



**Update on the Clean-up Following the Accident  
at a Fuel Storage of Norilsk Nickel**

June 22, 2020

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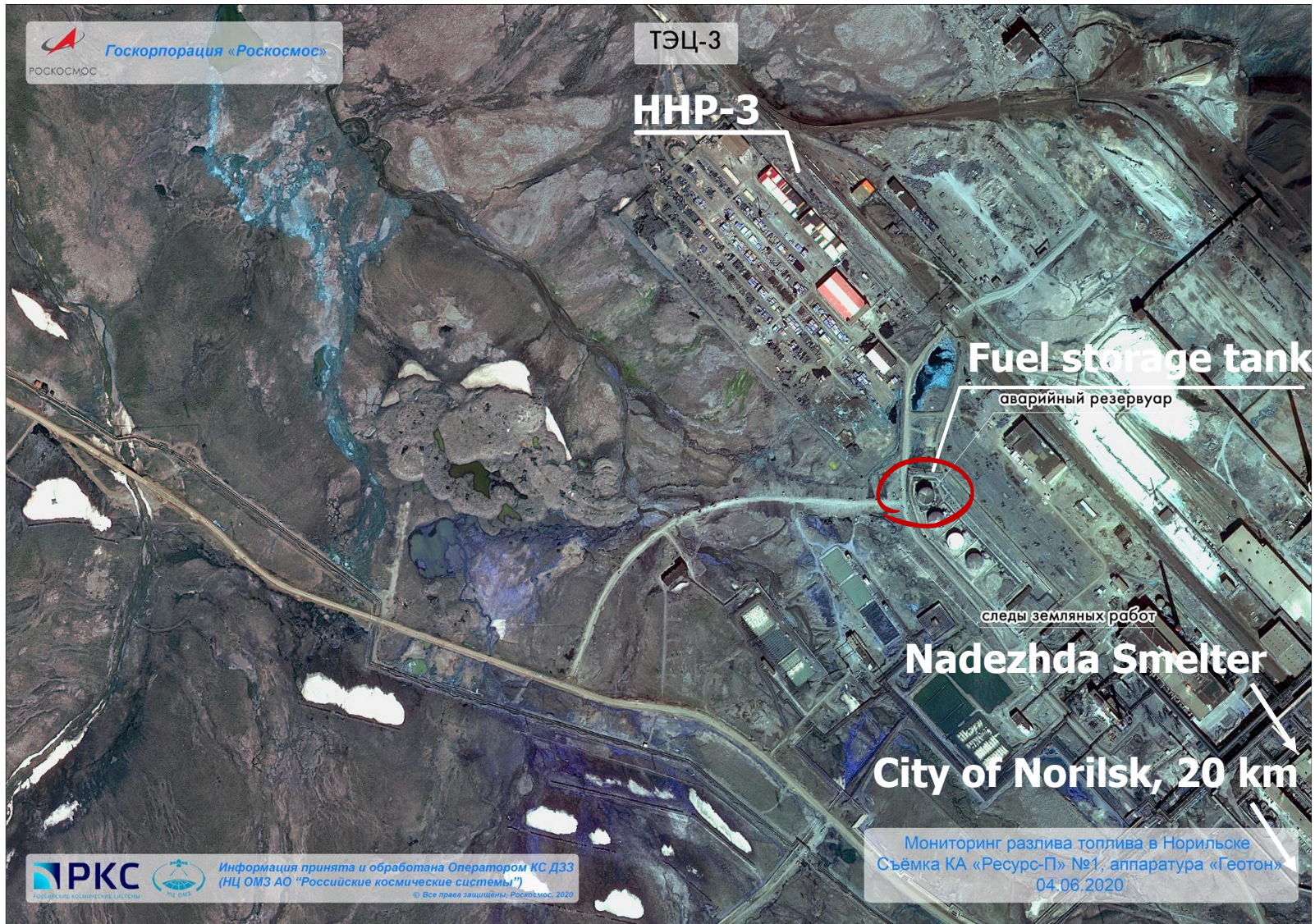
# Accident Overview

- On May 29, 2020, an accident occurred whereby the containment of the emergency fuel storage at Heat and Power Plant № 3 (HPP-3) in the Kayerkan neighborhood of Norilsk failed due to sudden sinking of support posts, resulting in the fuel leakage
- According to the Company's assessment, the accident could have been caused by the thawing of permafrost which resulted in sinking of support posts
- Since the HPP-3 is located remotely from Norilsk, the city has not been impacted
- Over a short period of time, 21.2kt of diesel fuel has leaked beyond the bunding perimeter into a designated pit and partially into the Bezymianny stream
- The fuel spill through Bezymianny stream via Daldykan river reached Ambarnya river, where boms prevented the contamination of Pyasino lake
- The exact distribution of the contamination will be assessed through the soil recultivation, pumping out of the fuel from the pit and drain sumps, and cleaning of water





# ROSKOSMOS Satellite Images of HHP-3 and Damaged Fuel Tank



Source: Company data, Roskosmos



# HHP-3 Facility Overview

- HPP-3 is operated by Norilsk Nickel's wholly-owned subsidiary, Norilsk Taymir Energy Company (NTEC)
- The HPP-3 predominantly serves the local municipality of the Norilsk Industrial District and supplies some power to Norilsk Nickel's facilities
- HPP-3 consumes natural gas, with diesel fuel used only in emergencies and stored in fuel reservoirs
- The reservoir #5, where the accident took place, was built in 1985
- After undergoing repairs in 2017-2018, the reservoir #5 went through hydraulic testing and Industrial Safety Audit (ISA) in 2018
- All recommendations of ISA regarding filling the reservoir #5 for the first time after the repairs were followed and controlled



# Immediate Response to the Accident

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- An emergency situation steering team was set up in the city of Norilsk comprised of the local and regional government's officials, Norilsk Nickel's senior management, law enforcement and other government agencies
- A federal level emergency situation was declared on June 3<sup>rd</sup> by the Ministry of Emergency Situations (MES), which deployed a 100 people team and delivered about 20kt of various equipment and supplies to Norilsk
- Teams from the Marine Rescue Service (from Murmansk), and Russians oil gas majors such as Gazpromneft and Transneft have been deployed to clean up water spill
- In total, almost 700 people and 300 equipment items were involved in the clean-up
- The government's environment supervision agency, Rosprirodnadzor, jointly with Norilsk Nickel has completed air inspections of Norilsk-Piasino water bodies to identify oil spills; regular air inspections are continued
- The government consumer supervision agency, Rospotrebnadzor, has not detected any violation of permissible limits for hazardous materials in the drinking water sources of the city of Norilsk
- Removal of the contaminated soil to a special storage facility has been launched, the contaminated soil is replaced with a clean one and treated with absorbent chemicals
- In total, 55 lines of containment boms have been installed at the Ambarnaya River, including 16 lines of absorbing boms
- A monitoring of water wildlife and water quality from Ambarnaya river to the Pyasino Lake has been set in observation points
- NTEC teams are conducting an inspection of emergency diesel fuel storage facilities, with a special attention paid to assessing the risks of sinking soil under hazardous objects installed in permafrost

# Action Plan and Further Steps

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- Ministry of Emergency Situations, Marine Rescue Team (from Murmansk), Transneft and Gazpromneft are engaged in cleaning up the fuel spill in the Ambarnaya river; Nornickel is removing contaminated soil
- **Water fuel spill remediation plan:**
  - ✓ The spill into water is being collected and placed into special tanks for temporary storage. 208 fuel tanks with a total capacity of 40.6k cubic meters have been installed alongside the river shore <sup>(1)</sup>
  - ✓ A temporary pipeline will be constructed to transport the watered fuel mix
  - ✓ Further usage of the recovered fuel will be determined upon chemical analysis
- **Contaminated soil remediation plan:**
  - ✓ Temporary storage has been arranged with a waterproof (a concrete) base and hangars with a roof (protecting the piles of contaminated soil from being watered down by rain)
  - ✓ All of the contaminated soil to be removed and placed into this temporary storage
  - ✓ The soil to be recultivated, with oil products to be removed
- A full investigation has been launched to identify the exact cause of the accident
- A complete revamp of risk assessment of hazardous industrial facilities has been launched:
  - ✓ Upon completion, a complex audit of all hazardous industrial facilities based on support posts sunk into permafrost will be carried out
  - ✓ A special focus will be put on potential environmental risks and including risks due to proximity of these facilities to water bodies
- The Company is planning additional investments into improvement of industrial safety of RUB2.5bn (circa USD36m) in 2020 and RUB11.0bn (circa USD160m) in 2021

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Source: Company data

Note: 1. as of June 22, 2020

Read more: <https://www.nornickel.com/sustainability/chpp-3/>

# Cleaning Up Progress To-date

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- **The first and second stages of the clean-up have been completed (as of June 19<sup>th</sup>):**
  - ✓ Over 90% of the leaked fuel was collected, over 70% of contaminated soil was removed
  - ✓ 103kt of contaminated soil has been removed near HHP-3
  - ✓ 32k cubic meters of water-fuel mixture has been collected near HHP-3 and from the Ambarnaya river
  - ✓ The water-fuel mixture has been placed into 103 watertight tanks, whereas all of the contaminated soil has been placed into sealed-off hangars to prevent further risk to the environment
- **The third stage of the clean-up program:**
  - ✓ Transportation of collected fuel: completion expected in approximately 2.5 – 3.0 months
- **The fourth stage of the clean-up program:**
  - ✓ Re-cultivation of the contaminated soil and separation of fuel from the water-fuel mixture as well as cleaning up the coastline;
  - ✓ Preparation of the land rehabilitation project started
- **The clean up costs are preliminary estimated at approximately RUB10bn (circa USD150m), RUB5 bn has been already spent**
- The amount of financial penalties will be calculated upon full investigation by the government's Environment Supervision Agency (Rosprirodnadzor), which is due to complete its assessment by July 1<sup>st</sup>

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Source: Company data

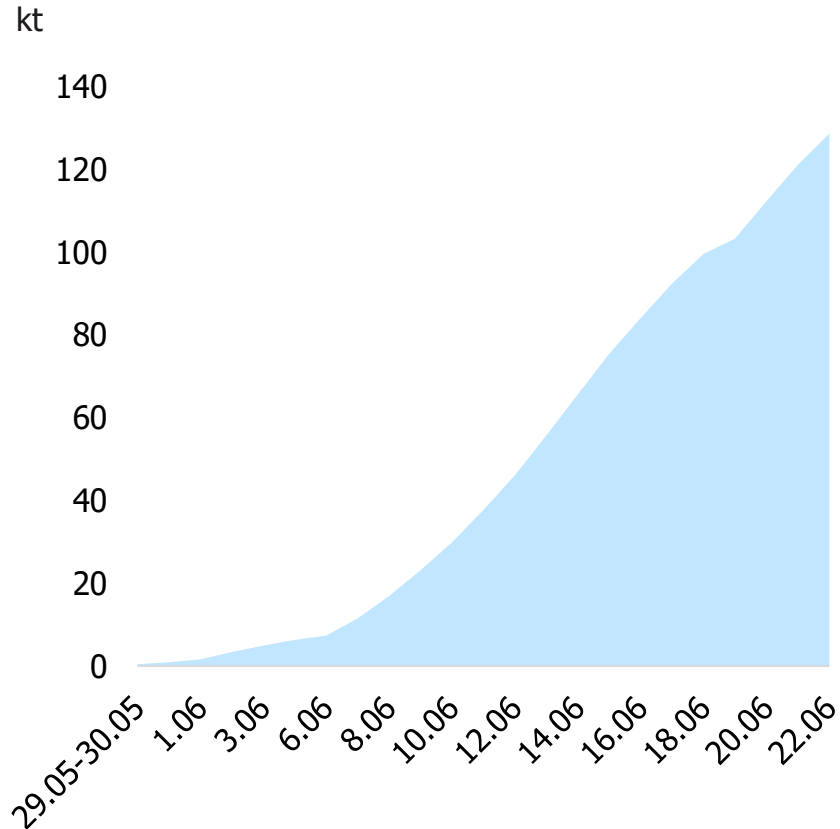
Read more:

<https://www.nornickel.com/news-and-media/press-releases-and-news/updates-on-the-clean-up-operation-following-diesel-spill-in-norilsk/>

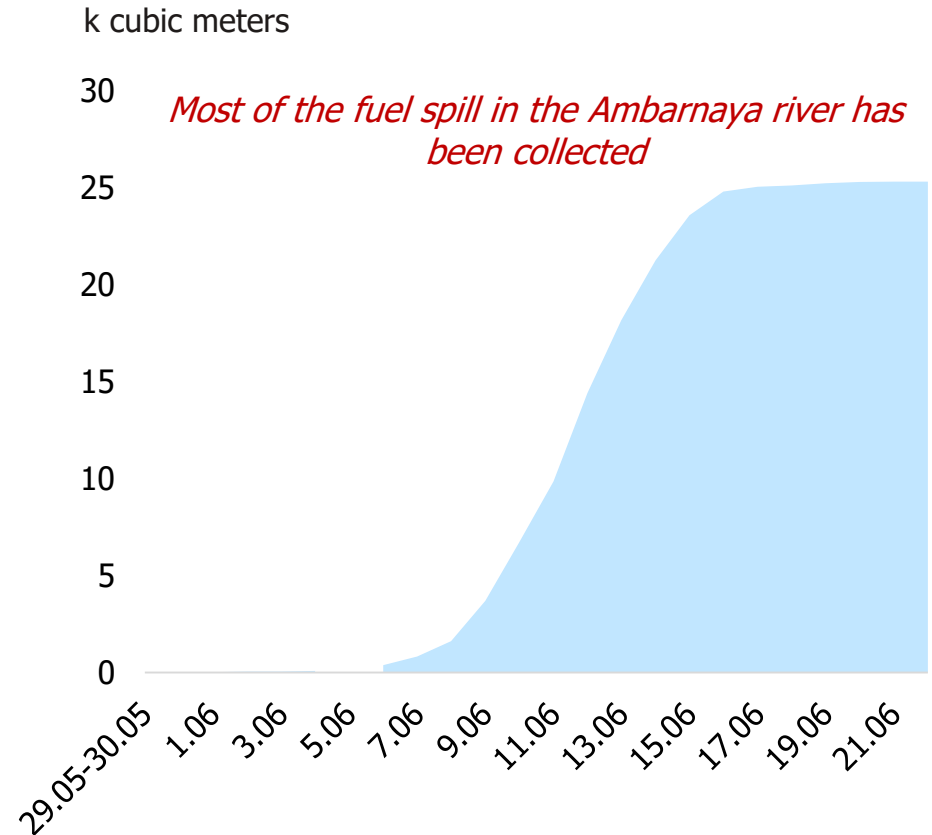


# Clean-Up Progress: Daily Updates

Contaminated Soil Removed:  
Cumulative Volume



Water-Fuel Mixture Collected from the Ambarnaya  
River: Cumulative Volume



Source: Company data  
Note: daily morning updates

# Long-term Plan to Manage Climate Change Risks

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## **1. Mapping of Norilsk industrial district**

- ✓ Digitization of historical geological studies
- ✓ Confirmation of lithological layers: rock formations and permafrost
- ✓ Objects location on the map

## **2. Confirmative geological drilling**

- ✓ Confirmation of historical studies
- ✓ Comparison of historical permafrost / temperature diagrams with current data

## **3. Top priorities for additional geological analysis**

- ✓ Fuel storage tanks operated by Norilsk Nickel's subsidiaries (NTEC, TTK)
- ✓ Other hazardous industrial objects

## **4. Real-time control of supporting posts deformation and soil temperature**

- ✓ Installation of strain gauges and temperature sensors on all sites at risk
- ✓ Establishment of a monitoring center
- ✓ Expansion of permafrost analysis laboratory and R&D

# Engagement with Stakeholders

- The Company is closely engaging with various environmental groups/NGOs
- Consultations are held with the local indigenous communities:
  - ✓ Indigenous people have been brought on site of the river
- To mitigate the wider impact on local indigenous communities, the Company has committed to providing additional support to the following programs:
  - ✓ Reproduction of aquatic bio resources - an initiative to release juvenile fish into water bodies in order to preserve rare fish species. The second fish hatchery will be built in Norilsk to restore the fish population at Ambarnaya river
  - ✓ Biodiversity conservation - a programme to increase reindeer population in the area

**«We note openness and willingness of the Company's to engage into a dialogue [with stakeholders]»**

**Alexander Zakondyrin**

**Deputy Chairman of the Public Council at the Ministry of Natural Resources and Ecology of the Russian Federation**



Source: Company data

Read more: <https://www.nornickel.com/investors/esg/>  
[https://www.nornickel.com/upload/iblock/882/NN2019\\_Digital\\_ENG.pdf](https://www.nornickel.com/upload/iblock/882/NN2019_Digital_ENG.pdf)

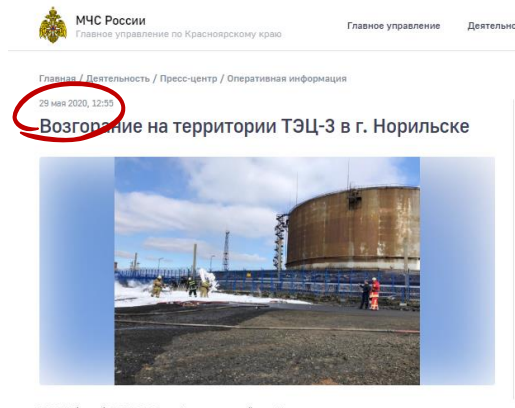


# Selected Fact Checks

## Allegation

**“The company has not promptly reported accident to the government/ information was delayed”**

- **The company informed the local authorities and government agencies** on May 29<sup>th</sup> immediately after the accident in line with the due procedures and emergency response plan
- Press release published on www site of the Ministry of Emergency Situations, local branch, from May 29,12:55



## Facts

**The accident reporting timeline, May 29<sup>th</sup> 2020:**

- 12.55 pm – the leak of diesel fuel was first reported by a dispatcher and was confirmed by HPP-3 at 12.57 pm
- 1.08 pm – the accident reported to the United Dispatch Service of the Siberia Power System, based in Kemerovo
- 1.10 pm — report to the United Dispatch Service (UDS) of the Civil Defense and Emergency of the city of Norilsk
- 1.20 pm — report to the Situation Analysis Centre of the Russian Ministry of Energy based in Moscow
- 1.49 pm — report to the Situation Analysis Centre of the System Operator of the Unified Energy System
- 2.59 - 5.05 pm — Emergency Forms No 2, No 3 and No 4 submitted to UDS
- 6.40 pm — NTEC issued an order declaring a state of emergency

**See details at:**

[https://www.nornickel.com/news-and-media/press-releases-and-news/ntec-provides-law-enforcement-agencies-with-copies-of-official-incident-reports/?redirect\\_url=/news-and-media/press-releases-and-news/&redirect\\_url=%2Fnews-and-media%2Fpress-releases-and-news%2F](https://www.nornickel.com/news-and-media/press-releases-and-news/ntec-provides-law-enforcement-agencies-with-copies-of-official-incident-reports/?redirect_url=/news-and-media/press-releases-and-news/&redirect_url=%2Fnews-and-media%2Fpress-releases-and-news%2F)

# Selected Concerns (1/2)

## Concern

**The oil spill has spread into Pyasino lake and is heading for the Kara Sea**

- **Special containment boms (in total 55 lines) have been installed in the Ambarnaya River, which have** prevented the spill from spreading to the downstream Pyasino Lake
- The spill has not reached Pyasino Lake
- There is no risk of pollution of the Kara Sea
- Regular aerial monitoring of the impacted area is carried out

## Facts

- **Satellite images published by Roskosmos on June 4<sup>th</sup> confirm that the oil spill were well contained in the Ambarnaya river**



## Selected Concerns (2/2)

### Concern

**90% of leaked fuel cannot be collected**

### Facts

**As of June 16<sup>th</sup>:**

- ✓ **More than 90% of leaked fuel was collected**
- ✓ **More than 70% of contaminated soil was removed**

**As of June 22<sup>th</sup> 8<sup>am</sup>:**

- ✓ 129 kt of contaminated soil has been removed (7.5kt removed in the past 24 hours)
- ✓ approximately 32.7k cubic meters of water-fuel mixture has been collected near HHP-3 and from the Ambarnaya river (15k cubic meters collected in the past 24 hours)





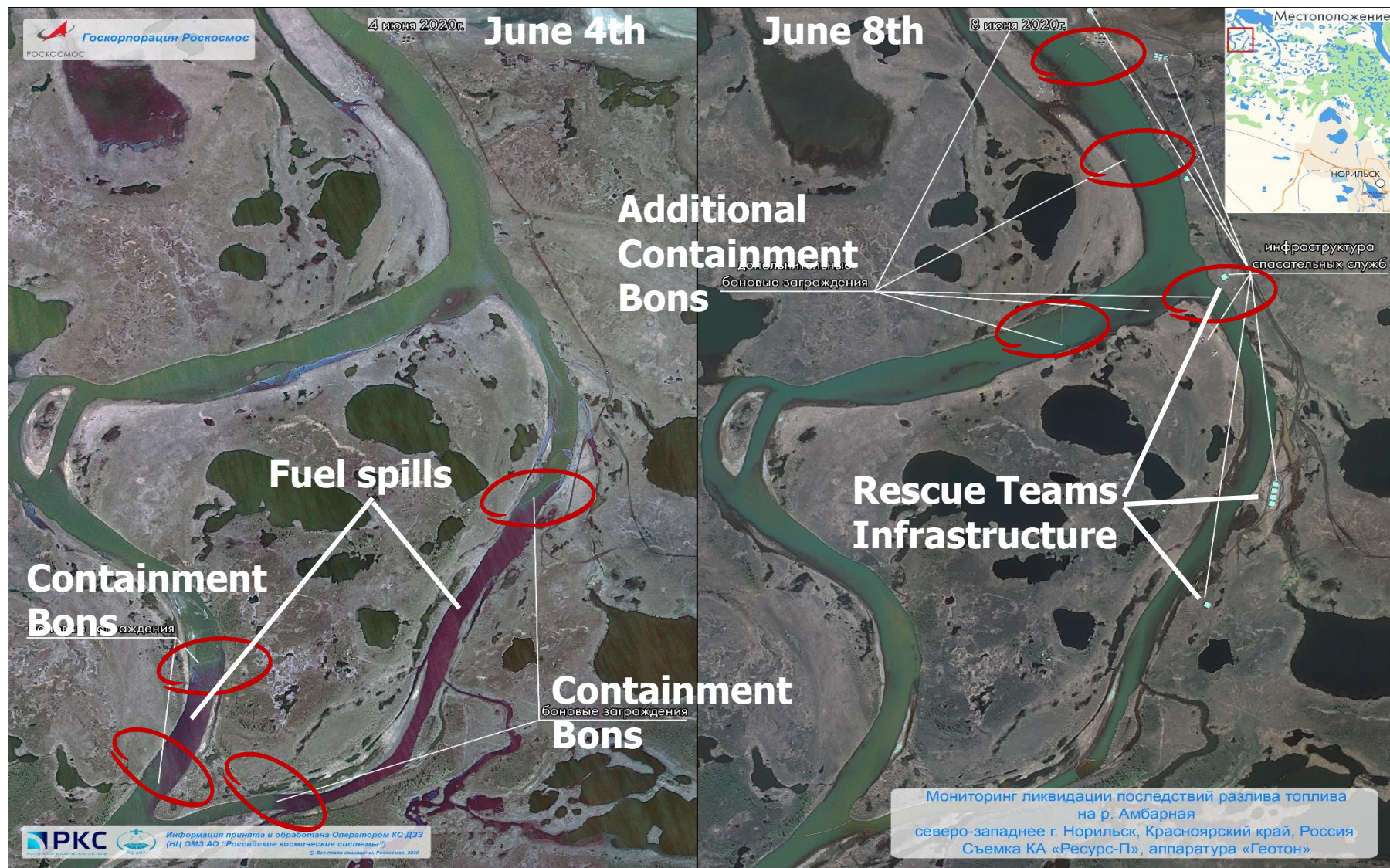
# ROSKOSMOS Satellite Images of Norilsk-Pyasinsky Water System



Source: Company data, Roskosmos



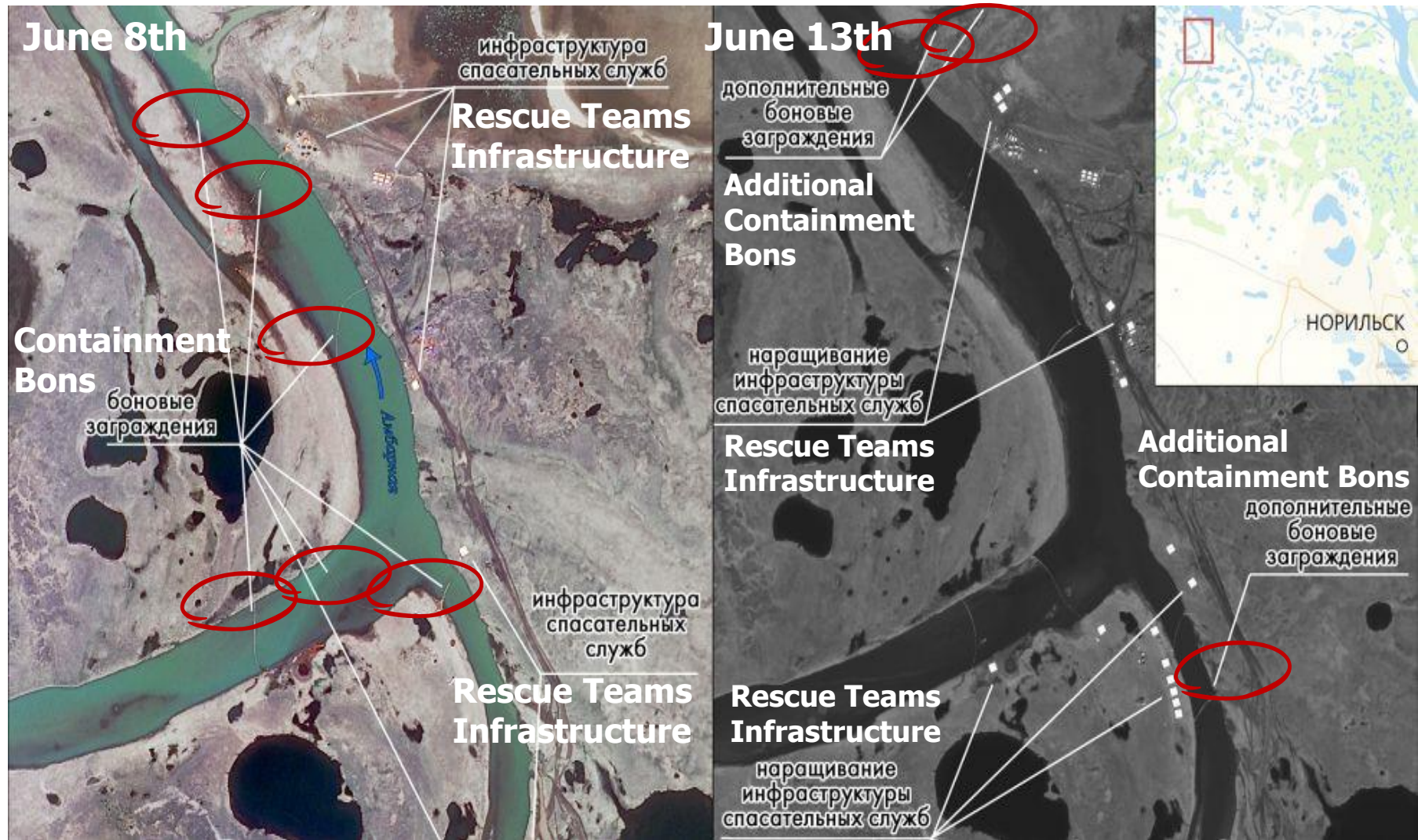
# ROSKOSMOS Monitoring of the Cleanup Progress: June 8<sup>th</sup> vs June 4<sup>th</sup>



Source: Company data, Roskosmos



# ROSKOSMOS Monitoring of the Cleanup Progress: June 13<sup>th</sup> vs June 8<sup>th</sup>



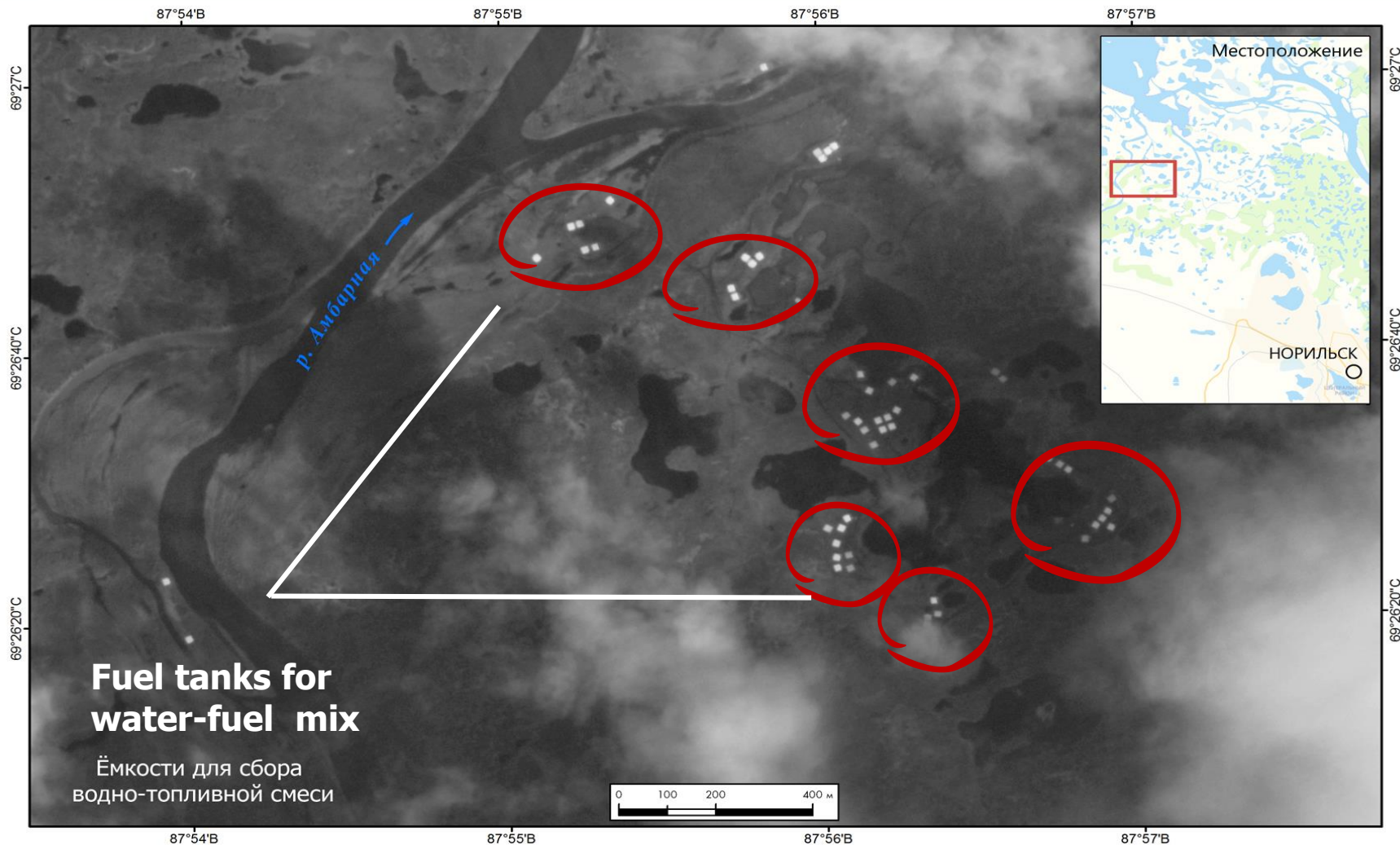
Source: Company data, Roskosmos



# ROSKOSMOS Monitoring of the Cleanup Progress as of June 15<sup>th</sup>



МОНИТОРИНГ ЛИКВИДАЦИИ ПОСЛЕДСТВИЙ РАЗЛИВА ТОПЛИВА. РОССИЯ, КРАСНОЯРСКИЙ КРАЙ, ДОЛГАНО-НЕНЕЦКИЙ АО  
ПО ДАННЫМ КА "КАНОПУС-В" №4 / ПСС 15.06.2020



Source: Company data, Roskosmos



# Removal of Contaminated Soil, Temporary Fuel Storage Tanks and Pumping of Water-fuel Mixture near HPP-3



Source: Company data, TASS



# Containment Boms, Temporary Fuel Storage and Rescue Team Camp at the Ambarnaya River



Source: Company data, TASS



# Temporary Fuel Storage Tanks, Water Sampling and Containment Boms on the Ambarnaya River



Source: Company data, TASS