Exhibit 5

Exhibit 5a

Exhibit 5a

Marathon Petroleum Company LP

P.O. Box 1200
400 S. Marathon Avenue
Robinson, IL 62454
Tel: 618.544.2121

ELECTRONIC SUBMITTAL ONLY

March 11, 2016

Illinois EPA
Bureau of Water,
Division of Water Pollution Control
1021 North Grand Avenue East
Springfield, IL 62794
Attn: Scott Twait and Brian Koch

Re: 35 Ill. Admin. Code §106.1115 Early Screening Information
NPDES Permit No. IL0004073
Marathon Petroleum Company LP – Robinson Refinery

Dear Mr. Twait and Mr. Koch:

Marathon Petroleum Company LP (MPC) intends to petition for an alternative thermal effluent limitation pursuant to Section 316[a] of the Clean Water Act (CWA) (33 U.S.C. § 1326[a]), Section 304.141[c] of the Illinois Pollution Control Board's (Board) Water Pollution regulations (35 Ill. Admin. Code § 304.141[c]), and the Board's Subpart K procedural rules (35 Ill. Admin. Code 106, Subpart K). Section 106.1115 of the Board's procedural rules describes the Early Screening information that is required to be submitted to Illinois EPA prior to filing a petition for an alternate thermal effluent limitation. Marathon Petroleum Company LP (MPC) hereby submits its Early Screening information, as required.

We look forward to meeting with you on March 15, 2016 to discuss MPC's Early Screening information.

Sincerely,

Jerri A. Titsworth

Jerri Titsworth
Environmental Supervisor
Marathon Petroleum Company

cc: File
Greg Smith, MPC/Law

35 Ill. Admin. Code § 106.1115 Early Screening Submittal

by

Marathon Petroleum Company LP
Illinois Refining Division
400 S Marathon Ave.
Robinson, IL 62454

and

Midwest Biodiversity Institute
P.O Box 21561
Columbus, OH 43221-0561

to

Illinois EPA
Bureau of Water
Division of Water
1021 North Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276

March 11, 2016

35 Ill. Admin. Code § 106.1115 Early Screening Submittal

Marathon Petroleum Company LP
Illinois Refining Division, Robinson Refinery
400 S Marathon Ave,
Robinson, IL 62454

BACKGROUND

Marathon Petroleum Company LP (MPC) seeks an alternative thermal effluent limitation pursuant to Section 316[a] of the Clean Water Act (CWA) (33 U.S.C. § 1326[a]), Section 304.141[c] of the Illinois Pollution Control Board's (Board) Water Pollution regulations (35 Ill. Admin. Code § 304.141[c]), and the Board's Subpart K procedural rules (35 Ill. Admin. Code 106, Subpart K). Section 106.1115 of the Board's procedural rules describes the Early Screening information that is required to be submitted to Illinois EPA prior to filing a petition for an alternate thermal effluent limitation. Specifically it states:

a) Prior to filing a petition for an alternative thermal effluent limitations, the petitioner must submit the following early screening information to the Agency:

    1) A description of the alternative thermal effluent limitation requested;
    2) A general description of the method by which the discharger proposes to demonstrate that the otherwise applicable thermal discharge effluent limitations are more stringent than necessary;
    3) A general description of the type of data, studies, experiments and other information that the discharger intends to submit for the demonstration; and
    4) A proposed representative important species list and supporting data and information.

b) Within 30 days after the early screening information is submitted under subsection [a] the petitioner shall consult with the Agency to discuss the petitioner's early screening information.

The Early Screening process precedes the development of a Detailed Plan of Study that is described in Section 106.1120 and is to be submitted to the Agency within 60 days of the Early Screening submittal and discussion.

EARLY SCREENING SUBMITTAL

Marathon Petroleum Company LP, Illinois Refining Division is making an Early Screening submittal pursuant to seeking an alternative thermal effluent limitation under Section 316[a] of the CWA for the Robinson Refinery thermal effluent that is currently discharged via outfall 001 (NPDES Permit IL0004703 September 19, 2013). The present limitations for temperature are described in Special Condition 8 of the NPDES permit as follows:

A. Maximum temperature rise above natural temperature must not exceed 5°F (2.8°C).

B. Water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3°F (1.7°C). (Main river temperatures are temperatures of those portions of the river essentially similar to and following the same thermal regimes as the temperature of the main flow of the river.)

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
°F	60	60	60	90	90	90	90	90	90	90	90	60
°C	16	16	16	32	32	32	32	32	32	32	32	16

Alternative Thermal Effluent Limitation

As required by Section 106.1115 [a][1] MPC will request one of the following alternative thermal effluent limitations:

Alternative #1:

~~Maximum temperature rise above natural temperature must not exceed 5°F (2.8°C).~~
Water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than ~~one (1.0)~~ [a new alternative percent limitation will be determined by the aquatic life study and assessment] percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3°F (1.7°C). (Main river temperatures are temperatures of those portions of the river essentially similar to and following the same thermal regimes as the temperature of the main flow of the river.)

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
°F	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1
°C	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1

X_1 Temperature limit to be determined by the aquatic life study and assessment.

Under alternative #1 it is possible that the thermal limitations requested may be listed as an end of pipe limitation.

Alternative #2:

~~Maximum temperature rise above natural temperature must not exceed 5°F (2.8°C).~~

A limitation based upon maximum thermal load to be determined during the study period.

Method of Alternate Thermal Effluent Limit Demonstration

As required by Section 106.1115 [a][2] MPC proposes to develop and submit a 316[a] demonstration that has elements of both Predictive and Type II demonstrations that will be supported by field studies of the receiving stream, predictive modeling, and comparisons to thermal tolerance information for representative important species (RIS). This conclusion was reached in accordance with the *Interagency 316[a] Technical Guidance Manual and Guide for Thermal Effects Sections of Nuclear Facilities Environmental Impact Statements* (U.S. EPA 1977) and decision criteria that appear in Section 3.0. The predictive demonstration applies to Robinson Creek as it is impaired due to a variety of causes identified by Illinois EPA (IEPA 2014) which precludes the showing of a lack of prior appreciable harm due to the thermal effluent.

This early submittal is also intended to document the applicant's screening process and conclusions. The intent is to assure that relevant aquatic assemblages are adequately addressed without collecting data that is either redundant or of little value to the applicant and regulatory agencies in accordance with the Interagency Technical Guidance (U.S. EPA 1977). The following is a summary of the biotic category determinations based on an examination of historical data available for Robinson Creek and other area streams and our general knowledge about the suitability of certain aquatic assemblages for assessing thermal effects and water quality in general in warmwater streams of the Midwestern U.S.

Biotic Category Determinations

The Interagency Technical Guidance (U.S. EPA 1977) identifies the following biotic categories as needing to be considered for their potential applicability:

- Phytoplankton
- Zooplankton and Meroplankton
- Habitat Formers
- Shellfish/Macroinvertebrates
- Fish
- Other Vertebrate Wildlife

Each biotic category is to be evaluated as to whether it has a low potential for adverse impacts or if it merits inclusion in the 316[a] demonstration. The conclusions reached for each biotic category about the potential for applicability in Robinson Creek and other area streams are based on recent knowledge about which groups are routinely used to assess streams and rivers, the likelihood of showing adverse impacts due the discharge of heat by the MPC Robinson Refinery, and the general utility of a biotic category for exhibiting non-thermal effects.

The terminology used by the Interagency Technical Guidance is dated compared to more modern terminology used to describe biological assemblages particularly as they relate to established methodologies in widespread use for the purpose of assessing the health and well-

being of warmwater streams. The following discussion of each biotic category reflects the more recent terminology.

Algal Assemblage
An algal assemblage in a freshwater system includes both phytoplankton and periphyton and there are methods available to assess each in rivers and streams. This assemblage group is regarded as having a low potential by the Interagency Technical Guidance (U.S. EPA 1977) in terms of their applicability to rivers and streams. In addition, algal assemblages are generally less sensitive to thermal effects than are fish and freshwater mussels. The response of algae to nutrient enrichment is a relevant concern in rivers and streams, but the proposed field studies will include other parameters and indicators that can adequately reveal the adverse effects of nutrient enrichment including diel dissolved oxygen (D.O.) and pH swings, and sestonic and benthic chlorophyll α levels.

Recommendation: Low Potential Impact

Zooplankton and Meroplankton Assemblages
Neither assemblage group is of major prominence or concern in a small stream or a river system with the possible exception of larval fish in the latter (U.S. EPA 1977). Both are considered to be of low potential impact in the study area.

Recommendation: Low Potential Impact

Habitat Formers
This category includes biota that provide the formation of habitat for other aquatic organisms. In freshwater streams and rivers this most commonly includes submergent and emergent aquatic macrophytes. These can be of major consequence in soft bottom low gradient streams and rivers with soft substrates, but much less so in moderate and high gradient streams. While they are gaining prominence as an aquatic assemblage that is monitored in lakes, wetlands, and some large rivers, they are usually not employed to assess warmwater streams. If present at all, they are included as a cover type in the habitat assessment that will be used in the proposed field studies. The vast majority of the habitat in Midwestern U.S. streams is comprised of physical and other features such as pools, riffles, runs, undercut banks, overhanging terrestrial vegetation, and woody debris, all of which are included in the habitat assessment protocol.

Recommendation: Low Potential Impact

Shellfish/Macroinvertebrates
a. *Macroinvertebrates*
Macroinvertebrates are a mainstay of stream and river biological assessments and include all invertebrate taxa that can be seen by the "unaided" eye, i.e., without magnification aids. Many different approaches to sampling and assessing the health of the macroinvertebrate assemblage exist. For the proposed field studies the procedures of the Illinois EPA will be

followed with taxonomic resolution to the lowest practicable level (i.e., genus/species for the common families and orders). While macroinvertebrates are generally regarded as being more thermally tolerant than fish, their inclusion is deemed necessary since they are used by Illinois EPA to determine the status of the General aquatic life use in terms of Section 303[d] impaired waters listings. They are also useful to assess other non-thermal causes of impairment and will be included in the proposed field studies.

Recommendation: High Potential Impact

b. Shellfish

Shellfish generally refers to marine species of clams, mussels, and snails where they are commercially important and susceptible to adverse thermal effects. In freshwater rivers and streams this biotic category primarily includes freshwater mussels of the family Unionidae and snails. While some snails and small freshwater clams are included in the macroinvertebrate assemblage sampling that was previously described, the larger Unionidae are not included and require a separate sampling effort and assessment method. Recent information suggests that certain species of mussels are as thermally sensitive as fish and they are the driver of the recently proposed U.S. EPA ammonia criterion. Based on this recent information, mussels should be regarded as a strong candidate for having a high potential for adverse effects from thermal enrichment and non-thermal impacts. The Illinois Natural History Survey (INHS) database includes mussel data for Robinson Creek and other area streams as follows (Shasteen et al. 2012):

Site BM-01 Sugar Creek – North, Edgar Co., Elbridge-Vermilion Rd Bridge, 51 mi.^{2}
Lampsilis cardium – Relict
Lampsilis siliquoidea - Relict
Mussel Community Index (MCI) = 0; Resource Classification = Restricted

Site BM-02 Sugar Creek – North, Edgar Co., 2 miles SE of Elbridge near state line, 67 mi.^{2}
Uniomerus tetralasmus – Relict
Leptodea fragilis - Dead
Mussel Community Index (MCI) = 0; Resource Classification = Restricted

Site BED-03 Big Creek, Crawford Co., 4 miles E and 2 miles N Oblong, 28.6 mi.^{2}
Uniomerus tetralasmus – Relict
Uniomerus tetralasmus – (1)
Mussel Community Index (MCI) = 9; Resource Classification = Moderate

Site BZO-01 Hutson Creek, Crawford Co., 2 miles S of Hutsonville, 24.3 mi.^{2}
Uniomerus tetralasmus – (1)
Toxoplasma parvum – (9)
Truncilla donaciformis – Dead
Mussel Community Index (MCI) = 4; Resource Classification = Restricted

None of these results convey a robust mussel assemblage in the small streams of the area, but it could be a reflection of a low level of effort in smaller streams of the size of Robinson Creek (≈15 $mi.^2$ drainage area). Given their sensitivity to thermal enrichment and other pollutants it is prudent to consider this assemblage as having a high potential impact.

Recommendation: High Potential Impact

Fish

Fish are widely recognized as having the highest sensitivity to thermal enrichment and are frequently the singular focus of predictive demonstrations and Representative Important Species lists. As such they have a high potential for adverse impacts from thermal and other impacts.

Recommendation: High Potential Impact

Other Vertebrate Wildlife

This biotic category can be wide ranging to include birds, mammals, amphibians, and reptiles that are not included in the preceding categories. While species of all four groups occur in Robinson Creek and other area stream drainages none are compelling enough to warrant inclusion as having a high potential for adverse impacts from thermal enrichment.

Recommendation: Low Potential Impact

Summary of Recommendations

The two principal assemblages for the proposed field studies are fish and macroinvertebrates with mussels as a third assemblage to be considered for inclusion.

General Description of Supporting Data and Studies

As required by Section 106.1115 [a][3] this section describes the supporting data and studies that will be included in a 316[a] demonstration. MPC proposes to conduct field studies of the high potential impact biological assemblages, habitat, and water quality of the Sugar Creek watershed which includes Robinson Creek and tributaries. Predictive thermal modeling and the Fish Temperature Modeling System (FTMS; Yoder 2008) will also be utilized to develop a 316[a] demonstration in support of the alterative thermal effluent limitations sought by MPC.

Proposed Field Studies

The proposed field studies will need to produce the quantity and quality of data needed to meet the following objectives:

1) Document the current General Use aquatic life status in Robinson, Marathon, and Sugar Creeks;
2) Determine the major causes and sources of any observed impairments; and,
3) Document the trajectory of any changes in biological and chemical/physical conditions as compared to available historical data from Illinois EPA FRSS and Basin Surveys.

MPC proposes to accomplish this by building on the Facility Related Stream Surveys (FRSS) conducted by Illinois EPA in six prior assessments dating to 1978 (1978, 1986, 1992, 2008 and 2013). Given the need to account for a complex array of overlapping impacts from upstream sources and non-thermal chemical and physical agents, an initial survey design was developed (Appendix Tables 1 and 2). The need to have sites in proximity to each potential source including point and nonpoint sources is essential to sorting out overlying impacts. Appendix Table 1 lists the proposed sampling sites and the biological, chemical, and physical indicators to be collected at each. Appendix Table 2 lists the chemical parameters to be analyzed in water and sediment samples. The proposed study will be described in more detail under the information requirements of Section 106.1120 Detailed Plan of Study.

Predictive Analyses

Predictive analyses will be accomplished using the FTMS methodology and the thermal effects database for fish and selected macroinvertebrates complied by MBI for the Midwest U.S. and Great Lakes regions with updates as new studies are examined. This will be used to develop predictive analyses using the predictive temperature modeling supported by MPC and an examination of the efficacy of the current Illinois temperature criteria. The process will be very similar to that used for the Lower Des Plaines River temperature criteria analyses (Yoder and Rankin 2006).

Representative Important Species (RIS)

As required by Section 106.1115 [a][4] the following is the initial selection of Representative Important Species (RIS) in support of the demonstration of the alterative thermal effluent limitations sought by MPC. The preliminary selection of RIS followed the FTMS procedure (Yoder 2008) and includes any species with sufficient thermal effects data (Table 1). This initial

Table 1. Preliminary list of representative important fish species for the predictive analyses to be conducted as part of the 316[a] demonstration for the MPC Robinson Refinery thermal effluent.

Species	Wabash Bioregion	IEPA FRSS 2008	IEPA FRSS 2013	Thermal Data Available?
Shortnose gar			X	√
Grass pickerel	X			
Smallmouth buffalo	X		X	√
White sucker	X			√
Creek chubsucker	X			
Common carp	X		X	√
Golden shiner	X			√
Creek chub	X	X	X	√
Suckermouth minnow	X			
Emerald shiner	X	X	X	√
Redfin Shiner	X			
River shiner	X			
Steelcolor shiner	X		X	
Sand shiner			X	
Red shiner			X	
Spotfin shiner	X	X	X	√
Silverjaw minnow	X	X	X	
Mississippi silvery minnow	X		X	
Bluntnose minnow	X	X	X	√
Central stoneroller	X		X	√
Yellow bullhead	X			√
Blackstripe topminnow	X	X	X	√
Western mosquitofish	X	X	X	
Pirate perch	X			
White crappie			X	√
Spotted bass			X	√
Largemouth bass	X			√
Green sunfish	X		X	√
Bluegill	X	X	X	√
Johnny darter	X			
Orangethroat darter	X			√
Slough darter	X			
TOTALS (32 species)	**27**	**8**	**19**	**18**

list was compiled by querying the Illinois EPA databases for the 2008 and 2013 FRSS surveys combined (Appendix Table A-3) and all sites in the Wabash bioregion at sites draining <30 square miles (Appendix Table B-4). Species that were found in "sufficient numbers" were included. Sufficient numbers can vary by the species since some species are inherently more numerous than others. For example, species such as bluntnose minnow would be expected to occur in the hundreds whereas the slough darter will occur in low numbers wherever it is found, thus these tendencies were taken into account when deciding about including a particular species as an RIS.

The preliminary selection of RIS resulted in 32 total species between the Wabash bioregion and 2008 and 2013 FRSS datasets of which 16 have thermal effects data (Table 1). The inclusion of the wider area of the Wabash bioregion assures that the RIS list will not be unintentionally truncated by selecting species only from an area with widespread impairments, which would have happened if only the 2008 FRSS results were considered. The 2013 FRSS added 5 new species not included from the Wabash bioregion. In addition, the proposed 2016 sampling could reveal additional RIS and these will be added to the final FTMS analyses. A literature search will be conducted to determine if new thermal effects data exists for any of the species listed in Table 1.

The preliminary RIS currently includes only fish species. Depending on the outcome of the further consideration of freshwater mussels during the Early Screening process and/or a new field assessment, mussel species could be added as RIS.

REFERENCES

Shasteen, D.K., S. A. Bales, A. L. Price. 2012. Freshwater mussels of the Embarras River basin and minor Wabash tributaries in Illinois. Illinois Natural History Survey, 1816 South Oak Street, Champaign, IL 61820, NHS Technical Report 2012 (30).

U.S. EPA. 1977. Interagency 316(a) technical guidance manual and guide for thermal effects sections of nuclear facilities environmental impact statements. Office of Water Enforcement, Permits Division, Industrial Permits Branch. 147 pp.

Yoder, C.O. 2008. Challenges with modernizing a temperature criteria derivation methodology: the fish temperature modeling system, pp. 1-1 to 1-19. *in* Robert Goldstein and Christine Lew (eds.). Proceedings of the Second Thermal Ecology and Regulation Workshop, Electric Power Research Institute, Palo Alto, CA.

Yoder, C.O. and E.T. Rankin. 2006. Temperature Criteria Options for the Lower Des Plaines River. Final Report to U.S. EPA, Region V and Illinois EPA. Center for Applied Bioassessment and Biocriteria, Midwest Biodiversity Institute, Columbus, OH. EPA Grant X-97580701. 87 pp.

Appendix Table A-1. Marathon Petroleum Corporation (MPC) Robinson Refinery proposed study area sites and parameters.

MPC Site ID	FRSS ID	River_Stream Name	RM	Latitude	Longitude	Location-Description	Drain. Area	Fish	Macroinvertebrates	Habitat	Datasonde	Field WQ	Demand	Nutrients	Metals	Organics	Sed. Metals & Organics
QC01	BFCB	Quail Creek	0.50	39.019625	-87.72745	Ust. confl. with Robinson Creek	2.29	F	IEPA MH	QHEI		8X	6X	6X	6X	6X	1X
RC01	BFC-20	Robinson Creek	6.50	39.015168	-87.726464	RR bridge 0.1 mi. ust. Robinson WWTP	2.59	F	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RWMZ	BFC-RB-EI	Robinson Creek	6.45	39.014383	-87.725301	Robinson WWTP mixing zone	3.24	E (MZ)	MZ	QHEI (MZ)		8X	6X	6X	6X	6X	
RC02		Robinson Creek	6.25	39.015714	-87.722492	0.2 mi. dst. Robinson WWTP	3.27	E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RC03	BFC-19	Robinson Creek	6.00	39.017105	-87.72134	Dst. Quail Cr. confl.; 0.4 mi dst. Robinson WWTP	5.73	E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RC04	BFC-25	Robinson Creek	5.20	39.014534	-87.709609	Farm access road ust. MPC 001 outfall	6.51	E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
MPMZ	BFC-MR-EI	Robinson Creek	5.00	39.01306	-87.70778	MPC 001 outfall mixing zone	6.53	E (MZ)	MZ	QHEI (MZ)		8X	6X	6X	6X	6X	
MC01	BFCA-22	Marathon Creek	0.16	39.011665	-87.709664	Dst. farm access road - 002, 003, 005, 008 outfalls;	1.24	F	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RC05	BFC-26	Robinson Creek	4.90	39.0125	-87.7064	0.1 mi. dst. MPC 001 (outside mixing zone)	7.94	E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
UT01		U.T. Robinson Creek[1]	0.10	39.0099	-87.7044	MPC 006 tributary	0.33	F	IEPA MH	QHEI	S	4X	2X	2X	2X	2X	1X
RC06		Robinson Creek	4.60	39.0115	-87.7023	Dst. 006 trib.; 0.4 mi. dst. MPC 001	8.39	E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
UT02		U.T. Robinson Creek[1]	0.10	39.0106	-87.6905	MPC RR yard trib. - 007, 009, 010 outfalls	1.47	F	IEPA MH	QHEI	S	4X	2X	2X	2X	2X	1X
RC07	BFC-11	Robinson Creek	3.30	39.0130	-87.6847	IL Rt 1 - 1.7 mi. dst. MPC 001	10.4	D,E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
RC08		Robinson Creek	2.00	39.01725	-87.667852	1500 N - 3.0 mi. dst. MPC 001	12.3	D,E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RC09	BFC-10	Robinson Creek	1.00	39.02239	-87.65268	1150 E - 4.0 mi. dst. MPC 001	13	D,E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
SC01	BF-22	Sugar Creek	5.90	39.04111	-87.65806	1550 N - background site	14.2	E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
SC02	BF-11	Sugar Creek	4.10	39.021902	-87.633767	1150 E - 0.5 mi. dst. Robinson Creek	30.7	D,E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
SC03	BF-01	Sugar Creek	1.60	39.0047	-87.5975	Palestine - E. Franklin Street - dst. RR yard	35.1	D,E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
LC01	BFB-13	Lamotte Creek	1.90	38.99515	-87.607661	IL Rt 33 - S of Palestine - background site	26.7	E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
							Totals	17	17	17	16	144	110	110	110	110	17

1 - contingent on having sufficient water to sample biota.

Fish Sampling Codes:
D - Roller barge - 200 meters
E - Longline - 150 meters
F - Backpack - 100 to 125 meters
MZ - mixing zone site - 50 meters

Macroinvertebrates:
MH - IEPA multihabitat method
MZ - Mixing zone sample

Datasonde:
S - summer deployment (5 Sondes/week over 6 total weeks)
W - winter deployment (4X January 2S - March 31)

Field WQ:
Temperature, D.O., Conductivity, pH
2X collected by fish crew
6X collected by chemical crew
All water and sediment samples collected by chemical crew mid-June to mid-October

Appendix Table A-2. Chemical parameters for laboratory analysis by parameter groups.

MPC Chemical Lab Analyses - Parameter Groups for Water and Sediment Sampling					
Field (Fi):	**Demand (De):**	**Nutrients (Nu):**	**Metals (Me)**	**Organics (O):**	**Sediment:**
Conductivity	Alkalinity	Benthic Chl a	Ag	BNAs	BNAs
D.O.	BOD5	Chlorophyll a	Al	Cyanide[1]	Metals
pH	Chloride	NH3-N	As	Pesticides	PAHs
Temp.	COD	NO2-N	Be	Phenol (4AAP)	PCB
	Conductivity	NO3-N	Bo	Total BETX	Pesticides
	Fluoride	TKN	Ca	Total PNAs	VOCs
	pH	Total P	Cd	VOCs	
	SSC		Co		
	Sulfate		Cr		
	Sulfide		Cr^{+b}		
	TDS		Cu		
	TOC		Fe		
	TSS		K		
			Mg		
			Mn		
			Na		
			Ni		
			Pb		
			Se		
			Sr		
			Vd		
			Zn		
	- specifically listed in MPC Robinson Refinery NPDES permit.				
	- Listed by IEPA for FRSS or Basin Surveys.				
[1] - To be analyzed for in samples collected at sites RC04, MPMZ, and RC05 only.					

Appendix Table A-3. Fish species collected in the IEPA FRSS survey of Robinson Creek in 2008 and 2013.

	Stream:		Robinson Creek			Marathon Creek	Robinson Creek		Sugar Creek	Sugar Creek	Lamotte Creek	
	Site:		BFC-20	BFC-19	BFC-25	BFCA-22	BFC-26	BFC-11	BF-01	BF-11	BFB-13	
	Date:		Combined	Combined	Combined	Combined	Combined	Combined	Combined	Combined	Combined	
Scientific name	Common name	T. ind	SH	SH	SH	SH	SH	SH	SH	SH	SH	RIS
Lepisosteus platostomus	Shortnose gar	10	0	9	0	0	0	0	0	0	1	X
Dorosoma cepedianum	Gizzard shad	4	0	0	0	0	0	3	0	0	1	
Campostoma anomalum	Central stoneroller	12	1	5	2	0	0	0	0	4	0	X
Ctenopharyngodon idella	Grass carp	23	0	0	0	3	4	1	0	8	7	
Cyprinus carpio	Carp	34	3	1	3	5	6	9	0	7	0	X
Notropis buccatus	Silverjaw minnow	69	3	0	15	0	0	1	9	12	29	X
Hybognathus nuchalis	Silvery minnow	2211	5	16	100	11	263	1004	0	812	0	X
Notropis atherinoides	Emerald shiner	567	0	0	12	4	33	10	364	11	133	X
Notropis blennius	River shiner	0	0	0	0	0	0	0	0	0	0	
Notropis stramineus	Sand shiner	25	1	0	4	0	0	0	0	19	1	
Cyprinella spiloptera	Spotfin shiner	301	1	91	40	0	7	0	6	25	131	X
Cyprinella whipplei	Steelcolor shiner	16	0	2	1	0	1	0	0	4	8	
Cyprinella lutrensis	Red shiner	29	1	20	0	0	0	0	0	8	0	X
Lythrurus umbratilus	Redfin shiner	18	0	0	4	0	0	0	0	0	14	X
Luxilus chrysocephalus	Striped shiner	2	1	1	0	0	0	0	0	0	0	
Notemigonus crysoleucas	Golden shiner	1	1	0	0	0	0	0	0	0	0	
Pimephales notatus	Bluntnose minnow	116	5	3	78	0	1	1	3	1	24	X
Semotilus atromaculatus	Creek chub	69	12	13	38	5	0	0	0	0	1	X
Carpiodes carpio	River carpsucker	1	0	0	0	0	0	1	0	0	0	
Carpiodes cyprinus	Quillback	0	0	0	0	0	0	0	0	0	0	
Catostomus commersoni	White sucker	3	0	0	0	1	0	0	0	1	1	
Erimyzon oblongus	Creek chubsucker	0	0	0	0	0	0	0	0	0	0	
Ictiobus bubalus	Smallmouth buffalo	38	0	0	0	4	1	16	0	7	10	X
Moxostoma erythrurum	Golden redhorse	1	0	0	0	0	0	1	0	0	0	
Ictalurus punctatus	Channel catfish	0	0	0	0	0	0	0	0	0	0	
Ameiurus natalis	Yellow bullhead	1	0	0	0	0	0	0	0	0	1	
Aphredoderus sayanus	Pirate perch	0	0	0	0	0	0	0	0	0	0	
Fundulus notatus	Blackstripe topminnow	30	5	8	10	0	0	5	0	0	2	X
Gambusia affinis	Mosquitofish	35	0	0	0	0	0	9	0	0	26	X
Labidesthes sicculus	Brook silverside	0	0	0	0	0	0	0	0	0	0	
Lepomis cyanellus	Green sunfish	22	3	0	1	13	0	0	0	4	1	X
Lepomis macrochirus	Bluegill	52	4	6	2	6	12	8	0	12	2	X
Lepomis megalotis	Longear sunfish	11	0	0	1	0	0	2	2	0	6	X
Pomoxis annularis	White crappie	54	0	0	0	54	0	0	0	0	0	X
Micropterus punctulatus	Spotted bass	36	4	1	6	17	0	2	0	0	6	X
Micropterus dolomieu	Smallmouth bass	2	0	0	0	0	0	2	0	0	0	
Micropterus salmoides	Largemouth bass	8	2	2	0	0	2	2	0	0	0	
Etheostoma blennioides	Greenside darter	0	0	0	0	0	0	0	0	0	0	
Etheostoma caeruleum	Rainbow darter	0	0	0	0	0	0	0	0	0	0	
Etheostoma flabellare	Fantail darter	0	0	0	0	0	0	0	0	0	0	
Etheostoma nigrum	Johnny darter	8	0	0	0	0	0	0	6	0	2	X
Etheostoma spectabile	Orangethroat darter	0	0	0	0	0	0	0	0	0	0	
Percina caprodes	Log perch	2	1	0	0	0	0	1	0	0	0	
Percina maculata	Blackside darter	0	0	0	0	0	0	0	0	0	0	
Aplodinotus grunniens	Freshwater drum	0	0	0	0	0	0	0	0	0	0	
*Lepomis macrochirus***L cyanell*	Bluegill x Greenn sunfish hybrid	4	0	4	0	0	0	0	0	0	0	
Hypophthalmichthys molitrix	Silver Carp	6	0	0	0	2	0	4	0	0	0	
	Number of Individuals:	3815	53	182	317	125	330	1082	390	935	407	
	Number of Taxa:		47	47	47	47	47	47	47	47	47	
		Site:	BFC-20	BFC-19	BFC-25	BFCA-22	BFC-26	BFC-11	BF-01	BF-01	BFB-13	19
		Seine hauls	4	4	4	4	4	4	4	4	4	

Appendix Table A-4. Fish species collected by IEPA/IDNR in the Wabash faunal region at sites <30 mi.^{2}.

FAMILY	SPECIES	SPECIES NAME	SCIENTIFIC NAME	NUMBER	RIS
10	002	SHORTNOSE GAR	*Lepisosteus platostomus*	2	
15	001	BOWFIN	*Amia calva*	1	
20	003	GIZZARD SHAD	*Dorosoma cepedianum*	16	
37	001	GRASS PICKEREL	*Esox americanus vermiculatus*	37	X
40	002	BIGMOUTH BUFFALO	*Ictiobus cyprinellus*	1	
40	004	SMALLMOUTH BUFFALO	*Ictiobus bubalus*	46	X
40	005	QUILLBACK CARPSUCKER	*Carpiodes cyprinus*	14	
40	006	RIVER CARPSUCKER	*Carpiodes carpio carpio*	11	
40	010	GOLDEN REDHORSE	*Moxostoma erythrurum*	2	
40	016	WHITE SUCKER	*Catostomus commersoni*	193	X
40	018	SPOTTED SUCKER	*Minytrema melanops*	3	
40	020	CREEK CHUBSUCKER	*Erimyzon oblongus*	313	X
43	001	COMMON CARP	*Cyprinus carpio*	21	X
43	003	GOLDEN SHINER	*Notemigonus crysoleucas*	79	X
43	013	CREEK CHUB	*Semotilus atromaculatus*	769	X
43	015	SUCKERMOUTH MINNOW	*Phenacobius mirabilis*	89	X
43	020	EMERALD SHINER	*Notropis atherinoides*	58	X
43	023	REDFIN SHINER	*Lythrurus umbratilis*	352	X
43	025	STRIPED SHINER	*Luxilus chrysocephalus*	3	
43	027	RIVER SHINER	*Notropis blennius*	100	X
43	031	STEELCOLOR SHINER	*Cyprinella whipplei*	72	X
43	032	SPOTFIN SHINER	*Cyprinella spiloptera*	175	X
43	034	SAND SHINER	*Notropis stramineus*	29	X
43	039	SILVERJAW MINNOW	*Notropis buccatus*	506	X
43	040	MISS. SILVERY MINNOW	*Hybognathus nuchalis*	196	X
43	041	BULLHEAD MINNOW	*Pimephales vigilax*	3	
43	043	BLUNTNOSE MINNOW	*Pimephales notatus*	1508	X
43	044	CENTRAL STONEROLLER	*Campostoma anomalum*	334	X
43	048	RED SHINER	*Cyprinella lutrensis*	5	
43	137	Ribbon shiner	*Lythrurus fumeus*	1	
47	002	CHANNEL CATFISH	*Ictalurus punctatus*	1	
47	004	YELLOW BULLHEAD	*Ameiurus natalis*	57	X
47	013	TADPOLE MADTOM	*Noturus gyrinus*	12	
54	002	BLACKSTRIPE TOPMINNOW	*Fundulus notatus*	706	X
54	005	BLACKSPOTTED TOPMINNOW	*Fundulus olivaceus*	36	X
57	001	WESTERN MOSQUITOFISH	*Gambusia affinis*	356	X
68	001	PIRATE PERCH	*Aphredoderus sayanus*	379	X
70	001	BROOK SILVERSIDE	*Labidesthes sicculus*	1	
77	001	WHITE CRAPPIE	*Pomoxis annularis*	2	
77	002	BLACK CRAPPIE	*Pomoxis nigromaculatus*	1	
77	006	LARGEMOUTH BASS	*Micropterus salmoides*	29	X
77	007	WARMOUTH SUNFISH	*Lepomis gulosus*	8	
77	008	GREEN SUNFISH	*Lepomis cyanellus*	673	X
77	009	BLUEGILL SUNFISH	*Lepomis macrochirus*	214	X
77	010	ORANGESPOTTED SUNFISH	*Lepomis humilis*	9	
77	011	LONGEAR SUNFISH	*Lepomis megalotis*	738	X
77	012	REDEAR SUNFISH	*Lepomis microlophus*	2	
80	005	BLACKSIDE DARTER	*Percina maculata*	17	
80	014	JOHNNY DARTER	*Etheostoma nigrum*	170	X
80	023	ORANGETHROAT DARTER	*Etheostoma spectabile*	49	X
80	028	MUD DARTER	*Etheostoma asprigene*	3	
80	030	SPOTTAIL DARTER	*Etheostoma squamiceps*	5	
80	031	SLOUGH DARTER	*Etheostoma gracile*	13	X
80	032	BLUNTNOSE DARTER	*Etheostoma chlorosomum*	4	
85	001	FRESHWATER DRUM	*Aplodinotus grunniens*	3	

Exhibit 5b

Exhibit 5b

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
BRUCE RAUNER, GOVERNOR LISA BONNETT, DIRECTOR

217/558-2012

MAR 2 4 2016

Marathon Petroleum Company LP – Robinson Refinery
c/o Jerri Titsworth, Environmental Supervisor
P.O. Box 1200
400 S. Marathon Avenue
Robinson, Illinois 62454

RE: NPDES No. IL0004073
Marathon Petroleum Company LP – Robinson Refinery
316(a) Early Screening Approval

Dear Ms. Titsworth:

The Agency has reviewed the March 11, 2016 "Early Screening Information" for the Marathon Petroleum Company – Robinson Refinery. Based on the information provided, the Agency approves the "Early Screening Information" thereby satisfying the requirements of 35 IAC 106.1115 (Early Screening). The Agency notes that only one year of sampling is proposed. If sampling cannot be conducted this summer due to atypical conditions, sampling during the following summer may be necessary. The Agency looks forward to reviewing the Detailed Plan of Study as per the requirements of 35 IAC 106.1120. The Agency reserves the option to provide further comments if new information becomes available.

If you have any questions or comments regarding this letter, please contact me at the above address and phone number. If you have questions regarding the permit, please call Permit Section at 217/782-0610.

Sincerely,

Scott Twait

Scott Twait
Water Quality Standards Unit
Bureau of Water

SAT:marathon-robinson 316(a)earlyscreening.docx

4302 N. Main St., Rockford, IL 61103 (815) 987-7760
595 S. State, Elgin, IL 60123 (847) 608-3131
2125 S. First St., Champaign, IL 61820 (217) 278-5800
2009 Mall St., Collinsville, IL 62234 (618) 346-5120
9511 Harrison St., Des Plaines, IL 60016 (847) 294-4000
412 SW Washington St., Suite D, Peoria, IL 61602 (309) 671-3022
2309 W. Main St., Suite 116, Marion, IL 62959 (618) 993-7200
100 W. Randolph, Suite 10-300, Chicago, IL 60601

Exhibit 5c

Exhibit 5c

Marathon Petroleum Company LP

P.O. Box 1200
400 S. Marathon Avenue
Robinson, IL 62454
Tel: 618.544.2121

ELECTRONIC SUBMITTAL ONLY

April 18, 2016

Illinois EPA
Bureau of Water,
Division of Water Pollution Control
1021 North Grand Avenue East
Springfield, IL 62794
Attn: Scott Twait and Brian Koch

Re: 35 Ill. Admin. Code §106.1115 Detailed Plan of Study
NPDES Permit No. IL0004073
Marathon Petroleum Company LP – Robinson Refinery

Dear Mr. Twait and Mr. Koch:

Marathon Petroleum Company LP (MPC) intends to petition for an alternative thermal effluent limitation pursuant to Section 316[a] of the Clean Water Act (CWA) (33 U.S.C. § 1326[a]), Section 304.141[c] of the Illinois Pollution Control Board's (Board) Water Pollution regulations (35 Ill. Admin. Code § 304.141[c]), and the Board's Subpart K procedural rules (35 Ill. Admin. Code 106, Subpart K). MPC submitted the required Early Screening Information, as described by Section 106.1115 of the Board's procedural rules, to Illinois EPA on March 11, 2016 and subsequently received approval from Illinois EPA of the Early Screening Information on March 24, 2016. Section 106.1120 of the Board's procedural rules describe the next step in petitioning for an alternative thermal effluent limitation as the submittal of a Detailed Plan of Study within 60 days of submitting the Early Screening Information. MPC hereby submits its Detailed Plan of Study, as required.

MPC understands the regulations allow IEPA 90 days to review the Detailed Study Plan. MPC would like to commence its plan of study by June 15, 2016 and respectfully requests IEPA make every effort to expedite its review. Thank you for your attention to this request.

Sincerely,

Jerri Titsworth

Jerri Titsworth
Environmental Supervisor
Marathon Petroleum Company

cc: File
Greg Smith, MPC/Law

35 Ill. Admin. Code §106.1120 Detailed Plan of Study
Biological and Water Quality Assessment of the Biological Resources of Robinson Creek and Tributaries

Crawford Co., Illinois

April 18, 2016

Prepared on behalf of:

Marathon Petroleum Company LP
Illinois Refining Division
400 S Marathon Ave.
Robinson, IL 62454
Jerri Titsworth, Environmental Supervisor
jltitsworth@marathonpetroleum.com

Submitted by:

Midwest Biodiversity Institute
P.O. Box 21561
Columbus, Ohio 43221-0561
Chris Yoder, Research Director
cyoder@mwbinst.com

Table of Contents

BACKGROUND

Marathon Petroleum Company LP (MPC) seeks an alternative thermal effluent limitation pursuant to Section 316[a] of the Clean Water Act (CWA) (33 U.S.C. § 1326[a]), Section 304.141[c] of the Illinois Pollution Control Board's (Board) Water Pollution regulations (35 Ill. Admin. Code § 304.141[c]), and the Board's Subpart K procedural rules (35 Ill. Admin. Code 106, Subpart K). On March 24, 2016 MPC received approval from Illinois EPA for the Early Screening submittal pursuant to Section 106.1115 of the Board's procedural rules. The next step is to submit a Detailed Plan of Study under §106.1120 within 60 days of submitting the Early Screening information which MPC submitted on March 11, 2016 and as approved by IEPA on March 24, 2016.

A Detailed Plan of Study is intended to communicate the nature and extent of the types of information to be included in the plan of study including:

1) Biological, hydrographical, and meteorological data;
2) Physical monitoring data;
3) Engineering or diffusion models;
4) Laboratory studies;
5) Representative Important Species (RIS);
6) Other relevant information.

Other rule provisions provide that in selecting the RIS special consideration should be given to species mentioned in the applicable water quality standards (WQS), the petitioner shall provide any additional information or studies that the Agency determines are necessary to support the alternative thermal effluent limit demonstration (including field or other studies as may be necessary to select RIS), and the petitioner shall consider any information or guidance published by U.S EPA to assist in making such demonstrations. Once the Detailed Plan of Study is submitted the Agency shall respond in writing, either approving the Plan and RIS or recommending any changes, within 90 days of its submittal.

The alternative thermal effluent limits being sought by MPC are described in the §106.1115 Early Screening Submittal of March 11, 2016 and as approved by Illinois EPA on March 24, 2016 (Appendix A).

GENERAL PROJECT DESCRIPTION

The Midwest Biodiversity Institute (MBI) was contracted by the Marathon Petroleum Company LP (MPC) to develop a Detailed Plan of Study for a biological and water quality assessment of Robinson Creek in the vicinity of the MPC Illinois Refining Division Refinery located in Robinson, IL. The plan is being submitted pursuant to 35 Ill. Admin. Code §106.1120 and in follow-up to the MPC Early Screening submittal of March 11, 2016 and its subsequent approval by Illinois EPA on March 24, 2016. This Plan describes the spatial and temporal sampling design and the indicators and parameters that are to be collected at sampling sites in 2016. It also describes supporting analyses based on modeling and predictive analysis of potential adverse thermal effects for species on the RIS list. The plan describes the type of biological sampling methods for fish, macroinvertebrate, and mussel assemblages, habitat assessment, and water quality assessment methods, and the water quality modeling and predictive analyses that will be employed. MPC wishes to execute the planned monitoring in conformance with methods that will produce data of a high quality and level of resolution. This Detailed Plan of Study was developed to comply with that objective and to be consistent with Illinois EPA and DNR methods of data collection and water body assessment.

The sampling design utilized by MBI on behalf of MPC employs an intensive pollution survey design. These surveys are employed to fulfill multiple purposes and goals in addition to the determination of the existing status of the extant biological assemblages and their relationship to chemical, physical, and biological stressors. As such, the principles of adequate monitoring (Yoder 1998) were used in anticipation that the resulting biological assessment will be used to support the development of cost-effective pollution controls.

Modeling consists of a three-dimensional hydrodynamic and temperature model using the Environmental Fluid Dynamics Code (EFDC) model that is widely employed and part of the U.S. EPA modeling toolbox. Calibration and validation of the EFDC model was accomplished by Tetra Tech (2016) and permits the simulation of ambient temperatures across all seasons and under various thermal loading scenarios in Robinson Creek. Along with the ambient data collected in 2016 by MBI the results will be used to support predictive analyses using the Fish Temperature Modeling System (FTMS; Yoder 2008) which incorporates the representative species list developed during the Early Screening process and which will be refined using the results of the 2016 field studies.

PROJECT ORGANIZATION

The project will be managed and executed by MBI under contract to MPC. Figure 1 is a functional table of organization for the project.

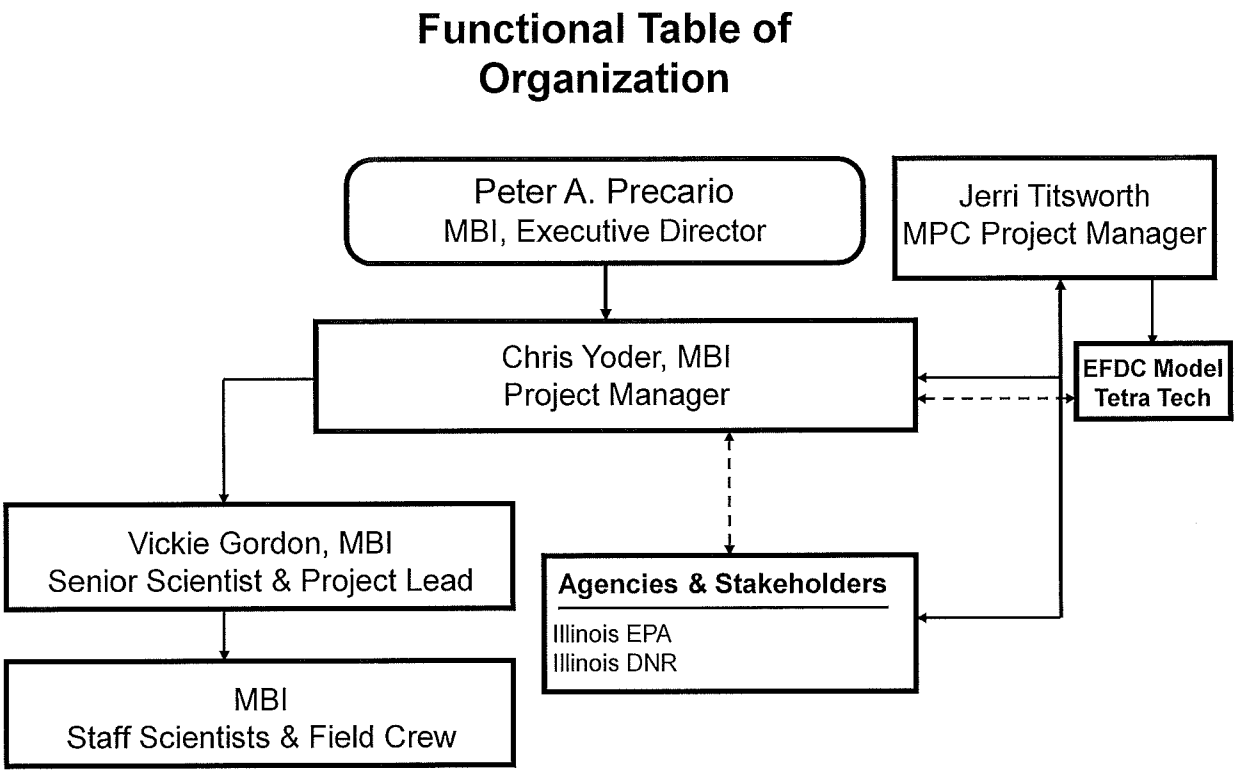

Figure 1. *Functional table of organization for project implementation and management.*

PROJECT OBJECTIVES

MPC intends to use the results and analysis of the biological and water quality assessment, temperature modeling, and FTMS analysis to accomplish the following:

1. Determine the aquatic life status of Robinson Creek and key tributaries in quantitative terms, i.e., not only if a waterbody is impaired, but the spatial extent and severity of the impairment and the respective departures from established criteria;
2. Determine the proximate stressors that correspond to observed impairments for the purpose of targeting appropriate management actions to those stressors;
3. Determine the thermal regime in Robinson Creek during the winter, spring, summer,

and fall periods;
4. Finalize the draft Representative Important Species (RIS) list in Appendix C;
5. Use the EFDC Modeling outputs and ambient temperature monitoring to establish the seasonal thermal regime and the Fish Temperature Modeling System (FTMS: Yoder 2008) to screen for possible adverse effects of elevated instream temperature; and
6. Establish the alternative thermal effluent limitations as seasonal instream temperatures and/or a maximum thermal loading allowance for the MPC 001 discharge.

To meet these objectives MPC has requested that MBI collect data with methods that provide high quality results and in conformance with the practices of Illinois EPA (IEPA 2011a-g; 2014a,b) and Illinois DNR (2010a,b).

PROJECT SCOPE AND DESIGN

The scope of the 2016 biological and water quality assessment and the supporting analyses of the thermal regime and adverse thermal impacts includes a comprehensive biological, habitat, and water quality assessment of Robinson Creek and tributaries and the development of seasonal temperature criteria that are protective of the RIS included in Appendix B (and as revised pending the 2016 field sampling results). Together these will be used to support the development of alternative thermal effluent limitations for the MPC Robinson Refinery 001 outfall as described in the Early Screening Submittal of March 11, 2016.

Robinson Creek Biological and Water Quality Assessment

The 2016 study area includes Robinson Creek and its tributaries, Sugar Creek, and Lamotte Creek (Figure 2). Robinson Creek is impacted by municipal and industrial point source discharges of wastewater, riparian encroachment, varying degrees of historical channelization, and nonpoint sources from rural agricultural to urban development. The urban gradient is strongest in upper Robinson Creek becoming agricultural further downstream. Tributaries include Quail Creek, Marathon Creek, and two unnamed tributaries that receive stormwater from the MPC Refinery. Robinson Creek is a tributary to Sugar Creek which flows into the Wabash River. Lamotte Creek is a tributary to Sugar Creek located south of Palestine.

Intensive Pollution Survey Design

The delineation of recommended sampling locations was developed following an intensive pollution survey design. Targeted sites are positioned upstream and downstream from major discharges, sources of potential pollution releases and contamination, and major tributaries to provide a "pollution profile" of Robinson Creek. The Illinois EPA Facility Related Stream Surveys (FRSS) conducted previously were initially used to determine sampling locations with additional sites added to fill gaps left by that coverage. A listing of all sites, indicators, parameters, and

sampling frequencies are found in Appendix Tables B-1 and B-2.

Description of Point and Nonpoint Sources

Significant stressors were inventoried in order to complete the intensive pollution survey design (Table 1). Major point sources include the Robinson Wastewater Treatment Plant (WWTP) and the MPC 001 outfall both of which discharge directly to Robinson Creek. MPC has seven additional outfalls that intermittently carry stormwater runoff to Marathon Creek (002, 003, 005, 008) and two unnamed tributaries to Robinson Creek (006, 007, 009, 010). The Rain CII discharge flows underneath the MPC refinery and into Marathon Creek. Robinson Creek also receives stormwater runoff from the city of Robinson and a tributary, Quail Creek receives runoff from a golf course. All of the other sites receive agricultural runoff and the lower most site on Sugar Creek receives runoff from a railyard in Palestine.

The study area lies mostly within the Southern Illinoisan Till Plain and Wabash River Bluffs and Low Hills subregions of the Interior River Valleys and Hills Level III ecoregion (Woods et al. 2006). The Southern Illinoisan Till Plain subregion is characterized by a partly dissected till plain that was once covered by forests and prairies. Broad flats, rolling hills, and subdued moraines are common. The underlying Paleozoic sandstone, limestone, coal, and shale is mantled by loess and Illinoisan-age glacial till. Upland soils are clayey or silty, derived from loess and till, and have poor internal drainage. Impervious fragipans or claypans are common. These soils are droughty during dry periods, excessively wet during the spring, and acidic. Overall soil quality and productivity are lower than in the Central Corn Belt Plains. In the early 19th century, about 40% of the well-drained uplands were covered by prairies. The remaining uplands were covered by scattered trees, groves, and forests. Groves containing pin oak, post oak, swamp white oak, and blackjack oak were native to nearly level, poorly drained uplands with clay-rich soils. Oak–hickory forests occurred on relatively dry valley slopes and mesic forests containing red oak, elm, basswood, and walnut dominated low morainal ridges. Today, nearly all of the original prairies and most of the original forests (especially in the south) have been converted to row crop agriculture. Soybeans, corn, and wheat are the primary crops, and livestock farming is present. Forests are now largely confined to side slopes and river bottoms that are unsuitable for farming. The natural soil wetness is generally unfavorable for crops, and, therefore, nearly all of the flat and nearly level uplands have been tiled to improve drainage. Nonpoint sources are typical of the extensive row cropping that dominates the landscape with row cropping encroaching on the riparian zone of streams and the after effects of stream channelization in several reaches. Towards the southern portion of the study area the terrain becomes hilly as glacial till thins and bedrock approach the surface. The Wabash River Bluffs and Low Hills subregion is characterized by partly forested, low bluffs along the Wabash River. Alfisols are common, and are characteristically derived from thick loess. This subregion is more wooded, rugged, and deeply loess-covered than the Southern Illinoisan Till

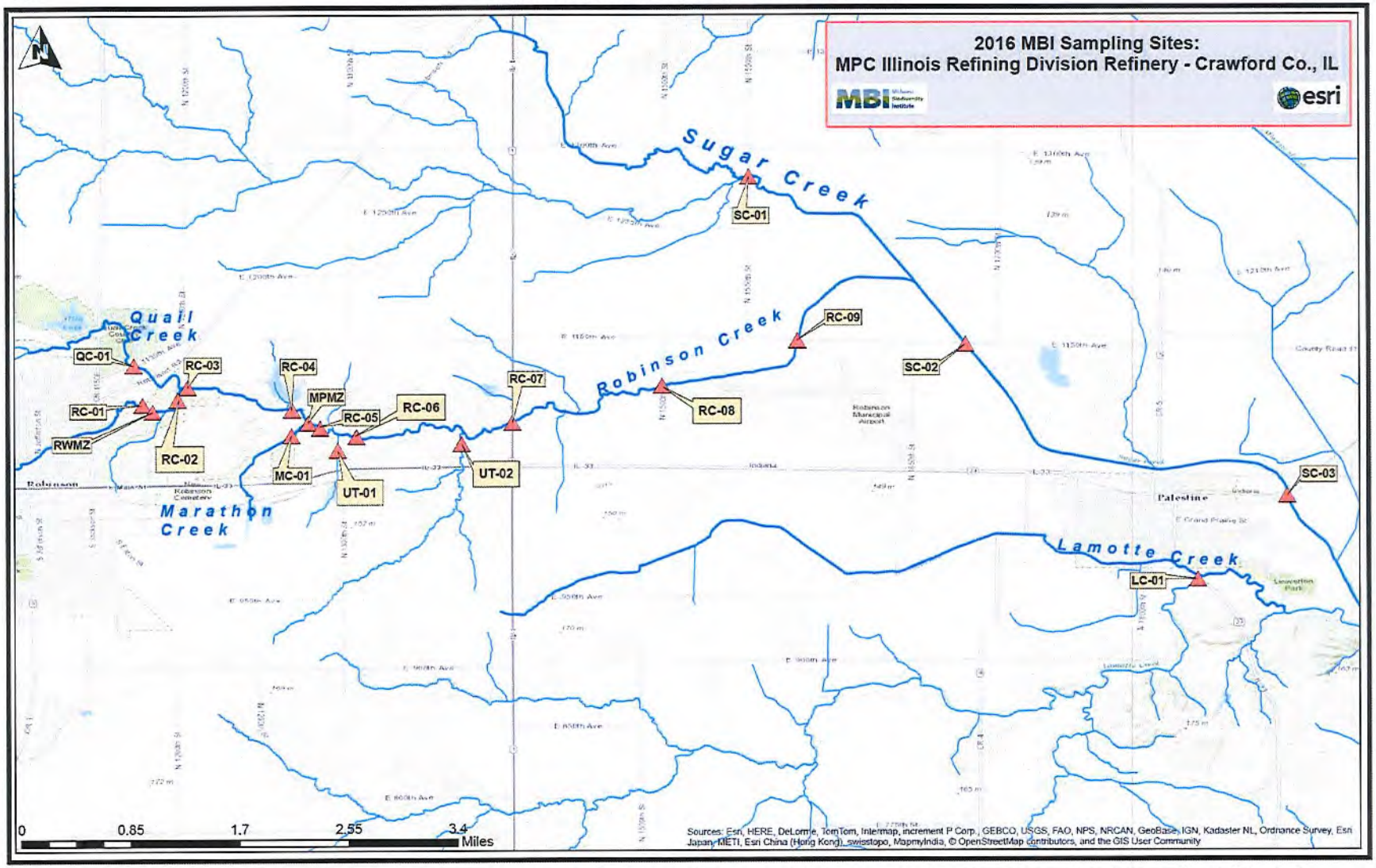

Figure 2. *Map of sampling locations for the Robinson Creek study area, 2016. Site codes correspond to Appendix Table A-1.*

Table 1. *List of point sources that occur in the Robinson Creek study area.*

Stream	RM	Facility/Source(s)
Robinson Creek	6.45	Robinson WWTP
Marathon Creek	0.30	MPC 002,003,005,008; Rain CII
Robinson Creek	5.00	MPC 001
U.T. to Robinson Creek	0.10	MPC 006
U.T. to Robinson Creek	0.10	MPC 007, 009, 010

Plain subregion. The streams in this subregion can be inundated by flood waters from the Wabash River that can extend several miles into Sugar Creek.

SAMPLING LOCATIONS

A total of 17 biological, habitat, and water quality sampling locations are planned for the 2016 survey. This includes 9 sites in Robinson Creek, 3 sites in Sugar Creek, and one site each in Quail Creek, Marathon Creek, two unnamed tributaries to Robinson Creek, and Lamotte Creek. The sampling sites are denoted by stream name, a unique site code, river mile (RM), GPS coordinates, and a description of the location of each (Appendix Table B-1).

PARAMETER COVERAGE

The allocation of indicators and parameters was done following the adequate monitoring framework (Yoder 1998), the MPC Refinery NPDES permit, and the Illinois EPA monitoring strategy (IEPA 2014a). The selection of biological assemblages was also done in accordance with the §106.1115 Early Screening process Biotic Category Determinations in which fish, macroinvertebrates, and freshwater mussels were deemed the significant assemblages to include in the Early Screening Submittal of March 11, 2016.

The biological and physical indicators are listed for each sampling site in Appendix Table B-1 and are denoted by stream, river mile (RM), GPS coordinates, and a description of the location. Fish and macroinvertebrate assemblages are the indicator groups that comprise the core biological indicator assemblages with freshwater mussels as a supplemental indicator assemblage. These are accompanied by a qualitative habitat assessment (QHEI; Rankin 1989, 1995; Ohio EPA 2006; Illinois EPA 2006) and field measured chemical/physical parameters at all sites. Water quality will be determined by grab water samples, sediment samples, and the periodic deployment of Datasonde units to measure temperature, D.O., conductivity, and pH on a continuous basis following Illinois EPA methods for the collection of water samples (IEPA 2011). Parameters are listed in Appendix Table B-2 and include core parameters that are

commonly used to assess stream water quality, parameters that are listed in the MPC NPDES permit, and additional parameters that are monitored by Illinois EPA for FRSS or Intensive Basin Surveys (IEPA 2014a). Winter and Spring Datasonde deployments will be accomplished at 5 locations to determine the non-summer temperature regime (Appendix Table B-1) and this will be supplemented by MPC monitoring at the same sites utilizing HOBO temperature loggers.

FIELD SAMPLING & DATA ANALYSIS METHODS

Biological Methods

Biological sampling for fish and macroinvertebrate assemblage data will follow the established protocols of the Illinois EPA (2011c-g) and Illinois DNR (2010a,b), respectively. Mussel sampling will follow a timed sampling approach as described by Illinois EPA[1].

Fish Methods

Fish sampling methods will consist of using pulsed D.C. electrofishing units ranging from a battery-powered back pack unit to generator powered units of 1750, 2500, or 5000 W capacity[2]. Deference will be given to the most effective method given the prevailing site and water characteristics. The determination of which sampling method and gear to use is ultimately a field decision made by a qualified MBI fish crew leader. A small, wadeable stream sampling site that is more than two times the depth or five times the width of the net ring (anode) will be the upper boundary for application for the battery-powered back pack electrofishing unit. Wider and deeper sites will be sampled with a generator powered unit as a bank set longline or floated on a roller barge. It was noted in the Illinois EPA FRSS summaries that elevated conductivity in Robinson Creek downstream from the MPC Robinson 001 outfall discharge precluded effective electrofishing, thus necessitating the use of seining. We propose to use a larger electrofishing unit than would normally be applied to a wadeable stream to overcome the high conductivity. However, should that approach prove less than effective for producing quality data, seining will be employed. We expect that all of the sites can be sampled effectively with wadeable methods.

Sampling effort will be standardized by distance and will include a 200 meter long reach for the generator powered methods and 150 meters for the back pack method. The data will be used to calculate the Illinois Fish Index of Biotic Integrity (fIBI), the Modified Index of Well-Being (MIwb), and the metric and data thereof. This will be applied to all except the two sites in the Robinson Creek and MPC Robinson 001 outfall mixing zone, which will be 50 meters in length to capture the immediate impact of those discharges. The objective of these samples is to

[1] Approach as described in an email from Diane Shasteen to Scott Twait dated April 12, 2016.
[2] Available units consist of a T&J 1736 DCV and Smith-Root 2.5 or 5.0 GPP pulsators.

determine if there is any avoidance behavior being exhibited and to provide a benchmark against which to evaluate whole effluent toxicity (WET) results in the effluents.

A three-person crew consisting of a fish crew leader and two field technicians will conduct the sampling. For wading electrofishing the primary net ring serves as the anode. An assist netter uses a long handled dip net to assist in the capture of stunned fish. The third crew member monitors the electrofishing unit. Captured fish are placed in a live well, bucket, or live net for later processing. Water is regularly replaced and/or aerated to maintain adequate D.O. levels in the water and to minimize mortality. Samples from each site are processed by enumerating and recording weights by species and by life stage (young-of-the-year, juvenile, and adult) on a field sheet (Appendix C). Fish are released back into the water after they have been identified to species, examined for external anomalies, and weighed either individually or in batches. Larval fish are not included in the sample and fish measuring less than 15-20 mm in length are generally excluded from the data as a matter of practice. The incidence of external anomalies will be recorded following procedures outlined by Ohio EPA (1989, 2006) and refinements made by Sanders et al. (1999). While the majority of captured fish are identified to species in the field, any uncertainty about a field identification requires vouchering for later laboratory identification. Voucher specimens are preserved for future identification in borax buffered 10% formalin and labeled by date, stream, and geographic identifier (e.g., river mile and site number). Identification is made to the species level at a minimum and to the sub-specific level if necessary. Regional ichthyology keys will be used including the Fishes of Illinois (Smith 1979) and updates available through the Illinois Natural History Survey (INHS). Vouchers will be deposited at The Ohio State University Museum of Biodiversity (OSUMB) in Columbus, OH.

Macroinvertebrate Methods

Macroinvertebrate sampling methods will follow the Illinois EPA multi-habitat method (IEPA 2011c,d) at all sites. The IEPA multi-habitat method involves the selection of a sampling reach that has instream and riparian habitat conditions typical of the assessment reach. Sampling reach requirements include flow conditions that approximate typical summer base flows, the absence of highly influential tributary streams, the presence of one riffle/pool sequence or analog (i.e., run/bend meander or alternate point-bar sequence), if present, and a length of at least 300 feet. The collection of macroinvertebrates is accomplished with a dip net in all bottom-zone and bank-zone habitat types that occur at a sampling site. Conditions must allow a sampler to apply the 11-transect habitat-sampling method or to estimate with reasonable accuracy via visual or tactile cues the amount of each of several bottom-zone and bank-zone habitat types. Multi-habitat samples will be field preserved in 10% formalin. Upon delivery to the MBI lab in Hilliard, OH the preserved samples will be transferred to 70% ethyl alcohol. Laboratory procedures will follow the IEPA (2011e) methodology which requires the production of a 300-organism subsample from a gridded tray following a scan and pre-pick of large and/or

rare taxa. Taxonomic resolution will be performed to the lowest practicable resolution for the common macroinvertebrate assemblage groups such as mayflies, stoneflies, caddisflies, midges, and crustaceans. This goes beyond the genus level requirement of IEPA (2011g); however, calculation of the Macroinvertebrate IBI will adhere to IEPA methods by using genera as the lowest level of taxonomy for MIBI scoring.

Freshwater Mussels

Using guidance offered by Illinois EPA,[1] mussel sampling is based on a four-person hour search at sites with sufficient water to produce 65-70% of mussels that are present. An abbreviated 1-2 person hour search for dead/relict shells can be conducted at sites with minimal water or no flow. Hand grubbing is required for turbid waters with limited visibility to depth. All sites are marked with GPS coordinates (beginning to end of sampling reach) and data is recorded on a standard field form (Appendix C).

Habitat Assessment

The QHEI (Rankin 1989, 1995; Ohio EPA 2006) will be employed as the principal aquatic habitat assessment methodology. The protocol is accomplished as part of the fish assemblage method in order to produce the data quantity required by the study design. This will be performed by a trained MBI fish crew leader who is trained and experienced in using the QHEI. A QHEI data sheet appears in Appendix C.

Background Sites

The upstream most site on Sugar Creek and the Lamotte Creek site near East Palestine will serve as measures of background quality as they did in the previous Illinois FRSS efforts. Historical data available from Illinois EPA basin surveys in the same subregions will be accessed as needed.

SEASONAL INDEX PERIODS

Biological and habitat sampling will adhere to a summer-early fall index period of June 16-October 15 for fish and July 1-September 30 for macroinvertebrates and mussels. For fish and QHEI, all sites will be sampled twice and macroinvertebrates and mussels once. Grab water samples will be collected 6 times during the index period and during periods of summer normal flows – high flows and high runoff periods will be avoided. Sediment samples will be collected once in October. Datasondes will be deployed for 4-5 consecutive day periods during the

[1] Approach as described in an email from Diane Shasteen to Scott Twait dated April 12, 2016.

summer targeting low flows and high ambient temperatures at all sites. Winter deployments will occur four times during January – March and once in April/May at 5 sites to evaluate the MPC Robinson 001 outfall effluent and to determine winter/spring season background conditions.

QUALITY ASSURANCE

This project does not specifically require a formal and separate QAPP, but we are following Illinois EPA and DNR methods for this project. The majority of the chemical laboratory analyses will be provided by the MPC Refining Analytical and Development Laboratory in Catlettsburg, KY. Selected analyses will be provided by the MPC Illinois Refining Division Laboratory in Robinson, IL and a contract lab for the chlorophyll a and pesticide analyses. Each of the MPC laboratories are accredited via the National Environmental Laboratory Accreditation Program (NELAP); the certificate of accreditation is in Appendix E.

DATA & ASSESSMENT OUTPUTS

The anticipated work products will include biological, habitat, and water quality data based on the sampling and measurement methods used in this project. All data will be managed by MBI in internal databases that permit ready access and analysis. Biological and habitat data will be stored in a routine based on the Ohio ECOS format that MBI uses for all biological data management tasks. Biological data analysis will include the calculation of Illinois Fish and Macroinvertebrate IBIs for determining aquatic life attainment status and the accompanying data attributes to enhance the diagnosis of impairments. Summaries of species/taxa relative abundance at each site and sampling date will also be provided. Habitat data will be analyzed using the QHEI and also via the QHEI attributes matrix to aid in assessing habitat related impairments. All of these analyses will be formalized in a written report.

PHOTO DOCUMENTATION OF SAMPLING SITES

MBI will develop a digital photographic catalog of all sites that will be retained in the MBI archives on the MBI central data server.

TEMPERATURE MODELING

Temperature modeling consists of a three-dimensional hydrodynamic and temperature model using the Environmental Fluid Dynamics Code (EFDC) model that is widely employed and part of the U.S. EPA modeling toolbox. The model will support the simulation of ambient temperatures across all seasons and under various thermal loading scenarios in Robinson Creek. Calibration

and validation of the EFDC model was accomplished by Tetra Tech (2016). The grid domain extends 0.3 miles upstream of Robinson POTW to Sugar Creek as one vertical layer with a run time of January 1, 2011-December 31, 2015. Model calibration data was collected August 7-10, 2015 and November 4-December 31, 2015 and grab samples collected from 2011 to 2015 were used as validation data. The results indicate that the model calibration is very good and therefore a reliable tool to predict instream temperatures under various ambient temperature, stream flow, and MPC Robinson 001 outfall thermal discharge scenarios.

PREDICTION OF ADVERSE THERMAL IMPACTS

Predictive analyses will be conducted to include the evaluation of potential adverse impacts on the resident biota of Robinson Creek. Since much of Robinson Creek is impaired by a variety of non-thermal stressors, both known and unknown, a predictive approach to the determination of the risk of adverse impacts from the current MPC Robinson 001 outfall thermal discharge will need to be taken. This will be accomplished by using the Fish Temperature Modeling System (FTMS; Yoder 2008) approach which requires a Representative Species list and their thermal tolerances as the primary input variables. The RIS list developed for Robinson Creek (Appendix D) will serve the needs of the former while the thermal effects database for the Ohio River basin developed in support of the ORSANCO temperature criteria development projects of 2005 (Yoder et al. 2006) will provide the latter. A brief literature search will be conducted to update the database for both existing species and new species. The principal output of the FTMS are summer period maximum and average temperatures that are protective of long and short term survival. Non-summer season maximum and average temperatures are based on maintaining normal seasonal cycles and being consistent with the tolerances of aquatic life. The results of the FTMS will be compared to the predicted and observed temperatures in Robinson Creek at various points downstream from the MPC Robinson 001 outfall to include at the edge of the thermal mixing zone and throughout Robinson Creek.

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APPENDIX A: §106.1115 Early Screening Submittal and IEPA Approval

Marathon Petroleum Company LP

P.O. Box 1200
400 S. Marathon Avenue
Robinson, IL 62454
Tel: 618.544.2121

ELECTRONIC SUBMITTAL ONLY

March 11, 2016

Illinois EPA
Bureau of Water,
Division of Water Pollution Control
1021 North Grand Avenue East
Springfield, IL 62794
Attn: Scott Twait and Brian Koch

Re: 35 Ill. Admin. Code §106.1115 Early Screening Information
NPDES Permit No. IL0004073
Marathon Petroleum Company LP – Robinson Refinery

Dear Mr. Twait and Mr. Koch:

Marathon Petroleum Company LP (MPC) intends to petition for an alternative thermal effluent limitation pursuant to Section 316[a] of the Clean Water Act (CWA) (33 U.S.C. § 1326[a]), Section 304.141[c] of the Illinois Pollution Control Board's (Board) Water Pollution regulations (35 Ill. Admin. Code § 304.141[c]), and the Board's Subpart K procedural rules (35 Ill. Admin. Code 106, Subpart K). Section 106.1115 of the Board's procedural rules describes the Early Screening information that is required to be submitted to Illinois EPA prior to filing a petition for an alternate thermal effluent limitation. Marathon Petroleum Company LP (MPC) hereby submits its Early Screening information, as required.

We look forward to meeting with you on March 15, 2016 to discuss MPC's Early Screening information.

Sincerely,

Jerri L. Titsworth

Jerri Titsworth
Environmental Supervisor
Marathon Petroleum Company

cc: File
Greg Smith, MPC/Law

35 Ill. Admin. Code § 106.1115 Early Screening Submittal

by

Marathon Petroleum Company LP
Illinois Refining Division
400 S Marathon Ave.
Robinson, IL 62454

and

Midwest Biodiversity Institute
P.O Box 21561
Columbus, OH 43221-0561

to

Illinois EPA
Bureau of Water
Division of Water
1021 North Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276

March 11, 2016

35 Ill. Admin. Code § 106.1115 Early Screening Submittal

Marathon Petroleum Company LP
Illinois Refining Division, Robinson Refinery
400 S Marathon Ave,
Robinson, IL 62454

BACKGROUND

Marathon Petroleum Company LP (MPC) seeks an alternative thermal effluent limitation pursuant to Section 316[a] of the Clean Water Act (CWA) (33 U.S.C. § 1326[a]), Section 304.141[c] of the Illinois Pollution Control Board's (Board) Water Pollution regulations (35 Ill. Admin. Code § 304.141[c]), and the Board's Subpart K procedural rules (35 Ill. Admin. Code 106, Subpart K). Section 106.1115 of the Board's procedural rules describes the Early Screening information that is required to be submitted to Illinois EPA prior to filing a petition for an alternate thermal effluent limitation. Specifically it states:

a) Prior to filing a petition for an alternative thermal effluent limitations, the petitioner must submit the following early screening information to the Agency:

   1) A description of the alternative thermal effluent limitation requested;
   2) A general description of the method by which the discharger proposes to demonstrate that the otherwise applicable thermal discharge effluent limitations are more stringent than necessary;
   3) A general description of the type of data, studies, experiments and other information that the discharger intends to submit for the demonstration; and
   4) A proposed representative important species list and supporting data and information.

b) Within 30 days after the early screening information is submitted under subsection [a] the petitioner shall consult with the Agency to discuss the petitioner's early screening information.

The Early Screening process precedes the development of a Detailed Plan of Study that is described in Section 106.1120 and is to be submitted to the Agency within 60 days of the Early Screening submittal and discussion.

EARLY SCREENING SUBMITTAL

Marathon Petroleum Company LP, Illinois Refining Division is making an Early Screening submittal pursuant to seeking an alternative thermal effluent limitation under Section 316[a] of the CWA for the Robinson Refinery thermal effluent that is currently discharged via outfall 001 (NPDES Permit IL0004703 September 19, 2013). The present limitations for temperature are described in Special Condition 8 of the NPDES permit as follows:

A. Maximum temperature rise above natural temperature must not exceed 5°F (2.8°C).

B. Water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3°F (1.7°C). (Main river temperatures are temperatures of those portions of the river essentially similar to and following the same thermal regimes as the temperature of the main flow of the river.)

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
°F	60	60	60	90	90	90	90	90	90	90	90	60
°C	16	16	16	32	32	32	32	32	32	32	32	16

Alternative Thermal Effluent Limitation

As required by Section 106.1115 [a][1] MPC will request one of the following alternative thermal effluent limitations:

Alternative #1:

~~Maximum temperature rise above natural temperature must not exceed 5°F (2.8°C).~~
Water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than ~~one (1.0)~~ [a new alternative percent limitation will be determined by the aquatic life study and assessment] percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3°F (1.7°C). (Main river temperatures are temperatures of those portions of the river essentially similar to and following the same thermal regimes as the temperature of the main flow of the river.)

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
°F	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1
°C	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1	X_1

X_1 Temperature limit to be determined by the aquatic life study and assessment.

Under alternative #1 it is possible that the thermal limitations requested may be listed as an end of pipe limitation.

Alternative #2:

~~Maximum temperature rise above natural temperature must not exceed 5°F (2.8°C).~~

A limitation based upon maximum thermal load to be determined during the study period.

Method of Alternate Thermal Effluent Limit Demonstration

As required by Section 106.1115 [a][2] MPC proposes to develop and submit a 316[a] demonstration that has elements of both Predictive and Type II demonstrations that will be supported by field studies of the receiving stream, predictive modeling, and comparisons to thermal tolerance information for representative important species (RIS). This conclusion was reached in accordance with the *Interagency 316[a] Technical Guidance Manual and Guide for Thermal Effects Sections of Nuclear Facilities Environmental Impact Statements* (U.S. EPA 1977) and decision criteria that appear in Section 3.0. The predictive demonstration applies to Robinson Creek as it is impaired due to a variety of causes identified by Illinois EPA (IEPA 2014) which precludes the showing of a lack of prior appreciable harm due to the thermal effluent.

This early submittal is also intended to document the applicant's screening process and conclusions. The intent is to assure that relevant aquatic assemblages are adequately addressed without collecting data that is either redundant or of little value to the applicant and regulatory agencies in accordance with the Interagency Technical Guidance (U.S. EPA 1977). The following is a summary of the biotic category determinations based on an examination of historical data available for Robinson Creek and other area streams and our general knowledge about the suitability of certain aquatic assemblages for assessing thermal effects and water quality in general in warmwater streams of the Midwestern U.S.

Biotic Category Determinations

The Interagency Technical Guidance (U.S. EPA 1977) identifies the following biotic categories as needing to be considered for their potential applicability:

- Phytoplankton
- Zooplankton and Meroplankton
- Habitat Formers
- Shellfish/Macroinvertebrates
- Fish
- Other Vertebrate Wildlife

Each biotic category is to be evaluated as to whether it has a low potential for adverse impacts or if it merits inclusion in the 316[a] demonstration. The conclusions reached for each biotic category about the potential for applicability in Robinson Creek and other area streams are based on recent knowledge about which groups are routinely used to assess streams and rivers, the likelihood of showing adverse impacts due the discharge of heat by the MPC Robinson Refinery, and the general utility of a biotic category for exhibiting non-thermal effects.

The terminology used by the Interagency Technical Guidance is dated compared to more modern terminology used to describe biological assemblages particularly as they relate to established methodologies in widespread use for the purpose of assessing the health and well-

being of warmwater streams. The following discussion of each biotic category reflects the more recent terminology.

Algal Assemblage

An algal assemblage in a freshwater system includes both phytoplankton and periphyton and there are methods available to assess each in rivers and streams. This assemblage group is regarded as having a low potential by the Interagency Technical Guidance (U.S. EPA 1977) in terms of their applicability to rivers and streams. In addition, algal assemblages are generally less sensitive to thermal effects than are fish and freshwater mussels. The response of algae to nutrient enrichment is a relevant concern in rivers and streams, but the proposed field studies will include other parameters and indicators that can adequately reveal the adverse effects of nutrient enrichment including diel dissolved oxygen (D.O.) and pH swings, and sestonic and benthic chlorophyll α levels.

Recommendation: Low Potential Impact

Zooplankton and Meroplankton Assemblages

Neither assemblage group is of major prominence or concern in a small stream or a river system with the possible exception of larval fish in the latter (U.S. EPA 1977). Both are considered to be of low potential impact in the study area.

Recommendation: Low Potential Impact

Habitat Formers

This category includes biota that provide the formation of habitat for other aquatic organisms. In freshwater streams and rivers this most commonly includes submergent and emergent aquatic macrophytes. These can be of major consequence in soft bottom low gradient streams and rivers with soft substrates, but much less so in moderate and high gradient streams. While they are gaining prominence as an aquatic assemblage that is monitored in lakes, wetlands, and some large rivers, they are usually not employed to assess warmwater streams. If present at all, they are included as a cover type in the habitat assessment that will be used in the proposed field studies. The vast majority of the habitat in Midwestern U.S. streams is comprised of physical and other features such as pools, riffles, runs, undercut banks, overhanging terrestrial vegetation, and woody debris, all of which are included in the habitat assessment protocol.

Recommendation: Low Potential Impact

Shellfish/Macroinvertebrates

a. *Macroinvertebrates*

Macroinvertebrates are a mainstay of stream and river biological assessments and include all invertebrate taxa that can be seen by the "unaided" eye, i.e., without magnification aids. Many different approaches to sampling and assessing the health of the macroinvertebrate assemblage exist. For the proposed field studies the procedures of the Illinois EPA will be

followed with taxonomic resolution to the lowest practicable level (i.e., genus/species for the common families and orders). While macroinvertebrates are generally regarded as being more thermally tolerant than fish, their inclusion is deemed necessary since they are used by Illinois EPA to determine the status of the General aquatic life use in terms of Section 303[d] impaired waters listings. They are also useful to assess other non-thermal causes of impairment and will be included in the proposed field studies.

Recommendation: High Potential Impact

b. Shellfish

Shellfish generally refers to marine species of clams, mussels, and snails where they are commercially important and susceptible to adverse thermal effects. In freshwater rivers and streams this biotic category primarily includes freshwater mussels of the family Unionidae and snails. While some snails and small freshwater clams are included in the macroinvertebrate assemblage sampling that was previously described, the larger Unionidae are not included and require a separate sampling effort and assessment method. Recent information suggests that certain species of mussels are as thermally sensitive as fish and they are the driver of the recently proposed U.S. EPA ammonia criterion. Based on this recent information, mussels should be regarded as a strong candidate for having a high potential for adverse effects from thermal enrichment and non-thermal impacts. The Illinois Natural History Survey (INHS) database includes mussel data for Robinson Creek and other area streams as follows (Shasteen et al. 2012):

Site BM-01 Sugar Creek – North, Edgar Co., Elbridge-Vermilion Rd Bridge, 51 $mi.^2$
Lampsilis cardium – Relict
Lampsilis siliquoidea - Relict
Mussel Community Index (MCI) = 0; Resource Classification = Restricted

Site BM-02 Sugar Creek – North, Edgar Co., 2 miles SE of Elbridge near state line, 67 $mi.^2$
Uniomerus tetralasmus – Relict
Leptodea fragilis - Dead
Mussel Community Index (MCI) = 0; Resource Classification = Restricted

Site BED-03 Big Creek, Crawford Co., 4 miles E and 2 miles N Oblong, 28.6 $mi.^2$
Uniomerus tetralasmus – Relict
Uniomerus tetralasmus – (1)
Mussel Community Index (MCI) = 9; Resource Classification = Moderate

Site BZO-01 Hutson Creek, Crawford Co., 2 miles S of Hutsonville, 24.3 $mi.^2$
Uniomerus tetralasmus – (1)
Toxoplasma parvum – (9)
Truncilla donaciformis – Dead
Mussel Community Index (MCI) = 4; Resource Classification = Restricted

None of these results convey a robust mussel assemblage in the small streams of the area, but it could be a reflection of a low level of effort in smaller streams of the size of Robinson Creek (≈15 $mi.^2$ drainage area). Given their sensitivity to thermal enrichment and other pollutants it is prudent to consider this assemblage as having a high potential impact.

Recommendation: High Potential Impact

Fish

Fish are widely recognized as having the highest sensitivity to thermal enrichment and are frequently the singular focus of predictive demonstrations and Representative Important Species lists. As such they have a high potential for adverse impacts from thermal and other impacts.

Recommendation: High Potential Impact

Other Vertebrate Wildlife

This biotic category can be wide ranging to include birds, mammals, amphibians, and reptiles that are not included in the preceding categories. While species of all four groups occur in Robinson Creek and other area stream drainages none are compelling enough to warrant inclusion as having a high potential for adverse impacts from thermal enrichment.

Recommendation: Low Potential Impact

Summary of Recommendations

The two principal assemblages for the proposed field studies are fish and macroinvertebrates with mussels as a third assemblage to be considered for inclusion.

General Description of Supporting Data and Studies

As required by Section 106.1115 [a][3] this section describes the supporting data and studies that will be included in a 316[a] demonstration. MPC proposes to conduct field studies of the high potential impact biological assemblages, habitat, and water quality of the Sugar Creek watershed which includes Robinson Creek and tributaries. Predictive thermal modeling and the Fish Temperature Modeling System (FTMS; Yoder 2008) will also be utilized to develop a 316[a] demonstration in support of the alterative thermal effluent limitations sought by MPC.

Proposed Field Studies
The proposed field studies will need to produce the quantity and quality of data needed to meet the following objectives:

1) Document the current General Use aquatic life status in Robinson, Marathon, and Sugar Creeks;
2) Determine the major causes and sources of any observed impairments; and,
3) Document the trajectory of any changes in biological and chemical/physical conditions as compared to available historical data from Illinois EPA FRSS and Basin Surveys.

MPC proposes to accomplish this by building on the Facility Related Stream Surveys (FRSS) conducted by Illinois EPA in six prior assessments dating to 1978 (1978, 1986, 1992, 2008 and 2013). Given the need to account for a complex array of overlapping impacts from upstream sources and non-thermal chemical and physical agents, an initial survey design was developed (Appendix Tables 1 and 2). The need to have sites in proximity to each potential source including point and nonpoint sources is essential to sorting out overlying impacts. Appendix Table 1 lists the proposed sampling sites and the biological, chemical, and physical indicators to be collected at each. Appendix Table 2 lists the chemical parameters to be analyzed in water and sediment samples. The proposed study will be described in more detail under the information requirements of Section 106.1120 Detailed Plan of Study.

Predictive Analyses
Predictive analyses will be accomplished using the FTMS methodology and the thermal effects database for fish and selected macroinvertebrates complied by MBI for the Midwest U.S. and Great Lakes regions with updates as new studies are examined. This will be used to develop predictive analyses using the predictive temperature modeling supported by MPC and an examination of the efficacy of the current Illinois temperature criteria. The process will be very similar to that used for the Lower Des Plaines River temperature criteria analyses (Yoder and Rankin 2006).

Representative Important Species (RIS)

As required by Section 106.1115 [a][4] the following is the initial selection of Representative Important Species (RIS) in support of the demonstration of the alterative thermal effluent limitations sought by MPC. The preliminary selection of RIS followed the FTMS procedure (Yoder 2008) and includes any species with sufficient thermal effects data (Table 1). This initial

Table 1. Preliminary list of representative important fish species for the predictive analyses to be conducted as part of the 316[a] demonstration for the MPC Robinson Refinery thermal effluent.

Species	Wabash Bioregion	IEPA FRSS 2008	IEPA FRSS 2013	Thermal Data Available?
Shortnose gar			X	√
Grass pickerel	X			
Smallmouth buffalo	X		X	√
White sucker	X			√
Creek chubsucker	X			
Common carp	X		X	√
Golden shiner	X			√
Creek chub	X	X	X	√
Suckermouth minnow	X			
Emerald shiner	X	X	X	√
Redfin Shiner	X			
River shiner	X			
Steelcolor shiner	X		X	
Sand shiner			X	
Red shiner			X	
Spotfin shiner	X	X	X	√
Silverjaw minnow	X	X	X	
Mississippi silvery minnow	X		X	
Bluntnose minnow	X	X	X	√
Central stoneroller	X		X	√
Yellow bullhead	X			√
Blackstripe topminnow	X	X	X	√
Western mosquitofish	X	X	X	
Pirate perch	X			
White crappie			X	√
Spotted bass			X	√
Largemouth bass	X			√
Green sunfish	X		X	√
Bluegill	X	X	X	√
Johnny darter	X			
Orangethroat darter	X			√
Slough darter	X			
TOTALS (32 species)	**27**	**8**	**19**	**18**

list was compiled by querying the Illinois EPA databases for the 2008 and 2013 FRSS surveys combined (Appendix Table A-3) and all sites in the Wabash bioregion at sites draining <30 square miles (Appendix Table B-4). Species that were found in "sufficient numbers" were included. Sufficient numbers can vary by the species since some species are inherently more numerous than others. For example, species such as bluntnose minnow would be expected to occur in the hundreds whereas the slough darter will occur in low numbers wherever it is found, thus these tendencies were taken into account when deciding about including a particular species as an RIS.

The preliminary selection of RIS resulted in 32 total species between the Wabash bioregion and 2008 and 2013 FRSS datasets of which 16 have thermal effects data (Table 1). The inclusion of the wider area of the Wabash bioregion assures that the RIS list will not be unintentionally truncated by selecting species only from an area with widespread impairments, which would have happened if only the 2008 FRSS results were considered. The 2013 FRSS added 5 new species not included from the Wabash bioregion. In addition, the proposed 2016 sampling could reveal additional RIS and these will be added to the final FTMS analyses. A literature search will be conducted to determine if new thermal effects data exists for any of the species listed in Table 1.

The preliminary RIS currently includes only fish species. Depending on the outcome of the further consideration of freshwater mussels during the Early Screening process and/or a new field assessment, mussel species could be added as RIS.

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Appendix Table A-1. Marathon Petroleum Corporation (MPC) Robinson Refinery proposed study area sites and parameters.

MPC Site ID	FRSS ID	River_Stream Name	RM	Latitude	Longitude	Location-Description	Drain. Area	Fish	Macroinvertebrates	Habitat	Datasonde	Field WQ	Demand	Nutrients	Metals	Organics	Sed. Metals & Organics
QC01	BFCB	Quail Creek	0.50	39.019625	-87.72745	Ust. confl. with Robinson Creek	2.29	F	IEPA MH	QHEI		8X	6X	6X	6X	6X	1X
RC01	BFC-20	Robinson Creek	6.50	39.015168	-87.726464	RR bridge 0.1 mi. ust. Robinson WWTP	2.59	F	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RWMZ	BFC-RB-EI	Robinson Creek	6.45	39.014383	-87.725301	Robinson WWTP mixing zone	3.24	E (MZ)	MZ	QHEI (MZ)		8X	6X	6X	6X	6X	
RC02		Robinson Creek	6.25	39.015714	-87.722492	0.2 mi. dst. Robinson WWTP	3.27	E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RC03	BFC-19	Robinson Creek	6.00	39.017105	-87.72134	Dst. Quail Cr. confl.; 0.4 mi dst. Robinson WWTP	5.73	E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RC04	BFC-25	Robinson Creek	5.20	39.014534	-87.709609	Farm access road ust. MPC 001 outfall	6.51	E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
MPMZ	BFC-MR-EI	Robinson Creek	5.00	39.01306	-87.70778	MPC 001 outfall mixing zone	6.53	E (MZ)	MZ	QHEI (MZ)		8X	6X	6X	6X	6X	
MC01	BFCA-22	Marathon Creek	0.16	39.011665	-87.709664	Dst. farm access road - 002, 003, 005, 008 outfalls;	1.24	F	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RC05	BFC-26	Robinson Creek	4.90	39.0125	-87.7064	0.1 mi. dst. MPC 001 (outside mixing zone)	7.94	E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
UT01		U.T. Robinson Creek[1]	0.10	39.0099	-87.7044	MPC 006 tributary	0.33	F	IEPA MH	QHEI	S	4X	2X	2X	2X	2X	1X
RC06		Robinson Creek	4.60	39.0115	-87.7023	Dst. 006 trib.; 0.4 mi. dst. MPC 001	8.39	E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
UT02		U.T. Robinson Creek[1]	0.10	39.0106	-87.6905	MPC RR yard trib. - 007, 009, 010 outfalls	1.47	F	IEPA MH	QHEI	S	4X	2X	2X	2X	2X	1X
RC07	BFC-11	Robinson Creek	3.30	39.0130	-87.6847	IL Rt 1 - 1.7 mi. dst. MPC 001	10.4	D,E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
RC08		Robinson Creek	2.00	39.01725	-87.667852	1500 N - 3.0 mi. dst. MPC 001	12.3	D,E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
RC09	BFC-10	Robinson Creek	1.00	39.02239	-87.65268	1150 E - 4.0 mi. dst. MPC 001	13	D,E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
SC01	BF-22	Sugar Creek	5.90	39.04111	-87.65806	1550 N - background site	14.2	E	IEPA MH	QHEI	W,S	8X	6X	6X	6X	6X	1X
SC02	BF-11	Sugar Creek	4.10	39.021902	-87.633767	1150 E - 0.5 mi. dst. Robinson Creek	30.7	D,E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
SC03	BF-01	Sugar Creek	1.60	39.0047	-87.5975	Palestine - E. Franklin Street - dst. RR yard	35.1	D,E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
LC01	BFB-13	Lamotte Creek	1.90	38.99515	-87.607661	IL Rt 33 - S of Palestine - background site	26.7	E	IEPA MH	QHEI	S	8X	6X	6X	6X	6X	1X
							Totals	17	17	17	16	144	110	110	110	110	17

1 - contingent on having sufficient water to sample biota.

Fish Sampling Codes:
D - Roller barge - 200 meters
E - Longline - 150 meters
F - Backpack - 100 to 125 meters
MZ - mixing zone site - 50 meters

Macroinvertebrates:
MH - IEPA multihabitat method
MZ - Mixing zone sample

Datasonde:
S - summer deployment (5 Sondes/week over 6 total weeks)
W - winter deployment (4X January 25 - March 31)

Field WQ:
Temperature, D.O., Conductivity, pH
2X collected by fish crew
6X collected by chemical crew
All water and sediment samples collected by chemical crew mid-June to mid-October

Appendix Table A-2. Chemical parameters for laboratory analysis by parameter groups.

MPC Chemical Lab Analyses - Parameter Groups for Water and Sediment Sampling					
Field (Fi):	**Demand (De):**	**Nutrients (Nu):**	**Metals (Me)**	**Organics (O):**	**Sediment:**
Conductivity	Alkalinity	Benthic Chl a	Ag	BNAs	BNAs
D.O.	BOD5	Chlorophyll a	Al	Cyanide[1]	Metals
pH	Chloride	NH3-N	As	Pesticides	PAHs
Temp.	COD	NO2-N	Be	Phenol (4AAP)	PCB
	Conductivity	NO3-N	Bo	Total BETX	Pesticides
	Fluoride	TKN	Ca	Total PNAs	VOCs
	pH	Total P	Cd	VOCs	
	SSC		Co		
	Sulfate		Cr		
	Sulfide		Cr^{+b}		
	TDS		Cu		
	TOC		Fe		
	TSS		K		
			Mg		
			Mn		
			Na		
			Ni		
			Pb		
			Se		
			Sr		
			Vd		
			Zn		
	- specifically listed in MPC Robinson Refinery NPDES permit.				
	- Listed by IEPA for FRSS or Basin Surveys.				

[1] - To be analyzed for in samples collected at sites RC04, MPMZ, and RC05 only.

Appendix Table A-3. Fish species collected in the IEPA FRSS survey of Robinson Creek in 2008 and 2013.

Stream:			Robinson Creek			Marathon Creek	Robinson Creek		Sugar Creek	Sugar Creek	Lamotte Creek	
Site:			BFC-20	BFC-19	BFC-25	BFCA-22	BFC-26	BFC-11	BF-01	BF-11	BFB-13	
Date:			Combined	Combined	Combined	Combined	Combined	Combined	Combined	Combined	Combined	
Scientific name	Common name	T. ind	SH	SH	SH	SH	SH	SH	SH	SH	SH	RIS
Lepisosteus platostomus	Shortnose gar	10	0	9	0	0	0	0	0	0	1	X
Dorosoma cepedianum	Gizzard shad	4	0	0	0	0	0	3	0	0	1	
Campostoma anomalum	Central stoneroller	12	1	5	2	0	0	0	0	4	0	X
Ctenopharyngodon idella	Grass carp	23	0	0	0	3	4	1	0	8	7	
Cyprinus carpio	Carp	34	3	1	3	5	6	9	0	7	0	X
Notropis buccatus	Silverjaw minnow	69	3	0	15	0	0	1	9	12	29	X
Hybognathus nuchalis	Silvery minnow	2211	5	16	100	11	263	1004	0	812	0	X
Notropis atherinoides	Emerald shiner	567	0	0	12	4	33	10	364	11	133	X
Notropis blennius	River shiner	0	0	0	0	0	0	0	0	0	0	
Notropis stramineus	Sand shiner	25	1	0	4	0	0	0	0	19	1	
Cyprinella spiloptera	Spotfin shiner	301	1	91	40	0	7	0	6	25	131	X
Cyprinella whipplei	Steelcolor shiner	16	0	2	1	0	1	0	0	4	8	
Cyprinella lutrensis	Red shiner	29	1	20	0	0	0	0	0	8	0	X
Lythrurus umbratilus	Redfin shiner	18	0	0	4	0	0	0	0	0	14	X
Luxilus chrysocephalus	Striped shiner	2	1	1	0	0	0	0	0	0	0	
Notemigonus crysoleucas	Golden shiner	1	1	0	0	0	0	0	0	0	0	
Pimephales notatus	Bluntnose minnow	116	5	3	78	0	1	1	3	1	24	X
Semotilus atromaculatus	Creek chub	69	12	13	38	5	0	0	0	0	1	X
Carpiodes carpio	River carpsucker	1	0	0	0	0	0	1	0	0	0	
Carpiodes cyprinus	Quillback	0	0	0	0	0	0	0	0	0	0	
Catostomus commersoni	White sucker	3	0	0	0	1	0	0	0	1	1	
Erimyzon oblongus	Creek chubsucker	0	0	0	0	0	0	0	0	0	0	
Ictiobus bubalus	Smallmouth buffalo	38	0	0	0	4	1	16	0	7	10	X
Moxostoma erythrurum	Golden redhorse	1	0	0	0	0	0	1	0	0	0	
Ictalurus punctatus	Channel catfish	0	0	0	0	0	0	0	0	0	0	
Ameiurus natalis	Yellow bullhead	1	0	0	0	0	0	0	0	0	1	
Aphredoderus sayanus	Pirate perch	0	0	0	0	0	0	0	0	0	0	
Fundulus notatus	Blackstripe topminnow	30	5	8	10	0	0	5	0	0	2	X
Gambusia affinis	Mosquitofish	35	0	0	0	0	0	9	0	0	26	X
Labidesthes sicculus	Brook silverside	0	0	0	0	0	0	0	0	0	0	
Lepomis cyanellus	Green sunfish	22	3	0	1	13	0	0	0	4	1	X
Lepomis macrochirus	Bluegill	52	4	6	2	6	12	8	0	12	2	X
Lepomis megalotis	Longear sunfish	11	0	0	1	0	0	2	2	0	6	X
Pomoxis annularis	White crappie	54	0	0	0	54	0	0	0	0	0	X
Micropterus punctulatus	Spotted bass	36	4	1	6	17	0	2	0	0	6	X
Micropterus dolomieu	Smallmouth bass	2	0	0	0	0	0	2	0	0	0	
Micropterus salmoides	Largemouth bass	8	2	2	0	0	2	2	0	0	0	
Etheostoma blennioides	Greenside darter	0	0	0	0	0	0	0	0	0	0	
Etheostoma caeruleum	Rainbow darter	0	0	0	0	0	0	0	0	0	0	
Etheostoma flabellare	Fantail darter	0	0	0	0	0	0	0	0	0	0	
Etheostoma nigrum	Johnny darter	8	0	0	0	0	0	0	6	0	2	X
Etheostoma spectabile	Orangethroat darter	0	0	0	0	0	0	0	0	0	0	
Percina caprodes	Log perch	2	1	0	0	0	0	1	0	0	0	
Percina maculata	Blackside darter	0	0	0	0	0	0	0	0	0	0	
Aplodinotus grunniens	Freshwater drum	0	0	0	0	0	0	0	0	0	0	
*Lepomis macrochirus*L cyanell*	Bluegill x Greenn sunfish hybrid	4	0	4	0	0	0	0	0	0	0	
Hypophthalmichthys molitrix	Silver Carp	6	0	0	0	2	0	4	0	0	0	
Number of Individuals:		3815	53	182	317	125	330	1082	390	935	407	
Number of Taxa:			47	47	47	47	47	47	47	47	47	
	Site:		BFC-20	BFC-19	BFC-25	BFCA-22	BFC-26	BFC-11	BF-01	BF-01	BFB-13	19
	Seine hauls		4	4	4	4	4	4	4	4	4	

Appendix Table A-4. Fish species collected by IEPA/IDNR in the Wabash faunal region at sites

FAMILY	SPECIES	SPECIES NAME	SCIENTIFIC NAME	NUMBER	RIS
10	002	SHORTNOSE GAR	*Lepisosteus platostomus*	2	
15	001	BOWFIN	*Amia calva*	1	
20	003	GIZZARD SHAD	*Dorosoma cepedianum*	16	
37	001	GRASS PICKEREL	*Esox americanus vermiculatus*	37	X
40	002	BIGMOUTH BUFFALO	*Ictiobus cyprinellus*	1	
40	004	SMALLMOUTH BUFFALO	*Ictiobus bubalus*	46	X
40	005	QUILLBACK CARPSUCKER	*Carpiodes cyprinus*	14	
40	006	RIVER CARPSUCKER	*Carpiodes carpio carpio*	11	
40	010	GOLDEN REDHORSE	*Moxostoma erythrurum*	2	
40	016	WHITE SUCKER	*Catostomus commersoni*	193	X
40	018	SPOTTED SUCKER	*Minytrema melanops*	3	
40	020	CREEK CHUBSUCKER	*Erimyzon oblongus*	313	X
43	001	COMMON CARP	*Cyprinus carpio*	21	X
43	003	GOLDEN SHINER	*Notemigonus crysoleucas*	79	X
43	013	CREEK CHUB	*Semotilus atromaculatus*	769	X
43	015	SUCKERMOUTH MINNOW	*Phenacobius mirabilis*	89	X
43	020	EMERALD SHINER	*Notropis atherinoides*	58	X
43	023	REDFIN SHINER	*Lythrurus umbratilis*	352	X
43	025	STRIPED SHINER	*Luxilus chrysocephalus*	3	
43	027	RIVER SHINER	*Notropis blennius*	100	X
43	031	STEELCOLOR SHINER	*Cyprinella whipplei*	72	X
43	032	SPOTFIN SHINER	*Cyprinella spiloptera*	175	X
43	034	SAND SHINER	*Notropis stramineus*	29	X
43	039	SILVERJAW MINNOW	*Notropis buccatus*	506	X
43	040	MISS. SILVERY MINNOW	*Hybognathus nuchalis*	196	X
43	041	BULLHEAD MINNOW	*Pimephales vigilax*	3	
43	043	BLUNTNOSE MINNOW	*Pimephales notatus*	1508	X
43	044	CENTRAL STONEROLLER	*Campostoma anomalum*	334	X
43	048	RED SHINER	*Cyprinella lutrensis*	5	
43	137	Ribbon shiner	*Lythrurus fumeus*	1	
47	002	CHANNEL CATFISH	*Ictalurus punctatus*	1	
47	004	YELLOW BULLHEAD	*Ameiurus natalis*	57	X
47	013	TADPOLE MADTOM	*Noturus gyrinus*	12	
54	002	BLACKSTRIPE TOPMINNOW	*Fundulus notatus*	706	X
54	005	BLACKSPOTTED TOPMINNOW	*Fundulus olivaceus*	36	X
57	001	WESTERN MOSQUITOFISH	*Gambusia affinis*	356	X
68	001	PIRATE PERCH	*Aphredoderus sayanus*	379	X
70	001	BROOK SILVERSIDE	*Labidesthes sicculus*	1	
77	001	WHITE CRAPPIE	*Pomoxis annularis*	2	
77	002	BLACK CRAPPIE	*Pomoxis nigromaculatus*	1	
77	006	LARGEMOUTH BASS	*Micropterus salmoides*	29	X
77	007	WARMOUTH SUNFISH	*Lepomis gulosus*	8	
77	008	GREEN SUNFISH	*Lepomis cyanellus*	673	X
77	009	BLUEGILL SUNFISH	*Lepomis macrochirus*	214	X
77	010	ORANGESPOTTED SUNFISH	*Lepomis humilis*	9	
77	011	LONGEAR SUNFISH	*Lepomis megalotis*	738	X
77	012	REDEAR SUNFISH	*Lepomis microlophus*	2	
80	005	BLACKSIDE DARTER	*Percina maculata*	17	
80	014	JOHNNY DARTER	*Etheostoma nigrum*	170	X
80	023	ORANGETHROAT DARTER	*Etheostoma spectabile*	49	X
80	028	MUD DARTER	*Etheostoma asprigene*	3	
80	030	SPOTTAIL DARTER	*Etheostoma squamiceps*	5	
80	031	SLOUGH DARTER	*Etheostoma gracile*	13	X
80	032	BLUNTNOSE DARTER	*Etheostoma chlorosomum*	4	
85	001	FRESHWATER DRUM	*Aplodinotus grunniens*	3	
					27

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
BRUCE RAUNER, GOVERNOR LISA BONNETT, DIRECTOR

217/558-2012

MAR 2 4 2016

Marathon Petroleum Company LP – Robinson Refinery
c/o Jerri Titsworth, Environmental Supervisor
P.O. Box 1200
400 S. Marathon Avenue
Robinson, Illinois 62454

RE: NPDES No. IL0004073
Marathon Petroleum Company LP – Robinson Refinery
316(a) Early Screening Approval

Dear Ms. Titsworth:

The Agency has reviewed the March 11, 2016 "Early Screening Information" for the Marathon Petroleum Company – Robinson Refinery. Based on the information provided, the Agency approves the "Early Screening Information" thereby satisfying the requirements of 35 IAC 106.1115 (Early Screening). The Agency notes that only one year of sampling is proposed. If sampling cannot be conducted this summer due to atypical conditions, sampling during the following summer may be necessary. The Agency looks forward to reviewing the Detailed Plan of Study as per the requirements of 35 IAC 106.1120. The Agency reserves the option to provide further comments if new information becomes available.

If you have any questions or comments regarding this letter, please contact me at the above address and phone number. If you have questions regarding the permit, please call Permit Section at 217/782-0610.

Sincerely,

Scott Twait

Scott Twait
Water Quality Standards Unit
Bureau of Water

SAT:marathon-robinson-316(a)earlyscreening.docx

APPENDIX B: List of Sampling Sites and Parameters
B-1: 2016 Sites and Parameters Master
B-2: Chemical Parameters in Water and Sediment

Appendix Table A-2. *Master list of sampling sites, biological and habitat indicators, and chemical parameters for the Robinson Creek biological and water quality survey in 2016.*

MPC Site ID	FRSS ID	River_Stream Name	RM	Latitude	Longitude	Location-Description	Drain. Area	Fish	Macroinvertebrates	Mussels	Habitat	Datasonde	Field WQ	Demand	Nutrients	Metals	Organics	Sed. Metals & Organics
QC01	BFCB	Quail Creek	0.50	39.019625	-87.727450	Ust. confl. with Robinson Creek	2.29	F	IEPA MH	INHS TP	QHEI		8X	6X	6X	6X	6X	1X
RC01	BFC-20	Robinson Creek	6.50	39.015168	-87.726464	RR bridge 0.1 mi. ust. Robinson WWTP	2.59	F	IEPA MH	INHS TP	QHEI	S	8X	6X	6X	6X	6X	1X
RWMZ	BFC-RB-EI	Robinson Creek	6.45	39.014383	-87.725301	Robinson WWTP mixing zone	3.24	E (MZ)	MZ		QHEI (MZ)		8X	6X	6X	6X	6X	
RC02		Robinson Creek	6.25	39.015714	-87.722492	0.2 mi. dst. Robinson WWTP	3.27	E	IEPA MH	INHS TP	QHEI	S	8X	6X	6X	6X	6X	1X
RC03	BFC-19	Robinson Creek	6.00	39.017105	-87.721340	Dst. Quail Cr. confl.; 0.4 mi dst. Robinson WWTP	5.73	E	IEPA MH	INHS TP	QHEI	S	8X	6X	6X	6X	6X	1X
RC04	BFC-25	Robinson Creek	5.20	39.014534	-87.709609	Farm access road ust. MPC 001 outfall	6.51	E	IEPA MH	INHS TP	QHEI	W,S	8X	6X	6X	6X	6X	1X
MPMZ	BFC-MR-EI	Robinson Creek	5.00	39.013060	-87.707780	MPC 001 outfall mixing zone	6.53	E (MZ)	MZ		QHEI (MZ)		8X	6X	6X	6X	6X	
MC01	BFCA-22	Marathon Creek	0.16	39.011665	-87.709664	Dst. farm access road - 002, 003, 005, 008 outfalls; Illin	1.24	F	IEPA MH	INHS TP	QHEI	S	8X	6X	6X	6X	6X	1X
RC05	BFC-26	Robinson Creek	4.90	39.012500	-87.706390	0.1 mi. dst. MPC 001 (outside mixing zone)	7.94	E	IEPA MH	INHS TP	QHEI	W,S	8X	6X	6X	6X	6X	1X
UT01		U.T. Robinson Creek[1]	0.10	39.009917	-87.704437	MPC 006 tributary	0.33	F	IEPA MH	INHS TP	QHEI	S	4X	2X	2X	2X	2X	1X
RC06		Robinson Creek	4.60	39.011488	-87.702346	Dst. 006 trib.; 0.4 mi. dst. MPC 001	8.39	E	IEPA MH	INHS TP	QHEI	S	8X	6X	6X	6X	6X	1X
UT02		U.T. Robinson Creek[1]	0.10	39.010649	-87.690496	MPC RR yard trib. - 007, 009, 010 outfalls	1.47	F	IEPA MH	INHS TP	QHEI	S	4X	2X	2X	2X	2X	1X
RC07	BFC-11	Robinson Creek	3.30	39.013038	-87.684726	IL Rt 1 - 1.7 mi. dst. MPC 001	10.4	D,E	IEPA MH	INHS TP	QHEI	W,S	8X	6X	6X	6X	6X	1X
RC08		Robinson Creek	2.00	39.017250	-87.667852	1500 N - 3.0 mi. dst. MPC 001	12.3	D,E	IEPA MH	INHS TP	QHEI	S	8X	6X	6X	6X	6X	1X
RC09	BFC-10	Robinson Creek	1.00	39.022390	-87.652680	1150 E - 4.0 mi. dst. MPC 001	13	D,E	IEPA MH	INHS TP	QHEI	W,S	8X	6X	6X	6X	6X	1X
SC01	BF-22	Sugar Creek	5.90	39.041110	-87.658060	1550 N - background site	14.2	E	IEPA MH	INHS TP	QHEI	W,S	8X	6X	6X	6X	6X	1X
SC02	BF-11	Sugar Creek	4.10	39.021902	-87.633767	1150 E - 0.5 mi. dst. Robinson Creek	30.7	D,E	IEPA MH	INHS TP	QHEI	S	8X	6X	6X	6X	6X	1X
SC03	BF-01	Sugar Creek	1.60	39.004657	-87.597527	Palestine - E. Franklin Street - dst. RR yard	35.1	D,E	IEPA MH	INHS TP	QHEI	S	8X	6X	6X	6X	6X	1X
LC01	BFB-13	Lamotte Creek	1.90	38.995150	-87.607661	IL Rt 33 - S of Palestine - background site	26.7	E	IEPA MH	INHS TP	QHEI	S	8X	6X	6X	6X	6X	1X
							Totals	17	17	15	17	16	144	110	110	110	110	17

1 - contingent on having sufficient water to sample biota.

Fish Sampling Codes:
D - Roller barge - 200 meters
E - Longline - 150 meters
F - Backpack - 100 to 125 meters
MZ - mixing zone site - 50 meters

Macroinvertebrates:
MH - IEPA multihabitat method
MZ - Mixing zone sample

Mussels:
INHS TP - INHS Timed Protocol

Datasonde:
S - summer deployment (5 Sondes/week over 6 total weeks)
W - winter deployment (4X January 25 - March 31)

Field WQ:
Temperature, D.O., Conductivity, pH
2X collected by fish crew
6X collected by chemical crew
All water and sediment samples collected by chemical crew mid-June to mid-October

Appendix Table A-3. *Chemical parameters to be analyzed in water and sediment samples collected from the Robinson Creek study area in 2016.*

MPC Chemical Lab Analyses - Parameter Groups for Water and Sediment Sampling					
Field (Fi):	**Demand (De):**	**Nutrients (Nu):**	**Metals (Me)**	**Organics (O):**	**Sediment:**
Conductivity	Alkalinity	Benthic Chl a	Ag	BNAs	BNAs
D.O.	BOD5	Chlorophyll a	Al	Cyanide[1]	Metals
pH	Chloride	NH3-N	As	Pesticides	PAHs
Temp.	COD	NO2-N	Be	Phenol (4AAP)	PCB
	Conductivity	NO3-N	Bo	Total BETX	Pesticides
	Fluoride	TKN	Ca	Total PNAs	VOCs
	pH	Total P	Cd	VOCs	
	SSC		Co		
	Sulfate		Cr		
	Sulfide		Cr^{+6}		
	TDS		Cu		
	TOC		Fe		
	TSS		K		
			Mg		
			Mn		
			Na		
			Ni		
			Pb		
			Se		
			Sr		
			Vd		
			Zn		
	- specifically listed in MPC Robinson Refinery NPDES permit.				
	- Listed by IEPA for FRSS or Basin Surveys.				
[1] - To be analyzed for in samples collected at sites RC04, MPMZ, and RC05 only.					

APPENDIX C: Field Data Sheets

Midwest Biodiversity Institute

Fish Data Sheet

Page ____ of ____

Crew Leader | Boat Driver | Netters

Field Crew: ____________ Time of Day: ________ Project Code: ____________

Site Code: ____________

River/ Stream: ____________ Location: ____________

Date: ________ Distance: ________ Temp: ________ Seconds Fished: ________

River Code: ________ Sampler Type: ________ Conductivity: ________ Lat/Long (Beg): ________

RM: ________ Secchi Depth: ________ Diss. Oxy.: ________ Lat/Long (Mid): ________

Voltage: ________ Volt. Range: ________ D.O. %sat.: ________ Lat/Long (End): ________

% Range: ________ Amperage: ________ pH: ________ Lat/Long (X-Loc): ________

Anomalies: A- anchor worm; B- black spot; C- leeches; D- deformities; E- eroded fins; F- funguns; L- lesions; M- multiple DELT anomalies; N- blind P- parasites; Y- popeye; S- emaciated; W- swirled scales; T- tumors; Z- other. [Heavy (H) or Light (L) code may be combined with above codes.]

Species	# Weighed	# Counted	Individual or Batch Weights or Length/ Weight					Anomalies						Lunker
														☐
V:	10x													
														☐
V:	10x													
														☐
V:	10x													
														☐
V:	10x													
														☐
V:	10x													
														☐
V:	10x													
														☐
V:	10x													
														☐
V:	10x													

Mass Weighing Convention: Total Weight → 536 (12) ← Number Weighed

Vouchers Collected: ☐

Appendix D--2: IEPA STREAM ASSESSMENT FORM

Station Code:_ _ _ _ _ _ _ _ _ _ Date:_ _ /_ _ /_ _ Start Time:_ _:_ _

Stream:_ _

County:_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ T:_ _ _ _ R:_ _ _ _ S:_ _ _ _

Lat:_ _:_ _:_ _ Long:_ _:_ _:_ _

Station Description (Direction from Town; Landmark):_ _ _ _ _ _ _ _ _

_ _

_ _

USGS Map Name:_____ USGS Map Number:_____

Survey Type:_ _
1. Intensive
2. FRSS
3. CORE
4. Special
5. Non-point

Collector: _ _ (ID: 1-13)
_ _ _ (initials)

Gage Type:_ _
1. Wire Wt.
2. Staff
3. Electric Tape
4. Dial Reading
5. Punch Tape

Gage Height (feet):_ _._ _

Field Parameters:

Air Temp. (°C) _ _ _ Water Temp. (°C) _ _ _.
D.O. (mg/L) _ _._ Cond. (µmhos) _ _ _ _
pH (units) _ _._ Turbidity _ _ _ _
Chlorophyll volume filtered (ml) _ _ _

Sampling for this survey:
(check those collected)

_ WQ _ Fish Populations _ Macroinvertebrates
_ Sediment _ Fish Contaminants
_ Habitat _ Other (_____)

Photographs:_____

IEPA STREAM ASSESSMENT FORM – LAND USE

Station Code:_ _ _ _ _ _ _ _ _ _ Date:_ _ /_ _ /_ _

Adjacent Land Use (circle predominant use)

Agriculture	Urban	Construction	Recreation
0=None	0=None	0=None	0=None
1=Pasture	2=Residential	3=Residential	4=Park
10=Cultivated	20=Commercial	30=Commercial	40=Golf Course
100=Fallow	200=Industrial	300=Industrial	400=Refuge
1000=Feedlot	2000=Landfill	3000=Highway	4000=Lake
10000=Buildings	20000=Other	30000=Other	40000=Other
100000=other			

Floodplain	Wooded	Mining	WWTP	Rural
0=None	0=None	0=None	0=None	0=None
5=Present	6=Present	7=Coal/shaft	8=Lagoon	9=Residential
		70=Coal/Strip	80=T.F.	90=Landfill
		700=Sand/Gravel	800=A.S.	900=Other
		7000=Oil Field	8000=CSO	
		70000=Abandoned	80000=Other	
		700000=other		

Channel Alteration	Riparian Vegetation	Channel Modification
0=None	1. >50% denuded	0=None
1=Old channelization	2. Grasses dominate	1=Culvert
10=New channelization	3. Trees dominate	10=Bridge abutment
100=Bank Stabilization	4. Shrubs dominate	100=Dams/man-made
1000=Levee		1000=Dams/natural
10000=Other		10000=Wing dams
		100000=Sand/gravel bars
		1000000=Other

Stream stage (circle)	Stage Trend (circle)	Precipitation (last 24 hours) (circle)	Water Odor (circle)	
1. Dry	1. Stable	1. None	1. Normal/None	6. Fishy
2. Pooled	2. Dropping	2. Trace	2. Septic	7. H_2S
3. Low	3. Rising	3. 0.1-0.5"	3. Algal	8. Musty
4. Normal	4. Unknown	4. >0.5"	4. Chemical	9. Petroleum
5. Flooded			5. Chlorine	10. Other
6. Intermittent				

Water Color (circle)

1. Clear	4. Gray	7. Black
2. Brown	5. Yellow	8. Tannic
3. Green	6. Red	

IEPA STREAM ASSESSMENT FORM – Non-Transect Habitat Information

Station Code:_ _ _ _ _ _ _ _ _ _ Date:_ _ /_ _ /_ _

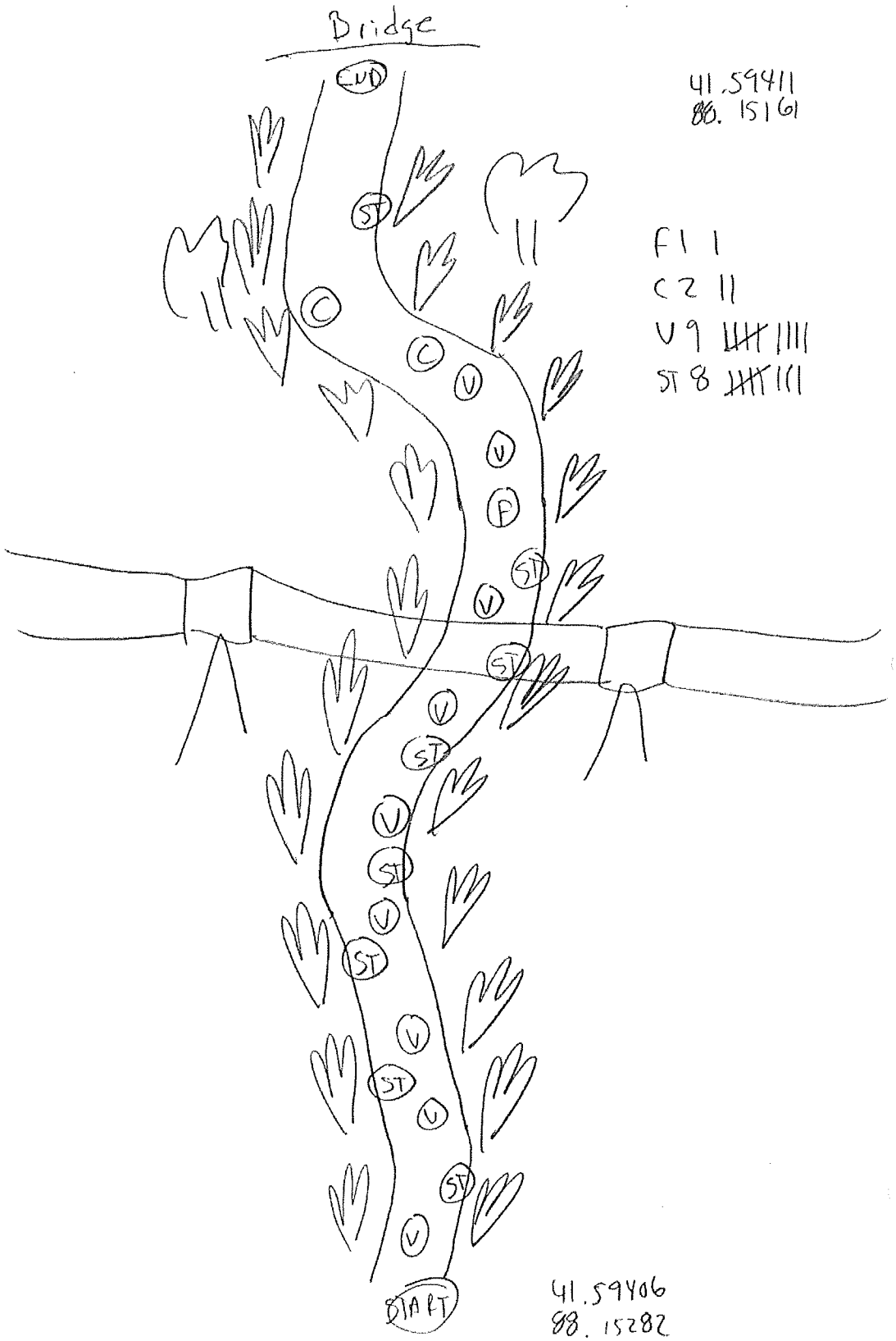
Field estimates of habitat features based on sampling reach:

Circle relative abundance: 0 = absent or not observed, 1 = rare (<10%), 2 = common (10-30%), 3 = abundant (30-50%), 4 = dominant (>50%) AND Indicate percentage of substrates: fines, coarse, plant detritus and vegetation; percentage of bank length as cover type, percent shading, pool, riffle, run.

BOTTOM SUBSTRATE:	Percent						HYDRAULIC	
(<0.062 mm) Silt/mud		0	1	2	3	4	Discharge (cfs)	
(0.062-2 mm) Sand		0	1	2	3	4	Mean Velocity (ft/s)	
(0.08-0.3 in) Fine gravel		0	1	2	3	4		
Fine Substrate Total		0	1	2	3	4		
(0.3-0.6 in) Medium gravel		0	1	2	3	4		
(0.6-2.5 in) Coarse gravel		0	1	2	3	4		
(2.5-5 in) Small cobble		0	1	2	3	4	Mean Water Width (ft)	
(5-10 in) Large cobble		0	1	2	3	4	Width Measurements:	
(>10 in) Boulder		0	1	2	3	4		
Coarse Substrate Total		0	1	2	3	4		
Plant Detritus		0	1	2	3	4		
Vegetation (Aq., Terr., FA)		0	1	2	3	4		
Sum Bottom Zone - 20-jab		0	1	2	3	4		
Bedrock		0	1	2	3	4	Mean Depth (ft)	
Claypan		0	1	2	3	4	Depth Measurements:	
Submerged logs		0	1	2	3	4		
Other		0	1	2	3	4		
INSTREAM COVER:								
Brush/Debris Jams		0	1	2	3	4		
Submerged Terrestrial Veg.		0	1	2	3	4		
Submerged Tree Roots		0	1	2	3	4		
Sum Bank Zone – 20-jab		0	1	2	3	4		
Aquatic Vegetation		0	1	2	3	4		
Boulders		0	1	2	3	4		
Rock/Clay Ledge		0	1	2	3	4	Station Length (ft)	
Undercut Bank		0	1	2	3	4		
Logs		0	1	2	3	4		
Other		0	1	2	3	4		
VEGETATION TYPE:								
Periphyton		0	1	2	3	4		
Filamentous Algae		0	1	2	3	4		
Macrophytes		0	1	2	3	4		
OTHER:								
Shading (1000-1600)		0	1	2	3	4		
Pool		0	1	2	3	4		
Riffle		0	1	2	3	4	Depth Sediment (in)	
Run		0	1	2	3	4	Depth Sludge (in)	
Slack		0	1	2	3	4		

Macroinvertebrate 20-jabs Sampling Allocations: Station Sketch on back.

Bottom Zone		Bank Zone	
Fine substrate		Sub. Terrestrial	
Coarse substrate		Sub. Tree roots	
Plant Detritus		Woody debris	
Vegetation			


Bridge
41.59411
88. 15161
F 1 1
C 2 11
V 9 IIII IIII
ST 8 IIII I
41.59406
88. 15282
START

Mollusk Field Sampling Data Form

EPA Station Code: _____ Field No.: _____ Page: _____

Stream: _____ Drainage: _____

Common Location: _____

Lat, Long: _____ County: _____ State: _____

Date: _____ T _____ R _____ sec. _____ Quarter _____

Collectors: _____ Person-hours: _____

Remarks: _____

	Wetted Width (ft):	Thalweg Depth (m):
d/s		
Mid		
u/s		
Mean		

Reach length: _____ m Water temp: _____ C

Flow: none low mod high

Water clarity: low mod high

Sampling: poor fair good

Substrate (%) (Total = 100%):

Bedrock		Sand	
Boulder		Silt	
Cobble		Clay	
Gravel		Other	

Corbicula (% time encountered): 0 25 50 75 100

Dreissena (% time encountered): 0 25 50 75 100

North

Photo: none digital

u/s reach _____

d/s reach _____

	V	L	D	R	SP	GRC (#/group) 0-3/ 4-10 / 11+/ N
Actinonaias ligamentina						
Alasmidonta marginata						
Alasmidonta viridis						
Amblema plicata						
Anodontoides ferussacianus						
Arcidens confragosus						
Cyclonaias tuberculata						

Elliptio crassidens	V	L	D	R	SP	0-3/ 4-10 / 11+/ N
Elliptio dilatata						
Fusconaia flava						
Fusconaia subrotunda						
Lampsilis cardium						
Lampsilis fasciola						
Lampsilis siliquoidea						
Lampsilis teres						
Lasmigona complanata						
Lasmigona compressa						
Lasmigona costata						
Leptodea fragilis						
Ligumia recta						
Ligumia subrostrata						
Megalonaias nervosa						
Obliquaria reflexa						
Obovaria olivaria						
Pleurobema sintoxia						
Potamilus alatus						
Potamilus capax						
Potamilus ohiensis						
Ptychobranchus fasciolaris						
Pyganodon grandis						
Quadrula cylindrica						
Quadrula metanevera						
Quadrula nodulata						
Quadrula pustulosa						
Quadrula quadrula						
Strophitus undulatus						
Toxolasma lividus						
Toxolasma parvus						
Toxolasma texasiensis						
Tritogonia verrucosa						
Truncilla donaciformis						
Truncilla truncata						
Uniomerus tetralasmus						
Utterbackia imbecillis						
Venustaconcha ellipsiformis						
Villosa iris						
Villosa lienosa						
Corbicula fluminea						
Dreissena polymorpha						
Snails						

Midwest Biodiversity Institute

Datasonde Field Sheet

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Unit Serial Number: ________ Set: ________ Retrieved: ________
Site Name: ________ Sampler's name(s): ________ Date: ________
Notes: ________
Picture Taken? Y / N GPS Unit X: ________ Y: ________

Created 7/2011; VLG

MBI Chemical Crew Field Notes

Site and lab number _____

Sampler name(s) _____

Date(mm/dd/yyyy)_____ Time(military)_____

Present weather conditions_____

Prior 24 hrs. weather conditions _____

pH_____ Temperature_____ Conductivity_____

Dissolved oxygen_____ Acidity_____ Alkalinity_____

Other _____

Record map location_____

GPS Coordinates X: _____Y:_____

Physical features (i.e., odor, color, banks, riparian zone, stream depth, visible sources of pollution; sewage, trash, oily film, etc...)

_____

_____

Directions to site_____

_____

_____

Field sketch including sample location, physical stream features; meanders, banks, woody debris, etc..., and permanent land features; roads, houses, culvert, etc.... (on back)_____

Picture taken? Y___ N___

Revised 2011Jun06

APPENDIX D: REPRESNTATIVE IMPORTANT SPECIES

Appendix Table D-4. Preliminary list of representative important fish species for the predictive analyses to be conducted as part of the 316[a] demonstration for the MPC Robinson Refinery thermal effluent.

Species	Wabash Bioregion	IEPA FRSS 2008	IEPA FRSS 2013	Thermal Data Available?
Shortnose gar			X	√
Grass pickerel	X			
Smallmouth buffalo	X		X	√
White sucker	X			√
Creek chubsucker	X			
Common carp	X		X	√
Golden shiner	X			√
Creek chub	X	X	X	√
Suckermouth minnow	X			
Emerald shiner	X	X	X	√
Redfin Shiner	X			
River shiner	X			
Steelcolor shiner	X		X	
Sand shiner			X	
Red shiner			X	
Spotfin shiner	X	X	X	√
Silverjaw minnow	X	X	X	
Mississippi silvery minnow	X		X	
Bluntnose minnow	X	X	X	√
Central stoneroller	X		X	√
Yellow bullhead	X			√
Blackstripe topminnow	X	X	X	√
Western mosquitofish	X	X	X	
Pirate perch	X			
White crappie			X	√
Spotted bass			X	√
Largemouth bass	X			√
Green sunfish	X		X	√
Bluegill	X	X	X	√
Johnny darter	X			
Orangethroat darter	X			√
Slough darter	X			
TOTALS (32 species)	**27**	**8**	**19**	**18**

APPENDIX E: Marathon Laboratory Accreditation

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY
NELAP - RECOGNIZED
ENVIRONMENTAL LABORATORY ACCREDITATION

is hereby granted to

MARATHON PETROLEUM COMPANY, LP

11631 US ROUTE 23

CATLETTSBURG, KY 41129

NELAP ACCREDITED
ACCREDITATION NUMBER #200069

According to the Illinois Administrative Code, Title 35, Subtitle A, Chapter II, Part 186, ACCREDITATION OF LABORATORIES FOR DRINKING WATER, WASTEWATER AND HAZARDOUS WASTES ANALYSIS, the State of Illinois formally recognizes that this laboratory is technically competent to perform the environmental analyses listed on the scope of accreditation detailed below.

The laboratory agrees to perform all analyses listed on this scope of accreditation according to the Part 186 requirements and acknowledges that continued accreditation is dependent on successful ongoing compliance with the applicable requirements of Part 186. Please contact the Illinois EPA Environmental Laboratory Accreditation Program (IL ELAP) to verify the laboratory's scope of accreditation and accreditation status. Accreditation by the State of Illinois is not an endorsement or a guarantee of validity of the data generated by the laboratory.

Primary Accrediting Authority: Texas Commission on Environmental Quality

Celeste M. Crowley
Supervisor
Environmental Laboratory Accreditation Program

Janet Cruse
Accreditation Officer
Environmental Laboratory Accreditation Program

Certificate No.: 003788
Expiration Date: 05/03/2016
Issued On: 01/26/2016

Exhibit 5d

Exhibit 5d

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
BRUCE RAUNER, GOVERNOR LISA BONNETT, DIRECTOR

217/558-2012

RECEIVED 5/20/2016
ENVIRONMENTAL DEPARTMENT
MARATHON PETROLEUM COMPANY LP
ILLINOIS REFINING DIVISION
ROBINSON, ILLINOIS

MAY 17 2016

Marathon Petroleum Company LP – Robinson Refinery
c/o Jerri Titsworth, Environmental Supervisor
P.O. Box 1200
400 S. Marathon Avenue
Robinson, Illinois 62454

RE: NPDES Nos. IL0004073
Marathon Petroleum Company LP – Robinson Refinery
316(a) Plan of Study Approval

Dear Ms. Titsworth:

The Agency has reviewed the April 18, 2016 Detailed Plan of Study to support Alternative Thermal Limits for the Marathon Petroleum Company LP – Robinson Refinery. Based on the information provided, the Agency approves the Detailed Plan of Study thereby satisfying the requirements of 35 IAC 106.1120 (Detailed Plan of Study). Additionally, the Agency has forwarded the Detailed Plan of Study to Illinois Department of Natural Resources, who has indicated that they plan to comment. The Agency reserves the option to provide further comments if new information becomes available.

If you have any questions or comments regarding this letter, please contact me at the above address and phone number. If you have questions regarding the permit, please call Permit Section at 217/782-0610.

Sincerely,

Scott Twait

Scott Twait
Water Quality Standards Unit
Bureau of Water

SAT:Marathon-robinson-316(a)detailedplanofstudy.docx

Exhibit 5e

Exhibit 5e

Illinois Department of
Natural Resources
One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov

Bruce Rauner, Governor
Wayne A. Rosenthal, Director

June 2, 2016

Marathon Petroleum Company LP – Robinson Refinery
c/o Jerri Titsworth, Environmental Supervisor
P.O Box 1200
400 S. Marathon Avenue
Robinson, Illinois62454

RE: NPDES Nos. IL0004073
Marathon Petroleum Company LP – Robinson Refinery
316(a) Plan of Study
EcoCAT Number(s): 1608667

Dear Mr. Titsworth:

The Illinois Department of Natural Resources has reviewed the April 18, 2016 Detailed Plan of Study to support Alternative Thermal Limits for the Marathon Petroleum Company LP – Robinson Refinery.

The project was submitted in the Department's online EcoCAT review tool by the Illinois Environmental protection Agency on March 17, 2016 and "auto-terminated" with no protected resources identified in the immediate discharge area. Department staff reviewed the Natural Heritage Database in more detail and determined that no records for state threatened or endangered aquatic species occur in the proposed study area of Robinson Creek and its tributaries, Lamotte Creek, and Sugar Creek. This does not preclude the possibility of a state-listed species from occurring in the study area. The Wabash River – Mount Carmel Illinois Natural Area Inventory Site does occur at the confluence with Sugar Creek and is known to contain state-listed fauna and high species diversity.

Based on the review, the Department has no objection to the Detailed Plan of Study. Be advised, the lead investigator should hold a valid Scientific Collectors Permit from the Department's Office of Resource Conservation for the proposed biological sampling events.

The Department looks forward to the study results and further participation in the 316(a) permit process.

Please contact me if you have any questions regarding this review.

Nathan Grider
Impact Assessment Section
217-785-5500

cc: Scott Twait, IEPA
Trent Thomas – IDNR, Fisheries