The Osa River Valley is a unique area. Osa marked the historical border between the Piast Christian kingdom of Bolesław the Brave (Bolesław Chrobry) and the pagan Prussia. In the Teutonic Knights' times it was also the northern border of the Chełmno Land. The border nature of Osa meant that medieval settlement and defensive architecture developed in its vicinity. The development depended largely on water supply, which was necessary for the growing population and economic activity, so that the hydrotechnical infrastructure, such as waterworks, water mills and related hydrotechnical facilities, also developed rapidly. In many cases, the remains of the old infrastructure have survived to this day.

The main purpose of this dissertation was to gather new information about historical hydrotechnical facilities in the main settlement centers located in the lower course of the Osa valley (Słupski Młyn, Rogóźno-Zamek, Kłódka, Grudziądz) functioning until the 19th century, including the location of the building, its construction characteristics, the time of its operation along with the course of its construction, modernization and maintenance, as well as the state of the building's preservation. In addition, an attempt was made to: (i) verify, supplement and systematize the current state of knowledge; (ii) carry out a historical reconstruction of both individual buildings and the entire hydrotechnical infrastructure, including modernizations carried out over time; (iii) compare collected information with data on similar sites located in the Teutonic state in Prussia, as well as in the Kingdom of Poland and in Europe; (iv) identify potential sources of technical solutions present in the Osa River Valley.

The study employed interdisciplinary methods, including: (i) historical search query that covered archival sources (written, cartographic, iconographic) and the literature on the subject; (ii) searching for information on archaeological sites in the studied area; (iii) sources analysis including the retrogressive method in order to determine the approximate time the structures and devices were created, estimate of their period of use and indicate the subsequent technical modernizations; (iv) comparative analysis based on the results of archaeological research carried out at other similar sites; (v) non-invasive surface field survey carried out in order to verify information obtained during source analysis; (vi) determining the state of preservation of existing structures and preparing the documentation (descriptive, drawing, and photographic); (vii) 3D laser scanning and geophysical surveys; (viii) dendrochronological and petrographic analysis of selected structures. Historical archaeology methods were used during the study; author refrained intentionally from using the most invasive archaeological methods due to the assumptions underlying the study.

Based on the analysis of sources (written, cartographic) and field research in Słupski Młyn, Rogóźno-Zamek and Kłódka, a set of hydrotechnical structures related to a former mill complex was described: their condition was determined and an attempt was made to verify the location of non-existing structures (known only from written sources), describe their history, construction and functions. For example, data from a Teutonic Knights' accounting book, including expenses incurred during the reconstruction of the complex in Słupski Młyn, were compared with the results of archaeological research carried out at a similar site (medieval mill in Mniszek). During the field research in Rogóźno-Zamek, remains of a wooden structure were found, as well as other remains that should be associated with the functioning of a mill at this location (including millstones and grinders). A plan of this structure was drafted, which involved, among other aspects, the location of millstones. Samples were also collected for professional dendrochronological and petrographic analysis. The results of these tests were discussed in detail, emphasising their importance in identifying and dating hydrotechnical structures that no longer exist.

The research conducted in Grudziądz concerned the city's water supply up to the nineteenth century. The high location and a progressing development of the city created serious problems with drinking water supply in medieval Grudziądz, and to solve them, numerous modern (by European standards) technical solutions were utilised: long canals and municipal waterworks, including probably the first *Wasserkunst* in the Teutonic state. Based on the acquired data (historical, archaeological, and obtained using a 3D laser scanner), the hydrotechnical solutions and their functioning were described as well as modernizations carried out over the centuries were indicated and the direction of knowledge flow regarding hydrotechnical construction was proposed. Furthermore, the construction of the water tower was analysed and an inlet into a filled tunnel inside the tower was located; the tunnel's probable course was identified by additional geophysical testing (GPR).

The application of scientific approach typical of historical archaeology that combines tools used by both the historians and archeologists, has proved important for investigation of historic hydrotechnical structures. In locations where invasive archaeological works would have been difficult or impossible, a broad use of various types of sources and their field verification as well as the use of various research methods are especially valuable for better understanding of the historical hydrotechnical facilities. The results may be helpful in selecting valuable sites for future excavations.