BURNS McDONNELL

CASE STUDY

TC Energy and Burns & McDonnell Collaborate on Response to Milepost 14 Incident in Washington County, Kansas

On Dec. 7, 2022, TC Energy engaged Burns & McDonnell in an emergency response to an oil release (Milepost 14 incident) from the Keystone Pipeline System in rural Washington County, Kansas. Over the course of a year, Burns & McDonnell led a cross-functional team of internal services, subcontractors and vendors to resolve the issue safely and sustainably.

Challenge

The Milepost 14 incident in Washington County discharged 12,397 barrels of crude oil, a portion of which flowed into Mill Creek, impacting 3.65 miles of creek. TC Energy mobilized its team and experienced responders from Burns & McDonnell's Environmental Services Group to support the initial response efforts. The immediate challenge was to keep the oil contained while initiating recovery efforts. With the threat of dissolved phase crude oil constituents migrating downstream into the larger Little Blue River and potentially beyond, TC Energy and Burns & McDonnell immediately began evaluating engineered solutions to reduce the risk and expedite cleanup.

Project Stats

Client
TC Energy

Location
Washington County, Kansas

3.4M
SAFE PROJECT HOURS

0.0
TOTAL RECORDABLE INCIDENT RATE (TRIR)*
FOR BURNS & McDONNELL'S PROJECT SCOPE

1.4B
GALLONS OF CLEAN WATER DIVERTED

53M+
GALLONS OF IMPACTED WATER TREATED

7th
LARGEST WATER TREATMENT FACILITY IN KANSAS

Solution

Within hours of the oil release, the Burns & McDonnell emergency response team began addressing the release in the middle of privately owned farmland in Kansas. The team worked 24/7 through nights, weekends and holidays to successfully contain the release and mitigate impacts to Mill Creek and its surrounding habitat. This wouldn't have been possible without the proactivity and responsiveness of the entire team, driven by TC Energy's organizational culture of care and responsibility to protect the environment and surrounding communities.

Over the next year, Burns & McDonnell and its subcontractors worked closely with TC Energy, who coordinated with agencies including the U.S. Environmental Protection Agency, the Kansas Department of Health and Environment and the U.S. Army Corps of Engineers, and worked within a select group of TC Energy contractors through five stages of critical project work.

The Burns & McDonnell team's efforts included members from the firm's Environmental Services, Water, Power, Transportation and Construction groups. The team's cross-regional approach, which drew in specialized personnel from across the country, was critical to successfully executing this challenging project within a relatively short period of time.

The team's integrated five-stage plan was critical to the success of the Milepost 14 response effort.

Five-stage Response Plan

Emergency Response: The 24/7 emergency response effort involved removing, protecting and caring for wildlife; cataloging plant species; identifying culturally sensitive areas; recovering oil; and capturing and analyzing drone footage and 3D aerial models.

Diversion: A two-phase diversion system consisting of a network of temporary piping and pumps was designed and implemented to direct 55,000 gallons per minute (gpm) of clean surface water over land to isolate the impacted segment of Mill Creek and facilitate investigation, removal and restoration. Phase 1 involved the rapid deployment of a 10,000-gpm bypass system 24 days after the release, followed by the more robust Phase 2 implementation of a45,000-gpm system 111 days after the release.

Treatment: A temporary water treatment plant, constituting the seventh largest water treatment plant in Kansas, was designed and built in 70 days. The plant was built to withstand a one-year, 24-hour, 1-inch storm event and included two holding ponds with a combined capacity of 28 million gallons, an oil removal system, and a clear water treatment system. The system treated more than 53 million gallons of impacted water with no regulatory exceedances.

Removal: Team members undertook a comprehensive and methodical approach by directly accessing and removing impacted soils at the release point. Following the successful diversion, impacted sediments were removed from the creek bed using a variety of techniques — from light and heavy mechanical to manual. For safe transportation and disposal, they performed solidification of these impacted sediments. The team operated an on-site field laboratory to provide ongoing qualitative assessments of the creek sediments. Then they tested and managed the reintroduced creek flow to monitor the effectiveness of the creek bed removal action. This monitoring approach demonstrated that the removal action was effective and protective of surface water.

Restoration: The team conducted fish and bat studies and restored stream banks and habitats, facilitating the reintroduction of wildlife into the area and the reestablishment of Mill Creek flow without restrictions. Ongoing activities include creek restoration, seeding, planting, bank grading and stabilization, water monitoring, and analytical testing as needed.

Result

TC Energy and Burns & McDonnell continue to focus on monitoring and restoration of the area in support of TC Energy's commitment to the community.

About Burns & McDonnell

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