

**Results of Radioactive Material Monitoring of Aquatic Organisms (Locations A and B along the Abukuma River)**

<Locations A and B along the Abukuma River: Samples collected>

| Locations | General items |          | Radioactive materials |            |               |               |
|-----------|---------------|----------|-----------------------|------------|---------------|---------------|
|           | Water         | Sediment | Water (Cs)            | Water (Sr) | Sediment (Cs) | Sediment (Sr) |
| A-1       | ○             | ○        | ○                     | ○          | ○             | ○             |
| A-2       | ○             | ○        | ○                     | -          | ○             | -             |
| B-2       | ○             | ○        | ○                     | -          | ○             | -             |
| B-3       | ○             | ○        | ○                     | -          | ○             | -             |

<Locations A and B along the Abukuma River: Site measurement item>

| Locations          | Latitude and longitude of the location |           | Survey date and time |              |                 | Water                         | Sediment                         |           |          |              | Other           |                   |
|--------------------|--|-----------|----------------------|--------------|-----------------|-------------------------------|----------------------------------|-----------|----------|--------------|-----------------|-------------------|
|                    | Latitude                               | Longitude | Date                 | Time (water) | Time (sediment) | Water temperature (degrees C) | Sediment temperature (degrees C) | Property  | Color    | Contaminants | Water depth (m) | Transparency (cm) |
| A-1(Surface layer) | 37.6210°                               | 140.5218° | 2019/11/7            | 08:50        | 09:06           | 11.1                          | 11.7                             | Fine sand | 2.5Y 3/2 | None         | 8.50            | >50 (1.3m)*       |
| A-1(Bottom layer)  |  |           |                      | 08:42        |                 | 11.2                          |                                  |           |          |              |                 |                   |
| A-2                | 37.5673°                               | 140.3946° |                      | 10:50        | 10:55           | 11.7                          | 12.3                             | Sand      | 2.5Y 4/3 | None         | 0.68            | >50               |
| B-2                | 37.8121°                               | 140.5058° |                      | 14:10        | 14:15           | 13.5                          | 16.3                             | Fine sand | 2.5Y 4/2 | None         | 0.63            | >50               |
| B-3                | 37.8182°                               | 140.4679° |                      | 13:04        | 13:12           | 12.8                          | 13.2                             | Sand      | 10YR 3/3 | None         | 0.50            | >50               |

\* The number in parentheses indicates Secchi disk depth.

<Locations A and B along the Abukuma River: General survey items/Analysis of radioactive materials Water>

| Locations          | Latitude and longitude of the location |           | Survey date and time |              | pH  | BOD (mg/L) | COD (mg/L) | DO (mg/L) | Electric conductivity (mS/m) | Salinity | TOC (mg/L) | SS (mg/L) | Turbidity (FNU) | Cs-134 (Bq/L) | Cs-137 (Bq/L) | Sr-90 (Bq/L) |
|--------------------|--|-----------|----------------------|--------------|-----|------------|------------|-----------|------------------------------|----------|------------|-----------|-----------------|---------------|---------------|--------------|
|                    | Latitude                               | Longitude | Date                 | Time (water) |     |            |            |           |                              |          |            |           |                 |               |               |              |
| A-1(Surface layer) | 37.6210°                               | 140.5218° | 2019/11/7            | 08:50        | 7.6 | 1.2        | 3.0        | 10.5      | 16.1                         | 0.08     | 1.3        | 6         | 4.4             | N.D.(0.0014)  | 0.010         | 0.00099      |
| A-1(Bottom layer)  |  |           |                      | 08:42        | 7.5 | 1.3        | 3.2        | 10.8      | 16.2                         | 0.08     | 1.3        | 7         | 4.5             | N.D.(0.0015)  | 0.0078        | -            |
| A-2                | 37.5673°                               | 140.3946° |                      | 10:50        | 7.4 | 0.7        | 1.8        | 11.3      | 9.0                          | 0.05     | 0.6        | 2         | 1.2             | N.D.(0.0014)  | 0.0057        | -            |
| B-2                | 37.8121°                               | 140.5058° |                      | 14:10        | 7.5 | 1.0        | 2.6        | 10.7      | 15.7                         | 0.08     | 1.2        | 7         | 5.1             | N.D.(0.0015)  | 0.0078        | -            |
| B-3                | 37.8182°                               | 140.4679° |                      | 13:04        | 7.5 | 0.7        | 3.0        | 11.1      | 9.1                          | 0.05     | 1.3        | 6         | 6.3             | N.D.(0.0015)  | 0.013         | -            |

Note) N.D. means to be below the detection limit and figures in parentheses show the detection limit.

<Locations A and B along the Abukuma River: General survey items/Analysis of radioactive materials Sediment>

| Locations | Latitude and longitude of the location |           | Survey date and time |                 | pH  | Redox potential E <sub>NHE</sub> (mV) | Water content (%) | IL (%) | TOC (mg/g-dry) | Soil particle density (g/cm <sup>3</sup> ) | Grain size distribution |                            |                               |                              |                          |                              |                            |                             | Cs-134 (Bq/kg-dry) | Cs-137 (Bq/kg-dry) | Sr-90 (Bq/kg-dry) |
|-----------|--|-----------|----------------------|-----------------|-----|---------------------------------------|-------------------|--------|----------------|--|-------------------------|----------------------------|-------------------------------|------------------------------|--------------------------|------------------------------|----------------------------|-----------------------------|--------------------|--------------------|-------------------|
|           | Latitude                               | Longitude | Date                 | Time (sediment) |     |                                       |                   |        |                |  | Gravel (2-75mm) (%)     | Coarse sand (0.85-2mm) (%) | Medium sand (0.25-0.85mm) (%) | Fine sand (0.075-0.25mm) (%) | Silt (0.005-0.075mm) (%) | Clay (Less than 0.005mm) (%) | Median grain diameter (mm) | Maximum grain diameter (mm) |                    |                    |                   |
| A-1       | 37.6210°                               | 140.5218° | 2019/11/7            | 09:06           | 7.3 | 451                                   | 23.9              | 1.6    | 2.1            | 2.728                                      | 0.1                     | 1.7                        | 72.2                          | 12.4                         | 6.0                      | 7.6                          | 0.36                       | 4.8                         | 5.7                | 91                 | N.D.(0.14)        |
| A-2       | 37.5673°                               | 140.3946° |                      | 10:55           | 7.2 | 468                                   | 20.6              | 1.8    | 2.6            | 2.712                                      | 28.6                    | 43.3                       | 23.5                          | 2.5                          | 2.1                      |                              | 1.3                        | 9.5                         | 8.0                | 100                | -                 |
| B-2       | 37.8121°                               | 140.5058° |                      | 14:15           | 7.3 | 435                                   | 26.2              | 2.0    | 2.2            | 2.716                                      | 0.0                     | 0.7                        | 45.6                          | 48.1                         | 2.4                      | 3.2                          | 0.24                       | 4.8                         | 5.8                | 94                 | -                 |
| B-3       | 37.8182°                               | 140.4679° |                      | 13:12           | 7.4 | 455                                   | 27.6              | 2.4    | 2.1            | 2.714                                      | 2.8                     | 19.6                       | 55.1                          | 13.8                         | 4.3                      | 4.4                          | 0.48                       | 4.8                         | 8.6                | 110                | -                 |

Note) N.D. means to be below the detection limit and figures in parentheses show the detection limit.

<Locations A and B along the Abukuma River: Analysis items Aquatic organisms>

| Locations                         | Sampling point                       | Latitude and longitude of the location |           | Sampling date | Division   | Class        | Order           | Family           | Scientific name                         | English name                    | Population | Sample weight (kg-wet) | Note                      |  |                  | Radioactive cesium (Bq/kg-wet) |            |            | Sr-90 (Bq/kg-wet) |
|-----------------------------------|--------------------------------------|--|-----------|---------------|------------|--------------|-----------------|------------------|---|---------------------------------|------------|------------------------|---------------------------|--|------------------|--------------------------------|------------|------------|-------------------|
|                                   |                                      | Latitude                               | Longitude |               |            |              |                 |                  |   |                                 |            |                        | Growth stage              | Stomach contents   | Measurement site | Total                          | Cs-134     | Cs-137     |                   |
| A-1                               | The main stream of the Abukuma River | 37.6210°                               | 140.5218° | 2019/10/16    | Vertebrata | Osteichthyes | Cypriniformes   | Cyprinidae       | <i>Hemibarbus barbus</i>                | Hemibarbus barbus               | 1          | 2.1                    | Mature fish               | Obscure digesta  | Viscera removed  | 6.48                           | 0.58       | 5.9        | 0.32              |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Perciformes     | Centrarchidae    | <i>Micropterus dolomieu</i>             | Small mouth bass                | 2          | 1.2                    | Mature fish               | Red swamp crawfish   | Viscera removed  | 8.62                           | 0.72       | 7.9        | 0.23              |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Siluriformes    | Ictaluridae      | <i>Ictalurus punctatus</i>              | Channel catfish                 | 5          | 2.4                    | Immature fish             | Frog,Red swamp crawfish,Worm,Millipede,Oriental weatherfish,Hairworm,Cicada(larva), Dragonfly(larva),Terrestrial insect,Aquatic insect | Viscera removed  | 11.77                          | 0.77       | 11         | 0.21              |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Siluriformes    | Siluridae        | <i>Silurus asotus</i>                   | Amur catfish                    | 1          | 0.64                   | Mature fish               | Fish   | Viscera removed  | 6.47                           | 0.37       | 6.1        | -                 |
| A-2                               | Harase River                         | 37.5673°                               | 140.3946° | 2019/10/18    | Arthropoda | Insecta      | Odonata         | Corduliidae      | <i>Macromia amphigena amphigena</i>     | Macromia amphigena              | 92         | 0.044                  | Larva(Dragonfly larva)    | -  | -                | 3.2                            | N.D.(1.3)  | 3.2        | -                 |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Cordulegastridae | <i>Anotogaster sieboldii</i>            | Anotogaster sieboldii           |            |                        |                           |  |                  |                                |            |            |                   |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Gomphidae        | <i>Nihonogomphus viridis</i>            | Nihonogomphus viridis           |            |                        |                           |  |                  |                                |            |            |                   |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Gomphidae        | <i>Melligomphus viridicostus</i>        | Melligomphus viridicostus       |            |                        |                           |  |                  |                                |            |            |                   |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Gomphidae        | <i>Sieboldius albardae</i>              | Sieboldius albardae             |            |                        |                           |  |                  |                                |            |            |                   |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Gomphidae        | <i>Davidius sp.</i>                     | Davidius                        |            |                        |                           |  |                  |                                |            |            |                   |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Gomphidae        | <i>Asiagomphus melaenops</i>            | Asiagomphus melaenops           |            |                        |                           |  |                  |                                |            |            |                   |
|                                   |                                      |  |           |               | Arthropoda | Malacostraca | Decapoda        | Potamidae        | <i>Geothelphusa dehaani</i>             | Japanese freshwater crab        | 9          | 0.012                  | Juvenile                  | -  | -                | 6.4                            | N.D.(2.7)  | 6.4        | -                 |
|                                   |                                      |  |           |               | Arthropoda | Malacostraca | Decapoda        | Atyidae          | <i>Neocaridina sp.</i>                  | Neocaridina                     | 335        | 0.12                   | Juvenile                  | -  | -                | 13.74                          | 0.74       | 13         | -                 |
|                                   |                                      |  |           |               | Mollusca   | Gastropoda   | Discopoda       | Pleuroceridae    | <i>Semisulcospira libertina</i>         | Semisulcospira libertina        | 30         | 0.020                  | Imago                     | -  | Molluscos part   | 14                             | N.D.(2.4)  | 14         | -                 |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Cypriniformes   | Cyprinidae       | <i>Phoxinus lagowskii steindachneri</i> | Amur minnow                     | 150        | 0.45                   | Immature fish,Mature fish | -  | -                | 6.51                           | 0.51       | 6.0        | -                 |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Cypriniformes   | Cyprinidae       | <i>Opsarichthys platypus</i>            | Pale chub                       | 140        | 0.97                   | Immature fish             | -  | -                | 7.52                           | 0.42       | 7.1        | -                 |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Cypriniformes   | Cyprinidae       | <i>Pseudogobio esocinus esocinus</i>    | Pseudogobio esocinus esocinus   | 2          | 0.0069                 | Immature fish             | -  | -                | 7.2                            | N.D.(6.3)  | 7.2        | -                 |
| Coarse Particulate Organic Matter | -                                    | -                                      | -         | -             | -          | -            | 0.25            | -                | -                                       | -                               | 38.4       | 2.4                    | 36                        | -  |                  |                                |            |            |                   |
| B-2                               | The main stream of the Abukuma River | 37.8121°                               | 140.5058° | 2019/11/6     | Vertebrata | Osteichthyes | Cypriniformes   | Cyprinidae       | <i>Tribolodon hakonensis</i>            | Japanese dace                   | 8          | 0.23                   | Mature fish               | Obscure digesta  | Viscera removed  | 8.47                           | 0.57       | 7.9        | 0.25              |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Cypriniformes   | Cyprinidae       | <i>Hemibarbus barbus</i>                | Hemibarbus barbus               | 3          | 4.7                    | Mature fish               | Obscure digesta  | Viscera removed  | 5.7                            | N.D.(0.33) | 5.7        | 0.31              |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Salmoniformes   | Salmonidae       | <i>Oncorhynchus keta</i>                | Salmon                          | 1          | 2.1                    | Mature fish               | Empty stomach  | Viscera removed  | N.D.                           | N.D.(0.30) | N.D.(0.32) | N.D.(0.017)       |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Perciformes     | Centrarchidae    | <i>Micropterus dolomieu</i>             | Small mouth bass                | 11         | 3.4                    | Immature fish,Mature fish | Ephoron shigae,Fish  | Viscera removed  | 15.92                          | 0.92       | 15         | 0.23              |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Siluriformes    | Ictaluridae      | <i>Ictalurus punctatus</i>              | Channel catfish                 | 6          | 2.3                    | Immature fish             | Red swamp crawfish,Ephoron shigae  | Viscera removed  | 8.81                           | 0.51       | 8.3        | 0.19              |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Siluriformes    | Siluridae        | <i>Silurus asotus</i>                   | Amur catfish                    | 2          | 0.59                   | Mature fish               | Japanese mitten Crab   | Viscera removed  | 6.57                           | 0.47       | 6.1        | -                 |
| B-3                               | Surikami River                       | 37.8182°                               | 140.4679° | 2019/10/18    | Arthropoda | Insecta      | Trichoptera     | Stenopsychidae   | <i>Stenopsyche marmorata</i>            | Stenopsyche marmorata           | 72         | 0.015                  | Larva                     | -  | -                | 10                             | N.D.(3.3)  | 10         | -                 |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Corduliidae      | <i>Macromia amphigena amphigena</i>     | Macromia amphigena              | 89         | 0.037                  | Larva(Dragonfly larva)    | -  | -                | 2.6                            | N.D.(1.2)  | 2.6        | -                 |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Gomphidae        | <i>Melligomphus viridicostus</i>        | Melligomphus viridicostus       |            |                        |                           |  |                  |                                |            |            |                   |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Gomphidae        | <i>Sieboldius albardae</i>              | Sieboldius albardae             |            |                        |                           |  |                  |                                |            |            |                   |
|                                   |                                      |  |           |               | Arthropoda | Insecta      | Odonata         | Gomphidae        | <i>Davidius sp.</i>                     | Davidius                        |            |                        |                           |  |                  |                                |            |            |                   |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Scorpaeniformes | Cottidae         | <i>Cottus pollux</i>                    | Japanese fluvial sculpin        | 24         | 0.29                   | Immature fish             | Japanese fluvial sculpin,Plant pieces,Rhinogobius,Oriental weatherfish,Stenopsyche marmorata,Diptera,Midge,Kamimuria tibialis          | Viscera removed  | 3.6                            | N.D.(0.37) | 3.6        | -                 |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Cypriniformes   | Cyprinidae       | <i>Tribolodon hakonensis</i>            | Japanese dace                   | 1          | 0.033                  | Mature fish               | -  | -                | 5.3                            | N.D.(1.9)  | 5.3        | -                 |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Cypriniformes   | Cyprinidae       | <i>Opsarichthys platypus</i>            | Pale chub                       | 4          | 0.030                  | Immature fish             | -  | -                | 5.4                            | N.D.(2.0)  | 5.4        | -                 |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Cypriniformes   | Cyprinidae       | <i>Gnathopogon elongatus elongatus</i>  | Gnathopogon elongatus elongatus | 1          | 0.0052                 | Mature fish               | -  | -                | 8.8                            | N.D.(7.8)  | 8.8        | -                 |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Cypriniformes   | Cobitidae        | <i>Nemacheilus toni</i>                 | Stone loach                     | 66         | 0.61                   | Immature fish             | -  | -                | 3.6                            | N.D.(0.34) | 3.6        | -                 |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Salmoniformes   | Salmonidae       | <i>Oncorhynchus masou masou</i>         | Seema                           | 1          | 1.5                    | Mature fish               | Empty stomach  | Viscera removed  | N.D.                           | N.D.(0.29) | N.D.(0.27) | -                 |
|                                   |                                      |  |           |               | Vertebrata | Osteichthyes | Siluriformes    | Bagridae         | <i>Tachysurus tokiensis</i>             | Cut-tailed bullhead             | 3          | 0.027                  | Immature fish,Mature fish | -  | -                | 4.0                            | N.D.(2.1)  | 4.0        | -                 |
|                                   |                                      |  |           |               | Vertebrata | Amphibia     | Anura           | Glandirana       | <i>Glandirana rugosa</i>                | Wrinkled frog                   | 3          | 0.023                  | Imago                     | -  | -                | 5.7                            | N.D.(2.1)  | 5.7        | -                 |
| Coarse Particulate Organic Matter | -                                    | -                                      | -         | -             | -          | -            | 0.25            | -                | -                                       | -                               | 26.9       | 1.9                    | 25                        | -  |                  |                                |            |            |                   |

\*1: Organisms were collected in or around the targeted water areas.

\*2: When multiple types of aquatic organisms were collected, a sample was prepared by mixing them.

\*3: For a sample made of multiple types of aquatic organisms, the English name of the dominant one largest in number is underlined.

\*4: Basically, measurement was conducted for all organism samples. Viscera (stomach and bowels) were removed for the measurement when possible so that undigested food and sediments, etc. in the digestive system would be excluded.

\*5: Plankton (suspended algae) is the residue remaining after the filtration of lake water or seawater with a plankton net (40µm-mesh).

\*6: River bottom materials (incl. algae) are algae, etc. that were scratched off stones with a brush, etc. and may include very fine particles such as inorganic silt and clay.

\*7: N.D. means to be below the detection limit and figures in parentheses show the detection limit.

\*8: Activity concentrations include counting errors, but the details are omitted here.