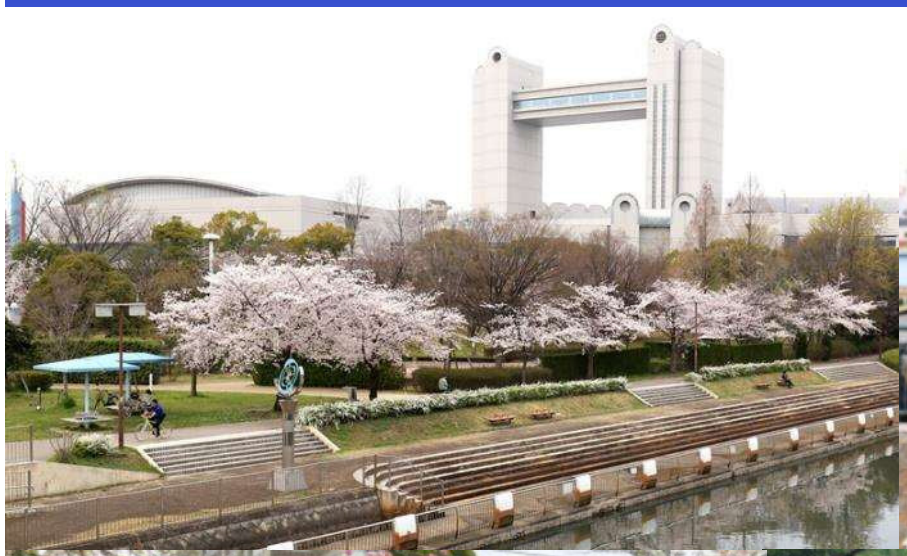
Horikawa Sen-nin Chosatai 2010 (HSC)
Summary meeting for the 23rd stage

Place:
Nagoya Urban Institute
Conference room (11th floor)






The secretariat of Horikawa Sen-nin Chosatai 2010
Sep.29th.2018

Photos:The secretariat of
Goyousui-ato-gaien-aigokai
Survey Group

1. Horikawa Sen-nin Chosatai 2010

～Transmission of Raw Water from Kiso River～

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

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)

■ 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, February.2012
Branch of contribution for Regional Environment Development Award for Excellence

■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

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

Transmission of Raw Water from Kiso River

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

To verify the clarification effects of TRWKR
Surveys during TRWKR period :
April.2007 ～ March.2010
Surveys after the stop of TRWKR period :
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 Cheering Groups Cheering
  clarification of Horikawa

The survey from a viewpoint and a sence 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 house.

Water Environment of Horikawa River

Area of basin: 51.9km^2
Length: 16.2km (Tidal effect section 13.6km)

Change in temperature, precipitation and hours of sunshine

Kiso River is our water source.

Cause of breeding of pphytoplankton, nitorogen 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

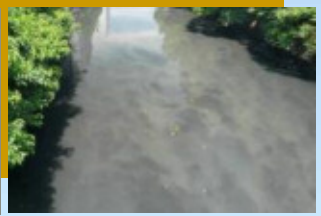
It has looked like red tide or blue tide.
In Nagoya Port and downstream of Horikawa, it is said that phytoplankton does over breeding and extinction, so water basin is polluted

Sludge rises and floats.


Red Tide

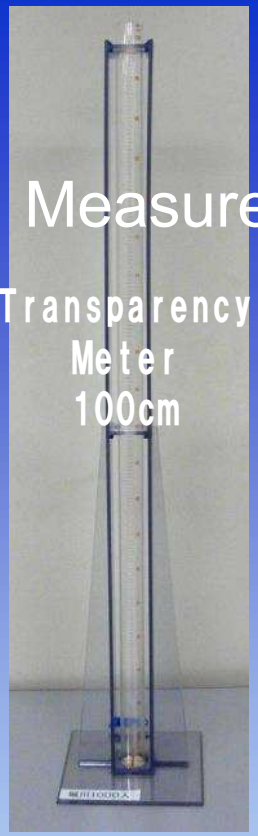

Blue Tide


Floating Sludge


Raised Sludge

Observation method at fixed-point

Measurement of Transparency



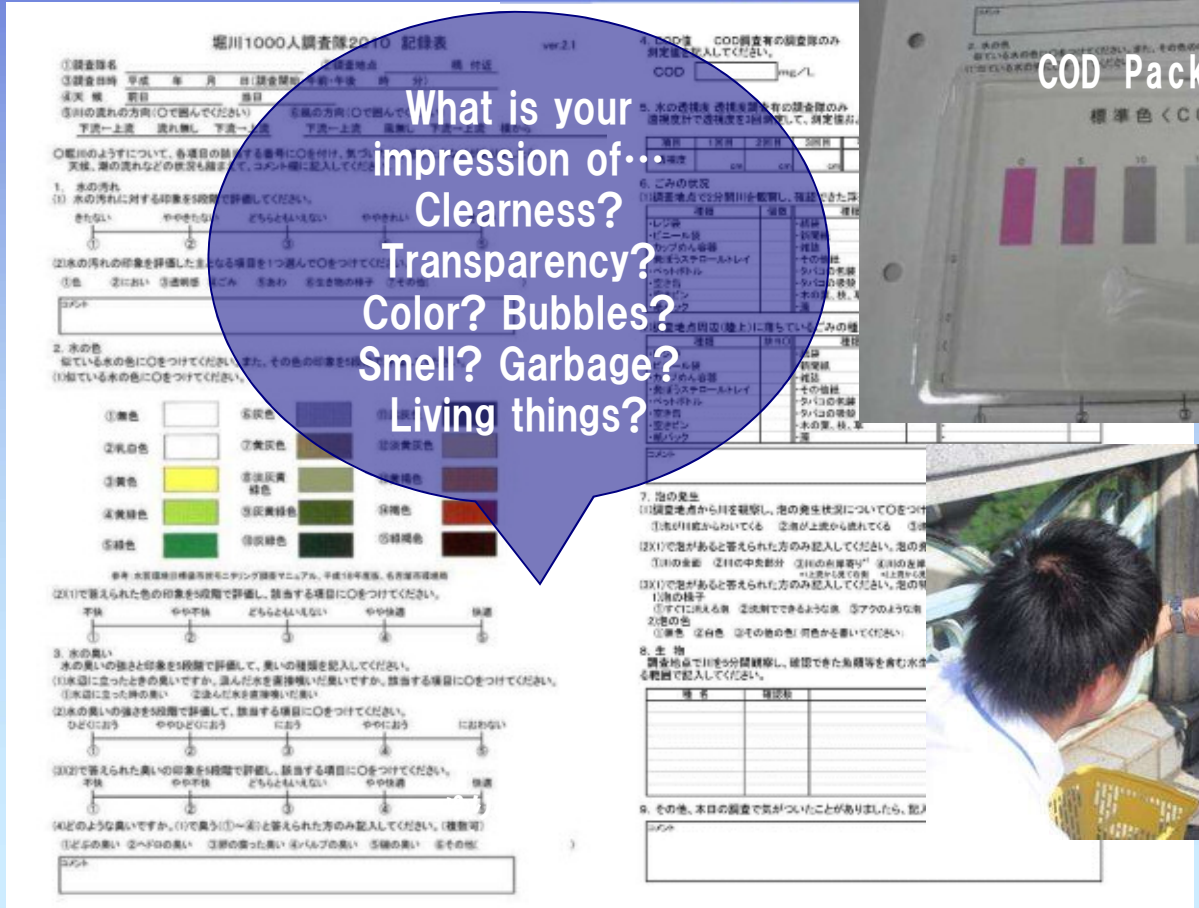
Transparency Meter 100cm

Photo: Shinko Survey Group

Measurement of COD

COD: Chemical Oxygen Demand
This is an index of water contamination used for sea, lakes, and marshes.
It is an oxygen consumption required for oxidation of organic matters dissolved in ample water.
The higher COD, the more it is contaminated.

What is your impression of…
Clearness?
Transparency?
Color? Bubbles?
Smell? Garbage?
Living things?



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.

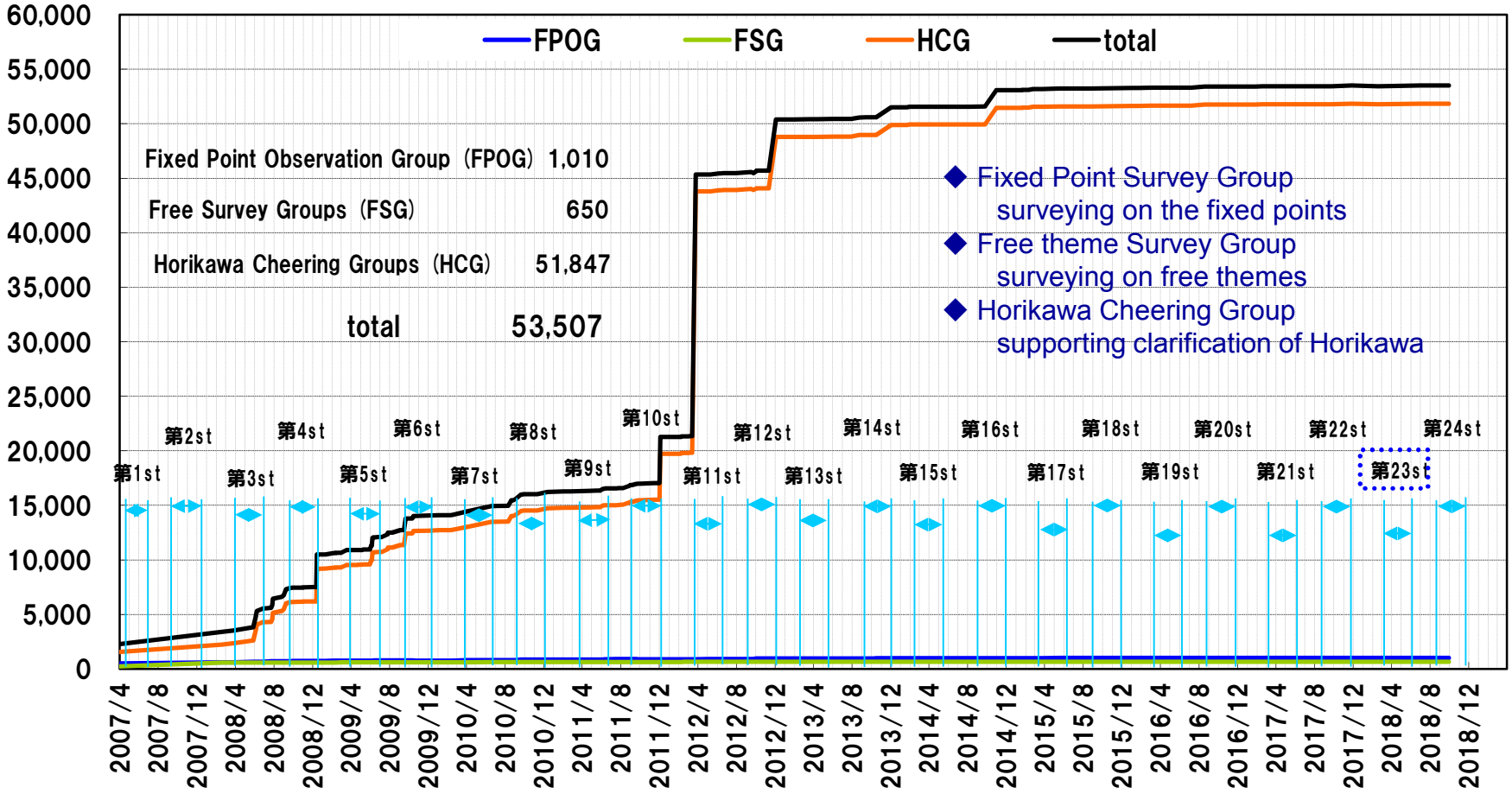
More than 50 thousand citizens' network

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 29th Sep.2018
Fixed Point Observation Groups	55 groups 497 persons	101 groups 1,010persons
Free Survey Groups	22 groups 234 persons	40 groups 650 persons
Horikawa Cheering Groups	88 groups 1,531 persons	2,596 groups 51,847 persons
Total	165 groups 2,262 persons	2,737 groups 53,507 persons

Number of Participants

Number of Participants in 3 classes

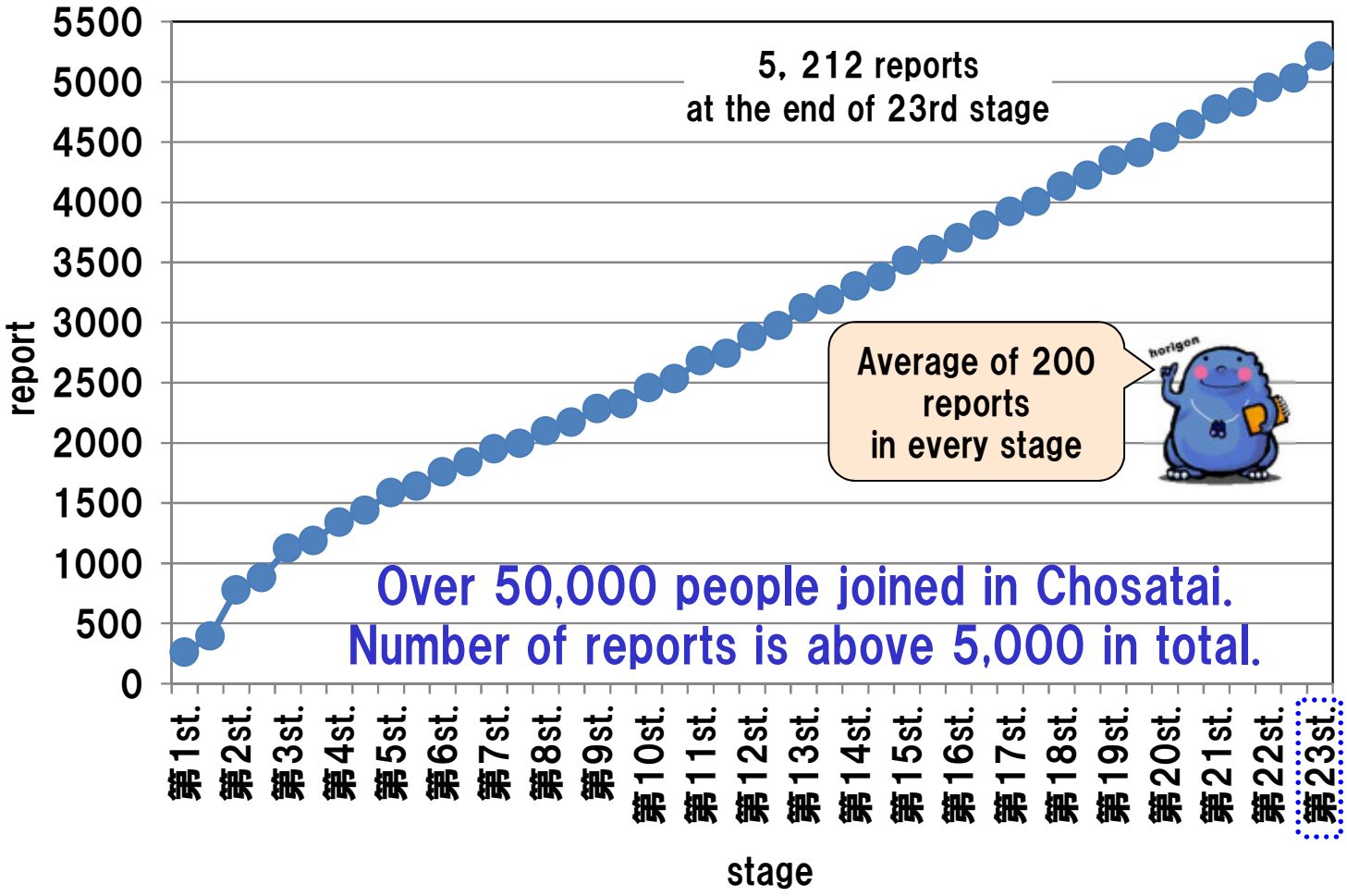


As of Sep. 29th, 2018

3. Survey Periods and Number of Reports

Survey Period			reports	Horikawa River	Shin-Horikawa River
With TRWKR; Utilization of shallow ground water; At upstream fo Kitashimizu bridge; Introduction of advanced water treatment at the Meijo Water Treatment Center	1st stage	Spring~Early summer/Apr.22nd~Jun.30th.2007	258	258	-
	interval	Jul.1st~Sep.7th.2007	134	134	-
	2nd stage	Autumn~Early Winter/Sep.8th~Dec.16th.2007	383	383	-
	interval	Dec.17th.2007~Mar.31st.2008	103	103	-
	3rd stage	Spring~Early summer/Apr.1st~Jun.30th.2008	245	245	-
	interval	Jul.1st~Sep.27th.2008	64	64	-
	4th stage	Autumn~Early Winter/Sep.28th~Dec.16th.2008	152	152	-
	interval	Dec.17th.2008~Mar.31st.2009	100	100	-
	5th stage	Spring~Early summer/Apr.1st~Jun.30th.2009	145	145	-
	interval	Jul.1st~Sep.26th.2009	54	54	-
	6th stage	Autumn~Early Winter/Sep.27th~Dec.16th.2009	120	120	-
	interval	Dec.17th.2009~Mar.31st.2010	81	81	-
Increase of Transmission Volume fromthe Shonai River; In-service of Horikawa Ugan Rain-Water Reservoir for pollution control; Utilization of reclamed wastwater from Moriyama Water Treatment Center from Apr. to Oct.	7th stage	Spring~Early summer/Apr.1st~Jun.30th.2010	111	111	-
	interval	Jul.1st~Sep.11th.2010	44	44	-
	8th stage	Autumn~Early Winter/Sep.12th~Dec.17th.2010	104	104	-
	interval	Dec.18th.2010~Mar.31st.2011	72	72	-
	9th stage	Spring~Early summer/Apr.1st~Jun.30th.2011	112	112	-
	interval	Jul.1st~Sep.10th.2011	42	42	-
	10th stage	Autumn~Early Winter/Sep.11th~Dec.16th.2011	133	133	-
	interval	Dec.17th.2011~Mar.31st.2012	77	77	-
	11th stage	Spring~Early summer/Apr.1st~Jun.30th.2012	148	148	-
	interval	Jul.1st~Sep.21th.2012	60	59	1
	12th stage	Autumn~Early Winter/Sep.22th~Dec.16th.2012	139	135	4
	interval	Dec.17th.2012~Mar.31st.2013	92	78	14
At upstream of Seko Bridge	13th stage	Spring~Early summer/Apr.1st~Jun.30th.2013	145	129	16
	interval	Jul.1st~Sep.28th.2013	70	55	15
	14th stage	Autumn~Early Winter/Sep.29th~Dec.17th.2013	113	99	14
	interval	Dec.18th.2013~Mar.31st.2014	79	68	11
At upstream of Sanage Bridge	15th stage	Spring~Early summer/Apr.1st~Jun.30th.2014	133	117	16
	interval	Jul.1st~Sep.28th.2014	91	78	13
Covered sand	16th stage	Autumn~Early Winter/Sep.29th~Dec.16th.2014	99	90	9
	interval	Dec.17th.2014~Mar.31st.2015	107	89	18
At upstream of Shiga Bridge	17th stage	Spring~Early summer/Apr.1st~Jun.30th.2015	113	100	13
	interval	Jul.1st~Sep.19th.2015	81	69	12
	18th stage	Autumn~Early Winter/Sep.20th~Dec.16th.2015	126	109	17
At upstream of Nakatodo Bridge	interval	Dec.17th.2015~Mar.31st.2016	91	79	12
	19th stage	Spring~Early summer/Apr.1st~Jun.30th.2016	127	116	11
	interval	Jul.1st~Sep.19th.2016	62	54	8
	20th stage	Autumn~Early Winter/Sep.20th~Dec.16th.2016	130	107	23
	interval	Dec.17th.2016~Mar.31st.2017	104	84	20
Odor control at Shin-Horikawa River	21st stage	Spring~Early summer/Apr.1st~Jun.30th.2017	129	100	29
	interval	Jul.1st~Sep.18th.2017	58	48	10
	22nd stage	Autumn~Early Winter/Sep.19th~Dec.20th.2017	121	93	28
At upstream of Kinjo Bridge	interval	Dec.21st.2017~Mar.31st.2018	80	67	13
	23rd stage	Spring~Early summer/Apr.1st~Jun.30th.2017	180	107	73
total			5,212	4,812	400

Number of Reports



We got 5,212 reports in total by when 23rd stage finished.
The number of reports by Shin-Horikawa River were 400 out of 5,212.
Lots of people research the water environment of Horikawa River
continually from a viewpoint and sense of citizens.

4. State of the weather

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

The weather changed with a cycle of several days in the 23rd Stage (April-June). And, Highest temperature and maximum rainful were recorded as a Stage from spring to early summer. In addition, the time of entering rainy season was 6th June as average as normal.

Feature : Changes in climate with a cycle of several days
Recorded highest temperature and maximum rainful

■Temperature

Average annual temperature was higher than normal value (18.7℃), and the highest 19.9℃ since HSC started action. Average monthly temperature is higher than normal value too, especially in April it was 2℃ higher.

■Precipitation

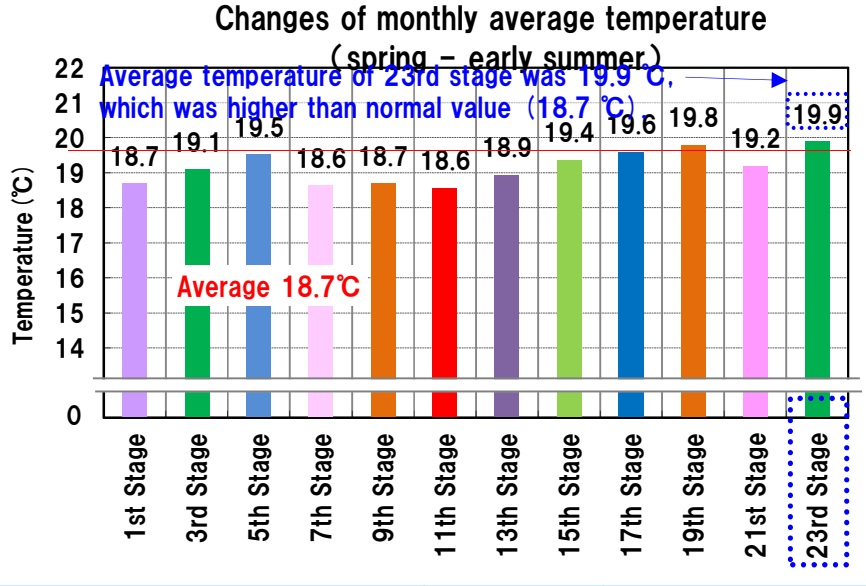
Average monthly rainfall is greater than normal value (160.8mm), and the greatest 220mm since HSC started action. The monthly rainfall amount was higher than normal value in April and May, and it was about normal value in June.

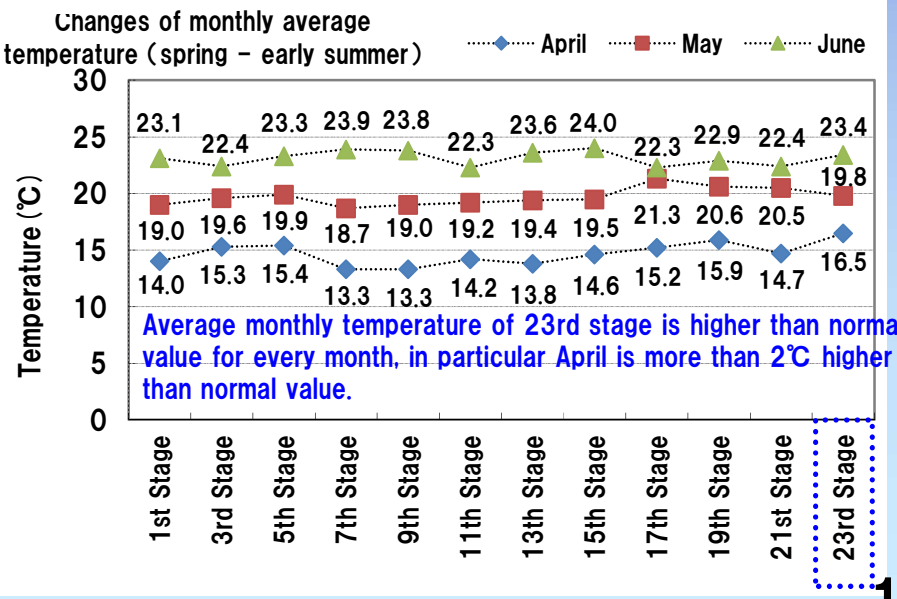
■Sunshine Hours

Average monthly sunshine hours were 207 which are about 26 longer than normal value. Average in all months It is longer than normal value.

名古屋地方気象台　平年値(月ごとの値)

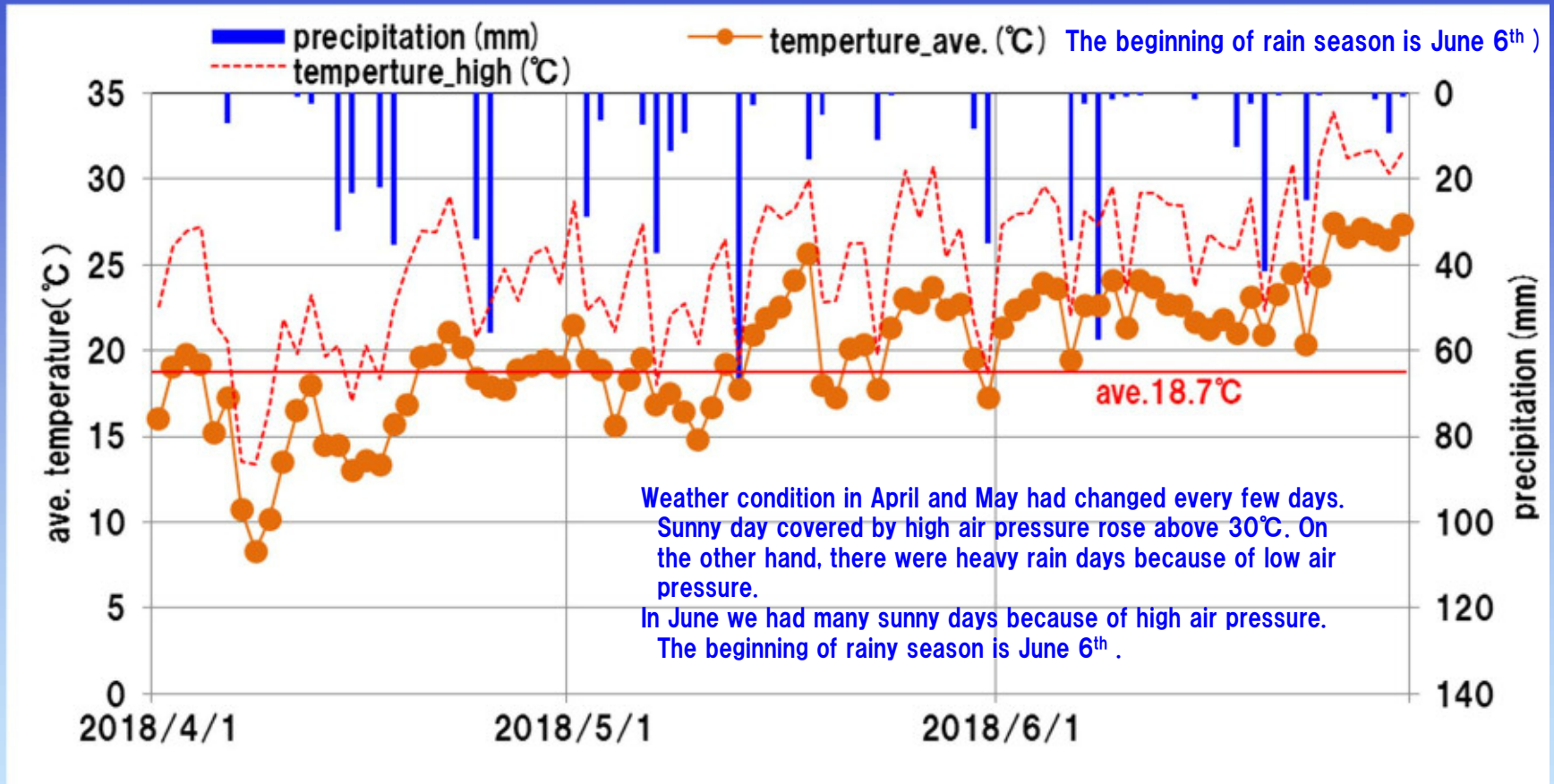
区分	降水量(mm) 合計	気温(℃) 平均	気温(℃) 最高	気温(℃) 最低	日照時間(時間) 合計
統計期間	1981～2010	1981～2010	1981～2010	1981～2010	1981～2010
資料年数	30	30	30	30	30
4月	124.8	14.4	19.9	9.6	196.6
5月	156.5	18.9	24.1	14.5	197.5
6月	201.0	22.7	27.2	19.0	149.9
平均	160.8	18.7	23.7	14.4	181.3
9月	234.4	24.1	28.6	20.7	151.0
10月	128.3	18.1	22.8	14.1	169.0
11月	79.7	12.2	17.0	8.1	162.7
12月	45.0	7.0	11.6	3.1	172.2
平均	121.9	15.4	20.0	11.5	163.7





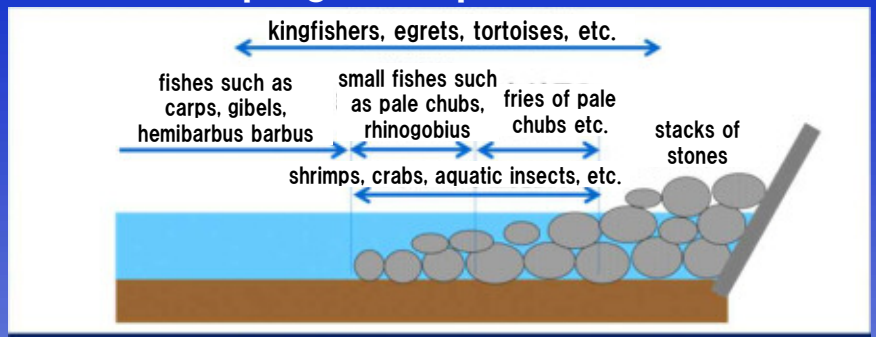
Normal value for April to June (1981 to 2010) Average is 18.7℃

23rd stage Precipitation and temperature (ave.)



Record-breaking High temperature and frequent rain.

Shaping of Rapids and Pool



Rise of self-purification by food chain

dirt of water (organic substance, nitrogen, phosphorus)

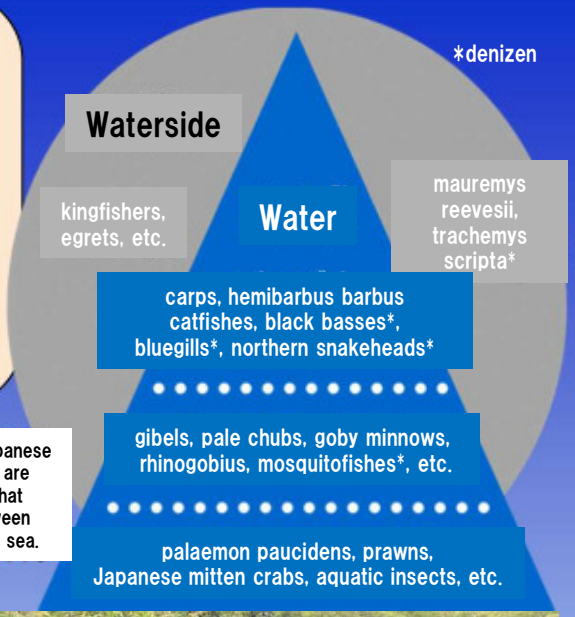
Algaes and microbes stick on stones with the dirt as nutrition.

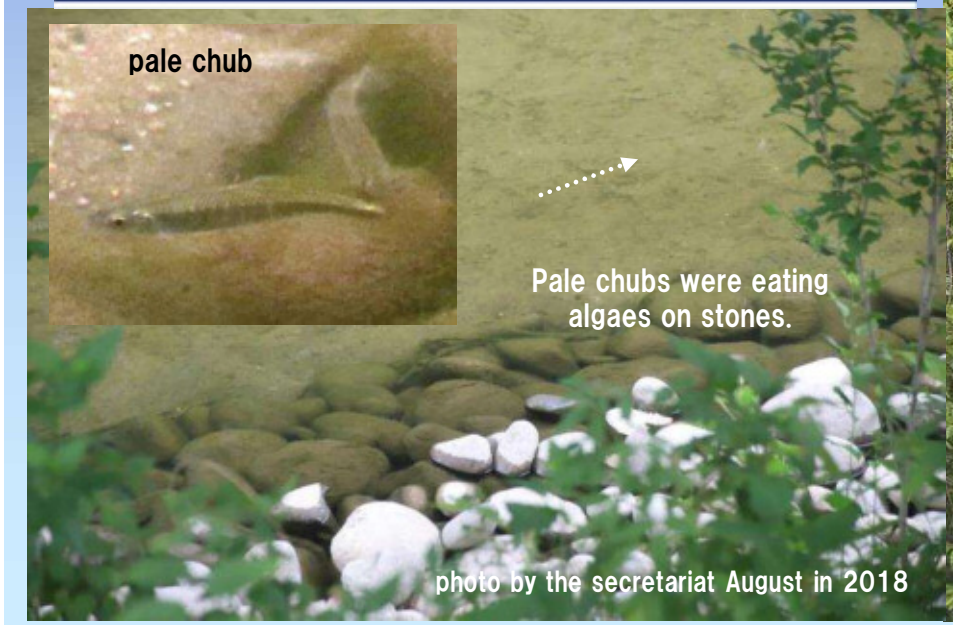
Small fishes, shrimps, aquatic insects feed the algaes and the microbes.

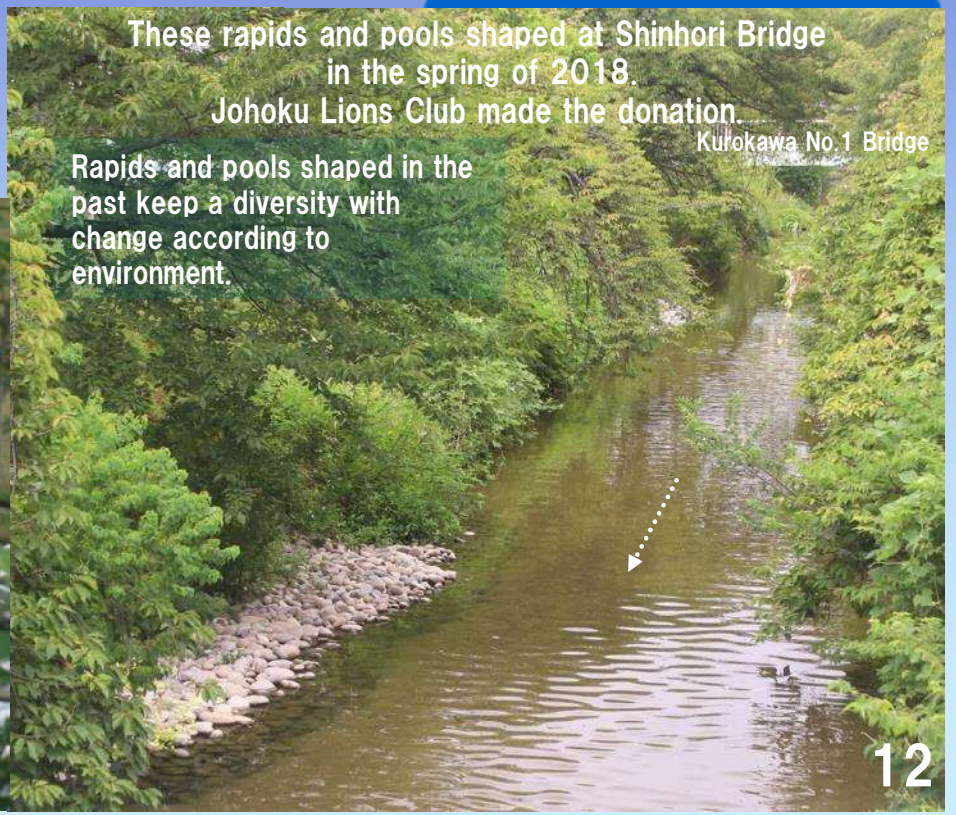
Big fishes and birds prey the small fishes and aquatic insects.

It was identified that various organisms breed and grow when rapids and pools were shaped.
Johoku Lions Club made a donation of building rapids and pools at Shinhori Bridge in the spring of 2018.
This place has been a habitat of organisms that like cobble stones.

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





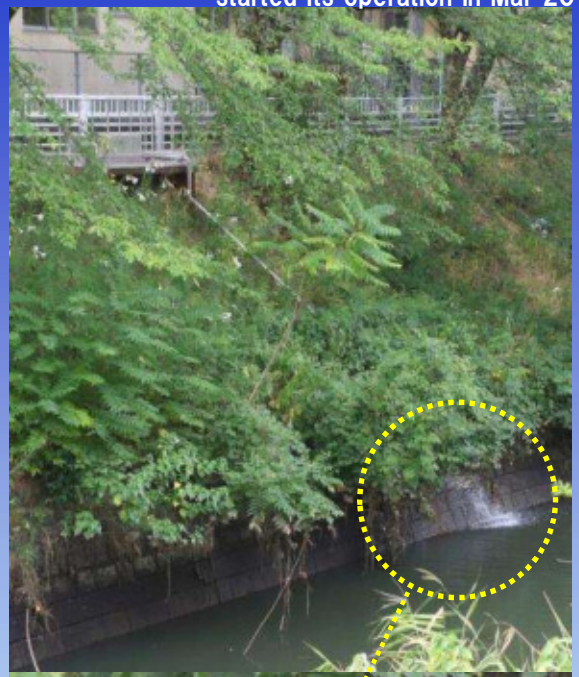


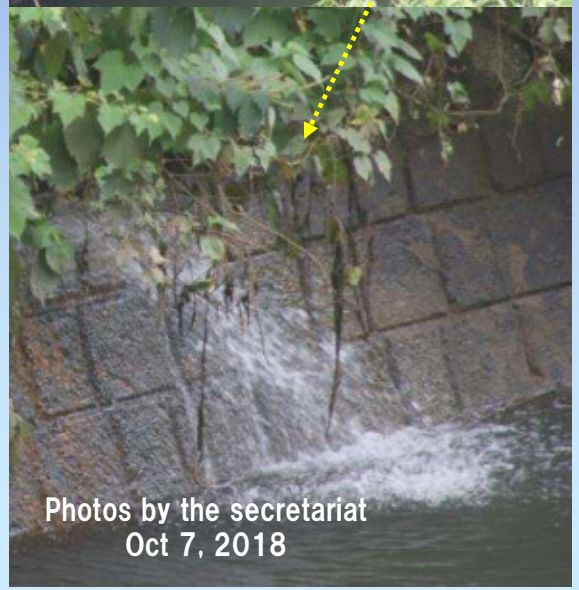
Newly sand-cover construction

Bet. Sakura Bridge-Naka Bridge
Bet. Gojo Bridge-Habashita Bridge
Dec 2017-Jan 2018

Securement of a water source

(Using shallow ground water)
A well at upstream of Kinjyo Bridge
started its operation in Mar 2018





Measures against smells at Shin-Horikawa River

(Dredging・Sand covering)

Downstream Dec 2017-Jun 2018
Upstream Sep 2018-

5. 23rd stage survey report

Introduction ～Column～

～Column～ For the clarification and regeneration of Horikawa River

Horikawa Sen-nin Chosatai (HSC) was established on 22nd April, 2007, as a place for citizens' activities, such as Fixed Point Observation Group, Free Survey Group and Cheering group, for clarification and regeneration of Horikawa River.

Fixed Point Observation Group examines Horikawa River to confirm the clarification effect by the measures for water quality improvement and to make clear 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. Cheering Group supports clarification and regeneration of Horikawa River in various-free ways. These three groups wish for clarification and regeneration of Horikawa River, and work together in a large network.

Currently (as of Sep. 29th 2018), there are 2,737 groups and 53,507 people in HSC. (101 groups in Fixed Point Observation Groups, 40 groups in Free Survey Group and 2,596 groups in Cheering Group) At the time of launch of HSC, there were 165 groups and 2,262 people. It shows that the network of citizens wishing for clarification and regeneration of Horikawa River has expended greatly (conference2 : pp6.7)

Fixed Point Observation Group observed 5,212 times from 1st stage to 23rd stage. So far, we found ever-changing state of the water due to the influence of the tides, at the downstream from the Sanage Bridge. And we found that a lot of observation results from the Fixed Point Observation Group can capture the average state of water quality of Horikawa River from citizens' point of view and sense, and understand the tendency of the change of water quality. (conference3 : pp8.9)

5. 23rd stage survey report

Introduction ～Column～

～Column～ For the clarification and regeneration of Horikawa River

～Pilot project of the clarification of Horikawa River～;
we confirmed the clarification effect of TRWKR from April.2007 to March.2012

We confirmed that water quality between Sanage Bridge and Matsushige Bridge had been improved by TRWKR (0.4m3/sec.) in this five years. And in this period, we confirmed that garbage (artificial garbage: plastic type garbage etc.) were reduced. It is considered that because the citizen's awareness changed, and cleaning activity became active.

【Five years summary】
■We confirmed clarification effect of TRWKR.
■Network of citizens wishing for clarification and regeneration of Horikawa River has expanded greatly.
■Citizen's awareness changed, and the cleaning activity became active.

(1) Weather Condition

In the 23rd stage (from Apr. to June. 2018) the weather changed every few days and the highest temperature and the heaviest rainfall in the stage from Spring to early Summer was recorded. The rainy season has started on June 6th, it was as early as an average year.

(Feature of the Weather in the 23rd stage) Change of the weather every few days, record breaking temperature (highest) and rainfall (heaviest)

(2) New Measures for Water Quality Improvement

After the stop of TRWKR in March 2010, new measures for water quality improvement of Horikawa River have been implemented.

Shallow and deep in upstream section of Sanage Bridge for improvement of self-purification function has been implemented since FY 2012 and it continues thanks to the donation from Johoku Lions Club in 2018.

Advanced water treatment at Meijo Water Treatment Center was introduced and Horikawa Ugan Rain-water Reservoir for pollution control was In-service in FY2010. Water conduction to Horikawa River (max. 4,000 m^3/day, during irrigation season (Apr.-Oct) using recycled waste water (advanced treatment; membrane filtration method) of Moriyama Water Treatment Center) started since FY2011. Experiment of covering sand for water purification between the Naka Bridge and the Gojo Bridge started in Feb. 2015. and by refering that result construction of covering sand for improvement of water environment between Habashita Bridge and Gojo Bridge and between Naka Bridge and Sakura Bridge was started in Dec. 2017.

The 8th well was dug in the upstream section of Kinjo Bridge in Mar. 2018 and utilization of shallow ground water (0.01m^3) started as new water source (Utilization of shallow ground water has been implemented in 2004).

読売新聞　平成30年8月21日

2018年(平成30年)8月21日(火曜日)

新堀川上流 ヘドロ撤去へ

悪臭対策効果検証

名古屋市は今年から、川沿いの住民らから悪臭の苦情が多い市内を流れる新堀川（延長6キロ）のヘドロの撤去を進めている。

同川は明治時代に運河として掘られ、同市南区明治で堀川に合流している。現在は水処理センターの処理水が唯一の水源で、水が入れ替わりにくく、ヘドロが堆積しやすい構造という。市の調査では下流部でヘドロの厚さが最大2メートルもあった。

今年初めに、下流部約500メートルで、川底をさらう浚渫が治水目的以外では初めて行われた。9月初旬からは、同市堀留水処理センター（中区）の手前から立石橋（熱田区）付近までの上流部約2・6キロ、ヘドロの量約1万5000立方メートルを、台船に載せたショベルで浚渫する。

新堀川のヘドロの撤去を要望してきた市民団体「堀川1000人調査隊2010」の服部宏・事務局長は「市民による定点観測のデータなどを収集し、水質の改善や悪臭低下などの効果を調べたい」と話している。

ヘドロの撤去が行われる新堀川の最上流部（中央が水処理センター）

In Dec. 2017 dredging work and cover sand were made as countermeasures against bad smell in the down stream area of Shin-Horikawa, where sedimentation and exposure of sludge, bubble and clouded water were found when citizens' survey (general survey of Spring tide on Apr. 28. 2017.). Dredging work has been also made in the upstream area of Shin-Horikawa as a countermeasure against bad smell since Sep. 2018.

(3) Change of the water quality of Horikawa River

The impression of the clearness of Horikawa River worsened after stopping water conduction from the Kiso River. But, though, water quality sometimes deteriorated due to weather conditions, etc.. , generally there is a tendency of improvement little by little from upstream. We think this is an effect of implementing new measures to improve water quality after stopping water conduction. Especially for "smell", the proportion of tiger and sludge decreased, the proportion of odorless It tends to increase, and water quality and river bottom condition are improving trends.

As a result of organizing the impression of clearness by section, 23rd stage was improved between Sanage Bridge and Asahi Bridge, between Matsushige Bridge and Oseko Bridge. But between Asahi Bridge and Matsushige Bridge got worse. In this section, "Garbage" and "Bubble from the bottom of the river" increased, A situation was different from other sections.

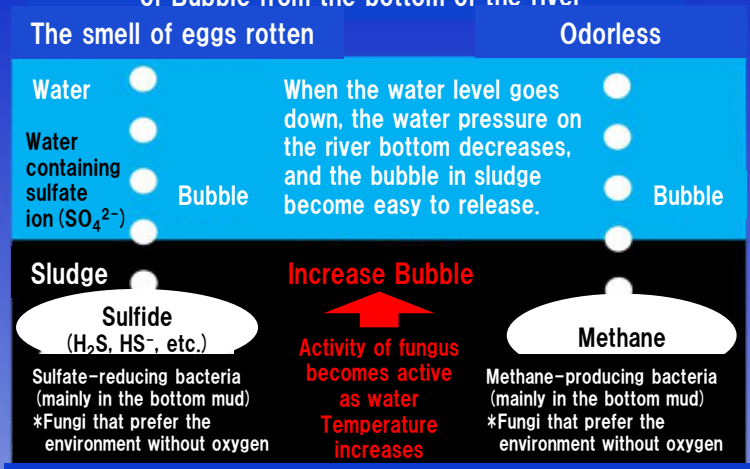
This "Bubble from the bottom of the river" is mainly accumulated in sludge deposited on the bottom of the river between Asahi Bridge and Matsushige Bridge, the increase in water temperature accompanying the rise in the recordable temperature.

Regarding "Garbage", it increased due to rain that fell in the cycle of several days, stayed at the water's edge "Garbage" repeatedly flowed out, accumulated and moved, stayed between Asahi Bridge and Matsushige Bridge.

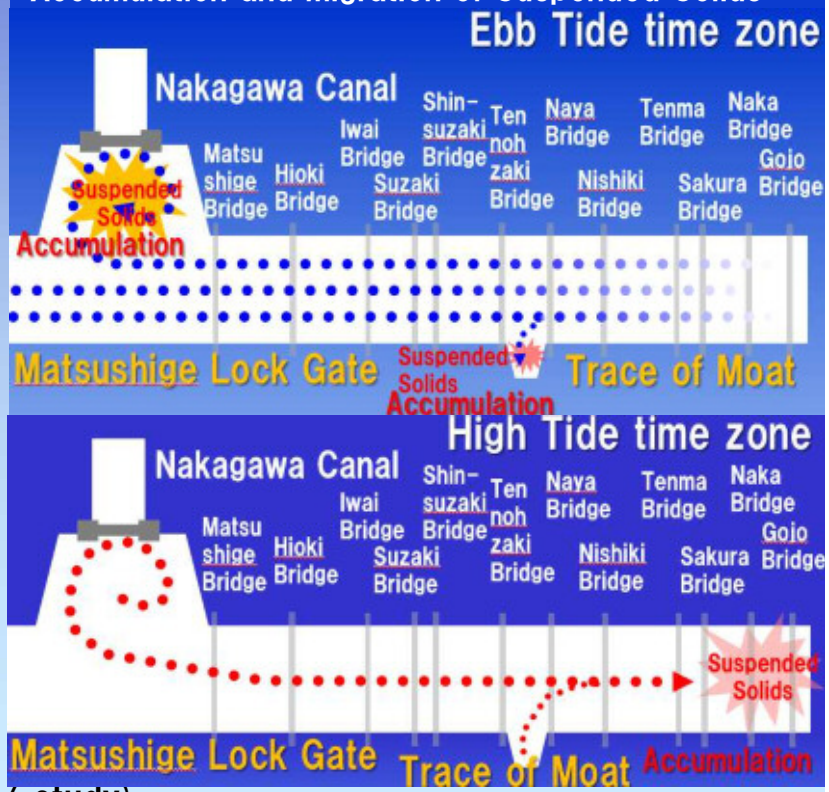
In the future, in addition to implementing measure so far, in order to improve the water quality of the middle part of Horikawa River, we hope that it will be discussed to the implementation of Sludge Removal (continued) deposited on the bottom of the river, Regular Ship's Sailing help reduce sludge? (Research / study), Effective Removal of Floating Matter (research / inspection), in adittion to the flood control project.

(Proposal) ★Sludge Removal (continued)
★Regular Ship's Sailing help reduce sludge? (Research / study)
★Effective Removal of Floating Matter

Example of occurrence mechanism of Bubble from the bottom of the river



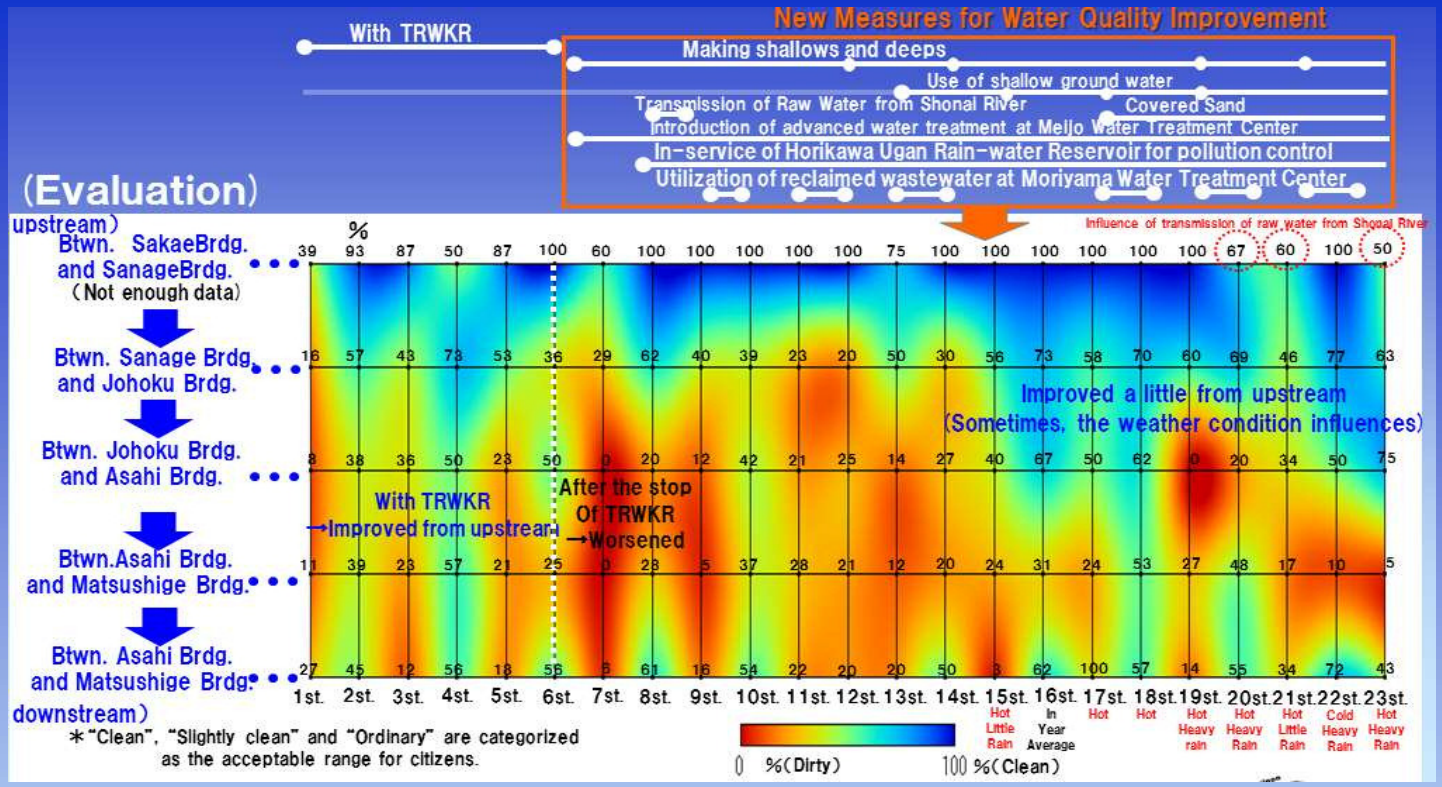
Accumulation and migration of Suspended Solids



(Source) The 22nd Survey Meeting Conference Report

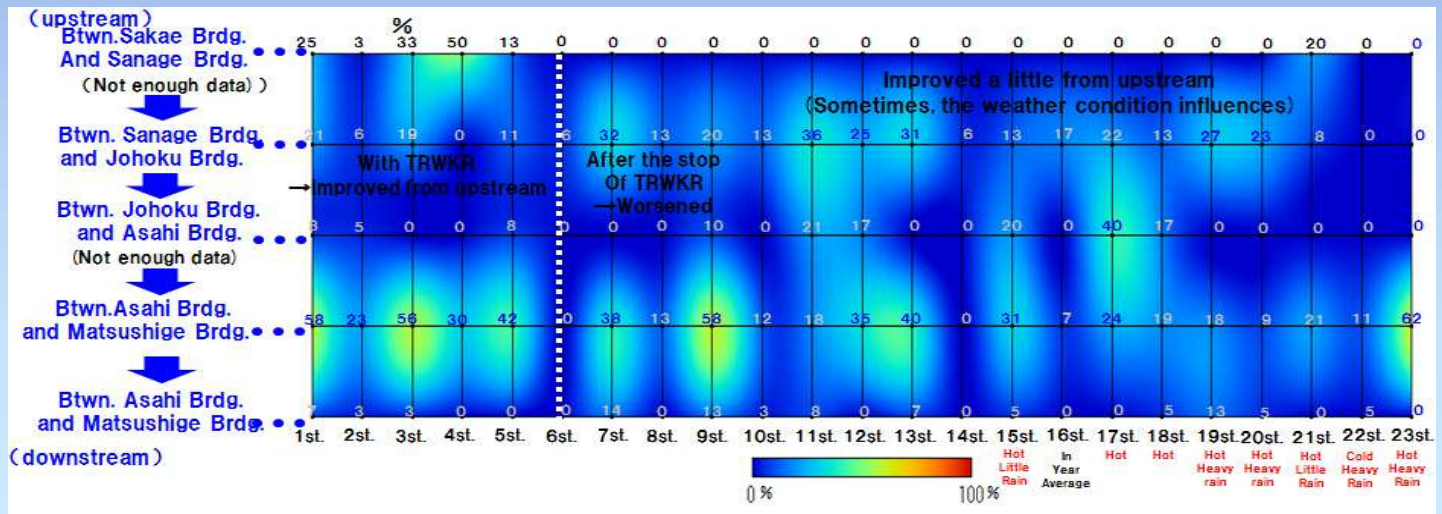
Impression of Water Clearness

The ratio of “Clean”～“Ordinary



Occurrence of bubbles from river bottom

The ratio of bubbles floating from the bottom of the river



Spring～Early Summer (Apr.～Jun.) : Odd number stage
Autumn～Early Winter (Sep.～Dec.) : Even number stage

(reference) With TRWKR

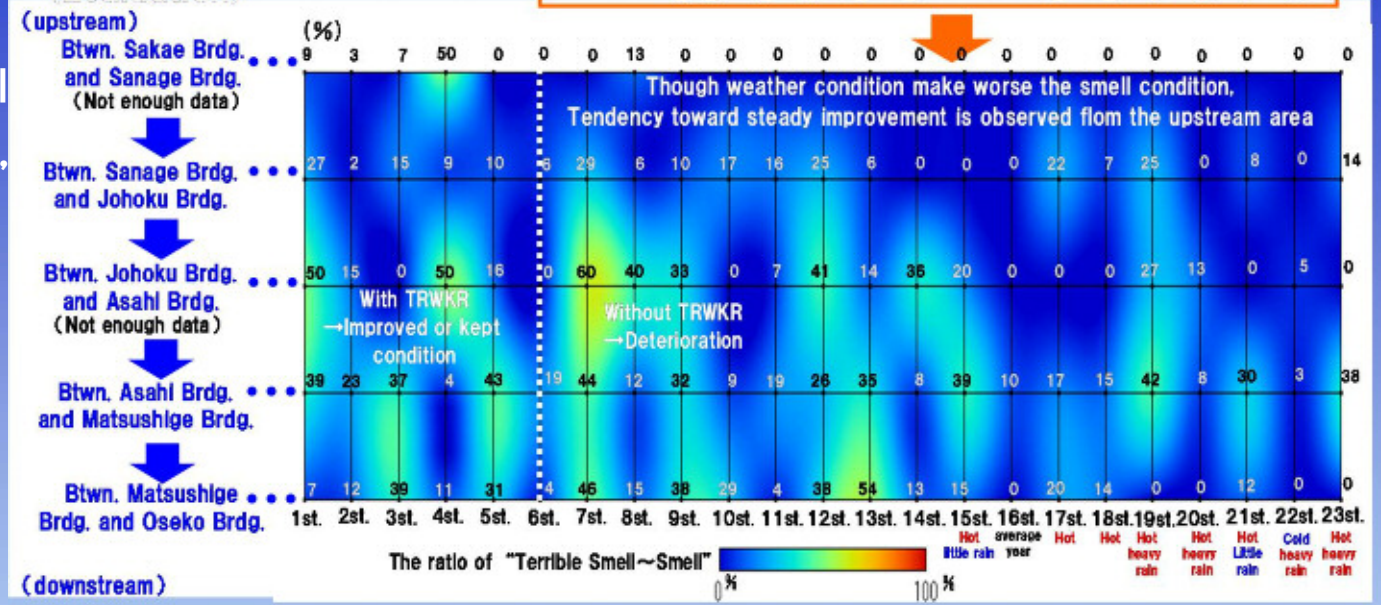
New Measures for Water Quality Improvement

- Making shallows and deeps
- Use of shallow ground water
- Transmission of Raw Water from Shonai River
- Covered Sand
- Introduction of advanced water treatment at Mejio Water Treatment Center
- In-service of Horikawa Ugan Rain-water Reservoir for pollution control
- Utilization of reclaimed wastewater at Moriyama Water Treatment Center

Occurrence of Smell

The average ratio of "Terrible Smell～Smell"

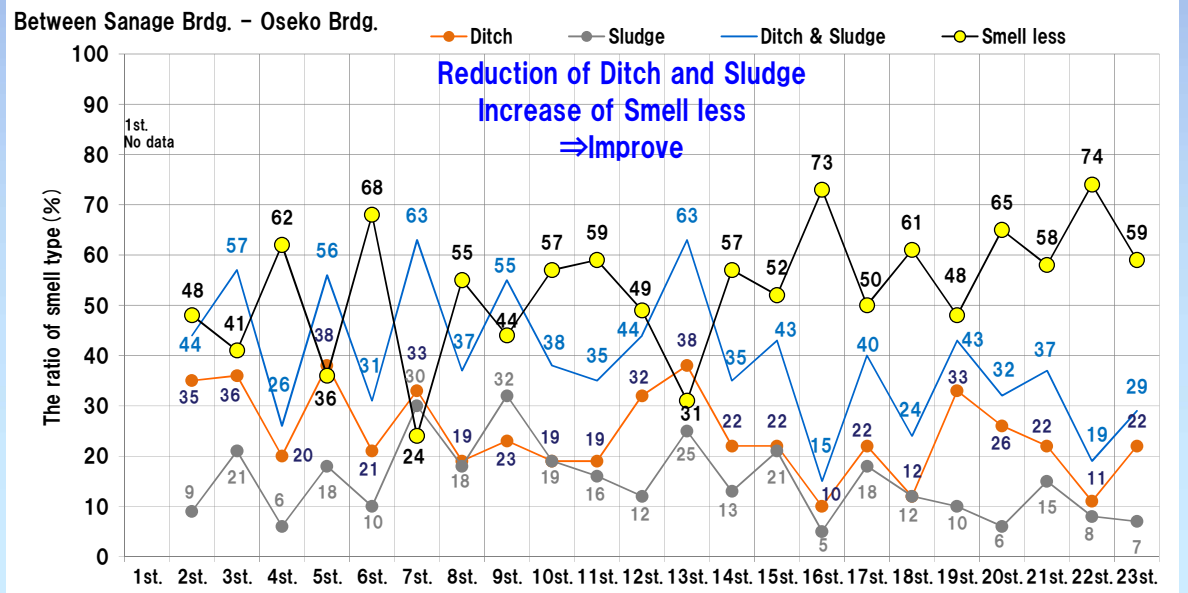
(Evaluation)

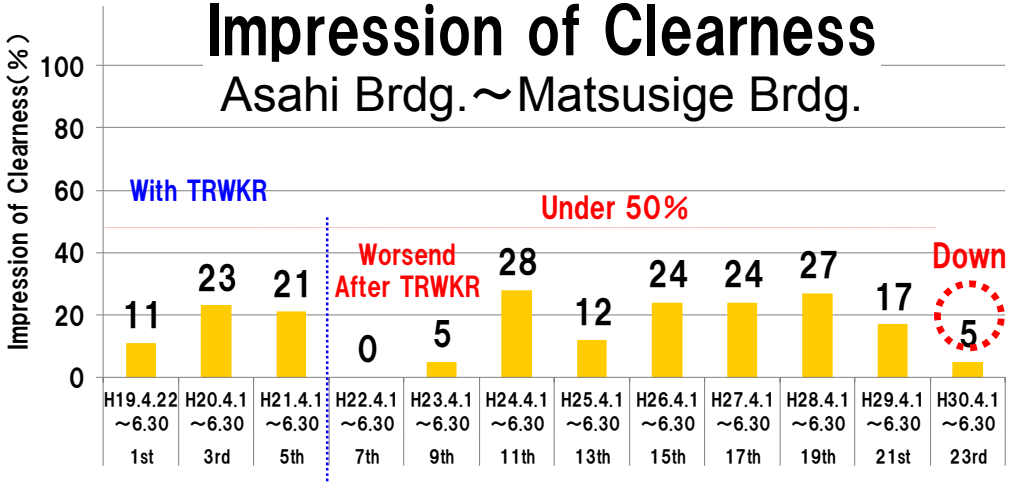


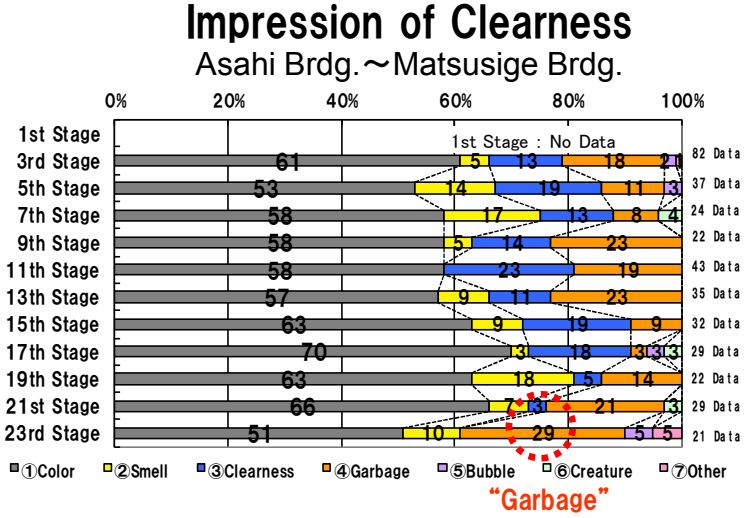
Spring～Early Summer(Apr.～Jun.): Odd number stage

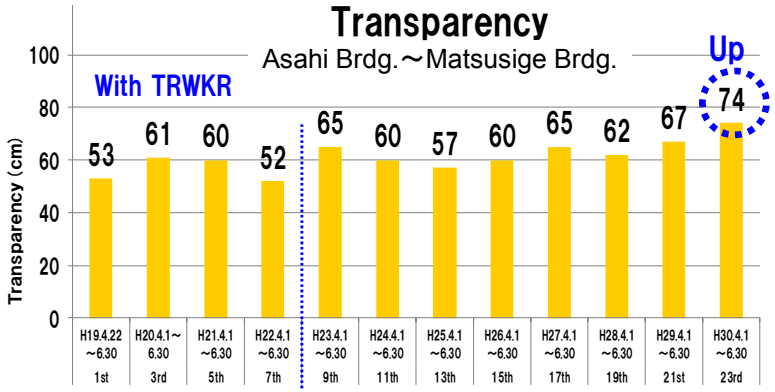
Autumn～Early Winter(Sep.～Dec.): Even number stage

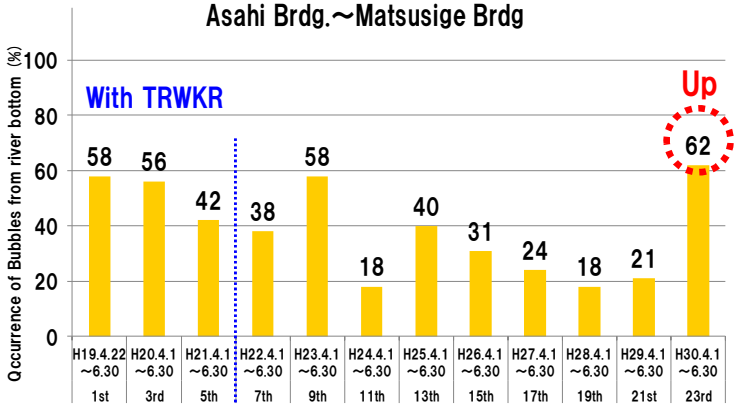
The ratio of "Ditch" "Sludge" "Smell less"

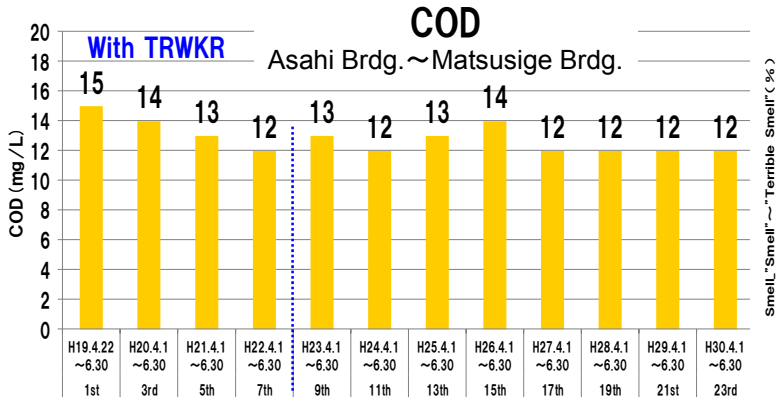


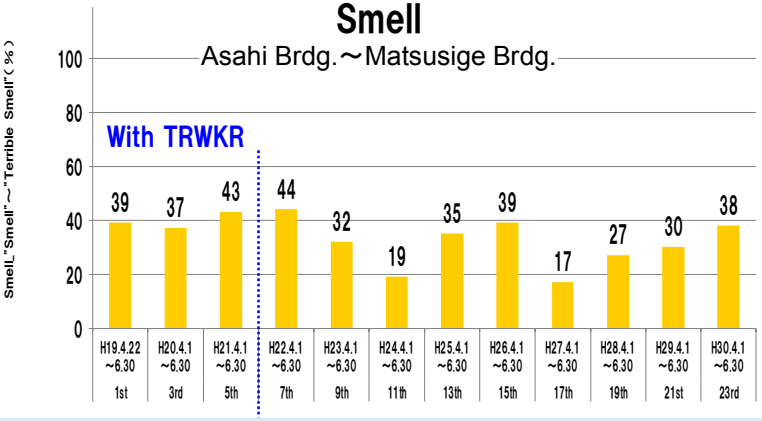

Impression of Clearness
Asahi Brdg.～Matsusige Brdg.
Impression of Clearness(%)
With TRWKR
Under 50%
Worsend After TRWKR
Down
11
23
21
0
5
28
12
24
24
27
17
5
H19.4.22 ～6.30 1st
H20.4.1 ～6.30 3rd
H21.4.1 ～6.30 5th
H22.4.1 ～6.30 7th
H23.4.1 ～6.30 9th
H24.4.1 ～6.30 11th
H25.4.1 ～6.30 13th
H26.4.1 ～6.30 15th
H27.4.1 ～6.30 17th
H28.4.1 ～6.30 19th
H29.4.1 ～6.30 21st
H30.4.1 ～6.30 23rd


Impression of Clearness
Asahi Brdg.～Matsusige Brdg.
1st Stage : No Data
1st Stage
3rd Stage
5th Stage
7th Stage
9th Stage
11th Stage
13th Stage
15th Stage
17th Stage
19th Stage
21st Stage
23rd Stage
①Color
②Smell
③Clearness
④Garbage
⑤Bubble
⑥Creature
⑦Other
"Garbage"


Transparency
Asahi Brdg.～Matsusige Brdg.
Transparency (cm)
With TRWKR
Up
53
61
60
52
65
60
57
60
65
62
67
74


Asahi Brdg.～Matsusige Brdg
Qccurrence of Bubbles from river bottom (%)
With TRWKR
Up
58
56
42
38
58
18
40
31
24
18
21
62


COD
Asahi Brdg.～Matsusige Brdg.
COD (mg/L)
With TRWKR
15
14
13
12
13
12
13
14
12
12
12
12


Smell
Asahi Brdg.～Matsusige Brdg.
Smell"Smell"～"Terrible Smell"(%)
With TRWKR
39
37
43
44
32
19
35
39
17
27
30
38

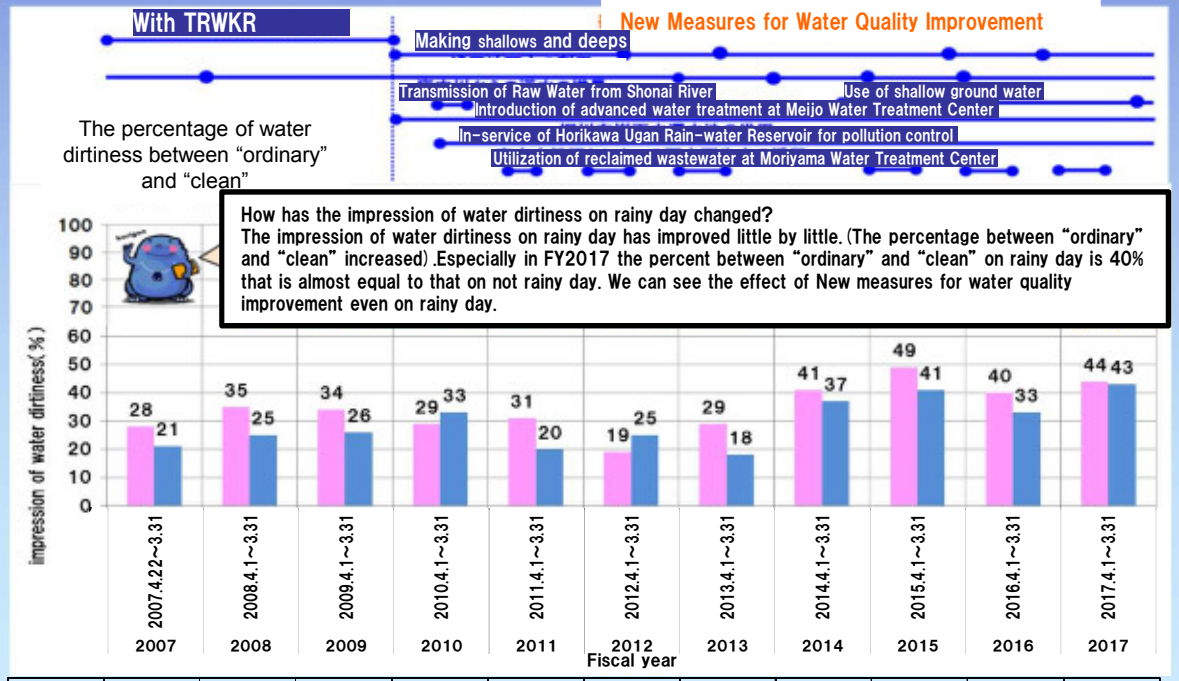
■ Quality of water on rainy day

We sort out rainy day data from not rainy day data.*rainy day means it rained the day or the previous day.

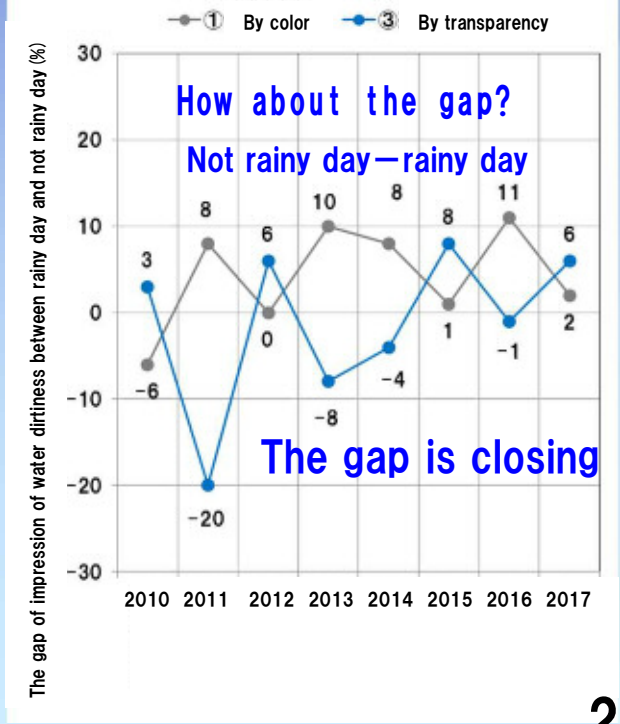
As a result, we could confirm that the impression of water dirtiness is tend to improve even on rainy day. In FY2017 the impression of water dirtiness is the same value between rainy day and not rainy day. Moreover,

Each evaluation method of the impression of water dirtiness(by color and bytransparency) leaded the same tendency that the percent of the impression of water dirtiness close the gap between rainy day and not rainy day. Therefore, by introducing new water quality treatment methods, water condition of rainy day is close to that of not rainy day. To improve the Horikawa water quality, We expected a large effect of new water quality treatment methods including Horikawa-sagan rain reservoir, advanced water treatment at Meijo water treatment center and so on.

Hypothesis: The percent of the impression of water dirtiness close the gap between rainy day and not rainy day ⇒ The water condition on rainy day improve.



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
not rainy days	557	403	280	236	272	304	261	279	269	214	236
rainy days	158	96	76	61	57	76	57	71	72	128	56



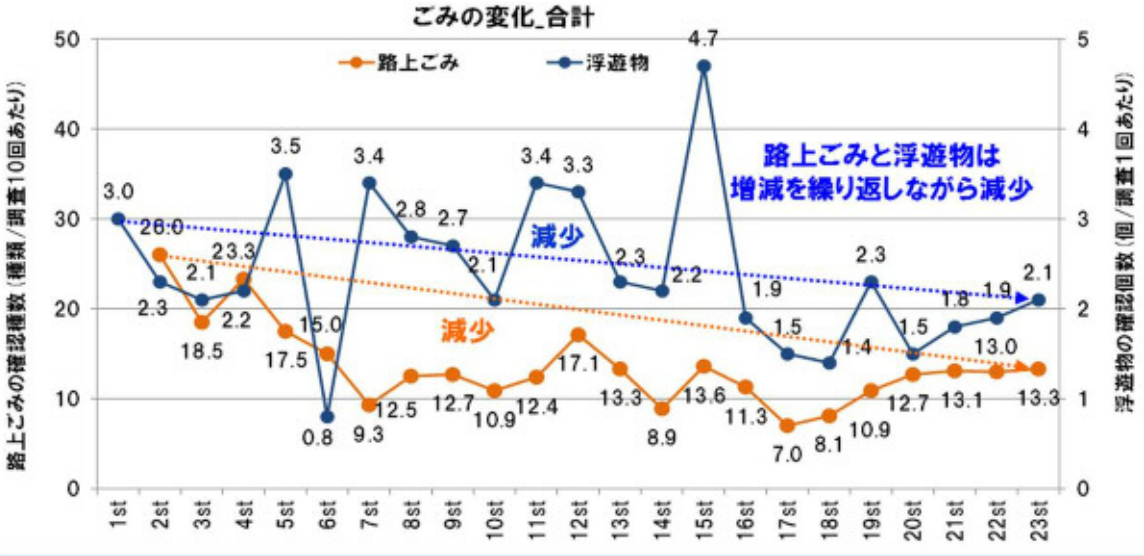
■ Garbage and Suspended substance

Garbage and suspended substance have been decreasing while repeating an increase and decrease, but they appear to increase slightly in recent 21-23 stages. Garbage around Naya Bridge is increasing recently. The cause might be thought that the more offices prohibit smoking, the more people smoke and take a rest drinking a can of coffee by the waterside.

These littering is a thoughtless behavior by a certain people because cigarette butts and empty cans by the river are same brand name products mostly.

The number of cleaning groups is increasing. However, garbage is thrown away as soon as cleaned up. We citizens have to think it over what we can do to resolve this problem.

Changes of garbage and suspended substance



（Suggestions） ★Enhancing citizen's consciousness

・Further expanding of cleanup activities（continue）

★Appealing not to litter by the waterside

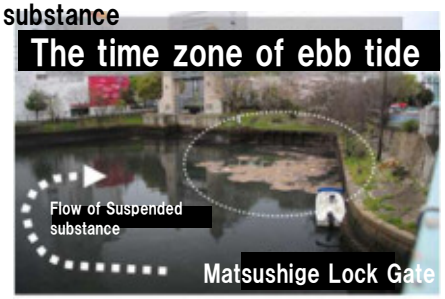
Photos by the secretariat

Opinions of secretariat for midstream of Horikawa River

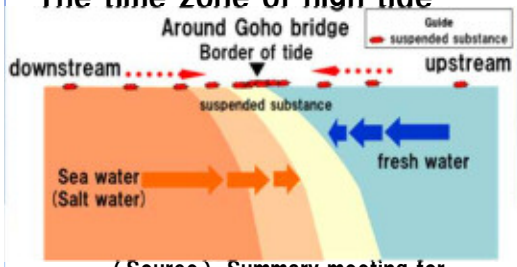
★The appeal of the prohibition of toss the cigarette at the water edge area

★effective removal of Suspended substance (research, investigation)

The removal based on the feature of the gather and movement or Suspended substance



The time zone of high tide



(Source) Summary meeting for the 21st stage p.92,93

Continue with confirmation of effect by citizens.

- Transparency was improved
- COD was improved
- Bubbles from the bottom of the river was reduced
- Ditch, Sludge smell was reduced
- Suspended substance was reduced

Sanage Bridge

Oseko Bridge | Matsushige Bridge | Asahi Bridge | Johoku Bridge

Impression of Water dirt was improved

Salt water

Bottom material was improved by combined effect. We expect the recovery of the natural purification capacity.

Continuation of Measures for Water Quality Improvement

- Improvement of treated water
  - Advanced water treatment at the Meijo Water Treatment Center
- Improvement of combined sewer system
  - The Horikawa Ugan, Sagan Rain-water Reservoir
- Securement of Additional Water Resource
  - Utilization of Reclaimed Wastewater
  - Utilization of shallow ground water
- Improvement of the natural purification capacity
  - Creation of Sehuchi
  - Covered sand

★Removal of sludge (continuation)

(Opinions offered at Summary meeting for the 18th stage)

In order to purify Horikawa River

We citizens can do many things. For example, the waste water from our house into the sewage becomes clearer, the water from the sewage into Horikawa River also becomes clearer

What can we do to reduce the dirt from our house?

Let's reduce the dirt from our house.

(1) Reduce the dirt from kitchen

(2) Reduce the dirt from washing

★Improvement of citizen's consciousness

- expansion of cleaning activity (continuation)

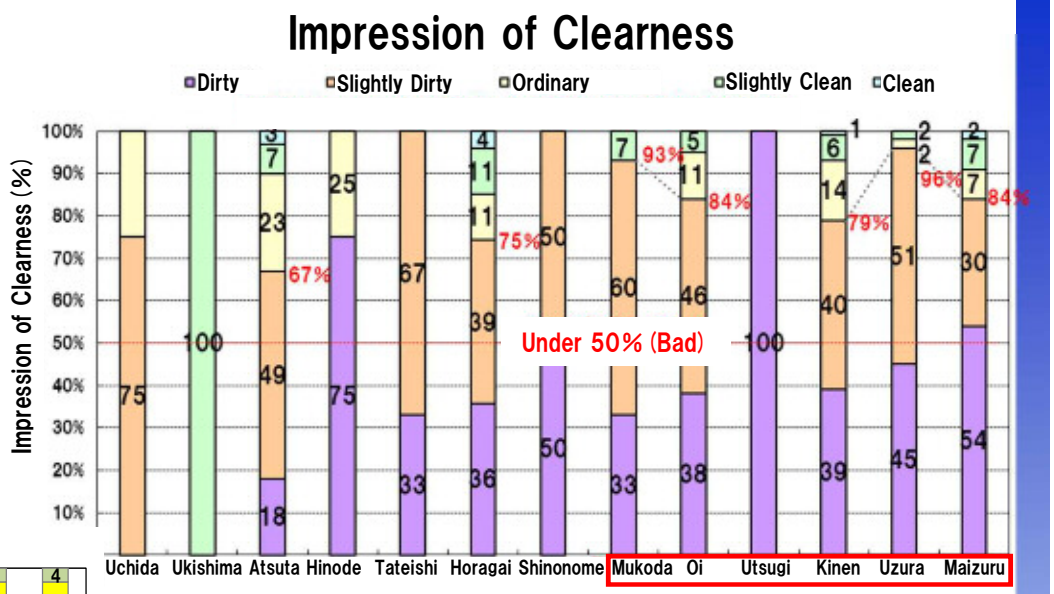
★Regular sailings of ships can reduce the sludge? (research, investigation)

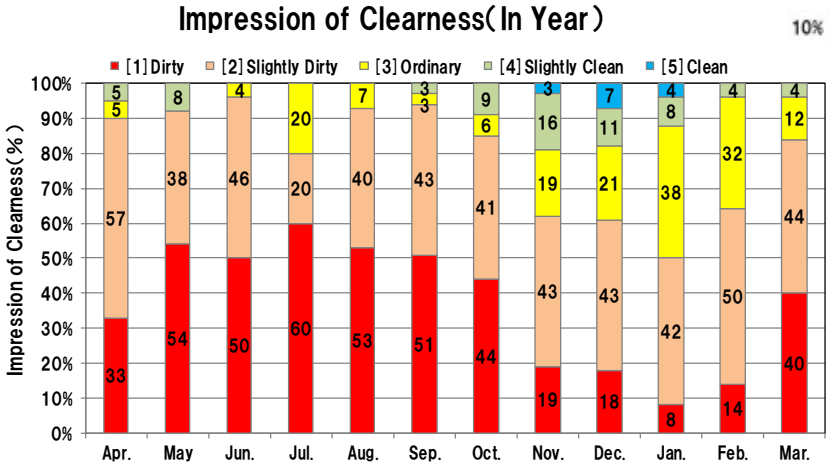
(Source) Summary meeting for the 22nd stage p.32

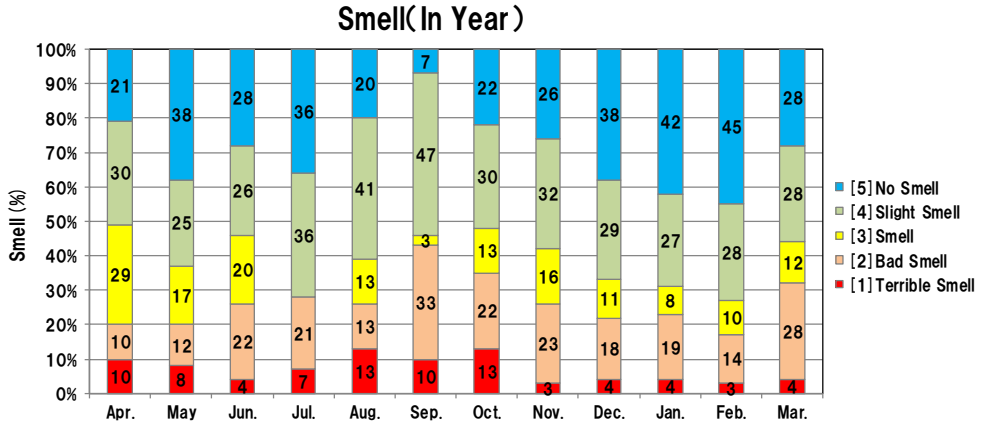
(4) Water Quality of Shin-Horikawa River

We got 400 reports of Shin Horikawa by when 23th stage finished.

It became clear that the Impression of Maizuru Bridge～Mukaida Bridge is especially bad.







About impression of clearness, the percentage of “Dirty”,”Slight Dirty” is over 50%. Ecpetialy, the percentage of April～Octobar and March is over 80%.

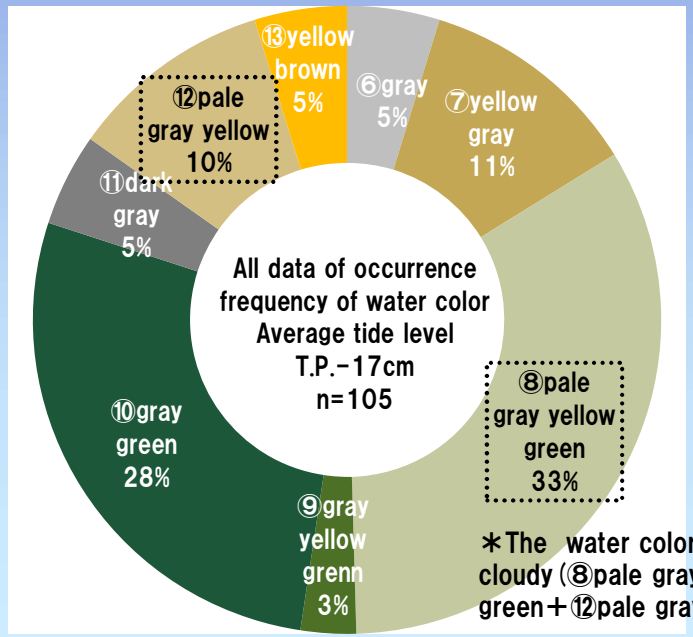
About smell, the percentage of “Terrible Smell” is high over the full year. The percentage of “Terrible Smell” and “Bad Smell” is high in Septembar, Octobar and March.

There are still many things we don’t understand about Shin-Horikawa river, so we need continuous survey in as many spots as possible.

（Data）
Fixed Point Observation ECO-doco Ouen-Tai at Mukaida Bridge
URL　http://www.eco-doco.jp/meiko_line/html/01.html
Number of survey data:105（105 pictures）
Survey period:April 2, 2015 ～ June 30, 2018
Tide level at survey:T.P.-148cm～98cm

＊T.P. is the elevation from the average sea level in Tokyo Bay at the Japanese level origin

The color of the water at the time of observation was chosen by comparing the sample of color and the picture of the homepage. The tide level at the fixed point observation was based on the hourly data of the Japan Meteorological Agency.



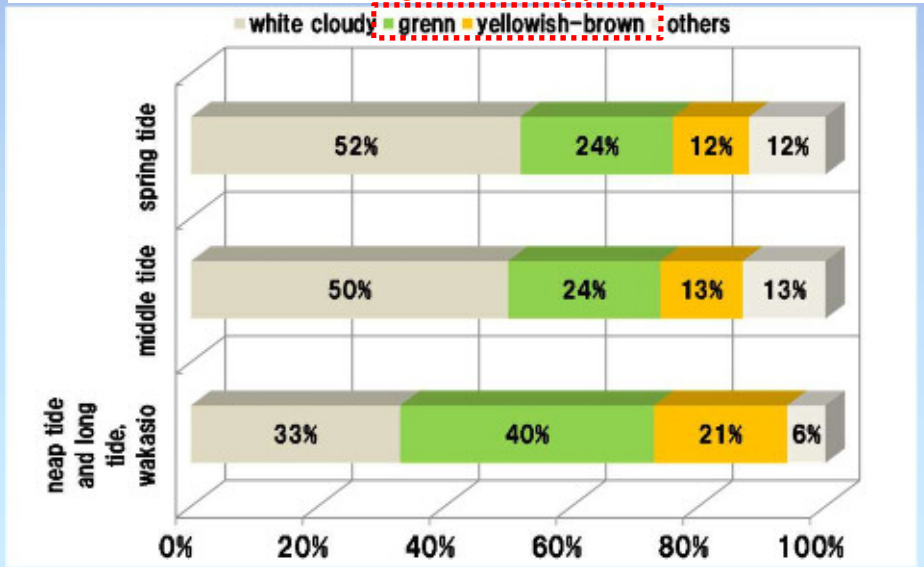
＊The water color of white cloudy（⑧pale gray yellow green＋⑫pale gray yellow）

■ The impression of the water color in Mukaida Bridge
The impression of the water color in Shin-Horikawa river based on picture by Fixed Point Observation ECO-doco Ouen-Tai were organized.

1) The water color of white cloudy（⑧pale gray yellow green＋⑫pale gray yellow）in Shin-Horikawa River accounts for 40% of all data. It often occurs at spring tide and middle tide.
2) The water color of green and yellowish-brown often occurs at neap tide and long tide, wakasio. This phenomenon may be caused by plankton.

Mukaida Bridge is near Horidome which is at the most upstream. The color of the river water to change according to plankton. It is different from the report near Horidome. It is a valuable report to understand the situation of the Shin-Horikawa.

Change in color by plankton



(5) Simultaneous survey of neap tide　May 8th .2018

1) Change in tide level

・The tide level difference of the tide of Nagoya Port was about 0.9m.

・The tide level difference at the time of Simultaneous survey of spring tide conducted last year was 2.5m, and the change in the tide level this neap tide were less than half of those at the time of spring tide.

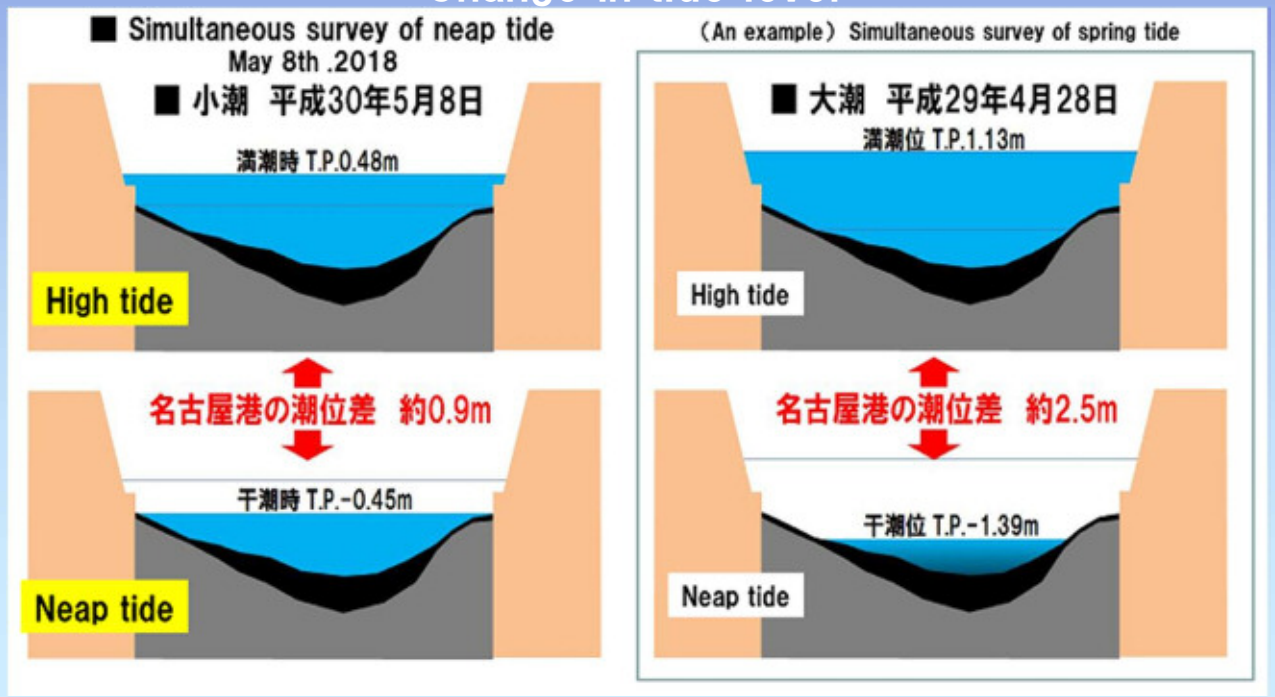
2) Weather condition

・37.5mm of rain fell the day before the survey of neap tide. Also on the day of the survey it started fall rain from around 5 PM. As a result the survey was conducted in a state that received little influence of rain.

3) Direction of water flow and accumulation of suspended substance

・There were few reports of upstream flow in the high tide time zone, and there was no report of the tide (accumulation of suspended substance) that went up to the vicinity of Gojo Bridge as in the case of spring tide. In the neap tide section of Horikawa and Shin-Horikawa River where water source was limited, it seems that at neap tide with little tidal change , the environmental became easier for water to stagnate than at the time of the tide.

Change in tide level



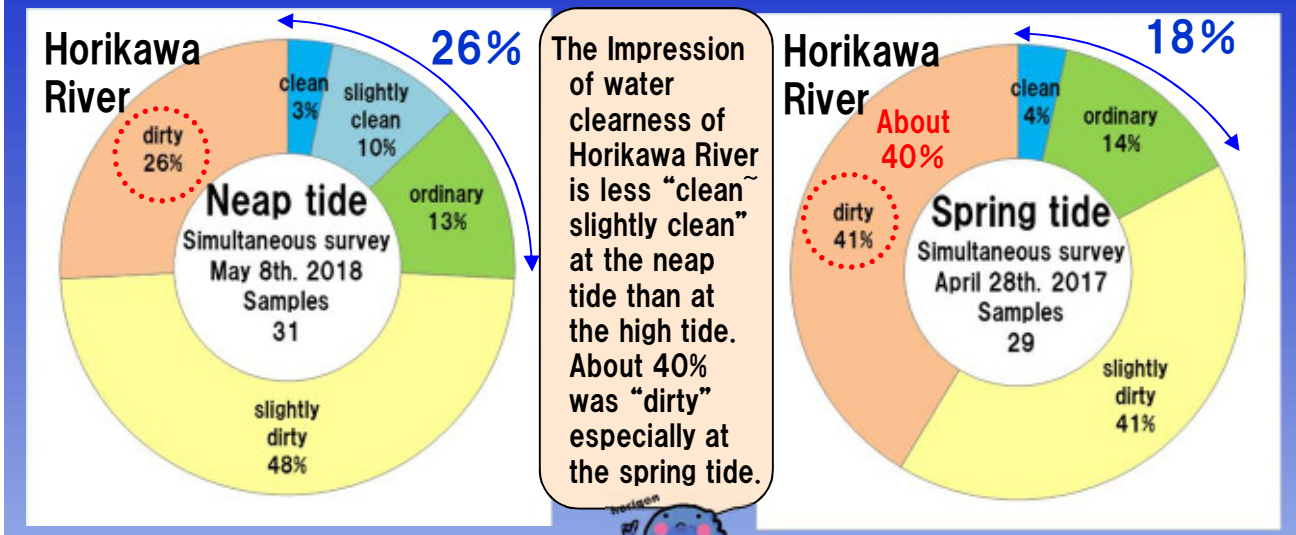
Impression and evaluation of water clearness

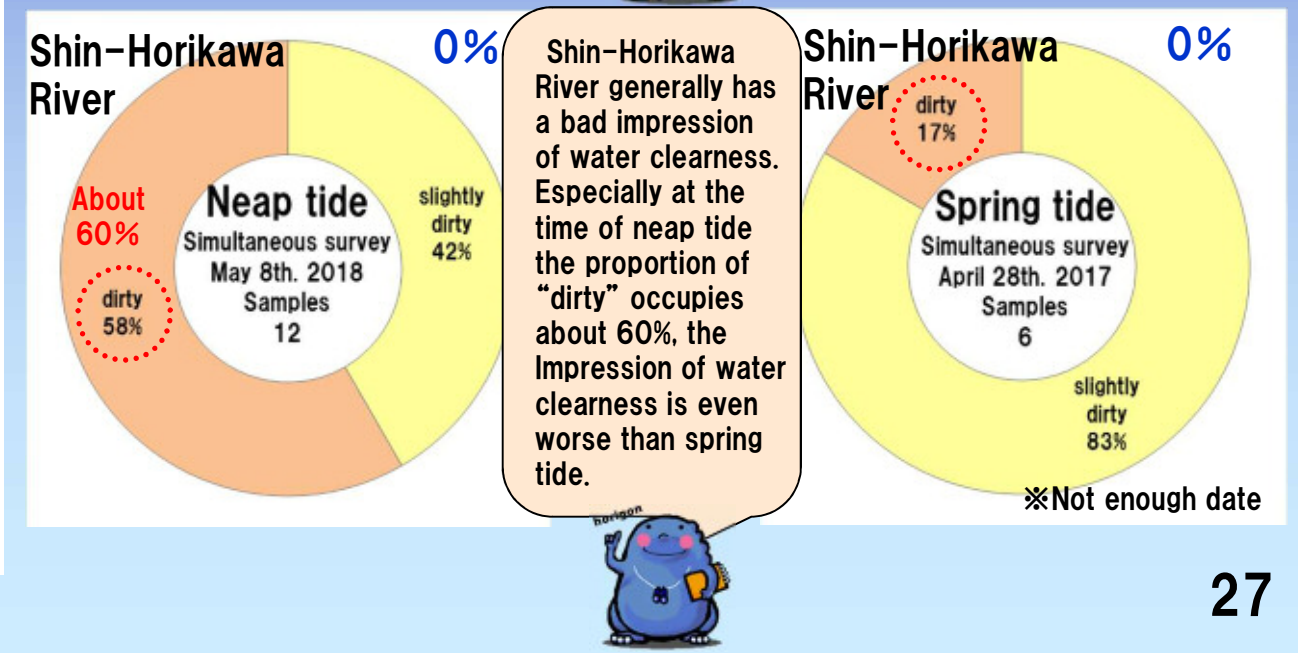
4） Hydration of sludge

- In the survey of spring tide last year, hydration sludge was reported between Kameya Bridge and Habashita Bridge in the time zone close to ebb tide. On the other hand, there is no report on hydration of sludge in the survey of neap tide.

5） Impression and evaluation of water clearness

- The Impression of water clearness of Horikawa River is "clean~slightly clean" at the time of neap tide than the spring tide.
- Shin-Horikawa River generally has a bad impression of water clearness. Especially at the time of neap tide the proportion of "dirty" occupies about 60%, the Impression of water clearness is even worse than the spring tide.





(6) Migratory Creatures ascending Horikawa River

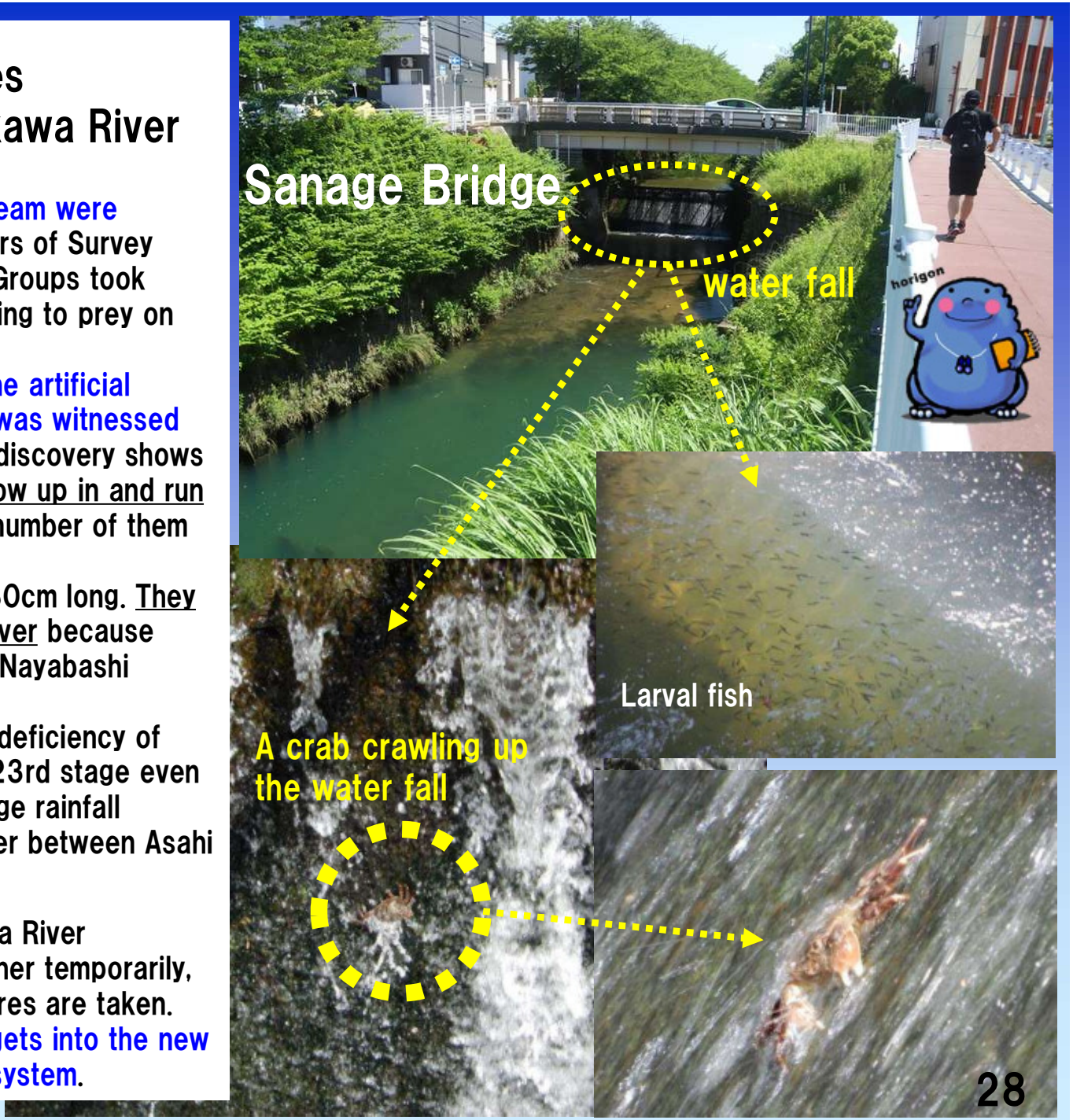
Larval fish ascending to upstream were witnessed this year, too. Menbers of Survey Groups and Horikawa Cheering Groups took pictures of them and of birds flying to prey on them.

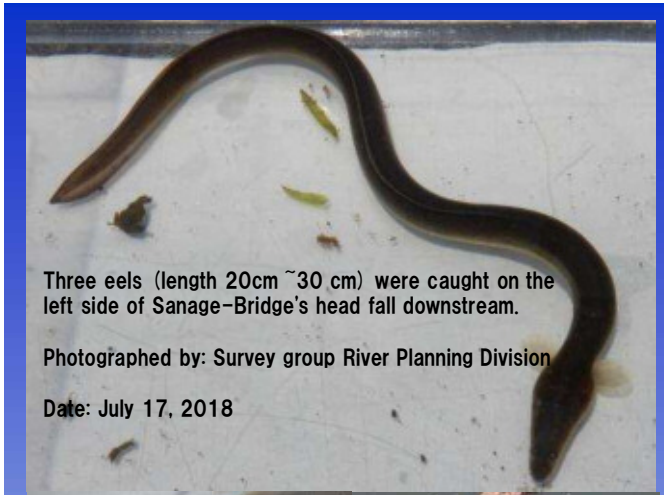
Moreover a crab crawling up the artificial waterfall beside Sanage Bridge was witnessed and we took pictures of it. This discovery shows us that crabs born in the sea grow up in and run up Horikawa River and that the number of them is increasing.

And we caught 3 eels of 20-30cm long. They probably grew up in Horikawa River because larval eels were witnessed near Nayabashi Bridge before.

Mass dead fish caused by the deficiency of oxygen did NOT happen in this 23rd stage even though high temperature and large rainfall worsened the impression of water between Asahi Bridge to Matsushige Bridge.

Although the status of Horikawa River sometimes worsens by the weather temporarily, it is getting better as the measures are taken. We expect that Horikawa River gets into the new phase and is recovering its ecosystem.





Three eels (length 20cm ~30 cm) were caught on the left side of Sanage-Bridge's head fall downstream.

Photographed by: Survey group River Planning Division

Date: July 17, 2018

Young eel at Naya-Bridge
(Around 10cm)
Date: May 28 2014

■ Observation record of "covering riverbed with sand"

Between Naka-Bridge and Gojo-Bridge, three years and fourth spring have passed from "covering riverbed with sand". We can still confirm the purification material and sand granules. However, it seems that sludge is tend to accumulate in the recessed area as our findings.
We could find many groups of mullet and goby at the edge of water between Gojo-Bridge and Habashita-Bridge.

Naka-Bridge

Condition from three years passed after "covering riverbed with sand".
Downstream of Gojo-Bridge

Date: June 14 2018
Kingfisher survey group

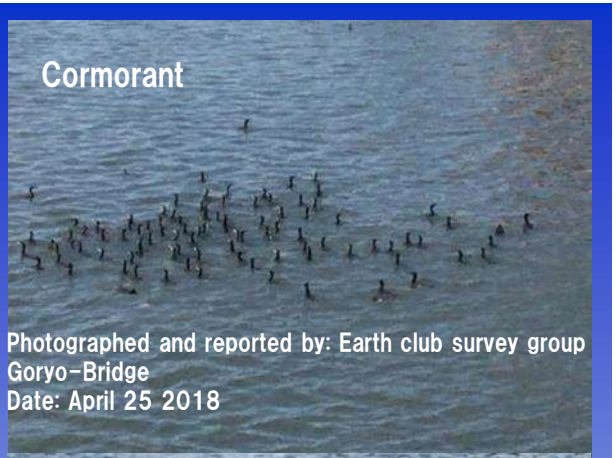
Uncovered area
Downstream of Sakura-Bridge right side

Condition from three years passed after "covering riverbed with sand".
Downstream of Gojo-Bridge right side

Date: May 16 2018

Around Habashita-Bridge
Group of mullet young fish

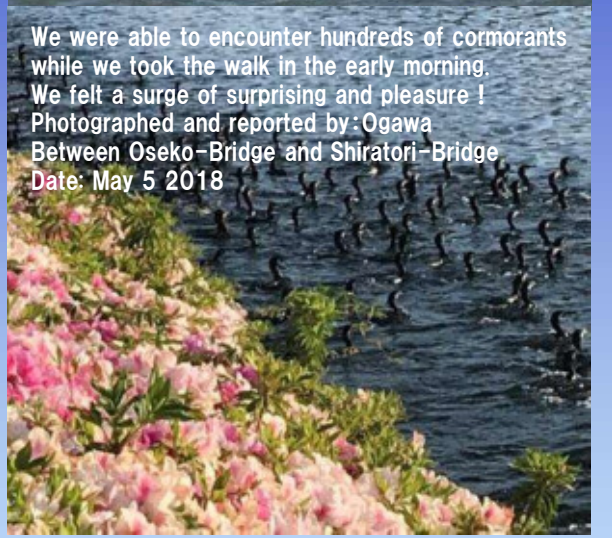
Around Habashita-Bridge
Group of goby young fish



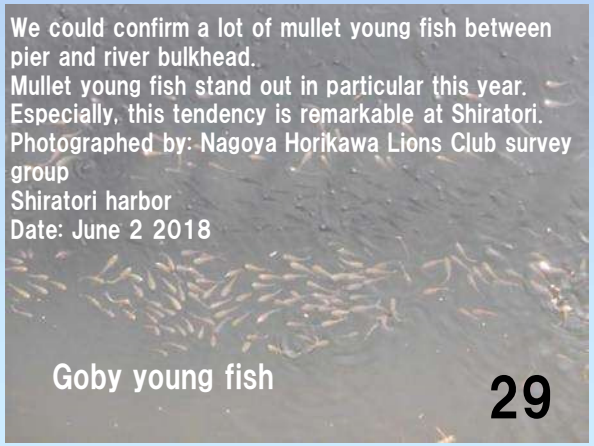
Cormorant

Photographed and reported by: Earth club survey group
Goryo-Bridge
Date: April 25 2018

We were able to encounter hundreds of cormorants while we took the walk in the early morning.
We felt a surge of surprising and pleasure !
Photographed and reported by:Ogawa
Between Oseko-Bridge and Shiratori-Bridge
Date: May 5 2018



We could confirm a lot of mullet young fish between pier and river bulkhead.
Mullet young fish stand out in particular this year.
Especially, this tendency is remarkable at Shiratori.
Photographed by: Nagoya Horikawa Lions Club survey group
Shiratori harbor
Date: June 2 2018



Goby young fish

Observation of the Sand Cover

3 years have passed since riverbed was covered with the sand between Nakabashi Bridge to Gojo Bridge. It has been clear that you can see the sand of riverbed. However hollow places seem to get sludge gathering easily. Lots of larval fish were witnessed in the shoal between Gojo Bridge to Habashita Bridge.

3 years after sand cover
Gojo Bridge

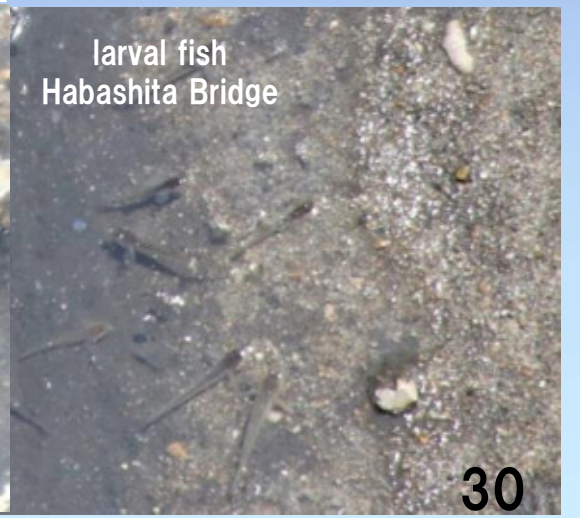
Habashita Bridge


a place without sand cover
Sakura Bridge


3 years after sand cover
Gojo Brigdge

6 months after sand cover
Habashita Bridge


larval fish
Habashita Bridge


larval fish
Habashita Bridge

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 pictyures 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.