

MEMO

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From:
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Subject:
Aberdeen MGP Site Environmental Remediation Program: 2019-2023
Projected Cash Flow

This memorandum presents a continuing update on the progress of remediation activities at NorthWestern Energy's former manufactured gas plant (MGP) site in Aberdeen, South Dakota, along with estimated environmental remediation expenditures over the next five years.

The remedial approach for this site, approved by the South Dakota Department of Environment and Resources (SD DENR) in June 2010, is based on recovery of coal tar free product from the subsurface at on-site and off-site locations where found to be drainable and recoverable. An existing network of coal tar collection trenches and wells (to be expanded through 2021) is used to accomplish this primary management goal for the site. In addition, overall site management consists of long-term perimeter groundwater monitoring, ongoing operational maintenance of a current groundwater remediation system, enacting restrictive land use covenants for the MGP property and other affected properties. Further discussion on recent project work and the anticipated timeline and projected cash flow for the next five years are presented below.

Extraction of coal tar free product was continued in 2018 from several on-site trenches ("collection galleries") and on-site and off-site recovery wells. Approximately 6,930 gallons of coal tar have been recovered during the seven years that the collection systems have been in place, with additional collection systems planned for installation on surrounding properties over the next three years. Whereas the original remedial program was anticipated to rely on large-scale collection trenches, a remedial performance evaluation completed in 2016 determined that a surgical, smaller-scale approach completed over time

would be optimal to target isolated coal tar bodies in the subsurface. The remedial design and associated costs to address the remaining target areas are based on this approach.

Historically, a budgetary allotment of \$1,000,000 was established for possible third-party property owner compensation. A 2018 analysis of nearby property values and the extent of impact beneath these properties indicated a value of \$435,000 as a more realistic budgetary allotment for this purpose, if necessary. This amount is assumed to cover potential third-party properties that are north, east, and south of the property and is spread out over a three year period as these properties are sequentially addressed. Third-party compensation is assumed to not be required for city properties west and north of the site, though recovery systems are still anticipated for those areas.

Remedial construction and any potential third-party property owner compensation is expected to be completed in 2021; after this time overall project expenditures are expected to reach a long-term annual O&M and monitoring budget of approximately \$215,000 by 2023. This annual project cost will be better understood pending the performance of the expanding product recovery network that will be completed in 2021 and could increase if more frequent pumping efforts are required or increased volumes of coal tar that require handling, storage, and disposal. A remedial design/construction contingency has been reduced relative to 2018, but this budget item remains until remediation system performance and regulatory expectations are better understood.

As the remedial construction program continues to target off-site properties, the schedule and costs will be more susceptible to third-party negotiations regarding access, design/operation constraints, timing, and any impacts to property owners and the local community. As such, actual costs may differ based on these factors. The forecasted expenditures outlined below are a best estimate based on the assumptions discussed herein at this time. Additionally, as noted in the environmental reserve analysis dated January 14, 2019, environmental monitoring, product recovery, and operational maintenance will most likely be required at Aberdeen beyond the 30-year time period for which a total cost has been developed for this site. In all likelihood, these activities will continue in perpetuity as a condition of managing coal tar free product in place within the subsurface. Based on our current understanding of these long-term monitoring and O&M costs, approximately \$200,000 per year would be incurred beyond year 30.

ABERDEEN MGP SITE REMEDIATION PROGRAM AND PROJECTED EXPENDITURES		
Year	Projected Expenditures	Anticipated Project Activities and Related Assumptions
2019	\$652k - \$1,065k	Continued remedial design and construction for Golden Park Apartments, City of Aberdeen North Property, Browne Park, and East Briar Townhomes property (north and northwest of Site); continued O&M for product recovery network and groundwater remediation system; installation of one additional offsite monitoring well; annual groundwater monitoring; executing land use restrictions. A remedial pre-design investigation will be conducted on each property to determine exact

		number and placement of recovery wells; accordingly, a design/construction contingency budget item is included.
2020	\$806k - \$1,220k	Remedial design and construction for Brown County property and Boys & Girls Club property (south of site), additional work on City of Aberdeen property west of site; continued O&M for product recovery network and groundwater remediation system; annual groundwater monitoring; executing land use restrictions. A remedial pre-design investigation will be conducted on each property to determine exact number and placement of recovery wells; accordingly, a design/construction contingency budget item is included.
2021	\$602k - \$1,015k	Remedial design and construction for Steel Structures and Sacred Heart properties east of Site and First Mini-Storage and Telserv properties south of Site; continued O&M for product recovery network and groundwater remediation system; annual groundwater monitoring; executing land use restrictions. A remedial pre-design investigation will be conducted on each property to determine exact number and placement of recovery wells; accordingly, a design/construction contingency budget item is included. Remedial construction expected to be essentially completed for all areas by the end of 2021.
2022	\$235,000	Continued O&M for product recovery network and groundwater remediation system, and annual groundwater monitoring.
2023	\$213,000	Continued O&M for product recovery network and groundwater remediation system, and annual groundwater monitoring.

5-Year Estimate for 2019-2023: \$3.75M (includes \$435k allotted for potential third-party property owner compensation)

Total 30-Year Environmental Liability Estimate identified in December 2018 reserve update: \$9.1M