



REMEDIATION SPECIALISTS FOR A CLEANER FUTURE

ENVIRONMENTAL CONSTRUCTION

STATEMENT OF QUALIFICATIONS



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REMEDICATION SPECIALISTS FOR A CLEANER FUTURE

We invite you to
experience the Cascade
difference, Excellence
on Every Level™.

EXECUTIVE SUMMARY

Whether you're in need of soil or groundwater remediation, infrastructure and site development, or environmental restoration, you face stringent requirements for regulatory compliance and safety and hold high expectations for quality work. We recognize that navigating these complexities requires a reliable partner who not only understands these challenges but also offers practical, effective solutions.

Cascade has decades of experience in environmental construction services. We have the technical expertise and resource capacity to deliver a wide variety of service offerings including multi-remedy projects and turnkey solutions.

Why Partner with Cascade?

Experience

Cascade's extensive experience with multiple remedial technologies and proactive communication minimize risks and surprises, ensuring your project's success.

Safety

Your reputation is backed by a world-class safety program to protect your interests and keep your project on-time and on-budget.

Capacity

Experience simplified contracting and expedited timelines through Cascade's single-source, self-performing approach to ensure your large-scale environmental projects run smoothly.



Environmental Construction Services

What is Environmental Construction?

Environmental construction involves specialized construction practices aimed at protecting and enhancing natural and built environments. This service line encompasses a wide range of activities, from the remediation of contaminated soil and groundwater and the installation of environmental safeguards like liners and barriers, to the construction and rehabilitation of infrastructure in a manner that minimizes environmental impact.

Cascade's Environmental Construction Services

The environmental construction business unit of Cascade Remediation Services, LLC (Cascade) is an environmental contracting firm providing a wide variety of civil and environmental services, including both in situ and ex situ soil remediation, manufactured gas plant (MGP) site remediation, wetlands restoration, groundwater recovery and treatment, landfill cell installation and capping activities or repairs. In addition, we implement other innovative technologies, such as in situ chemical oxidation or reduction (ISCO or ISCR), and bioremediation of soil and groundwater. Our groundwater remediation capabilities also include patented hydraulic and pneumatic fracturing and injection technologies.

Our civil remediation projects involve surgical and mass excavations, material/debris management, engineering controls, installation of earth support systems utilizing steel sheeting, trench boxes or slide rail systems, followed by excavation to and/or below groundwater, dewatering and treatment of impacted groundwater through a variety of treatment technologies and final site restoration services. We pride ourselves on implementing remediation programs that meet our client's goals in unique, manageable and cost-effective ways. When requested we provide technical assistance to our clients regarding design and constructability.


The Cascade team is highly experienced and consists of licensed engineers, seasoned project managers, site superintendents, and skilled field staff, many of whom have been working together effectively for decades. This rich experience has led to the successful completion of projects under diverse programs including private and municipal contracts, State, RCRA, CERCLA, and other government initiatives across the U.S.



As a full-service environmental and civil remediation services contractor, we possess the in-house expertise, substantial resource capacity, and extensive equipment inventory to self-perform all major elements of complex projects. To optimize productivity, reduce timelines, and minimize costs, we strategically incorporate the services of critical prequalified subcontractors when necessary. Our office and field personnel are not only seasoned in their fields but are also deeply committed to implementing projects safely, efficiently, and cost-effectively.

Cascade's Approach to Environmental Construction

At Cascade, our environmental construction services are designed to ensure compliance with all regulatory standards while prioritizing safety, sustainability, and efficiency. Whether it involves the containment of hazardous substances, restoration of ecological sites, or the implementation of green construction practices, our approach integrates advanced technology and expert methodologies to deliver resilient and sustainable solutions that support both environmental and community well-being.



Streamline your environmental construction projects and protect your reputation with a partner who delivers reliable results backed by experience, safety, and unparalleled remediation capacity.

Experience simplified contracting and expedited timelines through Cascade's single-source, self-performing approach to ensure your large-scale environmental projects run smoothly.

Equipment and Implementation

Services and Capabilities

In Situ Stabilization (ISS) & Solidification

- Environmental stabilization
- Geotechnical stabilization
- In situ chemical oxidation (ISCO)
- In situ chemical reduction (ISCR)
- In situ soil stabilization (ISS)
- Jet grouting
- Soil mixing

MGP & Utility Remediation

- Gas holder and infrastructure removal
- ISS
- Excavation and material handling
- Odor control
- Sheet pile and trench slurry walls

Wetlands Remediation & Restoration

- Climate resiliency
- Stormwater management
- Wetland banks
- Wetlands and stream stabilization

Excavation & Capping

- Excavation and disposal of contaminated materials
- Landfill cells, caps, vaults, liners, and collection
- Pit, pond, and lagoon closure
- Site development and earthwork
- Underground storage tank (UST) and aboveground storage tank (AST) removals

Innovative Technologies

- Combined remedies
- Hydraulic and pneumatic fracturing
- Injection and site characterization
- Permeable reactive barriers (PRBs)

Remedial System Installation

- Remedial system installation
- Remedial system operation and maintenance (O&M)

Other

- Disaster response

Key Markets Served

-
- | | |
|------------------------------------|--|
| • Chemical | • Oil and gas |
| • Engineering firms | • PFAS impacted |
| • Environmental consultants | • Pharmaceutical |
| • General contractors and builders | • Public and private utilities |
| • Government | • Real estate developers |
| • Law firms | • Trust groups & potentially responsible parties (PRP) |
| • Manufacturing and industrial | |

Equipment

- 4x4 Backhoe loaders
- Allu screener/crusher
- Bauer batch plant
- Custom self-powered batch mixing trailer with 6,000-gal storage
- Custom trailer with lab and office
- Demolition hammers
- Dozers
- Drum rollers (8 TN single)
- Dump trucks (on road)
- Excavator plate tampers
- Excavators (16,000 - 105,000 LB)
- Long reach forklift (9,000 LB)
- Moffett
- Monsoon misters
- Off-road trucks (25 - 35 TN)
- Pugmills
- Radial stackers
- Scheltzke batch plant
- Self-erecting silos (60, 170 ton)
- Skeleton buckets
- Skid steer loaders
- Trencher
- Trommel screen with conveyor
- Water buffalo sprayers
- Water trucks (2,500 GAL)
- Wheel loaders (3 and 5 YD)



SAFETY

At Cascade, safety is not just a policy; it's a core value ingrained in every aspect of our operations. We prioritize the health and safety of our employees and subcontractors above all, ensuring it is never compromised for expediency or cost. Our comprehensive Health and Safety Program is thoroughly designed to not only comply with governmental regulations but also to exceed our client's specific health and safety requirements.

Core™ – Cultivating a Culture of Safety

Our innovative CORE Program is the backbone of our safety culture. This behavioral-based approach empowers employees to proactively engage in safe practices, fostering a self-sustaining safety environment. CORE encompasses seven key elements:

- Rigorous training
- Compliance and risk management
- Inspections and audits
- Effective communication
- Recognition and accountability
- Active management involvement
- Thorough incident investigation and case management

Every new Cascade employee undergoes comprehensive CORE training, ensuring an in-depth understanding of our safety processes and practices.

Project-Specific Health and Safety Planning

Before any field mobilization, we develop a detailed site-specific Health and Safety Plan (HASP) for each project. This plan covers critical safety aspects:

- Organizational responsibilities
- Site descriptions and histories
- Scope of work
- Chemical hazards and exposure control
- Physical hazards and controls
- Air monitoring
- Personal protective equipment (PPE)
- Site control
- Decontamination processes
- Medical monitoring and training requirements
- Emergency response procedures

Daily Safety Engagement

We conduct daily field safety meetings (tailgate meetings) for all field projects, adapting additional meetings as needed for changes in scope or conditions. Every Cascade team member, including supervisors and subcontractors, actively participates in these meetings, reinforcing our safety-first mindset.

The environmental construction group has only two minor recordable injuries since the year 2000.

A Record of Safety Excellence

Our commitment to safety is reflected in our exceptional experience modification rate (EMR) of 0.65, significantly lower than the industry average. This achievement underlines our dedication to maintaining a safe work environment amidst the technical challenges we face.

Year	EMR	TRIR
2023	0.65	0.91
2022	0.57	0.93
2021	0.55	0.86

Certifications and Recognition

With Cascade, your reputation is backed by a world-class safety program. Our comprehensive safety program is recognized by leading industry auditors and certification bodies.

- Damage Prevention Institute Accreditation (DPI) (formerly Gold Shovel Standard)
- Avetta
- ISNetworld
- National Drilling Association Outstanding Commitment to Drilling Safety
- Minnesota Governor’s Safety Award



SUSTAINABILITY

Cascade's sustainability vision is to integrate environmental stewardship, social responsibility, and economic prosperity into every action that drives our business. Compass™, our Corporate Sustainability Program, was founded in 2014 upon the Global Reporting Initiative framework and is continually guided by stakeholder input.




Our sustainability strategy includes policies and programs that promote quality execution in every aspect of our business, reinforcing our commitment to sustainable growth in the face of change.

To achieve our vision, we have set three strategic priorities.

- First and foremost, we prioritize the health and safety of our employees, customers, and communities. Our world-class CORE Health & Safety Program is a behavior-based program that emphasizes hazard recognition and mitigation before an incident occurs.
- We also recognize the importance of growth, which means investing in our people and equipment, increasing sales, and maintaining a healthy balance sheet. By investing in our business, we can create long-term value for our stakeholders and promote sustainable growth.
- Finally, we prioritize employee retention. We are committed to fostering a diverse and inclusive workplace and providing our employees with opportunities for growth and development. By focusing on these three priorities, we are creating a sustainable business model that will continue to deliver value for our stakeholders well into the future.

To learn more about our commitment to sustainability, please download our most recent Annual Sustainability Report at <https://www.cascade-env.com/about-us/sustainability/>



Cascade's extensive experience and proactive communication minimize risks and surprises, ensuring project success.

PROJECT EXPERIENCE AND TESTIMONIALS

This section is dedicated to sharing our rich experience through selected case studies. These projects highlight our technical expertise as well as our collaborative approach, ensuring that each project we undertake is aligned with our clients' goals and environmental sustainability.

CASE STUDY #1

Precision excavation and grading transforms a freshwater marsh into a saltwater wetland

LOCATION: New Jersey

PROJECT

Bass River Mitigation Bank

SERVICE

Excavation, Loadout, Transport, and Disposal

The conversion of an approximately 55-acre freshwater marsh, overgrown with invasive vegetation, into a thriving saltwater wetland environment was complicated by access issues, endangered plants, and the need for precision grading and excavation.

PROJECT OVERVIEW

Evergreen, LLC contracted with Cascade to execute on the precision excavation, loadout, transport, and disposal of approximately 90,000 cubic yards of non-hazardous soils, the precise gradual sloping of about 55 acres, and the construction of three alignments (tidal channels) to establish a wetland environment.

Prior to excavation, the site was cleared of several acres of invasive vegetation, including phragmites, oak trees, and brush, within the limits of disturbance (LOD). To avoid two areas containing endangered plants, the team established a 200-foot visual buffer.

The 55-acre site was excavated using three long reach excavators, each with 60-foot sticks and TopCon GPS positioning systems installed for precision excavation. To allow heavy machinery access over deep mud, the team laid out over 1,800 linear feet of three-ply wooden plank road mats. Excavated soil was loaded into an R14-Terramac end dump with 360° cab rotation to avoid



establishing turnaround egress points within the marsh. Approximately 6,000 tri-axle dump trucks were required to transport these soils off-site to a specified recycling facility.

The Cascade teams excavated three tidal channels and connected them to a Bass River tributary. This enabled brackish tidal waters to access and flood the excavated areas.

RESULTS

Cascade was able to successfully establish an active wetlands environment. Egrets and herons were documented actively hunting saltwater prey (saltwater minnows and crabs), proving the area was transformed from a freshwater march to a saltwater wetland.



CASE STUDY #2

Installation of a zero valent iron permeable reactive barrier

LOCATION: Pleasant Hill, CA

SERVICE

Groundwater remediation

PROJECT OVERVIEW

This project valued at \$1.75 million was performed for a national consultant. The project scope included the installation of a 480-linear foot zero valent iron (ZVI) permeable reactive barrier (PRB) in Pleasant Hill, CA. The PRB was installed within a local park and within the right-of-ways on a highly trafficked main road. Prior to mobilization and installation of the PRB, a complete design consisting of column treatability testing, custom hydroxypropyl guar and associated crosslinker and enzyme mixture testing, Monte-Carlo probabilistic design process and detailed design specifications was developed and approved by the California Regional Water Quality Control Board.

Following completion of the design, forty (40) specialized injection wells and twenty (20) customized subsurface receivers were installed to allow for the installation of a vertical inclusion PRB and monitoring system down to depths of 50 feet BGS. Injection and support systems consisting of two (2) 3,000 gallon stainless steel guar mix tanks, hydraulically controlled injection equipment including centrifugal mixing and transfer pumps, 300-HP diesel power unit, 2,500 psi piston pumps, iron mixing vapor control system, 3,000 lbs concrete hoppers and weight control systems, custom electronic QA/QC s and all supporting systems were mobilized to the site to install the patented vertical hydraulically fractured PRB from 15' to 50' BGS along the alignment. A total of 465-tons of iron were injected to create the PRB ranging in thickness from 3-inches to 4.5-inches.

CASE STUDY #3

Mobile groundwater contamination remediated with in situ stabilization

LOCATION: New Jersey

PROJECT

Shipping Facility
on Former Paint
Manufacturing Site

SERVICE

In Situ Solidification
and Stabilization (ISS)
and Utility Relocation



PROJECT OVERVIEW

Seasonal Flow of Contaminated Groundwater Continues Despite Previous Remediation

The former paint manufacturing Site, bound by a PMC Specialties Site-related Deed Notice and groundwater contamination of a Classification Exception Area (CEA), included contaminants of concern such as Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b] fluoranthene, Dibenzo[a,h]anthracene, and Site-specific contamination in groundwater, Tert-butanol or tert-Butyl alcohol (TBA). The Site is currently an active facility.

The TBA in groundwater at the Site was delineated to a roughly 150-foot by 175-foot source area under the parking lot and along a route of underground utility lines at the edge of the property. The TBA was reportedly flushing from the area with seasonal groundwater flow from a former underground tank farm, within the footprint of historic chemical and paint manufacturing structures. The TBA followed the CEA plume to downgradient wells which showed high levels of TBA.

Other sections of the Site and surrounding properties had been remediated utilizing multiple forms of remediation technology. In the early 2000s, the footprint that held the former tank area had been partially excavated and backfilled during remediation but continued to release TBA in groundwater in a predictable and seasonal fashion. The property owner, working with a third-party consultant and Cascade's direct client, contracted with multiple engineering companies to design a remedial approach to stop the release of TBA and target the source materials. The objective of the remedial plan was to isolate the flow of groundwater from the area and solidify and stabilize the contaminated soil using in-situ solidification and stabilization (ISS).

In Situ Solidification and Stabilization and Utility Relocation

The Site engineer asked Cascade to perform ISS of the approximately 15,000 cubic yard area of TBA-impacted soils. To avoid impacting active 24/7 operations, the project was limited to the area of disturbance including a 100-foot by 100-foot area adjacent to the ISS footprint. Cascade was to install an initial five-foot wide, 20-33-foot deep barrier slurry wall around the impacted area before conducting the full-scale ISS operations. The barrier wall was to cut off the groundwater flow to and from the suspected TBA source, prior to treating the more impacted soils towards the center of the footprint with ISS.

In addition, Cascade was to remove concrete, asphalt, light poles, curbs, and fencing within the area as well as identify and relocate an unspecified number of underground utilities, including but not limited to electric, communication, sewer, fire protection water, and storm sewer lines. The drawings specified the existence of two electric and/or telecommunication lines, a set of storm sewer inlets, and the active high pressure water protection line connected to the truck maintenance building which was adjacent to the ISS footprint. Groundwater was suspected to be encountered between seven and 13-feet below grade surface (bgs).

Cascade was to complete the ISS and utility relocation between June and September to avoid occupying needed space within the parking area ahead of the busy shipping season (October through December).

Handling On-Site Surprises Including Bluestone Soil and 85% More Utility Conduits

Cascade quickly identified why the TBA had become so mobile, and why the former remedial work was not entirely effective. The area had been backfilled almost exclusively with bluestone, also known as #57 stone. Remedial investigations and site characterization prior to Cascade's mobilization had not fully captured the extent of the bluestone and lack of fines at the site.

The stone fill had undermined the soil and clay formations, creating voids where groundwater was settling and contacting source material, and subsequently flushing into and contaminating seasonal groundwater flow. The bluestone at the site also created an excavation issue because the stone did not set, stabilize, solidify, or hold appropriately. Slumping occurred when managing material.



As the initial barrier wall was completed, the TBA-impacted groundwater was trapped within the ISS footprint, as designed. But the unanticipated bluestone had created a void space of 20-30% in the area. When the Cascade team began to add slurry to the footprint, groundwater trapped in the void space began to rise with nowhere to go. The liquid slurry pushed groundwater away but was effectively trapped by the secure barrier wall. As more of the ISS area was mixed, groundwater rose from 13 feet below grade surface to approximately zero. The team siphoned out and filtered the groundwater, adding it to the slurry mixture being pumped back into the ground in order to eliminate the increase in volume. The team was able to quickly respond to the situation and update the feasibility of the ISS mix design, the ISS approach, and material management.

Another challenge was that the two conduits for electric and telecom identified prior to the onset of the project proved to be over 14 conduits of unknown contents ranging from data to electric to fiberoptic. A sanitary sewer line was also identified along the utility route with the fire protection and storm sewer lines. Conduits had also been placed underground below groundwater, and replacing or rerouting conduits in the same area would not be safe or to code, so Cascade had to proactively plan a new route with new manhole covers above the finished ISS grade but safely below the eventual asphalt and parking lot cap.

To provide stable ground for heavy equipment and mitigate the potential for undermining bluestone, Cascade was selective with uncovering concrete and asphalt at the site. Cascade also test-pitted areas to identify the extent of bluestone to anticipate the need for more slurry and to delineate and document the area for the engineer and client. Cascade produced a change order to deliver higher production with larger excavators to meet the active site owners request that the project must be completed by mid-October.

To address the new utility conduits that were discovered, Cascade managed the utility identification and rerouting issues with weekly calls and meetings. As Cascade identified more utilities, the team worked closely with the active site owner and a contracted electrician to identify their functions and to relocate the utilities safely and legally. Cascade was able to reduce the downtime of temporary power to multiple vital buildings to only a few hours. Cascade efficiently relocated the utilities and provided temporary support for the many lines within a week. Cascade also supported the active site owner by providing insight into their own infrastructure, which had been lost to time.

As these challenges arose, Cascade addressed them by working diligently with the property owner, tenant, engineers, and client to provide and identify solutions. The need to collaborate with multiple parties and complete in situ remediation work in conjunction with utility relocation, temporary power, and space management made for a challenging and dynamic experience featuring many moving parts and surprises. Communication between the field and office and between Cascade and the project team was critical to success.

RESULTS

Creative Problem-Solving, Dedication, and Communication Key to Staying on Schedule and Budget

Cascade completed all ISS remediation work; utility relocation; installation of temporary and new permanent power, sewer, fire protection, and telecommunication; monitored effectiveness, strength, and permeability of the ISS; and restored the area to existing or better conditions.

Working diligently and thoughtfully, Cascade helped the engineer and client so that both maintained their initial budgets, while creatively securing funding for change orders through line-item budgets that would not have been otherwise used. A client representative said, "I was at the site this morning with DEP [New Jersey Department of Environmental Protection] and [Engineer] for a cap inspection and wanted to let you all know the site looks great! There are trucks parked all over the area and you wouldn't know we had done what we have completed if you weren't there."

The client, property owner, consultant, engineer, and current tenant, were happy with Cascade's innovative and resourceful project execution. The project was finished six days ahead of schedule despite major data gaps in site characterization, drawing specifications, and field conditions. Cascade maintained the schedule through the multiple setbacks and major changes in scope including change orders and unknown conditions in the field. The Cascade team faced multiple problems that they solved with reasonable pricing and planning.



CASE STUDY #4

\$8.1 million industrial site recovery act (isra) remediation near residential properties

LOCATION: Mid-Atlantic

PROJECT

Remediation of Dowtherm impacted soils and civil construction work

SERVICE

Deep soil mixing, In Situ Stabilization, Civil Construction

PROJECT OVERVIEW

Cascade Remediation Services, LLC (Cascade) was awarded a contract to perform Deep Soil Mixing (DSM) and In Situ Stabilization (ISS) of approximately 63,000 cubic yards (CY) of Dowtherm impacted soils to depths of up to sixty (60) feet below ground surface (bgs) and related civil construction and remediation work at an 8-acre NJDEP ISRA site for a large, multi-national client. The contaminants is extremely odorous and required careful management as the site was bordered by residential properties. Our team was selected partly due to our extensive experience managing, monitoring, and abating odorous compounds.

Cascade mobilized to the site in January to complete site survey, layout of remediation areas, installation of temporary facilities and SESC activities. This was followed by the removal of 40,000 SF of concrete slabs, foundations, and remnant facility structures to prepare the areas for deep soil mixing (DSM) and ISS. Cascade-owned automated grout plant and silo storage tanks were located on site and configured for delivering the ~ 8,000 tons of Portland Cement and Ground Granulated Blast Furnace Slag (GGBFS) reagents required for the project.

Prior to ISS, the remediation areas required extensive preparation involving the removal of subsurface piping, utilities, monitoring wells, surficial and underground reinforced concrete structures as part of the previous manufacturing facility at the site. Asbestos containing materials (ACM) were known to be present, thus Cascade provided full time asbestos monitoring oversight with requisite ambient air sampling collected daily during the intrusive work. Engineering controls were also implemented to mitigate the ACM exposure hazard. Workers in close proximity to the areas with suspected ACM were fitted with personal air sampling pumps with samples analyzed for asbestos fibers.



RESULTS

ISS of 3,000 CY soils by excavator bucket was completed at a depth of 10 feet at one location. At a second location, a retention pond onsite, ISS of an additional 2,000 CY of pond sediments by bucket excavator was completed to a depth of 6 feet. Prior to the ISS of the pond sediments, the pond was dewatered by pumping ~ 2 feet of pond water 700 feet to another retention pond located on site. To access the pond, a section of steel sheet pile was removed along an adjacent asphalt roadway.

ISS of 58,000 CY of soils by DSM using large diameter augers was completed over two (2) separate areas distributed amongst the ~ 700 x 8-foot diameter by 60 feet deep ISS columns. Cascade was responsible for the QA/QC sampling program for the project which consisted of obtaining samples at discrete intervals of the ISS treated soils daily (or every 500 CY), with the treated soil molds shipped to a geotechnical laboratory for ASTM D1633 (Compressive Strength) and ASTM D5084 (Permeability) for 7, 14 and 28-day testing.

The average hydraulic conductivity (permeability) of the treated soil matrix tests achieved the less than 5.0×10^{-6} centimeters per second (cm/sec) requirement at 28 days or sooner. Further, all samples met the minimum compressive strengths (50 psi).

ISS Soil Samples were collected using our custom fabricated hydraulic sampling tool which allowed for immediate sample collection at any depth of the treated column. The sample depth ranged from 12' to 57' BGS.

Once all areas requiring ISS were completed, a final restoration of the areas included the addition of approximately 3,000 tons of import fill followed by deployment of a geotextile liner and 6" thick layer of DGA. Cascade was asked to complete other out-of-scope work at the site such as processing 2,800 tons of demolished concrete, loading, transportation, and beneficial re-use of the concrete along with site wide grading and anchor trench. Additional ISS of 3,500 CY of excess swell material generated from the large-scale ISS operation was completed prior to December demobilization.

As important as the successful remediation of the site was, Cascade completed in excess of 20,000 man-hours of work safely, without an OSHA incident or recordable injury. On multiple occasions, the crew achieved up to 1,200 CY of DSM daily, which was important for maintaining the project schedule for the owner.

CASE STUDY #5

\$12 million expedited remedial design and ex situ remediation of hex chrome impacted soil

LOCATION: Pennsauken, New Jersey



PROJECT

Innovative Metals Reduction Services
at Former Steel Manufacturing
Warehouse

SERVICE

Remedial Design, Asbestos
Abatement, Demolition, Ex Situ Soil
Treatment

PROJECT OVERVIEW

In early 2013, Cascade Remediation Services, LLC (Cascade) completed an expedited Remedial Design (RD) phase that developed a program that would pre-delineate (PDI) the site using post-excavation equivalency soil sampling, compared a suite of chemical reductants during treatability study testing for chemistry optimization, developed an impact to groundwater soil cleanup criteria per NJDEP requirements, developed and detailed an aggressive ex situ soil mixing program.

RESULTS

Cascade developed an aggressive remedial program that met the intent of the ROD, expedited the remedial program from a 5 year RD/RA program to an 18 month RD/RA timeframe, eliminated the hexavalent chromium source of groundwater contamination in the soil and reduced remedial costs by 50% over the ROD estimates.

In late 2013, Cascade initiated the PDI work. In 2014, Cascade performed asbestos abatement and demolition of the former steel manufacturing warehouse and began site preparation activities including tree clearing & chipping, E&S installation and perimeter fence installation. Cascade also started fabrication of the ex situ soil treatment system and started treating staged chromium impacted soils by March 2015.

By the end of 2015, Cascade had excavated and successfully treated all of the delineated hexavalent chromium impacted soils. Approximately 105,000 tons of hexavalent chromium impacted soils were excavated, hauled to a staging area and processed through a trommel screen. The trommel screen deposited screened material into a hopper with a weigh scale that communicated with a PLC that adjusted the pumping rate of the calcium polysulfide treatment

solution being mixed with the soils inside of a pug mill. Treated soil was deposited onto a 100' long radial stacker that placed the treated soil into one of four staging cells where the treated soil was sampled in 100 cy lots for post treatment confirmation sampling. Treated soil was loaded into trucks and returned to the excavation areas.

In addition to the soil excavated and treated ex-situ, an estimated 1,000 tons of soil on the neighboring property was treated in situ via treatment solution injections. Post treatment soil sampling identified a layer of residual chromium impacts located approximately 10 feet below grade and extending under the plant facilities. An RD amendment was prepared and submitted to USEPA for approval. The impacted soil from the offsite area was excavated and processed through the onsite soil treatment system. The layer of impacted soil underneath the 50' tall asphalt silo was removed via micro tunneling. Eight 30" to 36" steel pipes were installed approximately 10' below grade underneath the asphalt silo via a horizontal boring machine after the silo foundation was underpinned with helical piers. The interior of the steel pipes were filled with grout.

Testimonials

In our pursuit of excellence and commitment to client satisfaction, we are privileged to share reflections from those who have experienced the Cascade difference firsthand.

Below, you will find testimonials from a variety of our valued partners, highlighting how our dedicated approach to environmental construction—characterized by extensive experience, rigorous safety standards, and unmatched capacity—has delivered not just successful outcomes, but has also fostered trust and reliability, enhancing their reputations and ensuring their projects progress smoothly. These endorsements underscore our ability to meet complex challenges with prision and professionalism.

“Thank you and the Cascade crew for your efforts on this project.

The consultant’s staff has been complimentary of your personnel and work at the site. The consultant-Cascade team has worked well in completing the project activities safely around the active substation and in/around city streets. I greatly appreciate the efforts of the team to address unanticipated conditions, keep things moving, and keeping the city pleased with the work.”

– *Program Manager, major utility company*

“I was at the site this morning with the Department of Environmental protection and engineer for a cap inspection and wanted to let you all know the site looks great!

There are trucks parked all over the area and you wouldn’t know we had done what we have completed if you weren’t there. Thanks again for the great work!!”

– *Remediation Project Manager, global additives and specialty ingredients company*

“Thank you so much to the team’s hard work out there this week.

We are very pleased with the progress and have been impressed with Cascade’s ability to pivot quickly in response to field changes.”

– *Principal Consultant, ERM*

“A good safety tailgate is one that gets you to stop for a moment and think before doing, which your Project Manager achieved with his discussion.

It made me feel more at ease knowing you guys promote a work environment where safety is paramount, and your employees don’t just pencil-whip your forms and have me sign at the bottom. They also worked very hard and got the project done faster than I expected. All around, I was quite impressed. I look forward to working with you again in future endeavors.”

– *Environmental Scientist, APTIM*



MEET OUR ENVIRONMENTAL CONSTRUCTION TEAM

With a collective experience exceeding 100 years in the field, our subject matter experts bring a diverse blend of skills from drilling to remediation, contracting, and consulting. Our dedicated team has worked together for decades, each bringing a wealth of experience, expertise, and a commitment to excellence that sets us apart in the environmental construction industry.

From project managers to safety officers, our team works seamlessly to deliver the high standards of service our clients expect and deserve.

- **Technical and engineering experts** who bring a blend of practical know-how and innovative problem-solving skills.
- **Data management specialists** dedicated to precision and accuracy in tracking and reporting.
- **Quality control professionals** who ensure that every project meets the highest standards.
- **Health and safety experts** who are reliable in their commitment to practices that ensure both security and environmental sustainability.

Get to know the experts behind our projects, whose skills and dedication ensure that every challenge is met with innovative and reliable solutions.



Dr. Paul Lear

Dr. Paul Lear, a nationally recognized expert in stabilization/solidification (S/S) technology, has over 30 years of experience in full-scale remediation activities and serves as one of Cascade's technical experts for ISS. Known for pioneering numerous firsts in the field, Dr. Lear led the first application of in situ chemical oxidation and thermal treatment using auger mixers, established the first CAMU for waste treatment in CA, and implemented the first full-scale S/S treatment for dioxin and explosive-contaminated soils. His innovative projects extend internationally, including the first S/S of organic wastes in Australia and groundbreaking work on ISS technologies at a manufactured gas plant site in NJ. Dr. Lear's career is marked by his commitment to developing innovative solutions to complex environmental challenges, significantly advancing the capabilities of environmental remediation technologies.



John Coffey

John Coffey is a Technical Specialist dedicated to Cascade's environmental construction services. He has prepared and implemented project plans on a variety of private and publicly funded projects and has worked with engineers on design / build projects from concept to completion. John has more than 30 years of experience in hazardous waste management, site remediation, wetlands mitigation, and construction management. He spent two decades managing remedial action construction projects. He has extensive experience preparing proposals and cost estimates, negotiating contracts and interactive with regulatory agencies. Key projects in Superfund wetland site, private lake dredging, landfill closure, in situ stabilization of 100,000 cubic yards of contaminated soil and sediment from a Superfund site, and remediation of multiple manufactured gas plant (MGP) sites.



Deborah Shaffer (Schnell), P.E.

Deborah Shaffer Schnell is the Vice President of Operations and General Manager of Cascade's environmental construction services. She has nearly 30 years' experience, specializing in innovative technologies at Cascade. She is a leading national expert on permeable reactive barriers (PRBs), hydraulic and pneumatic fracturing, and in situ technologies such as in situ chemical oxidation (ISCO) and in situ chemical reduction (ISCR), with a focus on amendment distribution. Deborah works with clients to select the best remedial technology for their sites, based on data presented in their conceptual site model (CSM), project timelines, and budget. Clients know her broad skillset and experience enable her to adapt and optimize in the field when the unexpected happens, and that she is still available for questions or reviews after project implementation.



Gregg Helsel

With over 35 years in Civil Construction, Gregg Helsel serves as Cascade's Director of Project Management, overseeing complex projects from in situ and ex-situ soil remediation to groundwater treatment and hazardous material containment. Gregg is known for his expertise in navigating challenging, sensitive sites, including operational hospitals, pharmaceutical facilities, and dense urban areas, where safety and regulatory compliance are vital. His focus on Cascade's CORE™ safety program and proactive management ensures project success while upholding Cascade's reputation for quality. Gregg's leadership consistently drives projects that align with client objectives, delivered safely and effectively across diverse, high-impact environments.



Kevin Corradino

Kevin Corradino is the Director of Business Development for Cascade's environmental construction services. Kevin has a deep technical understanding of environmental remediation having served in operations, project management, and client support throughout his four decades in the environmental industry. His background includes project management, contract administration, proposal preparation, subcontracting, and procurement practices. Kevin brings deep knowledge of traditional and specialty services including in situ soil mixing (ISS), slurry walls, capping, excavation, mechanical dredging, trenching & shoring, and manufactured gas plant remediation. His vast professional network and practical field experience brings a unique perspective to solving some of the most complex environmental challenges.



CORPORATE OVERVIEW

As the premier single-source provider of environmental and infrastructure drilling, site characterization, and environmental remediation services, Cascade stands at the forefront of the environmental services industry. Our expansive network of over 35 offices and a dedicated team of over 900 employees positions us uniquely to support projects of any scale and complexity across the nation.

At Cascade, we bring more than personnel to the table; we bring solutions. Our comprehensive supply of specialized equipment is tailored specifically for cutting-edge technologies in environmental remediation. This, coupled with our in-house team of experts, enables us to offer a full spectrum of integrated environmental services, enhancing efficiency and effectiveness for our clients.

Comprehensive Drilling & Remediation Services

Cascade Environmental is the leading field services provider of environmental and geotechnical drilling, site investigation, and remediation. We offer the full suite of drilling services with a versatile fleet that includes limited and restricted access equipment, as well as traditional and high resolution site characterization, and remediation technologies ranging from injection and fracturing to in situ stabilization and thermal remediation. We also offer a line of injectable amendments designed to help clients reach site closure faster and cost effectively. Additionally, we are at the cutting edge of implementing innovative technologies such as in situ chemical reduction (ISCR), chemical oxidation (ISCO), and bioremediation for soil and groundwater.



Known in the marketplace simply as Cascade, our family of brands includes Cascade Environmental®, Cascade Drilling®, Cascade Remediation Services™, TerraTherm™, and Aquifer Drilling & Testing™. Our project teams and business development specialists work closely together to ensure our clients have access to the full suite of services and industry leading experts under one Cascade umbrella.

CONTACT US

Your journey towards efficient and sustainable environmental solutions begins here. At Cascade, we are committed to delivering exceptional remediation services and our team of experts is ready to assist you with any inquiries or specific needs you may have regarding ISS or our wide range of environmental services.

Whether you're seeking expert advice, need detailed information about our capabilities, or want to discuss potential projects, our door is always open. Reach out to us through the contact details below, and let's explore how we can collaborate to achieve your environmental goals.



Kevin Corradino

Director of Business Development

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