

San Jacinto River Waste Pits (SJRWP) Superfund Site Technical Document Review: Revised Final Removal Action Completion Report (May 2012)

by Jennifer Ronk and Birnur Guven, Houston Advanced Research Center

What does the RACR present?

The Removal Action Completion Report (RACR) presents the final design and construction summary for the time critical removal action (TCRA) implemented at the SJRWP site. The TCRA was completed to stop the ongoing release of contaminants to the San Jacinto River while the site is under investigation and a final remedy is being selected. The document includes the construction timeline, performance standards, inspections, costs, and lessons learned.

Where is the TCRA Site?

The TCRA site consists of an eastern impoundment and a western impoundment approximately 15.7 acres in size located on a western bank of the San Jacinto River, north of I-10 Bridge. The TCRA Site was subdivided into three areas: Eastern Cell, Western Cell, and Northwestern Area.



Were any Site Investigations conducted prior to the TCRA?

For the pre-design site investigations, 25 surface samples were collected; 10 within limits of the impoundments and 15 outside the impoundments to understand the distribution of 2,3,7,8-TCDD

(tetrachlorodibenzo-p-dioxin). The highest concentration in the waste pits was 360,000 ng/kg of 2,3,7,8,-TCDD.

In addition, studies were conducted to investigate existing chemical conditions of surface water, sediment, and tissue. These results were summarized in Remedial Investigation/Feasibility Study Work Plan.

What are the Objectives of the TCRA?

- Stabilize the impoundments to withstand river flow and any potential erosion until a final remedy is completed.
- Design a cover material that is strong enough for 100 year storm events.
- Prevent direct human and benthic contact with waste material.
- Ensure that actions are consistent with potential final remediation strategies.

What was Included in the TRCA?

- Upland perimeter fence installation
- Warning sign placement
- Clearing and grubbing vegetation on the site
- Removing tires and other debris from the site and disposing that material in an EPA approved site.
- Capping the Eastern Cell by:
 - Installing a stabilizing geotextile underlayment
 - Installing rock (referred to as “armored cap” or “armored rock”) above the geotextile
- Capping the Western Cell by
 - Stabilizing low lying areas of the cell with a cement mixture
 - Grading the stabilized area by adding crushed concrete road base
 - Installing a stabilizing geotextile underlayment
 - Installing an impervious geomembrane above the geotextile
 - Installing a rock cover over the geomembrane
 - Adding vents to the geomembrane in the Western Cell to allow for venting any gases that might be generated beneath the membrane. Because of the age of the material, the PRPs are not expecting significant gas generation.
- Installing a rock cover over the Northwestern Area. Because of the slope of this area, it was not possible to install a geotextile or geomembrane in this area.

Community Involvement Activities

Four community awareness meetings were conducted in 2011 throughout the TCRA construction. Guided tours of the TCRA site construction operations were provided at various stages of completion.

A Summary of Water-side Construction Activities

- Mobilization and site preparation included the following activities:
 - Arranging land to be used for material stockpiling, transloading and TCRA site access.

- Seven surface soil samples were collected at the property to establish pre-construction conditions on site.
- Stockpiling and transloading operations at the leased LaBarge property located about 2 miles upriver from the site.
- A transport barge was assembled.
- A series of 29 buoys were installed along the perimeter of the Eastern Cell to warn passing vessels.
- A turbidity curtain was installed around the water-side armored cap placement activities 40 feet outside the boundary of the armored cap placement area. The turbidity curtain was regularly moved with the effect of tides.
- Underwater geotextile placement in the Eastern Cell included two joined panels of geotextile and use of concrete anchors.
- Water-side armored cap installation covered the Northwestern Area and the majority of the Eastern Cell. A rock placement barge and a tug boat were used. Armored rock was placed atop the geotextile filter fabric.
 - Geotextile fabric was not installed in the Northwestern Area because it was not possible to effectively place a geotextile in water of that depth and geotextile placed on a steep slope could negatively affect the stability of an armored cap placed on the slope. Therefore the armored cap was placed directly on top of the waste material.
- Water quality and turbidity monitoring was performed to evaluate potential impacts of the construction activities, tugboat and barge movement on water quality. No exceedances were reported. Visible turbidity plumes were not observed outside the turbidity curtain during activities.
- Demobilization of equipment was completed on July 15, 2011.

A Summary of Land-side Construction Activities

Activities started on December 8, 2010 and ended on July 28, 2011.

- Mobilization and site preparation included the following activities:
 - Installing perimeter fencing, warning signs, and No Trespassing signs,
 - Clearing and disposal of vegetation from central berm,
 - Construction of an access road leading to the site across the TxDOT right of way, from East Freeway Service Road on the north side of I-10 and truck turnaround area, installing a steel guardrail between the access road and the I-10 bridge, and locating an equipment and materials storage area.
 - Clearing, transporting, and disposing of debris from the area along TxDOT right-of-way, directly under the I-10 bridge.
 - Environmental control best management practices were used to reduce the impact of construction activities on the environment.
 - A water truck applied water several times a day to control dust generated from the access road, truck turnaround, and stockpile areas.
 - Hay bales were used for sediment control at primary drainage points on-site (surface water inlets and stormwater discharge areas).

- A silt fence was placed between the upland area of the site and the receiving waters for stormwater control (to prevent impacts on the surrounding waters).
 - Equipment and vehicles used during the construction were decontaminated before leaving the site.
- Security measures were implemented against theft and vandalism.
- Surface and above-ground vegetation was cleared from the Western Cell area prior to geotextile and armored cap installation.
- Western Cell was prepared to allow construction equipment access for the installation of the geomembrane and rock cover. Portland cement was added to low-lying portions of the Western Cell for stabilization.
- Vents were added to the geomembrane layer to allow for the escape of the gases generated by the organic degradation of the material underneath.
- The rock was installed in the Western Cell and portions of the Eastern Cell.
 - During the construction of the access point in the Eastern Cell, waste material displacement was observed on the northern side of the rock access point within boundaries of the original impoundment. The use of land-side rock placement was discontinued in these areas that are later covered with water-side placement.
- Demobilization of the construction areas and equipment were completed on July 28, 2011.

When Will the Site be Inspected to Make Sure It is Okay?

After the rock was installed, the PRPs conducted surveys to measure the thickness of the rock. More rock was added to any area that need more.

Fencing, signage, and the armored cap will be inspected quarterly for the first two years, semi-annually from years 3 to 5, and annually starting at year 6. A cap inspection will be performed after the first 25-year flow event and after every 100-year flow event. Inspections will include visual observations, manual probing surveys, and bathymetric surveys.

What was the Cost of the TCRA Construction?

The estimated cost is \$8.78 million to date. Costs for engineering design, construction management and EPA oversight are not included in this estimate.

What are the Lessons Learned During the TCRA Construction?

- Any future work on TxDOT Right-of-Ways must establish direct contact with TxDOT to locate site utilities (e.g. power cables)
- Any future work in the nearshore area should consider the soft nature of the waste material. Water-side construction is preferable, but if it is not feasible, low pressure equipment should be used in land-side activities.
- Any future work which requires the installation of a geotextile layer in a river should consider several methods for the deployment including the use of anchor weights, minimizing the geotextile amount deployed at one time, and near-simultaneous deployment of the geotextile and armored cap.

- Any future work in a river or tidal environment should consider alternatives to the use of a turbidity curtain and should allow for tidal delays in the construction schedule.

What are HARC's Recommendations?

There was one inspection completed on July 20, 2012, after a storm event where the PRPs noted that the rock has washed away on part of the cap. The geomembrane under the rock was reported as being intact. New rock was added to the cap in August 2012, and the PRPs are in the process of preparing a report to explain what happened and what measures will be taken to assure the cap integrity until the final solution is implemented. In addition, the EPA has requested the US Army Corps of Engineers review the cap design. This report is scheduled to be completed by the end of April. HARC will review this document when it is completed. At a minimum, HARC would recommend a more frequent inspection schedule until the community can be assured that the new solution will be more protective than the previous. The inspections have been increased to monthly for a period of six months, but inspecting after every 25-year flood event (as opposed to 100-year flood event) may also be appropriate.