## Horikawa Sen-nin Chosatai 2010 Summary meeting for the 19<sup>th</sup> stage

Place: Nagoya Urban Institute Conference room (11<sup>th</sup> floor)



The secretariat of Horikawa Sen-nin Chosatai 2010 Sep.3<sup>th</sup>.2016

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

# Horikawa Sen-nin Chosatai 2010 📷

∼Transmission of Raw Water from Kiso River~

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 transmisission 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 3years (from Apr.22nd, 2007 to Mar.22nd, 2010)

 Increase of Transmisson Volume from the Shonai River (additional pilot project)
 (1) Water Source : Shonai River
 (2) Transmission Usual 0.4m3/sec (maxium 0.7m3/sec)
 (3) Experiment Period : Oct.1st-Dec.31st ,2010
 (4) 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 February.2012 Branch of contribution for Regional Environment Development Award for excellence



## 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 the survey group
 (Conclusions of Summary Meeting for the 10th Stage)
 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.

(2) There 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.

## Horikawa Sen-nin Chosatai was commended by Minister of Land, Infrastructure and Transportation

Date : 1<sup>st</sup> Aug. 2016

Place : Science Hall in Science Museum

### Water Resource Contributor Awards

It is awarded to group and individual contributing continuously to administrative promotion in development and utilization of water resource.



#### ほりかわ

都道府県名:愛知県 団体名:堀川1000人調査隊2010実行委員会

#### 地域

名古屋市の中心部を南北に貫く掘川は、名古屋城築城と時を同じくして開削され、以来400年間 にわたって、名古屋の人々の暮らしやまちづくりに密接に関わりを持ってきました。 しかし、昭和初期から高度成長期にかけて、急速な都市化や産業発展による環境悪化、舟運の 衰退などにより、かつての活気は失われ、人々の生活が堀川から離れることとなりました。 近年、都心の水辺空間の見直しの機運が高まり、堀川の再生をめざし、市民と行政の協働によ る環境改善の取り組みが進められています。

#### 経緯

平成19年、堀川浄化の社会実験として行われた木曽川からの導水にあわせ、市民と行政の協働 による堀川浄化を目指すため、「堀川1000人調査隊2010」を結成しました。

市民目線による調査を継続し、9年間で蓄積された調査データは累計4,000件以上にのぼります。 また、調査隊報告会をこれまでに、18回(年2回)開催し、行政を交えた意見交換を実施しています。 発足時は約2千人だった隊員数は、現在(平成28年5月)では5万人を超えています。 <u>功績内容</u>

○行政の浄化施策を市民が調査・検証し、行政と共有、評価した結果を、浄化施策に反映させ、 さらに、また市民が調査する官民協働による活動サイクルを確立しました。このような活動の 成果が、下水処理場の新しいろ過施設の導入や浄化実験などの施策に反映されています。
○その他、木曽三川の上流域の住民と名古屋市民の上下交流、浄化美化・実験活動、清掃活動、



# Horikawa Sen-nin Chosatai reported to Mayer of Nagoya City that they were commended by Minister of MLIT Date : 2<sup>nd</sup> Aug. 2016 Place : Nagoya City Hall

4<sup>th</sup> Aug. 2016, morning edition 6

#### **Reference: Chunichi Newspaper** 7th Aug. 2016, morning edition

時市長を実数時間した場川1000人調査後一市役所で





# Observation method at fixed-point

Measurement of COD

# leasurement of Transparency





# Number of Participants of Horikawa Sen-nin Chosatai





# Survey Period and Number of Reports



# Number of Reports





The total number of survey reports is 4,348 by the end of the 19<sup>th</sup> stage. On average, it is about 400 reports every year. A lot of citizens survey the real state of water environment of Horikawa River continually from a viewpoint and a sense of citizens.

# 4. Main Measures for Water Quality Improvement

Measures	FY2007				FY2008				FY2009					FY2010				FY2011				FY2012				FY2013				FY2014				FY2015			FY2016			
	— 1st.					5st.				<b>7</b> st.					9st.			11		t.			139	ist.		<b>15</b> s		st.		17st.				19st.						
				2st.				4st.				6st.				8st.		-		10s	t.			12s	t.			14st				16st		-		8st.				
With TRWKR (0.4m³/s)	-						_					-•																												
Making shallow and deep (Improvement of self-purification function and													•	b/w	Kurok	awa No	. 1 Brd	g. ~M	leoto E	rdg.			Jowns of Kui	tream okawa	area No.2	Brdg.	Ups	tream	area	of Kuro	kawa	No.2	Brdg.				Jpstrea of Kur	am are okawa	a No. <b>2</b>	Brdg
water environment) Increase of raw water transmission from Shonai River (+0.4m <sup>3</sup> /s)															•																									
Utilization of shallow ground water (0.0405m <sup>3</sup> /s)	Upstr Upstr	eam a eam a	rea of rea of	Tsujie Kizune	Brdg.D Brdg.C Shimiz	.01m³ .01m	/s(H ³/s(H	16)  17)   wate	er0.00	0.5m <sup>3</sup> /	e (FV)	0.08)													Upst Sek	tream o Brdg	area o . 0.0	1 1m <sup>3</sup> /s	Upsti Sana	eam a ge Br	rea of dg. O.(	0 1m <sup>3</sup> /	Ups s Sit	stream a ga Brdg	area of . 0.01	f m³/s	Upstu Naka 0.0	ream a atsuchi 1m <sup>3</sup> /s	rea ot ido Br	dg.
Experiment of sand coveringfor water purification b/w Gojo BrdgNaka Brdg. (water's edge along both banks)					Jiiiiiz	u wa	uwan	a wate	10.00	00117	5 (112	.000/																				•								
Introduction of Advanced water treatment at the Meijo Water Treatment Center													•																							-		-	-	_
In-service of Horikawa Ugan Rain-water Reservoir for pollution control															•																			$\square$		-	$\neg$	$\rightarrow$	+	_
Utilization of reclaimed wastewater at the Moriyama Water Treatment Center $(0.046{\rm m^2/s})$																		•	•				•	,	-		•					,	-	$\square$	•		-	┛	•	

### Newly launched facilities after the stop of TRWKR

Treated water quality improvement For improvement of water quality which is discharging into Horikawa River, treated water at the Meijo Water Treatment Center is filtered additionally.



Advanced water treatment at the Meijo Water Treatment Center Solution : conventional activated sludge process and rapid filtration Launch : May. 2010 Improvement of the combined sewer system High-polluted first flash rain water is stored temporarily to reduce the frequency of sewer outlet overflow.



Horikawa Ugan Rain-water Reservoir for pollution control Capacity: 13,000m3 Coverage Area: 633ha Launch: Sep. 2010







### Purification Experiment by Sand Covering Started in Feb. 2015



が期待できます。

電話 (052) 972-2823

「う へドロ除去(厚さ30cm程度)し、その上に砂で被覆(厚さ30cm程度)

### Making Additional Water Sources (Using shallow ground water)





# 5. Report of the 19th stage survey 5.1. Introduction ~Column~

# ∼Column For clarification and regeneration of Horikawa River

Horikawa Sen-nin Chosatai was established at 22th April, 2007, as a place for citizens' activities, Fixed Point Observation Group, Free Survey Group and Support group, for clarification and regeneration of Horikawa River.

Fixed Point Observation Group examines Horikawa River with TRWKR, from a viewpoint and a sense of citizen for, confirming the clarification effect, water quality and elucidation of cause of pollution. Free Survey Group study Horikawa River from various view point. Support group supports clarification and regeneration of Horikawa River in various ways. Then the three groups wish for clarification and regeneration of Horikawa River, and work together in a Large network.

Currently (3rd September, 2016) there are a total of 2,716 groups and 53,412 persons in the research team, 99 groups in Fixed Point Observation Group, 40 groups in Free Survey Group and 2,577 groups in Support group. At the time of launch there was 165 groups and 2,262 persons. It shows that the network of citizens wishing for clarification and regeneration of Horikawa River has expanded greatly.

Fixed Point Observation Group observed 4,348 times from 1<sup>st</sup> stage to 19<sup>th</sup> stage. So far, we found that the state of the water changed from moment to moment due to the influence of the tides, at the downstream from the Sanage Bridge. And we can found that a lot of observation results from the Fixed Point Observation Group can capture the average state of water quality of Horikawa River by citizen's point of view and sense, and understand the tendency of the change.

 $\sim$ Social experiment of the clarification of Horikawa River "Confirmation of clarification effect of TRWKR from 2007 April to 2012 March"  $\sim$ 

We confirmed that water quality between Sanage Bridge to Matsushige Bridge had been improved by TRWKR (0.4m<sup>3</sup>/sec.) in five years. And in this period, we confirmed that the garbage (Artificial garbage: plastic type garbage etc.) reduced. It seems that the consciousness of the citizen changed, such as the 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 Consciousness of the citizen changed, such as the action of the cleaning activity became active.



1. Weather Condition in 19th stage

<u>Warm air flow from south brought the highest temperature since 1st stage</u>. And continuous short cyclic heavy rain caused the most precipitation in April from 1st to 19<sup>th</sup> stage. On the other hand, the rainy season began in June 4<sup>th</sup>, as average start time.

Characteristic of 19th stage: high temperature and continuous short cyclic heavy rain

### 2. Survey Result of 19th stage

Impression of water clearness from Sanage bridge to Oseko bridge in 19<sup>th</sup> stage generally got worse from 17<sup>th</sup> stage. Negative evaluations about smells increased, positive ones about transparency decreased, and sludge often made the color grey green. They showed the water cleanness of river bottom of Horikawa river worsen because of high temperature and continuous short cyclic heavy rain. However the impression got better from Sanage bridge to Johoku bridge area.

### **3.** Change after stopping TRWKR

After stopping TRWKR (H22 March), introduction of Advanced water treatment at the Meijo Water Treatment Center (H22 May), in-service of the Horikawa Ugan Rain-water Reservoir for pollution control (H22 September), and utilization of reclaimed wastewater at Moriyama Water Treatment Center (0.046m3/s H23 August) were launched.

Furthermore, experiment of covering sand for water purification from Gojo bridge to Naka bridge (H27 February) started and utilization of shallow ground water from wells supplied more water source.

Water clearness of Horikawa river got worse after stopping TRWKR, but slight trend of improvement is observed from upper stream except temporal weather effect. It should be brought by citizen's awareness and various measures for water quality improvement.

Though water quality level is not enough for citizen's acceptable clearness and transparency (70cm,), especially in spring- early summer stage.

<u>Continuous survey based on fixed-point observation and general survey on high tide in Spring</u> is necessary to elucidate mechanism of worse water quality in Spring-early Summer stage, and we need <u>installation of more</u> <u>improving measures</u>.





4. Influence of Rain

We analyzed survey data of the days that it rained or not on the previous day (No TRWKR).

**1** Impression of Clearness

Impression of Clearness got better when it rains on the previous day above the Asahi Bridge and worse when does not rain on the previous day below the Asahi Bridege. When it rained on the previous day, evaluation value of smell increased, and evaluation value for the color decreased. Evaluation value of garbage increased below Johoku Bridge.

**2**Transparency

Transparency got lower when it rained on the previous day. It was the lowest between Johoku Bridge and Matsushige Bridge.

3COD

COD got lower when it rained on the previous day between Sanage Bridge and Johoku Bridge. No deffrence was seen about COD whichever it rained or not, below Johoku Bridge.

**4**Colors

Ratio of 'milky' was bigger when it rained on the previous day.





### 5. Living things

Kinds of gobies came back in the river in March, about a month earlier than usual. It maybe because it was warmer than usual. In addition, lots of little mullets came back in the river in 19th stage.

Birds of prey, which is the top of food chain in the Horikawa basin, were observed after the 18th stage. We can realize the diversification of an ecological system.

However, lots of gizzard shad died in June. We thought the mass death of fish was caused by the lack of oxygen. We analyzed records of the mass death in the past and set up <u>two hypotheses according to relation</u> <u>among seasons (temperature), tide and rainfall</u>.

We have to continue observing and recording living things to make clear the mechanism between the lack of oxygen and the mass death of fish.

(Hypothesis 1) high tide from Spring to Summer (large change of tidal level) ···hypothesis in the past (Hypothesis 2) low tide from Spring to Summer (small change of tidal level) ···new hypothesis temperature rises → tidal level doesn't change much and river water doesn't replace much oxygen supply decreases and it's tend to become lack of oxygen

From Spring to Summer, when the temperature is tend to rises, decomposition of organic matter activated and oxygen in the water is consumed much.



Especially when tidal level changes little bit and water replaces little bit, oxygen supply decreases and oxygen in the water becomes very poor.

### 6. Water quality of Shin-Horikawa River

We had made <u>196 surveys by the end of 19th stage</u>, <u>100 surveys just during 19th stage</u>, at Shin-Horikawa. Because these are not enough data, we analyzed the situation of Shin-Horikakwa by all those data including with rain on the day and the previous day.

It has become clear that "impression of water clearness" between the Maizuru Bridge and the Horagai Bridge in the upstream section is especially bad, and it has also become clear that "change of transparency", "COD", "Bubbles" and "Smell" are especially bad in the upstream section.

Secretariat considers that the basin could become in a situation like blue tide by judging from "Smell" and "Colors".

We have to <u>continue surveying at more points and collecting</u> data to make clear the situation of water quality at Shin-Horikawa from the citizen's point of view.





### 7. Spring Massive Research(April 6th 2016)

higher temperature and more precipitation before the researching day and 40.5mm precipitation on the previous day

Summary of the impression of water clearness We can see the difference between upper and lower of Sumiyoshi Bridge

- (1) Upstream of Sumiyoshi Bridge
  - 1 <u>mostly "slightly dirty" "dirty"</u> based on the color
  - (2)<u>raised sludge made the color dark grey</u> when ebb tide
  - <u>"bubbles", "smell like rotten eggs" and</u> <u>"getting milky" at ebb tide.</u> We think that lowered pressure made sulfide released into water from riverbed. This is an important clue to understand Horikawa River getting milky after rain.
     Transparency was under 50cm (over
    - 70cm is acceptable for people)
- (2) Downstream of Sumiyoshi Bridge
  - **1**Some reported "ordinary" "clean". The impression of water clearness was <u>a little</u> <u>better than that of upstream</u>.
  - **2**<u>Transparency was over 50cm.</u>
  - (3) "bubbles" were seen at ebb tide and color was grey green and dark green. Sludge smell was sensed.

- Gathering and moving of garbage
  - ①Garbage gathered in front of Matsushige Rock Gate during ebb tide. And they were pushed up to Naka Bridge when high tide. Garbage make impression worse. This is an important clue how to remove them and how not to let them gather.

②Garbage was reported <u>at high tide around Goryo bridge</u> which is in the downstream of Sumiyoshi bridge. We need to research it from now on.



## (Our Hypothesis) Gathering and Moving of Garbage



8. Experiment of Horikawa River clarification by sand cover etc.(start in Feb, 2015) Shorebirds searching for food on the river bed with covering sand on the water surface were seen during low tide in the spring tide.

Assuming that many kinds of living things which shorebirds eat inhabit, improvement of biological clarification by food chain can be expected.

## Hint for the river environment which hardly pile sludge?

Sludge was seen on the river bed with covering sand on left bank in downstream of Gojo Bridge, while sand particles were seen near the bank. Seeing there from opposite bank, it shows us that these area is a little higher than other area. This may be the hint to consider the water environment (including the form of river bed) which prevents sludge to accumulate.

石炭灰 coal ash sand **羊に近いところでは砂粒が見える** ここは他の場所よりもやや高い っずかな凹みでキ Sand particles near the bank. ヘドロが溜まる Higher than other area. Sludge accumulate on the smallest depression.



•eel

Improvement of natural purification

What kind of living things live and thrive at the sand-covered area?

by food chain is expected.







### **Progress of Citizen's Awareness Activities of studies** 主催・協力・報告:黒川ドリーム会・御用水跡街園愛護会調査隊・ロマン黒川





飯田小学校3年生 堀川自然体験学習 平成28年6月2日(木)





名北小学校3年生 堀川自然体験学習 平成28年6月6日(月)





正木小学校5年生 堀川体験学習 平成28年6月7日(火)



大杉小学校3年生 黒川自然体験学習 平成28年6月10日(金)



笹島小学校 黒川自然体験学習 平成28年7月14日(木)



第6回堀川ラウンドテーブル 開催 キャッチコピー「いつも心に川がある」 堀川まちづくりの会 平成28年3月18日(金)報告:事務局









ね川またづくりの会 … ラウンドテーブル

ANTON ANTONIO

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「身近な自然体験会~ 船から発見!私たちの堀川」 主催:名古屋市環境局 運営協力:名古屋堀川ライオンズクラブ 場所:熱田区白鳥桟橋

飯田小学校3年生60余名のお礼状 平成28年7月23日(土) 報告:御用水跡街園愛護会調査隊



### **Progress of Citizen's Awareness** 堀川の再生と魅力を発信することを目的に 名古屋市議会の議員有志による **Activities of studies 甦れ堀川名古屋市会議員連盟**が設立 平成28年6月29日(水)朝刊 中日新聞 平成28年7月26日(火) 2016年(平成28年)7月26日(火曜 融广 7940 会の 会長に自民・渡辺氏 の再生を目 **戦会議連発**尼 技術者ら来日、下水処理など学ぶ 内を 下水道展が名古屋で開催 平成28年7月26日~7月29日 堀川1000人調査隊が参加 知 場所:ポートメッセなごや 報告:事務局 恵 Rなどを視察するメキシコ市上下水道防護員 抱負を述べた。 運の でと進に いさ 水環境ひろば 7月28日 会を立ち上 なとな メキシコ市上下水道局の職員の方々を堀川の体験乗船にご案内 名古屋・堀川での市民活動や行政との連携活動をご紹介 125 平成28年7月20日(水)午後

場所:納屋橋~名古屋港 案内·報告:事務局



# Activities of "Free Survey Groups" & "Cheering Groups"



御用水跡街園 柵の補修とライトアップ 平成28年3月26日(土) 報告:御用水跡街園愛護会調査隊

園児のお花見 平成28年3月29日(火) 報告:御用水跡街園愛護会調査隊



堀川の地下水放流地点へ 北ホームニュースを案内 瀬古橋~辻栄橋~木津根橋~稚児宮橋 ~志賀橋~北清水橋~中土戸橋 平成28年4月4日(月) 報告:御用水跡街園愛護会調査隊 127

### Activities of "Free Survey Groups" & "Cheering Groups"

#### 三階橋郵便局でミニ写真展 平成28年4月14日(木) 報告:御用水跡街園愛護会調査隊

掘川ギャラリー 油絵展

平成28年5月31日(火) 8告:御用水跡街園 **┋護会調査隊** 

第7回 春の堀川一斉大そうじ 主催:クリーン堀川 平成28年4月16日(土) 報告:事務局





堀川の川開きを開催 黒川ドリーム会と堀川まちネットのみなさん 平成28年5月29日(日) 報告:御用水跡街園愛護会調査隊



場所:御用水跡街園周辺



清掃活動 ぎふしんムーミン清水支部 堀川応援隊 場所:北清水橋周辺



清掃活動

水を考えるつどい

PACK DROP

中日本建設コンサルタント(株) かわせみ調査隊 場所:錦橋~納屋橋間







母なる堀川の浄化 ~下水道展'16 名古屋に向けて~ 平成28年1月20日 ~7月20日

http://www.horikawa 1000nin.jp/katudou /2016-01-06nihongesuidousinbun.

## **Progress of Citizen's Awareness Events**



下呂市馬瀬地域の皆さんが来名 鯱城堀川と生活を考える会の皆さんと 上下流交流会を開催 平成28年1月20日(水) 場所:堀川ギャラリーほか 報告:事務局

ナヤマルシェ開催と災害義援金募集 平成28年4月23日(水) 撮影:御用水跡街園愛護会調査隊





#### 平成28年4月2日(土) 川友禅流し 12区民まちづくり推進協議会 報告:御用水跡街園愛護会調査隊

堀川フラワーフェスティバル2016開幕 平成28年5月13日(金)~28日(土) 報告:御用水跡街園愛護会調査隊、事務局







と表あかりさん(言う)

### Progress of Citizen's Awareness Events



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第12回「堀川エコロボットコンテスト2016」説明会 平成28年5月21日(土) 主催:名古屋堀川ライオンズクラブ 協賛:名古屋工業大学

なごや水フェスタ開催(鍋屋上野浄水場解放 平成28年6月5日(日) 場所:鍋屋上野浄水場 (名古屋市千種区) 主催:名古屋市上下水道局 参加した調査隊:名古屋市高年大学環境学科30期調査隊 名古屋堀川ライオンズクラブ調査隊

報告:事務局



堀川まつり 平成28年6月4日(土) 報告:御用水跡街園 愛護会調査隊

因





報告:御用水跡街園愛護会調査隊





「いい木曽見つかるキャンペーン」 132 平成28年7月1日~11月7日