MEMORANDUM

December 15, 2004

TO: File

FROM: Sam Stone

RE: Horse Creek Stewardship Program
Dissolved Oxygen Levels

As part of the Horse Creek Stewardship Program, water quality samples have been collected monthly at the four surface water stations since April 2003. One parameter of concern is dissolved oxygen (DO) which has a trigger level of < 5.0 mg/l. As per the program when a station shows DO below 5.0 an impact assessment is required by IMC to determine the cause of the low DO. A review of the project data shows that all stations are below the trigger level at various frequencies. (See table below)

Station No.	**Count**	**Count Below 5.0 mg/l DO**	**Range of DO Results**	**AVG. DO Results**
1 (Hwy 64)	19	2	4.3 - 10.4	7.08
2 (Goose Pond)	19	17	.3 - 5.0	2.3
3 (Hwy 70)	19	3	.27 - 10.3	6.07
4 (Hwy 72)	19	2	.58 - 10.6	6.43

From this data it is conceivable that an impact assessment would be required nearly every month.

In the southwest Florida region it is fairly typical for fresh water systems throughout much of the year to have dissolved oxygen levels below the state standard of 5.0. This is primarily caused by high ambient water temperatures that occur throughout most of the year. These high water temperatures physically limit the ability of water to hold large amounts of DO. A second reason for low DO is that higher water temperatures result in higher biological respiration

The Authority requested that IMC Phosphates provide historical DO data for these stations and evaluate the historical patterns found during that period. (See attached report.) The historical data was not collected on a consistent frequency with gaps in the data, so any conclusions drawn may be suspect. In general terms however the historical data was collected prior to major mining activities in the Horse Creek basin and show similar patterns to our current data. Both data sets show that station 2 is frequently below 5.0 DO and the other stations on occasion also drop below 5.0 DO. As such the Authority is not going to request

IMC

RECEIVED
SEP 14 2004

IMC Phosphates Company
P.O. Box 2000
Mulberry, Florida 33860-1100
863.428.2500

September 9, 2004

Regular Mail

Mr. Samuel S. Stone
Environmental Affairs Coordinator
Peace River Facility
8998 S.W. County Road 769
Arcadia, FL 31269

RE: Horse Creek Stewardship Program
Depressed Dissolved Oxygen Concentrations

Dear Mr. Stone:

We have often recorded dissolved oxygen concentrations less than 5.0 mg/l (5.0 mg/l is both the Class III water quality standard for dissolved oxygen and the Stewardship Program trigger level) at the HCSW-2 Station at Goose Pond Road. Recently we have seen dissolved oxygen concentrations at all four sampling stations below 5.0 mg/l (Table 1 (attached) has the dissolved oxygen concentrations recorded on August 30, 2004). These concentrations are thought to be a result of the rain and (chiefly the high winds and resultant organic deposition) from Hurricane Charlie. This effect has been seen both in Horse Creek and the entire Peace River Basin by others. Attached is data from the Southwest Florida Water Management District that includes dissolved oxygen concentrations from throughout the basin on August 22, 2004. The depressed dissolved oxygen concentrations are seen throughout the Peace Basin (Peace River, Myakka River, Shell Creek, Charlie Creek, and Horse Creek). The depression is worst at the south end of the Basin and levels rise (especially in Horse Creek and Myakka) upstream and westward.

The course of action we would prefer is to not perform a formal impact assessment for dissolved oxygen at State Road 64, State Road 70, and State Road 72 at this time. We would rather wait and see if dissolved oxygen concentrations rebound and are back to "normal" levels in the September sampling. If you have any other questions or need any further information, please contact me at (813) 634-3922, extension 3655 at your convenience.

Sincerely,

Ross Franklin

Table 1
Horse Creek Stewardship Program - Water Quality Sampling
August 2004

Field Sampling Summary
Samples from August 30, 2004

	pH Standard Units		Conductance umhos/cm		Dissolved Oxygen mg/l		Turbidity NTU	
Horse Creek at State Road 64	6.94	D	139	D	**4.3**	D	2.56	D
Horse Creek at Goose Pond Road	6.35	D	104	D	**0.14**	D	18.2	D
Horse Creek at State Road 70	6.32	D	117	D	**0.27**	D	14.6	D
Horse Creek at State Road 72	6.13	D	144	D	**0.58**	D	9.3	D

Data Qualifiers
Chemical Analyses

D The measurement was made in the field.

The Horse Creek at State Road 64 dissolved oxygen concentration of 4.3 mg/l is below the trigger level of 5.0 mg/l.

The Horse Creek at Goose Pond Road dissolved oxygen concentration of 0.14 mg/l is below the trigger level of 5.0 mg/l.

The Horse Creek at State Road 70 dissolved oxygen concentration of 0.27 mg/l is below the trigger level of 5.0 mg/l.

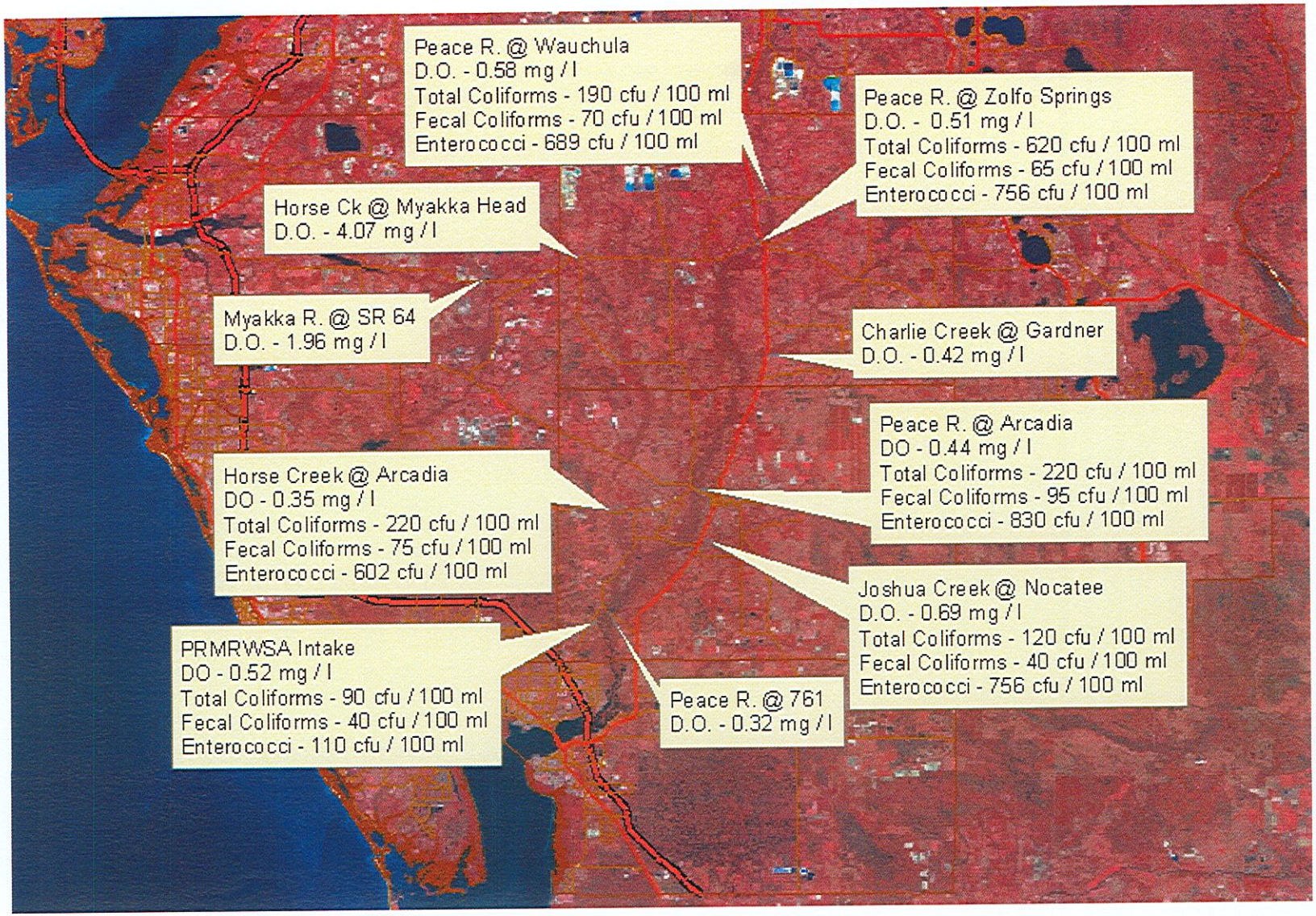
The Horse Creek at State Road 72 dissolved oxygen concentration of 0.58 mg/l is below the trigger level of 5.0 mg/l.

Peace River Basin Water Quailty Data
SWFWMD
August 22, 2004

The table prints out a little funny, but we can't edit the .pdf

Data

parameter	units	HORSE CRK. @ SR62	PRMRWSA INTAKE	PEACE R. @761	JOSHUA CRK.	HORSE CRK @ ARCADIA	PEACE R. @ ARCADIA	PEACE R. @ ZOLFO SPRING	CHARLEE CRK. @ GARDNER	PEACE R. @ WAUCHULA	Peace R. @ Wauchula	HORSE CRK. @MYAKKA HEAD	MYAKKA R. @ SR 64	PRMRWSA INTAKE
date	m/dd/yyyy	8/22/08	8/22/08	8/22/08	8/22/08	8/22/08	8/22/08	8/22/08	8/22/08	8/22/08	8/22/08	8/22/08	8/22/08	8/21/08
time	hhmm	1101	1030	1115	1145	1245	1315	1500	1410	1430	1044	1530	1545	
water temp.	deg C		29.78	30.00	30.11	30.2	29.86	29.8	30.36	29.37		29.07	30.3	
secchi	meters		0.3		0.25	0.3	0.3	0.25	0.3	0.25		0.3	0.25	
conductivity	umho/cm		179	169	309	117	203	256	162	261		119	75	
diss.Oxygen	mg/l		0.52	0.32	0.69	0.35	0.44	0.51	0.42	0.58		4.07	1.96	
diss.Oxygen	%		5.9	4.4	7.1	4.7	6.5	6.6	5.7	7.5		53.4	27.2	
pH	units		6.54	6.59	6.8	6.5	6.54	6.74	6.35	6.8		6.8	6.4	
salinity	0/00		0.08	0.08	0.15	0.05	0.09	0.12	0.07	0.12		0.05	0.03	
total depth	meters		3.20											
t-coliforms	#/100ml	160	90		120	220	220	620		700	190			
f-coliforms	#/100ml	70	40		40	75	95	65		295	70			
Enterococci	#/100ml	222.4	109.7		755.5	601.5	829.7	755.5		656.6	689.3			
TSS	mg/l	8	9		5	6	8	5			6			8
Turbidity	NTU	6.6	16.5		12.9	10.1	9.8	8.3			9.5			11.6
Color	PCU	210	210		225	225	210	195			210			240
sample depth	meters		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	


Peace R. @ Wauchula
D.O. - 0.58 mg / l
Total Coliforms - 190 cfu / 100 ml
Fecal Coliforms - 70 cfu / 100 ml
Enterococci - 689 cfu / 100 ml
Peace R. @ Zolfo Springs
D.O. - 0.51 mg / l
Total Coliforms - 620 cfu / 100 ml
Fecal Coliforms - 65 cfu / 100 ml
Enterococci - 756 cfu / 100 ml
Horse Ck @ Myakka Head
D.O. - 4.07 mg / l
Myakka R. @ SR 64
D.O. - 1.96 mg / l
Charlie Creek @ Gardner
D.O. - 0.42 mg / l
Peace R. @ Arcadia
DO - 0.44 mg / l
Total Coliforms - 220 cfu / 100 ml
Fecal Coliforms - 95 cfu / 100 ml
Enterococci - 830 cfu / 100 ml
Horse Creek @ Arcadia
DO - 0.35 mg / l
Total Coliforms - 220 cfu / 100 ml
Fecal Coliforms - 75 cfu / 100 ml
Enterococci - 602 cfu / 100 ml
Joshua Creek @ Nocatee
D.O. - 0.69 mg / l
Total Coliforms - 120 cfu / 100 ml
Fecal Coliforms - 40 cfu / 100 ml
Enterococci - 756 cfu / 100 ml
PRMRWSA Intake
DO - 0.52 mg / l
Total Coliforms - 90 cfu / 100 ml
Fecal Coliforms - 40 cfu / 100 ml
Enterococci - 110 cfu / 100 ml
Peace R. @ 761
D.O. - 0.32 mg / l

Charlotte Sun Herald
8/30/04

This is an article where Dr. Tomasko of the District talks about the hurricane's effect on the Basin and on dissolved oxygen concentrations in particular.

Sun and weekly Herald sun-herald.com Mon, August 30, 2004

advertisement

08/30/04

Downed trees cause fish kill

Hurricane Charley blew down so many trees throughout the Peace River Valley that rotting vegetation is fueling a major bacterial bloom, a state water quality scientist said.

The bloom has depleted dissolved oxygen levels in the river, and that is causing a significant fish kill, according to Dr. Dave Tomasko, an environmental section manager for the Southwest Florida Water Management District.

As a result, the river, and eventually most of Charlotte Harbor, will be plagued with dead fish and an odor of sewer gas for weeks, he said.

"For the next couple of months, it's probably not going to be a whole lot of fun" to be out on Charlotte Harbor, Tomasko said.

Natural fish kills have occurred periodically in the past when oxygen rich freshwater floating on the surface of the estuary flips with oxygen-depleted saltier water near the bottom.

But this kill is being driven by another phenomena, Tomasko said. It's caused by the process in which anaerobic microbes break down organic material. The process uses up the oxygen in the water.

The microbes, which work to putrefy organic material, generate both methane and hydrogen sulfide gases. Methane is also produced by the breakdown of sewage and the odor of hydrogen sulfide is associated with rotten eggs.

Tomasko, who sampled water quality in several upriver towns after the hurricane, also pointed out the river is above flood stage. Rotting vegetation is submerged in standing water that will be draining into the river for some time.

With all the organic material washing into the creeks, "the bacteria are going crazy," said Tomasko.

"It's probably a good idea for no one to go in the water for a while," he added. "When the oxygen levels are low, the bacteria that exist in it can be a little more dangerous."

Last week, a team of Department of Environmental Protection wastewater plant regulators also toured Peace River towns in DeSoto and Hardee counties damaged by the storm. Their mission was to sample river water and check for sewage plant spills. They tested for bacteria, turbidity and dissolved oxygen.

They found that the lack of dissolved oxygen in the Peace River and many of

its major tributaries was widespread and significant.

Normally, the state considers 5 parts of oxygen per million acceptable for rivers and streams. But the Peace River and most parts of Joshua, Charlie and Horse creeks had less than 1 percent.

For example, the Peace River sampled at Arcadia had only .44 parts per million oxygen, "which means there really isn't even oxygen for fish to live," said Tomasko.

"Most sport fish can't survive on that," he added. "When that water moves down into the harbor, we think that's going to create a significant fish kill."

Horse Creek, normally a near-pristine tributary of the Peace, had only .35 parts per million oxygen -- except for its uppermost wetlands, an area known as the Myakka Head. There, the oxygen level was a near-normal 4 parts per million.

There was little storm damage in the Myakka Head.

The investigation found that none of the sewage treatment plants upriver was illegally discharging pollution. That's despite the fact most of them lost electrical power as a result of the storm, said Jeff Greenwell, a DEP environmental services section supervisor.

There was no indication any of treatment plant ponds overflowed, Greenwell said. One factor that helped avert such a spill was the fact many of the residents of areas served by sewage plants had either vacated or haven't returned home since the storm, so flow to the plants was minimal, he said.

Greenwell said the river and creeks smelled foul even in areas where there were no people or sewer plants upstream.

"During our drive around, you could smell the river pretty strongly," Greenwell said. "What we did see was lots of trees down. It looked like the hurricane had gone right up the river."

There are 21 wastewater treatment plants in DeSoto County; Hardee County has 15.

Some of the utility companies that had regained electrical power last week were offering their generators to the ones without, Greenwell said.

Greenwell said he is unaware of any phosphate slime or wastewater spill that occurred as a result of the storm.

Fecal coliform bacteria, which is an indicator of sewage pollution, was found at very high levels at the Port Charlotte Beach Complex in Port Charlotte, said Bob Vincent, environmental administrator for the state health department.

Samples taken at the complex last week had a fecal bacteria count of 1,500 per 100 milliliters. The state prohibits swimming in water with more fecal bacteria than 400. Raw sewage has 300,000 to 1 million parts.

"There is no question that swimming contact with the river water may have health effects," Vincent said. "Stormwater has a tendency to cleanse the land and carry the waste to the river, and Florida's land is not sewage-free."

All of the samples along Gulf beaches tested safe for swimming, he added.

"You go up U.S. 17 and there's nothing but devastation all the way up to Wauchula," he said. "All the leaves are blown off the trees, trees are toppled over and all this stuff is rotting in standing water."

In the long term, the fish kill may benefit certain bottom-feeding species, Tomasko said.

"All the fish that are going to die are going to sink to the bottom and are going to get eaten by something," he said.

The Peace River drinking water plant stopped withdrawing water from the river last week. It began pumping from its 600-million-gallon reservoir instead, said Pat Lehman, executive director of the Peace River Manasota Regional Water Supply Authority.

The pumping was switched due to pumps getting back online at the reservoir, he said. However, by then, the quality of the river water had also declined.

For the water plant, the color of the water is a bigger problem than the lack of oxygen.

"It's jet black," Lehman said. "It's got to come way up before we can use it."

The authority has enough water stored in aquifer wells and the reservoir to last until spring, Lehman said.

You can e-mail Greg Martin at gmartin@sun-herald.com.

By GREG MARTIN

Staff Writer

Sunline © 2004 All rights reserved.
Your Local Internet Service Provider
A division of Sun Coast Media Group Inc.
Publishers of the Sun newspapers.

PEACE RIVER/MANASOTA REGIONAL WATER SUPPLY AUTHORITY
Serving the Citizens of Charlotte, DeSoto, Manatee & Sarasota Counties since 1982

HON. ADAM S. CUMMINGS, CHARLOTTE COUNTY | HON. TERRY L. WELLES, DESOTO COUNTY | HON. PATRICIA M. GLASS, MANATEE COUNTY | HON. SHANNON STAUB, SARASOTA COUNTY

PATRICK J. LEHMAN, P.E., EXECUTIVE DIRECTOR

September 15, 2004

Ross Franklin
IMC Phosphates MP Inc.
PO Box 2000
Mulberry, FL 33860-1100

RE: Horse Creek Stewardship Program / Depressed Dissolved Oxygen Concentrations

Dear Mr. Franklin:

The Peace River Manasota Regional Water Supply Authority (Authority) is in receipt of your letter dated September 9, 2004 concerning the above subject matter. The Authority is uniquely aware of the affects of Hurricane Charlie on the water quality of the Peace River at our Facility. Through the efforts of staff from the Department of Environmental Protection (DEP) and the Southwest Florida Water Management District (District), we have been appraised of similar water quality issues along the main channel of the Peace River up to Wauchula and many of its tributaries.

Since the primary charge of the Horse Creek Stewardship Program is to monitor the affects of phosphate mining on Horse Creek, and these conditions are clearly the result of Hurricane Charlie, we concur that a formal impact assessment of low Dissolved Oxygen levels is not warranted at this time. We do however request that monitoring for Dissolved Oxygen continue with the routine monthly monitoring program. Should these conditions continue for an excessive period, then we may have to reconsider this decision.

Yours truly,

Samuel S. Stone
Environmental Affairs Coordinator

xc:

Pat Lehman	(w / attachments)
Sunny Diver	(w / attachments)
Ralph Montgomery	(w / attachments)
Rob Brown	(w / attachments)
Terry Briggs	(w / attachments)
James Chisholm	(w / attachments)
John Ryan	(w / attachments)