

Appendix S1

Table S1.1

The following table indicates the number of unique samples, 400ft samples, taken each year from each waterway. The NorthShore Channel has three locations where sampling occurred and thus often has higher numbers. Due to the differences in numbers across waterways and year, data in the main text is averaged first by waterway*year and subsequently to a yearly mean.

Year	Cal-Sag Channel	Calumet River	Chicago Sanitary and Ship Canal	Little Calumet River	Lockport Lock And Dam	Northshore Channel
1985	0	2	4	2	1	6
1986	0	1	4	1	0	4
1987	2	1	3	2	1	6
1988	4	4	8	4	3	10
1989	4	4	8	4	2	8
1990	2	4	6	4	1	12
1991	0	0	4	0	1	12
1992	4	4	4	4	1	0
1993	2	2	0	2	0	6
1994	2	2	4	2	1	0
1995	2	2	0	2	0	6
1996	2	4	4	4	2	6
1997	2	0	4	0	1	0
1998	2	2	0	2	0	0
1999	0	0	0	0	0	6
2000	0	0	4	0	1	6
2001	2	2	6	2	2	2
2002	2	3	4	2	2	2
2003	2	2	4	2	2	2
2004	2	2	5	2	1	2
2005	2	2	4	2	2	4
2006	2	0	4	2	2	2
2007	2	2	4	2	2	3
2009	2	2	4	2	2	4
2010	2	2	4	2	2	2
2011	2	2	4	2	2	2
2012	2	2	4	2	2	2
2013	0	0	4	0	2	0
2016	2	0	4	2	2	0
2017	2	2	4	0	2	4
2018	2	0	4	3	2	2
2019	4	2	11	4	0	6

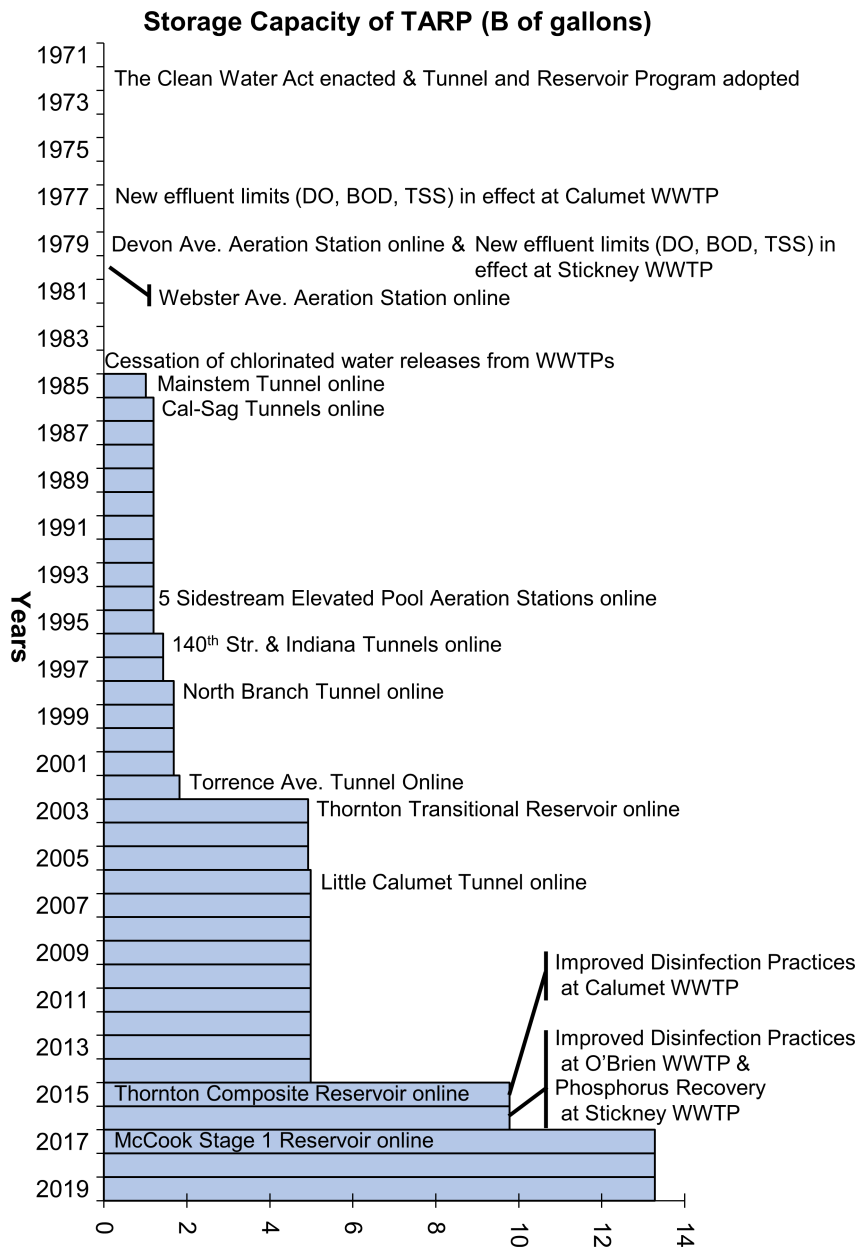


Fig. S1.1 Increases in storage capacity of Mainstem and Calumet sections of Chicago's Tunnel and Reservoir Plan as well as actions taken to improve water quality in those sections of the Chicago Area Waterway System. Note that legislative actions are not noted, nor are improvements affecting the nearby Des Plaines area which is outside the study reach.

Appendix S2

Table S2.1 List of species found within the Chicago Area Waterway System between 1985-2019 in July – September at nine locations representing six waterways. Trophic guilds were identified primarily by (Poff & Allan, 1995).

Common Name	Species	Genus	Family	Order	Class	Trophic guild
Alewife	pseudoharengus	Alosa	Clupeidae	Clupeiformis	Actinopterygii	omnivore
Banded Killifish	diaphanus	Fundulus	Fundulidae	Cyprinodontiformes	Actinopterygii	surface invertivore
Black Buffalo	niger	Ictiobus	Catostomidae	Cypriniformes	Actinopterygii	benthic invertivore
Black Bullhead	melas	Ameiurus	Ictaluridae	Siluriformis	Actinopterygii	omnivore
Black Crappie	nigromaculatus	Pomoxis	Centrarchidae	Perciformes	Actinopterygii	piscivore
Blackstripe Topminnow	notatus	Fundulus	Fundulidae	Cyprinodontiformes	Actinopterygii	surface invertivore
Bluegill	macrochirus	Lepomis	Centrarchidae	Perciformes	Actinopterygii	invertivore
Bluntnose Minnow	notatus	Pimephales	Cyprinidae	Cypriniformes	Actinopterygii	omnivore
Bowfin	calva	Amia	Amiidae	Amiiformes	Actinopterygii	piscivore
Brook Silverside	sicculus	Labidesthes	Atherinopsidae	Atheriniformes	Actinopterygii	surface invertivore
Brook Stickleback	inconstans	Culaea	Gasterosteidae	Gasterosteiformes	Actinopterygii	invertivore
Brown Bullhead	nebulosus	Ameiurus	Ictaluridae	Siluriformis	Actinopterygii	omnivore
Carp	carpio	Cyprinus	Cyprinidae	Cypriniformes	Actinopterygii	omnivore
Carp X Goldfish	auratus	Cyprinus	Cyprinidae	Cypriniformes	Actinopterygii	omnivore
Central Mudminnow	limi	Umbrina	Umbridae	Esociformis	Actinopterygii	benthic invertivore
Central Stoneroller	anomalum	Campostoma	Cyprinidae	Cypriniformes	Actinopterygii	omnivore
Channel Catfish	punctatus	Ictalurus	Ictaluridae	Siluriformis	Actinopterygii	omnivore
Chinook Salmon	tshawytscha	Oncorhynchus	Salmonidae	Salmoniformes	Actinopterygii	piscivore
Creek Chub	atromaculatus	Semotilus	Cyprinidae	Cypriniformes	Actinopterygii	omnivore
Emerald Shiner	atherinoides	Notropis	Cyprinidae	Cypriniformes	Actinopterygii	surface invertivore
Fathead Minnow	promelas	Pimephales	Cyprinidae	Cypriniformes	Actinopterygii	omnivore
Flathead Catfish	olivaris	Pylodictis	Ictaluridae	Siluriformis	Actinopterygii	piscivore
Freshwater Drum	grunniens	Aplodinotus	Sciaenidae	Perciformes	Actinopterygii	benthic invertivore
Gizzard Shad	cepedianum	Dorosoma	Clupeidae	Clupeiformis	Actinopterygii	planktivore
Golden Shiner	crysoleucas	Notemigonus	Cyprinidae	Cypriniformes	Actinopterygii	omnivore
Goldfish	auratus	Carassius	Cyprinidae	Cypriniformes	Actinopterygii	omnivore
Grass Carp	idella	Ctenopharyngodon	Cyprinidae	Cypriniformes	Actinopterygii	herbivore
Grass Pickerel	americanus	Esox	Esocidae	Esociformis	Actinopterygii	piscivore
Green Sunfish	cyanellus	Lepomis	Centrarchidae	Perciformes	Actinopterygii	invertivore
Hybrid Sunfish	spp.	Lepomis	Centrarchidae	Perciformes	Actinopterygii	invertivore
Largemouth Bass	salmoides	Micropterus	Centrarchidae	Perciformes	Actinopterygii	piscivore
Longnose Dace	cataractae	Rhinichthys	Cyprinidae	Cypriniformes	Actinopterygii	benthic invertivore
Mimic Shiner	volucellus	Notropis	Cyprinidae	Cypriniformes	Actinopterygii	invertivore
Mosquitofish	affinis	Gambusia	Poeciliidae	Cyprinodontiformes	Actinopterygii	surface invertivore
Nile Tilapia	niloticus	Oreochromis	Cichlidae	Cichliformes	Actinopterygii	omnivore
Ninespine Stickleback	pungitius	Pungitius	Gasterosteidae	Gasterosteiformes	Actinopterygii	invertivore
Northern Pike	lucius	Esox	Esocidae	Esociformis	Actinopterygii	piscivore

Orangespotted Sunfish	humilis	Lepomis	Centrarchidae	Perciformes	Actinopterygii	invertivore
Oriental Weatherfish	anguillicaudatus	Misgurnus	Cobitidae	Cypriniformes	Actinopterygii	omnivore
Pumpkinseed	gibbosus	Lepomis	Centrarchidae	Perciformes	Actinopterygii	invertivore
Quillback	cyprinus	Carpodes	Catostomidae	Cypriniformes	Actinopterygii	benthic invertivore
Rainbow Smelt	mordax	Osmerus	Osmeridae	Osmeriformes	Actinopterygii	invertivore
Rainbow Trout	mykiss	Oncorhynchus	Salmonidae	Salmoniformes	Actinopterygii	piscivore
Rock Bass	rupestris	Ambloplites	Centrarchidae	Perciformes	Actinopterygii	piscivore
Rosyface Shiner	rubellus	Notropis	Cyprinidae	Cypriniformes	Actinopterygii	invertivore
Round Goby	melanostomus	Neogobius	Gobiidae	Gobiiformes	Actinopterygii	benthic invertivore
Sand Shiner	stramineus	Notropis	Cyprinidae	Cypriniformes	Actinopterygii	invertivore
Skipjack Herring	chrysochloris	Alosa	Clupeidae	Clupeiformis	Actinopterygii	omnivore
Smallmouth Bass	dolomieu	Micropterus	Centrarchidae	Perciformes	Actinopterygii	piscivore
Smallmouth Buffalo	bubalus	Ictiobus	Catostomidae	Cypriniformes	Actinopterygii	benthic invertivore
Spotfin Shiner	spiloptera	Cyprinella	Cyprinidae	Cypriniformes	Actinopterygii	surface invertivore
Spottail Shiner	hudsonius	Notropis	Cyprinidae	Cypriniformes	Actinopterygii	omnivore benthic
Tadpole Madtom	gyrinus	Noturus	Ictaluridae	Siluriformis	Actinopterygii	invertivore
Threadfin Shad	petenense	Dorosoma	Clupeidae	Clupeiformis	Actinopterygii	planktivore
Warmouth	gulosus	Lepomis	Centrarchidae	Perciformes	Actinopterygii	invertivore
White Bass	chrysops	Morone	Moronidae	Perciformes	Actinopterygii	piscivore
White Crappie	annularis	Pomoxis	Centrarchidae	Perciformes	Actinopterygii	piscivore
White Perch	americana	Morone	Moronidae	Perciformes	Actinopterygii	piscivore
White Sucker	commersoni	Catostomus	Catostomidae	Cypriniformes	Actinopterygii	benthic invertivore
Yellow Bass	mississippiensis	Morone	Moronidae	Perciformes	Actinopterygii	piscivore
Yellow Bullhead	natalis	Ameiurus	Ictaluridae	Siluriformis	Actinopterygii	omnivore
Yellow Perch	flavescens	Perca	Percidae	Perciformes	Actinopterygii	piscivore