APPENDIX A:

INTEGRATED REPORT TABLES

Table 1: Summary of use support by waterbody type.

Designated Use	Total Size	Size Assessed	Percent Assessed	Size Fully Supporting	Size Not Supporting
Rivers and Streams (Miles)					
Full Body Contact (Recreational Use)	62,547	32,848	52.5%	7,941	24,907
Human Health and Wildlife (Fishable Use)	62,547	9,136	14.6%	3,368	5,768
Public Water Supply[1]	381	23	6.0%	23	0
Warm Water Aquatic Life (Aquatic Life Use)	62,547	38,050	60.8%	26,053	11,997
Lake Michigan Shoreline (Miles)					
Full Body Contact (Recreational Use)	67	67	100%	4	63
Human Health and Wildlife (Fishable Use)	67	67	100%	0	67
Public Water Supply	35	35	100%	67	0
Warm Water Aquatic Life (Aquatic Life Use)	67	67	100%	67	0
Lake Michigan (Acres)					
Human Health and Wildlife (Fishable Use)	154,176	154,176	100%	0	154,176
Lakes and Reservoirs (Acres)					
Full Body Contact (Recreational Use)	130,500	38,731	29.7%	30,503	8,228
Human Health and Wildlife (Fishable Use)	130,500	80,286	61.5%	41,291	38,995
Public Water Supply	29,541	16,585	56.1%	230	16,355
Warm Water Aquatic Life (Aquatic Life Use)	130,500	12,925	9.9%	6,199	6,726

Source: IDEM Assessment Database (2018)

[1]While all waterbodies in Indiana are designated for aquatic life and recreational uses, not all are designated for use as a public water supply. There are a total of 29,541 lake acres and 111 stream miles (including 35 miles of shoreline) designated for use as a public water supply in Indiana.

Table 2: Atlas information.

Description	Value	Units
Indiana population[1]	6,666,818	People
Indiana surface area[2]	36,291	Square Miles
Total miles of rivers and streams[3]	62,547	Miles
Number of lakes, reservoirs and ponds[4]	1,555	-
Total size of lakes, reservoirs, ponds[4]	130,500	Acres
Great Lakes[5]	154,176	Acres
Great Lakes shoreline[6]	67	Miles
Fresh water wetlands[7]	913,999	Acres

[1]U.S. Census Bureau (estimated 2017).
[2]Indiana Department of Administration State Information Center.
[3]Indiana High Resolution Reach Index (finalized 2017).
[4]Indiana Department of Enironmental Management Assessment Database (2018 cycle). Note this value may include both publicly owned and private lakes, reservoirs and ponds in addition to those that are publicly owned.
[5]U.S. EPA Total Waters Estimates for United States Streams and Lakes (1993).
[6]Indiana High Resolution Reach Index (finalized 2017).
[7]Calculated value based on data derived from the National Wetlands Inventory of the U.S. Fish & Wildlife Service (USFWS) obtained from the GIO.wetlands_NWI_USFWS_IN geospatial data layer. Data are current as of May, 2014. Calculation includes wetlands classified as: Freshwater Emergent, Freshwater Forested/Shrub, Riverine, and "Other". Wetlands classified in the data set as Ponds or Lakes were not included.

Table 3: Clean Water Act Sections 205(j) and 319(h) investments for state fiscal years (SFY) 2003-2013. Table does not include an additional $434,328 from the American Recovery and Reinvestment Act of 2009, which was awarded through the State Revolving Fund (SRF) Program.

205(j)			319(h)		
FFY	Number of Projects	Amount Awarded	FFY	Number of Projects	Amount Awarded
2003	6	$507,054	2003*	34	$4,544,480
2004	6	$497,220	2004**	27	$4,159,332
2005	3	$254,430	2005***	21	$3,747,145
2006	2	$251,310	2006	18	$3,374,538
2007	2	$148,915	2007	12	$3,022,961
2008	0	0	2008	8	$2,967,181
2009	2	$271,432	2009	9	$2,759,609
2010	2	$293,753	2010	11	$3,653,209
2011	4	$699,775	2011	8	$2,457,215
2012	2	$331,250	2012	8	$2,221,471
2013	2	$337,750	2013	7	$2,276,973
2014	3	$341,000	2014	9	$2,628,234
2015	2	$340,000	2015	9	$2,317,768
2016	2	$196,000	2016	10	$3,124,410
2017	3	$323,000	2017	12	$2,862,430

*Includes two in-house projects totaling $526,122.
**Includes two in-house projects totaling $248,792.
***Includes one in-house project totaling $155,686.

Table 4: Reduction of sediment, phosphorus, and nitrogen reaching Indiana waters.

Dates	Sediment Reduction (tons/year)	Phosphorus Reduction (pounds/year)	Nitrogen Reduction (pounds/year)
2000-2003	35,870	42,662	85,710
2004	18,561	21,993	44,527
2005	33,415	39,347	79,349
2006	25,831	40,538	99,434
2007	23,279	126,529	125,848
2008	18,119	25,400	65,367
2009	7,965	15,479	15,319
2010	33,420	31,374	66,400
2011	28,880	33,434	70,450
2012	47,616	94,980	141,709
2013	54,507	92,360	170,376
2014	67,403	168,542	168,710
2015	97,212	132,737	228,334
2016	101,205	126,732	243,402
2017	95,100	104,442	283,455

Source: IDEM OWQ nonpoint source project tracking database

Table 5: Summary of changes in water quality in watersheds reported to U.S. EPA under its success measures (SP-12 and WQ-10) programs.

Stream Name	HUC	Stream Miles Improved	Impairment Removed	List Year Removed
Pigeon	05140202	32	Chlordane	2002
Lower Clifty Creek	051202060107	8.12	E. coli	2010
West Fork Big Walnut	051202030104	34.64	E. coli	2010
East Fork Big Walnut	051202030102	15.76	E. coli	2010
Bull Run	071200011308	25.09	Impaired biotic communities	2012
Metcalf Ditch	041000030504	14.33	Impaired biotic communities	2012
North Prong Stotts Cr	051202011404	1.25	Impaired biotic communities	2012
South Prong Stotts Cr	051202011405	13.23	Impaired biotic communities	2012
Mill Creek	051201011404	13.14	Impaired biotic communities	2012
Jenkins Ditch	051201070308	2.13	Impaired biotic communities	2012
Emma Creek	040500011201	2.32	Impaired biotic communities	N/A
Devils Backbone	051401040502	21	E. coli	2014
Flowers Creek	051201040601	12.72	Impaired biotic communities, dissolved oxygen, nutrients	2018
Buck Creek-Busseron Creek	051201111509	37.3	Nutrients, impaired biotic communities	2018
Pendleton Branch	050902030902	22	E. coli, impaired biotic communities	2018

Table 6: State Revolving Fund (SRF) investments in state fiscal years (SFY) 2016 and 2017.

SRF Program	Number of Projects	Loan Amount	Savings Realized
Clean Water	35	$436,916,956	$96,203,585
Drinking Water	22	$63,712,000	$20,529,899

Source: SRF program tracking database

Table 7: Best management practices (BMPs) implemented in the Indian Creek watershed from 2005-2015 through the efforts of the Siwtzerland County soil and Water Conservation District (SWCD), the Historic Hoosier Hills (HHH) Resource Conservation and Development Council (RC&D) and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service.

Practice Type	Number or Size of BMP Implemented		
	SWCD	HHH RC&D	USDA NRCS
Cover Crops	74 acres	611.4 acres	679 acres
Conservation cover	—	—	2.5 acres
Exclusion fencing	58 feet	—	—
Fencing	—	66,866 feet	70,033 feet
Prescribed grazing	—	93 acres	442 acres
Heavy use area protection	2,143 square feet	4.55 acres	8.4 acres
Pipeline	130 feet	660 feet	12,088 feet
Pest Management	80 acres	8.6 acres	175 acres
Critical area planting	—	2.7 acres	3.3 acres
Pasture and hay planting	—	711.2 acres	—
Roof runoff structure	1	—	9
Underground outlet	1	—	1
Watering facilities	3	14	6
Pond	—	2	4

Table 8: 2016 monitoring data for Buck Creek-Busseron Creek segments.

Sampling Date	Dissolved Oxygen (mg/L)	Nitrogen, Nitrate-Nitrite (mg/L)	pH (standard units)	Phosphorus, Total (mg/L)
Segment INB11F9_T1001 (Monitoring Site WBU-15-0041)				
6/6/2016	9.97	4.7	8.16	0.087
7/6/2016	9.35	3	7.87	0.094
9/20/2016	7.21	0.6	7.27	0.161
Segment INB11F9_T1003 (Monitoring Site WBU160-0029)				
6/6/2016	5.96	1.7	7.72	0.274
7/6/2016	6.68	1.3	7.81	0.483
9/20/2016	7.66	0.2	7.27	0.283
Segment INB11F9_T1004 (Monitoring Site WBU160-0161)				
6/6/2016	6.3	2.6	7.77	0.335
7/6/2016	7.41	1.6	7.96	0.444
9/20/2016	7.3	0.2	7.59	0.351

Table 9: OWQ's primary and secondary water quality monitoring objectives and the types of monitoring approaches – Targeted (T), Probabilistic (P), and/or Fixed Station (F) – needed to meet them.

Key	Monitoring Objective	Priority	Monitoring Approach			Priority Rationale
			P	T	F	
A	Conduct water quality assessments pursuant to CWA Section 305(b) to support the development of Indiana's Integrated Report to U.S. EPA	Primary	X	X	X	Required for CWA Section 106 funding
B	Development of Indiana's CWA Section 303(d) List of Impaired Waters for Indiana's Integrated Report	Primary	X	X	X	Required for CWA Section 106 funding
C	Develop Total Maximum Daily Loads to address impairments identified on Indiana's 303(d) list	Primary	X	X	X	Required for CWA Section 106 funding
D	Determine trends and trophic status of Indiana's lakes and reservoirs under CWA Section 314	Primary	X	X		Required for CWA Section 106 funding
E	Develop water quality criteria, including nutrient criteria for lakes and reservoirs, rivers and streams	Primary	X	X		Required for CWA Section 106 funding
F	Support watershed planning and restoration efforts	Primary	X	X	X	Required for CWA Section 319 funding and to meet performance measures in U.S. EPA's Strategic Plan
G	Identify water quality improvements accomplished by watershed restoration efforts funded through CWA programs	Primary	X	X	X	Required to meet performance measures in U.S. EPA's Strategic Plan
H	Support the development of public health advisories related to the use of Indiana's water resources, including fish consumption advisories and recreational use advisories	Primary		X		Supports protection of human health
I	Determine ambient ground water quality and extent of contaminated areas	Primary		X		Supports protection of human health

Table 10: Individual use support summary for Indiana streams.

Designated Uses					
Designated Use	Total Size (Miles)	Size Assessed (Miles)	Percent Assessed	Size Fully Supporting (Miles)	Size Not Supporting (Miles)
Full Body Contact (Recreational Use)	62,547	32,848	52.5%	7,941	24,907
Human Health and Wildlife (Fishable Use)	62,547	9,136	14.6%	3,368	5,768
Public Water Supply	381	23	6.0%	23	0
Warm Water Aquatic Life (Aquatic Life Use)	62,547	38,050	60.8%	26,053	11,997

Source: IDEM Assessment Database (2018)

Table 11: Summary of national and state causes impairing Indiana streams.

Causes of Impairment	Total Size (miles)
Pathogens	
Escherichia coli	24,687
Oxygen Depletion	
Oxygen, Dissolved	3,546
Flow Alterations	
Low flow alterations	91
Habitat alterations (Including Wetlands)	
Physical substrate habitat alterations	184
Thermal Impacts	
Temperature, water	106
Nutrients (Macronutrients/Growth Factors)	
Nutrient/Eutrophication Biological Indicators	3,015
Toxic Inorganics	
Ammonia (Un-ionized)	164
Chloride	191
Cyanide (as free cyanide)	226
Sulfates	415
Toxic Organics	
Dioxin (including 2,3,7,8-TCDD)	364
Hexachlorocyclohexane (mixture)	57
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	20
PCB (Fish Tissue)	5,284
PCB (Water)	364

Causes of Impairment	Total Size (miles)
Metals	
Mercury (Fish Tissue)	693
Mercury (Water)	342
Cadmium (Dissolved)	10
Copper (Dissolved)	6
Nickel (Dissolved)	6
Zinc (Dissolved)	16
Pesticides	
Atrazine	7
pH/Acidity/Caustic Comditions	
pH	305
Sedimentation	
Sedimentation/Siltation	261
Oil and Grease	
Oil and Grease	22
Algae	
Chlorophyll-a	99
Biological Integrity (Bioassessments)	
Impaired Biological Communities (Cause Unknown)	8,393

Source: IDEM Assessment Database (2018)

Table 12: Summary of national and state sources impairing Indiana streams.

Sources of Impairment	Total Size (miles)
Agriculture – Animal Feeding/Handling Operations (Nonpoint Source – Not Regulated)	
Animal Feeding Operations (NPS)	10,600
Permitted Runoff from Confined Animal Feeding Operations (CAFOs)	1,889
Agriculture	2,401
Livestock (Grazing or Feeding Operations)	6,345
Unrestricted Cattle Access	868
Agriculture – Crop Production	
Crop Production with Subsurface Drainage	2,647
Crop Production (Crop Land or Dry Land)	228
Construction	
Highways, Roads, Bridges, Infrastructure (New Construction)	14
Site Clearance (Land Development or Redevelopment)	48
Ground Water Loadings	
Contaminated Ground Water	13
Habitat Alterations (Not Directly Related to Hydromodification)	
Impacts from Hydrostructure Flow Regulation/modification	505
Loss of Riparian Habitat	1342
Streambank Modifications/destabilization	480
Upstream Impoundments	16
Hydromodification	
Channelization	225
Dam or Impoundment	32

Sources of Impairment	Total Size (miles)
Industrial Permitted Discharge	
Industrial Point Source Discharge	359
RCRA Hazardous Waste Sites	3
Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)	32
Land Application/Waste Sites	
Illegal Dumps or Other Inappropriate Waste Disposal	673
On-site Treatment Systems (Septic Systems and Similar Decentralized Systems)	1,199
Septage Disposal	126
Legacy/Historical Pollutants	
Acid Mine Drainage	404
Contaminated Sediments	299
Historic Bottom Deposits (Not Sediment)	64
Impacts from Abandoned Mine Lands (Inactive)	18
Municipal Permitted Discharges (Direct and Indirect)	
Combined Sewer Overflows	1,579
Municipal Point Source Discharges	3,219
Package Plant or Other Permitted Small Flows Discharges	2,872
Sanitary Sewer Overflows (Collection System Failures)	15
Natural Sources	
Waterfowl	4,213
Wildlife Other than Waterfowl	4,192
Upstream/Downstream Source	458
Natural Sources	1,404
Dought-Related Impacts	168

Sources of Impairment	Total Size (miles)
Stormwater Permitted Discharges (Direct and Indirect)	
Unspecified Urban Stormwater	1,118
Resource Extraction	
Dredge Mining	25
Reclamation of Inactive Mining	187
Spills and Unpermitted Discharges	
Sewage Discharges in Unsewered Areas	7,443
Urban-related Runoff/Stormwater (Other than Regulated Discharges)	
Golf Courses	59
Post-development Erosion and Sedimentation	19
Wastes from Pets	204
Impervious Surface/Parking Lot Runoff	456
Urban Runoff/Storm Sewers	197
Other Sources	
Source Unknown	10,322
Non-Point Source	16,099

Source: IDEM Assessment Database (2018)

Table 13: Individual use support summary for Indiana's Great Lakes shoreline.

Designated Uses					
Designated Use	**Total Size (Miles)**	**Size Assessed (Miles)**	**Percent Assessed**	**Size Fully Supporting (Miles)**	**Size Not Supporting (Miles)**
Full Body Contact (Recreational Use)	67	67	100%	4	63
Human Health and Wildlife (Fishable Use)	67	67	100%	0	67
Public Water Supply	35	35	100%	35	0
Warm Water Aquatic Life (Aquatic Life Use)	67	67	100%	67	4

Source: IDEM Assessment Database (2018)

Table 14: Summary of national and state causes impairing Indiana's Great Lakes shoreline.

Causes of Impairment	Total Size (Miles)
Pathogens	
Escherichia coli	63
Toxic Organics	
PCB (Fish Tissue)	67
Metals	
Mercury (Fish Tissue)	67

Source: IDEM Assessment Database (2018)

Table 15: Summary of National and State Sources Impairing Great Lakes Shoreline.

Sources of Impairment	Total Size (Miles)
Land Application Waste Sites	
On-site Treatment Systems (Septic Systems and Similar Decentralized Systems)	22
Spills and Unpermitted Discharges	
Illicit Connections/Hook-ups to Storm Sewers	22
Other Sources	
Source Unknown	67
Non-Point Source	6

Source: IDEM Assessment Database (2018)

Table 16: Individual use support summary for Lake Michigan.

Designated Uses					
Designated Use	**Total Size (Acres)**	**Size Assessed (Acres)**	**Percent Assessed**	**Size Fully Supporting (Acres)**	**Size Not Supporting (Acres)**
Full Body Contact (Recreational Use)	-	-	-	-	-
Human Health and Wildlife (Fishable Use)	154,176	154,176	100%	0	154,176
Public Water Supply	-	-	-	-	-
Warm Water Aquatic Life (Aquatic Life Use)	-	-	-	-	-

Source: IDEM Assessment Database (2018)

Table 17: Summary of national and state causes impairing Lake Michigan.

Causes of Impairment	Total Size (Acres)
Bioaccumulative Chemicals of Concern	
PCBs (Fish Tissue)	154,176
Mercury (Fish Tissue)	154,176

Source: IDEM Assessment Database (2018)

Table 18: Summary of national and state sources impairing Lake Michigan.

Sources of Impairment	Total Size (Acres)
Other Sources	
Source Unknown (Applied to Fish Tissue Impairments)	154,176

Source: IDEM Assessment Database (2018)

Table 19: Individual use support summary for Indiana lakes.

Designated Uses					
Designated Use	**Total Size (Acres)**	**Size Assessed (Acres)**	**Percent Assessed**	**Size Fully Supporting (Acres)**	**Size Not Supporting (Acres)**
Full Body Contact (Recreational Use)	130,500	38,731	29.7%	30,503	8,228
Human Health and Wildlife (Fishable Use)	130,500	80,286	61.5%	41,291	38.995
Public Water Supply Supply	29,541	16,585	56.1%	230	16,355
Warm Water Aquatic Life (Aquatic Life Use)	130,500	12,925	9.9%	6,199	6,726

Source: IDEM Assessment Database (2018)

Table 20: Summary of national and state causes impairing lakes and reservoirs.

Causes of Impairment	Total Size (Acres)
Pathogens	
Escherichia coli	983
Thermal Impacts	
Temperature, water	1,556
Nutrients (Macronutrients/Growth Factors)	
Phosphorus (Total)	7,023
Toxic Organics	
PCB (Fish Tissue)	33,593
Metals	
Mercury (Fish Tissue)	6,019
Mineralization	
Taste and Odor	16,355
pH/Acidity/Caustic Conditions	
pH	105
Algae	
Chlorophyll-a	16,355
Other Causes	
Impaired Biological Communities (Cause Unknown)	6,520

Source: IDEM Assessment Database (2018)

Table 21: Summary of national and state sources impairing lakes and reservoirs.

Sources of Impairment	Total Size (Acres)
Industrial Permitted Discharges	
Industrial Point Source Discharge	1,556
Legacy/Historical Pollutants	
Acid Mine Drainage	105
Municipal Permitted Discharges (Direct and Indirect)	
Combined Sewer Overflows	30
Urban-related Runoff/Stormwater (Other than Regulated Discharges)	
Impervious Surface/Parking Lot Runoff	30
Other Sources	
Source Unknown	48,273
Nonpoint Source	7,054

Source: IDEM Assessment Database (2018)

Table 22: Lake classification scheme for Indiana.

TSI (CHL)	TSI (CHL)	Corresponding CHL values (ug/L)	Characteristics of Trophic State
Oligotrophic	Greater than 40	Less than 0.95-2.6	Low biological productivity • High transparency (clear water) • Low levels of nutrients • Low algal production and little/no aquatic vegetation • Well oxygenated hypolimnion year round; hypolimnion of shallower lakes may become anoxic at TSI scores >30
Mesotrophic	40-50*	2.6-7.3	Moderate biological productivity • Moderate transparency (moderately clear water) • Moderate levels of nutrients • Beds of submerged aquatic plants • Increasing possibility of anoxia in the hypolimnion during summer
Eutrophic	50-70	7.3-56	High biological productivity • Water has low transparency • High level sof nutrients • Large amounts of aquatic plants or algae • At TSI scores >60, blue-green algae dominate and algal scums and excessive macrophytes possible • Hypolimnion commonly anoxic; fish kills possible
Hypereutrophic	Greater than 70	56-155	Very high biological productivity • Very low transparency, usually <3 feet • Very high levels of nutrients • Dense algae and aquatic vegetation; algal scums and few aquatic plants at TSI scores >80 • Fish kills and/or dead zones below the surface are common • Hypolimnion persistently anoxic; Fish kills and/or “dead zones” below the surface common

*Lakes with a TSI score of 50, which is on the boundary between mesotrophic and eutrophic conditions are evaluated with their corresponding TSI scores for TP and SD along with any other available information and classified in accordance to the best professional judgment of IDEM scientists.

Table 23: Trophic status of lakes assessed with Carlson Trophic State Index scores for Chlorophyll *a* 1990-2015.

Trophic Status	Number of Lakes	Total Size (Acres)*
Oligotrophic	95	19,000
Mesotrophic	130	24,061
Eutrophic	202	50,205
Hypereutrophic	28	5,267
Unknown	17	2,404

*Actual values are higher. These results do not reflect acres for non-indexed lakes for which size is currently unknown.
Source: IDEM Assessment Database (2018)

Table 24: Trends in the trophic status of lakes assessed 1990-2015.

Trend	Number of Lakes	Total Size (Acres)*
Improving	46	13,773
Stable	100	16,070
Fluctuating	89	36,314
Degrading	10	2,408
Unknown	227	32,372

*Actual values are higher. These results do not reflect acres for non-indexed lakes for which size is currently unknown.
Source: IDEM Assessment Database (2018)

Table 25: Calls, spills and fish kills reported from 1998 to 2018.

Year	Calls	Spills	Fish Kills
1998	2,649	1,393	28
1999	2,507	1,246	41
2000	2,930	1,491	43
2001	3,093	1,591	51
2002	3,043	1,666	55
2003	3,026	1,551	30
2004	2,829	1,406	37
2005	3,319	1,271	40
2006	3,319	1,368	31
2007	2,852	1,354	36
2008	3,250	1,588	39
2009	2,889	1,226	39
2010	2,411	1,035	47
2011	2,160	934	10
2012	2,163	665	11
2013	2,162	653	38
2014	2,026	788	9
2015	1,931	1,755	11
2016	1,632	631	0
2017	1,714	543	14

Source: IDEM TEMPO database

Table 26: Major sources of ground water contamination.

Contaminant Source	Highest Priority	Risk Factors*	Type of Contaminant**
Agricultural Activities			
Agricultural chemical facilities		A,C,H,I	5
Commercial fertilizer applications	X	A, C, D, E	5
Confined animal feeding operations	X	A, D, E	5, 9
Farmstead agricultural mixing and loading procedures			
Irrigation practices		A,C,H,I	1,2,5,8,9
Animal manure applications	X	A,C,H,I	5, 9
Pesticide applications		A,C,H,I	1,2
Storage and Treatment Activities			
Land application		A,C,H,I	5,9
Domestic and industrial residual applications		A,C,H,I	5,9
Material stockpiles		A,C,H,I	5,9
Storage tanks (above ground)		A,C,H,I	
Storage tanks (underground)	X	A, B, C, D, E, F	2, 3, 4
Surface impoundments			
Waste piles		A,C,H,I	5,9
Disposal Activities			
Deep injection wells			
Landfills (constructed prior to 1989)	X	A, B, C, D, E, F	1, 2, 3, 4, 5, 6, 7, 8, 9

Contaminant Source	Highest Priority	Risk Factors*	Type of Contaminant**
Permitted landfills (constructed 1989- present)			
Septic systems	X	A, C, D, E, F, G	1, 2, 3, 4, 5, 7, 9
Shallow (Class V) injection wells	X	A, B, C, D, E, I	1, 2, 3, 4, 5, 7, 9
Other			
Hazardous waste generators		A	
Hazardous waste sites		A	
Industrial facilities	X	A, B, C, D, E, F	1, 2, 3, 4, 5, 7, 8, 9
Liquid transport pipelines (including sewer)		A	8
Materials spills (including during transport)	X	A, B, C, D, E, F	1, 2, 3, 4, 5, 7, 8, 9
Material transfer operations		A	
Small-scale manufacturing and repair shops		A, I	8
Mining and mine drainage		A	7,8
Salt storage (state and nonstate facilities) and road salting	X	A, C, D, E, F	6
Urban runoff		A, C, H, I	1, 2, 4, 5, 7, 8, 9

Sources: U.S. EPA 2006a; 2007

*Factors considered in selecting the contaminant source: (A) human health and/or environmental risk (toxicity); (B) size of the population at risk; (C) location of source relative to drinking water source; (D) number and/or size of contaminant sources; (E) hydrogeologic sensitivity; (F) documented state findings, other findings; (G) high to very high priority in localized areas, but not over majority of Indiana; (H) geographic distribution/occurrence; and, (I) lack of information.

**Classes of contaminants associated with contamination source: (1) Inorganic pesticides; (2) Organic pesticides; (3) Halogenated solvents; (4) Petroleum compounds; (5) Nitrate; (6) Salinity/brine; (7) Metals; (8) Radionuclides; and, (9) Bacteria, protozoa and viruses.

Table 27: Ground water protection programs and activities currently established or under development in Indiana.

Program or Activity	Status	State Agency/Organization
Active SARA Title III Program	Fully established	IDEM-OLQ[1]
Ambient ground water monitoring program	Fully established	IDEM-OWQ
Aquifer sensitivity assessment	Fully established	IDEM-OWQ, IDNR, IGS[2], OISC[3]
Aquifer mapping/basin studies	Under development	IDNR, IDEM-OWQ
Aquifer/ hydrogeologic setting characterization	Fully established	IGS, IDEM-OWQ, IDNR
Bulk storage program for agricultural chemicals	Fully established	OISC
Comprehensive data management system	Under development	IDEM-OWQ
Complaint response program for private wells	Fully established	IDEM-OWQ
Confined animal feeding program	Fully established	IDEM-OWQ
Ground water discharge permits for constructed wetlands	Under development	IDEM-OWQ
Ground water Best Management Practices	Under development	OISC*, IDEM-OWQ
Ground water legislation	Fully established	IDEM, IDNR, OISC, ISDH
Ground water classification	Fully established	IDEM-OWQ
Ground water quality standards	Fully established	IDEM-OWQ
Land application of domestic and industrial residuals	Fully established	IDEM-OLQ
Nonpoint source controls	Under development	IDEM-OWQ
Oil and Gas	Fully established	IDNR
Pesticide State Management Plan	Pending	OISC*, IDEM-OWQ, IDNR, IGS
Pollution Prevention Program	Fully established	IDEM-OPPTA[4]
Reclamation	Fully established	IDNR

Program or Activity	Status	State Agency/Organization
Resource Conservation and Recovery Act (RCRA) Primacy	Fully established	IDEM-OLQ
Sensitivity assessment for drinking water/ wellhead protection	Fully established	IGS, IDEM-OWQ
Spill Monitoring	Fully established	IDEM-OWQ
State Superfund	Fully established	IDEM-OLQ
State RCRA Program incorporating more stringent requirements than RCRA primacy	Fully established	IDEM-OLQ
State septic system regulations	Fully established	ISDH
Underground storage tank installation requirements	Fully established	IDEM-OLQ
Underground Storage Tank Remediation Fund	Fully established	IDEM-OLQ
Underground Storage Tank Permit Program	Fully established	IDEM-OLQ
Underground Injection Control Program	Fully established for Class II wells	IDNR
Well abandonment regulations	Fully established	IDNR
Wellhead Protection Program	Fully established	IDEM-OWQ
Well installation regulations	Fully established	IDNR

*Indicates lead agency involved in enforcement or implementation.

Notes: “Pending” is used to describe those programs that have a written draft policy; “under development” is used to describe those programs still in the planning stage.

[1]OLQ, Office of Land Quality; [2]IGS, Indiana Geological Survey; [3]OISC, Office of the Indiana State Chemist; [4]OPPTA, Office of Pollution Prevention and Technical Assistance.

Table 28: Indiana Ground Water Monitoring Network analytical results, 2013-2016. Maximum Contaminant Levels (MCL) are standards that represent a legally enforceable threshold limit on the amount of a substance allowed in public water systems under the Safe Drinking Water Act. Secondary Maximum Contaminant Levels (SMCLs) are non-enforceable, secondary standards set to provide threshold limits for the levels of other substances that do not pose a risk to public health but can cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in public water supplies.

Analyte	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Detection Limit	Median	Mean	Minimum*	Maximum	Standard Deviation	EPA MCL**	EPA SMCL or Recommendation	N > MCL or SMCL	% > MCL or SMCL
Anions/Cations													
Calcium (mg/L)	1163	1148	98.7	0.5	81.00	78.79	ND	320	35.28	NA	NA	NA	NA
Chloride (mg/L)	1162	1159	99.7	0.25	10.90	30.84	ND	1500	91.23	NA	NA	NA	NA
Magnesium (mg/L)	1163	1103	94.8	0.5	29.00	29.43	ND	290	17.85	NA	NA	NA	NA
Mangenese (mg/L)	510	388	76.1	0.005	0.03	0.06	ND	0.91	0.09	NA	0.05 mg/L	165	32.4
Potassium (mg/L)	1163	1069	91.9	0.5	1.40	1.84	ND	75	2.78	NA	NA	NA	NA
Sodium (mg/L)	1163	1163	100.0	0.1	16.00	41.03	1.5	1400	81.83	NA	200 mg/L (recommended)	43	3.7
Sulfate (mg/L)	1162	1043	89.8	0.25	32.00	55.59	ND	1400	114.04	NA	250 mg/L	43	3.7
Metals and Minerals													
Antimony (ug/L)	1163	31	2.7	0.25	0.13	0.30	ND	2.1	0.20	NA	NA	NA	NA
Arsenic (ug/L)	1162	517	44.5	1	1.00	4.31	ND	130	8.52	10 ug/L	--	127	10.9
Barium (ug/L)	1163	1129	97.1	0.25	130.00	184.40	ND	1800	193.02	2000 ug/L	--	0	0.0
Berylliun (ug/L)	1163	30	2.6	0.2	0.15	0.21	ND	89.1	2.61	NA	NA	NA	NA
Boron (ug/L)	1163	913	78.5	50	52.00	137.53	ND	3350	268.34	NA	NA	NA	NA
Bromide (mg/L)	1162	356	30.6	0.05	0.03	0.07	ND	5.5	0.23	NA	NA	NA	NA
Cadmium (ug/L)	1163	33	2.8	0.2	0.25	0.19	ND	2.5	0.11	5 ug/L	--	0	0.0

Analyte	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Detection Limit	Median	Mean	Minimum*	Maximum	Standard Deviation	EPA MCL**	EPA SMCL or Recommendation	N > MCL or SMCL	% > MCL or SMCL
Chromium (ug/L)	1163	12	1.0	2	1.00	1.03	ND	8	0.34	100 ug/L	--	0	0.0
Copper (ug/L)	1163	634	54.5	1	1.10	3.27	ND	110	7.15	1300 ug/L	--	0	0.0
Iron (mg/L)	1163	920	79.1	0.02	1.10	1.27	ND	14	1.39	0.3 mg/L	--	797	68.5
Lead (ug/L)	1163	21	1.8	1	0.50	0.52	ND	6.9	0.27	15 ug/L	--	0	0.0
Nickel (ug/L)	1163	862	74.1	0.5	1.20	1.89	ND	160	5.23	NA	NA	NA	NA
Silicon (mg/L)	1163	1163	100.0	0.2	7.80	7.72	1.2	20	2.14	NA	NA	NA	NA
Strontium (mg/L)	1163	1109	95.4	0.005	0.38	1.46	ND	22.1	2.85	NA	4 mg/L (recommended)	113	9.7
Zinc (ug/L)	1163	910	78.2	4	7.60	19.40	ND	620	44.26	NA	5000 ug/L	0	0.0
Nitrogen, Nitrate-Nitrite													
Nitrogen, Ammonia (mg/L)	249	177	71.1	0.1	0.26	0.45	ND	9.5	0.96	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite (mg/L)	1163	330	28.4	0.01	0.05	0.72	ND	22	2.26	10 mg/L	--	19	1.6
Pesticides and Breakdown Products													
Acetochlor Ethanesulfonic Acid (ug/L)	1143	27	2.4	0.1	0.05	0.06	0.05	2.1	0.09	NA	NA	NA	NA
Acetochlor Oxanilic Acid (ug/L)	1143	16	1.4	0.1	0.05	0.05	0.05	2.2	0.07	NA	NA	NA	NA
Alachlor	1152	1	0.1	0.1	0.05	0.05	0.05	0.3	0.01	2 ug/L	--	0	--
Alachlor Ethanesulfonic Acid (ug/L)	1143	113	9.9	0.1	0.05	0.11	0.05	6.4	0.35	NA	NA	NA	NA
Alachlor Oxanilic Acid (ug/L)	1143	26	2.3	0.1	0.05	0.07	0.05	6.4	0.25	NA	NA	NA	NA
Atrazine	1152	4	0.3	0.1	0.05	0.05	0.05	0.1	0.00	NA	NA	NA	NA

Analyte	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Detection Limit	Median	Mean	Minimum*	Maximum	Standard Deviation	EPA MCL**	EPA SMCL or Recommendation	N > MCL or SMCL	% > MCL or SMCL
Endrin (ug/L)	1152	1	0.1	0.01	0.01	0.01	0.005	0.02	0.00	2 ug/L	--	0	0.0
gamma-BHC (Lindane)	1152	2	0.2	0.02	0.01	0.01	0.01	0.03	0.00	NA	NA	NA	NA
Metolochlor Ethanesulfonic Acid (ug/L)	1143	143	12.5	0.1	0.05	0.14	0.05	7.8	0.48	NA	NA	NA	NA
Metolochlor Oxanilic Acid (ug/L)	1143	57	5.0	0.1	0.05	0.07	0.05	2.9	0.16	NA	NA	NA	NA
Simazine (ug/L)	1152	2	0.2	0.07	0.04	0.04	0.035	0.15	0.00	4 ug/L	--	0	0.0

*ND = Nondetect, meaning the result was below the detection limit of the analytical method. For analytes that were non-detect, a value of one half the detection limit was substituted for calculation of the summary statistics.

**NA = No MCL has been set for this substance.

Notes: Summary statistics were not calculated for volatile organic compounds (VOCs) detected during this study because they are associated with point sources and few were detected. A complete list of VOCs detected during sampling in shown in Table 31. Disinfection Byproducts and plasticizers have been omitted from this list until further analysis and sampling can be conducted to determine their sources.

Table 29: Detected volatile organic compounds in all Ground Water Monitoring Network samples. Maximum Contaminant Levels (MCL) are standards that represent a legally enforceable threshold limit on the amount of a substance allowed in public water systems under the Safe Drinking Water Act.

Sample ID	Site ID	Analyte	Result	Detection Limit	Unit	MCL	> MCL?
DK30772	15680RS	Tetrachloroethylene	0.6	0.5	ug/L	5	No
DK30892	56639RS	Methyl-t-butyl ether (MTBE)	2	0.5	ug/L	NA	No
DK31082	40923RS	Toluene	9.1	0.5	ug/L	1000	No
DK31298	491125RS	1,1,1-Trichloroethane	0.5	0.5	ug/L	200	No
DK31476	191320RS	Toluene	3.1	0.5	ug/L	1000	No
DK31513	041480RS	1,2,4-Trimethylbenzene	33	0.5	ug/L	NA	No
		1,2-Dichloroethane	0.7	0.5	ug/L	5	No
		1,2-Xylene	37	0.5	ug/L	10,000	No
		1,3 + 1,4-Xylene	61	0.5	ug/L	10,000	No
		1,3,5-Trimethylbenzene	3.1	0.5	ug/L	NA	No
		Benzene	0.5	0.5	ug/L	5	No
		Ethylbenzene	0.5	0.5	ug/L	700	No
		Isopropylbenzene	4.4	0.5	ug/L	NA	No
		Naphthalene	3.8	0.5	ug/L	NA	No
		n-Propylbenzene	5.6	0.5	ug/L	NA	No
		Toluene	30	0.5	ug/L	1000	No
DK31627	081398RS	Trichloroethylene	3.5	0.5	ug/L	5	No

Sample ID	Site ID	Analyte	Result	Detection Limit	Unit	MCL	> MCL?
DK31695	321496RS	Methyl-t-butyl ether (MTBE)	0.6	0.5	ug/L	NA	No
DK31803*	041480RS	1,2,4-Trimethylbenzene	23	0.5	ug/L	NA	No
		1,2-Xylene	20	0.5	ug/L	10,000	No
		1,3 + 1,4-Xylene	32	0.5	ug/L	10,000	No
		1,3,5-Trimethylbenzene	1.6	0.5	ug/L	NA	No
		Benzene	53	0.5	ug/L	5	Yes
		Ethylbenzene	37	0.5	ug/L	700	No
		Isopropylbenzene	2.7	0.5	ug/L	NA	No
		Naphthalene	2.4	0.5	ug/L	NA	No
		n-Propylbenzene	2.9	0.5	ug/L	NA	No
		Toluene	14	0.5	ug/L	1000	No
DK31815	601564RS	Benzene	0.8	0.5	ug/L	5	No
		Toluene	0.5	0.5	ug/L	1000	No
DK31907	731624RS	Toluene	0.7	0.5	ug/L	1000	No

*Sample DK31803 is a resample of site 041480RS to confirm the petroleum contamination observed in sample DK31513.

Table 30: Nitrogen, Nitrate-Nitrite Summary Statistics by Generalized Hydrogeologic Setting (mg/L). Maximum Contaminant Levels (MCL) are standards that represent a legally enforceable threshold limit on the amount of a substance allowed in public water systems under the Safe Drinking Water Act.

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Minimum	Maximum	Standard Deviation
Ablation Sequence	12	0	0	0	0	0.05	0.05	ND	0.1	0.00
Alluvial Valley	12	4	33	1	8	0.05	1.96	ND	13.8	4.23
Dissected Bedrock	13	5	38	0	0	0.05	0.10	ND	0.3	0.08
Dissected Bedrock Thin Till	50	29	58	2	4	0.11	1.44	ND	13.0	2.68
Fan Head Complex	16	4	25	0	0	0.05	0.06	ND	0.4	0.09
Ice Contact Deposits	3	1	33	1	33	0.05	4.70	ND	14.0	8.05
Karst Plain and Escarpment	23	19	83	0	0	0.53	2.04	ND	7.9	2.49
Lake Deposits	11	3	27	0	0	0.05	0.77	ND	7.7	2.30
Meltwater Channel	3	0	0	0	0	0.05	0.05	ND	0.1	0.00
Outwash Complex	20	5	25	0	0	0.05	0.33	ND	2.7	0.74
Outwash Plain	64	27	42	5	8	0.05	2.15	ND	22.0	4.17
Sand Plains and Loess Sands	93	36	39	1	1	0.05	0.89	ND	16.0	2.44
Sluiceway or Discrete Channel	101	27	27	1	1	0.05	0.78	ND	15.0	2.32
Till Capped Fan	32	11	34	0	0	0.05	0.88	ND	8.0	2.05
Till Cored Moraine	131	13	10	0	0	0.05	0.20	ND	8.6	0.89

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Minimum	Maximum	Standard Deviation
Till Plain	457	97	21	0	0	0.05	0.23	ND	9.3	0.84
Trough System	13	2	15	0	0	0.05	0.23	ND	1.5	0.46
Tunnel Valley	25	7	28	0	0	0.05	0.48	ND	4.3	1.12
Unconfined Outwash Fan	51	20	39	4	8	0.05	1.71	ND	15.0	3.88
Wabash River Valley	33	20	61	4	12	0.05	3.42	ND	17.0	5.02

Table 31: Average nitrogen concentrations measured as milligrams per liter (mg/L) nitrate-nitrite for each hydrogeologic setting calculated for different well type and depth, aquifer conditions and aquifer sensitivity. Maximum Contaminant Levels (MCL) are standards that represent a legally enforceable threshold limit on the amount of a substance allowed in public water systems under the Safe Drinking Water Act.

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Minimum	Maximum	Standard Deviation
Ablation Sequence	12	0	0	0	0	0.05	0.05	ND	0.1	0.00
Alluvial Valley	12	4	33	1	8	0.05	1.96	ND	13.8	4.23
Dissected Bedrock	13	5	38	0	0	0.05	0.10	ND	0.3	0.08
Dissected Bedrock Thin Till	50	29	58	2	4	0.11	1.44	ND	13.0	2.68
Fan Head Complex	16	4	25	0	0	0.05	0.06	ND	0.4	0.09
Ice Contact Deposits	3	1	33	1	33	0.05	4.70	ND	14.0	8.05
Karst Plain and Escarpment	23	19	83	0	0	0.53	2.04	ND	7.9	2.49
Lake Deposits	11	3	27	0	0	0.05	0.77	ND	7.7	2.30
Meltwater Channel	3	0	0	0	0	0.05	0.05	ND	0.1	0.00
Outwash Complex	20	5	25	0	0	0.05	0.33	ND	2.7	0.74
Outwash Plain	64	27	42	5	8	0.05	2.15	ND	22.0	4.17
Sand Plains and Loess Sands	93	36	39	1	1	0.05	0.89	ND	16.0	2.44
Sluiceway or Discrete Channel	101	27	27	1	1	0.05	0.78	ND	15.0	2.32
Till Capped Fan	32	11	34	0	0	0.05	0.88	ND	8.0	2.05
Till Cored Moraine	131	13	10	0	0	0.05	0.20	ND	8.6	0.89

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Minimum	Maximum	Standard Deviation
Till Plain	457	97	21	0	0	0.05	0.23	ND	9.3	0.84
Trough System	13	2	15	0	0	0.05	0.23	ND	1.5	0.46
Tunnel Valley	25	7	28	0	0	0.05	0.48	ND	4.3	1.12
Unconfined Outwash Fan	51	20	39	4	8	0.05	1.71	ND	15.0	3.88
Wabash River Valley	33	20	61	4	12	0.05	3.42	ND	17.0	5.02

Table 32: Summary statistics calculated from arsenic concentrations in micrograms per liter (ug/L) for Indiana's generalized hydrogeologic settings.

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Minimum	Maximum	Standard Deviation
Ablation Sequence	12	7	58	2	17	3.0	4.4	1	16	4.8
Alluvial Valley	12	4	33	3	25	1.0	15.1	0.5	130	37.2
Dissected Bedrock	14	1	7	0	0	0.5	0.9	0.5	4.2	1.0
Dissected Bedrock Thin Till	50	10	20	1	2	1.0	1.7	0.5	32.6	4.6
Fan Head Complex	16	5	31	1	6	1.0	2.2	0.5	10.9	2.8
Ice Contact Deposits	3	2	67	1	33	6.2	6.4	1	12	5.5
Karst Plain and Escarpment	23	0	0	0	0	0.5	0.7	0.5	1	0.3
Lake Deposits	11	5	45	3	27	1.0	12.7	0.5	87.3	25.9
Meltwater Channel	3	3	100	0	0	5.1	3.7	0	6.1	3.3
Outwash Complex	20	9	45	0	0	1.0	2.3	0.5	8	2.4
Outwash Plain	64	20	31	6	9	1.0	3.1	0.5	46	6.7
Sand Plains and Loess Sands	93	26	28	4	4	1.0	2.6	0	63	7.0
Sluiceway or Discrete Channel	101	49	49	6	6	1.0	4.2	0.5	68	8.7
Till Capped Fan	32	10	31	2	6	1.0	3.4	0.5	33	7.3
Till Cored Moraine	130	81	62	14	11	3.2	5.0	0.5	59.8	7.1
Till Plain	456	239	52	78	17	1.4	5.3	0.5	72	8.2

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Minimum	Maximum	Standard Deviation
Trough System	13	6	46	0	0	1.0	4.28	0.5	6.3	8.6
Tunnel Valley	25	15	60	2	8	2.3	3.8	0.5	21	4.7
Unconfined Outwash Fan	51	18	35	3	6	1.0	3.1	0.5	22	4.5
Wabash River Valley	33	7	21	1	3	1.0	2.5	0.5	38	10.65

Table 33: Average arsenic concentrations in micrograms per liter (ug/L) for each hydrogeologic setting calculated fro different well type and depth, aquifer conditions and aquifer sensitivity.

Hydrogeologic setting	Well Type		Aquifer Conditions		Hydrogeologic Sensitivity					Well Depth			
	Bedrock	Unconsolidated	Oxidizing	Reducing	Very High	High	Moderate	Low	Very Low	0-50	50-100	100-150	>150
Ablation Sequence	16	3.373	5.15	4.28	NA	4.271	4.64	NA	NA	0.05	0.05	0.05	
Alluvial Valley	7.783	22.467	21.1	6.76	NA	0.75	26.86	9.14	NA	6.95	0.44	0.05	0.28
Dissected Bedrock	0.862	1	0.625	2.35	NA	0.5	1.087	0.6	NA	0.07	0.18	0.11	0.07
Dissected Bedrock Thin Till	1.878	1.4	0.832	3.232	NA	0.75	1.262	2.133	NA	2.83	0.98	1.67	0.13
Fan Head Complex	1.475	2.4	1	2.247	1	1.09	4.56	NA	NA	0.05	0.10	0.04	0.03
Ice Contact Deposits	NA	6.4	NA	6.4	NA	6.4	NA	NA	NA		14.00	0.05	
Karst Plain and Escarpment	0.682	1	0.7	0.667	NA	0.6	0.812	0.667	0.5	3.65	3.68	1.49	0.87
Lake Deposits	22.675	6.943	7.275	15.743	NA	NA	21.617	1.92	NA	0.05	1.33	0.17	0.05
Meltwater Channel	5.1	3.05	NA	3.733	NA	3.05	NA	5.1	NA		0.05	0.05	
Outwash Complex	1	2.472	0.857	3.115	2.6	2.465	1	NA	NA	2.70	0.25	0.07	0.45
Outwash Plain	0.6	3.28	0.7	4.59	2.243	3.661	0.667	0.667	NA	2.68	1.91	0.86	0.49
Sand Plains and Loess Sands	1.156	3.646	1.061	3.667	2.1	3.977	2.075	1.068	NA	0.46	1.07	0.67	1.30
Sluiceway or Discrete Channel	2.348	4.814	1.217	5.396	1	2.714	5.547	4.12	NA	1.89	0.94	0.17	0.06
Till Capped Fan	NA	3.438	0.975	4.258	6.1	2.712	5.543	NA	NA	0.05	0.37	1.45	1.36
Till Cored Moraine	4.465	5.099	2.725	5.233	2.2	3.99	5.547	5.352	NA	0.97	0.31	0.06	0.05

Hydrogeologic setting	Well Type		Aquifer Conditions		Hydrogeologic Sensitivity					Well Depth			
	Bedrock	Unconsolidated	Oxidizing	Reducing	Very High	High	Moderate	Low	Very Low	0-50	50-100	100-150	>150
Till Plain	4.052	5.967	1.221	6.097	NA	2.912	5.618	5.626	2.4	0.64	0.25	0.16	0.14
Trough System	NA	2.388	2.4	1.978	0.75	2.627	NA	NA	NA	0.05	0.27	0.05	
Tunnel Valley	1.667	4.05	0.833	4.689	NA	3.6	3.567	5.85	NA	0.18	0.67	0.74	0.05
Unconfined Outwash Fan	7.35	2.92	0.778	4.358	1.386	3.547	1.55	NA	NA	0.79	2.87	0.64	0.04
Wabash River Valley	1.888	2.648	0.822	4.433	1	2.892	1.167	1	NA	10.21	2.69	3.44	0.05