

## 1.1 Report Summary

This is the as-built report for the system installation at the former Rasmus Oil Station located in West Point, Nebraska. This report details the activities of the installation of the remediation system. In addition, the report is a record of components of the systems.

In August of 1998, six underground storage tanks (USTs) and the associated piping and pump island were removed from Rasmus Oil. Contamination was noted in the tank basins, product lines, and the dispenser. In September of 2001, Coranco Great Plains personnel were onsite to conduct a Tier 1 investigation. Three monitoring wells (MW1-MW3) were installed to define the contaminant plume. Based on this investigation, a Tier 2 Investigation was required. During September and November of 2003, eight soil borings (SB1-SB8) were drilled to delineate the soil contamination from the point sources. Nine additional monitoring wells (MW4-MW12) were installed to delineate the aerial extent of the contaminant plume. Due to the contamination found during the Tier 2 investigation, the NDEQ required that a Remedial Action Plan be developed.

During January of 2006, four additional monitoring wells (MW13-MW16) were installed better delineate the groundwater contamination. One soil vapor extraction well (SVE1) and one air sparge well (ASW1) were also drilled at the facility. Pilot tests were performed at the facility on February 14<sup>th</sup> and 15<sup>th</sup>, 2006. The first test consisted of a three step soil vapor extraction test. The second test was an air sparge test performed for a duration of one hour with vapor extraction being performed concurrently utilizing SVE1. The short duration of the sparge pilot test was due to separate phase product in the vicinity of the sparge well.

The current remediation system at the facility was installed during August, September, and October of 2006 and consists of soil vapor extraction (SVE) and air sparging (AS) to remove contamination from the soil and groundwater. Currently four 4" soil vapor extraction wells (SVE1 through SVE4) are being used at the site and six 2" air sparge wells (ASW1 through ASW6) are installed but will not be operational until separate phase product is eliminated at the site. Trenches were dug to perform the required connections of 2" PVC SVE lines and 1" PVC AS lines to the SVE wells and AS wells. The SVE lines terminate at a manifold in the treatment trailer. SVE and AS manifolds with gauges and meters have been installed inside the trailer to allow for monitoring of individual lines.

Following the SVE manifold, the influent is drawn through a knock out tank. Condensate water is first filtered then treated by a granular activated carbon unit and surface discharged. The SVE blower is a Roots URAI 59 powered by a 25 horsepower (Hp) explosion proof (EXP) motor. The effluent from the SVE unit is discharged to the atmosphere.

The air sparge manifold is connected to a Becker KDT 3.60 blower which is powered by a 5.0 (Hp) explosion proof (EXP) motor. Prior to manifold, the air is cooled by a passive finned heat exchanger.

The treatment system is enclosed in an 8'x12'6"x6'6" Seneca trailer. A control panel with necessary interlocks is installed on the outside and at the front end of the trailer. To reduce the exterior noise, a layer of 2" noise absorption foam panels were installed on the interior walls and ceiling. A telemetric unit is installed to allow for remote monitoring of the remediation systems.

Monthly visits for field readings and maintenance will be performed at the site and quarterly visits will be made to sample monitoring wells.

## 1.2 Soil and Groundwater Remediation

Soil contamination at the former Rasmus Oil station is being addressed by soil vapor extraction. A 25 Hp EXP motor runs a Roots URAI 59 regenerative blower to create vacuum for the SVE system. The blower is connected to four wells for extracting vapors. The SVE wells were installed with 6.25" inside diameter hollow stem augers. The dissolved phase contamination will be addressed in the future by the air sparge system once separate phase product is removed. A Becker KDT 3.60 blower is connected to six AS wells.

The SVE wells are 4" diameter wells, 17 feet in depth, with 7 feet of 0.020" slot screen. The gravel pack used was 16/30 and was sealed with a bentonite chip seal. The SVE wells were connected to a 2" PVC SVE line with a 4"x4"x2" tee. Each line was connected to the treatment trailer utilizing a trench dug with a backhoe. The SVE wells were completed inside a traffic rated 12x12 wellhead protector and was completed with a 4" "Ex-Cap" to allow for vacuum measurements at the wellhead.

The AS wells are 2" diameter 30 feet deep, with 2.5 feet of 0.020" slot screen. The gravel pack used was 16/30 and was sealed with a bentonite pellet seal. The remaining annulus was grouted with neat cement from 25.5 feet below surface to 3 feet below ground surface. The AS wells were connected to a 1" PVC SVE line with a 2"x2"x1" tee. Each line was connected to the treatment trailer utilizing a trench dug with a backhoe. The SVE wells were completed inside a traffic rated 12x12 wellhead protector and was completed with reducing fittings and a mini ball valve to allow for pressure measurements at the wellhead.

Table 1: Well Details

Well Number	Type of Well Head	Well Diameter (inches)	Screen Interval (feet)	Slot Size (inches)	Gravel Pack Interval (feet)	Gravel Pack Size
SVE1	Flush mount	4	7-17	0.020	5-17	16/30
SVE2	Flush mount	4	10-17	0.020	8-17	16/30
SVE3	Flush mount	4	10-17	0.020	8-17	16/30
SVE4	Flush mount	4	10-17	0.020	8-17	16/30
ASW1	Flush mount	2	27.5-30	0.010	25-30	16/30
ASW2	Flush mount	2	26.5-29	0.010	24-30	16/30
ASW3	Flush mount	2	25.5-28	0.010	22-30	16/30
ASW4	Flush mount	2	27.5-30	0.010	25-30	16/30
ASW5	Flush mount	2	26.5-29	0.010	24-30	16/30
ASW6	Flush mount	2	27.5-30	0.010	24-30	16/30

The SVE lines and AS lines terminate at the treatment building where two manifolds exist that have vacuum gauges, flow meters, sample ports, and ball valves. The original SVE flow meters had to be replaced with Blue-White model number F452040GH after start up to allow for

more accurate flow measurement. The original flow meters were at to high of a range to be read with the flows generated by the SVE blower.

The air flow from the SVE wells is pulled through a condensate tank. At the condensate tank, "make-up" air can be added to assist in adjustment of the flow rate and vacuum to the well. Following the condensate tank, the air flows through an intake filter prior to the blower. Following the blower, the air passes through a discharge silencer and is discharged to the atmosphere. An additional silencer (Universal U5-4) was retrofitted to the exhaust due to noise complaints at startup. The condensate that accumulates in the tank is pumped with a 1½ Hp transfer pump through a carbon bed and a filter for treatment. The treated condensate is surface discharged. The system was set to run during daylight hours because of noise complaints made by the neighboring residents to the site. Photographs of the site and the remediation trailer are included in Section 3 and equipment information sheets are included in Section 4.

PLAN NOTES:

PLAN NOTE	DESCRIPTION	MANUFACT.	MODEL NO.	VOLTAGE	PHASE	POWER	NOTES
1	10" X 6" FLOOR OPENING	SENECA					
2	SVE HEADER	SENECA					
3	120 GALLON KNOCKOUT TANK	SENECA	92-30-120-200				
4	SIGHT GLASS	SENECA					
5	8-INCH CLEANOUT	SENECA					
6	DILUTION AIR INTAKE FILTER/SILENCER	STODDARD	F64-2" NPT				REPLACEMENT FILTER ELEMENT F8-108
7	INLINE FILTER	STODDARD	F75-4" NPT				REPLACEMENT FILTER ELEMENT F8-160
8	SVE BLOWER	ROOTS	URAI 59	230/460V	3	25 HP	3450 RPM, 280 SCFM @ 177" WC, CLASS I, DIV II XP
9	DISCHARGE SILENCER	STODDARD	PD13-4" NPT				
10	4-INCH GAL DISCHARGE STACK	SENECA					
11	TRANSFER PUMP	GOULDS	1ST1F6B4	208/230/460V	3	1.5 HP	3450 RPM, CLASS I, DIV II XP
12	CARTRIDGE FILTER	USFILTER	150492				
13	CARBON FILTER	TETRASOLV	HPP-100				100 LB
14	1-INCH SCH80PVC						
15	1-1/4-INCH SCH80PVC	SENECA					
16	1-INCH GALVANIZED	SENECA					
17	2-INCH GALVANIZED	SENECA					
18	4-INCH GALVANIZED	SENECA					
19	AIR SPARGE HEADER						
20	AIR SPARGE COMPRESSOR	BECKER	KDT 3.60	230/460V	3	5 HP	30 CFM @ 18 PSI
21	HEAT EXCHANGER	CHROMOLOX	GRS12-36				
22	12-INCH EXHAUST FAN	NEW YORK BLOWER	EN-122H	115/230V	1	0.25 HP	1900 CFM, EXPLOSION-PROOF
23	PASSIVE VENT						
24	EXPLOSION-PROOF LIGHT SWITCH						EXPLOSION-PROOF
25	THERMOSTAT						EXPLOSION-PROOF
26	EMERGENCY STOP SWITCH						EXPLOSION-PROOF
27	EXPLOSION-PROOF LIGHT	CROUSE-HINDS	VX-F25GP	115V	1		EXPLOSION-PROOF
28	EXPLOSION-PROOF CONVECTION HEATER	CHROMOLOX	CVEP 3.6 087097	230V	3	3.6 KW	EXPLOSION-PROOF
29	CONTROL PANEL W/ AUTODIALER, UL, TIMER-BASED	SENECA	CUSTOM	230V	3	100 AMP, 3 PH, 4W	

SHIPPING ITEMS:

ITEM	DESCRIPTION	MANUFACTURER	MODEL NO.	QUANTITY	UNIT	NOTES
1	SVE DISCHARGE STACK	SENECA	4" CUSTOM	1	EA	SHIP LOOSE



Pic 1



Pic 2



Pic 3



Pic 4



Pic 5



Pic 6



Pic 7



Pic 8



Pic 9



Pic 10



pic 11



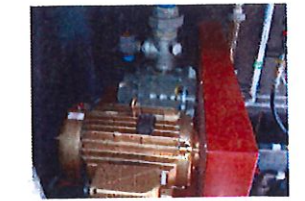
pic 12



Pic 13



Pic 14



Pic 15



Pic 16



Pic 17



Pic 18



Pic 19



Pic 20



Pic 21

CLIENT NAME		Coranco Great Plains, Inc.		
REFERENCE		Rasmus Oil		
LOCATION		West Point, NE		
PROJECT NO.		6292805		
DESCRIPTION	QTY	VENDOR	MANUFACTURER	PART NUMBER
8'X12' TRAILER, ENCLOSED	1	D&S MIDWEST TRAILER	D&S MIDWEST TRAILER	TRAILER
8'5" INTERIOR HEIGHT	1	D&S MIDWEST TRAILER	D&S MIDWEST TRAILER	INCLUDED
8' REAR DOOR, DOUBLE	1	D&S MIDWEST TRAILER	D&S MIDWEST TRAILER	INCLUDED
PLYWOOD WALLS & CEILING	1	D&S MIDWEST TRAILER	D&S MIDWEST TRAILER	INCLUDED
2- 3500 LB AXLES W/ELECTRIC BRAKES	1	D&S MIDWEST TRAILER	D&S MIDWEST TRAILER	INCLUDED
STONE GUARD	1	D&S MIDWEST TRAILER	D&S MIDWEST TRAILER	INCLUDED
NOISE FOAM	1	INDUSTRIAL NOISE CONTROL	INDUSTRIAL NOISE CONTROL	K10-M
AIR SPARGE COMPRESSOR, TEFC (CLASS 1, DIV2, GROUPD), 30 CFM @ 18 PSIG, 5 HP, 230 V, 3 P	1	BECKER	BECKER	KDT3.60
SVE BLOWER - 280 SCFM @ 177" WC	1	ENGINEERING AMERICA	ROOTS	59 URAI
MOTOR, 25HP, TEFC 230/460V, 3PH, 3500 RPM	1	BALDOR	BALDOR	EM4107T
ADJUSTABLE MOTOR BASE	1	BALDOR	BALDOR	B215T
MOTOR SHEV RIM	1	MOTION INDUSTRIES	MOTION INDUSTRIES	
BLOWER SHEV RIM	1	MOTION INDUSTRIES	MOTION INDUSTRIES	
MOTOR BUSHING	1	MOTION INDUSTRIES	MOTION INDUSTRIES	
BLOWER BUSHING	1	MOTION INDUSTRIES	MOTION INDUSTRIES	
POWER V BELT	2	MOTION INDUSTRIES	MOTION INDUSTRIES	
12" EXHAUST FAN, 1900 CFM, 0.25HP, 1-60-115/230V, XP	1	B/P ASSOCIATES	NEW YORK BLOWER	EN122-H
3/4-INCH BRONZE FLOWMETER	1	UTILITY EQUIPMENT	HERSEY	4300751
CONNECTIONS	2	UTILITY EQUIPMENT	HERSEY	CB751
EXP HEATER 3.6KW 230 VAC 1 PHASE	1	VOLCO	CHROMALOX	CVEP-3.6 087097
HEAT EXCHANGER, 1-INCH	1	VOLCO	CHROMALOX	GRS-12-36
AIR SPARGE INTAKE FILTER/SILENCER	1	PATHFINDER SYSTEMS	STODDARD	F64-2" NPT
DILUTION AIR INTAKE FILTER/SILENCER	1	PATHFINDER SYSTEMS	STODDARD	F64-2" NPT
INLINE FILTER	1	PATHFINDER SYSTEMS	STODDARD	F75-4" NPT
DISCHARGE SILENCER PACKAGE C	1	PATHFINDER SYSTEMS	STODDARD	PD13-4"NPT
BELT GUARD	1	PATHFINDER SYSTEMS	STODDARD	INCLUDED
FLEXIBLE CONNECTORS	1	PATHFINDER SYSTEMS	STODDARD	INCLUDED
VACUUM SWITCH	1	DWYER	DWYER	1950-10-2F
MAGNAHELIC READING 0-50"WC	1	DWYER	DWYER	2050
2" VACUUM RELIEF VALVE SET AT 14" HG	1	KUNKLE C/O MILLER MECHANICAL SUPPLY	KUNKLE	215V-H01AQE0014
0-200 INCHES OF WATER VACUUM GAGE, BACK CONNECTION	5	SIMONE	ASHCROFT	AC 25-1490A-02B-200" WC VAC
PRESSURE GAGE, 0-30 PSI, FLUTTER GUARD GAGE WITH LOWER CONNECTION	6	SIMONE	ASHCROFT	63-W3005H-02B-XSF 30#
PRESSURE GAGE, 0-60 PSI, FLUTTER GUARD GAGE WITH LOWER CONNECTION	1	SIMONE	ASHCROFT	63-W3005H-02B-XSF 60#
TEMPERATURE GAGE, 50/400 DEGREES F	2	SIMONE	ASHCROFT	30EI-60R-040-50/400
100 LB LIQUID PHASE GAC	1	TETRASOLV	TETRASOLV	HPP-100
CARTRIDGE FILTER, SIDE IN SIDE OUT 1" INLET AND OUTLET	1	SIEMENS WATER TECH.	SIEMENS WATER TECH.	150492
AIR FLOW METER 40-240 CFM 2" I/O	5	MULLARKEY	BLUE-WHITE	F452250GHN
AIR FLOW METER 1-12 CFM 1/2" I/O	6	MULLARKEY	BLUE-WHITE	F45376GHN-8
1" XP SOLENOID, 120/60V, NC	2	3E	ASCO	EF8210G4
TRANS PUMP, TEFC, 1.5 HP, 208/230/460V, 3 PH, 3500 RPM	1	CENTRAL STATES	GOULDS	1ST1F5B4
KNOCKOUT TANK FLOAT SWITCH W/THREE LEVELS	1	MADISON	MADISON	FOE W/ 3 FLOATS
120 GAL AIR RECEIVER TANK	1	SYLVAN	SYLVAN	92-30-120-200
MIST ELIMINATOR 12"	1	ACS	ACS	12" DIA X 6" THICK