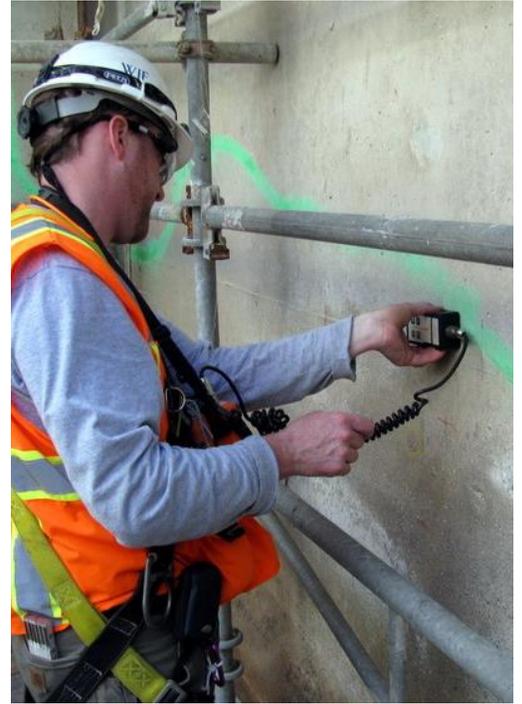




PROJECT PROFILE

Palo Verde Nuclear Generating Station

Water Reclamation Facility Condition Assessment and Repair Design | Tonopah, AZ



CLIENT

Arizona Public Service

BACKGROUND

The Palo Verde Nuclear Generating Station is a nuclear power plant located about forty-five miles west of Phoenix. It is currently the largest nuclear generating facility in the United States. Palo Verde is also the only nuclear generating facility in the world that is not located adjacent to a large body of aboveground water. Instead, it uses water from the Palo Verde WRF.

After Palo Verde personnel observed various distress conditions at the Water Reclamation Facility (WRF), the client retained WJE to perform a condition assessment and develop a ten-year capital maintenance and repair plan. The field investigations and proposed repairs were required to be executed during regularly scheduled shutdowns with work allowed using two twelve-hour shifts each day to minimize disruption to operations.



SOLUTION

WJE executed a systematic assessment of the WRF concrete structures that comprised visual examinations, nondestructive testing, and laboratory analysis of material samples to develop a ten-year maintenance and repair priority plan for the plant. WJE concluded that the primary distress mechanisms were corrosion of embedded reinforcement and structural members as well as alkali-silica reactivity in some concrete elements.

WJE evaluated four repair options to achieve an additional twenty-five-year service life. Options included an impressed current cathodic protection system, a passive anodic protection system, a coating system coupled with bulk anodes, or a concrete lining system containing sacrificial anodes. A rating system that considered structural deterioration, operational impact, safety hazards, and environmental impact was used to assess and prioritize the repair recommendations. Recommendations and repair concepts were developed and scheduled over a series of outages to meet the operational needs of the WRF.



During construction, WJE provided full-time on-site project management to assure unforeseen conditions and speciality repairs could be executed without delay. The WJE solution allowed for all work to be conducted during outages.