

Feasibility Evaluations: Extending the Lifespan of Oil Water Separators

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Shortly after adoption of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act of 1972, Norfolk Southern Railway Company's (NSRC) predecessors immediately began a program of designing and constructing industrial oil water separator systems at a majority of their Yards for the purpose of treating storm water runoff from fueling and maintenance areas, and to contain potential fuel and oil spills or releases during the same fueling and maintenance activities. At Yards located throughout Virginia, North Carolina and South Carolina for example, oil water separators consisting of predominantly in-ground reinforced concrete structures including grit chambers, settling basins, overflow or equalization basins, and weir structures, were constructed and placed into operation between 1973 and 1976. Now after almost 40 years of continuous use, NSRC recently undertook a major evaluation of the condition of each of these oil water separators through site-specific engineering feasibility evaluations in lieu of a "one size fits all" approach.

A Feasibility Evaluation, as prepared by an experienced and qualified engineer, is a thorough, detailed analysis of the potential of a proposed project that relies on extensive investigations to support the decision making process. The Feasibility Evaluation usually outlines several alternatives or options that could meet the desired goals. Numerous factors are considered for each alternative to include future facility operational plans, compliance with applicable regulations, engineering design complexity, estimated life cycle, constructability, operations and maintenance ease, and cost constraints, to name a few. The Feasibility Evaluation compares each alternative and identifies the recommended approach.

At NSRC's Yard facilities in Virginia, North Carolina, and South Carolina, NSRC recently developed a project to individually evaluate potential repairs and/or upgrades to each of the existing concrete oil water separator systems. The first step was to determine whether the existing oil water separator system is actually needed based on current and/or future operational needs at each specific Yard. The next step looked at the compliance record or history of the separator system in meeting discharge permit requirements, whether by a NPDES permit or POTW discharge permit. Field investigations which included soil borings, concrete cores, surveys, electrical inspections, etc. were essential in evaluating the actual condition of the existing concrete structures, most of which were approaching 40 years of continuous operation. Based on data from the field investigations, each of the separator systems was prioritized considering the need and potential environmental risk or liability. Site specific solutions were developed for each individual separator system. A full suite of remedial options were evaluated that included engineering, constructability and cost factors which included concrete structure replacement to coating or lining systems. During this evaluation, it was also imperative to consider operation and maintenance simplicity in addition to anticipated life cycle time frames and costs. The end product of each Feasibility Evaluation allowed NSRC to make better informed decisions for each site based on unique oil water separator system conditions, and to program and budget capital construction funds in a rational cost effective approach.
