Red River Supply Warehouse

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Region 8

What began as a request to help monitor the air around an intense chemical fire with a large smoke plume at an oil and gas industry warehouse in Williston, ND, quickly grew in significance as water used to suppress the fire leached toxic chemicals from the warehouse into storm drains and left the Red River Supply Warehouse to deal with charred buildings and contaminated soil and debris.

Prompted by a call from the North Dakota Department of Public Health, we responded to a large chemical fire at the Red River Supply Warehouse. After reviewing the MSDS sheets on a long list of oil industry chemicals stored in the warehouse, we set up monitoring stations to ensure that the nearby community would be safe from potential volatiles, but quickly we realized that particulate matter caused by the fire would be the chief concern. And, the city, after reviewing concerns with Incident Command, put out an advisory to the citizens of Williston to evacuate or shelter in place.

The blaze was so large and so hot that eventually the city fire department decided to abandon attempts to extinguish the fire, which had required large amounts of water, and reduced their efforts, using only enough water for suppression.

Of course we had to deal with all of the water used in the fire which was now contaminated with chemicals from the warehouse. Storm drains were blocked and berms were built around the periphery to contain the contaminated waters. An Army Corps pump station on a canal adjacent to the site was shut down and clean canal waters above the site were drained directly into a Missouri River tributary, the Little Muddy River, thus isolating the chemically-contaminated waters.

Local heavy rains immediately after the fire caused contaminated on-site water from the fire to breach an earthen berm and enter the canal, resulting in a fish kill. Oxygen scavengers, chemicals used in the petroleum industry to prevent corrosion and bacteria growth, washed into the canal and depleted the oxygen supply, killing the fish. We added strippers/aerators which not only returned dissolved oxygen levels but also removed many of the contaminants and, within a couple of weeks, mitigation efforts were effective enough to return the trapped water in the canal to the Little Muddy River.

The berms helped us to contain more than 250,000 gallons of contaminated water on site, most of which was captured in frac tanks. We used some of the water for gross decon and dust suppression, some was sent off-site for treatment and some disposed of through deep well injection.

Before the project was complete, burned and damaged buildings and debris were removed and staged for recycling or disposal and the top 18-inches of soil removed. The Red River Supply Warehouse, in coordination with the State of North Dakota, identified approved disposal/reclamation locations and began off-site shipments.