



Background

St. Juliens Creek Annex (SJCA) is located at the confluence of St. Juliens Creek and the Southern Branch of the Elizabeth River in Chesapeake, Virginia (*Figure 1*). SJCA began operations as a naval ammunition facility in 1849. For a majority of its history, SJCA was used for the storage and transportation of ammunition and ordnance. The current primary mission of SJCA is to provide a radar-testing range and various administrative and warehousing facilities for local naval activities.

SJCA was added to the National Priorities List (NPL) in July 2000 as a result of former operations conducted at the base that resulted in environmental impacts. Following the inclusion of SJCA on the NPL, the Environmental Restoration (ER) Program Partnering Team (herein referred to as the Team) was chartered. The Team consists of representatives from Navy Facilities Engineering Command (NAVFAC), United States Environmental Protection Agency (USEPA), Virginia Department of Environmental Quality (VDEQ), and NAVFAC's contractor, CH2M HILL, Inc. (CH2M). The Team is supported by technical, contracting, and legal professionals and NAVFAC's remedial action contractors, CB&I Federal Services LLC (CB&I) and Sovereign Consulting, Inc. The Team members during Fiscal Years 2014 and 2015 are provided in *Table 1*.

Fifty-nine potentially contaminated Installation Restoration (IR) and Munitions Response sites, solid waste management units (SWMUs), and areas of concern



Figure 1 – St. Juliens Creek Annex Location

	Ms. Krista Parra St. Juliens Creek Annex Remedial Project Manager
	Mr. Walter Bell St. Juliens Creek Annex Remedial Project Manager
	Mr. Robert Stroud St. Juliens Creek Annex Remedial Project Manager
	Ms. Karen Doran St. Juliens Creek Annex Remedial Project Manager
	Ms. Janna Staszak St. Juliens Creek Annex Activity Manager
	Ms. Adrienne Jones St. Juliens Creek Annex Project Manager

Table 1 – St. Juliens Creek Annex Environmental Restoration Partnering Team Members - Fiscal Years 2014 and 2015



(AOCs) have been identified for evaluation based on the previous assessments and investigations (*Figure 2*). Four IR sites are currently active in the ER Program. Fifty-five sites, SWMUs, and AOCs have been determined to require no further action under the ER Program following desktop audits, site inspections, and/or removal actions.

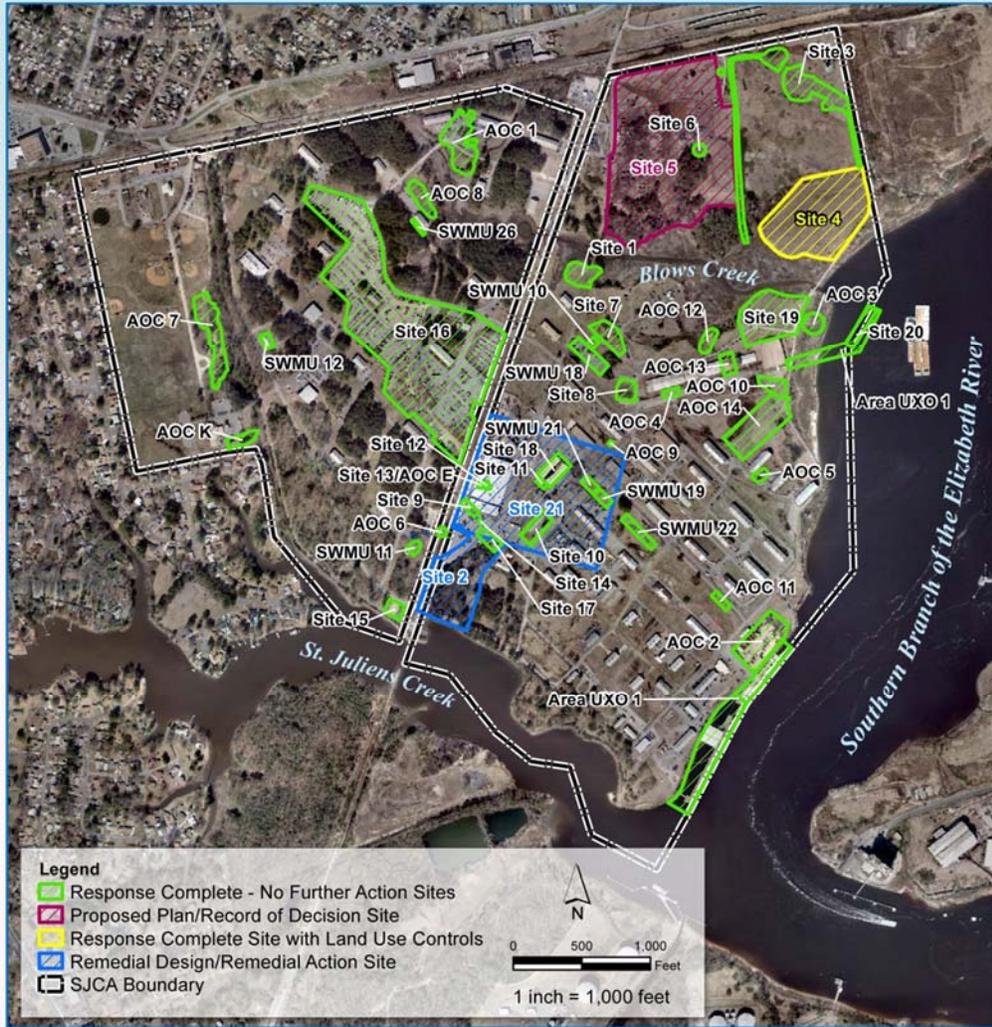


Figure 2 – Location of Environmental Restoration Program Solid Waste Management Units and Areas of Concern

Position Description

The Team works together to streamline the closure of ER sites by using consensus-based site management strategies following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. In accordance with the principles of partnering, the Team has developed written partnering guidelines to support the Team’s objective.

Continued to foster a positive relationship with the community and identified and enacted several opportunities to enhance the relationship, including providing a brief to the City Council, reaching out to a local civil league and environmental organization, announcing meetings in additional media outlets, and making the SJCA ER Program public Web site The partnering

guidelines include ground rules, goals, roles and responsibilities, and conflict resolution procedures, in addition to the mission statement developed by the Team members:

*Using principles of partnering and the CERCLA process, the St. Juliens Creek Annex Team shall seek to protect human health and the environment. The sites will be addressed, and ultimately de-listed, through innovative, streamlined, consensus-based strategies in a cost-effective, proactive manner.
St Js Rocks!*

The Team is committed to working together to achieve the mission. Partnering meetings are held every 2 months to facilitate the team’s mission. Meetings provide an opportunity to build relationships while presenting and discussing new information, which increases production and decreases document review and comment time periods.

Summary of Accomplishments

The Team was selected by representatives of NAVFAC, USEPA, and VDEQ as the Tier I Virginia Team of the Year for 2014. The award recognizes the Team’s “terrific accomplishments and strong partnering skills”. The following sections provide examples.

Accelerated Environmental Cleanup

Site 2 Remedial Action: Site 2, Waste Disposal Area B, is SJCA’s most complex site. A Remedial Action (RA) was initiated in 2012 to address potential risks to human and ecological receptors from exposure to waste and contaminants in shallow aquifer groundwater, soil, sediment, and surface water. The RA includes a soil cover, limited excavation, enhanced reductive dechlorination (ERD), monitored natural attenuation, land use controls, and a contingency permeable reactive barrier (PRB) (*Figure 3*).

The Team identified the following opportunities to accelerate cleanup at Site 2:

- Dense non-aqueous phase liquid (DNAPL) was discovered during installation of wells being installed for substrate injection as part of the remedy to address contamination in the shallow aquifer groundwater (*Figure 4*). The Team developed an approach to remove the DNAPL, resulting in immediate contaminant mass reduction.
- Flexibilities included in the Record of Decision (ROD) and

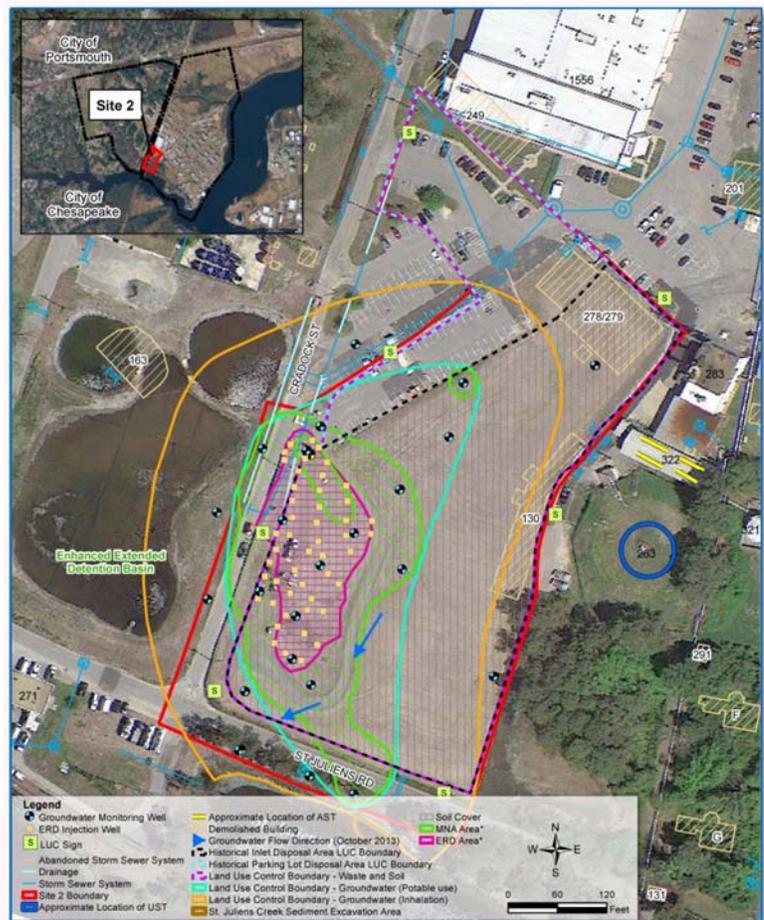


Figure 3 – Site 2 Remedial Action Components



Figure 4 – Dense Non-aqueous Phase Liquid from Site 2

Remedial Design (RD) were applied. During drafting of the ROD the Team had the foresight to include a contingency remedy that could be quickly implemented to mitigate concerns if changes in conditions occurred and warranted additional action. Additionally, the RD included an evaluation of contingency remedy technologies so the design could be easily refined. Because of these flexibilities, the Team was able to move quickly to initiate the implementation of the contingency remedy once it became apparent the contingency remedy was needed.

Site 21 Remedial Action: Site 21 is an industrial area in the central portion of SJCA. A RA was initiated in 2011 to address potential risks to human receptors from exposure to contaminants in shallow aquifer groundwater. The RA consists of in situ chemical reduction and ERD in the shallow aquifer groundwater and land use controls (*Figure 5*). Additionally, the Team conducts voluntary vapor intrusion monitoring to evaluate whether the RA or changes in building conditions have resulted in potential unacceptable inhalation risks or explosive hazards.



Figure 5 – Site 21 Remedial Action Components

The Team identified the following opportunities to accelerate cleanup or avoid unnecessary costs at Site 21:

- A plan to conduct additional emulsified vegetable oil (EVO) injections (i.e., ERD) as a polishing treatment to target areas of the site that had not initially been treated or in which



the contaminants of concern (COCs) degradation appeared to be slowing or stalled was developed and implemented.

- A decision strategy was developed and implemented to optimize the RA-operation phase groundwater monitoring. From the initial monitoring well network of 30 wells being sampled semi-annually for COC volatile organic compounds (VOCs), indicator parameters, and arsenic: 4 wells have been removed from the monitoring network, 3 wells were reduced to annual COC VOCs and arsenic monitoring, and 4 wells were reduced to annual arsenic monitoring only. The optimization has resulted in an approximate 30 percent analytical cost savings and the savings will increase over time.
- The Site 21 RA-operation phase vapor intrusion monitoring approach was optimized to avoid unnecessary costs. After multiple rounds of data collection and the resulting refinement of the conceptual site model, the Team determined the trigger for collection of indoor air samples was overly conservative. Therefore, the Team worked together to define a more representative trigger which resulted in less sampling. Since the revisions, no indoor air sample collection has been required.

Partnerships Addressing Environmental Restoration Issues between Department of Defense and other Entities

Partnership with government agencies: NAVFAC partners with USEPA and VDEQ to form the SJCA ER Program Partnering Team. The Team developed “guidelines” to provide a framework for implementation of the SJCA ER Program during chartering and meets approximately every 2 months to set schedules with interim milestones and develop site strategies using consensus-based decisions. An example of the Team’s collaborative problem solving ability is shown by their management of unforeseen circumstances during the Site 2 RA. Waste was identified outside of the ROD extent of waste during remedy implementation. The team worked together to determine a path forward that prevented delays to the ongoing RA by minimizing the amount of data collection needed and instead relying on existing information and physical features. Their collaborative approach included engaging in real-time partnering discussions with VDEQ legal support to gain timely consensus with decisions.

Partnership with the community: The Restoration Advisory Board (RAB), which was initiated in 1999, continued to be actively involved in the ER Program. RAB meetings and site visits were held to ensure the community members were informed of the ongoing activities and maintain the interactive relationship. Attendance at the meetings and site visits remained consistent, with the strongest attendance to-date occurring during the May 2015 site visit. Positive feedback was received from the RAB members, including the following from the RAB community co-chair, who has been involved in the RAB since its initiation: “In the 14 plus years that I have been the community co-chair for the St. J’s RAB, I have always been impressed with the way each and every one of you have conducted the meetings and on-site visits. The St. J’s RAB has been on track every step of the way and has accomplished what it set out to do. I’ve seen a lot of good things happening over here.”

The Community Involvement Plan was updated and included mailing 200 questionnaires to local residents and conducting interviews with a variety of stakeholders to solicit feedback. Overall, the feedback was positive, with the community feeling that the Navy is a responsible neighbor and that the partnering team is implementing the ER Program with the community’s interest and well-being in mind. The Team took the following actions to enhance their relationship with the community:



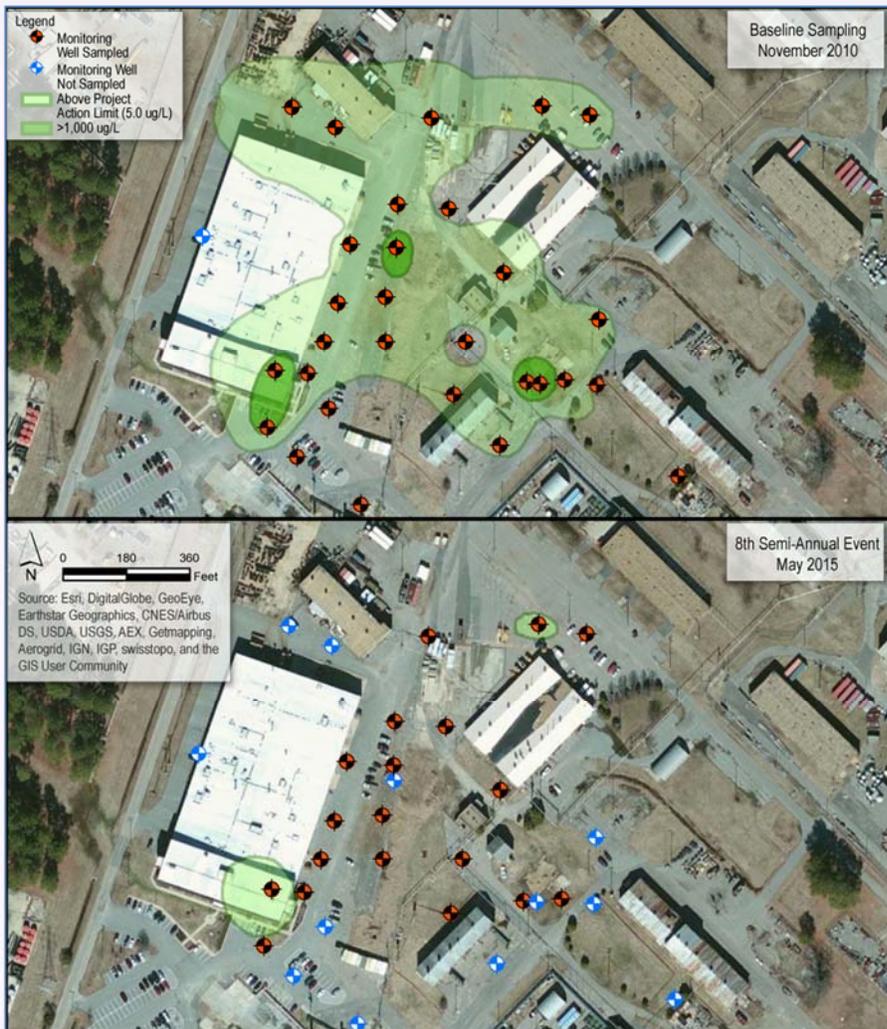
- Provided a brief to the City Council
- Reached out to a local civil league and environmental organization
- Announced meetings in additional media outlets.
- Made the SJCA ER Program public Web site more informative and user friendly
- Created a simplified version of the SJCA ER Program fact sheet

Reducing Risk to Human Health and the Environment

Site 2 achieved remedy in place in FY14, signifying all construction components of the RA were in place, preventing unacceptable risks to human health and the environment from exposure to site contamination.

The ongoing Site 21 RA-operation phase groundwater monitoring results have indicated significant contaminant reduction. The overall VOC plume area has been reduced by approximately 50 percent, from approximately 7.3 acres before the RA to approximately 3.5 acres. The plume area of the primary COC, trichloroethene, has been reduced by 96 percent from approximately 7.3 acres to approximately 0.3 acre (*Figure 6*).

Figure 6 – Reduction in Trichloroethene in Site 21 Groundwater





Green Remediation

The Team reduced the environmental impact of the remedies implemented at Sites 2 and 21 through utilization of the following green and sustainable remediation techniques:

- Installation of permanent injection wells at Sites 2 and 21 to reduce the amount of remediation-derived waste generated in comparison to use of temporary injection points.
- Use of an innocuous remediation substrate, emulsified vegetable oil, for enhanced reductive dechlorination at Sites 2 and 21 to prevent cross-contamination.
- Planting of native species at Site 2 to enhance the environment and reduce the need to mow.
- Selection of a PRB contingency technology, a bio barrier, to minimize remediation-derived waste, use less energy than alternatives, and allow for optimization of injection depths to reduce consumption of materials.