

Appendix 3 Individual RoW Descriptions

List of RoW Locations Visited			
KP	River / Location	Team	Date Visited
96	NOB-17	Northern	28/9/2011
109	NOB-19	Northern	28/9/2011
22.7	Khandusa River	Northern	29/9/2011
14	Sandy slopes / fault crossing #1	Northern	29/9/2011
36 – 38.3	Access route to Askasi River	Northern	29/9/2011
62	Dagi River	Northern	29/9/2011
67	Tomi River	Northern	29/9/2011
83.2	Mali Veni access	Northern	29/9/2011
148.5 – 156	Access road from OPF to NOB-24	Northern	30/9/2011
14.9	Plelyarna River	Northern	30/9/2011
37.8	Vstrechny River	Northern	30/9/2011
41.8	Nabil River	Northern	30/9/2011
56.6	Svetly Stream	Northern	30/9/2011
65.2	Pilenga River	Northern	30/9/2011
84.2	Voskresenka River	Northern	30/9/2011
95	Tym	Northern	30/9/2011
124 – 127.7	TOB1 and Sandy Slopes	Northern	1/10/2011
143.4	Taulanka River	Northern	1/10/2011
168.6	Onor River	Northern	1/10/2011
176.2	Sedmaya River	Northern	1/10/2011
210	Fault Crossing 7 and Porvotnaya	Northern	1/10/2011
212	Pobedinka River	Northern	1/10/2011
276.6 – 277.3	Leonidovka (main stream and unnamed tributary)	Northern	1/10/2011
299	PGB 4 Block Valve Station	Southern	30 September 2011
300	Gastellovka River	Southern	30 September 2011
326.6	Nitui River - North	Southern	30 September 2011
327	Nitui River - South	Southern	30 September 2011
344	Gornaya River	Southern	30 September 2011
346.5	Vidnaya River	Southern	30 September 2011
348.8	Gar River	Southern	30 September 2011
351	Khormovaya River	Southern	30 September 2011
352	Krinka River	Southern	30 September 2011
360.4	Makarova River	Southern	29 September 2011
361.4	Solyanka River	Southern	29 September 2011
362	Sosnovka River	Southern	29 September 2011
369.6	Pegas River	Southern	29 September 2011
370.2	Lesnaya 1 River	Southern	29 September 2011
373	Madera River	Southern	29 September 2011
376	Zhelezhnyak River	Southern	29 September 2011
380.6	Lesnaya 3 River	Southern	29 September 2011

List of RoW Locations Visited			
KP	River / Location	Team	Date Visited
382	Landslide on RoW	Southern	29 September 2011
384.5	Lazovaya River	Southern	29 September 2011
465.5	Krasnaya River	Southern	1 October 2011
488.3	Primorskaya River and RoW	Southern	1 October 2011
497.2	Listvonitza River and Fault Crossing 17	Southern	1 October 2011
502	Kirpichnaya River	Southern	1 October 2011
510.5	Sovetskoye Ridge and Ai Valley	Southern	1 October 2011
511.5	Ai River and slope	Southern	1 October 2011
512	Sandy slopes	Southern	2 October 2011
532	Dolinsk Wetlands	Southern	1 October 2011
570	Vladimirovka	Southern	1 October 2011
573	Mayakoskoga	Southern	1 October 2011

KP 96 NOB-17

The NOB 17 BVS is located in a gently undulating landscape (see map).

The RoW either side of the BVS generally re-vegetating well, although significant unwanted tree growth on the RoW was also identified (see Photo 1).

A temporary diesel power generator and associated fuel day were present at the BVS (see Photo 2). These were located within a rudimentary bund, although it appeared unlikely that this would provide sufficient containment to HSESAP requirements (110% secondary containment).



Photo 1 – Re-vegetation of the RoW (note unwanted tree growth)



Photo 2 – Temporary diesel generator and fuel day tank (note rudimentary containment)



KP 109 NOB-19

The NOB 19 BVS is located in a gently undulating landscape (see map).

The RoW either side of the BVS generally re-vegetating well, and drainage controls are in good condition (see Photo 1).

The Ormat gas generator at the BVS had reportedly already been replaced (and hence there were no temporary diesel generators at the BVS)..



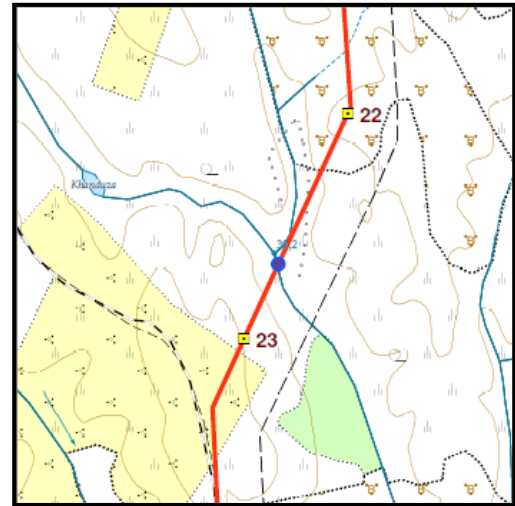
Photo 1 – Armoured drainage ditch in good condition



KP 22.7 Khandusa River

The river is crossed by the pipeline on a slight oblique angle (see map).

The river banks are protected by Reno matting which appears in good condition with some amount of growth through the matting starting to appear (Photo 1). The RoW slopes to the north show evidence of good vegetation, particularly on the lower slopes towards the river where the peat concentrations are higher, and the slope breakers appear to be functioning well. The southern bank appears to be more sandy and while limited re-vegetation is occurring in some areas and good use of Enkamat was evident (see Photo 2), some erosion/rillings was evident (see Photo 3). In places the erosion is becoming more severe with washouts behind slope breakers (Photo 4).



There was evidence that Enkamat installed by the Company for surface stabilisation on the RoW was found to have been pulled up and used as impromptu netting across the river, presumably for illegal fishing during the salmon spawning season.

Photo 1 – Reno protection on the riverbank



Photo 2 – Southern slopes with Enkamat



Photo 3 – Rilling on the Southern slope

Photo 4 – Washout behind Slope Breaker



Photo 5 – Enkamat in river



KP 14 Sandy Slopes / Fault Crossings 1

The alignment of the RoW is angled as part of the fault crossing design at KP 14 (see map)



The fault crossing area is fenced off and was found to be in tidy condition, with the running track and drainage controls in generally good condition (see Photo 1). However, some of the side cuts at the edge of the fault crossing were seen to be failing and are in need of both redesign and repair (see Photos 3 and 4).

The RoW adjacent to fault crossing was showing patchy/moderate signs of re-vegetation and slope breakers protected with coco matting were in evidence (see Photo 2).

Photo 1 – Drainage channels running track



Photo 2 – RoW showing moderate revegetation and slope breakers



Photo 3 – Failing side cut

Photo 4 – Failing side cut



KP 36 – 38.3 Access Route to Askasi River

The access and RoW is along a very sandy undulating stretch with sparse vegetation (see map).

The pipeline RoW is gently sloped from east to west along this stretch with pronounced run-off evidence across the slope and the lack of vegetation growth is resulting in several areas of silt run-off (Photo 1) and erosions rills forming (Photo 2).

The upland slopes on the approach to the river itself, also show a lack of vegetation, although slope breakers have been installed to a good standard help reduced siltation effects (see Photo 3).

The areas immediate adjacent to the river are well vegetated

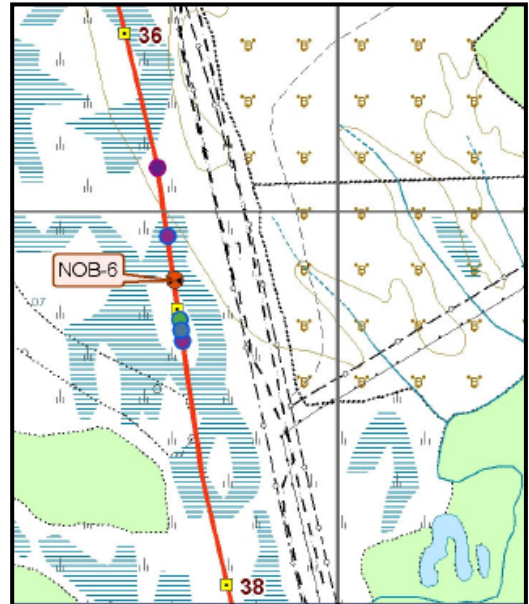


Photo 1 – lack of vegetation



Photo 2 – Erosion rills forming



Photo 3 – Slopes breakers on the approach to the river

Photo 4 – Good revegetation of the riverbanks



KP 62 Dagi River

The river crossing is a straight forward perpendicular crossing, although the river valley also contains some ox-bow lakes and low-lying marshy ground (see map).

The northern approach to the crossing was very wet but appeared to be showing good signs of re-vegetation (snow on the ground at the time of visit limited the level of visual inspection that could be undertaken see Photo 1).

Good vegetation of the riverbanks was also identified, although significant tree growth was also identified that will require control.



Photo 1 – Vegetation growth on the north approach



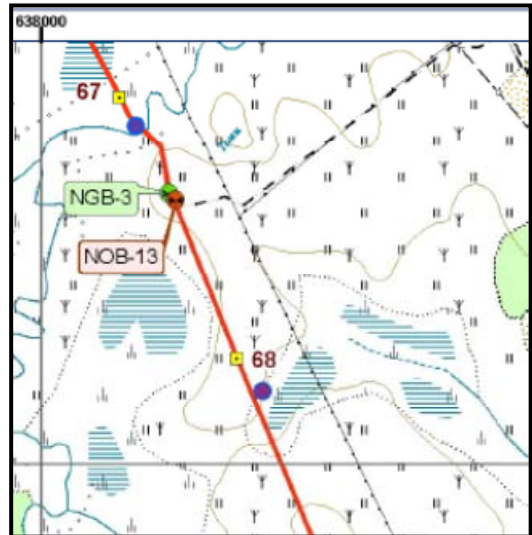
Photo 2 – Riverbank re-vegetation (including tree growth)



KP 67 Tomi River

The Tomi River crossing lies in a flat meander of the river in undulating topography (see map).

The riverbanks are protected by reno mats. These appear to be in reasonable condition with some vegetation now growing through the mats, although snow cover made visual inspection difficult (Photo 1).



The southern approach to the river crossing area was snow-covered, although it appears, although re-vegetation was clearly visible through the snow, it was not possible to judge the overall level of recovery (Photo 2). A wetland area lies to the north of the river crossing. This area could not be accessed for close inspection, but even from a distance the crowns on top of the pipelines were clearly visible (see far side of river in Photo 1). We note that this wetland area is on the list of wetlands identified by Sakhalin Energy for ongoing recovery monitoring.

Photo 1 – Bank protection and vegetation (note visible pipeline crowns)



Photo 2 – Snow-covered RoW with some visible vegetation



KP 83.2 Mali Veni Access

The Mali Veni access was walked from NOB14 down towards KP83, the topography being a long sandy slope down to the river valley. Access to the main river was prevented by a tributary river that could not be crossed at this time (see map).

Vegetation at the top of the hill is sparse (Photo 1), although at this site there is no evidence of erosion features forming and the slope breakers are in place and in good condition (Photo 1). The vegetation growth improves further down the hill and is good in the river valley area where there is more peat and organic matter in the soil (Photo 2).



Reno mats are in place on both riverbanks and appear in good condition with vegetation growing through the mats (Photos 3 and 4).

Photo 1 – Sparse vegetation on hill tops



Photo 2 – Good vegetation in river valley



Photo 3 – Reno mats on the southern riverbank

Photo 4 – Reno mats on the northern riverbank



KP 65.2 Pilenga River

The river is approached from TOB-01 along a gravelly river valley with the crossing going over three shallow river channels (see map).

The river banks are in good condition with silting of the bank encouraging growth and bank stabilisation (Photos 1), the river bed appears clean and gravelled.

The approach to the river is partially re-vegetated with a reasonably healthy looking cover coming through (Photos 2). In some areas significant unwanted tree growth was identified (see Photos 1 and 3)



Photo 1 – Riverbank re-vegetation



Photo 2 – Re-vegetation RoW



Photo 3 – Tree growth on the RoW



KP 56.6 Svetly Stream

The river crossing is situated in gently undulating hills with sandy soils (see map).

The river crossing is protected by rip-rap and was in very good condition, with natural re-vegetation growing through the rip-rap, and the river was seen to be running clean with no evidence of silting (Photo 1).

The re-vegetation is good close to the river on the lower slopes (Photo 2) and moderate on the upland slopes (Photo 3).

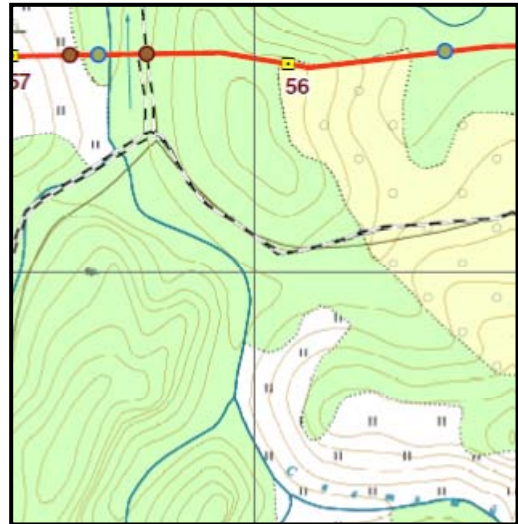


Photo 1 – Svetly Stream banks



Photo 2 – RoW adjacent to river



Photo 3 – Upland slopes above the river



KP 41.8 Nabil River

The Nabil River crossing involved blasting through the bedrock across the river and taking a notch in two slopes to the south-west and north-east (see map).

At the time of the site visit both the northern and southern slopes were snow covered, making visual observation of the condition of the RoW impossible.

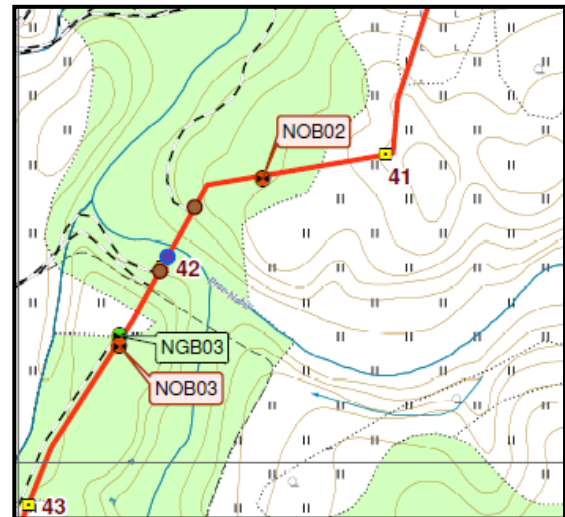


Photo 1 – North facing Scree Slope



KP 37.8 – Vstrechny River

A small but fast flowing river set in a steep valley (see map).

Due to the steep nature of the crossing and the problems of slope stability, the toes of slopes along the river are controlled through gabions (Photo 1). These all appear in good condition with the wiring holding well and no signs of movement at the toe.

The slopes on either side of the river were heavily snow covered making visual observation of condition impossible (Photo 2).



Photo 1 – Gabion engineering at toe of slopes



Photo 2 – Snow covered slopes



KP 14.9 Plelyarna River

A relatively low-flow river situated some 200 m to the north east of NOB-01 (see map).

The river banks were in good condition on the RoW with Reno mats holding well with signs of growth visible along the bank despite snow coverage (Photo 1). The river appears clean and silt free and the riverbed at the crossing location comprised clean gravels of a similar nature to upstream areas (Photo 2).

Snow cover on the adjacent slopes made visual inspection of the condition difficult, but it appeared that re-vegetation was likely to be sparse (Photo 3).

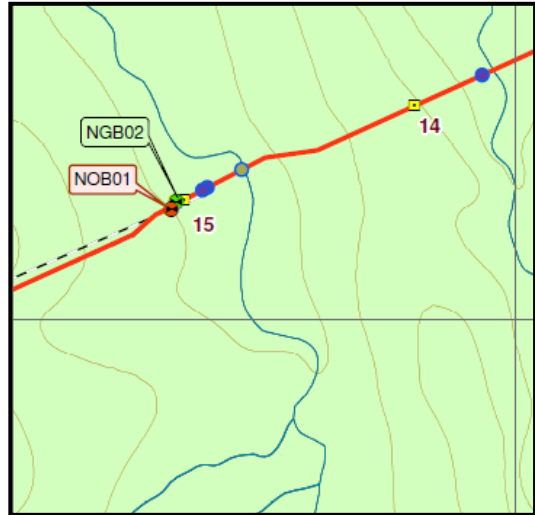


Photo 1 – Reno mats signs of re-vegetation



Photo 2 – Scour upstream on east bank

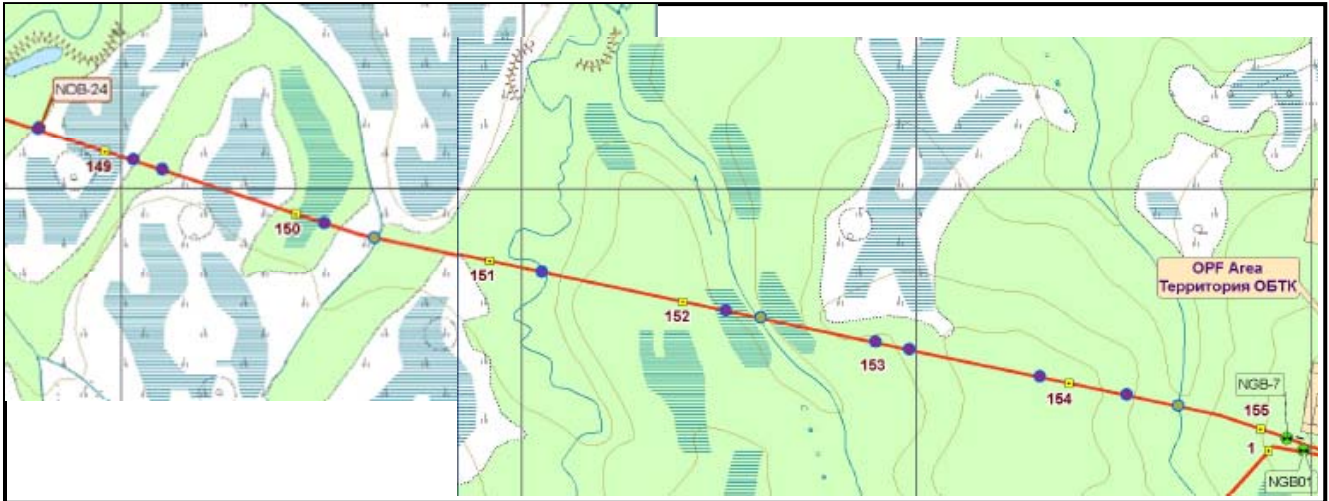


Photo 3 – Snow-covered RoW



KP 148.5 to 156 RoW

This is the access road from the OPF to NOB-24 running through a mixture of low lying peat areas and sandy raises. The road also includes the crossing of the Orkunie river at KP151.3



(see map).

The RoW was generally seen to be re-vegetating well (Photo 1), although in places tree growth was evident that will need to be controlled. Although the access road is in good condition and well maintained, visual inspection in the peat bog areas indicates apparent interference of the groundwater and surface water flows across the access road whereby the southern side is noticeably drier than the northern. The adequacy of cross drainage (e.g. culverts) under the access road will require future monitoring.

Some subsidence over the pipelines was noted within the peat areas with one notable hole having opened up.

The bridge placed over the Orkunie river to allow permanent access to NOB-24 is in generally good condition. However, it was noted that there is no silt protection either on the running area of the bridge or on the parapets which, combined with the open slats between the wood, has the potential to lead to material dropping into the river during vehicle transit. It is recommended that geotextile is placed on the bridge and a form of silt fencing lining the edges (see Photo 2). In addition some debris trapped under the bridge requires removal (Photo 2).

Photo 1 – South road RoW vegetation	Photo 2 – Bridge over R Orkunie
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KP 84.2 Voskresenka River

KP 84.2 is small river crossing in low-lying undulating terrain just to the east of the village of Voskresenka (see map).

The river bank is in good condition with Reno mats on both banks holding well and some vegetation growth through the reno mats was visible despite some snow coverage (Photo 1).

The RoW is showing sparse to moderate vegetation growth in the low lying areas (Photos 2 and 3) and this will require some attention in the form of continued fertilisation to ensure improved growth over the next few growing seasons.

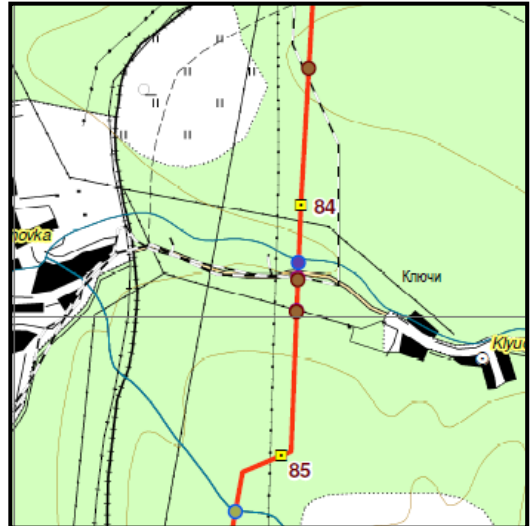


Photo 1 – Reno matting in good condition



Photo 2 – Moderate/sparse vegetation growth on the RoW



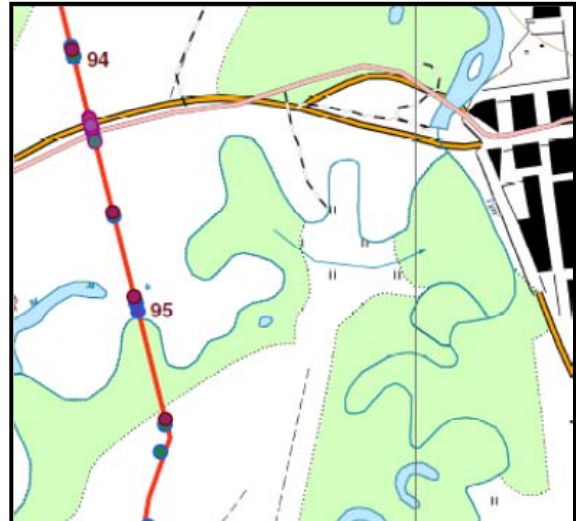
Photo 3 – Moderate/sparse vegetation growth on the RoW



KP 95 Tym River

A river crossing in the flat area of the flood plain to the west of Tymovskoe (see map).

The northern bank of the river (outside curve of the meander) is protected by gabions, through significant vegetation is now growing (Photo 1). The southern bank has Reno matting now covered in silt and is also showing natural re-vegetation (Photo 2). At the time of the visit there were no concerns over the river bank condition at this crossing.



Re-vegetation along the RoW on the northern approach to the river is general good (Photo 3). Some tree growth was noted on the southern bank that will require control (Photo 1). Some pooling of standing water was identified over the pipelines (Photo 4).

Photo 1 – Vegetation covered gabions on north bank



Photo 2 – View to south bank



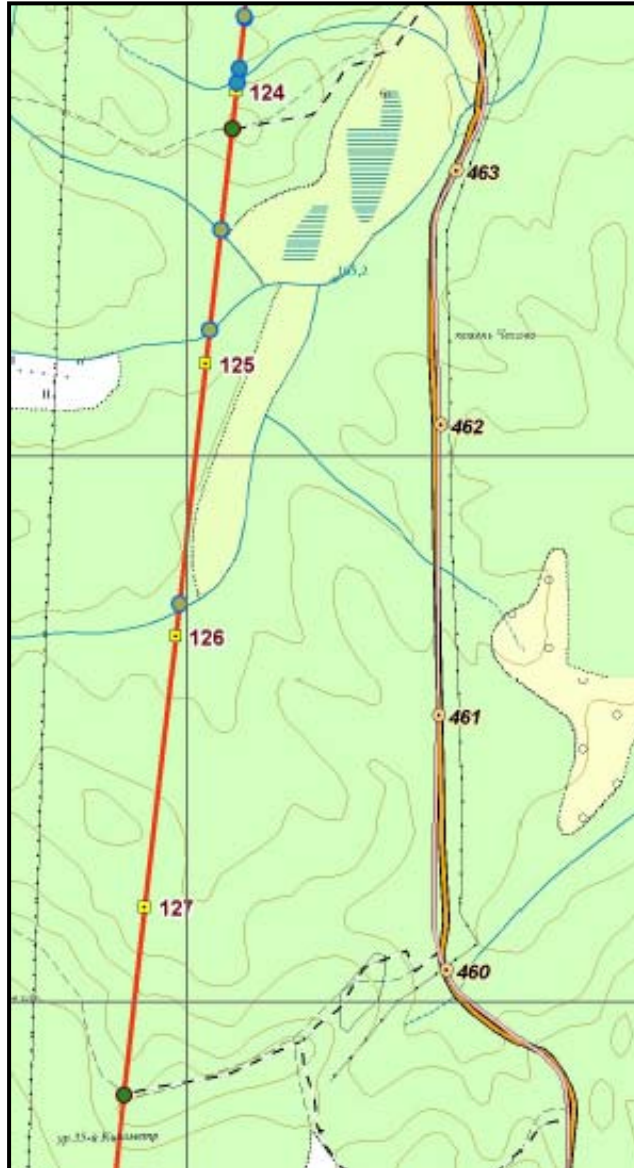
Photo 3 – Re-vegetation on north approach

Photo 4 – Pooling over the pipeline north of the river



KP 124 to 127.7 Sandy Slopes and BVS TOB-1

The RoW runs through an area of undulating sandy hills interspersed with low-lying peat-rich areas (see map).



This area had been a problem during the construction period with wash-outs and erosion difficult to control. It was noted during this visit that the slopes had held up reasonably well with the slope breakers still in place but only moderate signs of vegetation growth under snow coverage (Photos 1 and 2). However, in common with the other sandy areas visited, there

was evidence of erosional features with erosion rills formed in areas of barren growth (Photo 3), and silt and sand build up behind slope breakers (Photo 4).

The sparsely vegetated areas of the slopes will need further re-seeding and fertilisation to try and create a long-term solution to the erosion, while in the short-term repairs and maintenance will be required for the engineered areas of the slope.

A temporary diesel power generator and associated fuel day were present at the BVS (see Photo 5). These were located within a rudimentary bund, although it appeared unlikely that this would provide sufficient containment to HSESAP requirements (110% secondary containment).

Photo 1 – Slopes looking north to TOB-1



Photo 2 – Photo looking south



Photo 3 – Erosion rills in barren soil



Photo 4 – Slope breakers with evidence of siltation



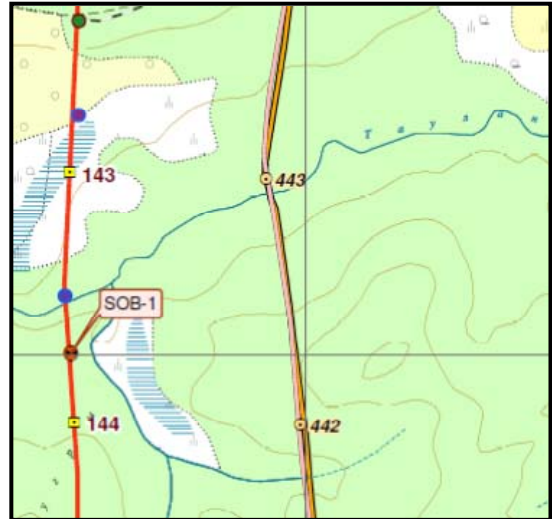
Photo 5 – Temporary generator at TOB1



KP 143.4 Taulyanka River

A river crossing in an area of low undulating topography with many peat-rich sections (see map).

Heavy snow coverage made visual inspection of the RoW into the river difficult, but significant re-vegetation was identified (Photo 1). However, this include tree growth, including some very tall growth that had evidently taken multiple seasons to grow and which is in urgent need of control (Photo 2).



The river crossing was in good condition with both banks showing vegetation over the Reno mats placed during construction (Photo 3). The crossing was in good condition. Some water pooling was identified over the pipeline on the southern approach to the river and this will require monitoring (Photo 4).

Photo 1 – Significant tree growth on RoW



Photo 2 – Significant tree growth on RoW



Photo 3 – Re-vegetation of river banks

Photo 4 – Water pooling of the pipelines



KP 168.6 Onor River

A river crossing at the base of a gravelly hill on the western outskirts of Onor town (see map).

Moderate-sparse levels of vegetation were visible through the snow cover on the slope down to the river was sparsely vegetated (Photo 1) but was holding well with the slope breakers in reasonable condition (Photo 2). Further work is going to be required to encourage and maintain growth on the slopes, it was noted that clover, rather than grass seemed to be establishing better.



The river banks were both in good condition with the Reno matting holding well and starting to show signs of natural re-vegetation showing through, although control of tree growth is required (Photos 3 and 4). The river was running clean and the river bed looked to be in good condition.

Photo 1 – Barren slope down to the river



Photo 2 – Slope breaker in good condition



Photo 3 – Northern bank re-vegetation

Photo 4 – View to southern bank



KP 176.2 Sedmaya River

The RoW crosses the river just upstream of a small meander, shown in Photo 1. Both banks are protected with Reno mats – these are in good condition although remain largely unvegetated at present. Vegetation on the southern slopes is patchy although visual inspection was hampered by snow coverage (Photo 2). Vegetation on the slopes north of the access road appeared to be of a similar level (Photo 3).



Photo 1 – Meander, towards southern bank



Photo 2 – Southern slope



Photo 3 – Slopes north of access road



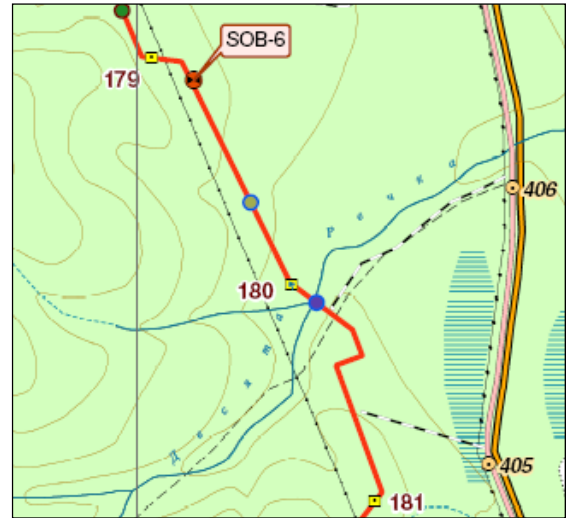
Photo 4 – Riverbank in good condition



Fault Crossing 7 and R Porvotnaya

The fault crossing area was found to be in generally good condition, including the running tracking and drainage controls (Photo 2). The side cuts are thought to have previously been hydro-seeded, and evidence of old and new vegetation was noted (Photo 1).

The original (re-routed) RoW (Photo 3) was very sparsely vegetated, with very poor topsoil and only a few shoots. We understand that this area will be reforested back to its former state by the forestry authorities.



In addition, the gates securing the highly engineered fault crossing were stolen in 2010 and it is disappointing to note that these have remained un-replaced for over a year.

The river Porvotnaya was found to be in good condition, as was the bridge over the river (which leads to the BVS) which included good sediment control (Photo 4).

Photo 1 – Revegetation on side cuts



Photo 2 – General view of fault crossing



Photo 3 – Re-routed RoW



Photo 4 – River Porvotnaya and bridge



KP 212 Pobedinka River

Revegetation of the southern approach to the Pobedinka River was seen to be very good (see Photos 1 and 2).

The southern bank of the Pobedinka River has been recently re-engineered following damage during the spring flood and the works appear to be of a good standard (Photo 3). Substantial new rip-rap has been installed upstream of the gabions in an attempt to prevent future undercutting of the gabions. We note that the rip-rap is of a substantial size (Photo 4), but nonetheless ongoing monitoring of the stability of the bank will be required. Significant bank undercutting is visible downstream of the gabions (Photo 5) and potential impacts on the gabions will also require ongoing monitoring.



Photo 1 – Established vegetation along RoW



Photo 2 – Established vegetation along RoW



Photo 3 – Gabion wall



Photo 4 – New rip-rap installation



Photo 5 – River undercutting outer bank



KP ~276.6 Unnamed Stream near Leonidovka River

The Leonidovka River was access by fooding the unnamed stream between the BVS (POB-3) and Leonidovka.

The Leonidovka underwent major engineering works in 2011 during which the western eroding bend was afforded new rip-rap protection (Photo 1). The rip-rap used was found to be of a substantial size (Photo 2) and was place on both failing reno mats and beyond the edge of the RoW to prevent future back-cutting of the renos. A gabion wall is installed on the southern, which is set back from the river edge and appears to be in good condition. A tributary to the river on the western side of the river crossing has been protected by rip-rap and appears to be in good condition (Photo 4).



Good re-vegetation was identified on the northern approach to the river (Photo 5) except very close to the river.

Photo 1 – New rip-rap installation



Photo 2 – New rip-rap installation



Photo 3 – Southern riverbank with gabion wall



Photo 4 – Rip-rap protection of tributary



Photo 5 – Re-vegetation on RoW



KP 299 PGB 4 and adjacent RoW

The block valve station was visited to view the operation conditions of the temporary power generator and fuel day tank. Currently there are several of these among the block valve stations due to failure and subsequent replacement of the dedicated gas operated Ormat power generation units. During the 2010 visit it was observed that the temporary units did not have secondary containment for the fuel day tanks and leak protection for the generators. During the current visit it was observed that the fuel tank had secondary containment and that the generator was situated above drip trays (Photo 1). The RoW at the vicinity of the block valve was re-vegetated however thin in spots (Photos 2 and 3).



Photo 1 – Temporary generator on drip trays and a fuel tank



Photo 2 – View south showing thinly vegetated RoW

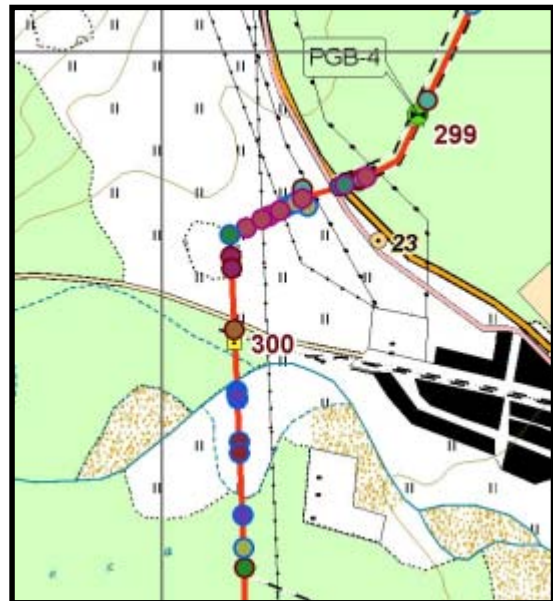


Photo 3 – View to north showing vegetated RoW



KP 300 Gastelovka River

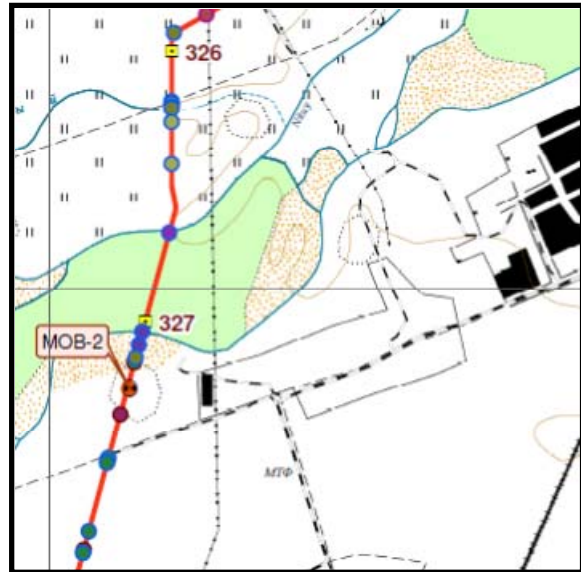
The Gastelovka river is a high energy braided river with multiple channels. The river banks experienced damage during the 2009 typhoon season and were repaired. Since then, the channels did not require further repair. The bank of the northern channel (currently the minor channel) is well fortified against the RoW to the north with Reno mattings which are in good condition (Photo 1). Further south the larger main channel is also fortified with Reno matting on the south bank (Photo 2). The Reno matting on the southern channel appears intact. It was not possible to cross the river to view the southern channel in more closely. The RoW north and south of the river is well vegetated (Photos 2 and 3).



<p>Photo 1 – View of the Reno matts on the north bank of the northern channel.</p> 	<p>Photo 2 – View across the river showing Reno matts on the south bank.</p> 
<p>Photo 3 – View north from Gastelovka River showing well vegetated RoW</p> 	

KP 325.5 Nitui River North

The Nitui River is a high energy, multi channel braided river. The river banks suffered damage and erosion during the 2009 typhoon season – see June 2010 visit report. Since then the banks protection had been repaired. At the time of the current visit to the north boundary of the channel it was possible only to reach a minor channel at the north end and to view the main channel only from a distance. The northern most channel showed good bank protection consisting of Reno matting in good condition and good re-vegetation on the banks (Photos 1 and 2).



From a distance it was possible to see only the top of the substantial bank fortification on the main northern channel (Photo 1). The overall braided river character of the Nitui River could be seen from an elevated terrace east of the crossing (Photo 3). The RoW north and south of the northern most channel showed very good re-vegetation of grass and other plants (Photos 4 to 6).

Photo 1 – View south at the bank fortification on the main northern channel



Photo 2 – Close up on the south bank showing Re Reno matting in place and re-vegetation.



Photo 3 – View from above of the Nitui North Channel east of the crossing



Photo 4 – View to the north showing very good re-vegetation of the RoW



Photo 5 – Close up of re-vegetation on the RoW



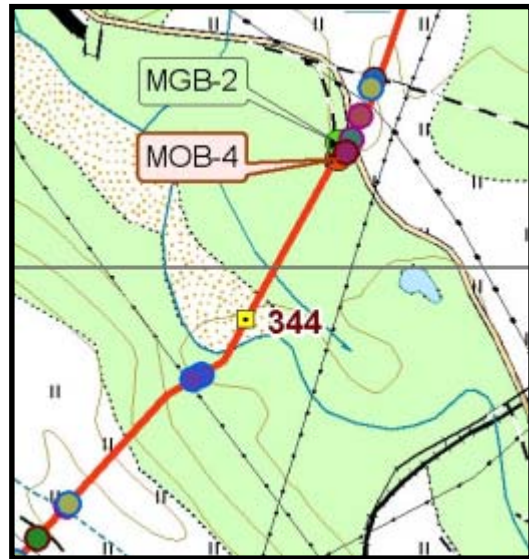
Photo 6 – View of a RoW slope north of the Nitui with good re-vegetation



KP 344 Gornaya River

The Gornaya River is a large meandering River with a tight meander just upstream of the pipeline crossing. During the 2009 typhoon season the river jumped the bank on the upstream meander and was flowing across the RoW north of the crossing. Both the gas pipeline and the FOC was exposed during that time and the situation was treated as an urgent repair by SEIC.

Since then, the upstream bank was fortified with heavy riprap (Photo 1) and a fortified overflow channel was constructed across the RoW (Photo 2). Since the visit in June 2010 additional work was conducted on the upstream meander and the bank fortification was extended further east towards the river crossing.



The crossing itself appears intact and the south bank is protected by a gabion wall (Photo 3). During the current visit significant change in vegetation on the RoW was observed. In the 2010 visit there was a sparse vegetation cover on the RoW. However during current visit there was mostly dense vegetation cover of grass, bushes and tree saplings (Photos 3 and 4). The saplings are reportedly Alder and form a dense ground cover. However the presence of the saplings will need to be addressed in the near future.

Photo 1 – View of the upstream fortified bank



Photo 2 – View of the overflow channel



Photo 3 – View to the south showing gabion wall protection and very dense vegetation of saplings on the slope across the river.



Photo 4 – View of the RoW north of the crossing showing dense coverage of saplings.



KP 346.5 Vidnaya River Slope

The Vidnaya River has a very long and steep southern slope of poorly consolidated material. In the previous visit, the slope was almost devoid of vegetation cover and showed signs of erosion in places. However, during the current visit the slope was densely vegetated with grass and tree saplings (Photos 1 to 3).

A previously used access track along the centre of the slope which previously was used to provide access from the top ridge to the bottom of the slope is now well protected with fortified slope breakers and with a beginning of re-vegetation (Photos 1 and 3).



The presence of dense coverage of tree saplings will need to be addressed by SEIC in the near future.

Photo 1 – View to the north of the re-vegetated RoW with fortified slope breakers.



Photo 2 – View to the north showing a dense coverage of tree saplings



Photo 3 – A close up view of the fortified slope breakers and tree saplings on the slope.



KP 348.8 Gar River Slopes

The Gar River slopes were observed from the north Slope only due to weather concerns and access road condition. The Gar crossing was damaged during the 2009 typhoon season but has since been repaired. The north Slope appeared to be in good condition and reportedly the river crossing itself held well during the last spring and summer. The slope was well vegetated with grass and saplings and access track from the last repair activity had been protected with fortified and reseeded slope breakers (Photo 1). On some of the slope breakers there is already good evidence of re-vegetation. The southern slope was also observed (short of the very bottom portion) and appears to hold well in the central and upper portions. A recent daily report that was provided by SEIC indicates that there was a slope movement on the oil and the gas pipe trenches at the lowest most part of the southern slope and that it was repaired. The southern slope is only partially vegetated and there is a need to continue seeding slope and seeding and protecting the side cuts (Photo 2).



Photo 1 – View to the south of vegetated RoW with fortified slope breakers on the access track.

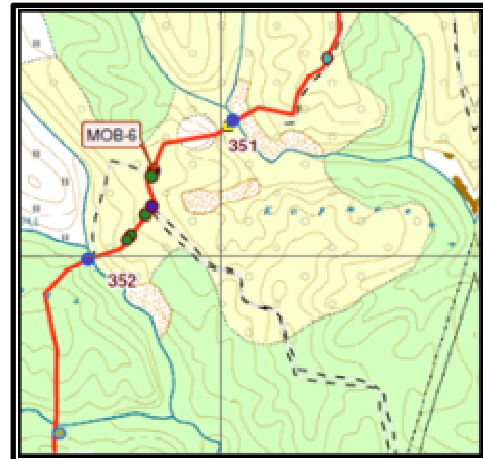


Photo 2 – View to the south showing a partially vegetated south slope. The slope is covered in green vegetation and brown soil, with a road visible in the foreground.



KP 351 Kormovaya River and Slopes

The Kormovaya River crossing was observed from the southern slope. The crossing appears to be holding well and the banks are protected by gabion walls (Photo 1). The silt fencing above the gabion walls on both banks is in urgent need or repair/replacement due to slopes almost devoid of vegetation.



The southern slope is vegetated well at the upper reaches but has almost no vegetation in the steep central and lower portions as well as the side cuts. A significant failure (Photo 2 and 3) at the central section of the south slope has not been repaired since last year's visit but it hadn't visibly moved since then. Reportedly, it is on the repair list.

The northern slope is also almost devoid of vegetation almost to the top (Photo 3). Both slopes are in urgent need of further bio-restoration. The upper part of the south slope and the RoW to the top where the MOB 6 block valve is situated is well vegetated (Photo 4



KP 352 Krinka River and Slopes

The Krinka River crossing was observed from the northern slope. The crossing appears to be holding well and the banks are protected by extensive Reno matting (Photo 1). Both slopes are well vegetated in strong contrast to the condition the year before (Photos 1 and 2). Towards the upper part of the north slope there are many tree saplings. The saplings also concentrate on the slope breaker as seen in Photo 3. The RoW between the north slope and block valve MOB 6 is well vegetated (Photo 4).



KP 360 Makarova River

The Makarova River is a wide high energy river which during heavy rains and the thaw season flows with high volume. The river banks are protected by gabion walls. Since last year's visit, the north bank gabion wall was completed and the temporary bridge foundation removed (Photos 1 and 3). The north bank gabion wall has sustained some damage on the upstream portion during the recent thaw season and reportedly is scheduled for repair (Photo 2). The south bank gabion wall is in tact and silt fence above the wall is damaged (Photo 4).



The slope north of the river crossing (the southern most reach of Pulka Valley) is well vegetated (Photo 3). The RoW south of the south bank gabion wall is partially vegetated due its use as a staging area for river crossing repairs. Further south the RoW is well vegetated.



KP 361.4 Solyanka River

The Solyanka River approaches the crossing with the RoW in parallel to the RoW. SEIC constructed gabion lined channel to protect the RoW eastern edge (Photos 1 and 2). Since last year's visit more work was performed to strengthen the upstream edge of the protection channel. Heavy riprap was added upstream of the gabion wall (Photo 2).

During the visit, the channel was intact. Banks of the river crossing itself are protected with riprap and appears to be in good shape (Photo 3). The RoW on both sides of the river is densely re-vegetated with grass.

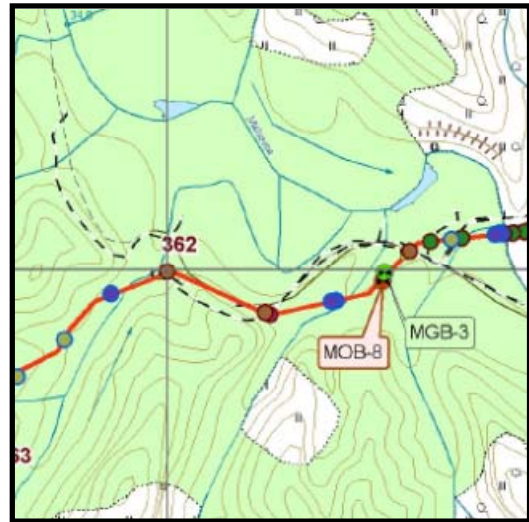


Photo 1 – View of the river channel prior to the crossing where the river flows in parallel to the RoW. The channel is protected with gabion walls.



Photo 2 – View to upstream of the river channel prior to the crossing where the protective gabion walls start. The heavy riprap is a new addition.



Photo 3 – View of the river crossing with riprap lined channel and good re-vegetation.



Photo 4 – View south towards the MOB 8 block valve showing good re-vegetated.



KP 362 Sosnovka River

The Sosnovka River crossing includes the river and adjacent tributary to the north. The tributary crossing is protected with riprap and is currently heavily re-vegetated. The banks at the river crossing are protected with gabion walls and Reno matting which appear in good conditions.

The RoW north and south of the crossing is densely re-vegetated with grass and other plants – some of which reach a meter or more in height.



Photo 1 – View downstream showing Reno matting, gabion walls and the dense vegetation.



Photo 2 – View to the upstream showing Reno matting and gabion walls.



Photo 3 – View to the south along the RoW showing dense and tall vegetation.



Photo 4 – View to the north along the RoW showing dense and tall vegetation.



KP 370 Pegas River

The Pegas River crossing banks are protected by Reno matting and gabion walls, and silt fencing is intact (Photos 1 and 2). The RoW on each side of the crossing is densely re-vegetated (Photos 3 and 4). The slope above the river and MOB 10 block valve is also very well vegetated (Photo 4) as compared to last year.

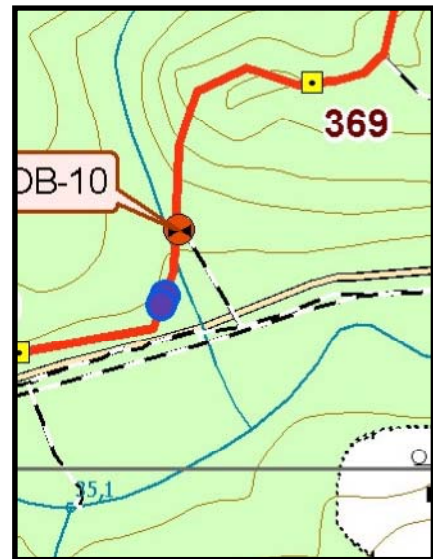


Photo 1 – View upstream showing Reno matting and gabion walls. Also note the dense vegetation.



Photo 2 – View downstream showing Reno matting, gabion walls, and dense vegetation.



Photo 3 – View of RoW to the south of the crossing showing dense re-vegetation.



Photo 4 – View north at the slope above the Pegas showing good re-vegetation.



KP 370.2 Lasnaya 1 River

The Lasnaya 1 River crossing is protected by Reno mattings and a gabion wall on the north bank. The south bank consists of natural river gravel deposits on top of Reno matting. The RoW on both sides is densely vegetated.

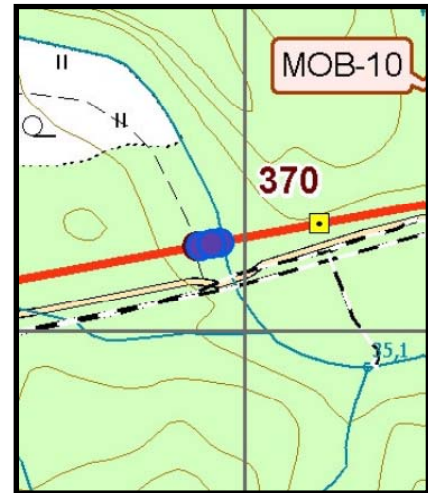


Photo 1 – View of the river crossing to the upstream showing Reno matting and a gabion wall on the north bank. The south bank consists of natural river gravel deposits on top of Reno matting. Dense vegetation is visible on the north bank.



KP 373 Madera River

The river crossing is protected by gabions on the south bank and Reno matting on the north bank. During the 2009 Typhoon season the bank protection was damaged but since then repaired and appears in good condition (Photos 1 and 2).

The RoW on each side of the river is densely vegetated (Photos 3 and 4). The south slope was repaired since last year's visit and shows repair surface and improved drainage control (Photo 3).

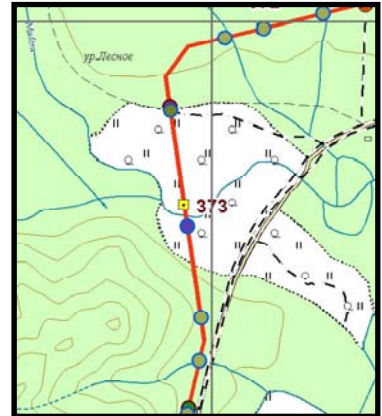


Photo 1 – View upstream showing Reno matting on the north bank and gabions on the south bank.



Photo 2 – View downstream showing Reno matting on the north and gabions on the south.



Photo 3 – View of slope showing repaired slope and well vegetated RoW.



Photo 4 – View north showing well vegetated RoW.



KP 374 RoW

RoW along the road in Lasnaya Valley has a very good vegetation cover.

Photo 1 – View to the north east of the RoW along an access road in Lasnaya Valley. Note the good vegetation cover.



KP 376 Zhelezhnyak River

The Zhelezhnyak River crossing was damaged during the 2009 Typhoon season and was since then repaired. The banks are protected by gabion walls and Reno matting and appear in to be good condition (Photos 1 and 2).

The RoW slope south of the crossing held well and the RoW on both sides the crossing is very well vegetated (Photos 3 and 4).

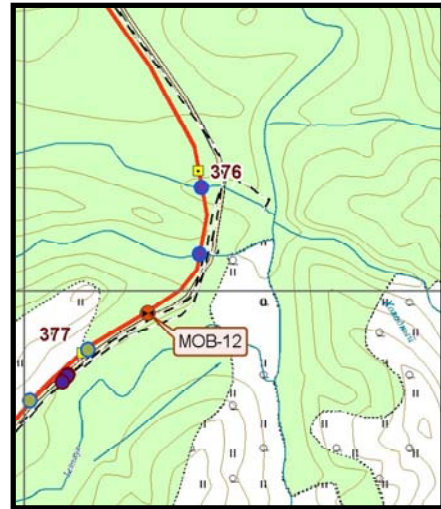


Photo 1 – View upstream of the river crossing showing Reno matting and gabion walls.



Photo 2 View downstream of the river crossing showing Reno matting and gabion walls.



Photo 3 – View of slope south of the crossing with very dense vegetation cover.



Photo 4 – View of the RoW north of the crossing with very dense vegetation cover.



KP 377 Chinarka River

The Chinarka River crossing is protected by Reno matting on both banks (Photo 1). The RoW on each side of the river crossing is densely vegetated (Photos 2 and 3). The bridge has no sediment control but some of the supporting posts are in place (Photos 2 and 3).

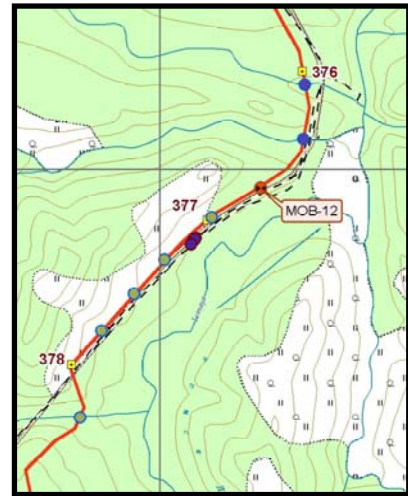


Photo 1 – View to the upstream of the river crossing showing Reno matting.



Photo 2 – View to the north showing dense vegetation cover.



Photo 3 – View to the south showing dense vegetation cover.



KP 380.6 Lasnaya 3 River

The Lasnaya 3 River crossing is well protected on both banks with Reno matting on the north and Reno matting and gabion wall on the south ((Photos 1 and 2).

The RoW on both sides of the crossing has good vegetation cover (Photo 3). The south slope is also well vegetated but with partially bare side cuts (Photo 4). The silt fencing on the south side is in need of repair.



KP 382 Landslide on RoW

Recent landslide at KP 382 on the west side of the RoW is currently being repaired. The project is classified as Category 3 repair work and is executed directly by SEIC. The works include stabilization of the side slope using gabion walls and geotextile and construction of a drainage system (Photos 1 to 3).

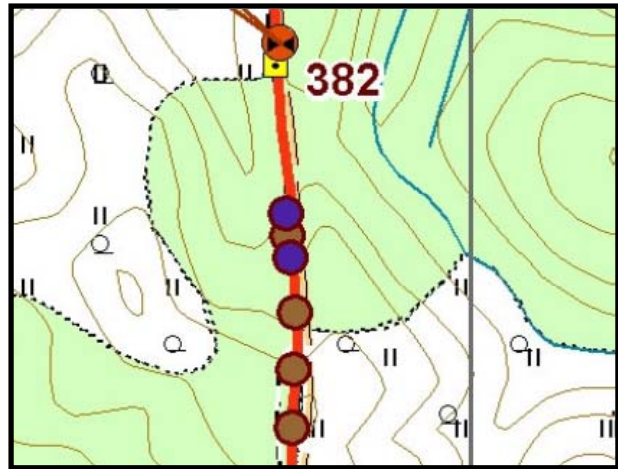


Photo 1 – View gabion walls and drainage channels.



Photo 2 – View of gabion wall and drainage channels



Photo 3 – View of terracing and geotextile during on going work.



KP 384.5 Lazovaya River

The Lazovaya River crossing is well protected with Reno matting and gabion walls on both banks (Photo 1). The bridge on the access road has good permanent sediment control (Photo 1). The slopes on both sides of the river have dense vegetation cover (Photos 2 and 3).

Reportedly, the bridge is now scheduled to stay as a permanent access point.

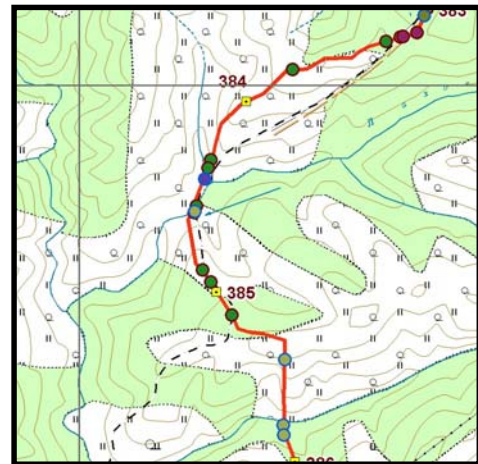


Photo 1 – View to the downstream showing gabion walls and Reno matting. Note good sediment control on bridge.



Photo 2 – View to the north showing slope with good vegetation cover.



Photo 3 – View across the river showing the RoW on both sides with good vegetation cover.



KP 466 Krasnaya River

The Krasnaya River crossing has a long steep slope which is protected by slope breakers on the south side and Reno matting protection on the banks. At the time of the visit, the slope appeared to be well vegetated and in tact (Photo 1). The RoW on the north side of the river and north of the railroad and federal highway is also well vegetated (Photo 2).

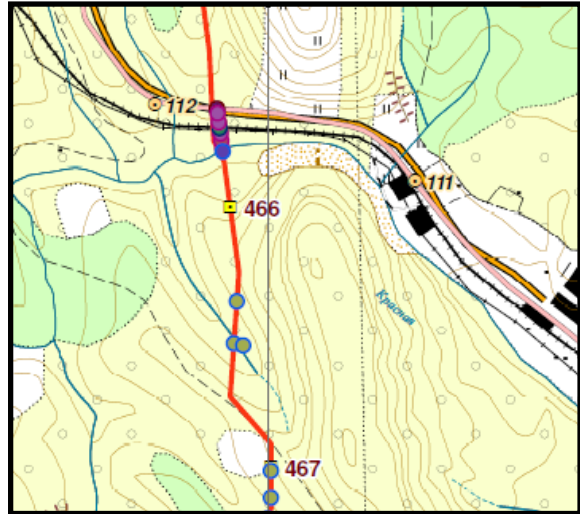


Photo 1 – View to the south showing well vegetated slope and river crossing



Photo 2 – View to the north showing well vegetated RoW.



KP 488.3 Primorskaya River

The Primorskaya River banks are protected with Reno matting. The river banks are partly vegetated and a silt fence on the south bank is in need of repair. The south slope is heavily protected with fortified slope breakers but is still poorly vegetated (Photo 1). The north slope is mostly vegetated (Photo 1). The RoW south of the river and north of MOB-4 is poorly vegetated (Photos 2 and 3). Although there is a marked improvement since last year's visit, more needs to be done in this area in order to improve the bio-restoration.



Photo 1 – View north showing mostly vegetated north slope and poorly vegetated south slope.



Photo 2 – View north showing poorly vegetated RoW and repaired slope breakers.



Photo 3 – View north showing minor drainage crossing and partially vegetated RoW.



Photo 4 – View of side cut retaining wall next to DOB-4 on the approach to the river.



KP 498 Listvenitsa River

The Listvenitsa River crossing is located south of Fault Crossing No. 17. The river banks are protected by Reno matting and are well vegetated (Photo 1). The RoW to the south has a dense vegetation cover. The slope to the south is also well covered but shows an erosion channel next to the east side cut (Photo 2). Reportedly, this feature is already on the repair list.



Photo 1 – View of the river channel showing good bank vegetation and Reno matts.



Photo 2 – View south showing vegetated south slope with an erosion channel on the east side .



Photo 3 – View north at the beginning of the fault crossing area.



KP 502 Kirpichnaya River

The Kirpichnaya River crossing is well protected with Reno mats and the banks are very well vegetated (Photos 1 and 2). The slopes on both sides of the river are well vegetated and appear to be holding well. A meander of the river on the downstream side is impacting the RoW on the east side and is under observation by SEIC.



Photo 1 – View upstream showing good vegetation on the Reno matting covered banks.



Photo 2 – View to the north showing vegetated slope.



Photo 3 – View to the south showing well protected and vegetated slope



KP 510.5 Sovietskoy Ridge and Ai Valley RoW

The Sovietskoy Ridge had soil stability problems during construction. Since then, a specific soil drainage and slope stability design was implemented using a specialist contractor (Photos 1 and 2). During the last two years the ridge appears to be holding well. The Ai River Valley which extends between Sovietskoy Ridge and the Ai River channel is very well vegetated and is being used as a pasture for live stock (Photo 3).

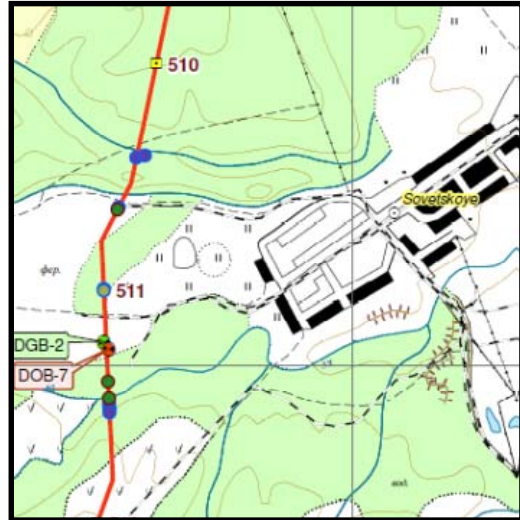


Photo 1 – View of the ridge slope with good vegetation and slope breakers



Photo 2 – View of the ridge with a drainage outlet at the base.



Photo 3 – View of the Ai River Valley showing good vegetation on pasture land



KP 511.5 Ai River

The Ai River crossing is protected with Reno matting. The mattings are now fully vegetated. The slope south of the crossing is well protected with slope breakers and has good vegetation cover (Photos 1 and 2).

The Ai Valley to the north of the crossing is well vegetated.

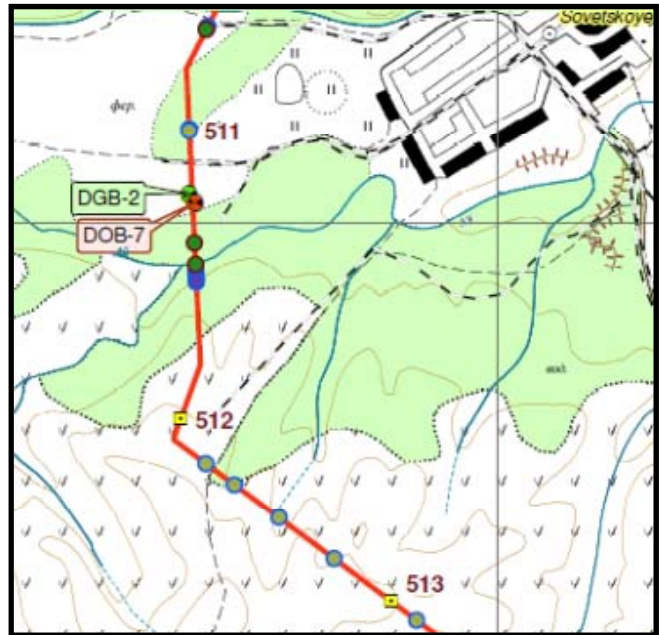


Photo 1 – View to south of the crossing showing good growth on the banks and the slope.



Photo 2 – View to upstream showing good vegetated banks.



KP 512 Sandy Slopes RoW

The sandy slopes between the Ai River and Fault Crossing Number 19 show an improvement over observations from last year. Vegetation is denser but in places there is partial or no vegetation at all. The slope breakers which were installed along the sandy area mostly function well but in places need increased in frequency. The sandy area will need surface preparation and re-seeding for improved bio-restoration.

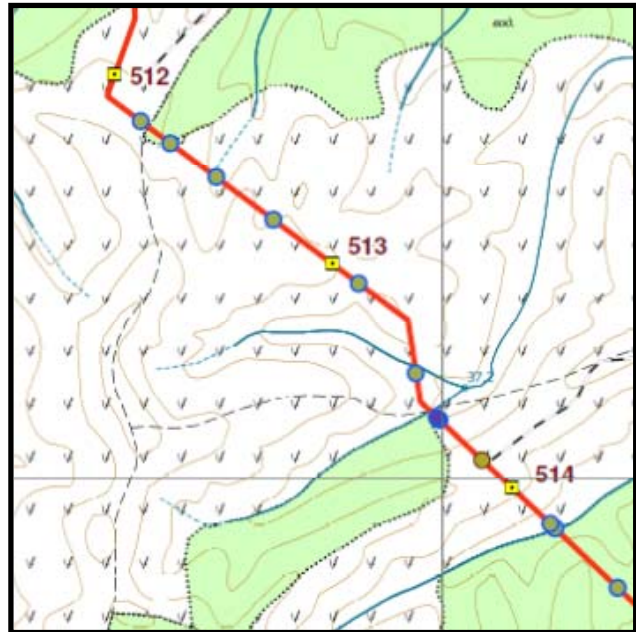


Photo 1 – View to the north along the RoW



Photo 2 – View to the south along the RoW



Photo 3 – View of geotextile in place and sparse vegetation.

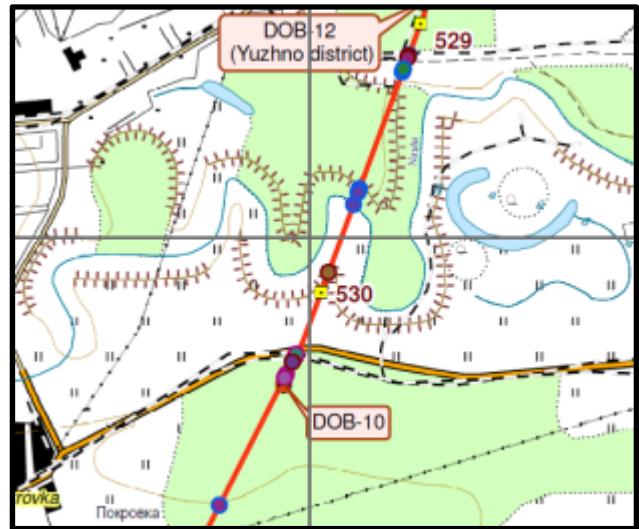


Photo 4 – View of a slope with very sparse vegetation



KP 530 Dolinsk Wetlands

The RoW crosses the Dolinsk Wetlands from north to south approximately 2 km west of Dolinsk. Since construction ended the main issues were the presence of large quantities of timber logs partly submerged in the peat material and poorly levelled RoW. The logs were used as access road foundation during construction. In addition, there was scattered concrete debris. During the current visit, the RoW was observed only from the road and from the block valve station. From these vantage points (Photos 1 and 2) it appears that the RoW is well vegetated with a pronounced improvement over last year.



Reportedly, SEIC has removed most of the timber logs during the previous year prior to the onset of winter. SEIC presented photographs to document the removal and levelling activities and included the clean-up project in Chapter 8 of the Sustainable Development Report 2010 – Environmental Impact Management.

Photo 1 - View to the north along the RoW



Photo 2 - View to the south along the RoW



KP 570 Vladimirovka River

The Vladimirovka River crossing is protected by Reno matting and riprap (Photo 1). In addition the meander on the upstream of the crossing has been fortified by heavy riprap in the last winter (Photo 2 and 3). The work was conducted to prevent the river from cutting into the RoW upstream of the crossing. The RoW on each side of the crossing is well vegetated.

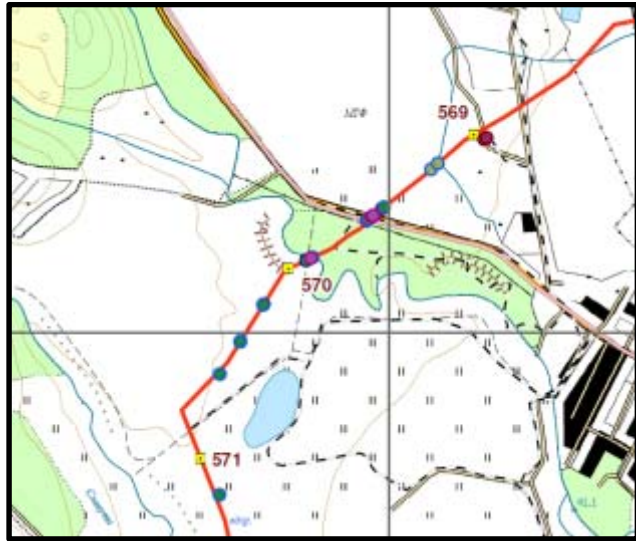


Photo 1 – View of the crossing with Reno matting and good vegetation



Photo 2 – View of the fortified meander upstream of the crossing



Photo 3 – View of the fortified meander upstream of the crossing



KP 573 Mayakovskoga River

The Mayakovskoga River crossing is protected by Reno matting and riprap (Photos 1 and 2). The Reno matting was replaced last winter when debris from previously placed bridge was removed and the banks were reshaped and covered. The RoW on each side of the crossing is well vegetated (Photos 3 and 4).

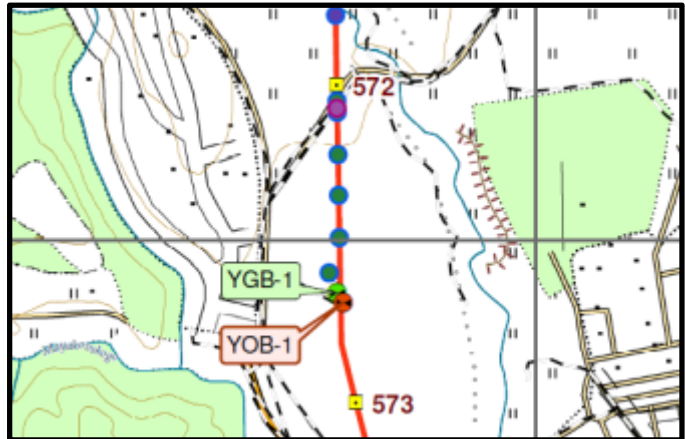


Photo 1 – View to the down stream showing the crossing with Reno mats on the banks.



Photo 2 – View to the upstream showing the crossing with Reno mats on the banks.



Photo 3 – View south along the RoW.



Photo 4 – View north along the RoW

