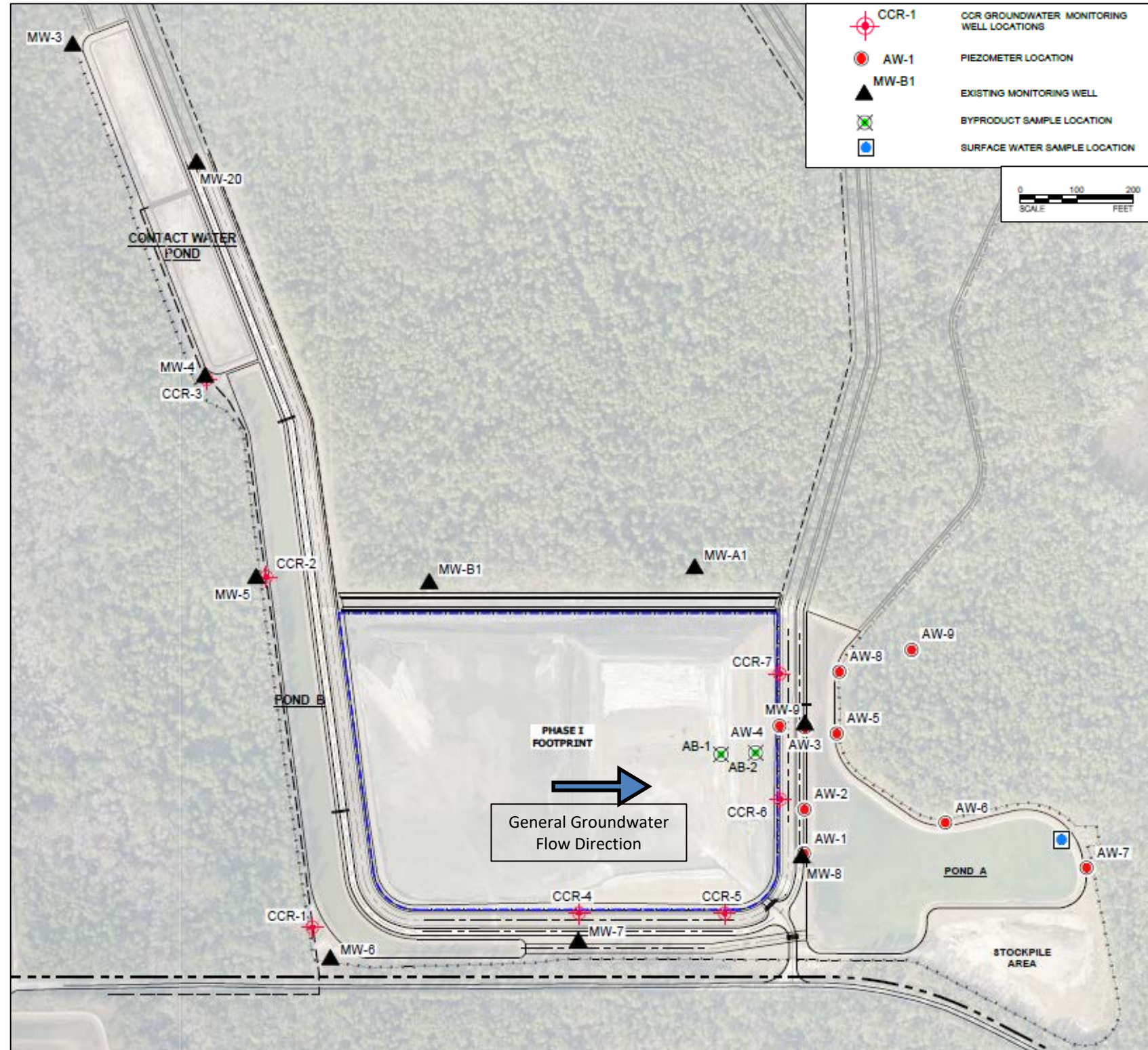
Nature and extent evaluation for SSLs included monitoring well installation (AW-series), soil sampling, groundwater sampling (shallow and intermediate zones), surface water sampling, and byproduct sampling.

- Lateral extent of radium 226+228 generally between 100 and 200 feet downgradient
- Lateral extent of molybdenum within 100 feet downgradient
- Vertical extents limited to shallow surficial aquifer
- No surface water impacts

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GROUNDWATER MONITORING



ASSESSMENT OF CORRECTIVE MEASURES

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ASSESSMENT OF CORRECTIVE MEASURES

SCREENING CRITERIA - 257.96(c)

- Effectiveness
- Performance and reliability
- Ease or difficulty of implementation
- Potential impacts (safety, cross-media impacts, residual contamination exposure)
- Timeframe to begin and complete the remedy
- Institutional requirements (i.e state/local permits)

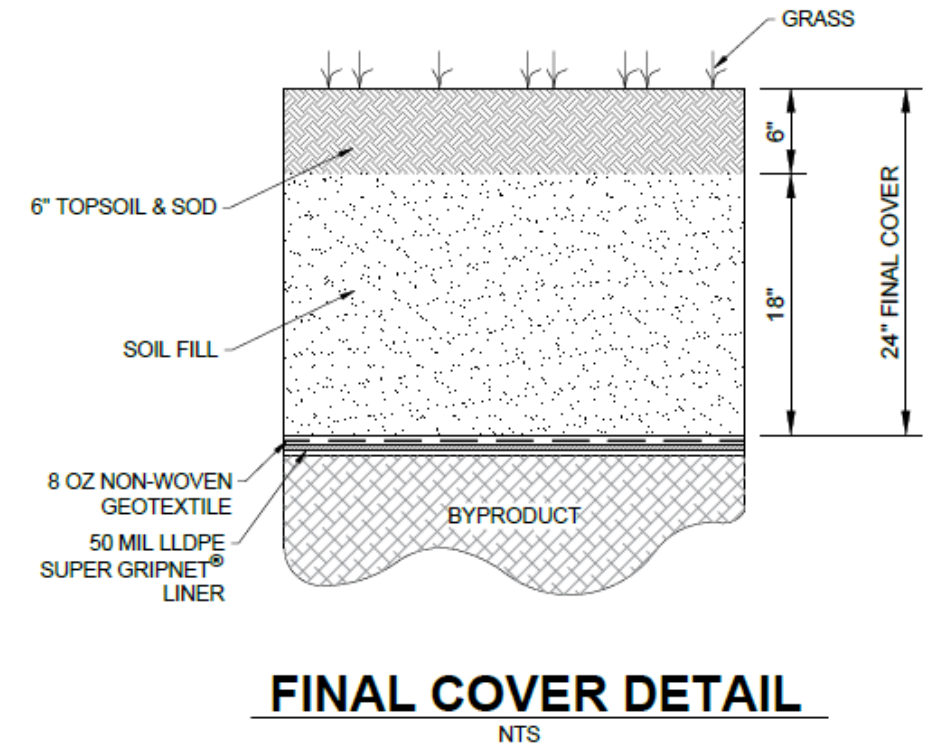
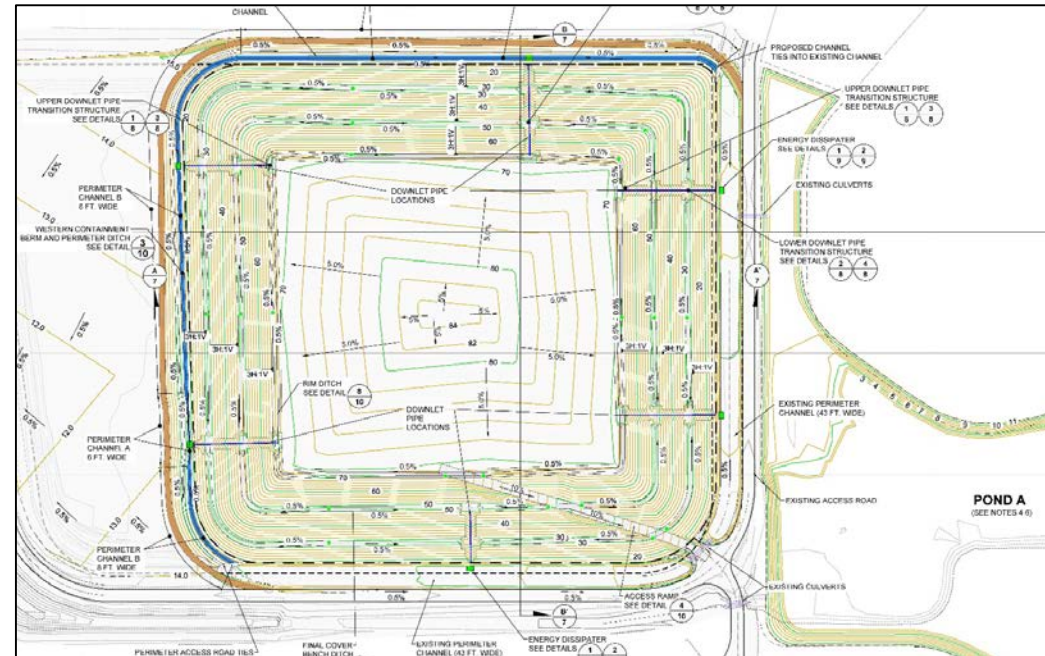
REMEDY OBJECTIVES - 257.97(b)

- Be protective of human health and the environment
- Attain the GWPS
- Control the source of release to reduce or eliminate further releases
- Remove from the environment as much contaminated material as feasible
- Comply with relevant standards (i.e. RCRA) for management of waste materials generated by the remedy

Source Control

Closure of Area B is scheduled to commence in December 2020.

Final Cover Construction at Area B will effectively eliminate further releases, substantially reducing infiltration through waste into underlying aquifer



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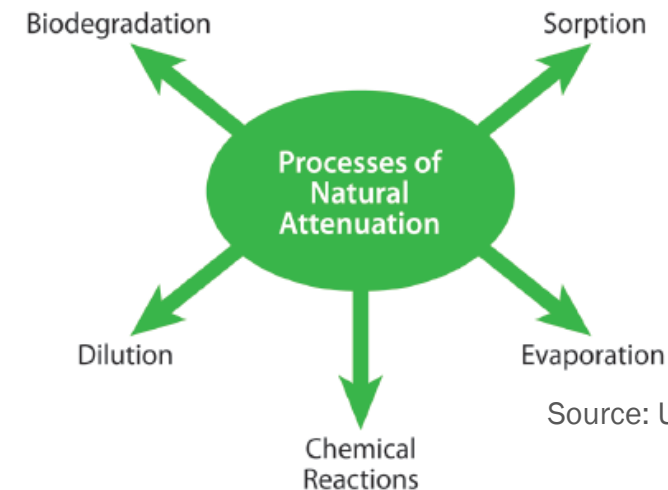


ASSESSMENT OF CORRECTIVE MEASURES

Monitored Natural Attenuation & Enhanced Monitored Natural Attenuation

Reliance on natural attenuation processes to achieve remediation objectives.

Tier	Objective
Tier I	Demonstrate the groundwater plume is stable and immobilization is occurring
Tier II	Determine mechanism and rate of attenuation
Tier III	Determine system capacity and stability of attenuation
Tier IV	Design performance monitoring program and contingency plan



Source: USEPA. 2012

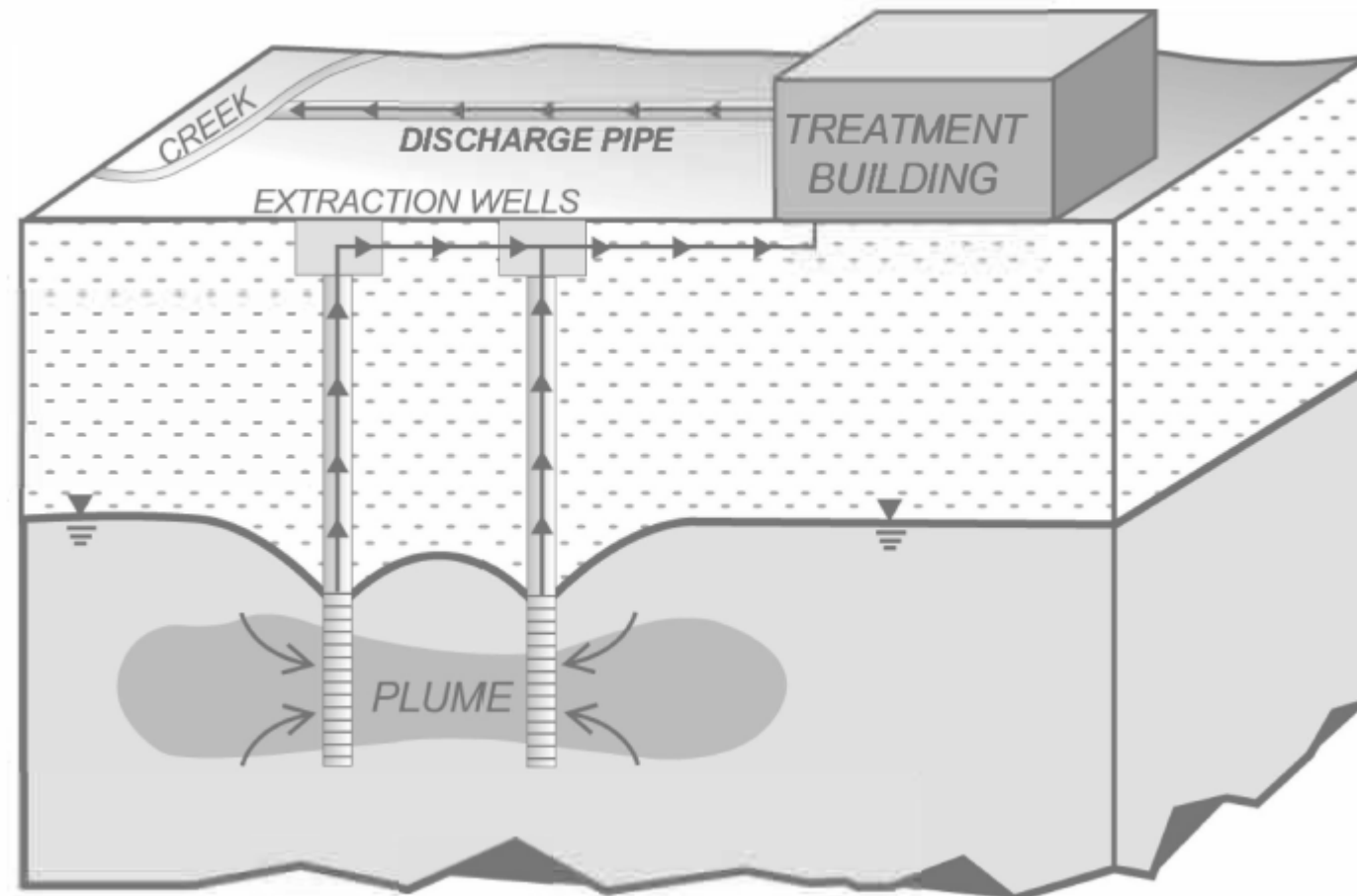
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ASSESSMENT OF CORRECTIVE MEASURES

Groundwater Pump-and-Treat

Combines groundwater extraction system with a surface treatment system to remove target constituents and/or to control migration



Source: USEPA. 2002

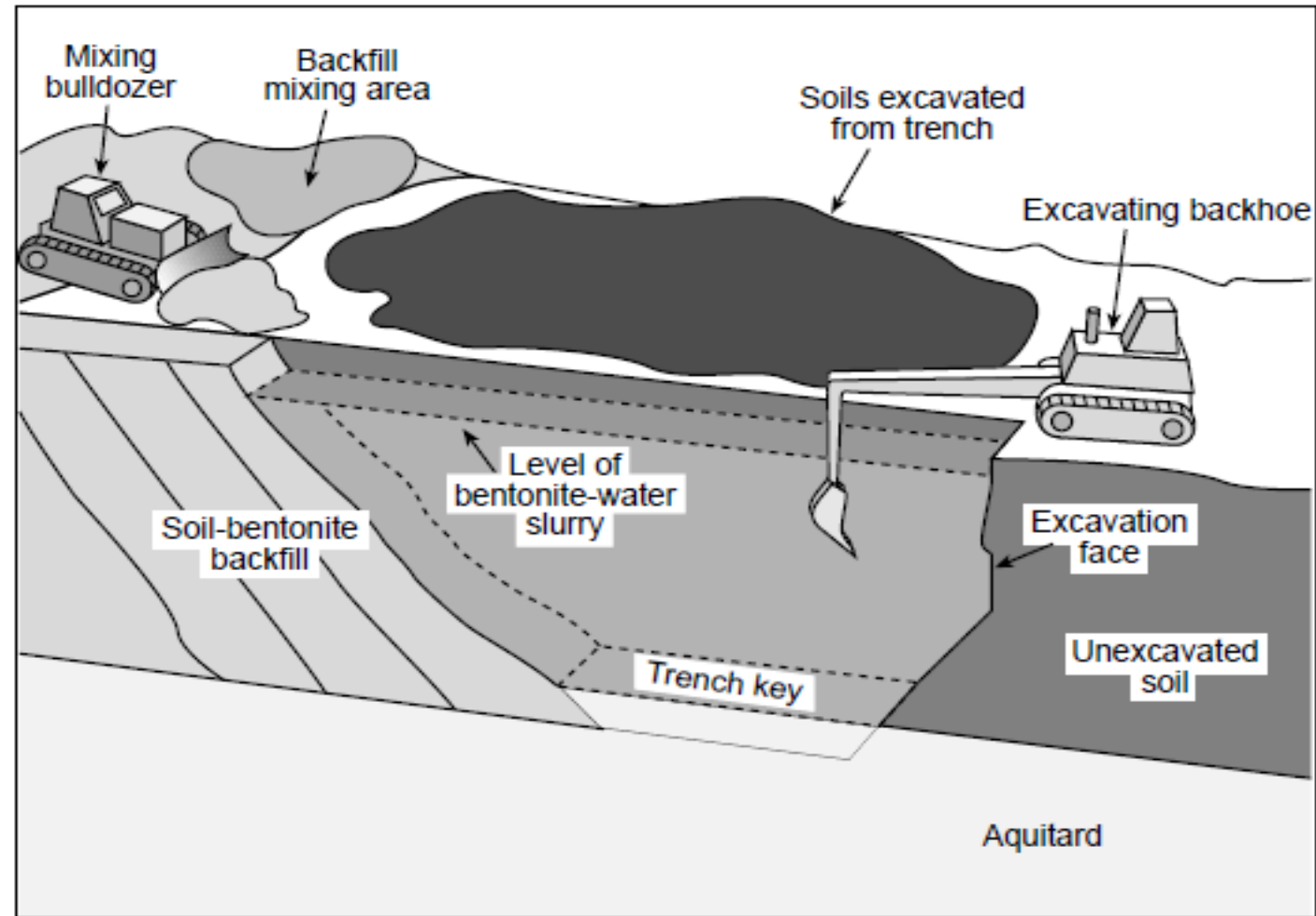
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**ASSESSMENT OF
CORRECTIVE MEASURES**

Hydraulic Barrier

Physical barrier to groundwater flow used to contain impacted groundwater or manipulate groundwater flow directions.



Source: Rumer & Ryan. 1995.

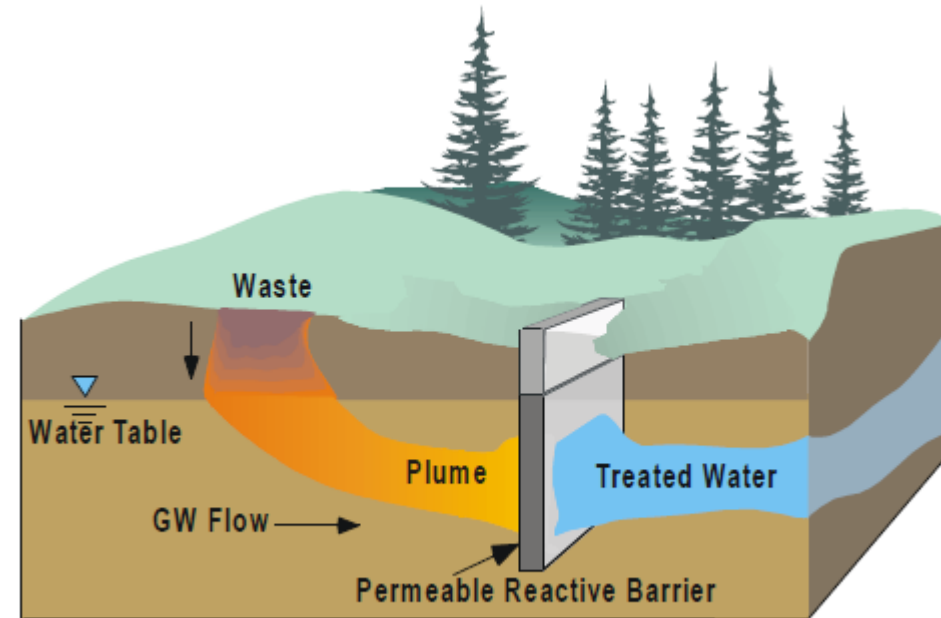
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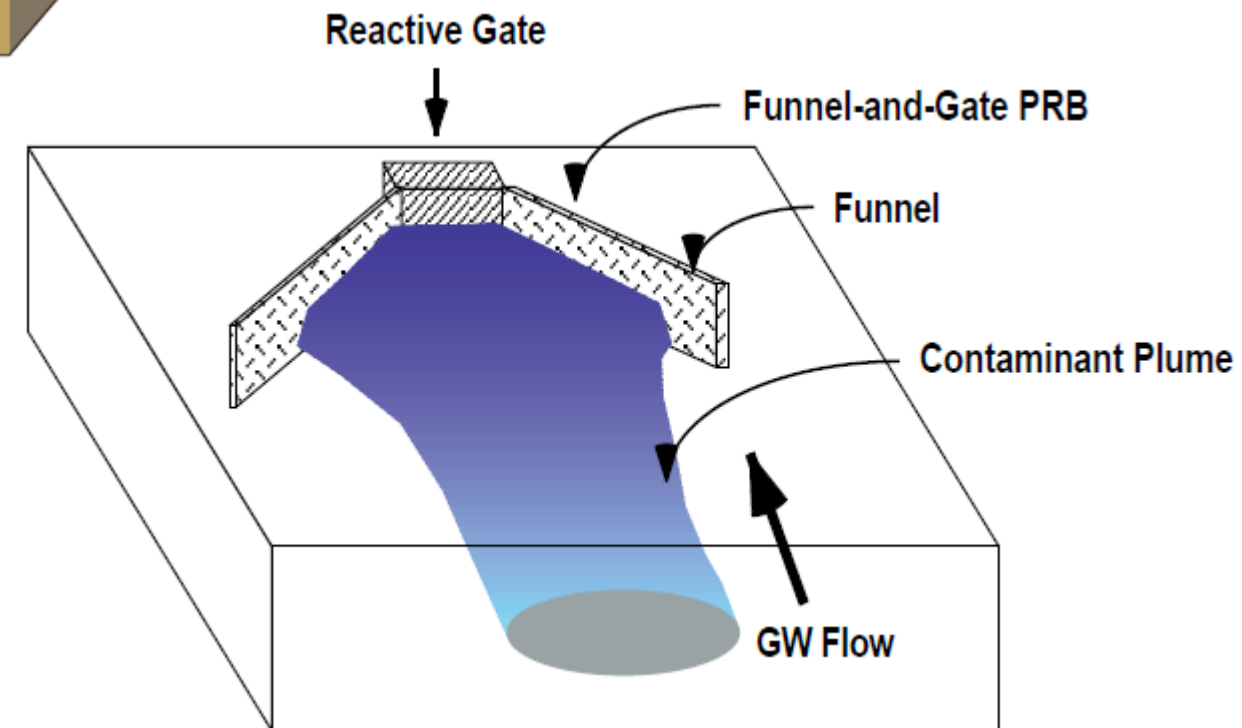
ASSESSMENT OF CORRECTIVE MEASURES

Permeable Reactive Barrier

In-situ permeable treatment zone with reactive media to intercept and treat impacted groundwater.



Source: USEPA. 1998.



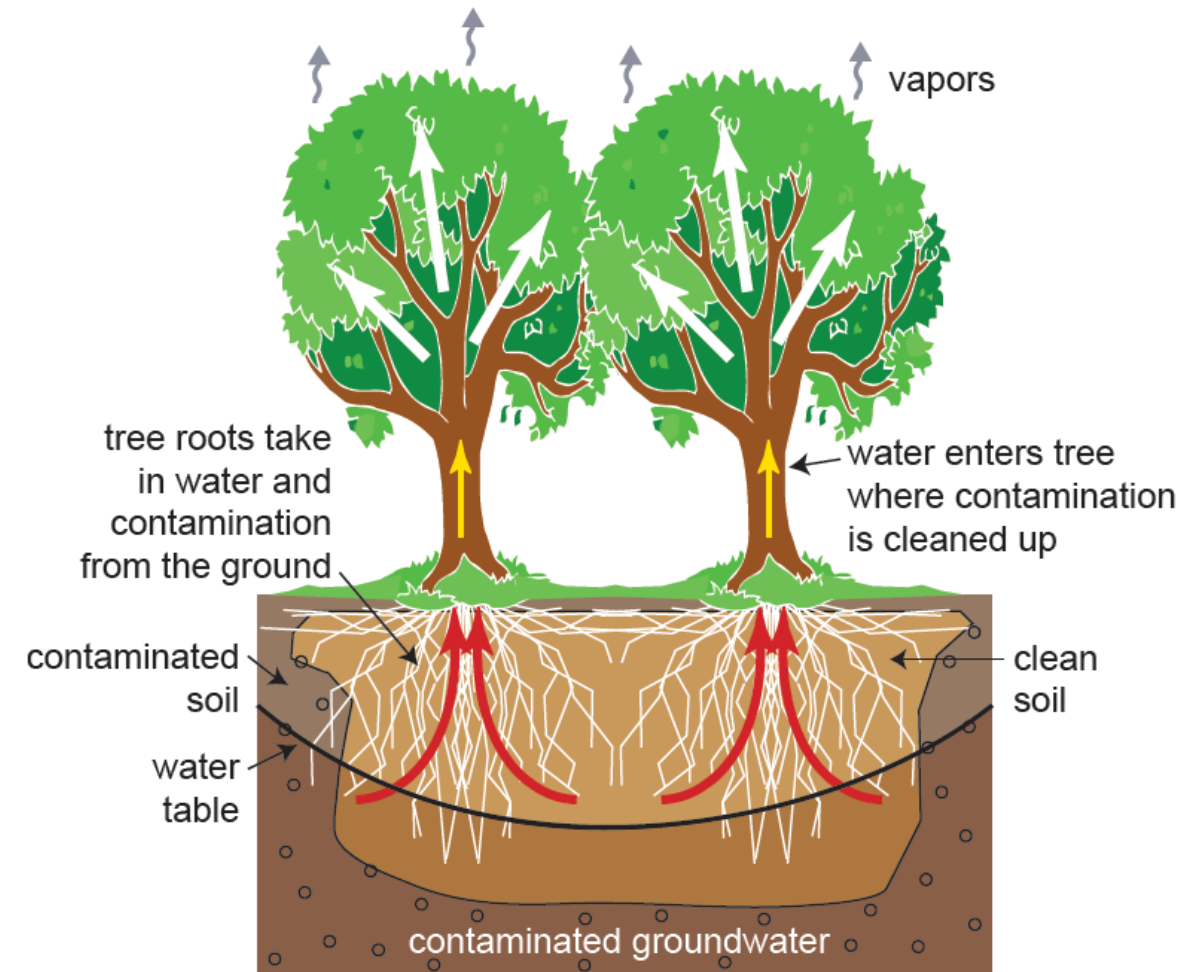
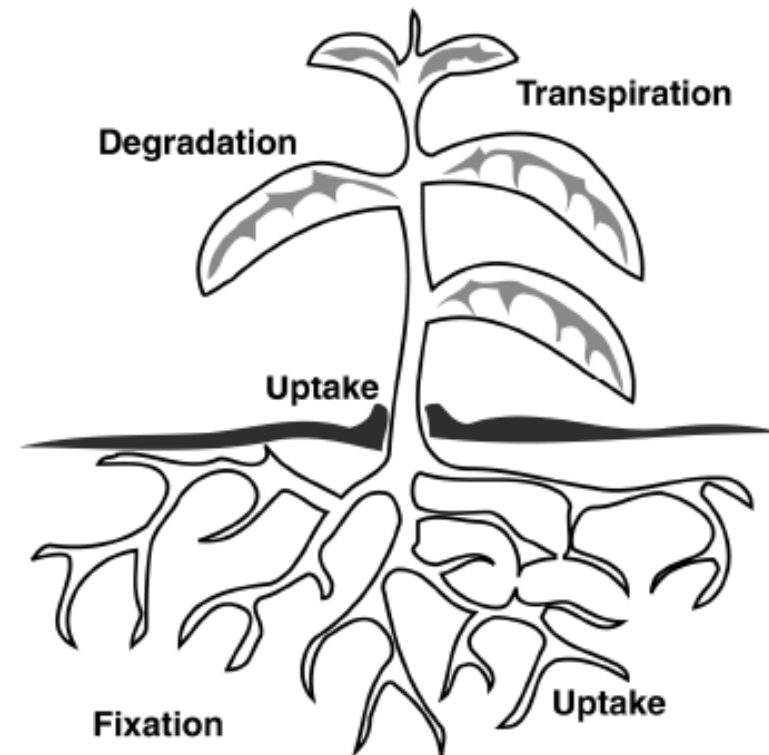
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**ASSESSMENT OF
CORRECTIVE MEASURES**

Phytoremediation

Use of plants to remediate contaminated soils or water. Includes phytoextraction and phytostabilization.



Source: USEPA. 2012.

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ASSESSMENT OF CORRECTIVE MEASURES

Potential Corrective Measure	Performance	Reliability	Implementation Ease	Potential Impacts	Timeframe	Institutional Requirements
Monitored Natural Attenuation	<ul style="list-style-type: none"> • Medium 	<ul style="list-style-type: none"> • High 	<ul style="list-style-type: none"> • Easy 	<ul style="list-style-type: none"> • Minimal 	<ul style="list-style-type: none"> • Begin: 3-12 months • Complete: Varies (5+ yrs) 	<ul style="list-style-type: none"> • FDEP
Enhanced Monitored Natural Attenuation	<ul style="list-style-type: none"> • Medium to High 	<ul style="list-style-type: none"> • Medium 	<ul style="list-style-type: none"> • Easy to Moderate 	<ul style="list-style-type: none"> • Minimal to Low 	<ul style="list-style-type: none"> • Begin: 6-12 months • Complete: Varies (5+ yrs) 	<ul style="list-style-type: none"> • FDEP
Groundwater Pump and Treat	<ul style="list-style-type: none"> • High 	<ul style="list-style-type: none"> • Medium to High 	<ul style="list-style-type: none"> • Moderate 	<ul style="list-style-type: none"> • Low 	<ul style="list-style-type: none"> • Begin: 12-24 months • Complete: Varies (1-10 yrs) 	<ul style="list-style-type: none"> • FDEP
Hydraulic Barrier	<ul style="list-style-type: none"> • Medium to High 	<ul style="list-style-type: none"> • High 	<ul style="list-style-type: none"> • Moderate to Difficult 	<ul style="list-style-type: none"> • Low 	<ul style="list-style-type: none"> • Begin: 12-18 months • Complete: Varies (1-10 yrs) 	<ul style="list-style-type: none"> • FDEP
Permeable Reactive Barrier	<ul style="list-style-type: none"> • Medium to High 	<ul style="list-style-type: none"> • Medium 	<ul style="list-style-type: none"> • Moderate to Difficult 	<ul style="list-style-type: none"> • Low 	<ul style="list-style-type: none"> • Begin: 12-24 months • Complete: Varies (1-10 yrs) 	<ul style="list-style-type: none"> • FDEP
Phytoremediation	<ul style="list-style-type: none"> • Low to Medium 	<ul style="list-style-type: none"> • Low to Medium 	<ul style="list-style-type: none"> • Moderate 	<ul style="list-style-type: none"> • Minimal 	<ul style="list-style-type: none"> • Begin: 6-12 months • Complete: Varies (10+ yrs) 	<ul style="list-style-type: none"> • FDEP

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ASSESSMENT OF CORRECTIVE MEASURES SCREENING TABLE

REMEDY SELECTION PROCESS



Semi-Annual Reports

Remedy selection and design process documented in semi-annual progress reports. Semi-annual reports issued in December 2019 and June 2020.



Public Meeting

At least 30 days prior to remedy selection, public meeting to discuss results of the assessment of corrective measures.



Remedy Selection Report

Report that describes selected remedy and details how it can satisfy the remedial objectives (257.97)

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REMEDY SELECTION PROCESS



PUBLIC COMMENTS

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Q&A

- Submit comments through the participant chat function
- Additional comments can be sent to:
 - JEA_SJRPP_CCR_Questions@JEA.com



CONCLUSION

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