MINISTRY OF FORESTRY OF THE REPUBLIC OF BELARUS

STATE SCIENTIFIC INSTITUTION
"INSTITUTE OF FOREST OF THE NATIONAL ACADEMY OF SCIENCES OF BELARUS"

FORESTRY DEVELOPMENT PROJECT
GEF/THE WORLD BANK TF0A1173

APPROVED:
First Deputy Minister
of the Forestry
of the Republic of Belarus

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REPORT No. 4

"To analyze the fire prevention measures for each peatland deposit site that has not been effectively drained for agricultural use, was depleted, withdrawn from the agricultural use and transferred to forestries. Based on the analysis, to prepare proposals for fire prevention measures and the arrangement of the area to reduce the fire risk in each peatland site transferred to the forestry, no longer used for agricultural purposes, taking into account the current legislation on the arrangement of fire prevention measures in the territories of forestries"

within the framework of services under contract No. BFDP/CQS/17/18-37/18 dated September 14, 2018.

Project activity 2.3: A targeted inventory of depleted peatlands and those peatlands that are no longer used for agricultural purposes and that pose a high risk of fires

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Gomel, 2019

Funded by Global Environment Facility (GEF)

Ministry of Forestry of the Republic of Belarus

This report was prepared under the Belarus Forestry Development Project with the grant funding support of the Global Environment Facility (GEF).

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Abbreviations

Forestry means a State legal entity carrying out forestry activities on forest covered land under the jurisdiction of the Ministry of Forestry of the Republic of Belarus;

MoF means the Ministry of Forestry of the Republic of Belarus;

MAF means the Ministry of Agriculture and Food of the Republic of Belarus;

NAS of Belarus – National Academy of Sciences of Belarus;

STB – State Standard of the Republic of Belarus;

TCCP – Technical code of common practice;

MES - Ministry of Emergency Situations of the Republic of Belarus.

Terms and Definitions

A mire is a permanently water-logged and covered with moisture-loving vegetation plot of land, where the process of peat formation and peat deposition takes place.

An upland mire is a mire that forms under the conditions of water and mineral nutrition by atmospheric precipitation containing less than 50 mg/l of dissolved mineral salts.

Forest Fund is a set of forests, forest land and non-forested land within the boundaries established in accordance with forest and land legislation.

Silvicultures are forest plantations, created by sowing or planting.

A lowland mire is a mire that forms under conditions of rich water and mineral nutrition (from 60 to 400 mg/l of dissolved mineral salts) by groundwater or river water and atmospheric precipitation.

A damaged mire is a mire, where the natural state of the mire ecological system has changed (flora, fauna, groundwater level, hydrological regime, peat formation and peat accumulation) as a result of its drainage for use in agriculture, forestry, peat extraction and for other purposes, burnout of peat during fires, as well as drainage and other works in the adjacent territories.

Drained lands with peat soils are lands, with one or several peat layers in the soil profile, where drainage was carried out.

A transitional mire is a mire that forms under the conditions of mixed water and mineral nutrition (40–80 mg/l of dissolved mineral salts) by atmospheric, surface-drainage waters and partially by groundwater.

Peat is an organogenic rock that is formed as a result of the withering away and incomplete disintegration of wetland plants under conditions of constant over-humidification with a lack of oxygen and containing not more than 50% of mineral components on a dry matter.

A peatland is a plot of land covered with a layer of peat formed in the process of natural peat formation, which is in a natural or dried state. This term combines the concepts of "mire", "peat deposit" and "drained land with peat soils."

Peat deposit is a geological formation consisting of layers of one or several types of peat, characterized in the natural state by excessive moisture, specific

vegetation cover, which is suitable for industrial and (or) other economic use by peat reserves and quality.

Peatland site means peatlands dried for agricultural purposes that have been depleted and are no longer used for agricultural purposes, transferred to a forestry.

Sustainable use of peatlands is the use of peatlands in such a way and at a pace that does not lead to their depletion in the long run and thus preserves their ability to meet the environmental, economic, aesthetic and other needs of current and future generations.

Ecological rehabilitation of damaged mires is an activity aimed at restoring the ability of mires to perform their biospheric functions.

Summary

1. The purpose of the fourth stage of the research was to analyze the implemented fire prevention measures for each peatland site transferred to the forest fund after 2008 and to develop proposals for fire prevention measures and arrangement of the territory.

2. Total of 38 fire prevention arrangement plans for individual peatland sites, located in 24 forestries with total area of 6679.21 ha, were prepared, of which: Brest SPFA - 11 sites in 6 forestries with area of 2432.0 ha; Vitebsk SPFA - 4 sites in 3 forestries with area of 347.3 ha; Grodno SPFA - 8 sites in 4 forestries with area of 825.0 ha; Minsk SPFA - 14 sites in 10 forestries with area of 2953.51 ha; Mogilev SPFA - 1 site in 1 forestry with area of 121.4 ha.

3. It was established that the fire prevention measures at the peatland sites under survey were implemented selectively. The previous survey of the peatlands areas transferred to the forest fund showed that, in general, little attention was paid to fire prevention measures in these areas.

4. It was determined that only one of 38 peatlands sites has good access and travel roads (Pruzhany forestry). The access and travel roads in the territory of the other peatland sites should be repaired to ensure rapid response in case of fire.

5. Laying and renewal of fire barriers along former narrow gauge railways is required in the territory of 17 peatlands sites. If possible, fire break plowing should be performed along the contour of the peatland at the border with mineral plots or small peat layer.

6. In total, 40 sites for water collection by fire-fighting equipment should be arranged in no longer used peatland sites, including, 16 sites at peatlands of Brest SPFA, 6 in Grodno SPFA, and 18 in Minsk SPFA.

7. To provide fire-fighting equipment with water, 5 fire-fighting reservoirs should be lain, including 2 in Grodno SPFA and 3 in Minsk SPFA. 15 fire-fighting reservoirs available in the territory of the transferred peatland sites, need maintenance and refurbishing.

8. The major repair of the bridge that allows to cross the main canal should be carried out in the peatland site "Vygonoshchanskoye" in Gantsevichi forestry.

9. Installation of overflow dam or control pipe on the border between quarters 3 and 4 in Sergeyevichskoye forest district of Pukhovichi forestry will allow to retain a sufficiently high water level at the transferred peatland site transmitted “Orekhovsky Mokh”, which will significantly reduce the fire risk of the area.

10. It is recommended to install barriers in all sites to restrict public access to the territory of the peatlands during the increased fire hazard period, as well as to install fire prevention information signs.

Introduction

Forest fires leading to severe damage and loss of forest plantations occur in the territory of the Republic of Belarus every year.

In the last decades the fire hazard situation in Belarus has aggravated due to the damage of the hydrological regime caused by the drainage of large areas of wetlands and climate change. Fires in the mires have a negative impact on the ecological state of natural complexes. Each year the fires in drained mires cause enormous economic damage. Because of inaccessibility of areas and complexity of the measures to fight peat fires, as well as in connection with non-developed infrastructure, their extinguishing requires large financial investments. The damage is caused to biodiversity, the atmosphere is polluted in the result of the large emissions of combustion products including greenhouse gases, and radionuclides deposited in peat and plants biomass.

Fires move to neighboring territories damaging forestry and agriculture. In some cases, especially severe fire hazard is formed in the mires where peat extraction was carried out, and the drainage network continues to operate resulting in groundwater level decrease, the desiccation of the upper layers of peat.

After peat extraction is stopped, the drainage network maintenance is also stopped, where subsequently a disturbance is observed and cessation of the operation of all fire-fighting arrangement of the drained peatland in the future. Irrigation and drainage canals, fire-fighting reservoirs, which are the primary and the most important sources of water supplies become inoperable, overgrow with grass, trees and shrubs, which in case of fire makes the approach and collection of water by fire-fighting equipment complicated.

Currently, the fire prevention arrangement in all peatland sites under survey does not fully comply with the regulatory framework. This requires to carry out measures for fire prevention arrangement of the transferred peatlands anew, aimed at preventing the peat fires or decrease fire hazard.

The following fire prevention measures can be carried out in peatlands:

1. To lay fire barriers around peat extraction sites;
2. To lay fire barriers on embankments of former narrow gauges;
3. To arrange and maintain the fire reservoirs in working state (separate, water collection from canels);
4. To maintain the roads in working state;
5. To ditch around especially dangerous areas;
6. To waterlog;
7. To maintain a certain level of GWL by sluicing;
8. To create hardwood silvicultures at drained areas with a pronounced slope;
9. To maintain the canels in the working state where high bonitet tree stands of middle and older age classes have formed and grown;
10. To arrange barriers and install notices.

The fire-prevention state of peatlands and planned activities for fire prevention arrangement were evaluated in view of the above proposals.

The work was performed in accordance with contract No. BFDP/CQS/17/18-37/18 dated September 14, 2018, activity 2.3 “A targeted inventory of depleted peatlands and those peatlands that are no longer used for agricultural purposes and that pose a high risk of fires” under the GEF/the World Bank “Forestry Development Project” TF0A1173.

1 Analysis of fire prevention measures and proposals for fire prevention arrangement for peatland sites depleted and no longer used for agricultural purposes, transferred to the forestries of Brest SPFA

In Brest SPFA, peatlands of industrial use (depleted peatlands after peat harvesting) and peatland no longer used for agricultural purposes have been transferred to six forestry institutions (Baranovichi, Gantsevichi, Ivatsevichi, Lyakhovichi, Pruzhany and Stolin forestries) starting from 2008 till the present time. The total area of peatlands transferred to forestry amounted to 2432.0 hectares.

1.1 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Baranovichi forestry"

The peatlands were transferred to the forest fund of SFI "Baranovichi forestry" in 2008, 2009 and 2019 within a peat deposit Torbolovo. All transferred peatland sites, with the total area of 429.8 ha, are located in quarters 44, 204-209 of Malakhovskoye forest district. The peatland site was transferred to the forestry as a land but not a property complex, and due to this, the drainage canals have not been entered in the state register, they have not been serviced after the transfer of the land.

Fires were not observed in the transferred site. Fire prevention measures were limited to informing the public and restricting the visits during periods of high fire hazard weather.

The following measures are required to improve the fire prevention state of the peatland site:

- to carry out technical maintenance of the main canal and transporting collectors;
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to repair the roads providing efficient movement around the peatland site;
- to arrange and maintain a fire barrier along the former narrow-gauge railway, as well as along the contour of the peatland at the border with mineral areas or small peat layer;
- to arrange the platform for water intake from the main canel in quarters 205 and 206;
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 1.1.

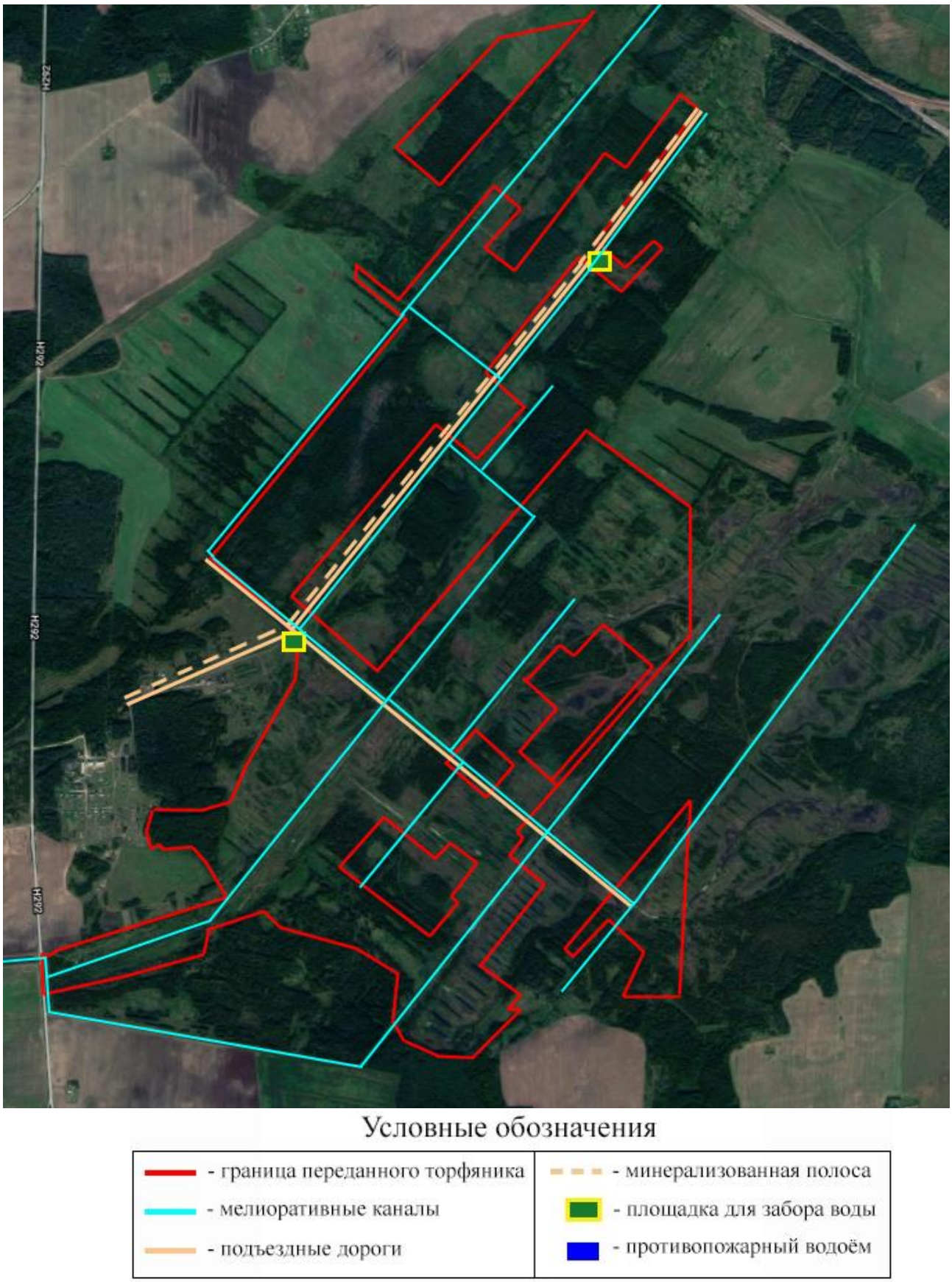

Figure 1.1 - Arrangement of fire prevention measures at peatland in quarters 44, 204-209 of Malakhovskoye forest district transferred to the forest fund of Baranovichi forestry in 2008, 2009, 2019.

1.2 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Gantsevichi forestry"

The peatlands were transferred to the forest fund of SFI "Gantsevichi forestry" in 2013 and 2015 within the three peat deposits (Vygonoshchanskoye, Gal, Petrova Polyana) in three forest districts: Rozdyalovichi (quarter 54, 64, 67), Khotynichi (quarter 8, 14, 21, 29), Gantsevichi (quarter 39, 52, 53, 58, 73-76). The total area of peatlands consisting of 4 sites, is 579.2 hectares.

The peatland sites were transferred to the forestry as a property complex however the reclamation canals have not been entered in the state register, they have not been serviced.

Slight ground fires sometimes occur on the peatland site in Rozdyalovichi and Khotynichi forest districts (*site 1*), presumably related to burning of vegetation on lands that were previously used by the locals. Fires are low intensive, quickly localized and do not become underground (peat) fires. Fires on the other peatland sites of Gantsevichi forestry (*sites 2-4*) were not observed. The existing fire-prevention arrangement is aimed at informing the public about the high fire hazard, rapid response to fire outbreaks. Plots of silvicultures created on the transferred lands are partially plowed around along the contour.

The following measures are required to improve the fire prevention state of the peatland sites:

- to carry out technical maintenance of the main canals and transporting collectors (*sites 1-4*);
- to repair waterworks to allow maintaining a high water level in the canals (control pipes) and unobstructed approach to distant areas of the peatlands (crossing pipes) (*sites 1-4*);
- to repair the bridge across the main canal (*site 1*);
- to repair the roads providing approach and efficient movement around the peatland site (*sites 1-4*);
- to create fire barrier along the contour of the peatland at the border with mineral areas or small peat layer (*sites 1-4*);
- to arrange the platform for water intake from the canals (*sites 1, 2, 4*);
- to create plantations with (prevailing) softwood trees (*sites 1-4*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install fire prevention information signs (*sites 1-4*).

The fire prevention arrangement plan is shown in Figures 1.2 - 1.4.

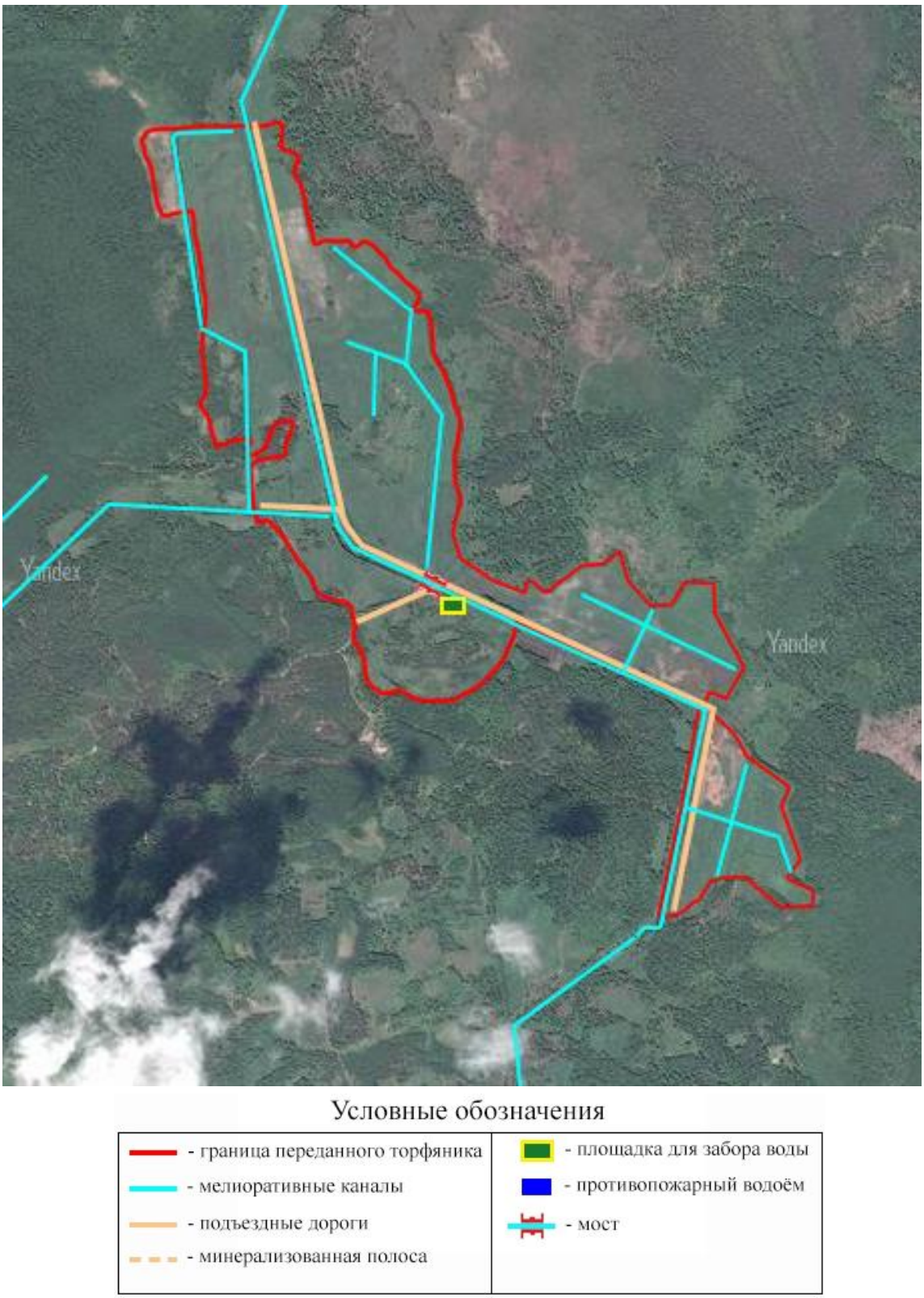

Figure 1.2 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Rozdyalovichi and Khotynichi forest districts of Gantsevichi forestry

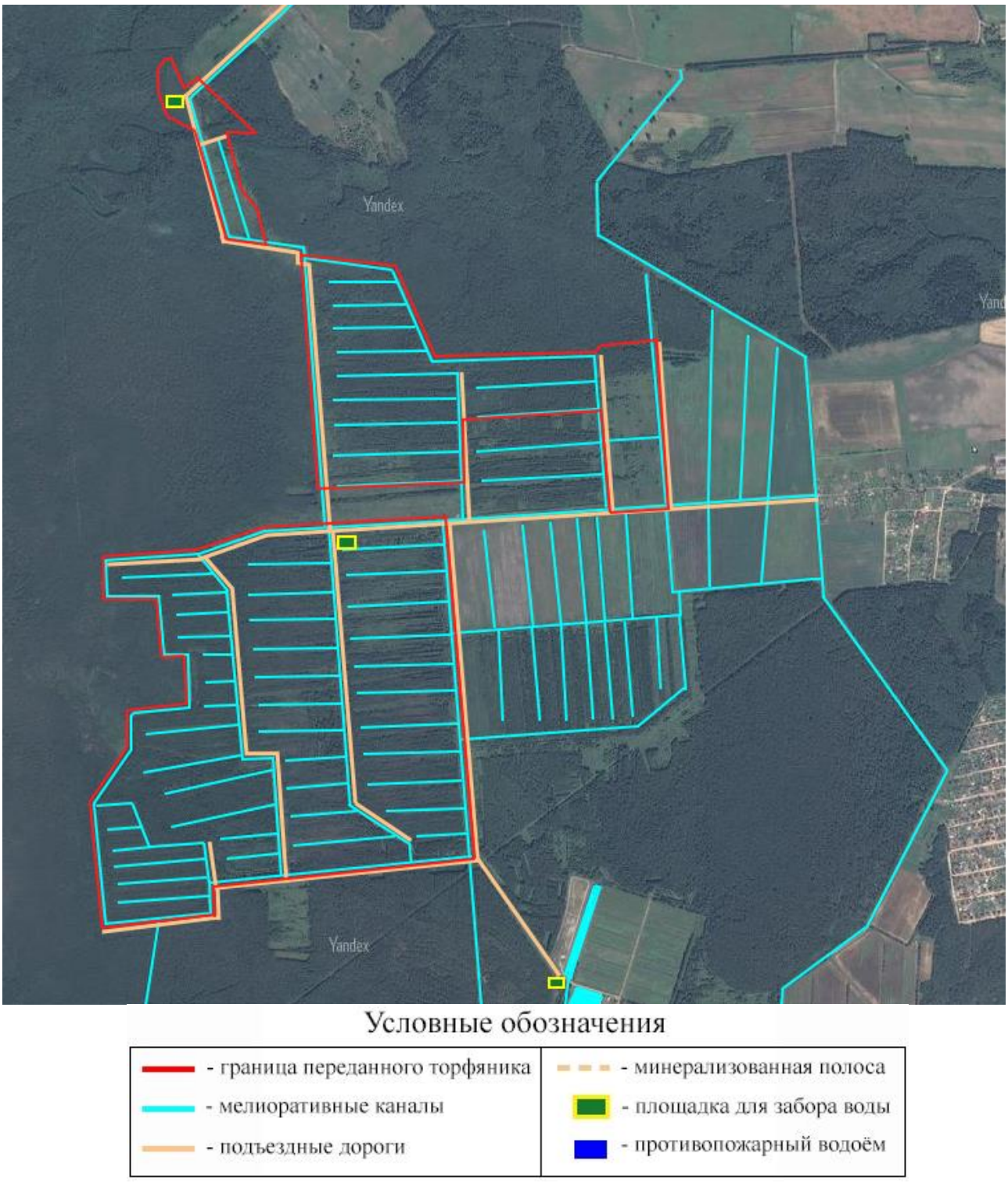

Figure 1.3 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Gantsevichi forest district (quarters 39, 73-75) of Gantsevichi forestry

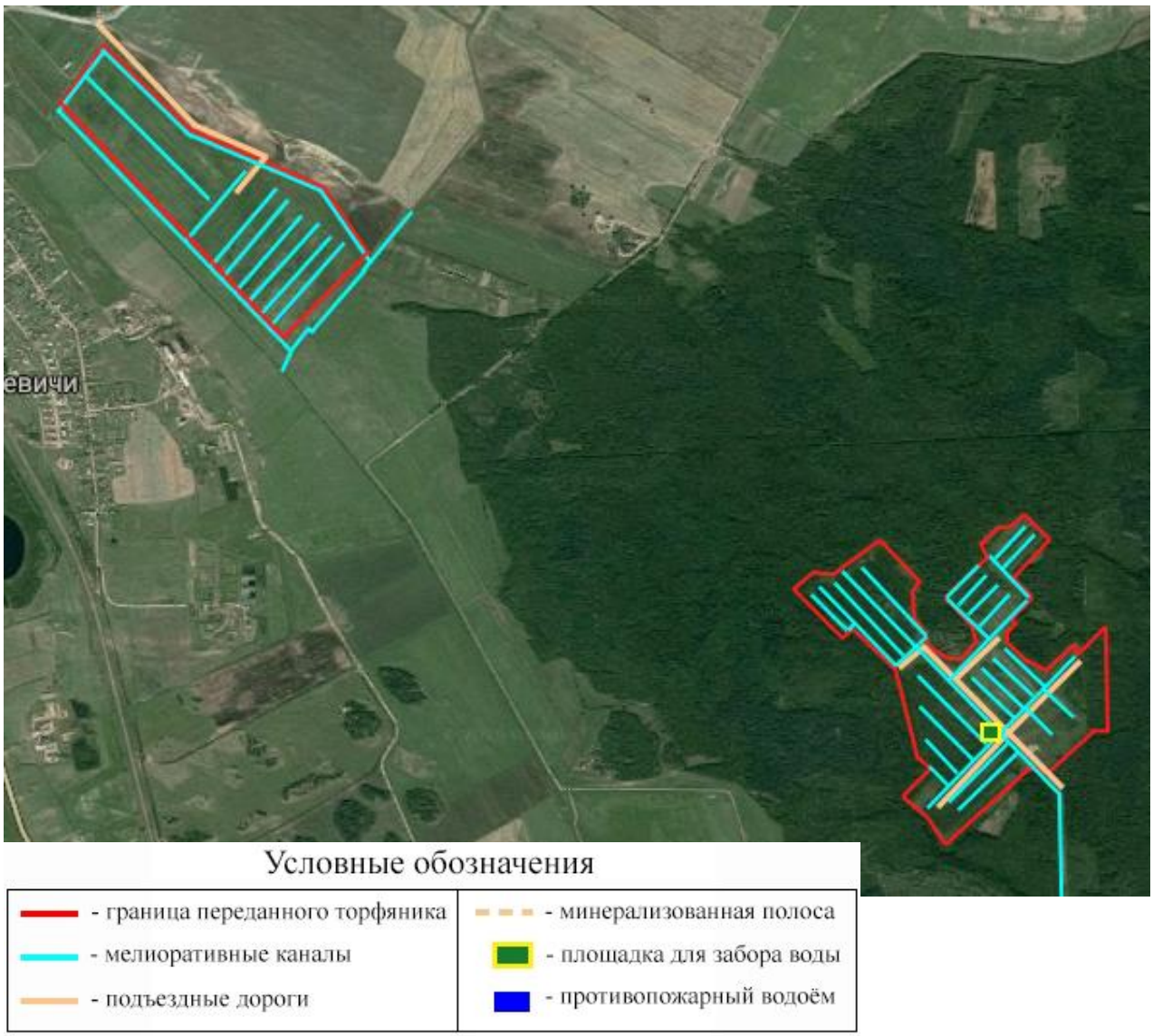

Figure 1.4 - Arrangement of fire prevention measures at peatland sites No. 3 and 4 transferred to the forest fund of Gantsevichi forest district (quarters 52, 53, 58, 76) of Gantsevichi forestry

1.3 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI “Ivatsevichi forestry”

The peatlands were transferred to the forest fund of SFI “Ivatsevichi forestry” in 2011 and 2017 within one peat deposit Stubla. All transferred peatland sites, with the total area of 201.4 ha, are located in quarters 121, 122, 133, 137, 138 of Orlyanskoye forest district. No fires were observed on the transferred site; the forestry has not taken any fire prevention measures.

The transferred area is a depleted peatland, bordering on the east with the previously transferred sites, and on the west - with the peatland, which is currently being developed. An operating narrow-gauge railway runs through the site, an acting pump station is located at the border with the peatland being developed. The organization performing peat extraction (UE "Brestoblgaz") maintains the canals. The

waterworks are in good condition. The transferred area is overgrowing with softwood trees with varying intensity.

The roads along the canals, due to the poor bearing capacity of peat, are broken and heavy going. Their repair and restoration to improve the fire-prevention state is impossible. The following measures are required to improve the fire prevention state of the peatland:

- to arrange the platform for water intake from the channel at the cross-section of quarters 109 and 122;
- to maintain an approach forest road in good condition;
- to create (complement) deciduous plantings at the site of the transferred peatland.

The fire prevention arrangement plan is shown in Figure 1.5.

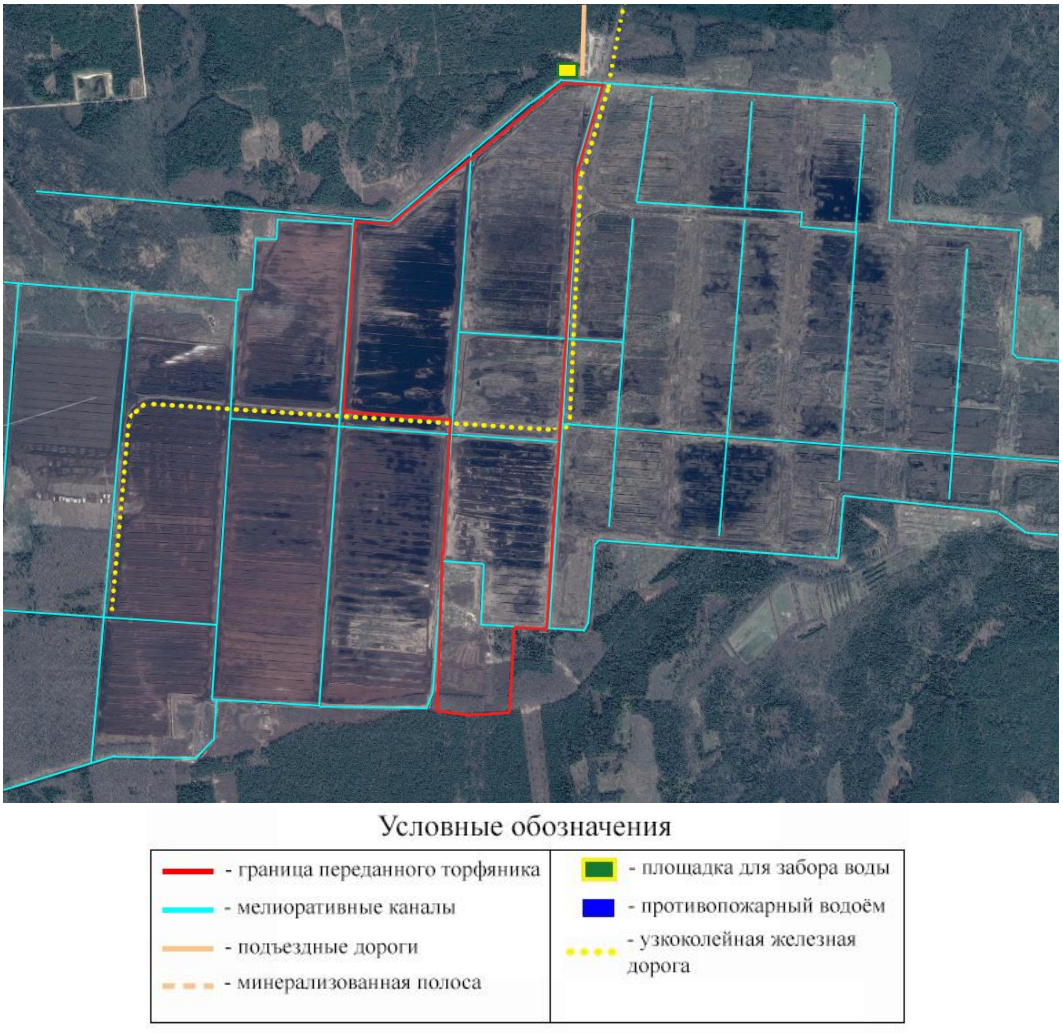

Figure 1.5 - Arrangement of fire prevention measures at peatland site in quarters 121, 122, 133, 137, 138 of Orlyanskoye forest district transferred to the forest fund of Ivatsevichi forestry in 2011 and 2017.

1.4 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Lyakhovichi forestry"

The peatlands were transferred to the forest fund of SFI "Lyakhovichi forestry" in 2017 and 2018 within two peat deposits (Torbolovo and Vygonoshchanskoye). Peatland site at the Torbolovo deposit has an area of 52.9 ha and is located in quarter 9 of Lyakhovichi forest district (*site 1*) at the border with Baranovichi forestry, and forms a part of peat massif described in section 1.1. Peatland site at the Vygonoshchanskoye deposit has an area of 303.7 ha and is located in quarters 110, 123, 134, 144, 151, 158 of Ostrov forest district (*site 2*).

The peatland sites were transferred to the forestry as a property complex however the reclamation canals have not been entered in the state register. After the industrial production, the maintenance of canals ceased, and as a result they are in sedimentation accumulation and overgrowth stage.

Fires were not observed in the transferred sites. Fire prevention measures are limited to informing the public and restricting the visits during periods of high fire hazard weather. The following measures are required to improve the fire prevention state of the peatland sites:

- to carry out maintenance of the main canals and transporting collectors (*sites 1 and 2*);
- to carry out repair of waterworks (control pipes) for providing the possibility to maintain a high water level in the canals (*site 1*);
- to repair the roads providing approach and efficient movement around the peatland site (*sites 1 and 2*);
- to arrange and maintain fire barrier along the former narrow gauge (*site 2*);
- to arrange the platform for water intake from the canals in quarter 9 of Lyakhovichi forest district (*site 1*) and quarter 144 of Ostrov forest district (*site 2*);
- to assist the formation of broadleaf vegetation (*sites 1 and 2*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figures 1.6 and 1.7.

Figure 1.6 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Lyakhovichi forest district (quarter 9) of Lyakhovichi forestry

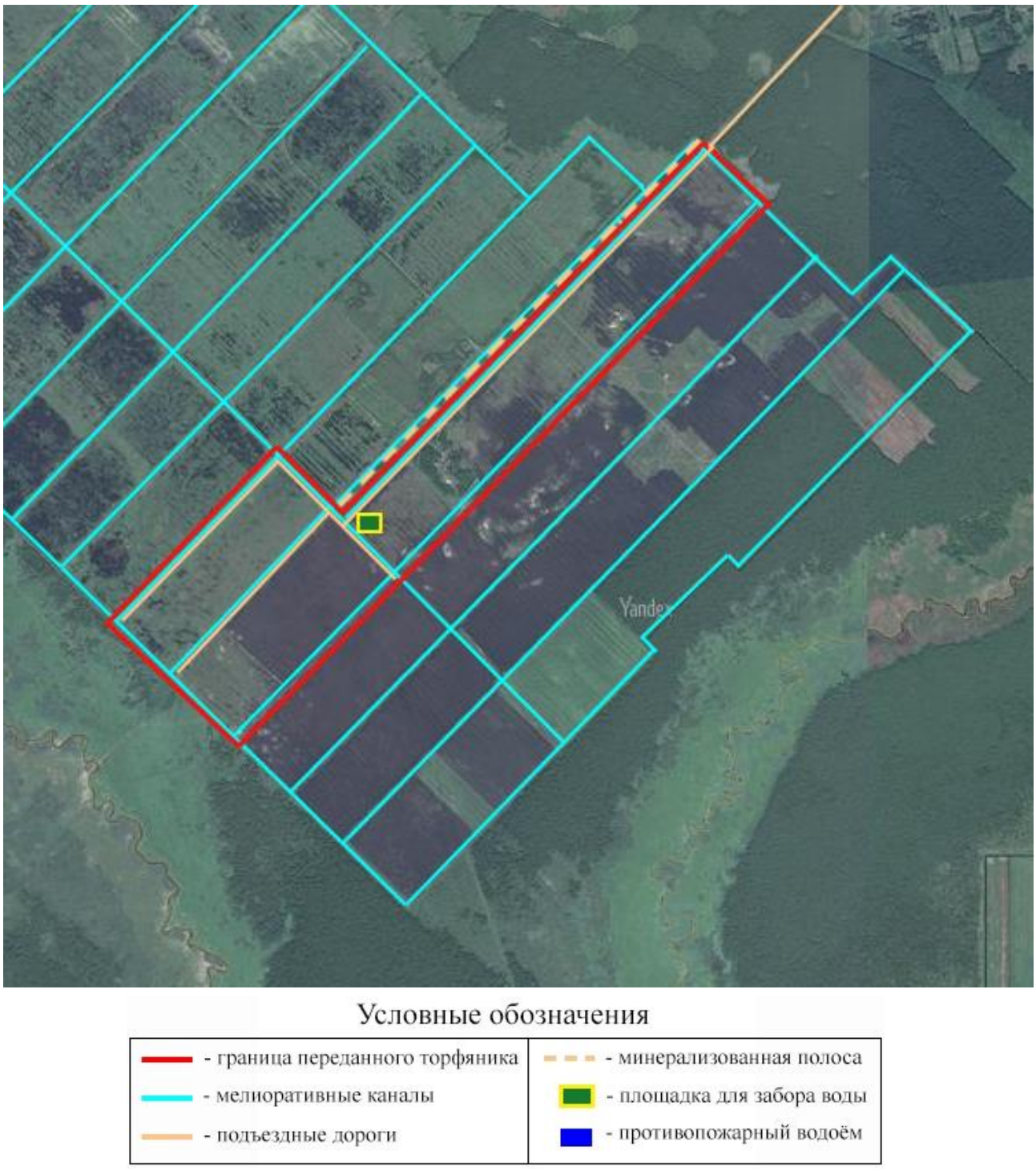

Figure 1.7 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Ostrov forest district (quarters 110, 123, 134, 144, 151, 158) of Lyakhovichi forestry

1.5 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Pruzhany forestry"

The peatlands were transferred to the forest fund of SFI "Pruzhany forestry" in 2010 within one peat deposit Khorevskoye. The transferred peatland site with the total area of 190.5 ha is located in quarter 104 of Mikhalinskoye forest district, and is surrounded by agricultural lands. The peatland site was transferred to the forestry as a property complex, however, the canals were not registered for state accounting.

Fires were not observed in the transferred area. Fire prevention measures are limited to informing the public and restricting the visits during periods of high fire hazard weather. The following measures are required to improve the fire prevention state of the peatland:

- to carry out maintenance of the transporting collector;
- to arrange the platform for water intake from the canal at the cross-section of the canal with gravel road;
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to equip collectors with the simplest hydraulic devices to control water level in the canals;
- to support the formation of softwood plantations;
- to install barriers to restrict access to the area during the high fire hazard period.

To re-naturalize the site, it is offered to increase the water level in the canals, by constructing the cascade of overflow dams (Figure 1.8).

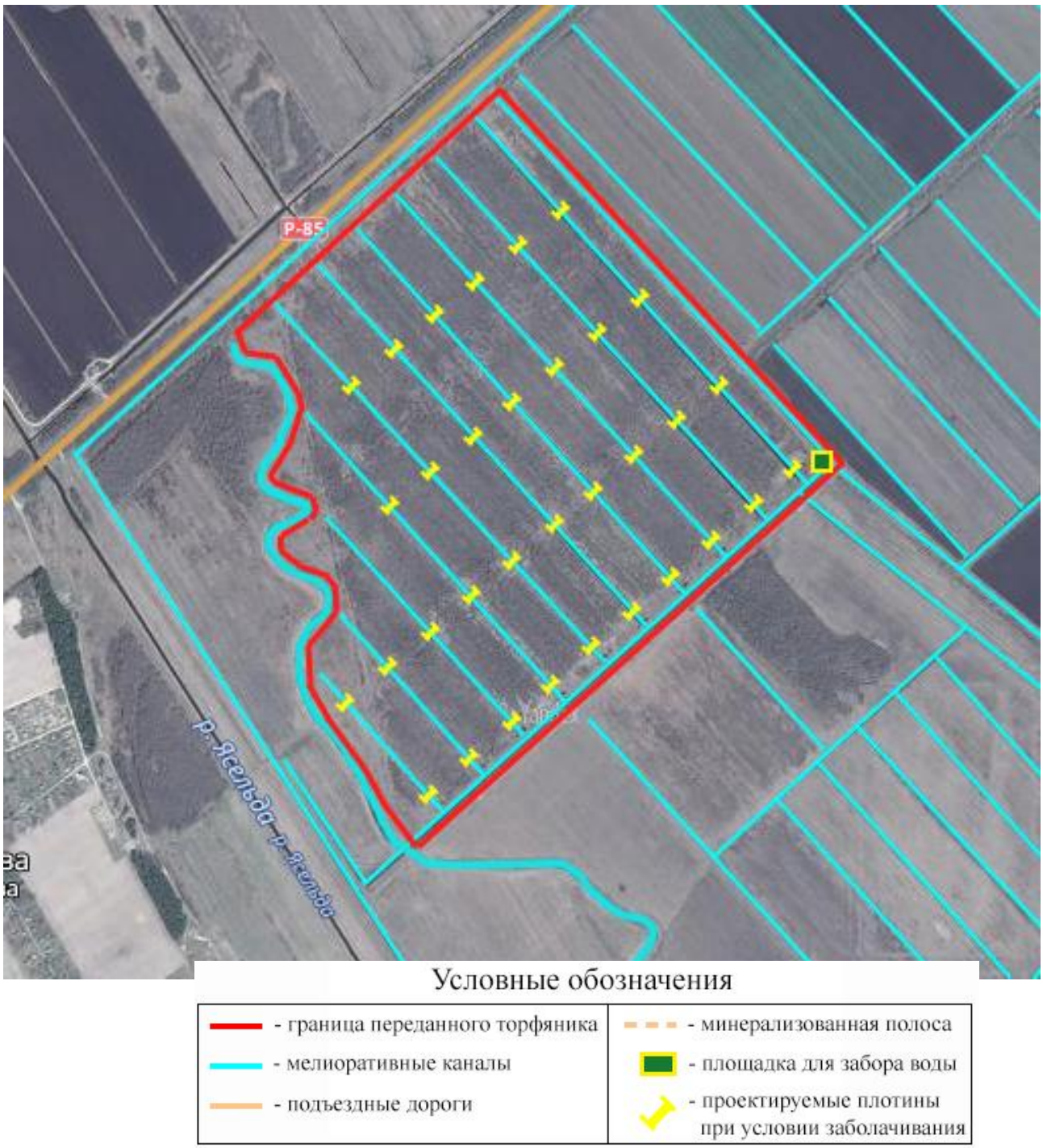

Figure 1.8 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Pruzhany forestry

1.6 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Stolin forestry"

The peatlands were transferred to the forest fund of SFI "Stolin forestry" in 2009, 2015 and 2018 within one peat deposit Morochno in the territory of three forest districts: Terebezhevskoye (quarters 1, 12-14, 22), Kolodnyanskoye (quarters 66,

127, 140), Lasitsk (quarters 73, 78). The total area of peatlands consisting of 3 sites is 674.5 hectares.

The peatland sites were transferred to the forestry as a land, and due to this, the drainage canals have not been entered in the state register, they have not been serviced after the transfer of the lands.

Peatland site in Kolodnyanskoye (quarter 67, 140) and Terebezhevskoye (quarter 1, 12-14, 22) forest districts (*site 1*) borders with the territory of peat enterprise "Glinka" on one side and the peatland being developed on the other side. An operating narrow-gauge railway runs through the peatland territory. There are areas of the exposed peat horizon. Heaps of tree stumps obtained during peat extraction, which increase fire hazard, are found in some areas of peatland transferred to forestries. The northern part of the site is waterlogged, overgrown with grassy vegetation. Fires were not observed at the site.

On the peatland site in Kolodnyanskoye forest district (quarter 127) (*site 2*) water level is slightly below the soil surface, some woody vegetation with prevailing softwood trees is observed. Fires were not observed at the site.

Peatland site in Lasitsk forest district (quarters 73, 78) (*site 3*) is a difficult to reach site surrounded by a canal. The water level in canals is 0.5 - 1.0 m below the soil surface. Several years ago a peat fire occurred at the site.

Fire prevention measures are limited to informing the public and restricting the visits during periods of high fire hazard weather. The following measures are required to improve the fire prevention state of the peatland sites:

- to carry out technical maintenance of the main canals and transporting collectors (*sites 1-3*);
- to repair waterworks to allow maintaining a high water level in the canals (control pipes) and unobstructed approach to distant areas of the peatlands (crossing pipes) (*sites 1-3*);
- to repair the roads providing approach and efficient movement around the peatland area (*sites 1-2*);
- to make way to fire-fighting reservoir (*site 3*);
- to create fire barrier along the contour of the peatland at the border with mineral areas or small peat layer (*sites 1-3*);
- to arrange the platform for water intake from the canals: in quarters 66 of Kolodnyanskoye and 13, 22 of Terebezhevskoye forest districts (*site 1*), in quarter 127 of Kolodnyanskoye forest district (*site 2*), in quarter 78 of Lasitsk forest district (*site 3*);
- to create plantations with (prevailing) softwood trees (*sites 1-3*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figures 1.9 - 1.11.

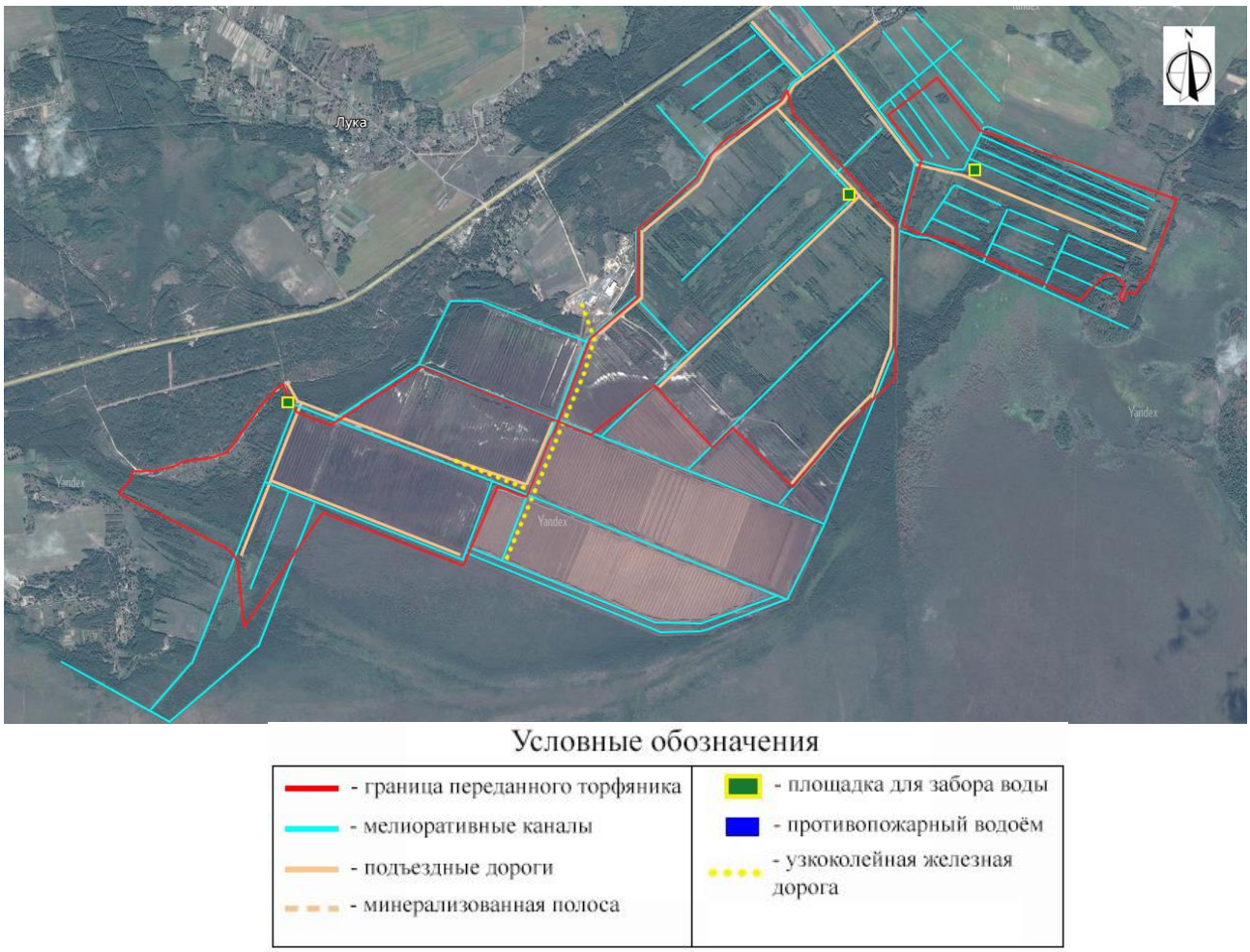

Figure 1.9 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Terebezhevskoye (quarters 1, 12-14, 22) and Kolodnyanskoye (quarter 66, 140) forest districts of Stolin forestry

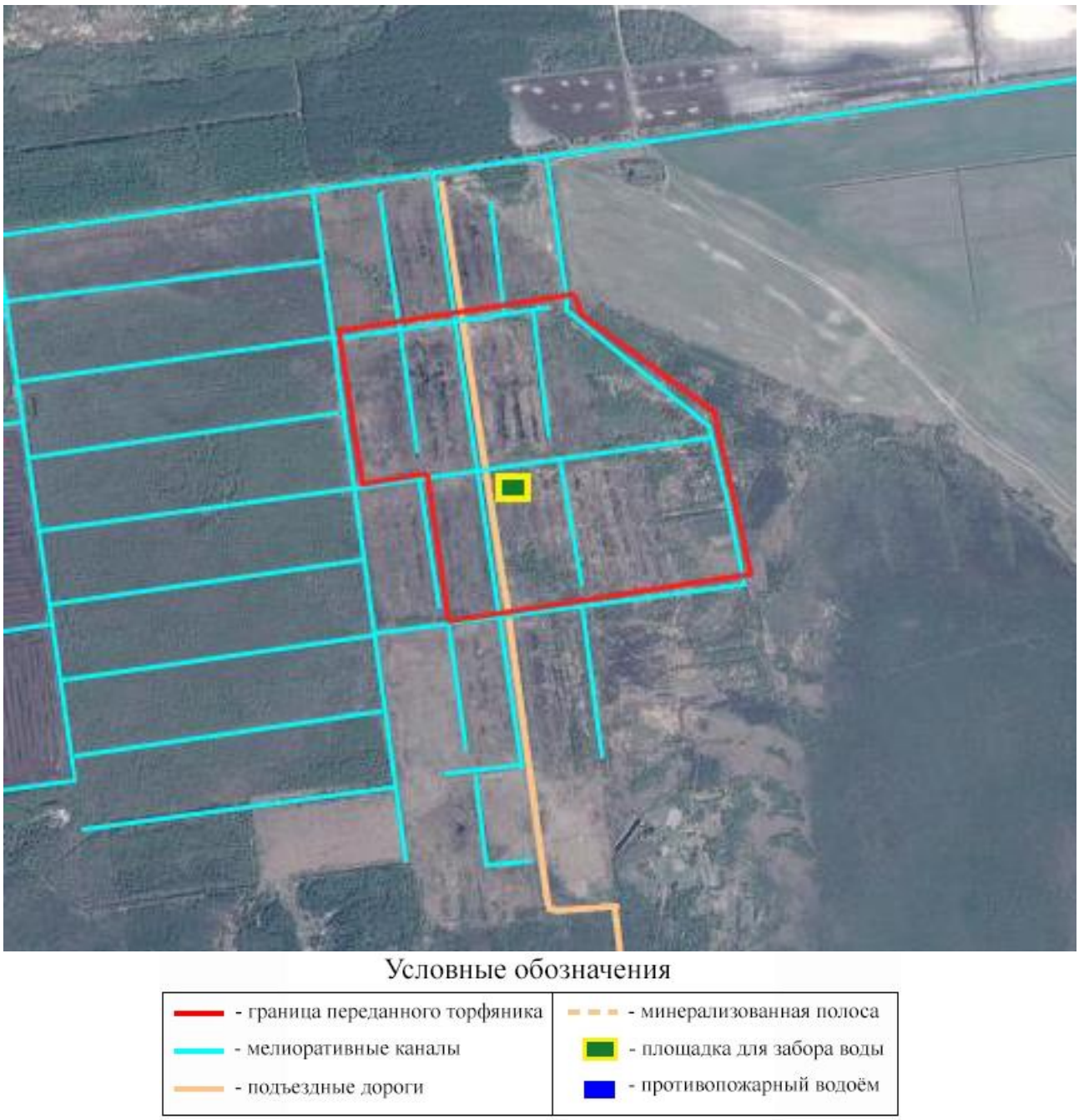

Figure 1.10 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Kolodnyanskoye forest district (quarter 127) of Stolin forestry

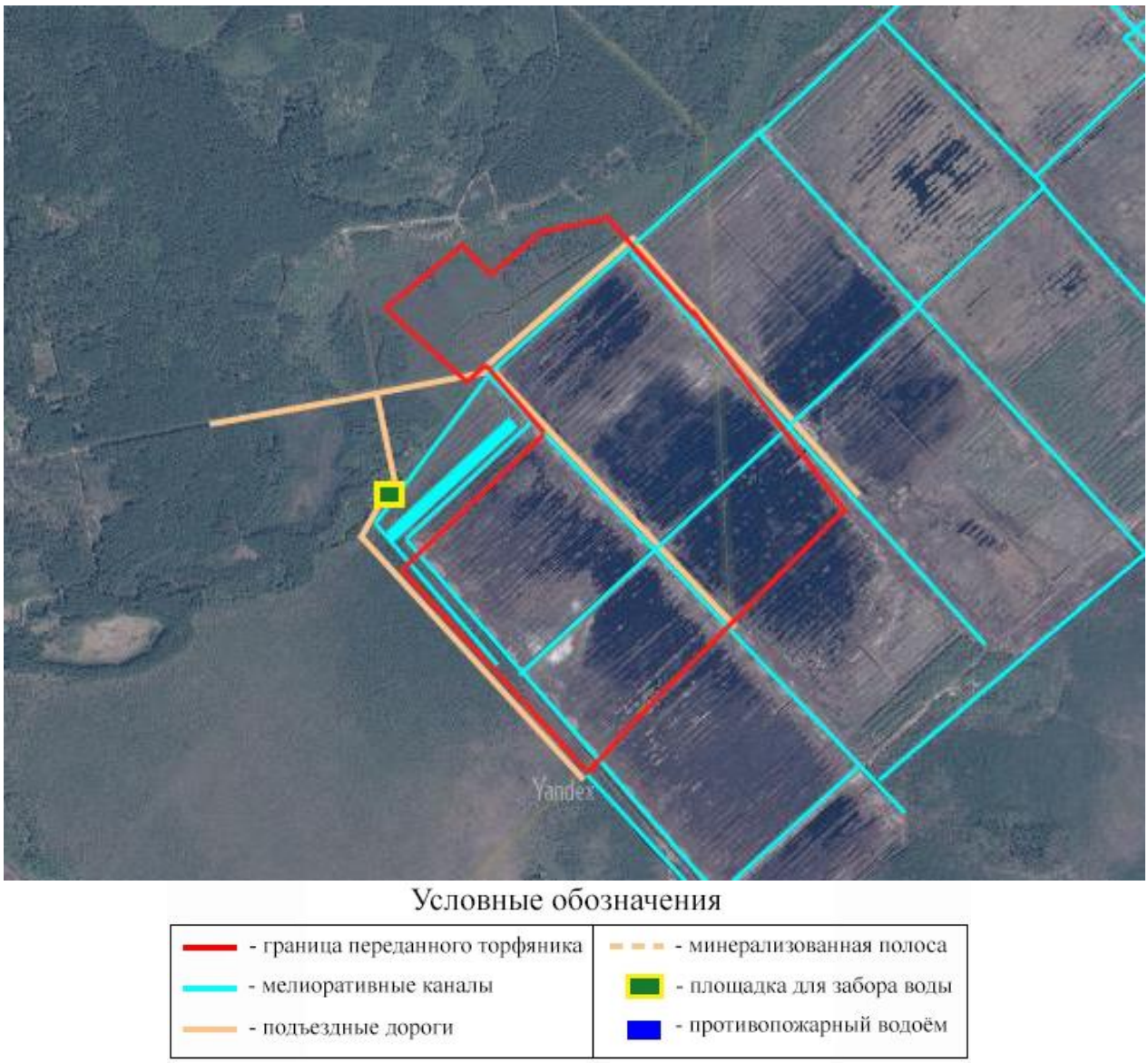

Figure 1.11 - Arrangement of fire prevention measures at peatland site No. 3 transferred to the forest fund of Lasitsk forest district (quarters 73, 78) of Stolin forestry

2 Analysis of fire prevention measures and proposals for fire prevention arrangement for peatland sites depleted and no longer used for agricultural purposes, transferred to the forestries of Vitebsk SPFA

In Vitebsk SPFA, peatlands of industrial use (depleted peatlands after peat harvesting) and peatlands no longer used for agricultural purposes were transferred to three forestry institutions (Verkhnedvinsk, Gorodok and Orsha forestries) starting from 2008 till the present time. The total area of peatlands transferred for forestry amounted to 347.3 hectares.

2.1 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Verkhnedvinsk forestry"

The peatlands were transferred to the forest fund of SFI "Verkhnedvinsk forestry" in 2008 within two peat deposits (Ostrovshchina and Avlaskovo). Peatland site in Ostrovshchina has an area of 34.8 ha and is located in quarter 113 of Strelki forest district (*site 1*). Peatland site in Avlaskovo has an area of 73.4 ha and is located in quarter 58 of Leonisheno forest district (*site 2*). Peatland sites were transferred to the forestry as land but not as property complexes, and due to this, reclamation canals have not been entered in the state register, were not maintained, and became inoperable due to the intense activity of beavers.

Peatland site in Strelki forest district (quarter 113) (*site 1*) is closely adjacent to the canalized river Vodga, due to which it is flooded and populated by beavers.

Peatland site in Leonisheno forest district (quarter 58) (*site 2*) had been drained for peat extraction that was not begun. Re-waterlogging processes are observed at the site, but a large part of it is represented by exposed peat horizon.

Fire prevention measures were not taken in the sites. The following measures are required to improve the fire prevention state of the peatland sites:

- to perform maintenance of canals (*site 2*);
- to repair waterworks to allow maintaining a high water level in the canals (control pipes) and unobstructed approach to distant areas of the peatlands (crossing pipes) (*sites 1-2*);
- to keep a water stand level equal to the soil surface to ensure re-waterlogging (*site 1*);
- to repair the roads providing approach to the peatland site (*sites 1-2*);
- to create fire barrier along the contour of the peatland at the border with mineral areas or small peat layer (*sites 1-2*); to lay fire barrier on the embankment for narrow-gauge railway (*site 2*);
- to service fire-fighting ponds with the area of 0.1 ha (*7 pieces - site 2*).
- to support the creation of plantations with prevailing softwood trees (*sites 1-2*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figures 2.1 - 2.2.

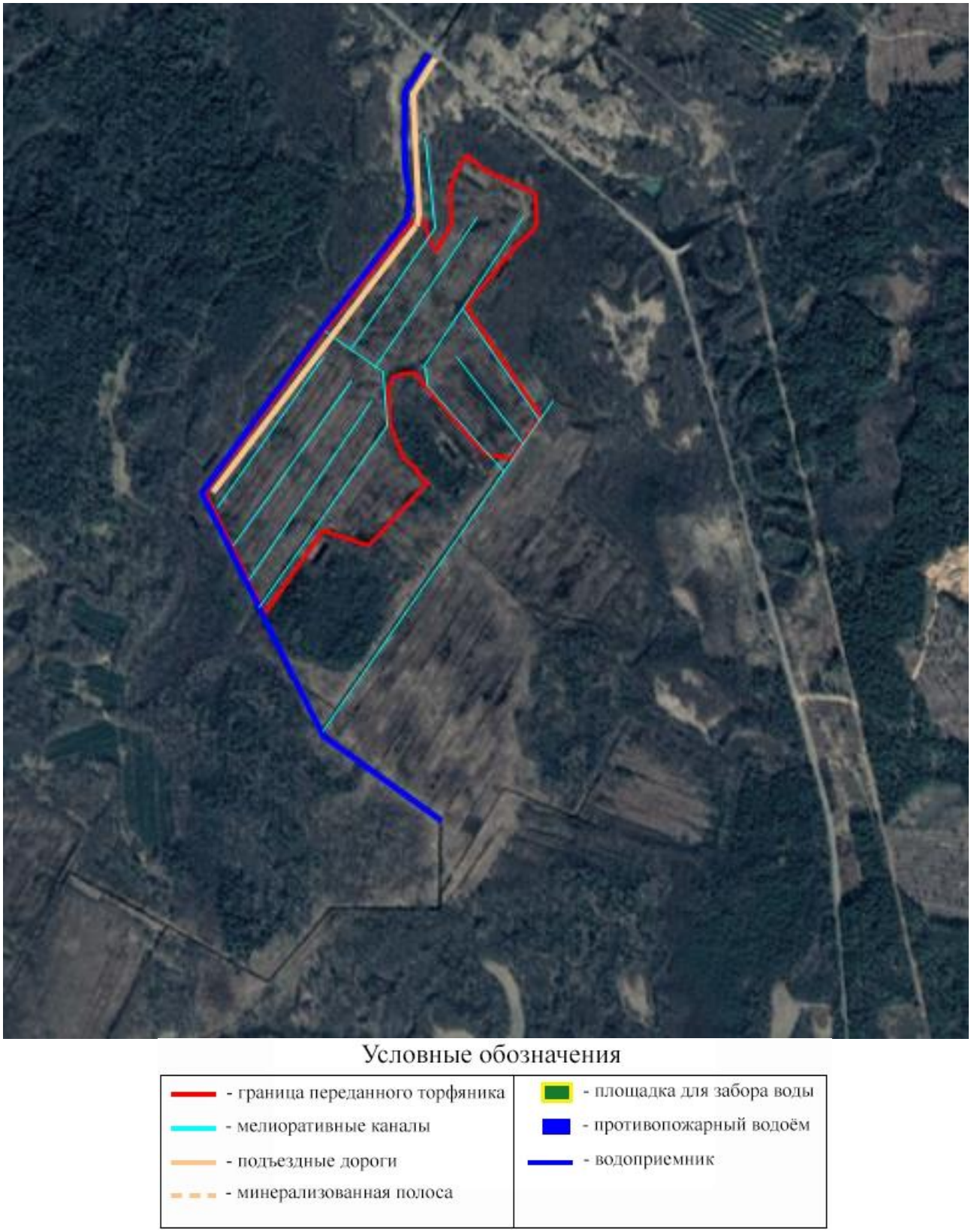

Figure 2.1 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Strelki forest district (quarter 113) of Verkhnedvinsk forestry

Figure 2.2 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Leonisheno forest district (quarter 58) of Verkhnedvinsk forestry

2.2 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Gorodok forestry"

The peatlands were transferred to the forest fund of SFI "Gorodok forestry" in 2015 within one peat deposit Zharovshchina. Peatland site has an area of 73.0 ha and is located in quarter 158 of Vyshedki forest district. Peatland site was transferred to the forestry as land, not as property complexes, and due to this, reclamation canals have not been entered in the state register, were not maintained, and became inoperable.

Fires were not observed in the transferred area. Fire prevention measures were limited to informing the public and restricting the visits during periods of high fire hazard weather.

The following measures are required to improve the fire prevention state of the peatland:

- to carry out technical maintenance of the main canal and transporting collectors;
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to repair the roads providing approach and efficient movement around the peatland site;
- to arrange and maintain a fire barrier along the former narrow-gauge railway, as well as along the contour of the peatland at the border with mineral areas or small peat layer;
- to install barriers to restrict access to the area during the high fire hazard period;

The fire prevention arrangement plan is shown in Figure 2.3.

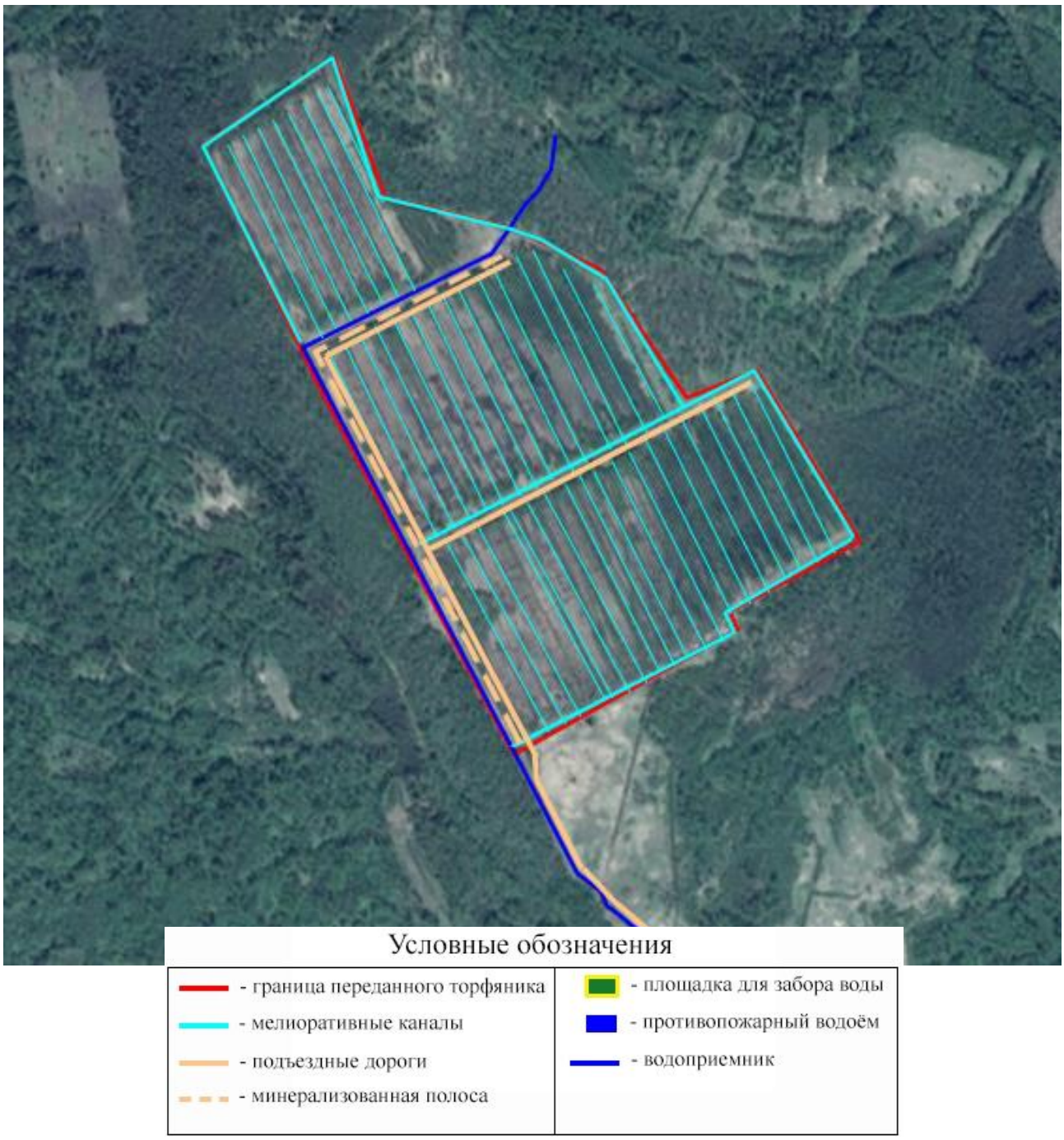

Figure 2.3 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Gorodok forestry

2.3 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Orsha forestry"

The peatlands were transferred to the forest fund of SFI "Orsha forestry" in 2008 within one peat deposit Osinovskoye. Peatland site has an area of 166.1 ha and is located in quarter 479 of Osintorf and quarter 151 of Orekhovsk forest district.

Peatland site was transferred to the forestry as a property complex. Reclamation canals were entered in the state register, they are taken care of by the forces of forest service.

The peatland is located in adjacent quarters of two forestries, the border between which is represented by a highway. Silvicultures of pine and spruce grow at the site, the trunks of which show traces of surface fires of the past years. 4 fire fire-fighting reservoirs, 2 of which have good access road, are located near the peatland site and directly on it. Fire-safety tower of the forest district with video surveillance is located 2 kilometers away from the peatland site. Fire prevention measures are carried out in accordance with the work plan.

The following measures are required to improve the fire prevention state of the peatland:

- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to repair the roads providing approach to the peatland site and fire-fighting reservoirs;
- to install barriers to restrict access to the area during the high fire hazard period.

The fire prevention arrangement plan is shown in Figure 2.4.

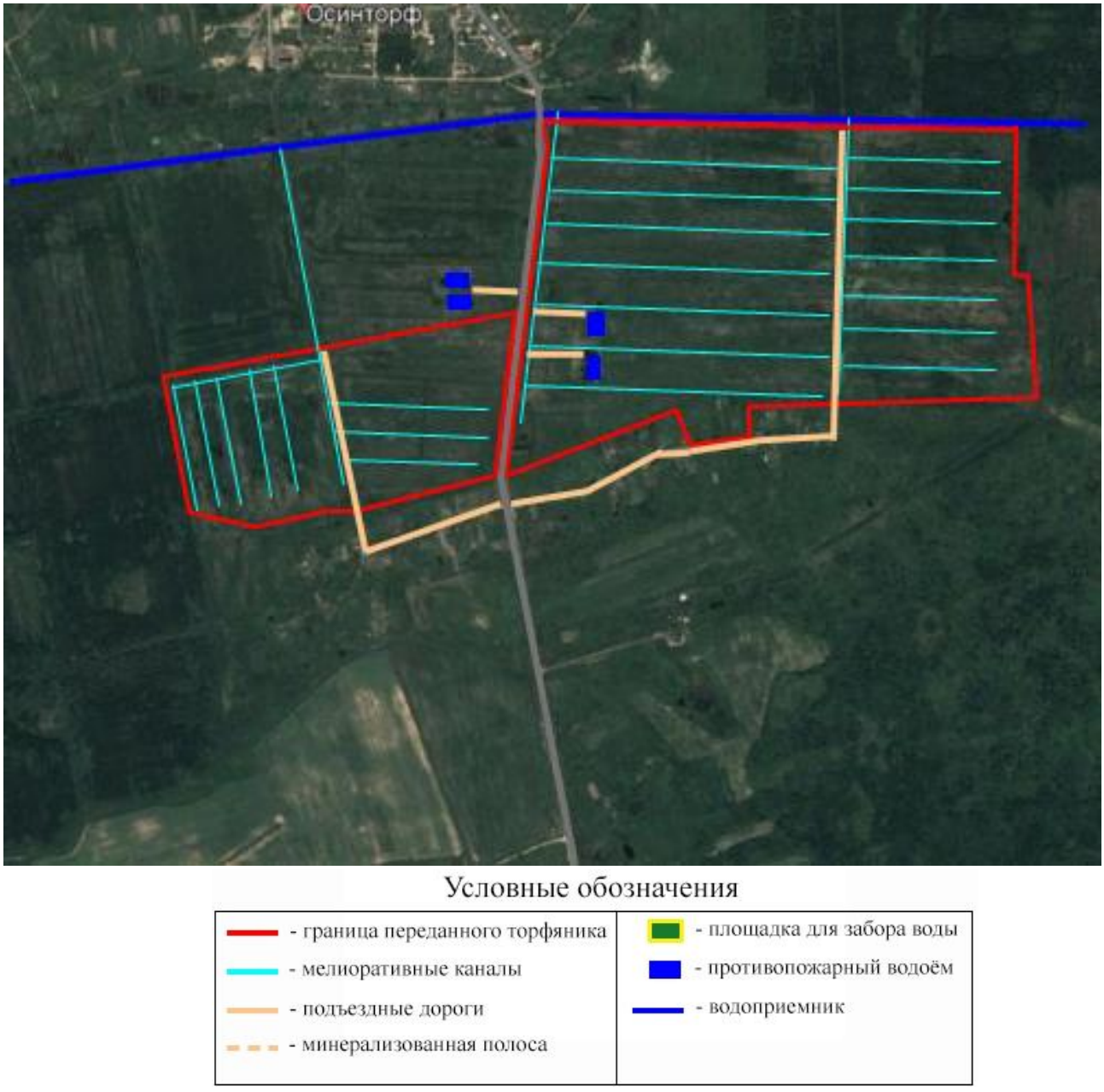

Figure 2.4 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Orsha forestry

3 Analysis of fire prevention measures and proposals for fire prevention arrangement for peatland sites depleted and no longer used for agricultural purposes, transferred to the forestries of Grodno SPFA

In Grodno SPFA, peatlands of industrial use (depleted peatlands after peat harvesting) and peatlands no longer used for agricultural purposes, were transferred to four forestry institutions (Lida, Novogrudok, Skidel and Smorgon forestries) starting from 2008 till the present time. The total area of peatlands transferred for forestry amounted to 825.0 hectares.

3.1 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Lida forestry"

The peatlands were transferred to the forest fund of SFI "Lida forestry" in 2010, 2011 and 2015 within three peat deposits (Zamostyany, Dokudovskoye-2, Dokudovskoye-3). Peatland site Zamostyany has an area of 45.4 ha and is located in quarter 208 of Pervomaiskoye forest district (*site 1*). Peatland site Dokudovskoye-2 has an area of 78.6 ha and is located in quarter 65 of Dokudovskoye forest district (*site 2*). Peatland site Dokudovskoye-3 has an area of 78.9 ha and is located in quarter 68 of Lida forest district (*site 3*). Peatland site No. 1 was transferred to the forestry as a property complex, the reclamation canals have been entered in the state register. Sites No.2 and No.3 were transferred as a land.

Peatland site in Pervomaiskoye forest district (quarter 208) (*site 1*) is characterized by a marked slope from the north to the south. Due to the intense activity of beavers the drainers are filled with brushwood, the southern part of the site is waterlogged. A birch-alder woodland is formed in the central part. Silvicultures of black alder are created in the northern part (22.3 ha).

Measures on re-naturalization of the disturbed peatland were taken at the peatland site in Dokudovskoye forest district (quarter 65) (*site 2*) in 2010. For this purpose, part of the canals was blocked, and the water level was brought to the ground level. As a result, the swamp began to actively overgrow with reeds, less often with sedge and willow. The natural recovery of black alder is noted. The level of swamp water table is at the level of the soil, sometimes 20 cm higher.

Measures on re-naturalization by raising the water stand level were taken at the peatland site in Lida forest district (quarter 68) (*site 3*) in 2015. In 2018, winter cutting of the reed was carried out on the part of the territory to form sedge marshes as habitats of aquatic warbler. As of the moment of the survey, the standing level of marsh water is in some places 20 cm above the soil. Fire-fighting reservoir with the volume of 5500 m^3 of water is dug at the northern border of the peatland. Access to the water reservoir is good.

Works on the re-naturalization of peatlands (*sites 2-3*) were carried out based on the engineering and technical solutions complying with fire safety requirements. The following measures are required to improve the fire prevention state of the peatland sites:

- to carry out repairs and maintenance of hydraulic structures (control pipes), to ensure the water level control (*sites 1-3*);

- to repair the roads providing approach to the peatland sites and fire-fighting reservoirs (*sites 1-3*);

- to create fire-fighting reservoir in quarter 208 of Pervomaiskoye forest district (*site 1*);

- to arrange a fire barrier along the border of the site with mineral soil (*site 1*);

- to arrange the platform for water intake from the canals (*site 2*);

- to install barriers to restrict access to the area during the high fire hazard period;

- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figures 3.1 - 3.3.

Figure 3.1 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Pervomaiskoye forest district (quarter 208) of Lida forestry

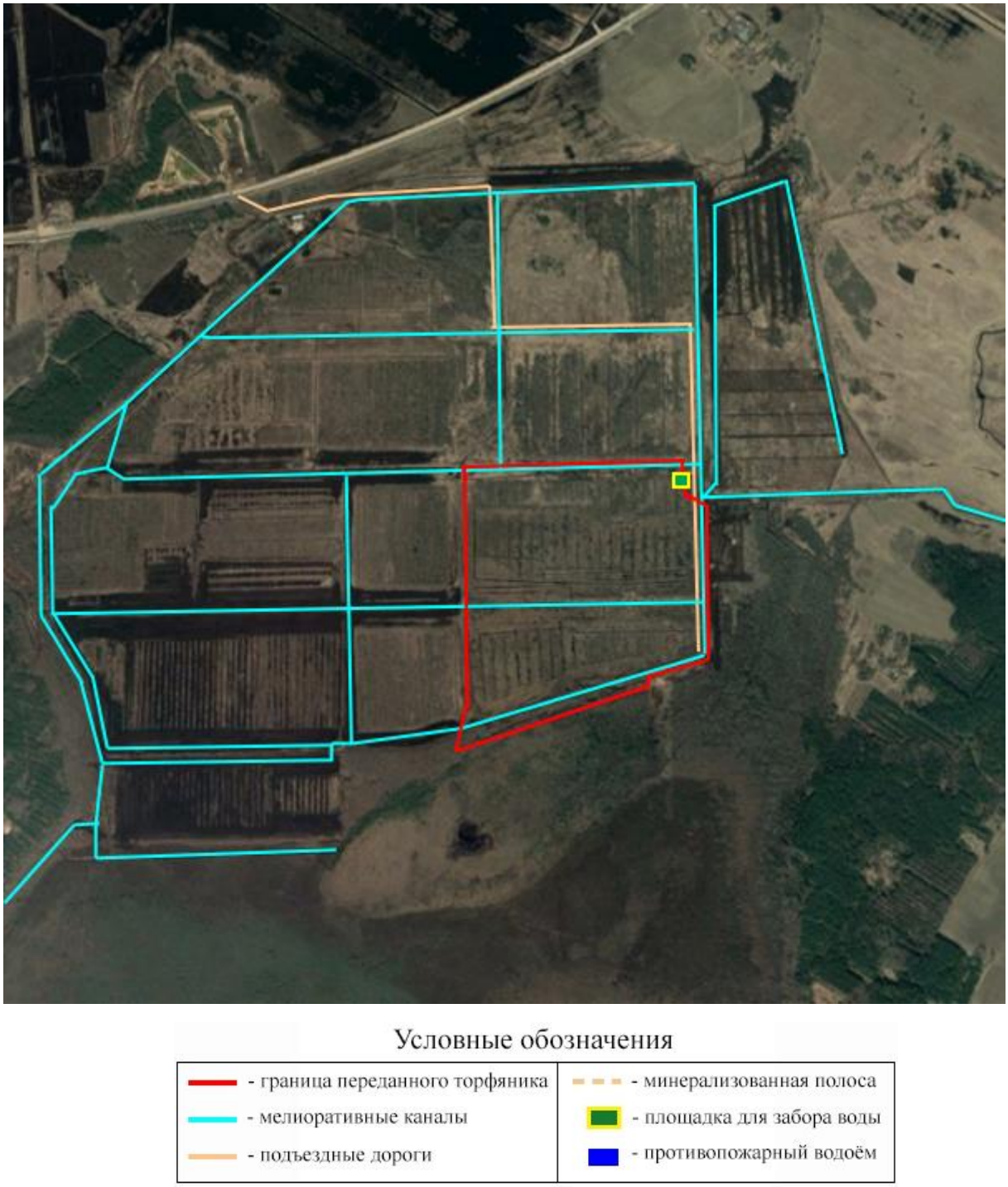

Figure 3.2 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Dokudovskoye forest district (quarter 65) of Lida forestry

Figure 3.3 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Lida forest district (quarter 68) of Lida forestry

3.2 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Novogrudok forestry"

The peatlands were transferred to the forest fund of SFI "Novogrudok forestry" in 2011 and 2016 within one peat deposit Korelichi in two separate sites. One site has an area of 15.1 ha and is located in quarter 75 of Korelichi forest district (*site 1*). The second site has an area of 44.7 ha and is located in quarter 117 of Lyubcha forest district (*site 2*). All peatland sites were transferred as property complexes, and due to this fact the reclamation canals were added to the state register.

Peatland site in Korelichi forest district (quarter 75) (*site 1*) is located in ground depression and is surrounded by agricultural land. The water level in some parts of the site is equal to the ground level, forest and mire phytocenoses is formed.

Peatland site in Lyubcha forest district (quarter 117) (*site 2*) is also surrounded by agricultural land on three sides. The groundwater on average is found at the depth of 50 cm and is not an obstacle for surface fires. Special monitoring is required at the site, because Trichophorum alpinum is found - the species included in the Red Book of the Republic of Belarus.

Fires were not observed in the transferred sites. Fire prevention measures were limited to informing the public and restricting the visits during periods of high fire hazard weather.

The following measures are required to improve the fire prevention state of the peatland sites:

- to perform maintenance of canals (*sites 1, 2*);
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals (*site 1, 2*);
- to repair the roads providing approach and efficient movement around the peatland site (*sites 1, 2*);
- to create fire barrier along the contour of the peatland at the border with agricultural land (*site 1*);
- to arrange the platforms for water intake from the water collector (*site 2*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figures 3.4 - 3.5.

Figure 3.4 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Korelichi forest district (quarter 75) of Novogrudok forestry

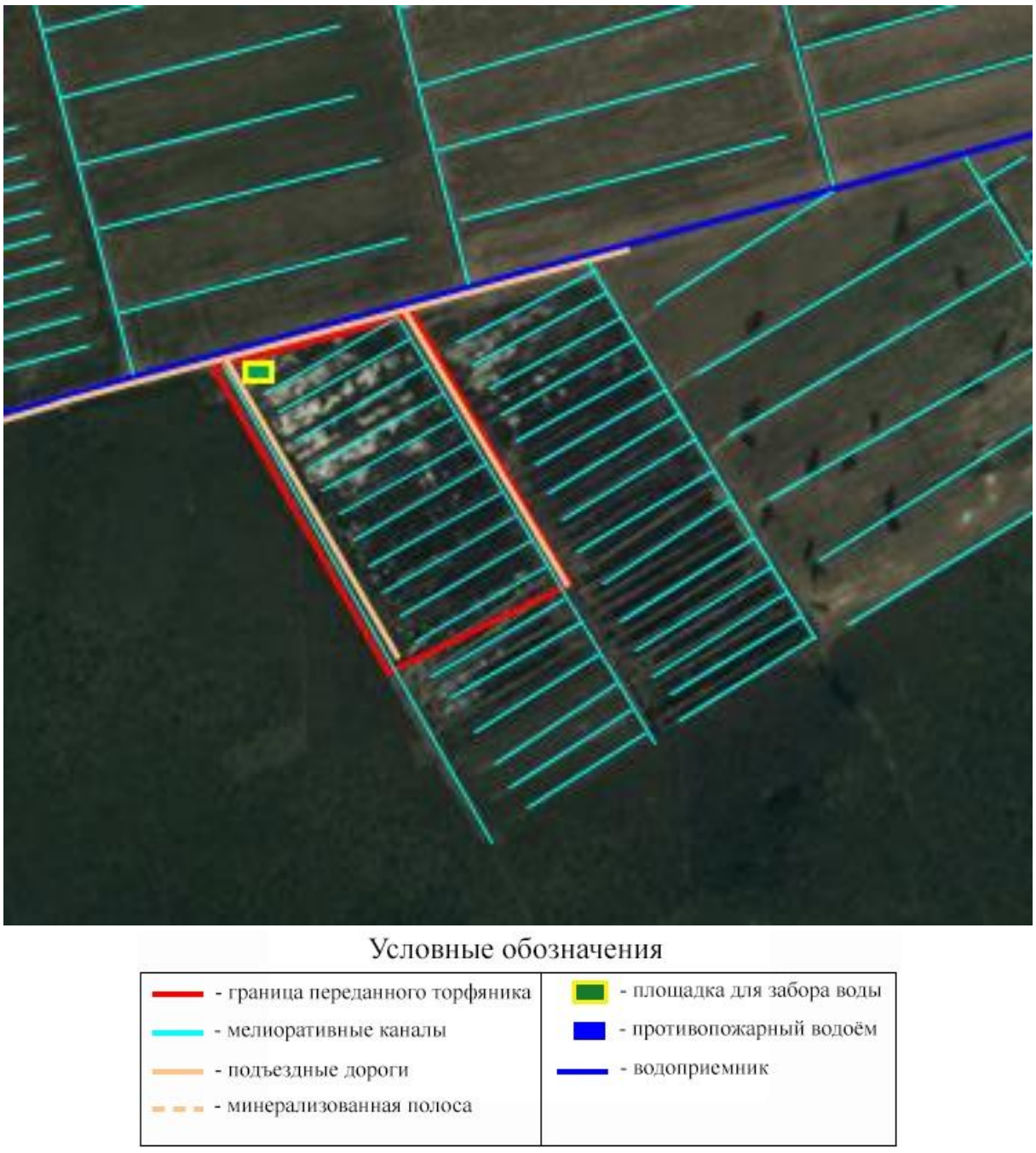

Figure 3.5 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Lyubcha forest district (quarter 117) of Novogrudok forestry

3.3 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Skidel forestry"

The peatlands were transferred to the forest fund of SFI "Skidel forestry" in 2009, 2012, 2013 and 2014 within one peat deposit Svyatoye in the territory of two adjacent forest districts. In total 67.1 hectares of peatlands were accepted in the forest fund of Ozery forest district, and 177.4 hectares - in Novogrudok forest district. The peatland sites were transferred to the forestry as a land but not property complexes,

and due to this, the drainage canals have not been entered in the state register, they have not been serviced after the transfer of the land.

The transferred territory is a partially drained peatland on the lands of agricultural and forestry purposes, partially developed peatland. Currently, a mosaic complex of forested lands and open bogs with reed and bog-grass communities has developed at the site. Peat harvesting is carried out to the north from the transferred site. In 2015, the works on canals closing were carried out to re-naturalize the site by raising the water level. As of the survey time, the canals are filled with water almost to the ground level. The development of wetland vegetation is hindered large, up to 1 m, fluctuations in water level during the growing season.

The following measures are required to improve the fire prevention state of the peatland sites:

- to repair the roads providing approach and efficient movement around the peatland site;
- to arrange the platforms for water intake from the canals (*2 pc.*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 3.6.

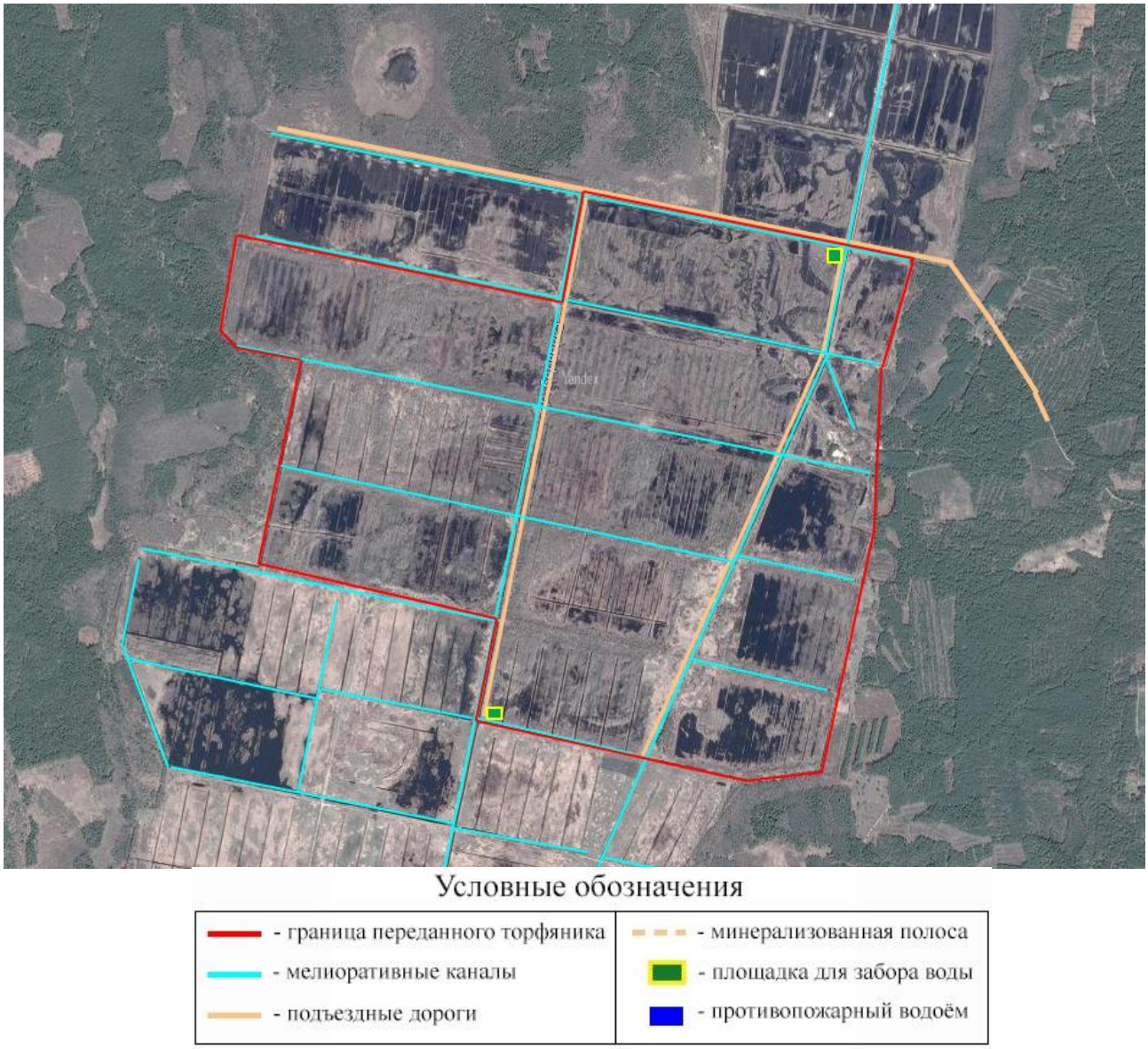

Figure 3.6 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Skidel forestry

3.4 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SEFI "Smorgon experimental forestry"

The peatlands were transferred to the forest fund of SEFI "Smorgon experimental forestry" in 2013 and 2017 within two peat deposits (Mikulishki and Seltsy). Peatland site of Mikulishki deposit has an area of 146.4 ha and is located in quarters 53, 55, 59 of Budenovka forest district (*site 1*). Peatland site of Seltsy deposit has an area of 171.4 ha and is located in quarters 29, 30 of Trilesinskoye forest district (*site 2*).

Peatland site in Budenovka forest district (quarter 53, 55, 59) (*site 1*) underwent reclamation. As of the survey time, the water level was 25 cm from the

soil surface, marsh vegetation is formed. A channelized river Myarkis runs along the western border. A narrow-gauge railway ran along the eastern border of the peatland. On its embankment a fire barrier was arranged, which eventually lost its technical properties.

The peatland in Trilesinskoye forest district (quarter 29, 30) (*site 2*) is represented by the site depleted by peat harvesting. Birch is regrowing along the canals. A large territory has open areas with exposed peat horizon.

According to the forestry workers, a big peat fire covering more than 100 hectares occurred in site 2 at the end of the 1990s. No fires broke out at site 1. The following measures are required to improve the fire prevention state of the peatland sites:

- to carry out technical maintenance of the main canal and transporting collectors (*sites 1, 2*);
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals (*site 1, 2*);
- to repair the roads providing approach and movement around the peatland site (*sites 1, 2*);
- to arrange the platforms for water intake from the canals (*sites 1, 2*);
- to renew the fire barrier along the former narrow gauge (*site 1*);
- to create fire-fighting reservoir in section 5 of quarter 38 of Budenovka forest district (*site 1*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figures 3.7 - 3.8.

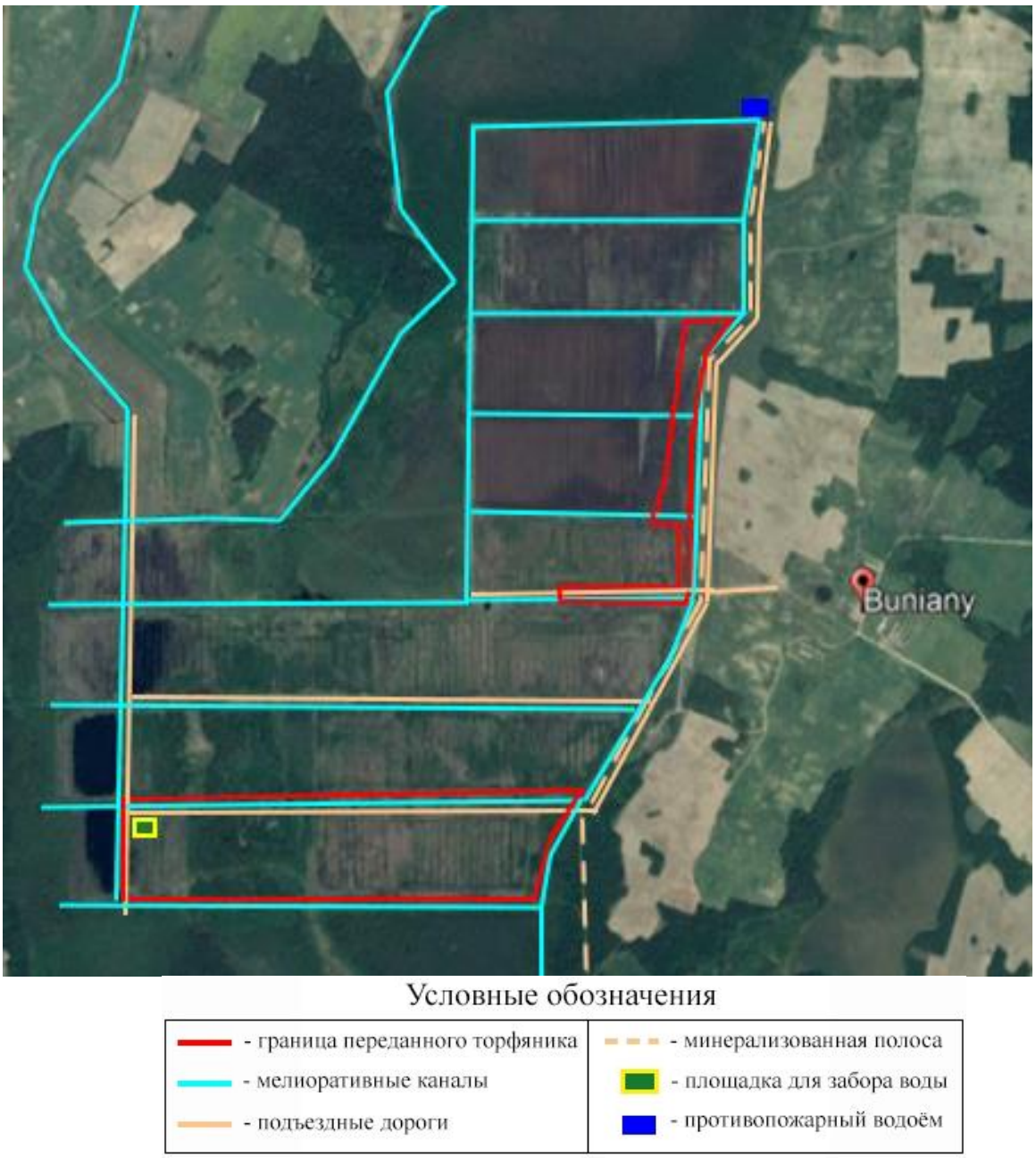

Figure 3.7 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Budenovka forest district (quarters 53, 55, 59) of Smorgon forestry

Figure 3.8 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Trilesinskoye forest district (quarters 29, 30) of Smorgon forestry

4 Analysis of proposals of fire prevention measures and fire prevention arrangement for peatland sites, depleted and no longer used for agricultural purposes, transferred to the forestries of Minsk SPFA

In Minsk SPFA, peatlands of industrial use (depleted peatlands after peat harvesting) and peatlands no longer used for agricultural purposes, were transferred to ten forestry institutions (Berezino, Borisov, Kletsk, Kopyl, Slutsk, Smolevichi, Starobin, Stolbtsy, Pukhovichi and Uzda forestries) starting from 2008 till the present time. The total area of peatlands transferred for forestry amounted to 2953.51 hectares.

4.1 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Berezino forestry"

The peatlands were transferred to the forest fund of SFI "Berezino forestry" in 2010 and 2014 within one peat deposit Ivanovskoye. 81.47 ha of peatlands (quarters 80, 81) were transferred to the forest fund of Brodets forest district, and 66.75 ha (quarter 90) - to Lyubushany forest district.

The transferred peatland is a site depleted by industrial peat extraction. Slow vegetation restoration is observed at the site. The northern part of the site (Brodets forest district) is partially flooded by beavers. Reclamation canals are serviced by the enterprise, which continues peat harvesting in the surrounding areas.

No fires occurred in the transferred peatland sites. Fire prevention measures were limited to restricting the visits during periods of high fire hazard weather. The following measures are required to improve the fire prevention state of the peatland:

- to perform maintenance of canals;
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to repair the roads providing approach and efficient movement around the peatland site;
- to create the fire barrier along the former narrow gauge;
- to arrange the platforms for water intake from the canals;
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 4.1.

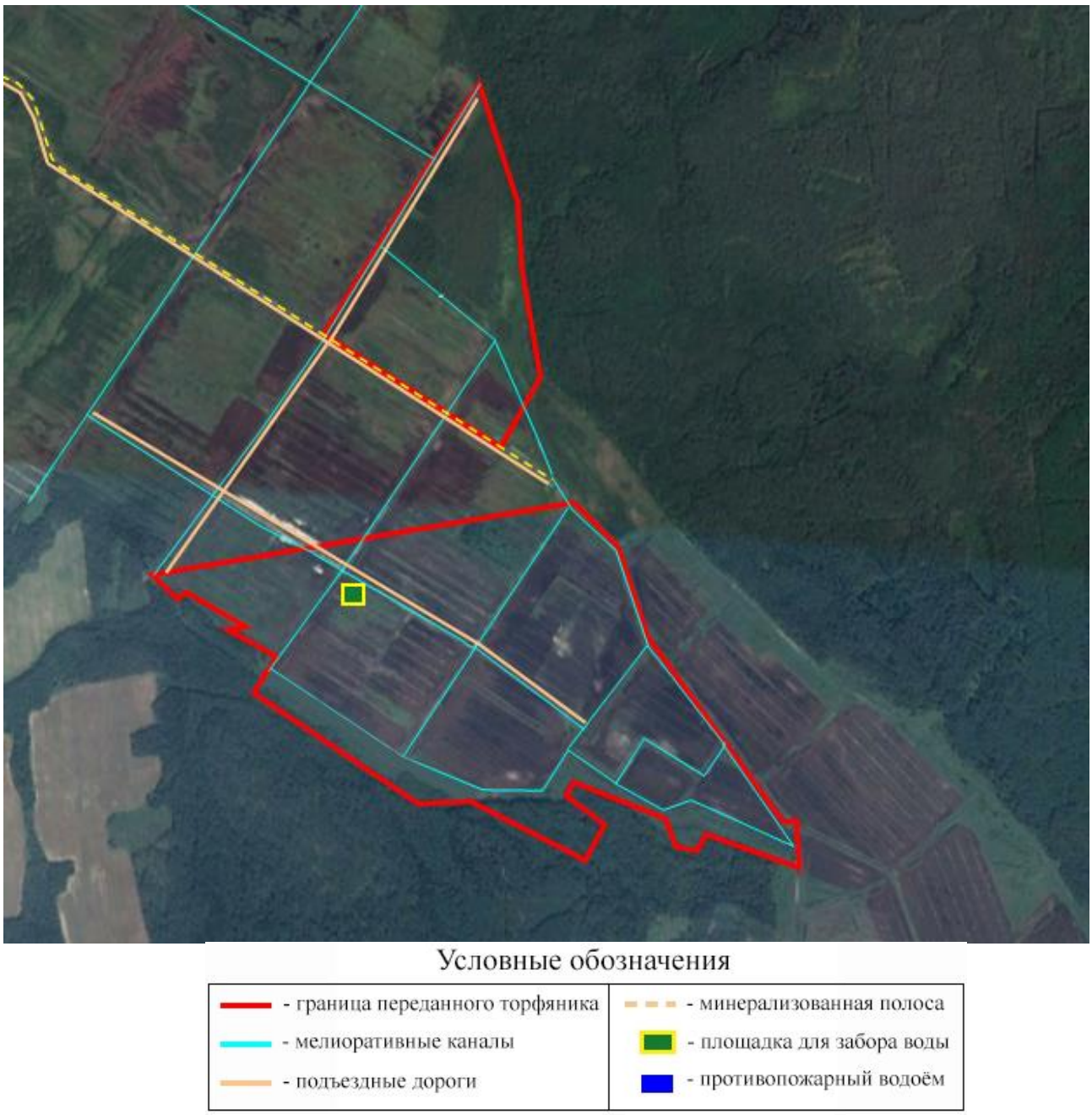

Figure 4.1 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Berezino forestry

4.2 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SEFI "Borisov experimental forestry"

The peatlands were transferred to the forest fund of SEFI "Borisov experimental forestry" in 2008 and 2017 within one peat deposit Tsna (Gantsevichi). Peatland site with the of area 407.68 ha is included in the forest fund in quarters 98, 100, 102-105, 107-110 of Ikany forest district. The territory was transferred as land, reclamation canals were not entered in the state register, the canals are not maintained.

Silvicultures of pine with filling-up with alder, birch and spruce were created at the site, transferred in 2008. The state of the cultures is good. The drainage canals system is not operational, most of them are backfilled. A recreation area is arranged in the widened place of the main canal. Herbaceous plants and rare trees and shrubs grow at the site transferred in 2017.

No fires occurred in the transferred peatland sites. Fire prevention measures were limited to restricting the visits during periods of high fire hazard weather. The following measures are required to improve the fire prevention state of the peatland:

- to perform maintenance of canals;
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to repair the roads providing approach and efficient movement around the peatland site;
- to create the fire barrier along the former narrow gauge;
- to arrange the platform for water intake from the canals;
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 4.2.

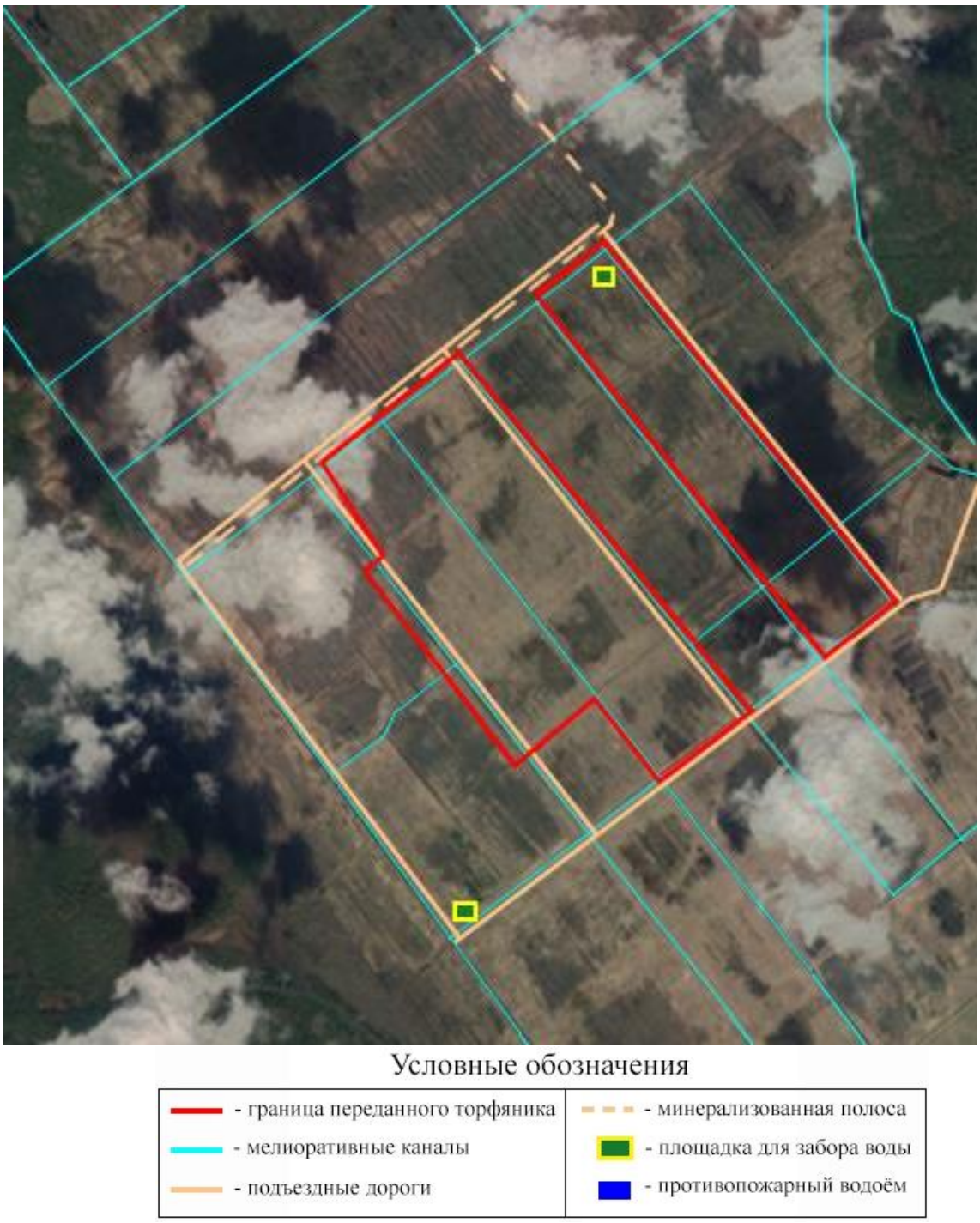

Figure 4.2 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Borisov forestry

4.3 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Kletsk forestry"

The peatlands were transferred to the forest fund of SFI "Kletsk forestry" in 2011, 2013 and 2014 within one peat deposit Karolina. Peatland site with the area of 172.03 ha is located in quarters 135, 136, 138 of Nesvizh forest district. The territory

was transferred to the forestry as land, reclamation canals were not entered in the state register, the canals are not maintained.

The site is represented by the alternating soil exposures and fragments of reclamation-derived type of birch wood. Reclamation network along the banks is intensively overgrown with trees and shrubs. The water level in canals is 10-30 cm below the soil surface. Fire barrier was arranged on the embankment of the former narrow gauge railway, which eventually lost its technical properties. Invasive species (Sosnovsky cow parsnip, Canadian goldenrod, wild cucumber) are found at the site, limiting the spread of which will also help rise the groundwater level.

No fires occurred in the transferred peatland areas. Fire prevention measures were limited to restricting the visits during periods of high fire hazard weather. The following measures are required to improve the fire prevention state of the peatland:

- to perform maintenance of canals;
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to repair the roads providing approach and efficient movement around the peatland site;
- to arrange a fire barrier along the former narrow-gauge railway, as well as along the contour of the peatland sites at the border with mineral areas or small peat layer;
- to arrange the platforms for water intake from the canals (*3 pc.*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 4.3.

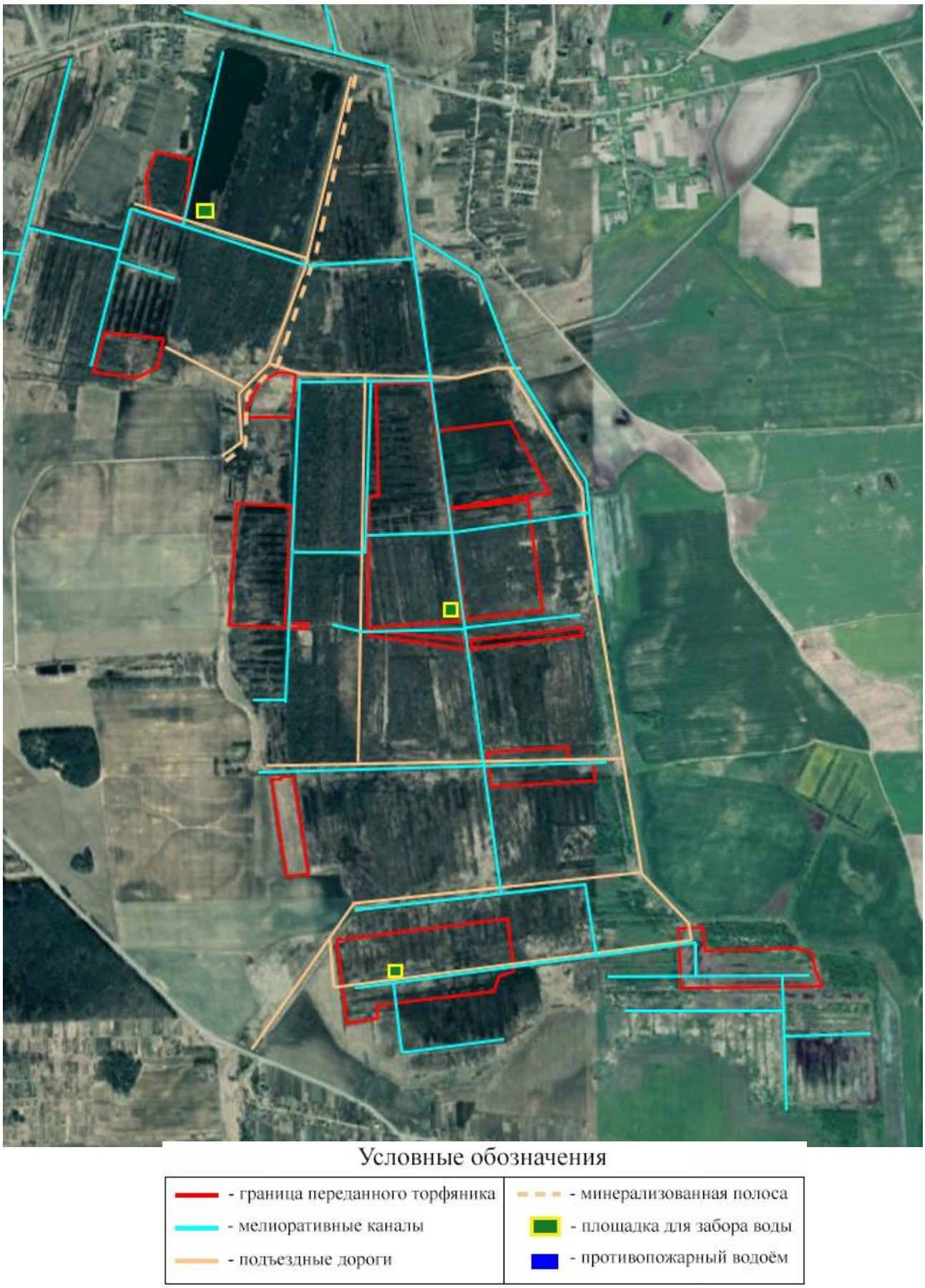

Figure 4.3 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Kletsk forestry

4.4 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SEFI "Kopyl experimental forestry"

The peatlands were transferred to the forest fund of SEFI "Kopyl experimental forestry" in 2008, 2011 and 2016 within three peat deposits (Pozhary, Turya, Loshansky peat massif). The site of peat deposit Pozhary has an area of 23.37 ha and is located in quarter 75 of Kopyl forest district (*site 1*). The site of peat deposit Turya has an area of 93.81 ha and is located in quarter 11 of Kolov forest district (*site 2*). The site of peat deposit Loshansky peat massif has an area of 169.1 ha and is located in quarters 1, 18 of Staritskoye forest district (*site 3*). The depleted peatlands were transferred to the forestry as land, reclamation canals were not entered in the state register, the canals are not maintained.

The reclamation canals on the peatland site in Kopyl forest district (quarter 75) (*site 1*) are overgrown with trees and shrubs, and have become inoperative. Creation of an artificial pond for recreational purposes at the adjacent site (west side) has led to the flooding of the transferred peatland. Level on mire water stand in some places of the site is 20 cm above the soil level.

Reclamation canals on the peatland site in Kolov forest district (quarter 11) (*site 2*) are also overgrown with trees and shrubs. Birch regrowth is 8-10 m high. Coenopopulation of Trichophorum alpinum entered in the Red Book of the Republic of Belarus is found in the site, which leads to special protection regime.

Peatland site in Staritskoye forest district (quarters 1, 18) was used in agriculture before its transfer to the forestry. Silvicultures of black alder are created in the most part of the site. Birch regrowth is observed on the flooded territory. In some parts traces of surface fire, which caused fall out of black alder and birch tree stand, are observed. The peatland site is surrounded by agricultural land, which will not allow the significantly increase of the groundwater level.

Fire prevention measures were very few, and were limited to restricting the access during periods of high fire hazard weather. Growing forest plantations are partially plowed around. The following measures are required to improve the fire prevention state of the peatland:

- to perform maintenance of canals (*sites 1 -3*);
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals (*sites 1-3*);
- to repair the roads providing approach and movement around the peatland site (*sites 1-3*);
- to create fire barrier along the contour of the peatland sites at the border with mineral areas or small peat layer (*site 2*);
- to arrange the platforms for water intake from the canals and the artificial water body (*sites 1, 3*);
- to arrange fire-fighting reservoir (*site 2*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figures 4.4 - 4.6.

Figure 4.4 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Kopyl forest district (quarter 75) of Kopyl forestry

Figure 4.5 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Kolov forest district (quarter 11) of Kopyl forestry

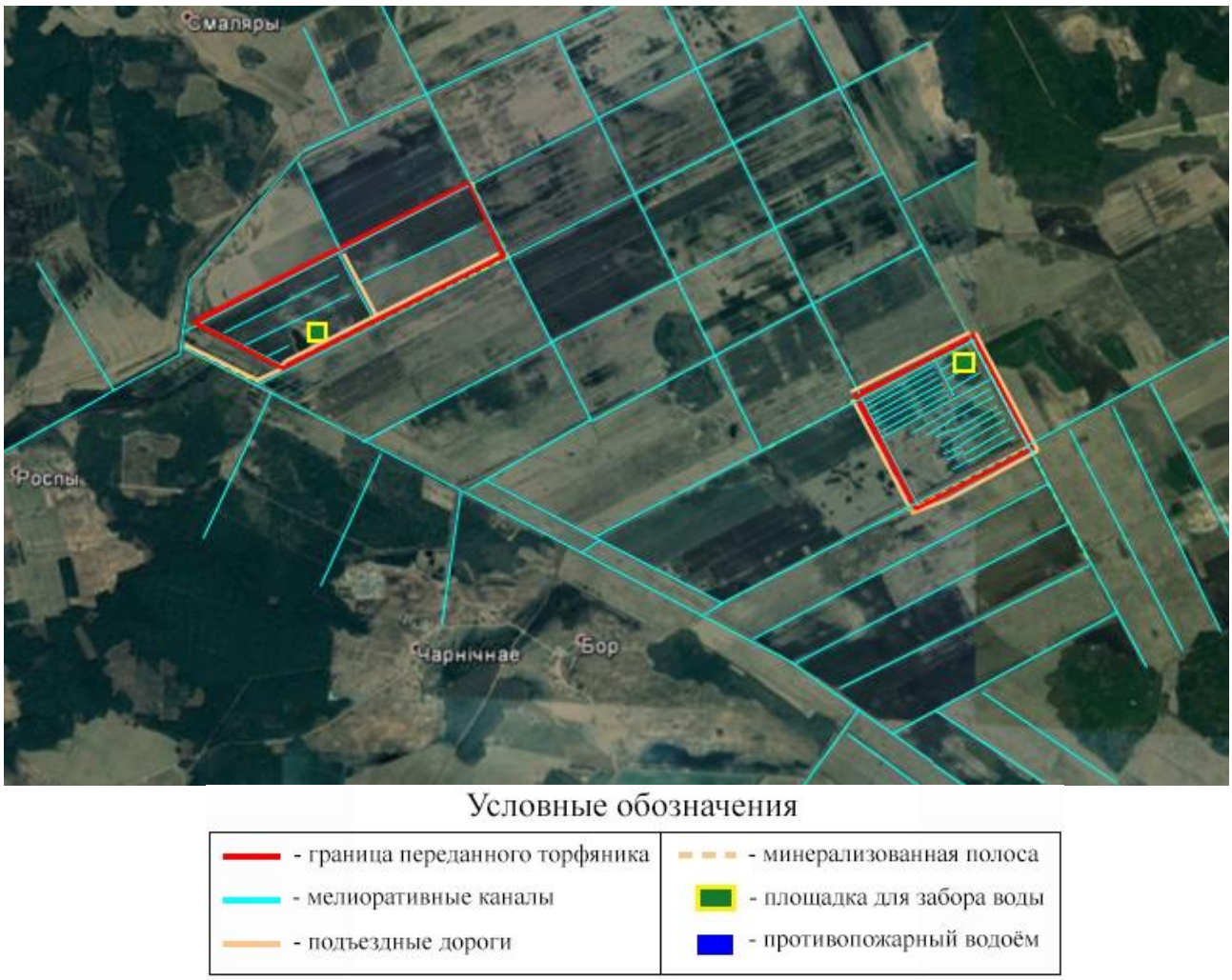

Figure 4.6 - Arrangement of fire prevention measures at peatland site No. 3 transferred to the forest fund of Staritskoye forest district (quarters 1, 18) of Kopyl forestry

4.5 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Pukhovichi forestry"

The peatlands were transferred to the forest fund of SFI "Pukhovichi forestry" in 2010, 2013 and 2016 within two peat deposits (Orekhovsky Mokh and Ptich). The site of peat deposit Orekhovsky Mokh has an area of 208.7 ha and is located in quarters 21, 22, 32-34 of Sergeyevichskoye forest district (*site 1*). The site of peat deposit Ptich has an area of 33.7 ha and is located in quarter 70 of Veterevichi forest district (*site 2*). The peatland sites were transferred to the forestry as land, reclamation canals were not entered in the state register, the canals are not maintained.

Peatland site in Sergeyevichskoye forest district (quarters 21, 22, 32-34) (*site 1*) was subjected to reclamation by raising the water level. As of the time of the survey the western part of the site is flooded, and the eastern part is dried. Exposed

peat horizon is observed in the most of the area. At the request of the forestry, the peat company flooded the part of the previously transferred lands. The greatest effect in maintaining the high water level is expected after the installation of a gateway or an overflow dam at the intersection of the motor road (the border of quarters 3 and 4) and the main canal.

The peatland site in Veterevichi forest district (quarter 70) (*site 2*), is characterized by the increase of water content and reduction of flowage due to the overgrowth of reclamation canals. The rise of the water level results in the shrinkage of birch forests along the perimeter. Works on re-naturalization of the disturbed peat deposit were carried out in the adjacent area in 2015.

Fires were not observed at the sites. For the purposes of fire-prevention arrangement at the sites, the fire barriers were lain along the embankment of the former narrow gauge railway, which partially lost their functions. The following measures are required to improve the fire prevention state of the peatland:

- to perform maintenance of canals (*sites 1, 2*);
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals (*site 1, 2*);
- to install an overflow dam at the intersection of the motor-road (the border of quarters 3 and 4) and the main canal (*site 1*);
- to repair the roads providing approach and movement around the peatland site (*sites 1, 2*);
- to renew the fire barriers along the embankment of the former narrow gauge railway (*sections 1, 2*);
- to arrange the platforms for water intake from the canals and the artificial water body (*sites 1, 2*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figures 4.7 - 4.8.

Figure 4.7 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Sergeyevichskoye forest district (quarters 21, 22, 32-34) of Pukhovichi forestry

Figure 4.8 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Veterevichi forest district (quarter 70) of Pukhovichi forestry

4.6 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Slutsk forestry"

The peatlands were transferred to the forest fund of SFI "Slutsk forestry" in 2013 within one peat deposit Ptich. The peatland site has an area of 382.6 ha and is located in quarters 102, 103 of Vorobyevskoye forest district. The peatland was transferred to the forestry as land, reclamation canals were not entered in the state register, the canals are not maintained.

Renaturation work was carried out in the site by restoring the hydrological regime. The level of mire water table is at the level of the soil, in some places 20 cm higher. The natural recovery of black alder and downy birch is observed. Good access

roads are available. A narrow-gauge railway ran through the site territory.

Fires were not observed at the sites, the fire barriers were lain along the embankment of the former narrow gauge railway, which partially lost their functions. The following measures are required to improve the fire prevention state of the peatland:

- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to repair the roads providing approach and efficient movement around the peatland site;
- to renew the fire barriers along the embankment of the former narrow gauge railway;
- to arrange the platform for water intake from the canal;
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 4.9.

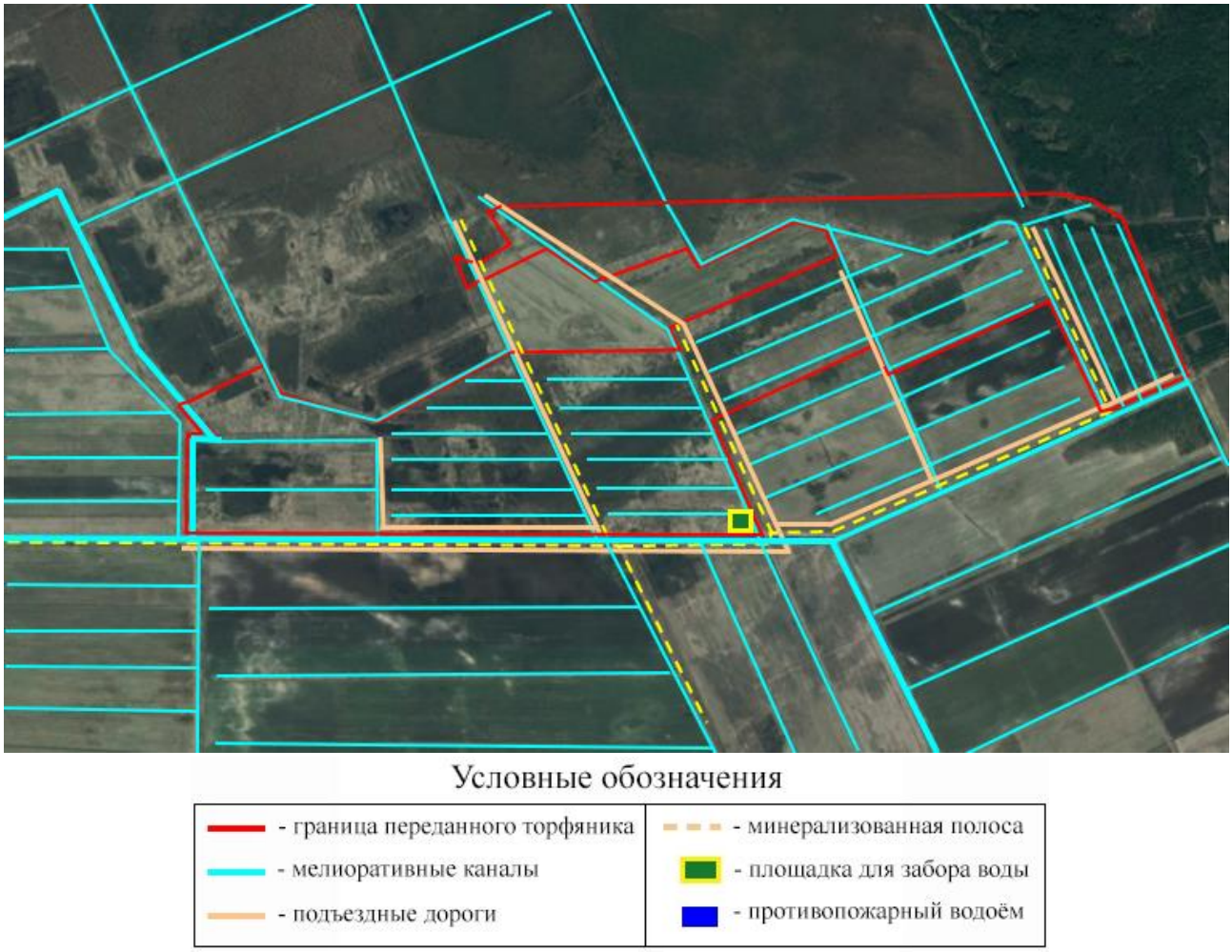

Figure 4.9 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Slutsk forestry

4.7 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Smolevichi forestry"

The peatlands were transferred to the forest fund of SFI "Smolevichi forestry" in 2009 within one peat deposit Gayno-Brodnya. The peatland site has an area of 61.4 ha and is located in quarters 43, 44, 54, 55, 62, 67 of Yuryevskoye forest district. The peatland was transferred to the forestry as land, reclamation canals were not entered in the state register.

The plot is the former peat extraction site. The central part of the area is the lands which are not under the forestry utilization. The raise of the groundwater level resulted in the formation of shallow water bodies, the depth of which reached 1.5 m at the time of the survey.

Fires were not observed at the sites, fire prevention arrangement was not carried out. The following measures are required to improve the fire prevention state of the peatland:

- to repair the roads providing approach and efficient movement around the peatland site;
- to arrange the platform for water intake from the canal;
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 4.10.

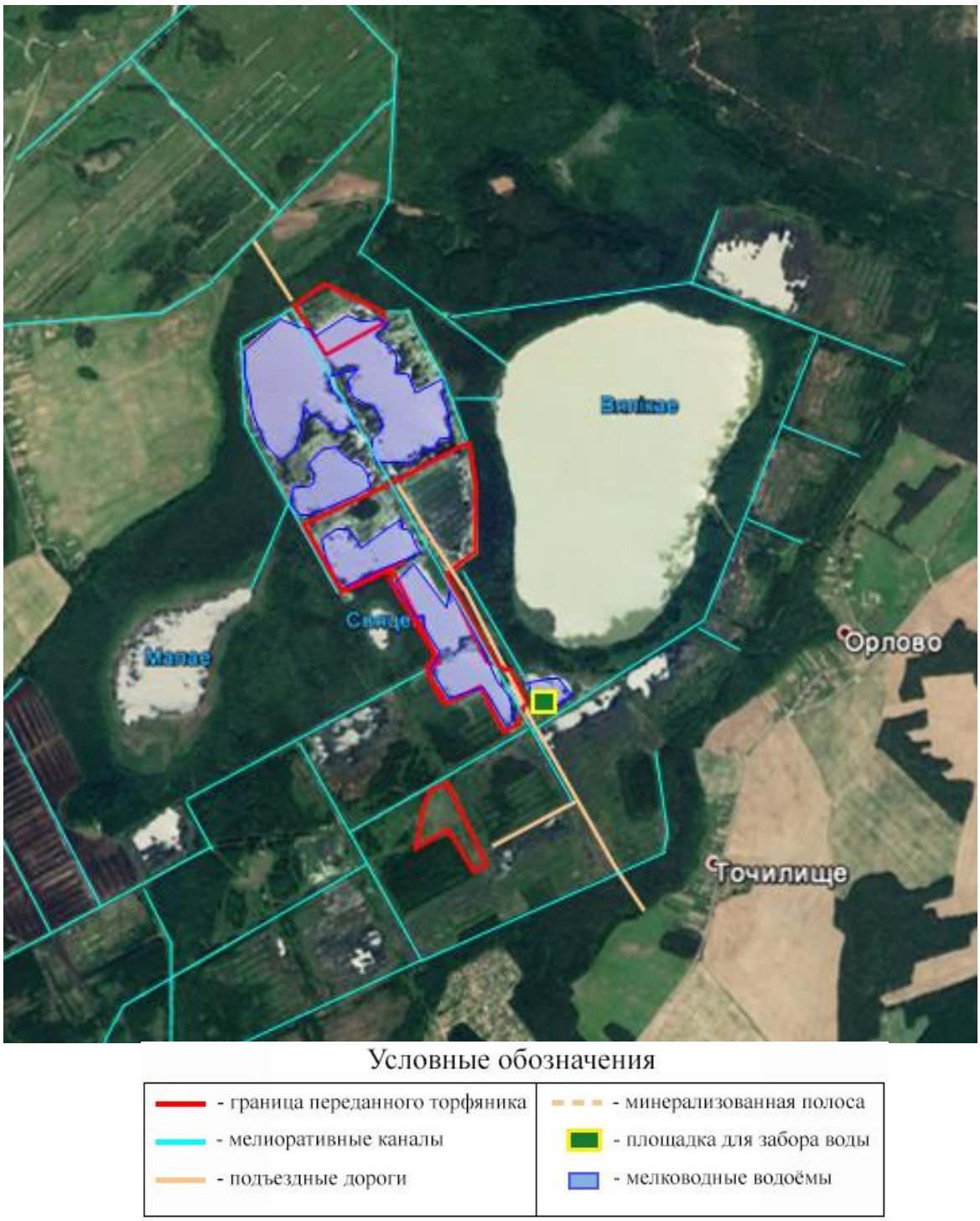

Figure 4.10 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Smolevichi forestry

4.8 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Starobin forestry"

The peatlands were transferred to the forest fund of SFI "Starobin forestry" in 2008, 2009, 2013 and 2016 within one peat deposit Bulev Mokh. The peatland site has an area of 848.61 ha and is located in quarters 1, 7, 9, 18, 35, 39, 43, 48, 52, 54,

67, 71-75, 77-79, 81, 82, 85 of Skovshin forest district. The transferred sites are located on the border with Gomel region and belong to the peatland developed around lake Chyrvonaye. The peatland sites were transferred to the forestry as a land, the canals were not registered for state accounting.

A significant part of the depleted areas of the peatland Bulev Mokh was transferred to the forest fund of Skovshin forest district before 2008. Currently, all transferred sites form a single massif where peat extraction continues. A narrow-gauge railway operates at the site, along which motor-roads should be maintained in the working condition. In July 2009, the work was carried out on re-naturalization of the disturbed peatland in this territory. The water level in the canals and in the territory was raised which resulted in the formation of a series of shallow ponds with depth up to 1.0 meter, overgrowing with aqueous and offshore vegetation.

The following measures are required to improve the fire prevention state of the peatland:

- to repair the roads providing approach and efficient movement around the peatland site;
- to arrange the platforms for water intake from the canals (*3 pc.*);
- to assist the formation of softwood tree stands on the water-free areas;
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 4.11.

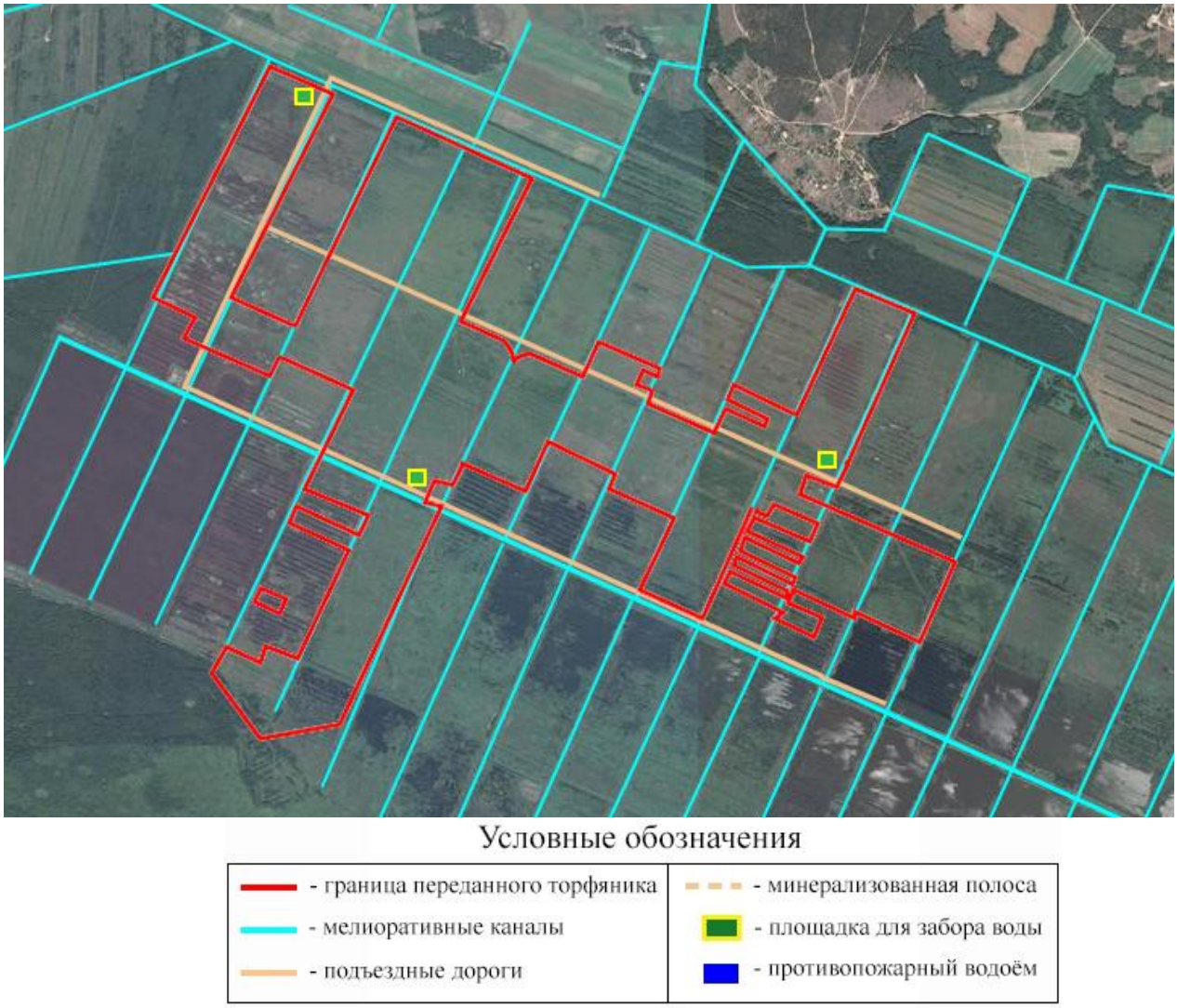

Figure 4.11 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Starobin forestry

4.9 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SEFI "Stolbtsy experimental forestry"

The peatlands were transferred to the forest fund of SEFI "Stolbtsy experimental forestry" in 2009, 2011, 2012 and 2017 within two peat deposits (Gumanovshchizna and Khmelishsche). The site of peat deposit Gumanovshchizna has an area of 52.2 ha and is located in quarters 42, 43 of Starinskoye forest district (*site 1*). The site of peat deposit Khmelishsche has an area of 160.02 ha and is located in quarters 91, 92 of Naliboki forest district (*site 2*). The peatland site was transferred to the forestry as a land, the canals were not registered for state accounting.

Peatland site in Starinskoye forest district (*site 1*) is characterized by an increase in the upper part (with exposed peat horizon), and watered area overgrown with marsh vegetation in the center. The site has a good access road.

The vegetation at the peatland site in Naliboki forest district (*site 2*) is represented by silver birch, pine, less often willows. As of the survey period, the groundwater level was 0.25 m, which is not a reliable protection to prevent fires.

Fires were not observed in the transferred sites. Fire prevention measures were limited to informing the public and restricting the visits during periods of high fire hazard weather.

The following measures are required to improve the fire prevention state of the peatland:

- to perform maintenance of canals (*sites 1, 2*);
- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals (*site 1, 2*);
- to repair the roads providing approach and movement around the peatland area (*sites 1, 2*);
- to create the fire barrier along the former narrow gauge (*site 1*);
- to arrange the platform for water intake from the canals and the shallow water bodies (*site 1*);
- to create a fire-fighting reservoir (*site 2*);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figures 4.12 - 4.13.

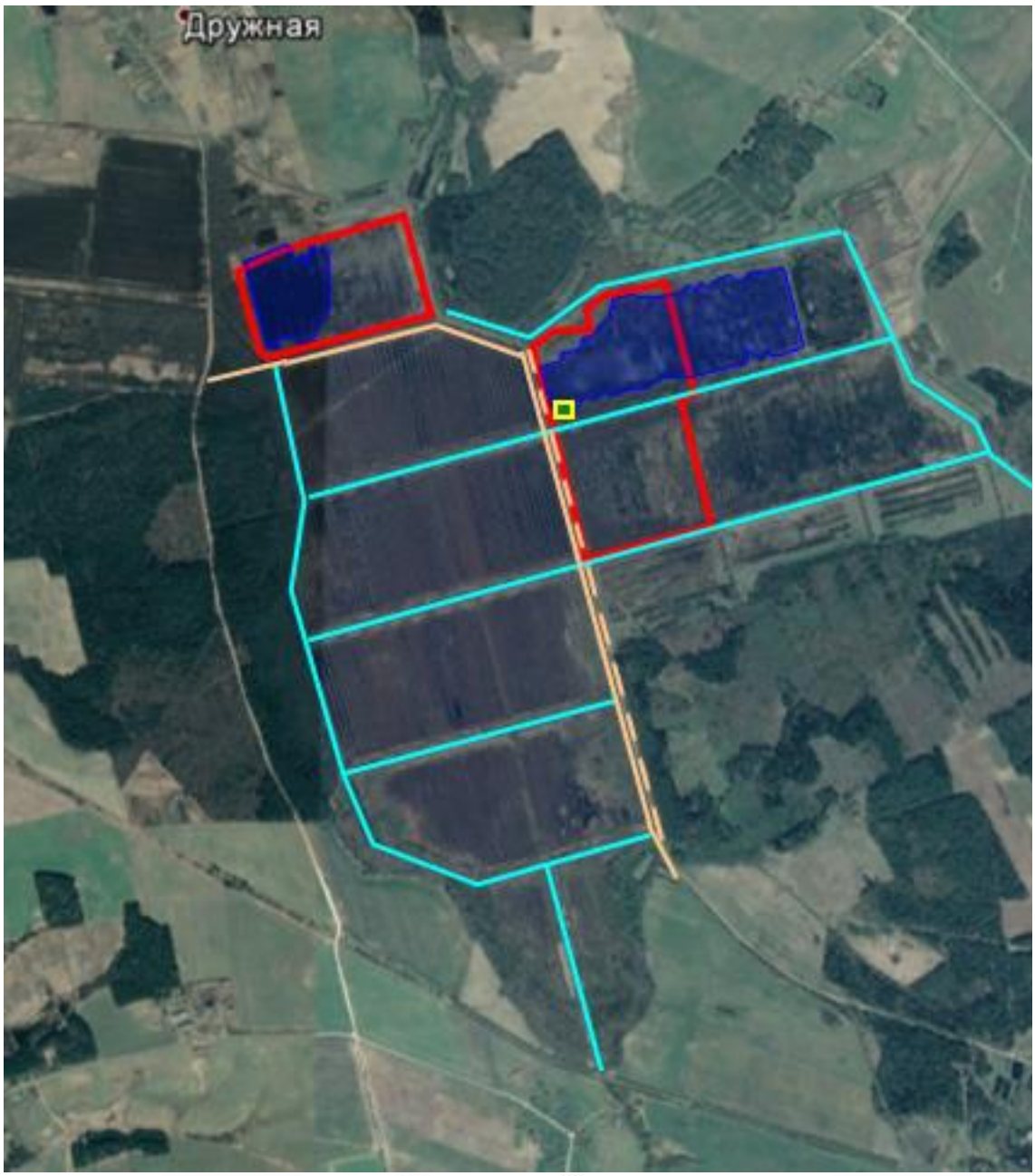

Figure 4.12 - Arrangement of fire prevention measures at peatland site No. 1 transferred to the forest fund of Starinskoye forest district (quarters 42, 43) of Stolbtsy forestry

Figure 4.13 - Arrangement of fire prevention measures at peatland site No. 2 transferred to the forest fund of Naliboki forest district (quarter 91, 92) of Stolbtsy forestry

4.10 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Uzda forestry"

The peatlands were transferred to the forest fund of SFI "Uzda forestry" in 2013 and 2017 within one peat deposit Ptich. The peatland site has an area of 192.07 ha and is located in quarters 171, 180, 181 of Losha forest district. The peatland was

transferred to the forestry as a land, the canals were not registered for state accounting.

Exposed peat horizon is observed in the most of the transferred peatland area. Closed tree layer is not observed. A small part of the site is flooded, local water bodies are formed in depressions. Fires were not observed in the transferred peatland. Fire prevention measures were not taken.

The following measures are required to improve the fire prevention state of the peatland:

- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to repair the roads providing approach and efficient movement around the peatland site;
- to create the fire barrier along the former narrow gauge;
- to create a fire-fighting reservoir;
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 4.14.

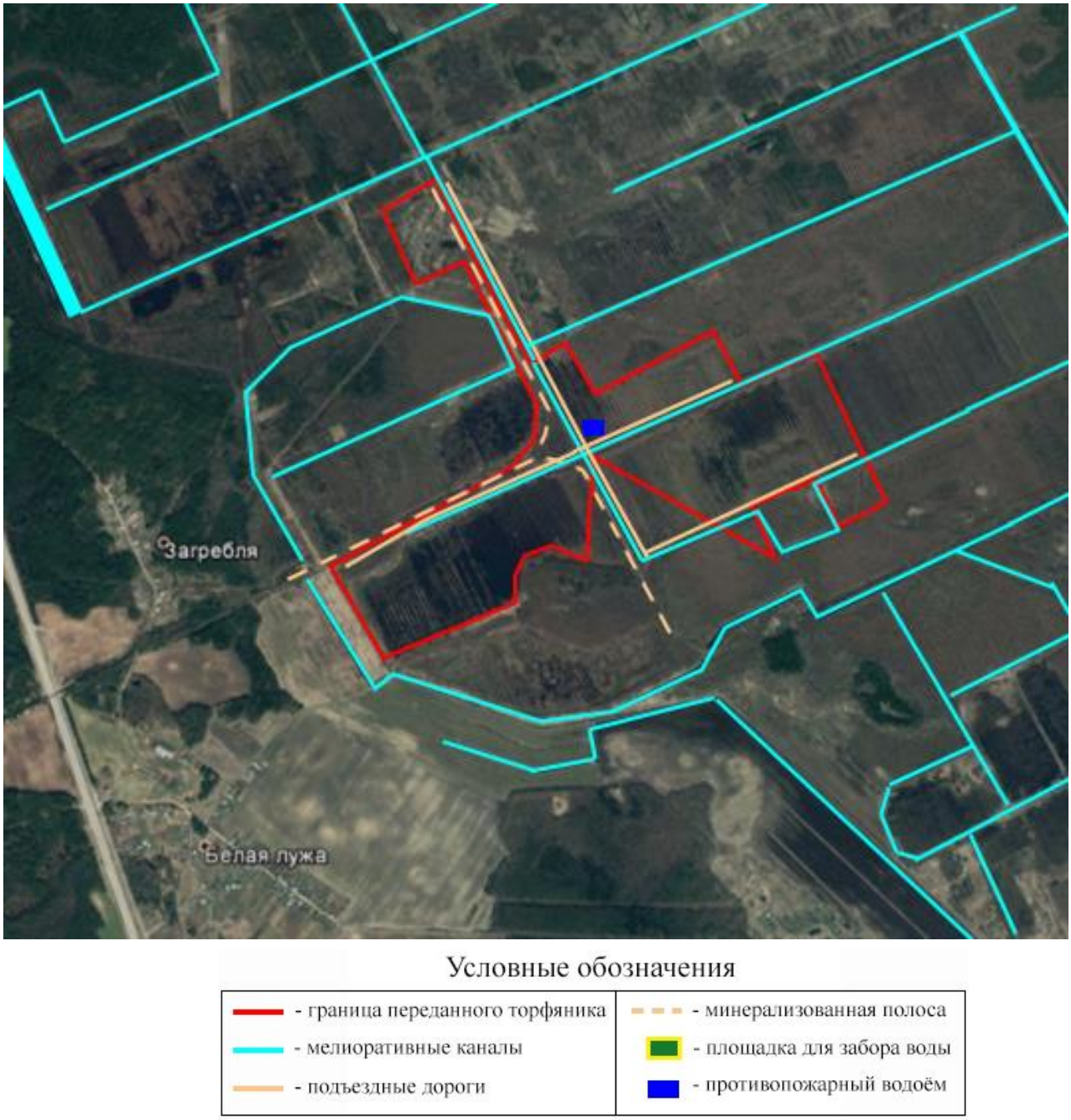

Figure 4.14 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Uzda forestry

5 Analysis of fire prevention measures and proposals for fire prevention arrangement for peatland sites depleted and no longer used for agricultural purposes, transferred to the forestries of Mogilev SPFA

In Mogilev SPFA, peatlands of industrial use (depleted peatlands after peat harvesting) and peatlands no longer used for agricultural purposes were transferred to one forestry institution (Klichev forestry) starting from 2008 till the present. The total area of peatlands transferred for forestry amounted to 121.4 hectares.

5.1 Analysis of fire prevention measures and proposals for fire prevention arrangement of peatland sites transferred to the forest fund of SFI "Klichev forestry"

The peatlands were transferred to the forest fund of SFI "Klichev forestry" in 2011 within one peat deposit Gonchanskoye. The peatland site has an area of 121.4 ha and is located in quarters 76, 77, 87-89, 92-94 of Gonchansky forest district. The peatland was transferred to the forestry as land, however, reclamation canals were entered in the state register.

The transferred peatland site is a part of the peat massif, depleted and previously transferred to the forestry. The site, except southwestern offset, is covered with herbaceous vegetation, trees and shrubs grow on the edges of canals and elevations, represented mainly by birch and willow. There is good approach to the borders of the site. Fire-fighting reservoirs are located at the site, however, they are inaccessible due to the high overgrowth. It is necessary to arrange platforms for water intake.

The following measures are required to improve the fire prevention state of the peatland:

- to carry out repair of hydraulic structures (control pipes) for providing the possibility to maintain a high water level in the canals;
- to repair the roads providing approach to the peatland site;
- to carry out maintenance of fire-fighting reservoirs;
- to arrange the platforms for water intake from the fire-fighting reservoir and the main canal (2 pc.);
- to install barriers to restrict access to the area during the high fire hazard period;
- to install information signs with fire prevention content.

The fire prevention arrangement plan is shown in Figure 5.1.

Figure 5.1 - Arrangement of fire prevention measures at peatland transferred to the forest fund of Klichev forestry

6 Updating the data on the inventory of peatlands and their fire prevention arrangement

In the process of presenting the report at the coordination council, members of the council commented on the relevance of fire prevention activities, as well as discrepancies in the data obtained from the inventory of peatlands and forest management materials. This section provides data updates and some explanations.

6.1 Updating the data on fire prevention arrangement

As a result of the assessment of fire prevention arrangement of the peatland sites transferred to the forestries, it was found that out of 24 forestry enterprises to which the peatlands were transferred, 23 forestries required partial or full repair of forest roads (access or travelling on peatland). To ensure prompt delivery of water, in case of fire, it is necessary to install 42 platforms for water intake. To provide fire-fighting equipment with water, 5 fire-fighting reservoirs should be created. 15 fire-fighting reservoirs available on the territory of the transferred peatlands need maintenance and renewal. On the territory of 17 sites of the transferred peatlands, it is necessary to arrange or renew the fire barriers along the embankment of the former narrow-gauge railway; on all the sections, if possible, fire break plowing should be performed along the contour of the peatland at the border with mineral soil or small peat layer. The report resulted in 38 fire prevention arrangement plans, which covered all the developed peatlands transferred to forestries since 2008.

Fire prevention arrangement requires significant financial costs. In this regard, the Ministry of Forestry instructed to update information on fire prevention arrangement, to take into account those measures that have already been taken at the transferred peatland sites.

In view of this, we sent letters to all 24 forestries asking them to indicate which of the fire prevention measures had been carried out in the peatland sites transferred to the forestries. The fire prevention arrangement plan proposed by us and the list of planned fire prevention measures were enclosed with every letter.

SFI “Pruzhany forestry”, on the territory of which the regional training workshop took place on August 28, informs that re-waterlogging processes are underway on the transferred peatland site, support was provided for the formation of softwood plantations, and a water intake platform was equipped. The peatland site transferred to the forest fund of the Ivatsevichi forestry borders on the peatland, which is currently being developed. An access forest road is maintained in a satisfactory state here. Stolin and Gantsevichi forestries report that barriers and information signs have been installed on the transferred peatland sites, and natural softwood stands are being formed. According to Baranovichi and Lyakhovichi forestries, the fire prevention measures proposed by us were not carried out at the transferred peatlands this year. Baranovichi forestry reports that next year a fire barrier, access barriers and information signs will be installed on the peatland. Lyakhovichi forestry informs that the planned fire prevention measures will be carried out next year.

Skidel and Novogrudok forestries report that there are access barriers and information signs on the developed peatland sites. Lida Forestry informs that no fire prevention measures have been carried out at the indicated peatlands this year. Smorgon forestry informs that the fire prevention measures indicated in the letter for the peatland site in the Budenovka forest district have not been carried out. In 2019, on the site in Trilesinskoye forest district, the environmental rehabilitation of the peatland has been carried out by raising of the water level, based on the agreement between the Subsidiary Unitary Smorgon Enterprise of Reclamation Systems and the UN Office in the Republic of Belarus, as a result of which the designed fire prevention measures for this site have lost their relevance.

Verkhnedvinsk forestry informs that no fire prevention measures have been taken at the transferred peatland areas due to the present flooding of the sites with water. Gorodok forestry informs that on the peatland site transferred to it the natural plantations of softwood trees, aged 5–20 years, are being formed, reclamation canals on the site have become unusable after a long service life. The most optimal fire prevention measure, according to the forestry, is site re-waterlogging.

According to the information of Berezino, Kopyl and Uzda forestries, the designed fire prevention measures have not been carried out on the transferred peatland sites since 2008. Smolevichi forestry reports that no fire prevention measures were carried out, as part of the sites is flooded, and part of the sites has a dense network of reclamation canals with inoperative crossing pipes, that impede movement across the site. In Stolbtsy forestry, fire prevention measures were not taken because the part of the sites is swamped or covered with water, while the water-free part of peatlands is covered with softwood plantations. Starobin and Borisov forestries installed information signs on the transferred sites of peatlands. On the peatlands of Pukhovichi forestry there are information signs and access barriers. Kletsk forestry maintained the fire barrier and the road on the transferred peatland sites.

On July 30, the regional training workshop was held on the basis of Klichev forestry, in the process of preparation for which the fire water reservoirs were maintained, the water intake platforms were equipped, information signs and barriers were installed.

Table 6.1 provides information on the implementation of fire prevention measures on the peatland sites transferred to the forestries as of November 15, 2019.

It should be noted that the table below does not include the following fire prevention measures that we are planning: maintenance of canals, repair of hydraulic structures, formation of softwood stands. The reason for this is that the forestry is not able to independently carry out maintenance of reclamation canals and repair of hydraulic structures, while the measures to form the softwood stands are not one-time and include the whole range of forest management and reforestation work.

Also, single measures are not included in the table, such as the repair of the emergency bridge in Gantsevichi forestry, and the installation of an overflow dam in Pukhovichi forestry.

Table 6.1 - Information on the implementation of fire prevention measures on the peatland sites transferred to forestries

	Forestry	Forest district	Quarter	Projected fire prevention measures						
				Arrangement of fire barriers	Arrangement of fire-fighting reservoirs	Maintenance of fire-fighting reservoirs	Repair of roads	Arrangement of water intake platforms	Installation of barriers	Installation of informa-tion signs
1	Baranovichi	Malakhovskoye	44, 204-209	pr.	–	–	pr.	pr. 2	pr.	pr.
2	Gantsevichi	Rozdyalovichi and Khotynichi	54, 64, 67; 8,14,21,29	pr.	–	–	pr.	pr. 1	Compl.	Compl.
3	-//-	Gantsevichi	39, 73-75	pr.	–	–	pr.	pr. 3	Compl.	Compl.
4	-//-	Gantsevichi	52, 53, 58, 76	pr.	–	–	pr.	pr. 1	Compl.	Compl.
5	Ivatsevichi	Orlyanskoye	121, 122, 133, 137, 138	–	–	–	Compl.	pr. 1	–	–
6	Lyakhovichi	Lyakhovichi	9	–	–	–	pr.	pr. 1	pr.	pr.
7	-//-	Ostrov	110, 123, 134, 144, 151, 158	pr.	–	–	pr.	pr. 1	pr.	pr.
8	Pruzhany	Mikhalinskoye	104	–	–	–	–	Compl. 1	Compl.	–
9	Stolin	Terebezhevskoye and Kolodnyanskoye	1, 12-14, 22; 66, 140	pr.	–	–	pr.	pr. 3	Compl.	Compl.
10	-//-	Kolodnyanskoye	127	pr.	–	–	pr.	pr. 1	Compl.	Compl.
11	-//-	Lasitsk	73, 78	pr.	–	–	pr.	pr. 1	Compl.	Compl.
12	Verkhnedvinsk	Strelki	113	–	–	–	pr.	–	pr.	pr.
13	-//-	Leonisheno	58	pr.	–	pr.	pr.	–	pr.	pr.
14	Gorodok	Vyshedki	158	pr.	–	–	pr.	–	pr.	–
15	Orsha	Osintorf and Orekhovsk	479; 151	–	–	pr.	pr.	–	–	pr.
16	Lida	Pervomaiskoye	208	pr.	pr. 1	–	pr.	–	pr.	pr.
17	-//-	Dokudovskoye	65	–	–	–	pr.	pr. 1	pr.	pr.
18	-//-	Lida	68	–	–	pr.	pr.	–	pr.	pr.
19	Novogrudok	Korelichi	75	pr.	–	–	pr.	–	Compl.	pr.
20	-//-	Lyubcha	117	–	–	–	pr.	pr. 1	Compl.	pr.

End of Table 6.1

	Forestry	Forest district	Quarter	Projected fire prevention measures						
				Arrangement of fire barriers	Arrangement of fire-fighting reservoirs	Maintenance of fire-fighting reservoirs	Repair of roads	Arrangement of water intake platforms	Installation of barriers	Installation of informa-tion signs
21	Skidel	Ozery and Novaya Ruda	58-61, 75; 125, 126,136-139	–	–	–	pr.	pr. 2	Compl.	Compl.
22	Smorgon	Budenovka	53, 55, 59	pr.	pr. 1	–	pr.	pr. 1	pr.	pr.
23	-//-	Trilesinskoye	29, 30	–	–	–	pr.	pr. 1	pr.	pr.
24	Berezino	Lyubushany and Brodets	90; 80, 81	pr.	–	–	pr.	pr. 1	pr.	pr.
25	Borisov	Ikany	98, 100, 102-105, 107-111	pr.	–	–	pr.	pr. 2	pr.	Compl.
26	Kletsk	Nesvizh	135, 136, 138	Compl.	–	–	Compl.	pr. 3	pr.	pr.
27	Kopyl	Kopyl	75	–	–	–	pr.	pr. 1	pr.	pr.
28	-//-	Kolov	11	pr.	pr. 1	–	pr.	–	pr.	pr.
29	-//-	Staritskoye	1, 18	–	–	–	pr.	pr. 2	pr.	pr.
30	Pukhovichi	Veterevichi	70	pr.	–	–	pr.	pr. 2	Compl.	Compl.
31	-//-	Sergeyevichskoye	21, 22, 32-34	pr.	–	–	pr.	pr. 1	Compl.	Compl.
32	Slutsk	Vorobyevskoye	102, 103	pr.	–	–	pr.	pr. 1	pr.	pr.
33	Smolevichi	Yuryevskoye	43, 44, 54, 55, 62, 67	–	–	–	pr.	pr. 1	pr.	pr.
34	Starobin	Skovshin	1,7,9,18,35,39,43, 48, 52, 54, 67, 69, 71-75, 77-79, 81, 82, 85	–	–	–	pr.	pr. 3	pr.	Compl.
35	Stolbtsy	Naliboki	91, 92	pr.	–	–	pr.	pr. 1	pr.	pr.
36	-//-	Starinskoye	42, 43	–	pr. 1	–	pr.	–	pr.	pr.
37	Uzda	Losha	171, 180, 181	pr.	pr. 1	–	pr.	–	pr.	pr.
38	Klichev	Gonchansky	76, 77, 87-89, 92-94	–	–	Compl.	pr.	Compl. 2	Compl.	Compl.
Note: “pr.” - projected activity; “Compl.” – completed activity; “-” - there is no need for activity.										

In total, 11 of 24 forestries have taken fire prevention measures on the transferred peatland sites. In most cases, they included the installation of access barriers and information signs. In Kletsk and Ivatsevichi forestries, road maintenance was carried out; besides, in Kletsk, the fire barrier was partially maintained. In Pruzhany forestry, all the planned activities have been completed. In Klichev forestry, fire-fighting reservoirs were maintained, water intake platforms were equipped, barriers and information signs were installed.

Forestry specialists note that some peatlands are swampy and difficult to access and hence they do not need fire-fighting facilities. However, it should be borne in mind that in Belarus there is annual increase in the dry period and decrease in precipitation. In the abnormally dry 2015, forest fires in the south of Belarus arose in dense swamps.

Thus, to ensure fire prevention arrangement it is necessary:

- To arrange (renew) the fire barriers on 21 sites along the embankment of the former narrow-gauge railway and along the peatland contour, at the border of the site with mineral soil;
- To arrange 5 fire-fighting reservoirs;
- To carry out maintenance of the existing 12 fire-fighting reservoirs;
- To conduct road maintenance at 35 sites;
- To arrange 39 platforms for water intake from canals and reservoirs;
- To install barriers at 23 sites to limit citizens' access during periods of high fire hazard;
- To install information signs with fire prevention content at 23 sites;
- To repair the bridge in Gantsevichi forestry;
- To install an overflow dam to regulate water flow in Pukhovichi forestry.

The implementation of the above fire prevention measures will ensure the most efficient fire prevention arrangement of the peatlands transferred to forestries since 2008. Fire prevention arrangement of the peatlands transferred before 2008 should be carried out in a similar way.

6.2 Updating data on mensurational description of sites

According to the terms of reference to contract BFDP/GEF/CQS/17/18-37/18, during the on-site inspection of the transferred peatland sites, it was not intended to conduct continuous or selective mensuration of the stands growing on the peatlands. The more detailed inspection covered the peat, grass-fruticulose vegetation, waterlogging principles, presence and condition of reclamation systems, hydraulic structures, fire prevention arrangement of peatlands. The plantations were assessed by eye, on the whole over the entire site, therefore, when describing stands in the reports, the materials used were forest inventory.

It is well known that woody plants have less growth energy on excessively wet lands; in view of this it is impossible to accurately determine the age, and therefore the bonitet, by eye assessment. Determining the average diameter and average height also requires instrumental measurement of a significant number of specimens. The calculation of further mensuration indicators (stand volume, density, composition,

etc.) is also possible on the basis of accurate instrumental measurements, which require large time and labour costs in field study. In this regard, when describing stands in reports, preference was given to the data from forest inventory materials.

The eye assessment data were taken into account only when, as a result of overwetting, the plantation, which was valuated by forest management, fell out, that formed an area not covered by forest, or when for some areas transferred over the past years, there were no mensuration descriptions and plans of forest stands with a breakdown by strata in the forestries. In the second case, 15-20-year birch forests sometimes have already grown on the transferred sites.

The mensuration indicators of stands in the reports provide only information on the origin and average composition of the stands for the entire site or forest quarter. Comparison with more updated data of RUE Belgosles showed that the errors in determining the average composition of the stands were no more than 3-5% for a particular species.

More significant differences between our studies and forest inventory data are present in peat deposit description: data on the peat deposit type (lowland, transitional or bog peat) and thickness differ. These inaccuracies, according to Belgosles, are due to the fact that afforestation inspectors do not conduct a detailed study of peat during field work and use indirect indicators when compiling a mensurational description.

As a result of agreement with RUE Belgosles, we got more accurate data on average composition and origin of plantations growing in the transferred peatlands, and offered the materials for more accurate description of peat deposits to Belgosles.

Conclusion

In the process of report preparation, the implementation of fire prevention measures in the areas of drained peatlands, inefficiently used for agricultural purposes, depleted by industrial peat extraction, and transferred to the forestry institutions was analyzed.

The results of the analysis revealed that the majority of fire-prevention measures were limited to informing people and restricting the access to the territory during periods of high fire hazard weather. In some sites, fire barriers were lain along the embankment of the former narrow gauge railways, which partially lost their function due to untimely maintenance. Also, some sites have natural shallow water bodies that can be used for fire-fighting.

Analyzing the fire-prevention measures in the peatland sites, it should be noted that the ongoing anthropogenic pressure on mire communities, climate change with an increase in dry periods, and the decrease in precipitation, lead to a complication of the fire safety situation and require the development of special fire prevention measures.

The weak point of almost every peatland site under survey is the lack of good access roads and roads to move around the peatland. In some cases, this is explained by the destruction of the crossing pipes at the intersection of canals, and activity of beavers along the canals.

It should also be noted that in some cases the sites transferred to the forestries are part of the peatland, developed and transferred to the forestry in parts during several decades. In such cases, the question of fire-fighting arrangement should be approached comprehensively by considering the peatland as a whole, not only the part transferred after 2008.

The survey revealed that reclamation canals at the peatland sites require maintenance and hydrological reclamation structures require technical repair (control pipes, crossing pipes). At one site (Gantsevichi forestry) the bridge across the main canal requires repair.

Out of 24 forestries, to which the peatlands were transferred, 23 forestries require partial or full repair of forest roads (access or travelling on peatland). 15 forestries have the opportunity to arrange (renew) fire barriers along the embankment of the former narrow-gauge railway. 40 platforms for water intake and 5 fire-fighting reservoirs should be created on the transferred peatland sites to ensure the necessary fire-fighting arrangement.

The best way to improve fire prevention state of the drained peatlands is to rise water level to the soil surface level and higher. On most sites it can be done by repairing control pipes. In Pruzhany and Pukhovichi forestries it is recommended to create overflow dams to raise the water level. However, it should be noted that such measures entail raising the groundwater level in the surrounding areas, which is unacceptable when the adjacent lands are the farmland.

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