Russian Federation
“SURGUTNEFTEGAS”
PUBLIC JOINT STOCK COMPANY

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First Deputy
Director General
“Surgutneftegas” PJSC

_____ A.S.Nuryaev
“____”_____ 2021

Biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations

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Surgut – 2021

The biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations (hereinafter – “Surgutneftegas” PJSC biodiversity conservation program) is integrated into the complex program for environmental protection measures (the Ecology program). Key goals of this program is to preserve the original state of the areas of license blocks of the Company and systematic, consistent mitigation of the industrial impact upon the environment.

“Surgutneftegas” PJSC biodiversity conservation program is to be implemented in all constituent territories of the Russian Federation, where the Company prospects, explores and produces hydrocarbons.

“Surgutneftegas” PJSC biodiversity conservation program within the Ecology program is aimed at:

protection and rehabilitation of disturbed lands;

protection and restoration of water bodies;

monitoring of environmental components and production facilities;

monitoring of biodiversity indicator species in the vicinity of production facilities of the Company;

reproduction of aquatic biological resources in water bodies of fishery significance;

forest reclamation;

prevention and elimination of pipeline incidents outcomes;

R&D in the sphere of biodiversity conservation, publication of results on the official website of the Company;

special mode of management in production activities in specially protected natural reservations (SPNR);

financial support and promotional development of SPNR;

preservation of the primordial living environment, social and economic support of traditional nature management and legitimate interests of the small-numbered indigenous peoples;

invitation of the concerned parties to discussions of biodiversity conservation programs: meetings, workshop venues for plans and results of biodiversity conservation measures with representatives of executive bodies, the small-numbered indigenous peoples, academia.

Investments of “Surgutneftegas” PJSC in the biodiversity conservation program are determined annually within the Company's budget for investments in the environmental protection measures.

In order to implement the biodiversity conservation program within the Ecology program, “Surgutneftegas” PJSC spent RUB 8.0 billion in 2020, and it is planned to spend RUB 10.2 billion in 2021.

Within “Surgutneftegas” PJSC biodiversity conservation program we developed separate programs for implementation of biodiversity conservation measures at the license blocks of “Surgutneftegas” PJSC in Khanty-Mansiysky Autonomous Okrug – Yugra, in the Republic of Sakha (Yakutia) and in the south of Tyumenskaya Oblast. Most of the Company’s production facilities are located in these territories:

Biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in Khanty-Mansiysky Autonomous Okrug – Yugra (Appendix 1);

Biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the Republic of Sakha (Yakutia) (Appendix 2).

Biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the south of Tyumenskaya Oblast (Appendix 3).

“Surgutneftegas” PJSC biodiversity conservation program is amended once a year taking into account the results of the implemented measures of the previous year.

Appendix 1

Biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in Khanty-Mansiysky Autonomous Okrug – Yugra

The biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in Khanty-Mansiysky Autonomous Okrug – Yugra within the complex program for environmental protection measures (the Ecology program) is aimed at preservation of the original state of the areas of license blocks of the Company, systematic and consistent mitigation of the industrial impact upon the environment, and the following:

protection and rehabilitation of disturbed lands;

protection and restoration of water bodies;

monitoring of environmental components and production facilities;

monitoring of biodiversity indicator species in accordance with the approved list (Appendix) in the vicinity of production facilities of the Company in KhMAO-Yugra;

reproduction of aquatic biological resources in water bodies of fishery significance;

forest reclamation;

prevention and elimination of pipeline accidents outcomes;

R&D in the sphere of biodiversity conservation, publication of results on the official website of the Company;

special mode of management in production activities in Numto nature park;

financial support and promotional development of Numto nature park;

biological monitoring at the fields operated within the boundaries of specially protected natural reservations,

minimization of environmental risks when placing production facilities of the Company in the wetland ecosystems within Numto nature park as part of the agreement between “Surgutneftegas” PJSC and the Federal State Budgetary Organization the Institute of Forest Science of the Russian Academy of Sciences;

minimization of a negative impact of business activities of the Company on the hydrology of wetlands in Numto nature park in accordance with the cooperation agreement between “Surgutneftegas” PJSC and the Federal State Budgetary Organization the State Hydrological Institute;

preventive measures against a negative impact of electric power supply network facilities of the Company on birds, prevention and reduction of death of rare birds and birds under protection within Numto nature park as part of the cooperation agreement between “Surgutneftegas” PJSC and the All-Russia public organization “Russian bird conservation union”.

preservation of the primordial living environment, social and economic support of traditional nature management and legitimate interests of the small-numbered indigenous peoples of the North;

development of special measures for protection of rare and endangered flora and fauna if discovered within production facilities of the Company;

invitation of the concerned parties to discussions of biodiversity conservation programs: meetings, workshop venues for plans and results of

biodiversity conservation measures with representatives of executive bodies, the small-numbered indigenous peoples of the North, academia.

For the purposes of biodiversity conservation across the territory of its operations, the Company applies an ecosystem approach when planning and performing its production activity. In the vicinity where facilities are planned to be constructed, we carry out a spatial analysis of environmental risks aimed at:

prevention of works which can disturb hydrological regimes of the place, cause and develop erosion and landslide,

construction of facilities outside the most environmentally vulnerable lands (places for population boom among animals and birds, fish feeding and spawning periods, natural areas of rare and endangered animals, birds and plants, etc.);

development of measures for prevention or mitigation of impacts, including restoration of ecosystems and impact compensation.

Investments of the biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in KhMAO-Yugra are determined annually within the Company's budget for investments in the environmental protection measures.

In order to implement the biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in KhMAO-Yugra within the Ecology program, the Company spent RUB 7.5 billion in 2020, and it is planned to spend RUB 9.2 billion in 2021.

The biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in KhMAO-Yugra is amended once a year taking into account the results of the implemented measures of the previous year.

Appendix

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“____”_____ 2021

The list of land plants – biodiversity indicators
of ombrotrophic bogs of the Middle Ob area*

1. Biodiversity indicators of hummock-ridge and hummock-ridge-pool bogs:
Carex pauciflora,
Drosera anglica,
Drosera X obovata,
Rhynchospora alba,
Scheuchzeria palustris.

2. Biodiversity indicators of shrub-tree bogs with pines and sphagnum (riams):
Andromeda polifolia,
Betula nana,
Chamaedaphne calyculata,
Drosera rotundifolia,
Empetrum nigrum,
Ledum palustre,
Pinus sylvestris,
Oxyccocus microcarpus,
Vaccinium uliginosum,

3. Indicators of the biodiversity decrease threat of ombrotrophic bogs (the increased number signifies the biodiversity decrease threat):
Eriophorum russeolum.

Note:
* There are no lists of biodiversity indicator species approved in regulations of Khanty-Mansiysky Autonomous Okrug – Yugra.
The list is compiled by E.A.Shishkonakova, PhD in Geography, for ombrotrophic (raised) bogs – the prevailing type of nature complexes in the region of “Surgutneftegas” PJSC operations in KhMAO-Yugra.

Appendix 2

Biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the Republic of Sakha (Yakutia)

The biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the Republic of Sakha (Yakutia) within the complex program for environmental protection measures (the Ecology program) is aimed at preservation of the original state of the areas of license blocks of the Company, systematic and consistent mitigation of the industrial impact upon the environment, and the following:

protection and rehabilitation of disturbed lands;

protection and restoration of water bodies;

monitoring of environmental components and production facilities;

monitoring of biodiversity indicator species in accordance with the approved list (Appendix) in the vicinity of production facilities of the Company in the Republic of Sakha (Yakutia)

reproduction of aquatic biological resources in water bodies of fishery significance;

forest reclamation;

prevention and elimination of pipeline accidents outcomes,

R&D in the sphere of biodiversity conservation, publication of results on the official website of the Company,

monitoring of biological resources and cryolithozone in the territory of operated hydrocarbon fields;

development of special measures for protection of rare and endangered flora and fauna if discovered within production facilities of the Company;

invitation of the concerned parties to discussions of biodiversity conservation programs: meetings, workshop venues for plans and results of biodiversity conservation measures with representatives of executive bodies, academia.

Investments of the biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the Republic of Sakha (Yakutia) are determined annually within the Company's budget for investments in the environmental protection measures.

In order to implement the biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the Republic of Sakha (Yakutia) within the Ecology program, the Company spent RUB 464.5 million in 2020, and it is planned to spend RUB 964.9 million in 2021.

The biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the Republic of Sakha (Yakutia) is amended once a year taking into account the results of the implemented measures of the previous year.

Appendix

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“____”_____ 2021

The list of biodiversity indicator species within the area of production facilities of “Surgutneftegas” PJSC in the Republic of Sakha (Yakutia)*

1. Flora biodiversity indicator species**

1.1. Biodiversity indicators of Laricetum vacciniosum and Laricetum vaccinioso-hylocomiosum:

Trees and shrubs:
Larix gmelinii,
Rosa acicularis,
Spiraea media;
Shrubs and herbs:
Vaccinium vitis-idaea,
Equisetum scirpoides,
Linneae borealis,
Majanthemum bifolium;
Moss:
Pleurozium schreberi,
Rhytidium rugosum;
Lichens:
Cladonia amaurocraea,
Peltigera aphthosa.

1.2. Biodiversity indicators of Laricetum vaccinioso-hylocomiosum and Laricetum myrtilloso-hylocomiosum (spruce and cedar):

Trees and shrubs:
Larix sibirica,
Pinus sibirica,
Sorbus sibirica;

Note:
* There are no lists of biodiversity indicator species approved in regulations of the Republic of Sakha (Yakutia).
** The list is compiled by Head of floristics, geobotanics and cryogenic forestry laboratory in the Institute for Biological Problems and Cryolithozone of Siberian Branch of RAS, A.P.Isaev, Doctor of Biology.

Shrubs and herbs:
Vaccinium myrtillus,
Ledum palustre,
Mitella nuda,
Moneses uniflora;
Moss:
Hylocomium splendens,
Ptilium crista-castrensis,
Climacium dendroides.

1.3. Biodiversity indicators of Laricetum variobryosum:
Trees and shrubs:
Larix gmelinii,
Betula exilis,
Salix myrtilloides;
Shrubs and herbs:
Ledum palustre,
Vaccinium uliginosum;
Moss:
Aulacomnium palustre,
Sphagnum ssp.

1.4. Biodiversity indicators of Laricetum variobryosum:
Trees and shrubs:
Larix gmelinii,
Betula exilis,
Salix myrtilloides;
Shrubs and herbs:
Ledum palustre,
Vaccinium uliginosum;
Moss:
Aulacomnium palustre,
Sphagnum ssp.

1.5. Biodiversity indicators of Pinetum arctostaphylosum and Pinetum cladinoso-arctostaphylosum:
Trees and shrubs:
Pinus silvestris,
Rosa acicularis;
Shrubs and herbs:
Arctostaphylos uva-ursi,
Phlox sibirica;
Moss: *Poltrichum piliferum*;
Lichens:
Cladonia rangiferina,
Cetraria laevigata,
Cladonia stellaris.

1.6. Biodiversity indicators of Pinetum vacciniosum:
Trees and shrubs:
Pinus silvestris;
Shrubs and herbs:
Vaccinium vitis-idaea,
Equisetum scirpoides,
Linneae borealis;
Lichens:
Cladonia amaurocraea,
Peltigera aphthosa.

1.7. Biodiversity indicators of Piceetum vaccinioso-hylocomiosum and Piceetum myrtilloso-hylocomiosum:
Trees and shrubs:
Pinus sibirica,
Sorbus sibirica;
Shrubs and herbs:
Vaccinium myrtillus,
Ledum palustre,
Mitella nuda,
Moneses uniflora,
Lilium martagon,
Aquilegia sibirica,
Viola uniflora,
Cypripedium guttatu;
Cypripedium macranthon;
Calipso bulbosa.
Moss:
Hylocomium splendens,
Ptilium crista-castrensis,
Climacium dendroides.

1.8. Biodiversity indicators of fens:
Shrubs:
Betula exilis,
Salix myrtilloides;
Shrubs and herbs:
Ledum palustre,
Chamaedaphne calyculata,
Andromeda polyfolia;
Oxycoccus microcarpus,
Carex vesicaria;
Moss:
Aulacomnium palustre,
Sphagnum ssp.

1.9. Biodiversity indicators of bottomland meadows:
Shrubs:
Betula exilis,

Salix myrtilloides;
Shrubs and herbs:
Ledum palustre,
Calamagrostis langsdorffii,
Comarum palustre;
Carex gracilis;
Moss:
Aulacomnium palustre,
Sphagnum ssp.

2. Birds - biodiversity indicators*
Anserifomes:
Anas platyrhynchos,
Anas crecca;
Galliformes:
Tetrao urogallus,
Tetrastes bonasia;
Falcaniformes:
Milvus migrans,
Circus cyaneus,
Accipiter gentiles,
Buteo buteo,
Falco subbuteo.

3. Mammals - biodiversity indicators**
Insectivora
Sorex roboratus Hollister,
Sorex tundrensis Merriam,
Sorex caecutiens Laxmann;
Lagomorpha
Leporidae
Lepus timidus L.;
Rodentia
Sciuridae
Sciurus vulgaris L.,
Eutamias sibiricus Laxmann;
Cricetidae
Clethrionomys rutilus Pallas,
Myopus schisticolor Lilljeborg,
Microtus oeconomus Pallas;
Carnivora
Ursidae
Ursus arctos L.;

Note:
* The list is compiled by Senior Researcher of zoological research laboratory in the Institute for Biological Problems and Cryolithozone of Siberian Branch of RAS, A.G.Larionov, PhD in Biology.
** The list is compiled by Junior Researcher of cryogenic ecosystem laboratory in cold regions in the Institute for Biological Problems and Cryolithozone of Siberian Branch of RAS, V.K.Vasilieva.

Mustelidae
Martes zibellina L.;
Artiodactyla
Cervidae
Cervus elaphus L.,
Alces alces L.,
Rangifer tarandus L..

Appendix 3

Biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the south of Tyumenskaya Oblast

The biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the south of Tyumenskaya Oblast within the complex program for environmental protection measures (the Ecology program) is aimed at preservation of the original state of the areas of license blocks of the Company, systematic and consistent mitigation of the industrial impact upon the environment, and the following:

protection and rehabilitation of disturbed lands;

protection and restoration of water bodies;

monitoring of environmental components and production facilities;

monitoring of biodiversity indicator species in accordance with the approved list (Appendix) in the vicinity of production facilities of the Company in the south of Tyumenskaya Oblast;

reproduction of aquatic biological resources in water bodies of fishery significance;

forest reclamation;

prevention and elimination of pipeline accidents outcomes,

R&D in the sphere of biodiversity conservation, publication of results on the official website of the Company,

development of special measures for protection of rare and endangered flora and fauna if discovered within production facilities of the Company;

invitation of the concerned parties to discussions of biodiversity conservation programs: meetings, workshop venues for plans and results of biodiversity conservation measures with representatives of executive bodies, academia.

Investments of the biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the south of Tyumenskaya Oblast are determined annually within the Company's budget for investments in the environmental protection measures.

In order to implement the biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the south of Tyumenskaya Oblast within the Ecology program, the Company spent RUB 59.9 million in 2020, and it is planned to spend RUB 55.7 million in 2021.

The biodiversity conservation program in the areas of “Surgutneftegas” PJSC operations in the south of Tyumenskaya Oblast is amended once a year taking into account the results of the implemented measures of the previous year.

Appendix

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“____”_____ 2021

The list of plants – biodiversity indicators for the territory of Uvatsky District in Tyumenskaya Oblast
(subzone of south taiga)*

Communities of zonal, dark coniferous and similar dark coniferous betulaceae, dark coniferous aspen and betulaceae-aspen forests

Species – indicators which disappear or decrease activity when disturbed

Lycopodium annotinum L.
Perennial herbaceous plant. Mesophyte. Circumboreal species.
Dark coniferous forests and Pinetum hylocomiosum.
Native species, anthropophobe.

Phegopteris connectilis (Michx.) Watt.
Perennial herbaceous plant. Mesophyte. Circumboreal (boreal-nemoral) species.
Dark coniferous forests, forest edge.
Native species, anthropophobe.

Diplazium sibiricum (Turcz. ex G.Kunze) Kurata.
Perennial herbaceous plant. Mesohygrophyte. Boreal eastern Eurasian species.
Dark coniferous (spruce-fir), mixed forests.
Native species, anthropophobe.

Gymnocarpium dryopteris (L.) Newm.
Perennial herbaceous plant. Mesophyte. Circumboreal species.
Dark coniferous, mixed forests.
Native species, anthropophobe.

Note:
* There are no lists of biodiversity indicator species approved in regulations of Tyumenskaya Oblast.
The list is compiled by Senior Researcher of the Tyumen Scientific Center of Siberian Branch of RAS, V.A.Glazunov, PhD in Biology.

Actaea erythrocarpa Fischer.
Perennial herbaceous plant. Mesophyte. Boreal eastern Eurasian species.
Dark coniferous and mixed forests.
Native species, anthropophobe.

Vaccinium myrtillus L.
Woody plant, deciduous long-rhizome shrub. Mesophyte. Boreal Eurasian species.
Pine, dark coniferous and mixed hylocomiosum forests.
Native species, anthropophobe.

Daphne mezereum L.
Woody plant, deciduous erect shrub. Mesophyte. Boreal-nemoral Eurasian species.
Dark coniferous and mixed forests.
Native species, anthropophobe.

Oxalis acetosella L.
Perennial herbaceous plant, rhizomatous polycarpic. Mesophyte. Circumboreal species.
Dark coniferous forests.
Native species, anthropophobe.

Linnaea borealis L.
Woody plant, evergreen rhizomatous shrub. Mesophyte. Circumboreal species.
Dark coniferous and mixed forests, Pinetum hylocomiosum.
Native species, anthropophobe.

Paris quadrifolia L.
Perennial herbaceous plant, long-rhizome polycarpic. Mesophyte. Coniferous, mixed and parvifoliate forests.
Native species, anthropophobe.

Species – indicators which appear or increase activity when disturbed

Populus tremula L.
Woody plant, deciduous tree. Mesophyte. Palearctic species.
One of forest-forming species. Can be found in dark coniferous, mixed and parvifoliate forests. There is plenty of it in biotopes, felling sites and burned-out forests.
Native species, apophyte.

Pyrola rotundifolia L.
Woody plant, evergreen long-rhizome shrub. Mesophyte. Circumboreal species.
Dark coniferous, pine and mixed hylocomiosum forests, disturbed biotopes.
Native species, apophyte.

Rubus melanolasius Focke.
Semi-woody plants, deciduous erect soboliferous semi-shrub. Mesophyte. Boreal Siberian-American species.
Coniferous and mixed forests, forest edge and clearings, disturbed forest biotopes.
Native species, apophyte.

Rubus saxatilis L.
Perennial herbaceous plant, rhizomatous stoloniferous polycarpic. Mesophyte. Boreal Eurasian species.
Coniferous, mixed and betulaceae forests.
Native species, apophyte.

Geum aleppicum Jacq.
Perennial herbaceous plant, short-rhizome polycarpic. Mesophyte. Circumboreal species.
Mixed and parvifoliate forests, forest edges and clearings, disturbed biotopes.
Native species, apophyte.

Chamerion angustifolium (L.) Holub.
Perennial herbaceous plant, long-rhizome soboliferous polycarpic. Mesophyte. Circumboreal species.
Low-density forests, edges and clearings, disturbed biotopes.
Native species, apophyte.

Communities of ombrotrophic shrub-tree bogs with pines (grass) and sphagnum

Species – indicators which disappear or decrease activity when disturbed

Betula nana L.
Woody plant, deciduous shrub. Oxylophyte. Circumboreal species.
Raised bogs with sphagnum.
Native species, anthropophobe.

Andromeda polifolia L.
Woody plant, evergreen long-rhizome shrub. Oxylophyte. Circumpolar (hypoarctic-boreal) species.
Raised bogs with sphagnum and mesotrophic bogs.
Native species, anthropophobe.

Chamaedaphne calyculata (L.) Moench.
Woody plant, evergreen erect shrub. Oxylophyte. Circumboreal species.
Raised bogs with sphagnum, on the ridges of hummock-ridge bogs.
Native species, anthropophobe.

Ledum palustre L.
Woody plant, evergreen erect shrub. Oxylophyte. Boreal Eurasian species.
Raised and mesotrophic bogs with sphagnum, boggy coniferous forests.
Native species, anthropophobe.

Oxycoccus microcarpus Turcz. ex Rupr.
Woody plant, evergreen rhizomatous shrub. Oxylophyte. Circumboreal species.
Raised bogs with sphagnum.
Native species, anthropophobe.

Species – indicators which appear or increase activity when disturbed

Calla palustris L.
Perennial herbaceous plant, long-rhizome aero-aquatic polycarpic. Hydrophyte. Circumboreal species with disjunction in natural area in Europe.
Fens, on the rim of raised bogs with sphagnum, boggy streambanks, floating bogs.
Native species, apophyte.

Typha latifolia L.
Perennial herbaceous plant, long-rhizome aero-aquatic polycarpic. Hydrophyte. Almost cosmopolitan plant.
Shallow water, wet disturbed biotopes, roadside ditches.
Native species, apophyte.

Communities of complex hummock-ridge and hummock-ridge-pool bogs.

Species – indicators which disappear or decrease activity when disturbed (changed hydrological regime)

Salix myrtilloides L.
Woody plant, deciduous shrub. Oxylophyte. Hypoarctic-boreal European-Siberian species.
Mesotrophic bogs.
Native species, anthropophobe.

Oxycoccus palustris Pers.
Woody plant, evergreen rhizomatous shrub. Oxylophyte. Circumboreal species.
Raised bogs with sphagnum and hummock-ridge bogs.
Native species, anthropophobe.

Drosera anglica Huds.
Perennial herbaceous plant. Oxylophyte. Circumboreal species.
Hummock-ridge bogs.
Native species, anthropophobe.

Scheuchzeria palustris L.
Perennial herbaceous plant, long-rhizome polycarpic. Oxylophyte. Circumboreal species.
Hummock-ridge bogs.
Native species, anthropophobe.

Hammarbia paludosa (L.) O. Kutze.
Perennial herbaceous plant, tuber-forming polycarpic. Oxylophyte.
Circumboreal species.
Mesotrophic bogs with sphagnum.
Native species, anthropophobe.

Rhynchospora alba (L.) Vahl.
Perennial herbaceous plant, caespitose polycarpic. Oxylophyte.
Circumboreal species.
Hummock-ridge bogs.
Can inhabit disturbed plots with turfy substrate when locally disturbed
Native species, anthropophobe.

Species – indicators which appear or increase activity when disturbed

Rubus chamaemorus L.
Perennial herbaceous plant, long-rhizome polycarpic. Oxylophyte.
Circumpolar (hypoarctic-boreal) species.
Raised bogs with sphagnum and hummock-ridge bogs.
Native species, anthropophobe.

Menyanthes trifoliata L.
Perennial herbaceous plant, aero-aquatic long-rhizome polycarpic.
Hydrophyte. Circumboreal species.
Fens, hypnaceous bogs and bogs with sedges, floating bogs, boggy betulaceae forests, streambanks.
Native species, apophyte.

Calla palustris L.
Perennial herbaceous plant, long-rhizome aero-aquatic polycarpic. Hydrophyte. Circumboreal species with disjunction in natural area in Europe.
Fens, on the rim of raised bogs with sphagnum, boggy streambanks, floating bogs.
Native species, apophyte.

Typha latifolia L.
Perennial herbaceous plant, long-rhizome aero-aquatic polycarpic. Hydrophyte. Almost cosmopolitan plant.
Shallow water, wet disturbed biotopes, roadside ditches.
Native species, apophyte.

Communities of bottomland meadows and grassy fens.

Species – indicators which disappear or decrease activity when disturbed (changed hydrological regime)

Dryopteris cristata (L.) A.Gray.
Perennial herbaceous plant. Hygromesophyte. Circumboreal (boreal-nemoral) species with disjunction in natural area in Siberia and the Far East.

Fens with sedges, boggy parvifoliate forests.
Native species, anthropophobe.

Ranunculus lingua L.
Perennial herbaceous plant. Hygrophyte. Boreal Eurasian species.
Fens, boggy meadows, streambanks.
Native species, anthropophobe.

Species – indicators which appear or increase activity when disturbed

Equisetum arvense L.
Perennial herbaceous plant. Mesophyte. Holarctic species.
Bottomland meadows, river banks, riverside forests, disturbed biotopes, roadsides.
Native species, apophyte.

Ranunculus repens L.
Perennial herbaceous plant. Hygrophyte. Palearctic species.
Bogs, wet meadows, streambanks, wet disturbed biotopes, roadside ditches.
Native species, apophyte.

Ranunculus sceleratus L.
Annual herbaceous plant. Hygrophyte. Holarctic species.
Fens, boggy meadows, streambanks, wet disturbed biotopes, roadside ditches.
Native species, apophyte.

Rorippa palustris (L.) Besser.
Biennial herbaceous plant. Hygrophyte. Palearctic species.
Fens, boggy forests, streambanks, wet disturbed biotopes.
Native species, apophyte.

Potentilla anserina L.
Perennial herbaceous plant, short-rhizome taproot stoloniferous polycarpic. Mesophyte. Almost cosmopolitan plant.
Bottomland meadows, wet disturbed biotopes.
Native species, apophyte.

Trifolium pratense L.
Perennial herbaceous plant, short-rhizome polycarpic. Mesophyte. Boreal Eurasian species.
Disturbed biotopes, dry and bottomlands, forest edge.
Native species, apophyte.

Epilobium adenocaulon Hausskn.
Perennial herbaceous plant, short-rhizome stoloniferous polycarpic. Hygrophyte. North American species, non-native in Eurasia.
Meadows, parvifoliate forests, streambanks, wet disturbed biotopes.
Adventitious species, kenophyte.

Bidens tripartita L.
Annual herbaceous plant, taproot monocarpic. Hygrophyte. Palearctic species.
Fens, bottomland meadows, streambanks, wet disturbed biotopes.
Native species, apophyte.

Alisma plantago-aquatica L.
Perennial herbaceous plant, fibrous root aero-aquatic polycarpic. Hygrophyte. Palearctic species.
Streambanks, fens, wet meadows, wet disturbed biotopes, roadside ditches.
Native species, apophyte.

Juncus bufonius L.
Annual herbaceous plant, fibrous root monocarpic. Hygrophyte. Palearctic species.
Wet disturbed biotopes.
Native species, apophyte.

Phragmites australis (Cav.) Trin. ex Steudel.
Perennial herbaceous plant, long-rhizome and aero-aquatic polycarpic. Hygrophyte.
Almost cosmopolitan plant.
Streambanks, fens, boggy forests, wet meadows, wet disturbed biotopes, roadside ditches.
Native species, apophyte.