The development and utilization of course resources is one of the key components of curriculum reform. Over the course of more than 4,000 years of water resources development and management, China has achieved remarkable accomplishments. Rich physics course resources are embedded in the construction and operation of hydraulic engineering projects, including principles such as flow rate, pressure distribution, and energy conversion. By developing and integrating these physics course resources from hydraulic engineering projects into secondary school physics education, the educational value of hydraulic engineering can be further highlighted. This approach leverages real-world scenarios to cultivate students' comprehensive ability to solve practical problems, enhances core competencies within the discipline, and promotes the inheritance and development of excellent traditional Chinese culture through physics teaching, thereby strengthening students' national pride.