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River Bank Boundary Determination**

1. Introduction

Problem of real estate boundaries has become very important, lately. Surveyors perform such works as boundaries delimitation and relocation more often. In case of typical real estate being piece of land they are works well defined and described both in acts and literature. Yet, there are such cases which need some reflection and application other algorithms than those usually used. It happens surely in case of river bank boundary determination.

Such determination, taking into account the simplest approach, is delimitation between land covered by waters and adjacent lands [1]. It needs not only surveying knowledge but also knowledge from hydrology, hydrography and management of water resources.

2. Water Cadastre

Water cadastre [5] is one of instruments of water management resources. It is run by Head of State Administration of Water Management. It is an information system of water management. It is divided into two files.

File I comprises timely data concerning (among others): hydrographic network and meteorological and hydrologic watching-survey stations, course of boundaries of drainage area and water regions, resources of underground waters, locations of major reservoirs of underground waters and stations of waters observations, quantity and quality of underground and surface waters supplies, quantity of surface and underground water consumption, sources and characteristic of

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punctual and area pollutions, biological condition of water environment and deluge area, fishing districts and fishing usefulness of waters, use of waters, legal-water permissions and integrated permissions concerning usage of water, quantity and kind of substance especially harmful for water environment, water constructions, protective zones and areas, and areas of risk of floods, water companies.

File II comprises (among others): country water environmental program, programs of waters management on river-basins areas, anti flood plans and neutralization of effect of dry weather at country territory.

Source of data of water cadastre concerning real estate [5] is grounds and buildings register (cadastre). It has been mentioned in [4], that is “uniform in country, systematically updating collection of information of grounds, buildings and dwellings, their owners and other individuals and common persons possessing these grounds, buildings and dwellings”. Obviously, in case of water cadastre, data concerning real estate will be the most interesting ones. From the point of view of persons responsible for its updating.

3. Cadastral Boundaries Versus River Bank

Water, as one of small elements has such ability, that changing itself, modifies permanently all what is around it. No matter whether it is surface or underground water, it happens independently. Nevertheless the first ones have influence on forming space being the subject of data of grounds and buildings register.

Water Act [5] classifies waters on seas and inland waters. Inland waters are flowing and stagnant ones. Although they have various features, they all more or less change pieces of the Earth crust under and near by, through different kinds of hollowing out and accumulation particles of soil being result of waving water or current of a stream.

In case of grounds and buildings register, relief is not important. So, the fact how water will form a river valley or bottom of lake is not significant. Yet, significant are changes which are located at this place, where water touches dry land.

One should then think over on necessity of periodic control of river bank in the relation of boundaries, determined during establishing of grounds and buildings register.

Since existing up to now grounds and buildings register was established on the break of years of 60 and 70 of last century, boundaries of parcels, determined that time at presence of owners and possessors, being under rivers should be surely changed. Almost half of the century passed and especially these more “laborious” rivers could overpass determined earlier cadastral boundaries.

Such case has been observed in Vistula river on the boundary between Liszki commune, krakowski district, Małopolskie voivodeship and Krakow.

Figure 1 shows an orthophotomap, made contemporary, with cadastral boundaries. It is generated by Geoportal. Boundaries, being on the picture, are elements of Piekary and Sciejowice cadastral units, Liszki commune, krakowski district, Małopolskie voivodeship. Krakow boundaries are not presented on the picture. They are not accessible in portal. Eastern boundary of parcels is administration boundary between krakowski district and Krakow. From the city side are also river parcels being under water of Vistula river or under its direct neighbourhood. In the centre is clearly visible old river-bed, which did not exist during the time of establishing of grounds and buildings register (Fig. 2).



Fig. 1. Cadastral boundaries on the background of orthophoto map, made contemporary

Source: picture generated directly from [2]



Fig. 2. Satellite photo from 1965 year and orthophotomap from 2009 year with mapped administrative boundary of Krakow – old river-bed on the boundary of cadastral unit Rączna, commune Liszki, krakowski district together with Krakow city

Source: picture generated from [3]

On the figure 2, on the background of satellite photo, boundary of Krakow is shown. As it is visible, at time when grounds and buildings register had been establishing, presented piece of administrative boundary of the town run along the river. Now, it is outside the river.

4. River Bank Boundary

River bank was especially mentioned earlier, at last chapter. It is reasonable because river bank, according to [5], for natural streams, lakes and other natural water reservoirs is an edge of bank or line permanent overgrowth of grasses or line which is determined according to medium level of water from the period of last 10 years, at least. Thus, it is an information about natural environment [1].

Flowing waters are always property of state. Only stagnant waters are property of individuals or corporate persons. Waters being ditches, located within real estate are properties of owners of real estate [5].

If inland surface flowing water or water of territorial sea or inner sea waters annex constantly, through natural way land not belonged to the owner of water –

this land becomes property of owner of water. Obviously, it can take place only with compensation. It is reasonable that together with compensation, determination of location of new river bank is performed again.

It is different situation in case of old river-banks (Fig. 1–3) and lands become as results of erecting construction, regulating levels of waters (Fig. 3). These lands remain property of former owners. Such case shows, as an example, figure 3 presented below.

Figure 3 describes situation which took place after erecting “Kościuszko” stage of fall, being now a part of western ring of Krakow. From left side one can see a course of Vistula river in 1965. From left side one can see changes of its course and formed old river-bank.

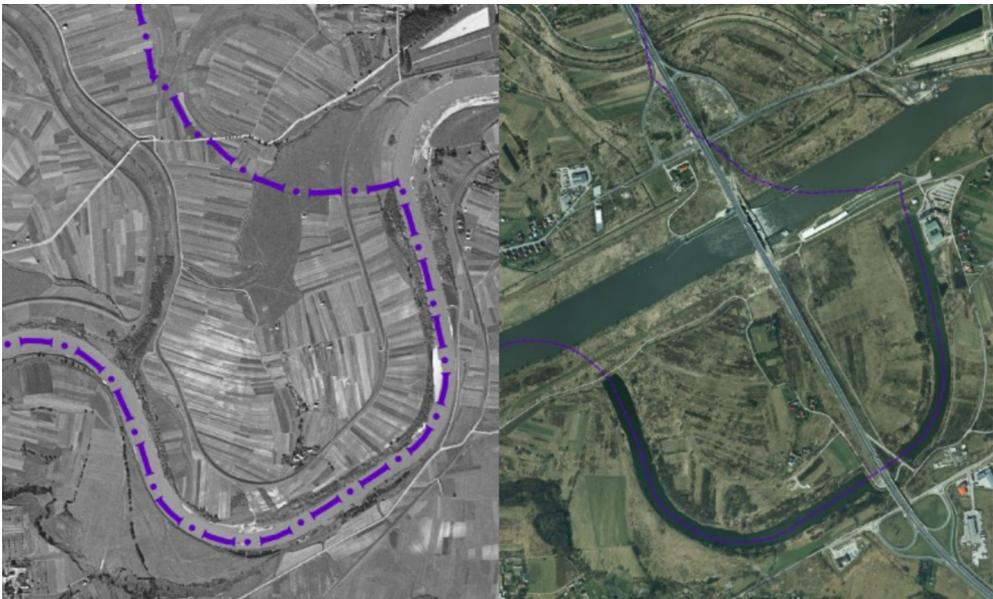


Fig. 3. Satellite photo from 1965 year and orthophoto from 2009 year with mapped administrative boundary of Krakow – “Kościuszko” stage of fall

Source: pictures generated from [2]

It is worth mentioning, that lands, which were flooded, are still the property of the same owner.

5. River Bank Determination

River bank determination [5] is a result of decision given through administrative procedure on the application of party, having legal interest.

Such decision is issued by:

- sea administrative organ – for inner sea waters together waters of Gdańska Gulf and territorial sea,
- marshal of voivodeship – for border waters and inland waters roads,
- head of district (starosta), performing governmental tasks – for rest waters.

Issuing decision is followed by making project of delimitation between lands covered by waters and adjacent lands. Such project consists of graphic and descriptive part, and contains:

- 1) In descriptive part:
 - name of applicant, together with address of applicant,
 - accepted way of determination of projected bank river,
 - determination of legal status of real estate included to project together with their owners,
 - condition of waters relationships on lands adjacent to projected river bank.
- 2) In graphic part: as built map of regulation constructions or updated basis map at scale which was used to make project of regulation of inland waters or in the scale 1:5000 or 1:2000 with listing:
 - permanent points of horizontal control tied to country network,
 - line of permanent overgrowth of grass,
 - edges of banks, alluviums, outwashes, and islands,
 - suggested line of bank.

6. Surveying Documentation

As in any case, when one tell about real estate boundaries, crucial role play surveyors, performing important works, describing existing situation and proposed solutions concerning waters.

Such works demand preparing two essential sets of documents [7].

- surveying works technical documentation,
- project of waters delimitation demanded by *Water Act* [5].

Surveying documentation, made through measurements connected with determination of boundary of river bank should be prepared according to law regulations applied in surveying and mapping.

The major component of project of delimitation between lands covered by waters and adjacent lands is a map with projected line of bank [1]. It is specific work, which may be related to thematic map idea.

There are two kinds of such maps:

- map of as built survey of regulation construction,
- updated copy of basic map.

The first type of maps is used in case of river bank determination after building up waters construction including also regulation works of river beds.

Yet, basic map, updated because of changes of field objects, taking place in the neighbourhood of rivers very often and quickly, is used in all rest cases. Yet, it is only a framework for thematic contents, necessary for correct line bank determination.

One should remember, that line bank determination can cause significant legal consequences. Thus, timely and updated cadastral boundaries should be put on map, prepared by surveyor to these purposes.

Well prepared project of delimitation is the basis for issuing administrative decision, fixing line of a bank. After this decision is ultimate, project of delimitation, being an appendix to decision, is a basis for making changes into grounds and buildings register. Such updating is the first step for regulating of legal status of lands, which were influenced by changes of line bank [1].

After changes of description of land use, and computing parcel areas, one can change legal status of real estate. It means, that one can convey ownership rights. Thus, parcels being lands covered by water become property of state while parcels which were outside line bank may become property of individuals or other persons.

7. Conclusion

Ownership right, during last years, had became more and more important in society consciousness. Essential is not only possessing itself but also knowledge about asset which is to be managed.

Real estate is a specific kind of property. More and more often it is treated as an investment or insurance. Their owners demand from persons dealing with real estate, all suitable information connected with physical and legal aspects of real estate. Basic information concerning parcels is their description. It is demanded from surveyor first of all to show precisely boundaries in the field. Boundaries which determines a range of ownership right, where an owner can freely manage his rights.

Although line bank reflects field situation, yet one should remember that it also has legal aspect. In order to assure its explicit interpretation one should worked it out more precisely, in digital form. It will it make possible formal-legal regulations made, when mentioned earlier administrative decision has legal power.

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