PROJECT FOR THE FIRST STAGE OF CONSTRUCTION OF ST. PETERSBURG BY-PASS ROAD SECTION FROM THE CROSSING WITH CONTINUATION OF OKTYABRSKAYA NABEREZHNAYA TO THE CROSSING WITH THE "KOLA" ROAD AND THE SECTION FROM RZHEVKA TO SHAFIROVSKY PROSPECT

EXECUTIVE SUMMARY OF THE REPORT ON THE ENVIRONMENTAL IMPACT ASSESSMENT

PK 611+46–PK 664+33; PK 775–PK 795+72.

1. INTRODUCTION

1.1. General Information

This document provides a brief description of the issues related to environmental protection (EP) during the construction and operation of the section of the St. Petersburg By-Pass from the interchange at the crossing with the continuation of Oktyabrskaya Embankment to the crossing with "Kola" highway (PK 611+46–PK 644+33) and the section from Rzhevka to Shafirovsky prospect (PK 774+50–PK 795+72).

The goal of investigation and highlighting of these aspects is the identification, forecasting and evaluation of the environmental impact of the considered Project.

1.2. The basic legislative acts regulating the use and protection of certain types of resources.

- The Federal Law "On the Environmental protection" dated January 10, 2002, No. 7-FZ;
- Water Code of the Russian Federation dated November 16, 1995, No. 167- FZ (with modifications as of December 30, 2001);
- Town Planning and Construction Code of the Russian Federation, dated May 7, 1998, No.73-FZ;
- Federal Law "On the Fauna" dated April 24,1995, No. 52-FZ;
- Federal Law "On Atmospheric Air Protection" dated May 4, 1999, No 96-FZ;
- Federal Law "On the Entrails of the Earth" dated 21.02.2002, No. 2395-1, edition of 03.03.95 (with modifications as of 10.02.99, 02.01.00, 14.05.01, 08.08.01, 29.05.02);
- Federal Law "On Specially Protected Natural Areas" dated March 14, 1995, No. 33-FZ (with modifications as of 30.12.01);
- Forest Code of the Russian Federation dated January 29, 1997, No 22-FZ (with modifications as of December 30, 2001 and July 25, 2002);
- Land Code of the Russian Federation dated October 25, 2001, No. 136-FZ;
- Federal Law "On Industrial and consumption waste" dated June 24, 1998, No. 89-FZ (with modifications as of December 29, 2000);
- The RF Law "On the Sanitary and Epidemiological safety of the population" dated 30 March 1999, No. 52-FZ;

- Federal Law "On the Ecological Expertise" dated November 23, 1995, No. 174-FZ (with modifications as of April 15, 1998)

and others.

For evaluation of the environmental impact the following documents were used: regulatory and methodological documents approved by the respective bodies of the State Hydrometeorological Service, State Ecological Expertise of the Committee of Natural Resources of Russia, the Ministry of Public Health, as well as the documents of various ministries and institutions. In particular:

- Recommendations on environmental protection requirements for construction of motor roads and bridges (approved by the Ministry of environmental protection and natural resources of the Russian Federation on June 19, 1995, No. 03-19/AA), Moscow, 1995;
- OND-86. Methodical instruction for calculation of the concentrations of harmful substances contained in the air emissions of industrial enterprises . Gosgidromet, Leningrad, 1987;
- Methodical instruction for determination of transport exhaust emissions for consolidated calculations of pollution of cities (approved by the order of Goscomecologiya of Russia on February 16, 1999, No.66);
- SNiP П-12-77 "Noise protection";
- SNiP 2.05.02-85 "Motor Roads";
- SNiP 2.07.01-89* "Town planning and construction";
- Sanitary norms 2.2.4/2.1.8.562-96 "Noise at the work places, in residential and public buildings and housing areas"

and other regulatory documents.

1.3. Need for Investment

The construction of the By-Pass ring motor road is a priority investment project for St.Petersburg and the Leningrad region that will make significant input to stability of the social-economic and transport development of the region.

With account of the trends of the international trade and the economic development the increasing number of private cars in the city the load on the existing motor road network is expected to increase 2-2.5 times.

The problem of stabilization of the city transport traffic can be solved by development of the network of streets and roads and first by development of a network of highways and roads of for continuous traffic that will provide a by-pass of transit transport from the city center, and will reduce the transport load in the residential area.

The construction of the By-Pass will allow to switch significant part of the transit traffic of the city to this road and re-distribute this traffic onto the roads of general use in the area of the city. .

The construction of the By-Pass will significantly improve the operational capacities of the IX-th Pan European Transport Corridor, will speed up the process of integration with the countries of Western Europe and Finland and to increase the attractiveness of the route for cargo carriers, including the option of transit for Russian and foreign goods through the territory of St. Petersburg and the Leningrad region. The By-Pass will link all major port, railway, air and motor transport terminals and will facilitate the process of transforming St. Petersburg into one of the largest international centers of cargo operations.

2. DESCRIPTION OF THE PROJECT

2.1. General Information

The project of the East half-ring part of the By-Pass was developed as part of the construction of the 1st stage of the St.Petersburg By-Pass.

The route of the By-Pass was considered during the stage of pre-design planning. The principal decision was worked out in the General Plan of development of the city and the region and in the comprehensive traffic scheme of the city.

Whereas the location decision for the south-western and north- western sections of the road from the Vyborg highway intersection to the Tallinn highway intersection is influenced by location of the St Petersburg Flood Protection Barrier and by territorial structure of the northern and southern banks of the Finnish gulf, location of the south -eastern and north- eastern sections of the road is not determined by these factors and basically related to the rate of development of the territories of the city and of the towns of the S. Petersburg agglomeration.

In the view of the above, the St Petersburg Committee for Town-planning and Architecture proposed to proceed with the interior scenario of the eastern part of the road from the intersection with the Tallinn highway to the intersection with the Priozerskoe highway along the city boundary. This part of the road is adjacent to the uninhabited areas under development, partly intrudes the city territory and comes closer to the residential area.

There are several reasons that determine the construction of several sections of the route sections close to the city.

One of them is the fact that the construction of By-Pass according to the previous remote variant is more expensive. The route constructed far from the city will serve only the transit traffic the share of which is not high presently. This remote route will make no contributions to solution of the internal problems of the city related to the over-load of the street and road network and will not create any options for transfer of the significant part of the traffic out of the city with related reduction of the load on the bridges across the Neva river.

The transfer of the great part of the traffic from the center of the city to the By Pass road will play an important role in the traffic management and contribute to reduction of air pollution in the city center.

Another important reason was the difficulties of land re-allocation, for example in the case of land currently belonging to the Ministry of Defense.

It is necessary to note that the By-Pass route is located outside of the city boundary with the exception of only two sections where it passes through the residential area, namely: Rzhevka and area of Troitski field. In these areas extensive environmental protection actions will be undertaken.

Therefore, that the current design of the By-Pass route is the optimal option.

2.2. Basic technical parameters of the project

On the basis of technical and economic analysis the following technical parameters of the By-Pass road were accepted

- category of the Road - l-b,
- calculated normal speed - 120 km per hour,
- number of lanes - 8,
- width of the subgrade - 43. 0 meters,
- width of the road - 8 lanes x 3.75 meters,
- width of the hard shoulder lane - 3.0 meters,
- width of the dividing strip - 5.0 meters,

- road coating of capital type - asphalt - concrete.
- sizes of bridges and overhead crossings –according to SNiP 2-05-03-84*
- design loads – A-14, NK-80

The length of the Priozerskoye - Moscow Highway section of the By-Pass is 42,7 km. The total length is 153,7 km.

The engineering design for the described By-Pass section envisages the construction of junctions at the intersection with the Oktyabrskaya Embankment extension, "Kola" Highway, Poperechnaya Street (Rzhevka), Shafirovsky Prospect (Avenue).

The modern technologies are used in the By-Pass construction. The road will be equipped with the emergency communication systems, central control post, rest areas, service complexes and pedestrian crossings on different levels.

The interchange and flyover bridge superstructures will be made of monolith reinforced concrete, cast in situ concrete and composite concrete. It is envisaged to use driven and bored cast-in-place piles for the basement of piers. The bodies of piers are separate columns for each traffic line.

2.3. Approvals of the project

All related ministries and institutions of the Russian Federation have approved the project following the order established by Russian legislation.

All approvals are filed in a separate book - Supplement 2 to the Volume 1 of the Engineering Project.

Regarding environmental and public health issues the Project is approved by:

- sanitary and epidemiological supervision centers of St. Petersburg and Leningrad region;
- regional water management department;
- regional fishery protection department;
- Hunting management department of Leningrad region.

Forestlands are allotted in accordance with the Decree of the Government of Russian Federation.

Approvals of the territorial administrations and local authorities are obtained.

The State ecological review (Expertiza) was carried out, positive conclusion No. 01-41-2100/7172-308 dated April 2, 2002 was obtained and approved by the order of the North-Western department of the Ministry of Natural Resources (dated April 4, 2002, No. 628).

Gosstroy of Russia approved the Project by its decision dated May 17, 2002.

3. CURRENT ENVIRONMENTAL CONDITIONS

The route of the road traverses the territories of two administrative entities of Russian Federation- St. Petersburg and Leningrad oblast (region).

The baseline environmental conditions are presented on the basis of engineering and environmental research data.

3.1. Climatic conditions

The area of the road is characterized by a warm summer, a long and rather warm winter with frequent thaws in December. The annual average temperature of the air is -3.6 °C.

Average temperature of the coldest month (January, February) is -9.1 °C. The average temperature of the warmest month (July) is +17 °C.

The transition of the temperature through the zero point occurs in spring -about April 4th, in autumn - about November 6th.

The reported absolute maximum of summer temperature is +33 °C, the minimum in winter is - 42 °C. The prevailing directions of wind are Southwest and South, the average annual wind velocity is 3.0 meters per second, the most high (every 10 and 20 years) is 20 and 22 meters per second.

Due to significant precipitation the area of the road is considered a zone of excessive humidity Annual precipitation is 725 mm with 64% share of the warm period

3.2. Geomorphology and geology

Regarding geomorphology the route of the Road is located within "accumulative terraced glacial and lacustrine valley". The relief is flat. This constitutes a problem for drainage of storm water and water from melted snow. According to Russian humidity condition classification this part of the Road belongs to type I. The geological structure of the area comprises quaternary glacial and lacustrine sediments, represented by loamy soil, loam and fine-grained sands. The-water beds and flood-lands of Neva, Okhta, Lubia, Lapka are mainly composed of sand alluvium.

3.3. Hydrographic Profile. Quality of surface and ground water.

Hydrographic network of the territory, which is adjacent to the east part of the By-Pass, is represented by Neva River, its right-hand tributaries, namely, Okhta, Utka and a number of other small rivers and brooks. Humid climate, flat swamped Prinevskyay lowland facilitated the formation of rather diversified hydrographic network (river density is 1,2-1,4 km/km2) with addition of the man-made network of drains and collectors.

The section of the By-Pass PK 774+50-PK 795+72 crosses the Okhta and Lubiya rivers, Gorely and Bezimyanny brooks and 12 drains. Basically the quality of water does not comply with the sanitary norms for the indicators of chemical and bacteriological contamination. According to analyses (for suspended substances, oil-products, lead, zinc, ect.) of water samples taken from all the rivers and brooks crossing the in the By-Pass road (excluding Lubia and Okhta rivers) do not comply with SanPiN 2.15.980-00 for water bodies of commercial fishing importance and the water bodies within human settlements (8.5 >pH>6.5).

Due to low flow rates, small depth the water bodies have limited capacity for natural purification.

Water protection zones and coastal areas are not properly arranged and their condition is basically poor

3.4. Air Quality.

For evaluation of the current condition of atmospheric air in the area of the By-Pass influence the official data on the background concentrations of suspended substances were used, namely: sulfur dioxide, carbon oxide, nitrogen dioxide. In addition, analysis of background contamination by other polluting agents such as phenol, formaldehyde and soot was performed.

The results of analysis showed that the maximum background contamination of atmospheric air is determined by emissions of nitrogen dioxide. In the total the maximum level of contamination by nitrogen dioxide and summation group № 6009 varies from 0,4 to 1,37 of maximum permissible concentration (MPC); for carbon oxide this figure constitute 0,1-0,4 of MPC. The background air contamination by other substances is very low amounting to less than 0,1 MPC.

3.5. Noise

The measurements of the equivalent and maximum noise levels in areas where the By-Pass route is in the immediate proximity of residential areas has been conducted following the methodology given in the appendix 6 to the volume "Engineering and Ecological Surveys". The measurements were performed in night and daytime of working days and weekends. The time for taking daytime measurements was chosen to have the maximum intensity of traffic on the neighboring highways (12 a.m. -5 p.m.). Nighttime measurements were carried out within the time interval from 23 p.m. to 7 a.m. The analysis of the results shows excess of equivalent noise levels for most of the localities under investigation.

3.6. Flora and fauna

The majority of the territory is used for ploughed fields, dwelling houses, and meadows. Small territories present bushes, field protection trees, pastures and inconvenient land. The rest of the territory is forest.

All forests within the land allot belong to the first group.

Forests of the Neva forestry (of the Vsevolozhsky park and forest administration) cover the territory of section PK 611+46 – PK 664+33. The territory suitable for recreation constitutes 64.5% of the forest area. The most popular is the well0arranged eastern part of the forest. The western assigned part where the Road will be constructed is in initial phase of improvements for recreation and thus can hardly be used for recreation (Only land amelioration has been carried out there) The territory belongs to the category “Forest and park zones around inhabited areas”. The right-of-way of the Road in the area of Nevsky forest park is basically covered with birch grey alder-woods.

The section PK 775-PK 795 +72 of the route is located within the territory of the city with weed and ruderal vegetation and agrocoenosis on the Okhta (river) left bank.

As a result of the quantitative and qualitative evaluation of the ornitho-fauna in the area of the 1st stage of the Road one can conclude that the ornitho-complexes of the considered territory vary significantly and essentially depend on the topography of the territory. . The ornitho-fauna has low versatikity of species, its structure is rather simple with synanthropic species prevailing.

In the section PK 611+46 – PK 664+33 the squirrels (0.032 animal per hectare) and other small species (mainly, rodents) live in the forest and park zone because they have adapted to the zone with high recreational load.

In the Okhta river (the section near the bridge) the ichthyofauna includes 20 fish species. The biological types are limited. There is no industrial fishing in the river due to its low profitability too much effort needed to organize this.

Natural productivity of the fish in the Utka river (account that the fish from Neva river comes to Utka river) is 10-15 kg/ha annually. There is no industrial fishing in the Utka river.

There are no rare species of vegetation and animals, as well as species specially protected by the legislation.

3.7. Social, economic and cultural issues

The evaluation of the load on the street and road network showed that about 30% out of the 70 main city highways have exhausted their traffic capacity. Coefficients of the actual use of the highway traffic capacity are as follows (in the average): 0,85 – in the central part of the city; 0.90- in the industrial and dwelling zone; 0,75 – on the main roads in the suburb residential zones; 0,75 - at the city entrance (working days) with the increase to 0,9-1,2 during holidays. In fact almost all of the bridges across Neva River and its delta are working in the low speed mode with considerable delays at traffic lights (more than one cycle), and decreased safety levels. Bridges Troitski, Liteiny, Leitenanta Shmidta, Peter the Great and Dvortsovy are overloaded most significantly

The morbidity indicators for the population of theBy-Pass route area do not exceed the indicators for the Leningrad Region in general as far as main classes of illnesses are concerned. For some nosological forms (endocrine system diseases, injuries and intoxications) the indicators are considerably lower.

The special feature of the By-Pass construction zone is the following: it is located on the line separating the common archeological monuments which are usual for rural zones and such a specific site as a cultural area of a big city with all its identity and cultural objects dating back to pre- St. Petersburg time.

During the archeological survey of the zone allocated for the future construction of the Easten part of the By-Pass, the three places were found where cultural layer can be classified as Late Mediaeval (XV-XVIII cent.). These are the following: left and right banks of the Murinski brook, banks of Bezimyanny brook in its down stream part. At present all the necessary archeological works are completed.

3.8. Ecological systems not subjected to the anthropogenic impact

There are no natural ecological systems, landscapes and complexes, which were not subject to anthropogenic impact (and thus must be of the first priority for protection according to the RF Law “On Environment protection”) within the territory of the given sections.

4. DESCRIPTION AND EVALUATION OF THE MAJOR FACTORS OF ENVIRONMENTAL IMPACT OF THE PROPOSED PROJECT. MEASURES FOR MITIGATION OF THE NEGATIVE IMPACT ON THE ENVIRONMENT

4.1. Introduction.

In compliance with Russian Environmental legislation the Project includes the sections "Environmental Impact Assessment (EIA) and "Environment Protection" (EP)

The section "Environment Protection" presents the measures for mitigation of the negative impact on the air, water, soil as well as the measures for reduction of acoustic loads on the components of the residential areas during both the construction and operation periods of the project.

In addition, the report presents the principal project solutions regarding protection of the residential and recreational areas from transport noise, methods for the treatment of waste water coming from the route of a transport structure are included in the report together with calculated costs of necessary environmental measures.

The basic actions for the mitigation of the negative impact of the project are determined with account of the following factors:

- assumed types and respective intensities of the loads within the project area;
- spatial differences of the intensity of technogenic/industrial load on the environment;
- Necessity for minimization and further localization of the site's emissions;
- Provisions for maintenance of the required level of sanitary and environmental comfort within the residential area influences by the site (regarding the parameters of the impact on the atmospheric air).

Development of the territories within the zone of the SPBP sites requires that the following conditions should be observed

- Limiting the concentrations of the contaminating substances in the atmosphere air and the intensity of acoustic load within the zone where the road passes in the immediate neighborhood to residential areas to the level of sanitary hygienic norms for residential territories (1,0 MPC, 55 dB during the day and 45 dB at night)
- Providing protection of residential areas from chemical and noise impacts throughout the project life;
- Arrangement of the periodical monitoring of the sanitary ecological condition of the environment within the zone of the project location.

The period of the construction of the SPBP sites of the sections located from the transport intersection at the crossing with continuation of Oktiabrskaya Naberezhnaya (embankment) to the crossing with the "Kola" road and further from Rzhevka towards Shafirovsky Prospekt (Avenue) will have intensive impact on all the components of the environment (air, water, soil and flora).

4.2. SPBP impact on surface (open) water

Impact of the construction and further operation of SPBP on the hydrological regime, water and water-salt balance of the crossed water courses, rivers, meliorative ditches is versatile and many-sided. Anthropogenic influence of SPBP on the natural and meliorative water courses leads to the following:

- Changes of the level and water regime of the water courses

- changes of hydro chemical regime;
- changes of hydraulic and morpho - metrical characteristics of water beds flood valleys of rivers and brooks
- changes turbidity characteristics of the water in the rivers;
- changes of thermal and ice regimes.

Analysis of the project materials on bridge crossings of SPBP road the construction of bridges, flyovers, interchanges, road beds will not lead to changes of the level regime of the rivers since all the bridges, flyovers and culverts are designed in the pressure proof version. Thus the flow constraint is as a rule absent or very small.

Assessment of possibility of the discharge of treated storm water runoff from the road to the receiving drains was performed using the method of comparing the concentrations at the outlet of the water treatment stations (C τρ) with permitted concentration for discharge to the water bodies (C λε), that is defined by the Regional Regulation(SanPiN 2.1.5.980-00. Hygienic Requirements to protection of surface water.

For discharge of storm waste water to the city storm water system the permitted concentrations of contaminants (Ccan) is regulated by the Rules [Temporary Recommendations for design of water treatment stations for the surface runoff from the territories of industrial enterprises and calculation of conditions for discharge into water bodies. VNII VODGEO, M-1983]. The balance C τρ< C λε< C can has to be maintained. The quality of the waste water after treatment, that allows discharge to the water bodies or to the city sewer is defined by the Table 4.1.1 below.

Permitted concentrations of contaminants in the treated waste water that can be discharged to the water bodies or to the city sewer

Table 4.1.1.

Indicator	Concentration of contaminants, mg/l		
	After treatment at LTF*	Permitted for discharge into water body.	Permitted for discharge to the sewer
Suspended matter	10-15	15	300
Oil products	0,05-0,3	0,3	0,3
Lead	0,1	0,3	0,5

Note: Permitted concentration for discharge to the city sewer is taken for the Northern Aeration Station.

LTF * (Local treatment facilities) – concentrations in the treated waste water at the outlet of the treatment facility is presented.

The table shows that the concentrations in the waste water after treatment (at the outlet of LTF) meet the requirements.

Influence of the construction and further operation of SPBP on the hydro chemical regime of small rivers is evaluated as insignificant, since the storm waste water from the road will be treated to regulatory level

Construction of the SPBP will not influence the temperature and ice regime of the rivers since there is no heating of the waste waters.

4.3. SPBP impact on ground water

To predict the changes of the ground water composition in the proximity of the SPBP the method of analogs was used. The section of the Kievskoye shosse near the airport Pulkovo was

selected as an analog. The observations of that section showed that in the proximity of the road the salt content of the ground water was increased at the expense of the hydrocarbon and chloride salts. The hydrocarbon salts appear as a result of emissions of carbon oxide and dioxide. Chloride salts appear when the ice-fighting salts are used. At the roadside of the motor way and at a distance of 5 m from it the salt consent is 2.5-2.7 g/dm^3. At a distance of 30 m from the roadside the salt consent decreases to 1.6-1.9 g/dm^3, at a distance of 40-50 m, to 1.0-1.4 g/dm^3. The similarity of the geological and geomorphological conditions of the designed road and the Kievskoye shosse allows to expect the pollution of the ground water along the route of the designed road. However, such comparison will be correct if no additional measures are envisaged to drain the storm and snowmelt water.

Besides, decrease of the ground water quality may be caused by the general anthropogenic environmental impact. By the present time the salt content in the ground water within considerable part of the road route (from the south heating station to the river Okhta) has already reached 1 g/dm^3.

It should be noted that the SPBP project envisages almost complete collection of the precipitation in the drainage system and runoff to the local treatment stations, hydro botanical beds, as well as to the sewer. Undoubtedly, these measures will decrease the volume of pollutants in the ground waters but will not exclude this completely . The rate of the salt content increase forthe ground water of different sections of the road will depend on many factors. It is difficult to predict all of them during the design stage. In the given below calculations the ground water horizon is considered as the source of pollution of the lower layers, i.e. the period of time between the beginning of pollution of the ground horizon and the stabilization of the level of pollutants' content is not taken into account.

4.4. Surface and ground water protection.

According to the sanitary classification, the water courses crossing the considered section of SPBP belong to the second category of water use objects. These water bodies located within settlements are not used for swimming and water sport.

Storm drain from the road within the section PK 611+46 – PK 644+33 is treated and goes to meliorative ditches as well as to the small natural hydrographical network (brooks with no names and Utka River).

Basically the storm waste water are treated in hydro botanical beds (HBB) consisting of buffer excavated tanks and oil traps. A part of the waste water flow is directed to industrially manufactured local treatment facilities (LTF).

The accepted type of the LTF is SOR II, manufactured by FORTEX company. Locations of LTFs are determined by existence of transport junctions within the area, road longitudinal profile, size of water collection area and the balance between the calculated water discharge with LTF capacity

Areas of the road pavement relevant to basins of runoff within the section PK 611+46 – PK 644+33 are given in the Table 4.3.1.

Table 4.3.1.

No.	Type of treatment stations	Location (PK+)	Road area, hect	Runoff basin after treatment
1	HBB	614+02	0,2 58	land improvement ditch
2	HBB	614+02	0,2 36	land improvement ditch
3	HBB	615+80	0,6 88	brook
4	HBB	615+30	0,7 10	brook

5	HBB	620+60	0.6 02	river Utka
6	HBB	620+50	0.5 80	river Utka
7	LTS	622+60	1.0 5	river Utka
8	LTS	623+20	0.7 52	river Utka
9	HBB	629+32	1.5 0	land improvement ditch
10	HBB	631+36	1.7 8	land improvement ditch
11	HBB	637+13	1.6 1	land improvement ditch
12	HBB	639+45	1.4 4	land improvement ditch
13	HBB	644+50	2.1 5	land improvement ditch
14	HBB	647+88	0.4 30	land improvement ditch
15	HBB	654+35	2.7 6	land improvement ditch
16	HBB	658+20	7.8 9	brook
17	HBB	664+00	1.4 4	land improvement ditch

The costs of the implementation of environmental actions will be:

Table 4.3.2.

Works	Unit of meas.	Scope of works	Unit price, US&/RUR	Total price, ths US$/ths RUR
Local treatment facilities	pc	2	-	34,4/1533,0
Hydrobotanic bed	pc	15	-	106,5/2430,0

The natural longitudinal profile of the section is determined by the river valleys of the brook Bezymianny, river Okhta, brook Gorely and river Lubia, which cross the Road. The longitudinal profile of the Road route is characterized by long descents and accents (see the Road design part of the Project).

Table 4.3.3.

List of the treatment facilities at the PK 774+50 – PK 795+72 section

Location and type of treatment facility	Discharge	Total length of water collection, m	Waste Water collection area, hect
LTF No.1 PK 10+44 at the junction to Shafirovsky prospect (at the left on the stationing side)	To the melioration ditch	1986	2.90
HBB No.1, PK 789+90 (at the left on the stationing side)	brook Bezymianny	1010	1.5
HBB No.2[1], PK 5+00 (on the circular access road 2 at the right of the stationing side)	To the melioration ditch	272	0.54
HBB No.2, PK 4+37 on the circular access road (at the right of the stationing side)	brook Bezymianny	285	0.46
HBB No.3, PK 4+ on the circular access road (at the right of the stationing side)	brook Bezymianny	50	0.05
HBB No.4 or LTS PK 790+70 (at the right of the stationing side)	brook Bezymianny	161	0.32

HBB No.5, PK 1+20 12 on the circular access road (at the right of the stationing side)	brook Bezymianny	497	0.69
Water body in the center of the circular access road	brook Bezymianny	50x70	0.35
LTS No.2 PK 6+85,7 Poperechnaya,15	To the melioration ditch	2032	6.31
HBB No.6 circular access road 5 and side access road 6 at the left to Rzhevka	To the melioration ditch	700	0.70
HBB No.7 PK 755+00 (at the left of the stationing side)	To the melioration ditch	540	0.98
LTS No.3 PK 781+60 (at the left of the stationing side)	r.Okhta, left bank	246	0.49
LTS No.4 PK 782+20 (at the right of the stationing side)	r.Okhta, left bank	280	0.56
LTS No.5 PK 776+77 (at the left of the stationing side)	brook Gorely, right bank	223	0.45
LTS No.6 PK 777+20 (at the right of the stationing side)	brook Gorely, right bank.	175	0.35
LTS No.7 PK 776+38 (at the left of the stationing side)	brook Gorely, left bank	148	0.30
LTS No.8 PK 785+90 (at the left of the stationing side)	r.Okhta, right bank	920	2.72
LTS No.9 PK 764+00 (at the left of the stationing side)	r.Lubia, left bank	470	0.94
LTS No.10 PK 764+00 (at the left of the stationing side)	r.Lubia, left bank	470	0.94

The separate end discharges with small water collection area on the side interchange ramp № 2 on the Poperechnaya Street will be equipped with splitter dampers and drainage wells filled with gravel . Installation of HBB or LTF at these discharge points is not planned. According to the scheme the treated waste water is drained to Okhta, Lubia rivers, Gorely and Bezumyanny brooks and to drainage trenches.

Costs of implementation of environment protection measures

Types of Works	Unit	Volume of Works	Unit cost. US$	Total Cost thousand US $
Local Treatment Facilities	pcs	10	-	172,16/5 165*
GBB	pcs	8	-	43,3/1 300

To prevent the pollution of the surface water during the By-Pass operation period the following measures are envisaged:

- to provide all parts of the road (roadbed and flyovers) with effective drainage system and construction of local treatment facilities;
- hydro botanic beds (HBB) and local treatment stations will be used as treatment facilities which are planned to be installed near to flyovers and drainage trenchers, This allows to achieve complete treatment of storm water along the whole route of the section;
- for the treatment of the snowmelt runoff from the disposal sites (for snow removed from the roadbed) it is planned to install treatment stations at these sites;
- to prevent excess intrusion of ice-fighting salts into the snow-melt water it is envisaged to reduce the salt volumes down to 5-15 g/$m^{2.}$. It is recommended to dampen the salt before using. The removal of snow and its disposal off the road also contributes to reduction of salinification level of the surface melt water runoff;
- to increase efficiency of treatment stations it is envisaged to perform the permanent monitoring of their operation and in case of necessity it is planed to upgrade certain units or replace them;
- in case of emergency spills of oil products it is recommended to use corresponding sorbent agents (see the volume Environmental Impact Assessment), for example, carbonic compounds of a high reactive capability. One gram of this sorbent agent absorbs 70 g. of oil products. The stock of this sorbent agent should be kept in the warehouses of the Road Construction Department, storage time is 5 years. Additionally at the outlet of the pit it is possible to install blocks of the light polystyrene. Upon getting dirty with fuel oil the blocks are changed for new ones.

4.5. Protection of land, soils and vegetation

To prevent further degradation of the soils and damage to the vegetation during the construction, as well as the pollution within the roadside of the designed Road the following measures are envisaged:

- Regular mechanized cleaning of the road by special crews of the road operation service;
- Replacement of the polluted soil with clean one delivered by trucks. The depth of the removed topsoil is defined by the depth of harmful substances penetration and does not exceed 20 cm;
- Collection of the polluted surface runoff from the territory and subsequent transfer to the water treatment stations to exclude penetration of the polluted water into the soil.

Collection of the storm and snowmelt water, use of environmentally friendly technologies for treatment of the road cover with special salts in winter (see Volume 13, Executive Summary) assumed by the project also will work as t mitigation measures regarding the impact on the soil.

Soil protection measures during construction phase include the following:

- Maximum use of the existing infrastructure for the construction engineering support and operation of the road in one technical corridor: roads, overpasses and temporary construction sites, thus allowing to reduce the area of temporary withdrawn territory;
- Prohibition of the off-road travel of heavy construction machinery;
- Use of the construction machinery and mechanisms with minimal specific pressure of the running gear upon the soils;
- Removal and storage of the topsoil according to the requirements of the GOST 17.4.3.03-85 on the specially designated areas and subsequent use of the material for land recultivation;
- Prevention of the waste water discharge from the construction sites to the topography;
- Construction of the culverts and cleaning of the existing drainage system to avoid swamping of territory and ensure surface runoff from the construction sites;
- Technical and biological recultivation of the damaged land;
- Maximum possible measures to reduce the construction waste;
- Prohibition of the construction waste storage outside the specially temporary designated areas and subsequent dumping of the waste outside the territory of the developed area;
- Preventive repair of the machinery and mechanisms to avoid pollution of the soils by fuels and oils;
- Covering of the construction sites and technological grounds with concrete slabs, the minimum surface grade being 2% to exclude the surface runoff to the waterways;
- Use of metal sumps for oil, condensate and diesel fuel collection for the machinery with internal combustion equines;
- Regular discharge of the collected matter from the sumps into special tanks with further disposal outside the territory.
- Fuelling of the machinery and mechanisms outside the construction site;
- Washing of the casing pipes outside the construction site.
- Removed vegetation soil shall be accurately stored for further use .

4.6. Protection of vegetation and animals

The project envisages:

- not to allow forest cutting and removal of bushes outside the road and road facilities right-of-way;
- not to allow the covering with soil of the root necks and trunks of the trees near the site;
- money compensation for the works on replanting the forests and city trees and bushes;
- money compensation for the works on reproduction of biological species and prohibition of works on the water during spawning within the period from April 15 until June 15;
- money compensation for the damage caused by withdrawal of the areas where surface animals live;
- protection of the road with metallic guard net along the whole route to prevent the animals from entering the road;
- provisions for migration of small animals in the places where tractors may cross the road or where bridges, flyovers, culverts are located.

4.7. Noise protection

Noise is one of the major environmental impact factors that have a negative effect on the population first of all.

The noise protection measures for the construction phase include:

- Arrangement of the working machinery on the site considering the mutual noise protection and natural acoustic screens;
- Putting the compressed air station inside a noise protection tent;
- Installation of mufflers for air intake, vibration isolators and noise dampers at the compressor stations;
- Installation of vibration absorbers;
- Preventive repair of the mechanisms;
- Installation of noise protection screens for operations near housing estates;
- Prohibition of the pile drilling near housing estates at night.

The following noise protection measures are envisaged for the operation phase acoustic screens, trees planting, and installation of additional noise-proof protective windows.

List of acoustic screens to be installed on the section PK 611+46 – PK 644+33

Table 4.5.1.

No.	Location (stationing)	Height, m	Length, m	Remarks
1	PK 606+80 – PK 612+80	3.0	660	At the left side of the main way, protection of the housing estate in Oktyabrskaya naberezhnaya
2	On the junction from PK 617+00	4.0	500	On the circular junction, in the by-pass side opposite direction

List of trees planting on the section PK 611+46 – PK 644+33

Table 4.5.2.

No.	Stationing, PK by-pass side	Width and structure	Length, m (area, hect)	Purpose
1	PK 614+00 – 614+60 PK 615+50 – 620+90 at the left	13 m 2 rows of staggered planting with 2 rows of bushes (1 row of tall bushes and 1 row of small ones)	540 m (0.7 ha)	Protection of the dwelling area in Oktyabrskaya naberezhnaya

Costs of the environmental protection measures on the section PK 611+46 –PK 644+33 amount to:

Table 4.5.3.

Works	Unit of meas.	Scope of works	Unit price, US$/RUR	Total price, ths US$/ ths RUR
Installation of noise	m^2	4000	55.00/1,595.00	220/6,380

screens				
Re-planting	pc	108	2,6/75,2	0,281/8,122

List of acoustic screens to be installed on the section PK 774+50 – PK 795+72

Table 4.5.4.

No.	Location (stationing)	Height, m	Length, m	Remarks
1	Along the northern access to the SPBP from Novokovalevo	3.0	490	Protection of housing in Bratskaya street, gardens
2	Along the western junction to Lesoparkovaya street	3.0	500	Protection of buildings in Lesoparkovaya street
3	PK759+00 - PK 782+30	4.0	2330	At the left of the main way Protection of Rzhevka
4	PK 759+00 - PK 782+30	4.0	2330	At the right of the main way. Protection of Rzhevka
5	Along Ryabovskoye shosse, at the left to Vsevolozhsk	4.0	990	Protection of Rzhevka
6	Along Ryabovskoye shosse, at the right to Vsevolozhsk	4.0	1000	Protection of Rzhevka
7	Along Chelaybinskaya street, at the right	3.0	400	Protection of Rzhevka
8	Along Chelyabinskaya street, at the right	3.0	480	Protection of Rzhevka
9	The RH bank of the river Okhta (boundary of gardens)	4.0	590	Fencing of the Arsenal gardens
10	PK 7785+50 - PK 788+40 at the right	3.0	290	Protection of Rzhevka
11	PK 792+50 - PK 795+70	3.0	290	Protection of Rzhevka
12	On the eastern branch of the junction with Shafirovsky pr.	3.0	540	Protection of Rzhevka

List of installation of noise-proof windows on the section PK 774+50 – PK 795+72

Table 4.5.5.

Street	№№ of houses
Bratskaya	30, 32, 35, 37
Lesoparkovaya	24, 29
Rzhevskaya	Out-patients' clinic No.11
Chelaybinskaya	37-2 (school No.94), 45, 47
Total quantity of multi glass panes	**962**

List of trees planting on the section PK 774+50 – PK 795+72

Table 4.5.6.

No.	Stationing, PK by-pass side	Width and structure	Length, m (area, hect)	Purpose
1	In Poperechnaya street, at the end of the junction, at the right	160 and 640 m²	(0.08 hect)	Protection of settlement Novokovalevo
2	Along Arsenal gardens, at the left	30 m 3 rows of staggered planting with, with 2 rows of bushes (1 row of tall bushes and 1 row of small ones)	590 m (1.8 hect)	Protection of Arsenal gardens

3	Along the south side of the junction to Shafirovsky pr.	20 m 2 rows of staggered planting , with 2 rows of bushes (1 row of tall bushes and 1 row of small ones)	780 m (1.56 hect)	Protection of Pediatr gardens
4	Along the north side of the junction to Shafirovsky pr.	20 m 3 rows of staggered planting , with 2 rows of bushes (1 row of tall bushes and 1 row of small ones)	320 m (0.64 hect)	

Costs of the environmental protection measures amount to:

Table 4.5.7.

Works	Unit of meas.	Scope of works	Unit price, US$/RUR	Total price, ths US$/ ths RUR
Installation of noise screens	m^2	25640	55/1595	1410,2/40895,8
Installation of noise-proof windows	m^2	3800	45/1305	171,0/4959,0
Installation of special aeration devices in noise-proof windows	pc	950	60/1740	47,5/1377,5
Re-planting	pc	479	-	1,24/36,04
Additional planting	pc	140	-	0,4/11,2

4.8. Protection of atmospheric air

The project envisages the following atmospheric protection measures:

- Reconditioning of the grass cover and re-planting of trees in the areas of construction sites;
- Additional planting on the land strip between the road and front row of the housing with dust- and gas-proof species of trees;
- Periodical monitoring of the atmospheric air quality and compliance with PDV limits for emissions .

Emissions of the pollutants to the air during construction phase are short lived. It is required to provide special measures to reduce the polluting emissions to the atmospheric air.

These measures include:

- Monitoring of the machinery operation during unscheduled or scheduled breaks in the work. Idle machinery shall have the engines turned off;
- Monitoring of the technological procedures of the operations;
- Closed transportation and unloading of trucks with construction materials that may cause pollution of the air;
- Spacing in time the operation of the machinery not involved in one continuous technological process;
- Preventive repair of the diesel mechanisms;
- Regular monitoring of toxicity of the exhaust gases according to the GOST 2.02.03-84 and GOST 21393-75*.

4.9. Recultivation measures

The project envisages recultivation of the temporary technological access roads and territories temporary withdrawn during construction operations.

To prevent further pollution of the soils and damage to the vegetation during the road construction the following measures shall be undertaken:

- Regular mechanized cleaning of the road by the road operation service crews;
- Periodical re-seeding the grass along the road by road operation service crews.

In this connection the removed topsoil may be used for:

- Grass-plotting of the sections damaged by construction and other operations if these areas are located beyond the territories occupied by the road service facilities;

- grading works outside the territories occupied by the road service facilities with subsequent grass plotting, fixation by grass seeding or arrangement of waterproof artificial coatings.

4.10. Protection of the natural and social environment

The By-Pass route does not traverse specially protected natural territories; nor will it negatively influence any wildlife or endangered species. All the forests along the road belong to the 1st group. The required by the feasibility study decree of the Government of the Russian Federation allowing the withdrawal of forest lands for the purposes of the By-Pass Road construction is issued.

The project assumes the compensation payment for withdrawal of the woodland and damage to the parks and gardens.

Compensation payments for the damage to the fauna amount to 30,200.00 RUR.

Compensation payments for the damage to the fishing industry amount to 266,100.00 RUR (prices of 2001).

According to the calculations using the city transport model worked out by the specialists of the NIPI (institute of the territory development and transport infrastructure) the total length of the road network where the traffic intensity will be changed considerably with the road commissioning will constitute 464 km.

Commissioning of a new bridge across the river Neva will connect the south industrial and residential areas of the city with the eastern planning zone and further with the north areas and transport junction to Moscow (the road "Russia") with the federal roads "Kola", "Scandinavia" by-passing the overloaded connection pr.Slavy-Ivanovskaya-Narodnaya street. This will considerably reduce the load on the existing latitudinal roads and the Neva bridges.

Medical and demographic situation in the city as well as in the region settlements within the Road influence zone is aggravating. Sanitary and hygienic conditions of the territories and natural objects is basically poor.

According to the investigation performed by the Mechnikov Medical Academy **abandonment** of the SPBP project **will increase the risk** of diseases for St.Petersburg population in general because a part of transport flows will not be removed from the residential areas of the city where the density of population is very high.

4.11. Waste: storage and disposal

As a result of construction of the road, bridges, junctions and road service facilities waste is generated:

- During preparation works within the withdrawn territory (remaining waste of the trees felling, unauthorized dumping on the withdrawn territory, garbage after removal of buildings, cutting of old asphalt concrete pavement);
- On the construction sites (remaining construction materials, packing, burnt electrodes, timber and formworks not to be used repeatedly, etc.);
- On the sites of construction camps and parkings of trucks and construction machinery (household garbage, swept away waste after territory cleaning, burnt lamps of the internal and external lighting, spent oils, etc.);
- On the temporary occupied territories during recultivation upon completion of the construction works (construction waste, formworks, oily soil).

The list and amount of the construction waste are determined by the types of the operations and the used technology. The project of the construction operations arrangement and plans (Volume 3) includes the baseline data for determination of the list of waste generated and calculation of the quantities. Construction waste (group 161, code 00 according to the waste codifier for St.Petersburg and Leningrad region): sand and gravel mixtures, remaining concrete products, non-woven clothes, cement waste, glass mesh, broken stone, etc. belong to the 4th class

of hazard; rejected asphalt concrete mix - to the 3rd – 4th class; lumps of bitumen and ruberoid - to the 3rd class.

The amount of solid and liquid household waste is calculated according to the "Recommendations for determination of the norms of accumulation of household waste for the Russian Federation cities". The day average (three work shifts) norm of accumulation of the household waste per person according to the SNiP 2.07.01-89* is 1.23 kg/day (4.11 l/day) for solid waste and 9.6 l/day for liquid waste.

Construction waste of the low hazard class is accumulated and stored in specially designated places on the construction sites.

For temporary storage of solid household garbage the containers located on the special grounds of the construction camps are used. As soon as the waste is accumulated, it is dumped to the specially designated areas off-site.

Construction waste of the 3rd – 4th class of hazard and domestic waste generated during construction operations are removed to the dumping facilities according to the list of the Letter of the Committee of the territory improvement and road administration of St. Petersburg No.67 dated October 3, 2001 (refer to the Appendix 1 to the given Volume). Solid domestic waste is removed to the dumping facilities according to the contracts made with contractors as appropriate. The list and amount of the waste generated during the construction of the SPBP within the boundaries of the lots and the issues of their disposal are considered in details in the Books 1–7 of Volume 14 "Environment Protection".

The contractors performing construction operations have their own motor transport bases for repair and maintenance of the machinery. Therefore no used tires, ferrous and non-ferrous metal scrap, used oils, rags, etc. are stored on site. Collection, storage and disposal of this waste are carried out in the established order according to the agreement signed by the contractors with specifically licensed organizations.

The following impact mitigation measures related to construction waste are included into the project:

- Regular delivery of construction materials in the process of construction avoiding storage of large batches on the sites;
- Temporary storage of the construction waste on the construction site at specially designated places;
- Portable containers for metal scrap, remaining fasteners, packaging;
- Special containers for oily rags and oily sand ;
- Mandatory dumping and utilization of the construction waste, signing of the agreement between the General Contractor and the organizations specializing in industrial waste processing.

The debris swept away from the roadway and the spent lamps of the road external lighting are generated systematically during operation of the road.

The classification, data on the amount of waste, recommended places for their disposal are presented in the tables 4.9.1, 4.9.2.

List and amount of generated waste for the operation period

(SPBP section PK 611+46 –PK644+33)

Table 4.9.1.

No.	Operations	Waste	Class of hazard	Code	Quantity, t/year	Disposal
1.	Mechanized cleaning of the roadway	Swept away waste	4	01314	959	PTO-1

2.	Replacement of lamps of the road external lighting	Used mercury lamps	1	01905	0.0185	Licensed organizatio n
3.	Petroleum traps	Spilt petroleum products	2	01202	1.91	"Krasny bor" dumping ground
4.	Treatment stations	Sediment of the stations	4	01302	98.8	Dumping ground for sediments

List and amount of generated waste for the operation period

(SPBP section PK 774+50 – PK 795+72)

Table 4.9.2.

No.	Operations	Waste	Class of hazard	Code	Quantity, t/year	Disposal
1.	Mechanized cleaning of the roadway	Swept away waste	4	01314	800	PTO-1
2.	Replacement of lamps of the road external lighting	Used mercury lamps	1	01905	0.026	Licensed organizatio n
3.	Petroleum traps	Petroleum traps	2	01202	0.6	"Krasny bor" dumping ground
4.	Treatment stations	Treatment stations	4	01302	100.4	Dumping ground for sediments

5. Assessment of ecological, economic, demographic and other effects in short and long terms.

Assessment of the environmental impact is given above. Construction of the road will inevitably affect the existing ecosystems. However, the project envisages all the required compensation measures to provide rehabilitation of the elements of the environment (for example, plants, water biological forms) and/or to minimize undesirable effects. Environmental impact on the air, soil, water is local. Considering the population health as it is indicated in paragraph 4.10 the impact will be positive for the city. In this respect one should bear in mind that the population living in the immediate vicinity of the Road where the impact exceeds the permissible limits will be move to environmentally friendly areas of the city. In general the trends for reduction of morbidity will probably have a positive effect for the demographic situation.

The construction of the SPBP will help to solve the following problems (or significantly reduce their acuteness):

- Creation of the transport corridor providing Euro-Asia links and integration of Russia into the world transport system;
- Provide connection of the main ports, railways, airports and roads of the city with the terminals and logistic centers under construction;
- Creation of a new population allocation line due to intensive development of the adjacent territories of the city and Leningrad region where the zone of intensive construction activity will be formed;
- Reduction of the transport load for the central part of St. Petersburg, switching the transit flows to the by-pass Road thus improving the traffic conditions in the city as well as the ecological situation and condition of the world worth architectural historical monuments;
- Re-distribution of the transport flows and reduce the load on the head sections of external roads;
- Provide connection of the right and left banks of the Neva river within the city by construction of the new bridge to bypass the historical center and existing bridges operating at the limit of their capacity.

This will produce positive effect on the city economy. Besides, it should be noted that the SPBP construction means new work places, reduction of time needed to reach the work and entertainment places, attraction of investments in the infrastructure.

6. Direct and indirect effects of the project. Cumulative effects.

Direct effects of the SPBP construction and operation include, first of all, withdrawal of land for construction, pollution of the atmospheric air, soil, storm run-off from the road, and noise.

Indirect effects are disclosed when the ground water regimes are changed and in particular the hydrochemical composition of the ground waters, when the ecosystems of the road adjacent areas become poor or (on the other hand) when the city population becomes more healthy and economic situation in the city is improved.

The Environmental Impact Assessment covers cumulative effects as well. For instance, background concentrations of the substances in the environment media, generated by the city activity, transboundary transfer, natural geochemical conditions are taken into account in the impact assessment for the air, soil and water. The combined effect of the toxic components of the same action was considered. Changes in the background concentrations are predicted on the basis of the environment protection measures planned by the city enterprises and with account of the city construction plans especially concerning re-distribution of the transport flows.

7. Impact scaling.

The environmental impact of the SPBP is local. It is temporary during construction and permanent during operation. The zone of the impact beyond the permissible limits is: 30 m from the road edge for air pollution, up to 40 m for soil pollution, up to 1000 m for noise (if noise protection measures are in place it is up to 250 m wide for the section PK 611+46 – PK 664+33 and up to 60-200 m for the section PK 775 – PK 795+72).

8. Alternatives.

Abandonment of the SPBP idea is considered as a basic alternative. . In is demonstrated that this alternative will lead to undesirable consequences for the health of the population and economy of the city.

Several variants of the Road route arrangement were considered as well. Especially many versions (more than ten) were proposed for Rzhevka (PK 775 – PK 795+72). The designers, Client, expert commission at different levels decided that the selected solutions meet the requirements of contradicting ecological, economical and social problems most completely.

9. Methods of analysis and assessment of the uncertainty of the results.

For the analysis of the initial condition of the environment and assessment of future environmental conditions the methods approved for application in Russia were used, in particular:

- Recommendations for account of the environmental requirements for design of roads and bridges. (Approved by the RF Ministry of environmental protection and natural resources, dated June 19, 1995, No. 03-19/AA), Moscow, 1995;
- OND-86. Methods of calculation of the concentrations of harmful substances (contained in the air emissions of the enterprises) in the atmospheric air. Gosgidromet;
- Methods for determination of transport exhaust emissions for consolidated calculations of pollution of cities. (Approved by the order of Goscomecologiya of Russia on February 16, 1999, No.66).

Uncertainties related to assessment of the boundaries of air and soil pollution beyond permissible limits are compensated by methodical shift of the error to provide general safety of the assessment. . There is certain uncertainty in the assessment of efficiency of hydrobotanical pools to be used for storm water treatment, specifically for the winter period. In this connection the needed complex of theoretical and in-field investigations is performed now.

There is certain indefiniteness in the assessment of soil pollution by such substances as benz(o)pyrene, zinc, oil products since the necessary methodical basis is not available. However, the experience gained in practical observations on the existing roads allows to consider the selected boundaries of the zones of soil pollution beyond the permissible limits to be sufficient.

10. ORGANIZATION OF ENVIRONMENTAL MONITORING

Environmental monitoring in the By-Pass impact area is the main method to maintain ecological safety control. It can be considered one of the i of the information tools providing the management of the road. The funding for environmental monitoring can be included into the funds allocated for By-Pass Road maintenance. Organization of monitoring, expenditures required for its implementation depends on the goals and tasks of this activity.

The reasons for environmental monitoring are as follows:

- Requirements stated in 4.8.7, 4.8.8, 4.8.9, 4.9.2, 4.9.3, 4.9.4 SN 11-102-97 “Engineering and ecological surveys” 161-04 dated October 16, 2000
- Requirements of “Provisions for evaluations of environmental impact of the planned economic and other types of activities in the Russian Federation ” adopted by the order of Goscomecologia # 372 dated May 16, 2000;
- Letter of the State Sanitary and Epidemiological Supervision of St. Petersburg # 111-13/ 161-04 on the “Establishing Sanitary Protection Zone for the Eastern By-Pass Part ” (according to EO materials);
- Conclusion of the State Ecological Expertise for the engineering project of By-Pass interchange in Gorskaya village, #725 adopted by the order of Lencomecologia # 2753 dated August 28, 2000. (section – environmental monitoring);

- Conclusion of the State Sanitary and Epidemiological Supervision of Leningrad region # 88 dated 24.04.01 on EO By-Pass (option close to the city). Requirements p.15 on necessity to carry out sanitary and epidemiological monitoring.

The goals of the of the monitoring are as follows:

- To analyze the compliance of the project (By-Pass) and environment with the ecological and hygienic requirements to work out decisions providing ecological wealth;
- To reduce the degree of uncertainty due to inaccuracy of calculated estimates;
- To solve the disputes related to environmental impact, especially for the residential areas within the zone of the Road impact;
- To update the environmental database for the By-Pass area;
- To record all the road incidents with negative environmental influence in the By-Pass area (fuel oil, oil and toxic liquids spills as well as solid waste disposals) with working out proposals to prevent the negative consequences;

The main tasks to be solved by the environmental monitoring:

- Control the completeness and accuracy of the design documentation for regulations approved on earlier stages of design including measures aimed at excluding or minimizing impacts, compensation, environment protection facilities and activities;
- providing the choice of a contractor, capable of providing environmentally better services and technologies and construction of the environment protection facilities included in the project;
- including into the plans of the operations the measures explaining to the Contractor's workers the environmental protection regulations and project solutions (with training of workers if necessary);
- supervision of damage reimbursement and payments of the compensation envisaged by the project;
- supervision of environmental protection actions during construction and operation phases;
- supervision of the construction of environment protection facilities;
- monitoring of the Contractor's compliance with the regulations, standard documents, technical conditions and project requirements;
- recultivation works performance control;
- examination of efficiency of the measures included into the project during the construction and their updating, if necessary;
- post-construction supervision of the functioning of the drainage system, snow protection planting, erosion resistance and other environment protection facilities.

The road operator will be responsible for the post-construction monitoring.

The environmental monitoring program includes the monitoring of the air, water, soil quality, noise level, efficiency of the storm water treatment facilities during the construction and operation of the road, as well as monitoring of the health of the population.

10.1. Public consultation and awareness of population

The implementation of such a big project for Northwestern part of Russia definitely should have adequate information support.

The decision on building the first section of the By-Pass from Priozerskaya highway to Moscow highway is recorded in the Decision of the Government of the Russian Federation # 305 dated March 6, 2001.

According to the Statement on the environmental impact assessment of the planned economic or other activity in the Russian Federation, which is approved by the order of Goscomecologiya dated May 16, 2000, No. 372, the Client jointly with the Designer held the public hearings and

discussions of the design solutions during meetings with the public and in the mass media and provided participation of the population in making decisions on the stage of the project preparation.

Nevertheless the Client (the state company "Directorate for Construction of St. Petersburg By-Pass Road" (Directorate)) had to prove the feasibility of this construction, its social and economic importance and ecological safety many times.

Taking into account the great interest of St. Petersburg and Leningrad region citizens as well as the mass media interest to the construction of the By-Pass road, the Public Relation Department started to work in the Directorate. The Public Reception Office is the subdivision of the Directorate. Starting from March 1, 2001 the Public Reception Office have received more than 1500 written and verbal notifications and information from the citizens of St. Petersburg and Leningrad region.

The main types of notifications are the following:

1. Information concerning the issues of the in-force environmental legislation of Russian Federation;
2. Provisions for environmental safety of the By-Pass Road construction project;
3. Questions concerning the resettlement of population living in the dwellings in the construction corridor and in the sanitary protection zone.
4. Questions concerning withdrawal of land allots for By-Pass construction.
5. Questions on the regulations for construction operations

The major amount of complaints and suggestions come from the population of Nevsky, Krasnogvardeisky, Kalininsky and Frunzesky regions of St.Petersburg, namely, from the population which interests are directly influenced by the By-Pass construction.

The most important tool for public relation activity is the Deputy's and public hearings (according to the legislation)

The Public Relation Department together with the Directorate Department for Construction Preparation and General Designer of By-Pass ZAO "Petersburg-Dorservice" carried out the following meetings:

- in the Permanent Commission on Town Planning, architecture and land issues (May 8,2001);
- in DK "Troitsky" with the citizens of the Nevsky region, St. Petersburg (May 30, 2001);
- in the Legislative Assembly of St.Petersburg (June 7, 2001)

The majority of the deputies of the St.Petersburg Legislative Assembly has responded positively to the information of the Directorate management on the progress in project implementation. The support of deputies is very important for the Project.

At the end of June – beginning of July 2001 the Directorate together with ZAO ""Petersburg - Dorservise" organized and carried out the meetings in St.Petersburg municipal units traversed by the route of the Road.

The Chief Engineer of the By-Pass Road project gives answers to the questions of the public during the hearings in Vsevolzhsky district, Leningrad region.

Since thebeginning of 2001 such newspapers as “Finasovaya Rossia”, “Vedomosti”,” “Izvestia”, “St. Petersburg Vedomosti”, “Delovoi Petersburg”, “Vechernii Petersburg”, “Nevskoe Vremya”, “Tchas Pik” (Rush Hour), “Nedvizimost Peterburga” (Real Estate of St. Petersburg) and etc. published about 300 articles on the By-Pass Road construction plans. The leading Russian and St. Petersburg journalists write about the problems of the construction of the Road, among them are the following persons: Anna Scherbakova (“Vedomosti”), Roman Romanuk (“Delovoi Peterburg”), Alexander Molokov (“Vechernii Petersburg”), Juri Trefilov (“St.Petersburg Vedomosti”, which is the most popular newspaper in St.Petersburg).

The TV channels including RTR, TV-6, and NTV pay great attention to the issues related to the By-Pass construction. The Directorate press service coordinates its activities with the press-service of St. Petersburg television (“Inform-TV”).

On May 16, 2001 the Directorate press service prepared the TV live transmission. Mr. Rudakov - expert in ecology, professor, Doctor of Technical Science and Mr. Lombas – the director of “Lengiproinzproekt” – the general designer of the part of the By-Pass traversing the Frunzensky Region- give answers to the questions of the region citizens during the live transmission on the cable TV of the Frunzensky Region.

Having realized the efficiency of this form of maintaining public awareness of the Project , the Directorate Management arranges regular live transmissions, open discussions with the citizens, explains them the importance of the By-Pass construction. For example, Mr. Tatarnikov took floor in the St. Petersburg “Radio of Russia”, “Echo of St. Petersburg”, “7th Studio” live transmission.

Mr Tratnikov’s answers to the questions of the “Komsomolskaya Pravda” and “Peterburg-Express” readers have initiated wide social resonance with detailed reports in these newspapers to follow that provided the citizens with the last information on the By-Pass construction. These publications gave answers to the most alarming questions connected with the By-Pass route line, resettlement of inhabitants, compensation procedures and etc.

Public Relation Department arranged effective cooperation with the regional mass media. Namely, “Slavyanka” newspaper, Nevsky Region, published Mr. Tratnikov’s message to the citizens of “Troizky field”. A number of articles on the resettlement of the dwellings within the corridor of the route and the sanitary protection zone as well as on the ecological situation in the region were published. The leading specialists of the Directorate took part in the preparation of these materials, namely, Mr. Rogatko (head of department for preparation of construction), Mr. N. Ivanov (The Chairman of Scientific and Technical Commission on the Ecological Safety within the framework of the Directorate, (Doctor of Technical Science, professor) and others.

The attitude of the majority of the citizens toward the construction of the By-Pass Road is positive since they experience difficult traffic situation every day. They understand that the transfer of heavy traffic out of the city boundaries should improve the ecological situation in the city.

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