Horikawa Sen-nin Chosatai 2010 (HSC)
Summary meeting for the 30th stage

Place : Will Aichi







The secretariat of Horikawa Sen-nin Chosatai 2010
Mar. 19th. 2022

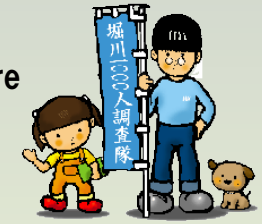
1. Horikawa Sen-nin Chosatai 2010

～Transmission of Raw Water from Kiso River (TRWKR)～

1.Purpose

To verify the clarification effects of TRWKR with citizens

(1) Develop to new clarifying measures
(2) Asses the influence on an ecosystem
(3) Sustain and enhance citizens' activities
(4) Develop citizens' awareness in the entire Horikawa River basin



2.Water source and Volume of transmission of raw water

(1) Water Source : Kiso River
(2) Volume of transmission of raw water : Maximum 0.4 m3/s

3.Pilot project period

(1) Evaluation and Survey term : About 5 years
(from Apr.2007 to Mar.2012)
(Including the term of follow-up survey and evaluation after the stop of TRWKR)
(2) TRWKR period : about 3 years
(from Apr.22nd.2007 to Mar.22nd.2010)

■Increase of Transmisson Volume from the Shonai River (additional pilot project)

1.Water source and Volume of transmission of raw water

(1) Water Source : Shonai River
(2) Transmission Usual 0.4m3/sec (maxium 0.7m3/sec)

2.Period of Increase

(1) Experiment Period : Oct.1st - Dec.31st.2010
(2) Period of Increased Transmision Volume : Oct.5th - Nov.2nd.2010

The formation of HSC (April.22nd.2007)
With a viewpoint and a sence of citizens, the survey of the clarification effect of TRWKR started

■ The survey from a viewpoint and a sence of citizens'
＊Clearness ＊Transparency ＊Color ＊Bubble ＊Smell
＊Garbage ＊Living things, etc

The first Nagoya City Environmental Practice Prize, Feb.2012
Branch of contribution for Regional Environment Development Award for Excellence

Water Resource Contributor Awards
Minister of Land, infrastructure and Transportation) Aug.2016

Transmission of Raw Water from Kiso River (TRWKR)

3 years from April.22nd.2007(Stopped on March.22nd.2010)

Surveys during TRWKR period : 3 years
April.2007 ～ March.2010
Surveys after the stop of TRWKR period : 2 years
April.2010 ～ March.2012

Horikawa Sen-nin Chosatai
April.2007 ～ March.2012

- ■ Fixed Point Observation Groups
  Surveying effects of TRWKR
- ■ Free Survey Groups Researching
  Horikawa River by free themes
- ■ Horikawa Support Groups Supporting
  clarification of Horikawa

The survey from a viewpoint and sense of citizens

Results of pilot project (Clarification effects of TRWKR)

- ■ It was confirmed that the water quality tended to improve during TRWKR between Sanage Bridge and Matsushige Bridge.
- ■ Network of citizens who wish for clarification and restoration of Horikawa River expanded.
- ■ Citizens' awareness of cleaning of the river was developed.

■ Role of Horikawa Sen-nin Chosatai
(Conclusions of Summary Meeting for the 10th Stage)

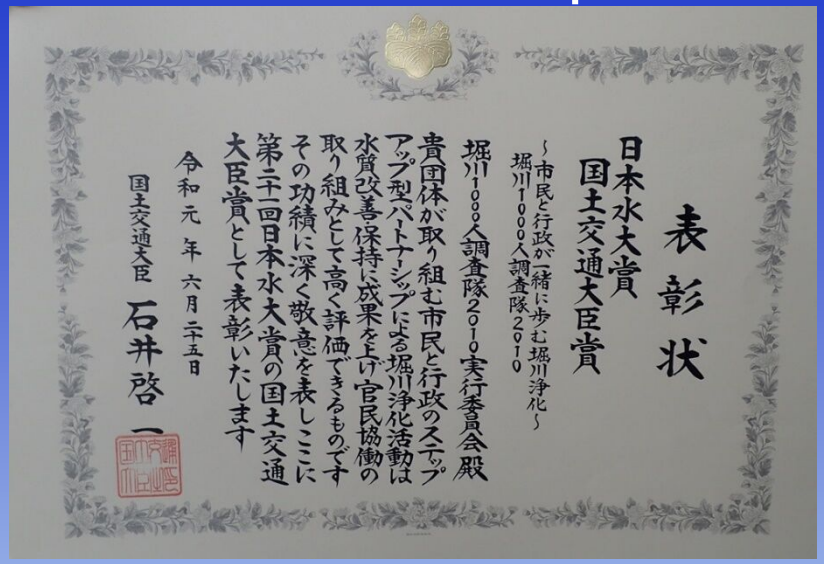
① More surveys should be implemented.

- •Continuity of investigation, clarification of the situation of the river, identification of cause of pollution in the river, are needed.
- •We improve our plan and take action against the pollution.
- •After that, citizens and public administration do what is possible to clean the river.

②There are many things that citizens can do.

- •We expand our partners who love Horikawa River and hope TRWKR again.
- •We deepen exchanges with people living in the basin of Kiso, Nagara, and Ibi River.
- •We check the effects of pollution removal from domestic wastewater and implement it in each residence.

Won the21st Japan Water Award Minister of Land, Infrastructure and Transport Award June 2019


表彰状

日本水大賞
国土交通大臣賞

～市民と行政が一緒に歩む堀川浄化～
堀川1000人調査隊2010

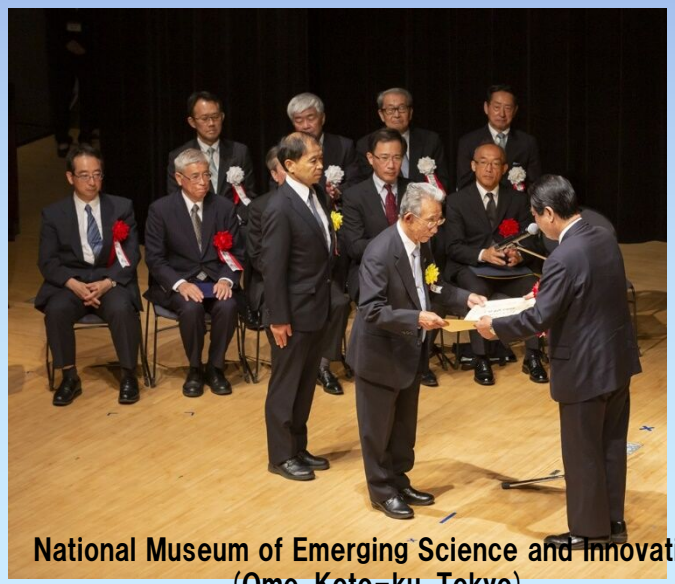
堀川1000人調査隊2010実行委員会殿

貴団体が取り組む市民と行政のステップアップ型パートナーシップによる堀川浄化活動は水質改善保持に成果を上げ官民協働の取り組みとして高く評価できるものです
その功績に深く敬意を表しここに第二十一回日本水大賞の国土交通大臣賞として表彰いたします

令和元年六月二十五日

国土交通大臣 石井啓一

Public-private academic collaboration step-up partnership



National Museum of Emerging Science and Innovation
(Ome, Koto-ku, Tokyo)

Horikawa Sen-nin Chosatai Executive Committee visited Mayor Kawamura to report getting a prize on the Japan Water Award and Minister of Land, Infrastructure, Transport and Tourism award.

On June 25, 2019, the award ceremony for the 21st Japan Water Awards was held in the presence of Crown Prince Akishino. Horikawa Sen-nin Chosatai Executive Committee received the Minister of Land, Infrastructure, Transport and Tourism Award.

Water Environment of Horikawa River

Horikawa-River
Area of basin :52.85km²
Length :16.20km

Shin-Horikawa-River
Area of basin :22.77km²
Length : 5.95km

Change in temperature, precipitation and hours of sunshine

Kiso River is our water source.

Cause of breeding of phytoplankton, nitrogen and Phosphorus are included in wastewater from houses, factories and stores.

The primary cause of water pollution is wastewater from houses, factories, and stores.

Wastewater is discharged after treatment in wastewater treatment plant.

After heavy rain, wastewater is discharged without treatment.

Shonai River
Privisional raw water transmission: 0.3m3/s

Wastewater Treatment Plant

Sanage Bridge

Motoiri Sluiceway

Tide Gate

▼High Tide

Horikawa River

Difference of water level is more than 2m between high tide and ebb tide.

▼Ebb Tide

Water level, direction of current and velocity are changed, by tide.

Shimizu wakuwaku-sui

Nagoya Port

Rising

Groundwater, etc

Ise Bay

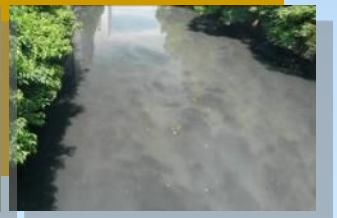
It has looked like red tide or blue tide.
In Nagoya Port and downstream of Horikawa, it is said that phytoplankton does over breeding and extinction, so water basin is polluted

Sludge rises and floats.


Red Tide


Blue Tide


Floating Sludge


Raised Sludge

2. Number of Participants of Horikawa Sen-nin Chosatai

(Horikawa Sen-nin Chosatai started accepting participation on 26th Mar.2007)

Network of citizens who wish for clarification and restoration of Horikawa River is growing.

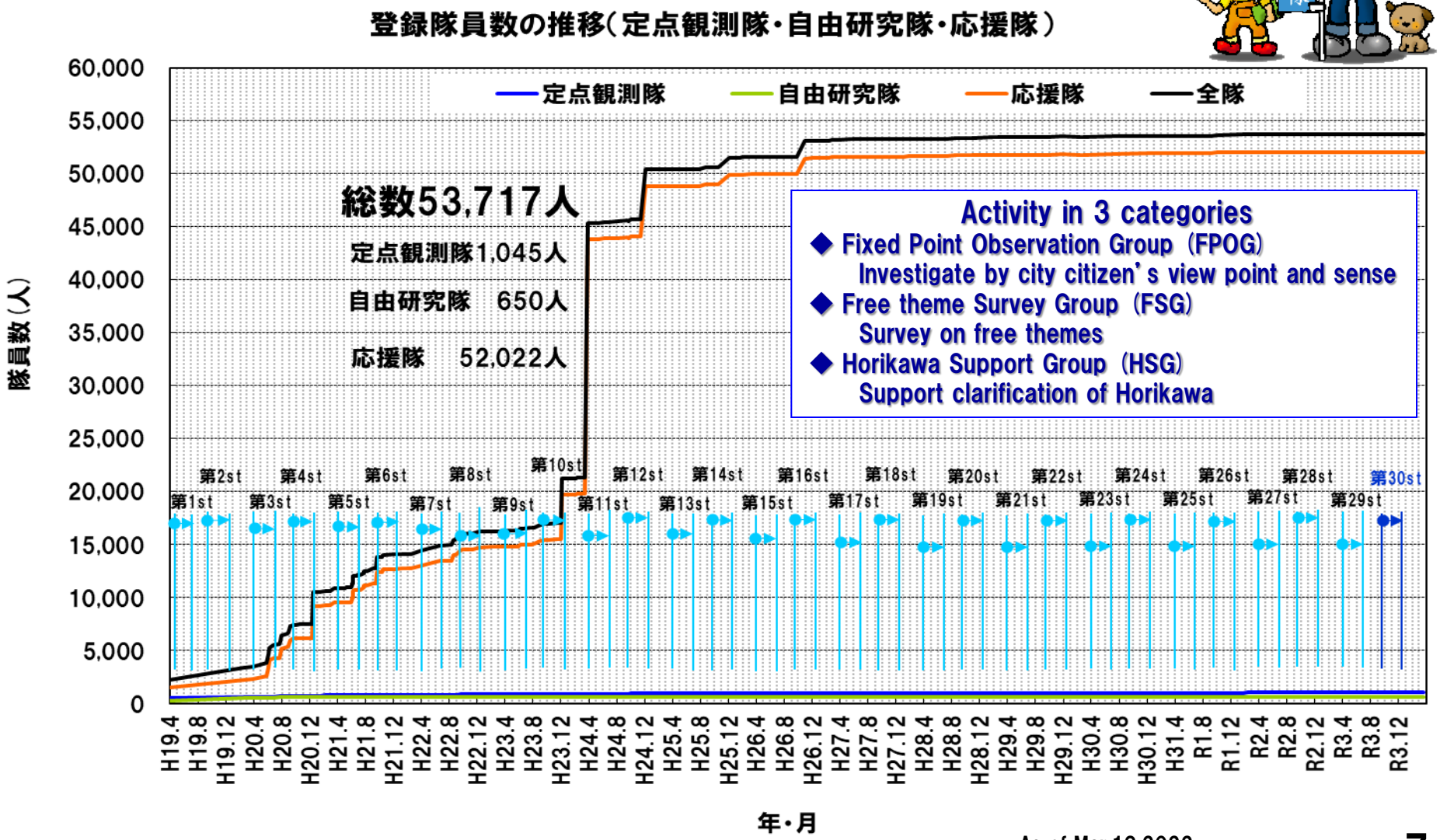
More than 50 thousand citizens' network

Horikawa, the Mother River of Nagoya, was polluted in rapid economic growth.
The citizens have rised to get the past back.

	Start 22nd Apr.2007	Now 19th Mar. 2022
Fixed Point Observation Groups	55 groups 497 persons	108 groups 1,045persons
Free Survey Groups	22 groups 234 persons	40 groups 650 persons
Horikawa Support Groups	88 groups 1,531 persons	2,605 groups 52,022persons
Total	165 groups 2,262 persons	2,753 groups 53,717persons

Number of Participants

Horikawa Sen-nin Chosatai was established to clean *Horikawa* River and to check effective of experiment for it by city citizen's viewpoint.
This activities are not only to surveys, but also spread to the clarification, cleanup, enlightenment activities and exchanges between regions.



As of Mar.19.2022

3. Survey Periods and Number of Reports

内容	年度	期間			報告数	堀川	新堀川
堀川浄化の社会実験 木曽川からの導水 0.4 m^3/s	平成19年 2007年	第1ステージ	春～初夏	4月22日～6月30日	258	258	-
		中間		7月1日～9月7日	134	134	-
		第2ステージ	秋～初冬	9月8日～12月16日	383	383	-
		中間		12月17日～3月31日	103	103	-
	平成20年 2008年	第3ステージ	春～初夏	4月1日～6月30日	245	245	-
		中間		7月1日～9月27日	64	64	-
		第4ステージ	秋～初冬	9月28日～12月16日	152	152	-
		中間		12月17日～3月31日	100	100	-
	平成21年 2009年	第5ステージ	春～初夏	4月1日～6月30日	145	145	-
		中間		7月1日～9月26日	54	54	-
		第6ステージ	秋～初冬	9月27日～12月16日	120	120	-
		中間		12月17日～3月31日	81	81	-
	平成22年 2010年	第7ステージ	春～初夏	4月1日～6月30日	111	111	-
		中間		7月1日～9月11日	44	44	-
		第8ステージ	秋～初冬	9月12日～12月17日	104	104	-
		中間		12月18日～3月31日	72	72	-
	平成23年 2011年	第9ステージ	春～初夏	4月1日～6月30日	112	112	-
		中間		7月1日～9月10日	42	42	-
		第10ステージ	秋～初冬	9月11日～12月16日	133	133	-
		中間		12月17日～3月31日	77	77	-
官民学協働のステップアップ型パートナーシップ	平成24年 2012年	第11ステージ	春～初夏	4月1日～6月30日	148	148	-
		中間		7月1日～9月21日	60	59	1
		第12ステージ	秋～初冬	9月22日～12月16日	139	135	4
		中間		12月17日～3月31日	92	78	14
	平成25年 2013年	第13ステージ	春～初夏	4月1日～6月30日	145	129	16
		中間		7月1日～9月28日	70	55	15
		第14ステージ	秋～初冬	9月29日～12月17日	113	99	14
		中間		12月18日～3月31日	79	68	11
	平成26年 2014年	第15ステージ	春～初夏	4月1日～6月30日	133	117	16
		中間		7月1日～9月28日	91	78	13
		第16ステージ	秋～初冬	9月29日～12月16日	99	90	9
		中間		12月17日～3月31日	107	89	18
	平成27年 2015年	第17ステージ	春～初夏	4月1日～6月30日	113	100	13
		中間		7月1日～9月19日	81	69	12
		第18ステージ	秋～初冬	9月20日～12月16日	126	109	17
		中間		12月17日～3月31日	91	79	12
	平成28年 2016年	第19ステージ	春～初夏	4月1日～6月30日	127	116	11
		中間		7月1日～9月19日	62	54	8
		第20ステージ	秋～初冬	9月20日～12月16日	130	107	23
		中間		12月17日～3月31日	104	84	20

内容	年度	期間				堀川	新堀川
官民学協働のステップアップ型パートナーシップ	平成29年 2017年	第21ステージ	春～初夏	4月1日～6月30日	129	100	29
		中間		7月1日～9月18日	58	48	10
		第22ステージ	秋～初冬	9月19日～12月20日	121	93	28
		中間		12月21日～3月31日	80	67	13
	平成30年 2018年	第23ステージ	春～初夏	4月1日～6月30日	180	107	73
		中間		7月1日～9月19日	76	44	32
		第24ステージ	秋～初冬	9月20日～12月16日	184	106	78
		中間		12月17日～3月31日	108	67	41
	平成31年、令和元年 2019年	第25ステージ	春～初夏	4月1日～6月30日	193	127	66
		中間		7月1日～9月19日	101	43	58
		第26ステージ	秋～初冬	9月20日～12月16日	214	105	109
		中間		12月17日～3月31日	123	67	56
	令和2年 2020年	第27ステージ	春～初夏	4月1日～6月30日	333	168	165
		中間		7月1日～9月19日	32	23	9
		第28ステージ	秋～初冬	9月20日～12月16日	232	161	71
		中間		12月17日～3月31日	131	101	30
	令和3年 2021年	第29ステージ	春～初夏	4月1日～6月30日	343	190	153
		中間		7月1日～9月19日	35	22	13
		第30ステージ	秋～初冬	9月20日～12月16日	907	816	91
		中間					
	計				8,224	6,852	1,372

Background about COVID-19

2020
1/16 The Infected person was confirmed in Japan.
2/27 Prime Minister requested temporary closure of school.
4/7 The state of emergency in 7 prefectures.
4/10 The state of emergency in Aichi.
4/16 The state of emergency in Japan.
5/31 The state of emergency was lifted.
8/6～24 Prefectural emergency in Aichi.
2021…about Aichi
1/14～2/28: The state of emergency
5/12～6/20: The state of emergency
6/20～7/11:Pre-emergency measures
8/8～8/26: Pre-emergency measures
8/27～9/30: The state of emergency
2022
1/21～3/21: Pre-emergency measures

To date, 8,224 reports have been reported. The number of reports for Shin-Horikawa River was 1,372.

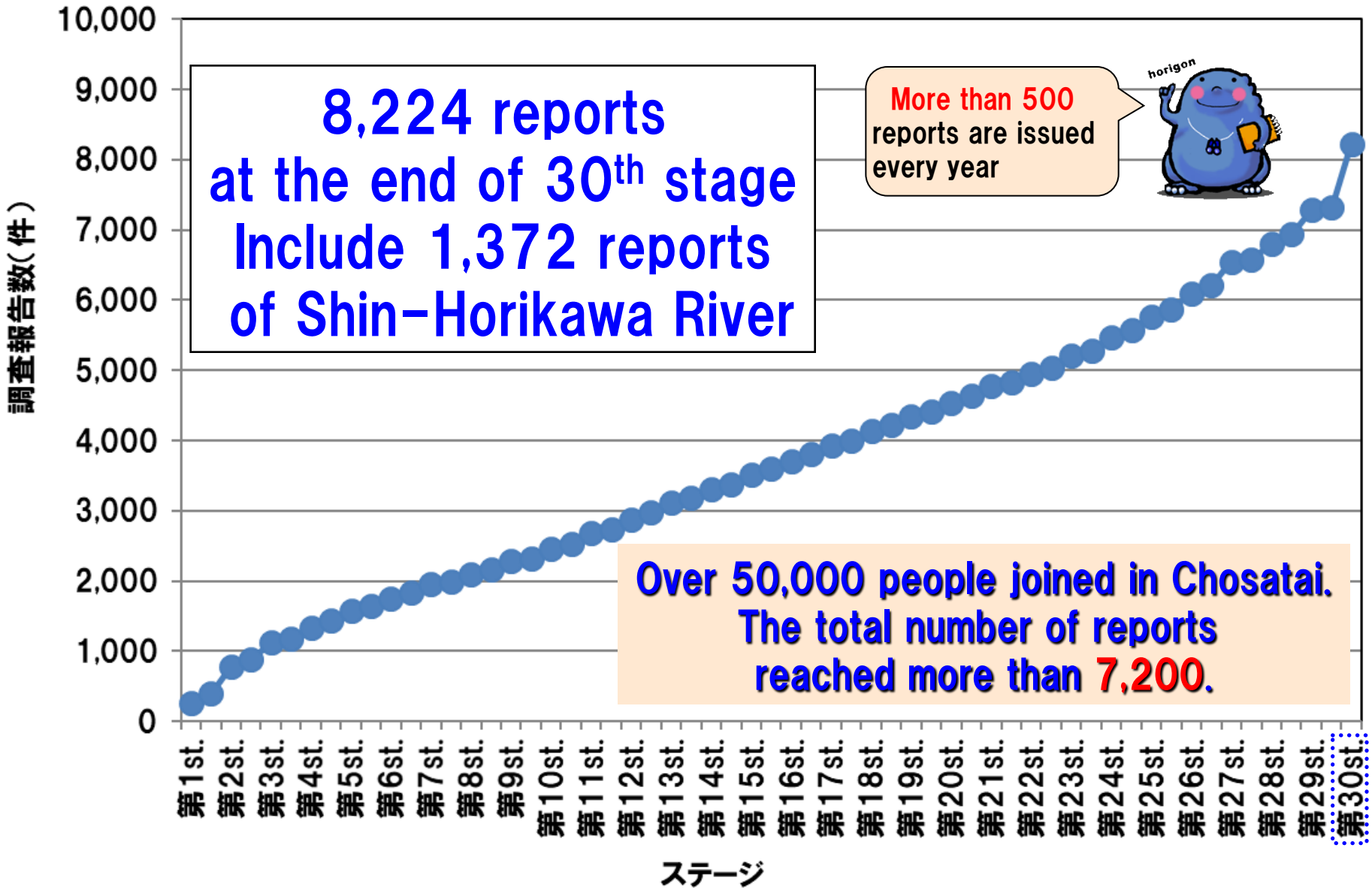
In the 30th stage, there were 907 reports. 816 were reported for Horikawa River and 91 were reported for Shin-Horikawa River. On average, more than 500 surveys are conducted every year.

Many citizens are continuously examining the actual water environment of Horikawa River and Shin-Horikawa River on a daily basis from the perspective and sense of the citizens.

In the 30th stage, infection spread of COVID-19 made survey groups activity avoid “3Cs” (※).

※”3Cs” : Close space, Crowded places, Close-contact

Total Number of Reports



4. Weather conditions

Meteorological Agency _ Meteorological Statistics, Nagoya Local Meteorological Observatory
http://www.jma.go.jp/jma/menu/report.html

■ Weather Overview for 2021

The average temperature in Nagoya (Nagoya Regional Meteorological Observatory/Omitted below) was 16.8℃,slightly higher than normal (16.2℃).Precipitation was 1998.5 mm ,which was higher than normal.

In 2021, the flowering of Somei Yoshino was early , there was a lot of rain from the middle of May before the start of the rainy season , the price of vegetables soared due to the unseasonable weather (low temperature, heavy rain ,lack of sunshine) from August to September , and the cold wave at the end of the year was memorable.

30st. Weather conditions
September ～December 2021

Features : There is little rain , and the temperature and sunshine hours are normal

- The average temperature was 16.1℃,which was generally normal
- Precipitation was low at 112 mm/month
- Sunshine hours was generally normal at 173 hours/month

■ Temperature

The average temperature was 16.1℃, which was generally around the same level as normal (the average temperature in September～December was 15.7℃).There were many hot days in the first half of October, but the rest of the day was normal.

■ Precipitation

Precipitation was 112 mm/month, which was less than normal (The average for S September～December was 133 mm/month).In October , there was a noticeably low rainfall of about 100 mm less than normal. Throughout the period, days of less than 5 mm accounted for about 80 %. And there was not a day that rained more than 50 mm. For this reason, the average monthly temperature was 112 mm , and it became to little rain stage.

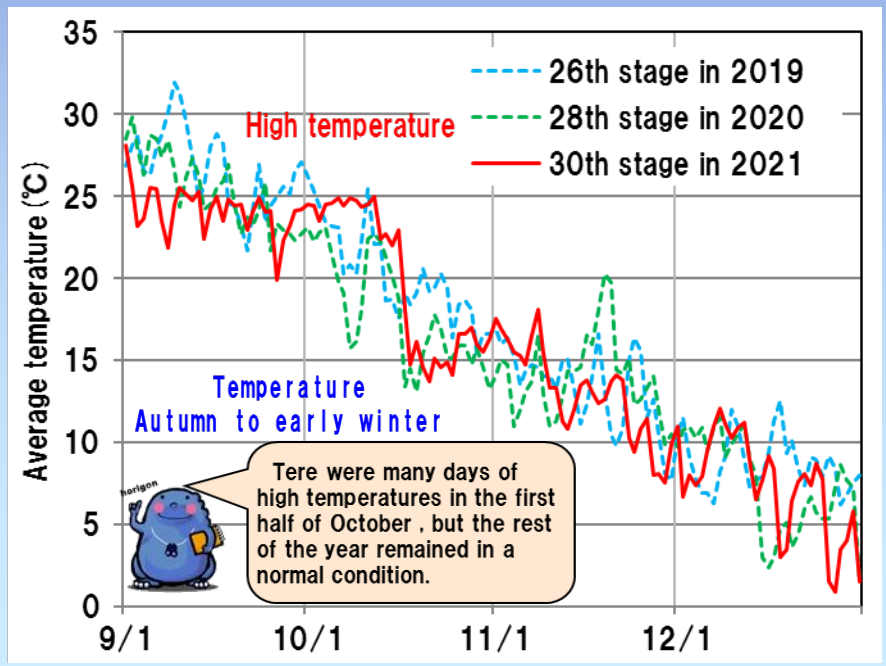
■ Daylight hours

The number of hours of sunshine was 173 hours per month , which was generally about the same as the normal (The average for September～December was 166.5 hours/month) . September was few ,and many sunny days in October and November was high, especially in November it exceeded 200 hours.

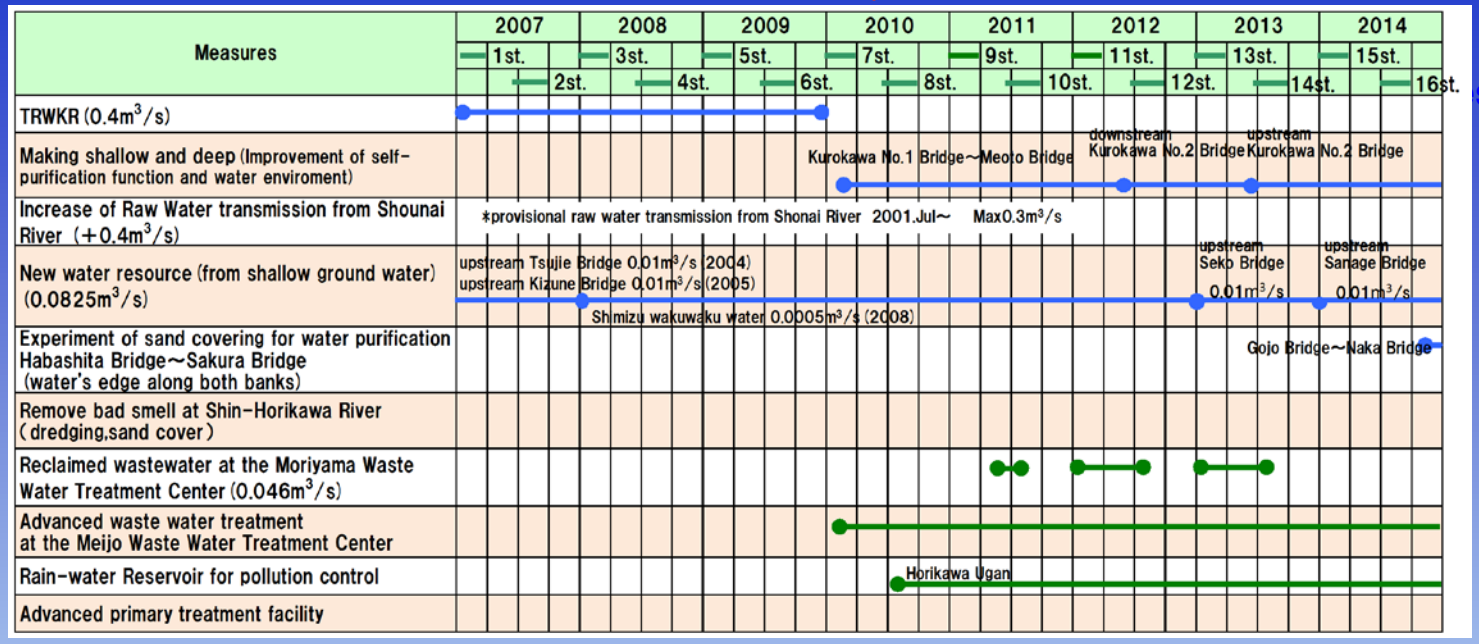
■1991-2020 Normal

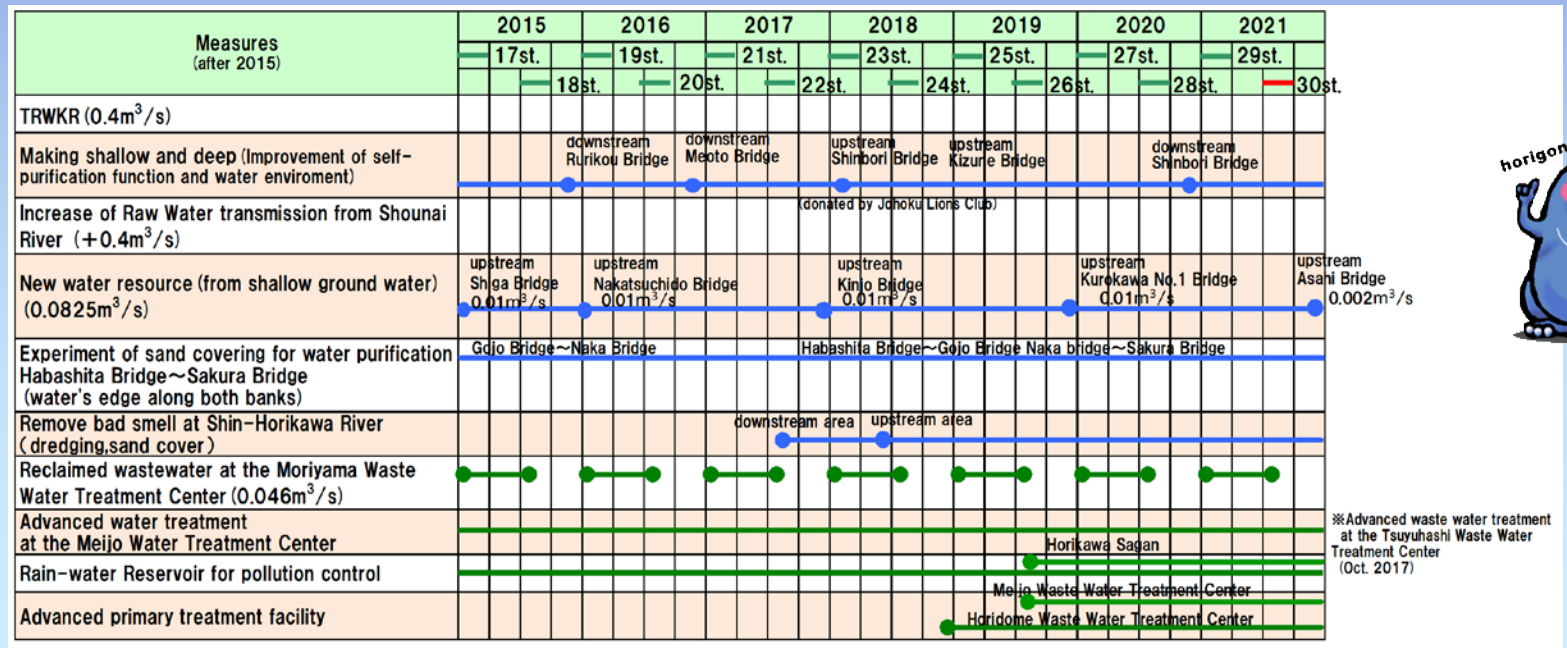
Nagoya Local Meteorological ObservatoryNormal value (Monthly)

Category	Precipitation (mm)	Temperature (℃)			Daylight (hour)
	total	Ave.	Highest/day	Lowest/day	Total
Record period	1991 ～2020	1991 ～2020	1991 ～2020	1991 ～2020	1991 ～2020
Record year	30	30	30	30	30
Year	1535.3	15.8	20.7	11.9	2091.6
Apr.	127.5	14.6	20.1	9.7	200.2
May	150.3	19.4	24.6	14.9	205.5
Jun	186.5	23.0	27.6	19.4	151.8
Ave.	154.8	19.0	24.1	14.7	185.8
Sep.	231.6	24.5	29.1	21.0	159.6
Oct.	164.7	18.6	23.3	14.8	168.9
Nov.	79.1	12.6	17.3	8.6	167.1
Dec.	56.6	7.2	11.7	3.4	170.3
Ave.	133.0	15.7	20.4	12.0	166.5



5. Main Water Quality Improvement Measures





Water quality improvement measures （After water conduction stop from Kiso River）

Source of pollution
house・factory etc

Effulent of sewerage treatment
Drainage in rainy weather from combined sewerage

Improved natural purification function

■Sebuchi formation
(From 2010year 8 points)

Water pollution
Mainly organic matter

brown

Ditch smell

Perspective of citizen's impression・bubble・smell・color

Implement of new water quality improvement mesures

color
Mianly cloudy dark gray、brown

Smell
Mainly ditch、Sludge、putrid etc

Confirm improvement

No color smell

cloudy　dark gray

putrid　sludge

Floating Suspention subsidence
(including organic matter)
↓
Oxgen consumption

Wind up

bubble methane

bubble hydrogen sulfide

Sludge
Riverbed rotting mud

Pollution reduction measures

(Improvement of effulent of sewerage treatment)
■Advanced processing in Meijo treatment center (2010 yesr)
■Advancement of primary treatment in Horidome sewerage treatment center (2018 year)
■ Advancement of primary treatment in Meio sewerage treatment cenetr (2019 year)
(Contamination load reduction from combined sewerage)
■Horikwa right bank stormwater pond (2010year)
■Horikawa left bank storrmwater pond (2019year)

New water source secure

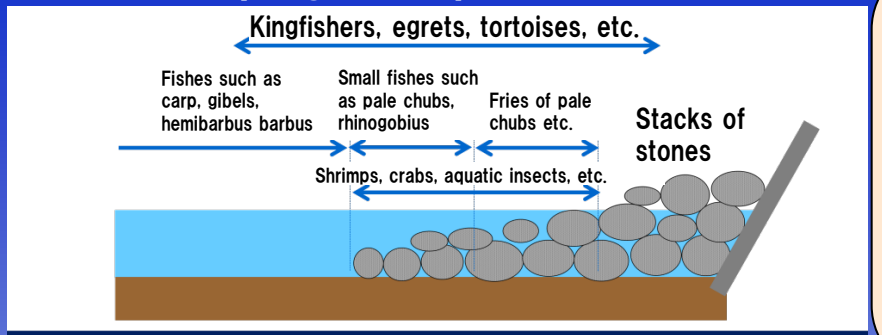
■Conjugation of reclaimed water in Moriyama treatment center (2011year)

■Conjugation of shallow groundwater
(From 2013 year 6 points)

Reduction measures smell・ white turbid from river bed

■ Sand cover
・Horikawa：Habashita.brg～Sakura .Brg vicinity (2017yaer)
■ Pedro removal・sand cover
・Shin Horikawa：downstrem (2017・2018year)
■ Pedro removal
・Shin Horikawa：Tateishi brg.～Upstream (2018yaer)
・Horikawa：Pedro removal after revetment work

Shaping of Rapids and Pool



Rise of self-purification by food chain

Dirt of water (organic substance, nitrogen, phosphorus)

Algaes and microbes stick on stones with the dirt as nutrition.

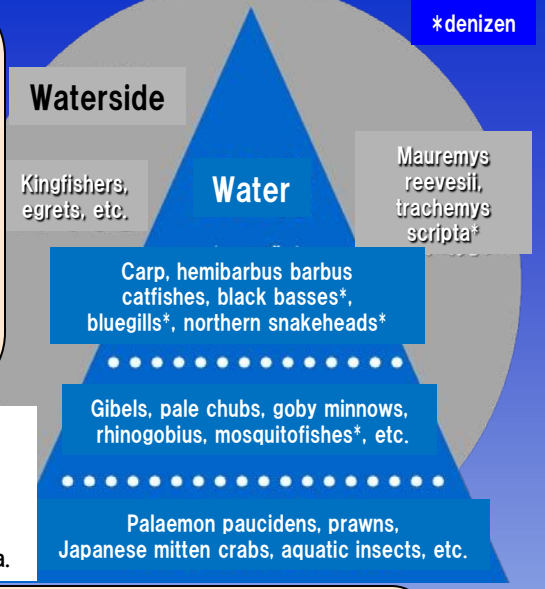
Small fishes, shrimps, aquatic insects feed the algaes and the microbes.

Big fishes and birds prey the small fishes and aquatic insects.

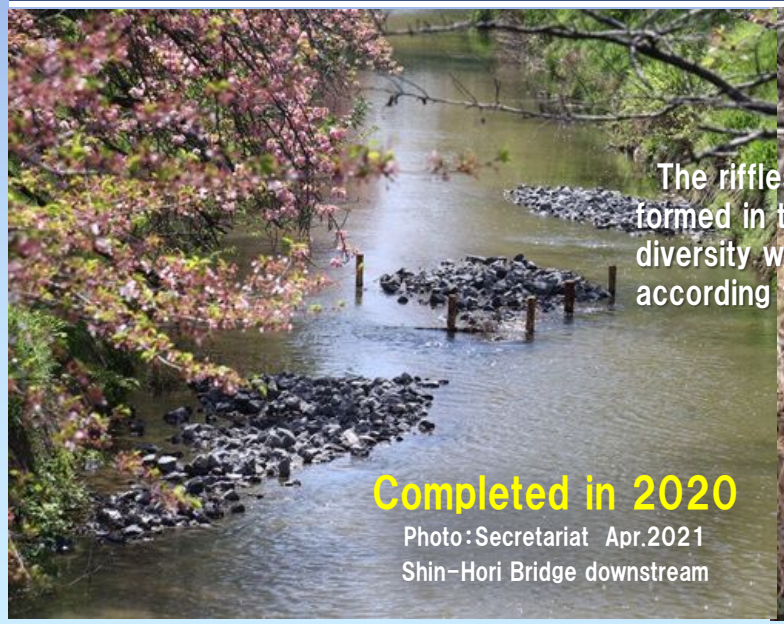
It was identified that various organisms breed and grow when rapids and pools were shaped. This place has been a habitat of organisms that like cobble stones.
In winter, there are some ducks waiting for spring here.
Let's also pay attention to the difference in the stones used (round stones, angular stones) and observe them.

Prawns and Japanese mitten crabs are organisms that migrate between rivers and the sea.

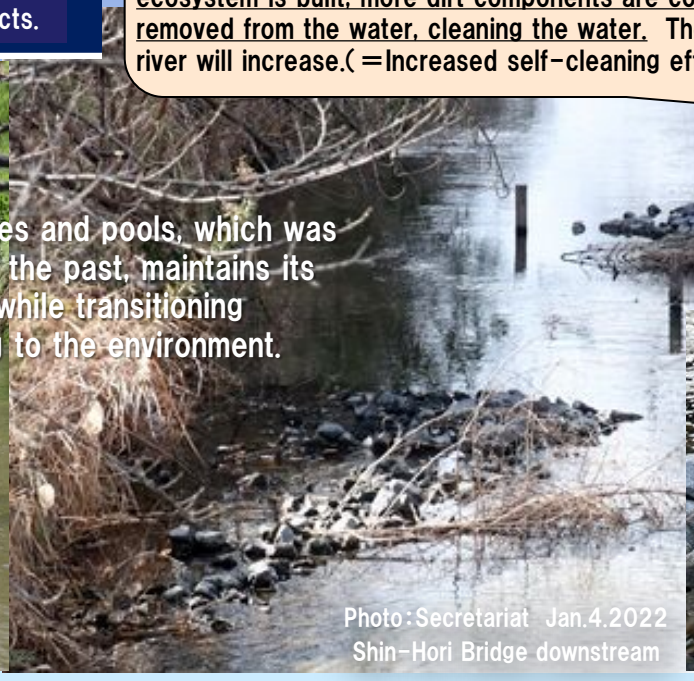
*denizen



The components of dirt in water are taken up by living things in the food chain and consumed for growth and reproduction.
As the riffles and pools is formed and a diverse and affluent ecosystem is built, more dirt components are consumed in a chain and removed from the water, cleaning the water. The purifying effect of the river will increase.(=Increased self-cleaning effect)



Completed in 2020
Photo:Secretariat Apr.2021
Shin-Hori Bridge downstream

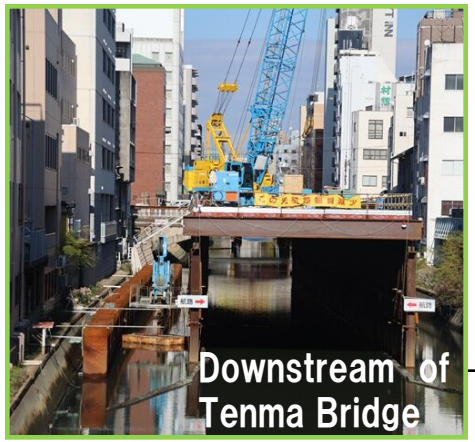


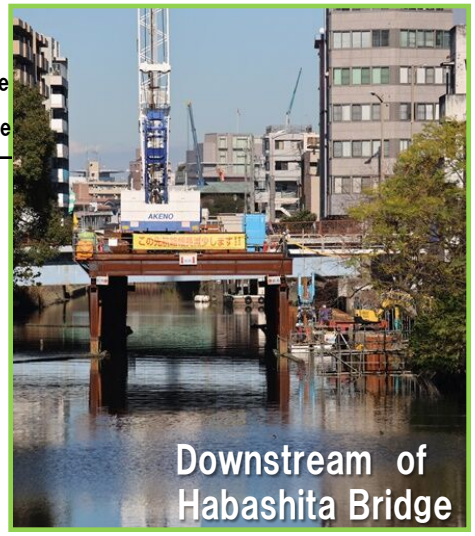
The riffles and pools, which was formed in the past, maintains its diversity while transitioning according to the environment.

Photo:Secretariat Jan.4.2022
Shin-Hori Bridge downstream

Spot-billed duck

■護岸工事が進む中流部の様子（ヘドロ除去を実施）





When the revetment work is over, the seabed is dug and the sludge is removed.

Horikawa river

Asahi Bridge
Habashita Bridge
Koshio Bridge
Keiun Bridge
Gojyo Bridge
Naka Bridge
Sakura Bridge
Tenma Bridge
錦橋
納屋橋
天王崎橋
新洲崎橋
洲崎橋
岩井橋
堀川
Nakagawa Canal
日置橋
Tsuyuhashi Water treatment center
松重橋
松重閘門
山王橋
古渡橋
JR・名鉄橋
尾頭橋
住吉橋

sludge removal

Progress of revetment works
The secretariat
On site confirmation

Legends

Revetment work section

撮影：事務局　2021年（令和3年）
11月～12月

■ Measure against foul odors in the Shin-Horikawa river (Dredging・Sludge dredged) Section : Btwn Upstream of Tateishi Brdg. and Upstream end.

Period:Sep.2018－Feb.2019

Securing a new water source.

■Utilization of Reclaimed wastewater (Except winter)

Conducting reclaimed wastewater treated by Membrane filtration at the Moriyama Water Treatment Center (up to 4000m3/day) is discharged.
Start to conduct in Aug.2011

Reclaimed wastewater is conducted during irrigation season (Apr - Oct) (Excluding the period Nov.-Mar. when water is passed throught the Shonai irrigation canal.)

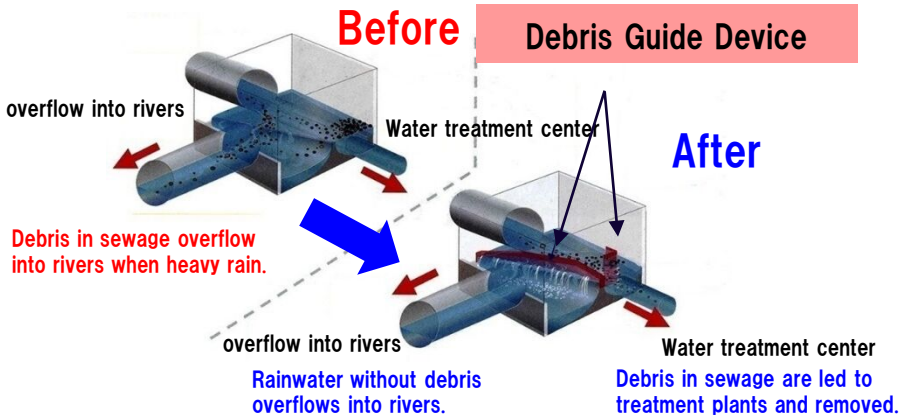
Newly launched facilities after the stop of TRWKR

■Improvement of Treatedwater Quality

Meijo Water Treatment Plant installed filtration devices and improved quality of treated water.

Meijo Water Treatment Plant
- Processing method : Conventional activated sludge process + Rapid filtration
- Operated since : May 2010

■Preventing the outflow of debris into rivers



■Installation of Narrower Slit Screens

- Shiratoribashi Pump Station
- Nakajima Pump Station
- Chitose Water Treatment Plant

◆Interval of Slits
40mm → 25mm

Facilities which started operation after the stop of TRWKR

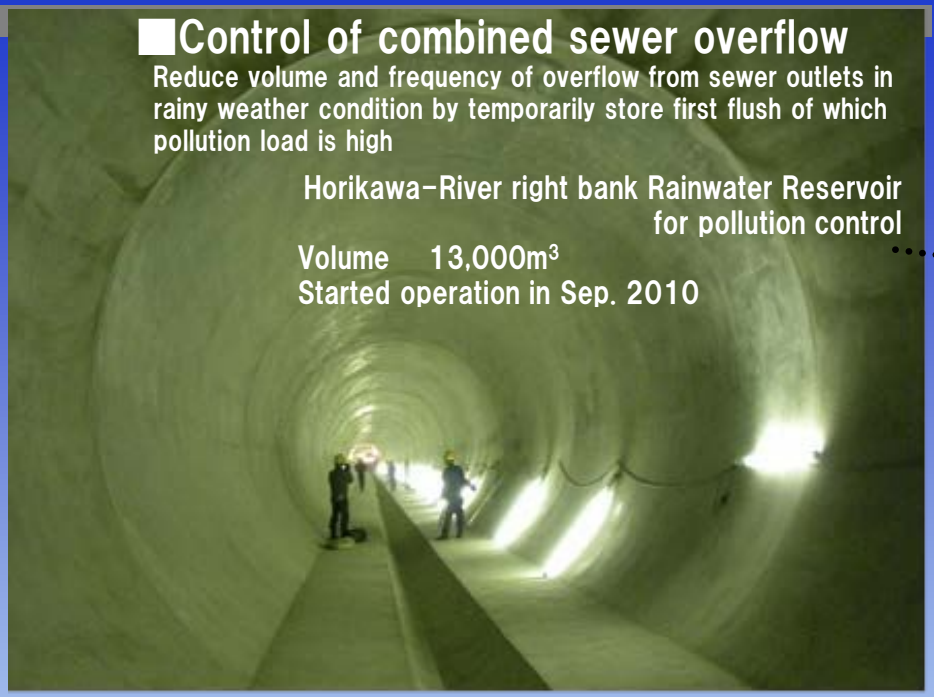
■Control of combined sewer overflow

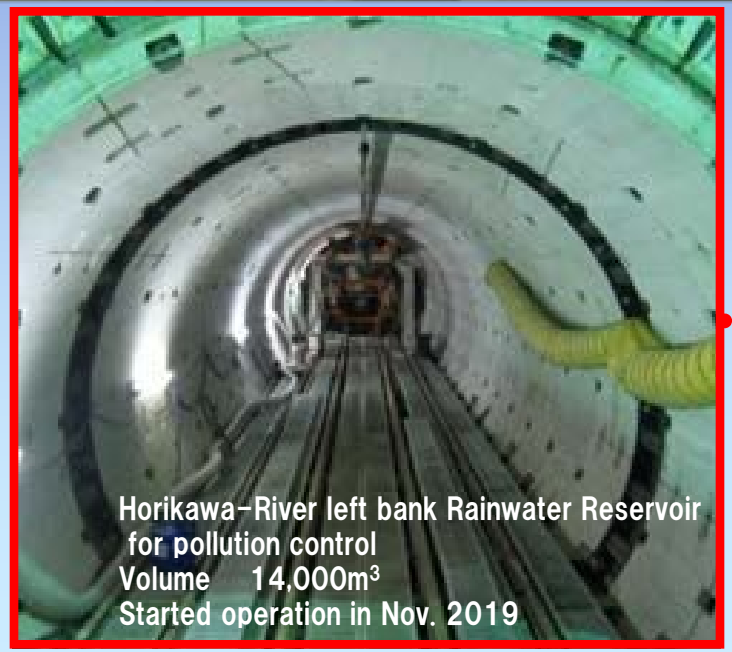
Reduce volume and frequency of overflow from sewer outlets in rainy weather condition by temporarily store first flush of which pollution load is high

Horikawa-River right bank Rainwater Reservoir for pollution control

Volume 13,000m³

Started operation in Sep. 2010

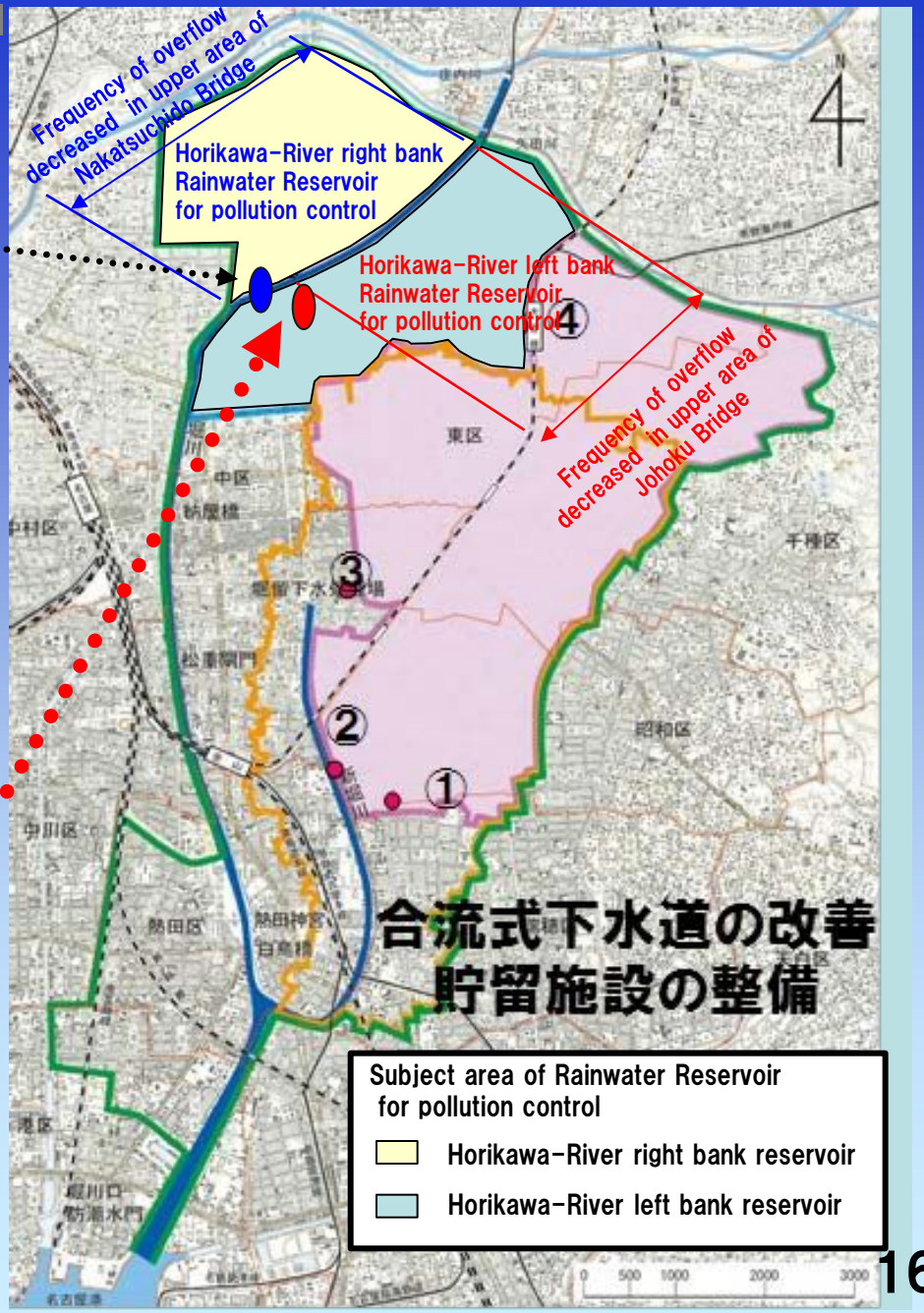




Horikawa-River left bank Rainwater Reservoir for pollution control

Volume 14,000m³

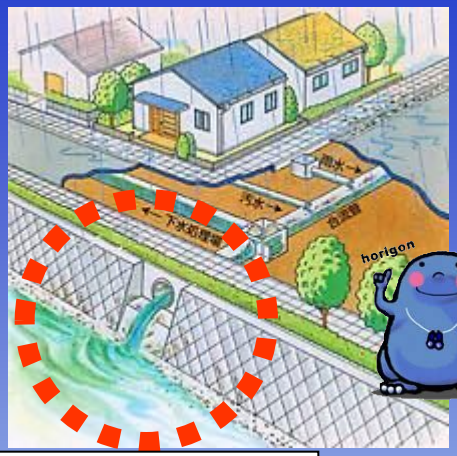
Started operation in Nov. 2019



Advanced Facility for simple treatment in Horidome Water Treatment Center

Started in Mar. 2019

Combined Sewer System in rainy day



Less than certain amount of rainwater is treated with wastewater in water treatment center, but more amount is directly discharged into the river.

Rain-water Reservoir for pollution control is the facility temporally storing the initial rainwater (="first flush" which is particularly dirty).
Accumulated rainwater in the reservoir is delivered to the water treatment center for treatment after rain stops.

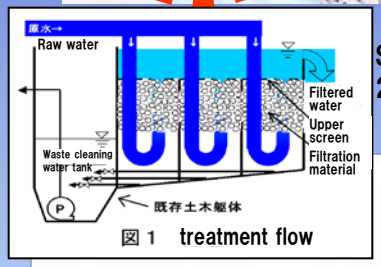
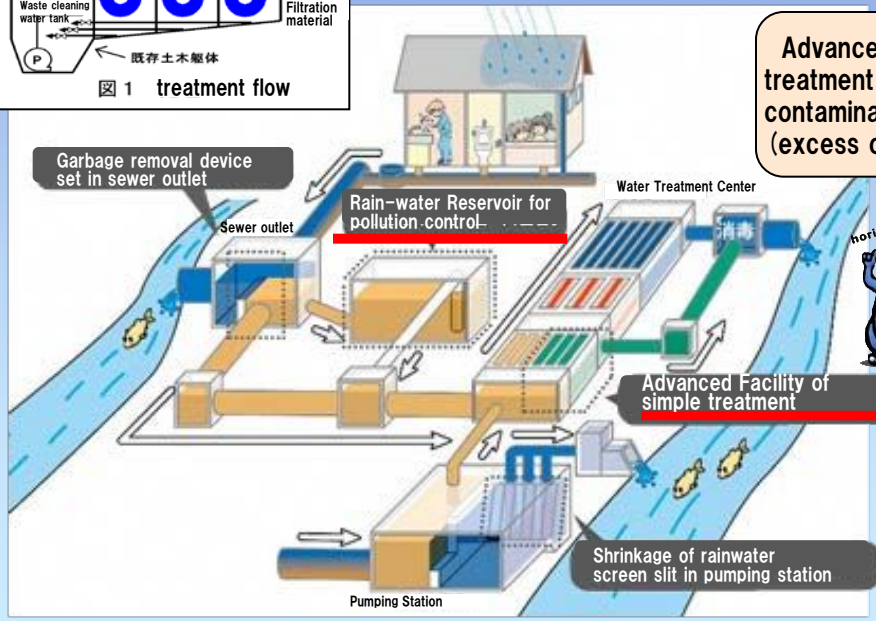


図 1 treatment flow

Source:
25th HSC Conference
(Report by Nagoya City)



Advanced Facility of simple treatment * can remove more contaminants from rainwater (excess of normal treatment).

*By replacing sedimentation tank to filtration facility, water quality improves substantially compared with conventional simple treatment.

(Source) Website of Nagoya City Waterworks and Sewerage Bureau
https://www.water.city.nagoya.jp/category/mizukankyoukoujou/2096.html

Examination of using ground water for Shin-Horikawa River

- Summarize information of groundwater capable to use for Shin-Horikawa
- Review model cases of using ground water for river clarification

(reference) Well Water of Tsuruma Library

There are many water springs in basement floor of Tsuruma Library. One of springs is abundant (more than 100 litters/min. (fluctuated)) and water quality is good.

(Source) Website of Nagoya City Environment Bureau
http://www.city.nagoya.jp/kankyo/page/0000089008.html

5. 28th stage survey report

～Column～ For the clean-up and regeneration of Horikawa River

Horikawa Sen-nin Chosatai (HSC) was established on April 22nd, 2007 for clean-up and regeneration of Horikawa River, as a place for citizens' activities (Fixed Point Observation Group, Free Survey Group and Support group).
Fixed Point Observation Group examines Horikawa River to confirm the clean-up effect by the water quality improvement measure and to make clear the condition of water quality and cause of pollution, from a viewpoint and a sense of citizen.
Free Survey Group studies Horikawa River from various view points.
Support Group supports clean-up and regeneration of Horikawa River in various-free ways. These three groups wish for clean-up and regeneration of Horikawa River, and work together in a large network.
Currently (as of Mar.19.2022), there are 2,605 groups and 53,717 people in HSC.
(108 groups in Fixed Point Observation Groups, 40 groups in Free Survey Group and 2,605 groups in Support Group) At the time of launch of HSC, there were 165 groups and 2,262 people.
We can see that the network of citizens who wish to purify and regenerate Horikawa-River has expanded significantly.
(Reference. Survey group registration status p.7～8)

We will explain the status of activities of Fixed Point Observation Groups. The Fixed Point Observation Groups carried out 6,808 observations. It has become clear from the surveys so far that the state of the water area changes from moment to moment due to the ebb and flow of the tide at the downstream section (tidal section) from the Sanage Bridge in Horikawa River. Since Fixed Point Observation Groups made many observations from the perspective and sense of the citizens (Observation in various places, tide conditions, and time zones), we are able to grasp the average condition of the water quality of the Horikawa, and trends in that change become clear. (Reference: 3. Survey period / number of reports of survey results_p.9-10)

-Pilot project of Horikawa River clean-up "from Apr. 2007 to Mar. 2012 confirmed the effect of TRWKR"-

In 5 years pilot project of Horikawa River clean-up, it was confirmed that the range of improved water quality due to TRWKR "0.4㎥/sec" was about between Sanage Bridge and Matsushige Bridge. And in this period, it was confirmed that the amount of waste "artificial waste : plastic waste" was reduced. This is probably because the public awareness has changed due to increased cleaning activities.

【Summary of 5 years pilot project】

- ■Confirmed the effect of clean-up between Sanage Bridge and Matsushige Bridge due to TRWKR
- ■The network of citizens who wish to clean and revives the Horikawa River has been expanded
- ■Citizens' awareness of clean-up improved as cleaning activities became active

The weather of the 30th Stage (Autumn to early winter : September 20～December 16) included the period during "Emergency declaration" about COVID-19 had been issued. The activities of the HSC team were forced to stopped, or carried out with prevention of confined space, dense state, close contact. So its activities were limited.

In addition, as in previous stages of COVID-19 pandemic, we think that evaluation of survey is not enough at this time, for example such as study of impact for decline in social and economic activities due to COVID-19. We think that it is necessary to reorganize, according to further investigations.

(1) State of the weather etc (reference : 4.state of the weather)

The average temperature of the 30th stage (September ～ December) was 16.1℃, which was generally around the same as normal (September ～ December average 15.7℃). And, precipitation was 112mm/month, which was generally less than normal (September ～ December average 133.0mm/month).

(Feature of the 30th stage weather etc) •Average temperature was normal
•Precipitation was low

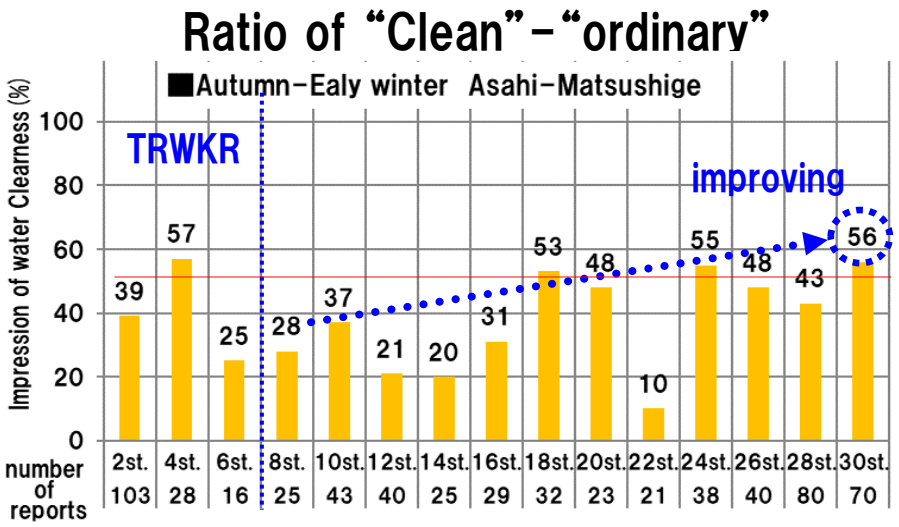
(2) Implementation of new water quality improvement measures

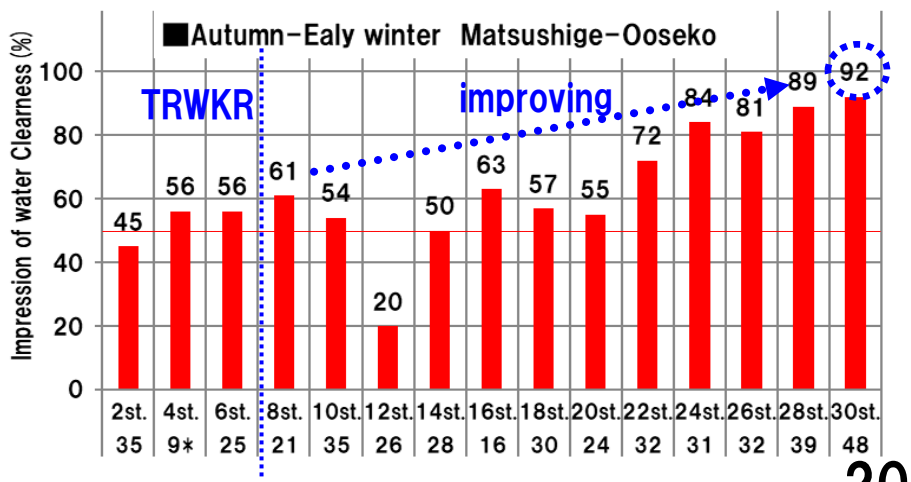
After the TRWKR was stopped "Mar. 2010", new measures were implemented to improve the water quality.
In FY2019, a ninth well was drilled in the Horikawa River to utilize shallow grand water upstream of the Kurokawa No.1 Bridge, and water conduction to the Horikawa River began. In addition to improve the combined sewer system, a rainwater detention storage pond on the left bank of the Horikawa River and a simplified advanced treatment facility at the Meijyo Water Treatment Center were put into service. In the Shin-Horikawa River, dredging and covering of the river channel was conducted in FY2017 near the confluence as an odor control measure.
Similarly, in FY2018, dredging of the river channel was conducted in the upstream section to combat odor.
In addition, the Horidome Water Treatment Center on the Shin-Horikawa River put a simplified treatment and upgrading facility into service in March 2019.
And in FY2020, a new rapids was formed downstream of the Shinhori Bridge on the Horikawa River.
In FY2021, a tenth well is being dug upstream of the Asahi Bridge on the Horikawa River.

(3) Change in water quality of Horikawa River

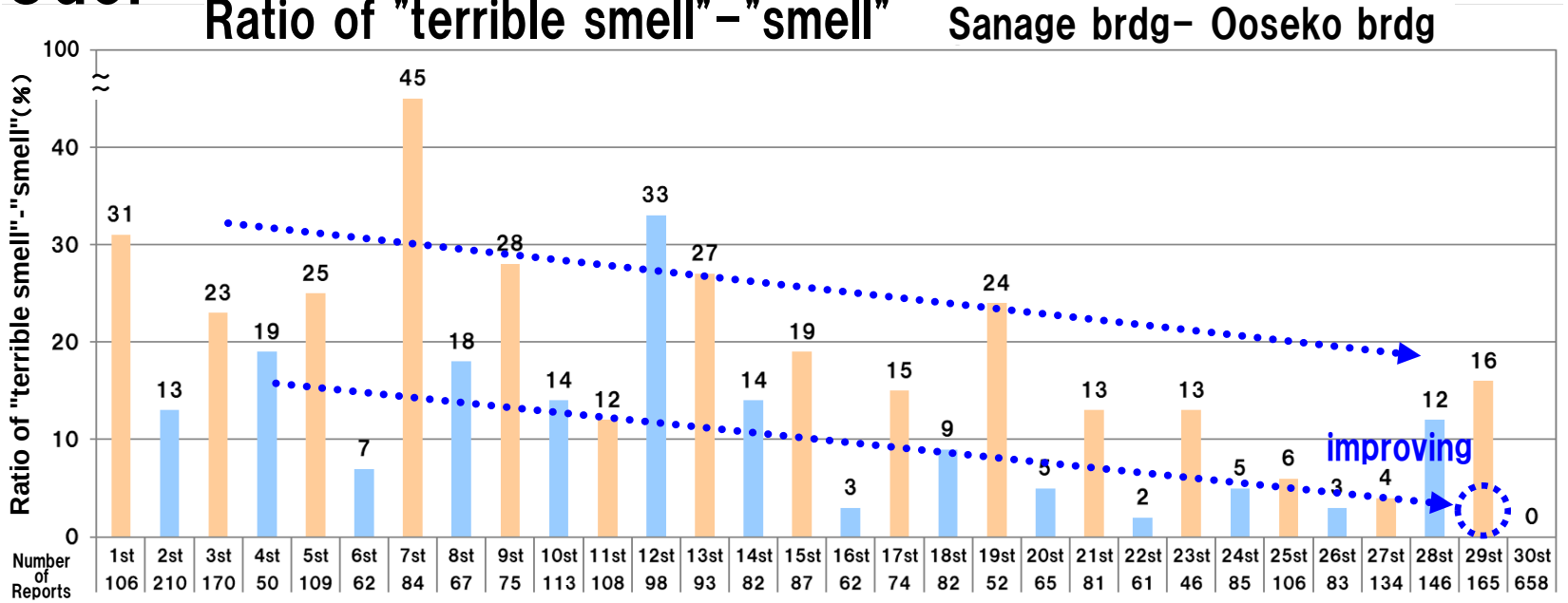
Although water quality of Horikawa River got worse after TRWKR there has been a general tendency for improvement.
There were improvements mainly in "impression of water clearness" and "Odor" in the 30th stage. "impression of water clearness" improved between Asahi Brdg - Ooseko Brdg. Especially the ratio of "clean"-"ordinary" reached 92% between Matsushige Brdg - Ooseko Brdg. The ratio of "terrible smell"-"smell" decreased between Sanage Brdg - Ooseko Brdg and that of "no smell" increased to 95%.

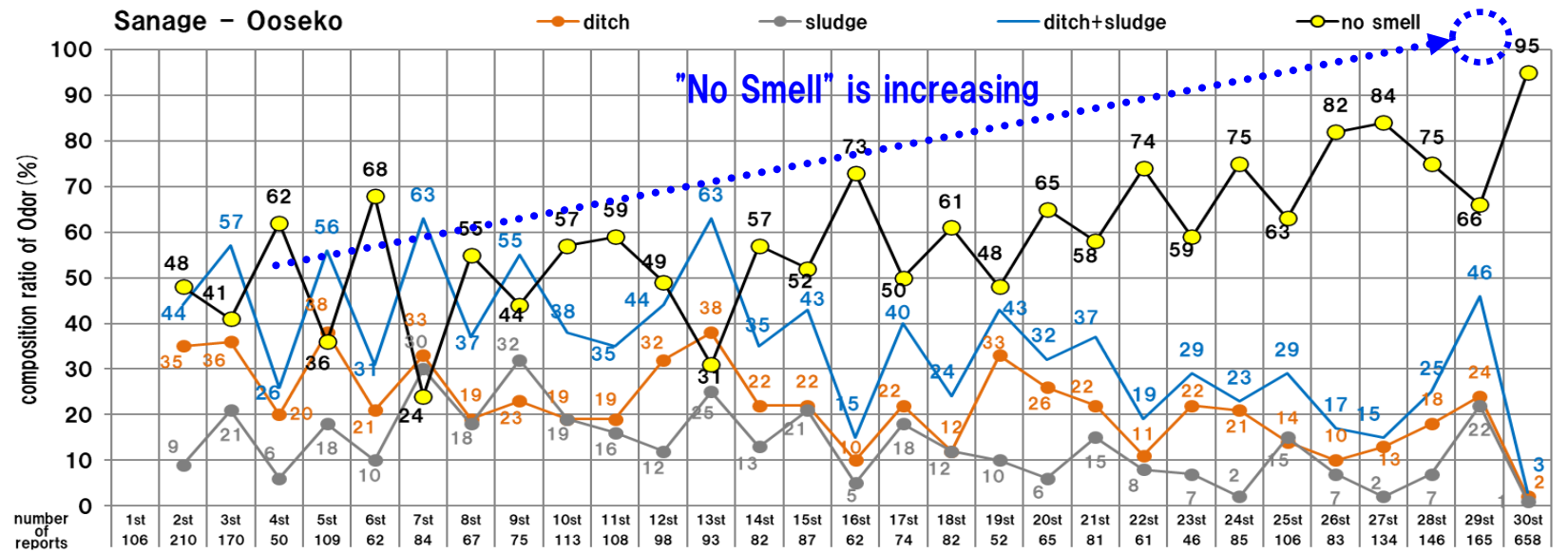
Impression of Water Clearness





Odor

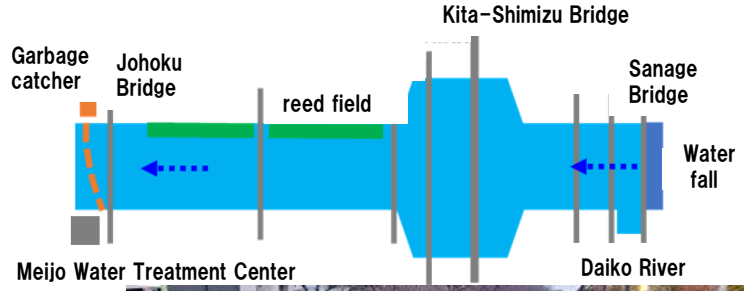

Ratio of "terrible smell"-"smell"
Sanage brdg- Ooseko brdg
Ratio of "terrible smell"-"smell"(%)
improving
Number of Reports
1st 106
2st 210
3st 170
4st 50
5st 109
6st 62
7st 84
8st 67
9st 75
10st 113
11st 108
12st 98
13st 93
14st 82
15st 87
16st 62
17st 74
18st 82
19st 52
20st 65
21st 81
22st 61
23st 46
24st 85
25st 106
26st 83
27st 134
28st 146
29st 165
30st 658


Change in the composition ratio on Odor
Sanage - Ooseko
ditch
sludge
ditch+sludge
no smell
"No Smell" is increasing
composition ratio of Odor (%)
number of reports
1st 106
2st 210
3st 170
4st 50
5st 109
6st 62
7st 84
8st 67
9st 75
10st 113
11st 108
12st 98
13st 93
14st 82
15st 87
16st 62
17st 74
18st 82
19st 52
20st 65
21st 81
22st 61
23st 46
24st 85
25st 106
26st 83
27st 134
28st 146
29st 165
30st 658

(4) "Floating garbage" and "bubbles" between Johoku Bridge and Sanage Bridge

"Our Requests" to the City of Nagoya about "floating garbage" and "bubbles" between Johoku Bridge and Sanage Bridge are summarized forcing on the following four points obtained by field work.

1) Floating matters near Kita-Shimizu Bridge
2) Floating matters near Johoku Bridge
3) Bubbles and smell at water fall of Sanage Bridge
4) Mechanism of gathering bubbles at water fall of Sanage Bridge



『Our Requests』

◆ Garbage (①～③ were already requested at 28th stage meeting)

①Establishment of municipal ordinance which prohibit throwing away, leaving, and scattering garbage in Horikawa River, Shin-Horikawa River and the surrounding area, and impose fine on a person who violates

②Installation of sign boards etc., to announce the ordinance at important places

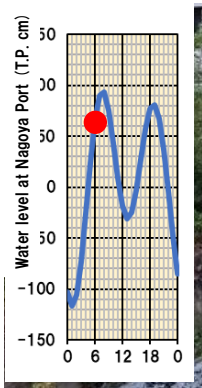
③Some measure to prevent garbage felled into the river

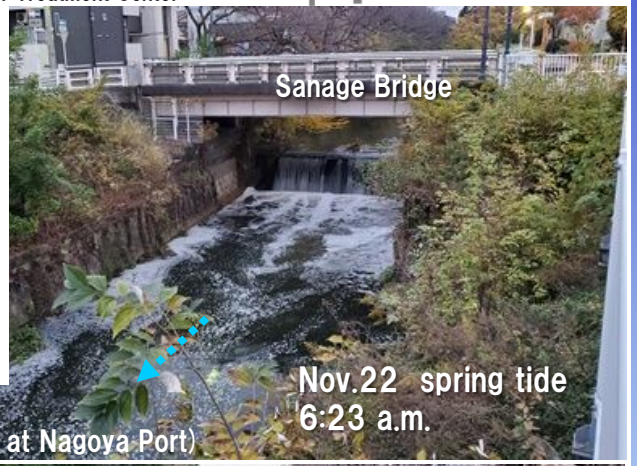
④Some effective measure to collect floating garbage

◆ Bubbles near Sanage Bridge

①Some measure to reduce bubbles and smell

②Confirmation of water safety (water quality・smell)





(5) 15th Simultaneous Survey on Horikawa River

Comparison with total lunar eclipse（2021 in May）

■ About changes of water color, smell, and bubbles in Horikawa river

It was reported that the water color was white gray, dark gray like sludge, and red tide color, and the bubbles occurred from the riverbed, but it was not reported about the rising of sludge from the riverbed.

■ About Other changes in Horikawa River

It was not reported about living things such as fish and floating things accumulated at the boundary of the tide.

We believe that conducting continuous surveys and accumulating and organizing data will enable further elucidation of the water pollution mechanism and more effective measures against water pollution with an emphasis on the senses of citizens.

(6) A change in 3 years after dredging sludge (autumn～early winter)

Sludge was dredged in the upper from Tateishi Brdg. to headwaters (Horidome) against bad smell.
period:September in 2018～February in 2019

It was found that impression of clearness and smell was improved around Kinen Brdg. and Mukaida Brdg., an ecology was changed in all along the river.

■Impression of clearness and smell was improved around Kinen and Mukaida Brdg.
①"Middle"～"Clean" increased. (Kinen Brdg. 40%, Mukaida Brdg. 50%)
②"A little smell"～"No smell" increased. (Kinen Brdg. 90%, Mukaida Brdg.100%)
③"No smell" increased. (Kinen Brdg. 70%, Mukaida Brdg.100%)
④At Mukaida Brdg. "Bubble from bottom","Smell of rotten eggs" was 0%.
■An ecology was changed in all along the river.
①Ducks of winter birds were found in all along the river.
②Young dotted gizzard shads (?) were found.
③Young kingfishers were found. (They might bred.)

→ An ecology rallied
(=We expect a rally of self-purification.)

Group of young dotted gizzard shads (?)


Young bird

(7) Where can we see many waterfowl in Horikawa and Shin-horikawa?

Based on the results of the citizen survey between September and December (the period when winter birds come), we tried to study where many waterfowl were seen flying in the Horikawa and Shin Horikawa. The characteristics of waterfowl companions can be broadly divided into species that mainly feed near the surface of the water (hereinafter referred to as "water surface collected species") and species that mainly dive into the water and collect food (hereinafter referred to as "diving collected species"). This time, we divided the main waterfowl around Horikawa and Shin-horikawa into these two groups and organized them.

(Hypothesis) Where can we see many waterfowl in Horikawa and Shin-horikawa?
(1) Food is available + (2) Good condition for take off + (3) Rest and sleep are available

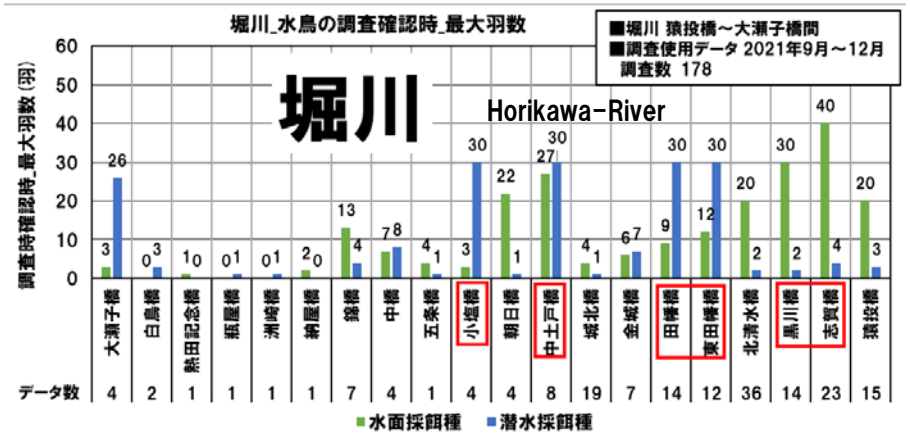
①Food is available

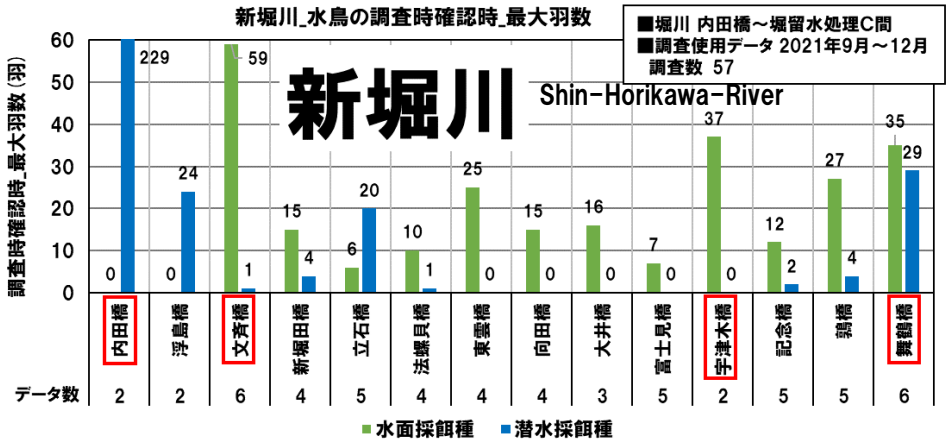
■Water surface collected species
・Places where there is food near the surface of the water
・A place where animals and plants can inhabit, grow and breed at the water's edge, seawalls and riverbeds, and prey on them near the surface of the water.

■ Diving collected species
・Places where food is near the surface of the water and underwater
・A place where animals and plants inhabit, grow, and breed at the water's edge, seawalls, and riverbeds, and can prey on them near the surface of the water or in the water.

＋ **②Good condition for take off**
Place with enough space for take off

＋ **③Rest and sleep are available**
Place with safe and secure water surface, waterside, flat ground, etc.





According to the results of research, we found that “places which many wild ducks (winter bird) are available around Horikawa-River and Shin Horikawa-River” relate to places which "food flowing", "food is available at water edge", "water surface is open" and "good condition for rest".
Furthermore, if we observe, record, and organize the environment of places which many waterfowl confirmed, the appearance of the urban area waterside that waterfowl flying into will be clarified. And it is useful for future direction of waterside development.

(8) Easy slope at the edge of the water

Thanks to the easy slope at the edge of the water constructed by shore protection maintenance work, there are many group of small fishes who like shallow water place such as mosquitofish. And we can observe water transparency.

As a result of shore protection maintenance work for the heavy rain measurement, easy slope at the edge of the water restored and created part of ecosystem of the water.
From now on it will look a little dirty because of algae, but we will accept it as the working of nature and continue observing the growth and reproduction of living things.

from secretariat

■ Every data you offer to us is valuable

Information about subtle change you find when you survey Horikawa river can be valuable data to understand the present situation of the river. We're looking forward to your data from now on.

■ Let us introduce your activity

Your activity, such as survey, think and cheer up Horikawa, is the motivation to increase the number of those who love Horikawa, Nagoya City and the Earth.

■ Let's hand down the past appearance of Horikawa as record

To know about the past Horikawa is very important to design the future Horikawa.

We refer Horikawa's photos taken in Taisho and Showa era to know forgotten past Horikawa. Do you keep photos which Horikawa was photographed in in your album? For example, photo of your family with Horikawa in the background of the picture is Okay.

(contact) secretariat

e-mail:2010@horikawa1000nin.jp

Please send comments and pictures (with date and place) from mobile phone or PC.

＊We think image quality of picture taken by mobile phone camera is enough.