

Ecomax

APPROVED  
Director General  
S.Ya.Trofimov  
20 January 2023

## REPORT

under contract No. 908 dated 4 July 2022

for biological monitoring at 16 well sites of the Vatlorskoye, Suryeganskoye,  
Verkhnekazymskoye fields and the I.N.Logachev field within Numto nature park (project  
documentation under codes 6256, 6506, 7526, 8212, 8428, 8431, 10318, 13737, 14709)

*(final)*

Obninsk 2023

## CONTENTS

|                                                                                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------|-----|
| INTRODUCTION .....                                                                                                      | 5   |
| 1. MONITORING OF THE STATE OF SOIL AND VEGETATION COVER .....                                                           | 7   |
| 1.1. Characteristics of monitoring sites established in the territory of the Vatlorsky<br>license block.....            | 7   |
| 1.1.1. Monitoring sites in the area of well pad No. 41 .....                                                            | 7   |
| 1.1.2. Monitoring sites in the area of well pad No. 42 .....                                                            | 20  |
| 1.1.3. Monitoring sites in the area of well pad No. 48 .....                                                            | 28  |
| 1.1.4. Monitoring sites in the area of well pad No. 103 .....                                                           | 42  |
| 1.1.5. Monitoring sites in the area of well pad No. 112 .....                                                           | 51  |
| 1.1.6. Monitoring sites in the area of well pad No. 113 .....                                                           | 61  |
| 1.2. Characteristics of monitoring sites established in the territory<br>of the Suryegansky license block.....          | 72  |
| 1.2.1. Monitoring sites in the area of well pad No. 34 .....                                                            | 72  |
| 1.2.2. Monitoring sites in the area of well pad No. 38 .....                                                            | 83  |
| 1.3. Characteristics of monitoring sites established in the territory<br>of the Verkhnekazymsky license block.....      | 89  |
| 1.3.1. Monitoring sites in the area of well pad No. 12 .....                                                            | 89  |
| 1.3.2. Monitoring sites in the area of well pad No. 18 .....                                                            | 95  |
| 1.3.3. Monitoring sites in the area of well pad No. 26 .....                                                            | 108 |
| 1.3.4. Monitoring sites in the area of well pad No. 39 .....                                                            | 114 |
| 1.3.5. Monitoring sites in the area of well pad No. 42 .....                                                            | 126 |
| 1.3.6. Monitoring sites in the area of well pad No. 44 .....                                                            | 134 |
| 1.3.7. Monitoring sites in the area of well pad No. 61 .....                                                            | 142 |
| 1.4. Characteristics of monitoring sites established in the territory<br>of the I.N.Logachev field.....                 | 147 |
| 1.4.1. Monitoring sites in the area of well pad No. 7 .....                                                             | 147 |
| 1.5. Assessment of species that indicate biological diversity of vegetation<br>at the license blocks in Numto park..... | 153 |

|                                                                                                                                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1.6. Analysis of the dynamics and forecast of the development of soil and vegetation cover according to monitoring data for 2012-2022, flora protection recommendations | 155 |
| 1.7. Areas proposed for monitoring work in 2023.....                                                                                                                    | 158 |
| 2. MONITORING OF FAUNA.....                                                                                                                                             | 160 |
| 2.1. Description of routes and survey results of long-term monitoring.....                                                                                              | 161 |
| 2.1.1. Route in the area of well pad No. 42 at the Vatlorsky license block.....                                                                                         | 161 |
| 2.1.2. Route in the area of well pad No. 48 at the Vatlorsky license block.....                                                                                         | 164 |
| 2.1.3. Route along the field road from well pad No. 41 to booster pump station No. 3 at the Vatlorsky license block .....                                               | 168 |
| 2.1.4. Route in the area of well pads No. 103-100 at the Vatlorsky license block..                                                                                      | 172 |
| 2.1.5. Route at the Suryegansky license block .....                                                                                                                     | 175 |
| 2.1.6. Route in the area of well pad No. 39 at the Verkhnekazymsky license block .....                                                                                  | 179 |
| 2.1.7. Route in the area of well pads No. 7 and 5 at the I.N.Logachev field .....                                                                                       | 182 |
| 2.1.8. Route in the area of well pad No. 26 at the Verkhnekazymsky license block .....                                                                                  | 185 |
| 2.1.9. Route in the area of well pad No. 18 at the Verkhnekazymsky license block .....                                                                                  | 189 |
| 2.1.10. Route in the area of well pad No. 8 of the Verkhnekazymsky license block .....                                                                                  | 192 |
| 2.1.11. Route in the area of well pads No. 41-112 at the Vatlorsky license block..                                                                                      | 195 |
| 2.1.12. Route in the area of well pad No. 42 at the Verkhnekazymsky license block .....                                                                                 | 198 |
| 2.1.13. Results of survey of routes traveled for the first time .....                                                                                                   | 200 |
| 2.2. Biotopic distribution of birds in 2022.....                                                                                                                        | 204 |
| 2.3. Red Book species.....                                                                                                                                              | 207 |
| 2.4. Monitoring of ichthyofauna.....                                                                                                                                    | 209 |
| CONCLUSION .....                                                                                                                                                        | 211 |
| APPENDIX Maps of soil and vegetation cover in the area of possible impact of field development facilities.....                                                          | 212 |

## INTRODUCTION

Field work was carried out by the team of Ecomax LLC in August 2022 at the Vatlorskoye, Suryeganskoye, Verkhnekazymskoye fields and the I.N.Logachev field within Numto nature park under contract No. 908 dated 4 July 2022.

The work done under this contract is a continuation of the research that was conducted in 2012-2019. The study was carried out at the following sites:

1. Monitoring points established in 2012 in the areas of well pads No. 41 and 42 (partially re-established in 2013 because of the expansion of the well pad area) and No. 48 at the Vatlorskoye field.

2. Monitoring points established in 2013 in the area of well pad No. 113 at the Vatlorskoye field.

3. Monitoring points established in 2014 in the areas of well pads No. 103 and 112 at the Vatlorskoye field, No. 34 and 38 at the Suryeganskoye field, No. 39 at the Verkhnekazymskoye field (partially re-established in 2015 because of the expansion of the well pad area).

4. Monitoring points established in 2016 in the areas of well pads No. 18 and 26 at the Verkhnekazymskoye field, No. 7 at the I.N.Logachev field (partially re-established in 2017 because of the expansion of the well pad area).

5. Monitoring points established in 2017 in the area of well pad No. 42 at the Verkhnekazymskoye field (partially re-established in 2018 because of the expansion of the well pad area).

All the well pads were in commercial operation at the time when the field work was carried out.

Activities on biological monitoring of well pads in 2012-2019 included:

- Assessing the state of the main components of biogeocenosis. Geobotanical surveys were conducted (changes in species composition, vitality, phenological phases, changes in morphometric parameters were noted), permafrost levels were studied in frozen landscapes, and groundwater levels were studied in thawed landscapes. Also, at each site, a route survey of the territories and sectors adjacent to the access roads to the well pads was carried out (changes in soil and vegetation cover, degradation landscape processes and their development, changes in the hydrological regime of the territories, as well as a number of other natural and anthropogenic phenomena that determine the sustainability of the biocenoses of the study area were recorded).

- Zoological research in the area of these industrial facilities also included route surveys of birds, mammals (visually and by tracks), amphibians and reptiles in order to determine species composition and abundance. The total distance covered was 72 kilometers: 10 walking routes with a total length of 33 kilometers and one car route with a total length of 39 kilometers. A daily fish catch using nets was carried out on the Ai-Kuryeh and Mindaty-aikuryohan rivers.

In 2022, additional monitoring points were established in the area of well pads No. 12, 44, 61 at the Verkhnekazymyskoye field. The well pads were in commercial operation at the time when the field work was carried out.

The work done at the new monitoring sites included:

1. Clarifying the structure of soil and vegetation cover at the well site that had been identified by preliminary interpretation of satellite images.

2. Choosing a location of monitoring sites, taking into account the direction of geochemical runoff from oil production facilities, landscape features of the surrounding territory, as well as ongoing destructive natural and natural-anthropogenic processes. Determining geographical coordinates of monitoring sites.

3. Geobotanical description of monitoring sites. Collecting the herbarium of difficult-to-identify plant groups. Marking monitoring sites using poles and signal tapes/ropes. Description of soils (soil sections), collecting peat samples to characterize the degree of decomposition and botanical composition. Taking photographs.

4. Route geobotanical surveys of areas adjacent to drilling sites to identify rare plant species and the most vulnerable communities requiring special protection measures.

5. Zoological research in the area of these industrial facilities also included route surveys of birds, mammals (visually and by tracks) in order to determine species composition and abundance. Five new walking routes with a total length of 17 kilometers were taken.

6. Looking for existing signs of anthropogenic disturbances.

7. Monitoring the condition of landscapes adjacent to the axial field road.

## CONCLUSION

Biological monitoring carried out by Ecomax LLC at the licensed blocks within the boundaries of the Vatlorskoye, Suryeganskoye, Verkhnekazymskoye fields and the I.N.Logachev field is one of the measures to prevent the negative impact of the oil production on the soils, plants and animals of Numto nature park. Carried out for over 11 years (2012-2022), the observations showed generally insignificant impact of oil production infrastructure on soil, plants and animals. The changes identified in a number of cases are of an insignificant and local nature, which do not violate the integrity of the ecological framework of the park. All components of biogeocenoses continue to perform their ecosystem functions. Populations of rare and protected species of plants and animals do not show any signs of disturbance. Indicators of biological diversity prove that it is fully preserved. During the entire monitoring period, no signs of oil pollution of the environment (soil surface, water bodies, vegetation) were found in the park. A number of phenomena – thawing of permafrost, fluctuations in water levels of swamps and water bodies – are associated mainly with climatic fluctuations, including global warming, which is especially pronounced in the northern taiga and forest tundra subzones of Western Siberia. A certain restructuring (recombination) of plant communities along roads and production sites, sometimes observed in the form of strips up to 15-20 meters wide, does not lead to dangerous invasions of new species into the park and occurs mainly due to species of local flora. It is also important to note successful restoration successions in places where communications (pipelines) are laid and other mechanical disturbances associated with the development of infrastructure, as a result of which the progressive restoration of the projective vegetation cover is carried out.