2020 Annual Newsletter

Sny Island Levee Drainage District

From year to year, there's just not a dull moment in the life of the Sny. It seems like one thing after another makes life more challenging each year that we move forward with a new chapter in the Sny. From battling flood events to recovering from floods, to completing the improvement of four miles of river levee, dealing with torrential rain events to constructing two new pump stations; life in the Sny isn't boring. Oh, and we mustn't forget while that was happening, we assisted with the replacement of a key bridge crossing the Sny facilitating the delivery of fuel to Pump Station 1, rehabilitated the channel of one of our 15 sedimentation basins, repaired inside slopes in another basin along with our routine work in maintaining more than 150 miles of river, creek and basin levees. No complaints though. It definitely keeps us on our toes.

A project that was touched on at our 2019 Annual Meeting but not mentioned in any newsletter was the replacement of the 190th Street Sny bridge in Section 23 of Cincinnati Township in Reach 1. Wear and tear over the years along with the effects of exposure to the elements led to the bridge being condemned in the late fall of 2019. Constructing a new bridge was going to be delayed for several years due to budget constraints from Pike County. However, with the cooperation of the County, Cincinnati Township and the Sny, a plan calling for the installation of rail cars to replace the bridge was arrived at. Once hydraulic studies were completed on the efficiency of the rail cars and permits were secured, Sny crews removed the old bridge structure. Construction involved the operation of Pump Station 1 to draw down the elevation of the Sny as much as possible along

One Of The Two Rail Cars Being Delivered To The Project Site

with closing the aqueducts at Hadley McCraney Creek. A coffer dam was constructed upstream of the construction site to block the remaining flow of the Sny while the cars were moved into place. The project site was then back-filled and riprap installed to finish the project. The completed project will provide a reliable crossing for years and years to come at a much lower cost to the taxpayers. Our appreciation goes out to the cooperation extended from the Pike County Board, the Pike County Highway Department and Cincinnati Township without which this project would not have been possible.

2019 Flood Recovery


Sand Bags To Be Removed
Main Stem River Levee

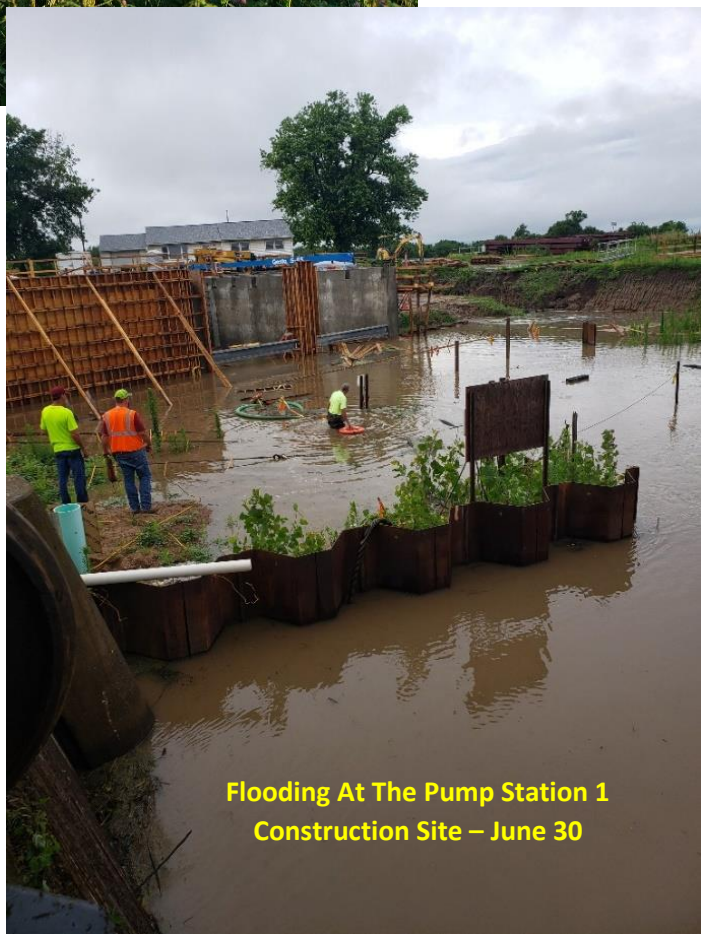
Much of this past year's activity involved recovery from the second highest flood in the history of the Hannibal gauge. Sand bags and debris had to be removed, the windrow of sand on top of the levee had to be leveled to the pre-flood elevation and slopes had to be restored. Even though our Administrative Assistant, Trudi Brummell, kept meticulous records on costs associated with such an event, FEMA representatives were on site through much of the first half of 2020 to put those costs in the new government format for submittal of claims. The District spent nearly $1,500,000.00 in 2019 flood-fighting activities over and above our Annual Maintenance income. That being the case, we were forced to borrow $1,500,000.00 so we would have revenue available to cover expenses. If approved by the Federal Government, the District becomes eligible for reimbursement of 75% of those costs. To date, we have been reimbursed $992,281.74. We anticipate receiving another $60,000.00 or so. Some expenses we claimed were denied. For comparisons sake, in 2008 we spent more than $6,000,000.00 on what is now the third highest flood in the history of the Hannibal gauge. The Rock Island District, U.S. Army Corps of Engineers reported the successful flood fight in 2008 prevented $268,124,400.00 in damages in the Sny. Based on those estimates, the Sny's 2019 flood fight likely prevented nearly $300,000,000.00 in damages. To go one step further, the damages prevented by the Sny's flood-fighting activities in 2001, 2008, 2013, 2014 and 2019 exceed $1,100,000,000.00.


Windrow Of Sand To Be Leveled

Pump Station Operations

Pumping operations at all three of the Sny's existing pump stations were about half of what we encountered in the 2019 flood year, but exceeded operations for the three years in advance of 2019. We had a wet spring and early summer in 2020. In fact, late June and early July were extremely wet. On June 30 of this year, we experienced a rain event that dumped anywhere from 4.5" to 7.5" of rain throughout the system. This event created excessive interior flooding over our entire district. Roads were closed for several days due to flooding conditions in Reach 3. Water over-topped the bridge and levees of Grubb Branch and basin in Reach 2 twice as well as Brewster Basin in Reach 3. Crops were damaged throughout the entire system with many acres flooded. Sny stages exceeded damage elevation at all three pump stations. In some cases, we were more than 3' over damage elevation. Fortunately, we did not have any malfunctions at any of the pump stations

Reach 1 South of Hull



Flooding At The Pump Station 1 Construction Site – June 30

Crop Damage From June 30 Rain Event – Reach 4

that caused us to shut down for repairs. 24 hour-a-day, seven-day-a-week operations were the norm at all three stations early in July. This type of operation went on for several days before conditions got to be more manageable.

The image on the right is taken along the road from Pike Station to Ill. 96 in Reach 3. The road also over-topped for a period.

Reach 3 Flooding

Image on the left is a shot of the Pigeon Creek Basin Trash Rack and outlet taken on July 8, 2020. The restrictor on the outlet is completely over-topped with the trash rack nearly over-topped.

Noted earlier was the fact the township bridge crossing Grubb Branch in Reach 2 along with the basin and levees overtopped twice in that June/July timeframe. Grubb Basin is one of 15 sedimentation basins located in the Sny with an estimated acreage of 2,700. When the water finally subsided, equipment was moved in to remove trash that had accumulated at the basin outlet obstructing flow as well as debris left on the levees. In addition, brush that had grown up in a section of the creek channel was removed and the channel opened up. Once the channel was cleaned, the opening of the channel was re-routed to direct flow into the low area of the basin. Much of this work evolved from the landowner who noted a

drainage issue at the basin and reported it to Sny officials. Follow up investigation by Sny staff found the problem and resolved it as soon as possible.

Total Gallons of diesel fuel delivered to pump stations 1, 3A, & 4 "by month" per individual year.													Yearly
	January	February	March	April	May	June	July	August	September	October	November	December	Total Gal
1996	0	0	43,708	21,650	108,839	58,505	22,202	0	0	0	29,207	7,400	291,511
1997	0	14,518	36,478	7,300	58,119	22,309	0	0	0	0	0	0	138,724
1998	0	30,005	36,204	80,214	59,260	44,014	45,005	15,001	14,435	0	29,701	0	353,839
1999	0	14,701	22,000	59,700	29,301	52,099	22,102	0	0	0	0	22,199	222,102
2000	0	0	0	0	0	37,105	14,900	0	0	0	0	0	52,005
2001	0	7,402	29,909	44,014	111,912	59,171	22,627	0	0	0	0	0	275,035
2002	0	0	15,057	29,800	112,357	44,506	0	0	0	0	0	0	201,720
2003	0	0	0	0	21,730	29,311	14,808	0	0	0	0	14,804	80,653
2004	0	0	44,123	14,732	29,916	43,718	0	14,694	15,000	0	0	0	162,183
2005	0	0	29,596	14,604	35,905	0	0	0	0	0	0	0	80,105
2006	0	0	14,698	15,061	7,484	15,100	0	0	0	0	0	0	52,343
2007	0	0	0	37,038	29,583	0	44,702	21,911	0	0	0	0	133,234
2008	0	22,734	37,006	22,195	126,786	126,478	119,234	29,975	44,918	0	0	22,098	551,424
2009	22,384	0	37,587	51,600	90,230	37,084	7,600	22,697	0	29,728	74,535	22,549	395,994
2010	0	15,170	50,981	75,016	60,111	118,892	88,951	74,564	82,060	14,684	7,600	0	588,029
2011	0	14,760	44,874	82,244	82,694	89,616	22,454	14,600	0	0	0	0	351,242
2012	0	22,235	0	15,000	7,500	7,451	0	0	0	0	0	0	52,186
2013	0	0	22,501	97,087	156,097	103,911	22,585	0	0	0	0	0	402,181
2014	0	0	0	37,109	30,198	37,200	81,354	22,204	22,031	29,590	0	0	259,686
2015	0	29,718	0	0	14,520	125,588	125,849	22,205	0	0	15,002	80,999	413,881
2016	29,346	14,863	36,179	14,621	36,611	0	22,366	14,405	21,927	14,704	14,813	7,598	227,433
2017	14,845	7,503	15,113	37,515	134,157	51,795	7,002	0	0	7,359	0	7,338	282,627
2018	0	7,500	14,849	22,237	29,953	21,830	30,337	7,415	14,666	66,106	22,636	29,727	267,256
2019	29,592	37,395	67,447	140,895	176,117	110,891	59,532	29,537	14,892	51,993	29,542	22,427	770,260
2020	44,890	22,366	96,023	65,854	37,230	73,396	36,731	7,435	0	0	0		383,925

Reach 1 Levee Berm Project

As has been reported in previous communications, the construction of a levee berm on the land side slope of the northern four miles of Mississippi River levee was completed just in advance of the 2019 flood event. Several hundred thousand cubic yards of sand were transported via Volvo 40-ton quarry trucks from a borrow site on the Ken and Sandy Crim farm in Fall Creek Township. The sand was in place before the 2019 flood event and proved invaluable in fighting off what proved to be the second highest flood on the Hannibal gauge. There are some who believe that section of levee would not have held but for the berm being in place to fortify the levee slope and reduce seepage. A key component of the project that gets little mention is the Fall Creek Township tar and chip road without which the project would not have been possible. In advance of the project, the Sny Board reached an agreement with the Fall Creek Township Board and Road Commissioner that permitted the Sny to use the road in exchange for the Sny repairing any damage the road section might suffer during the project. A major portion of that repair work was completed late this fall.

Diamond Construction ground up about a 700' section of the road damaged by the huge quarry trucks, added a layer of base gravel then topped it off with two lifts of tar and chip surfacing. One more lift of tar and chip will be done in the spring of 2021 to completely finish the project. Many thanks to the Fall Creek Township Board and their Road Commissioner, Bob Perry, for their help throughout this most important project.

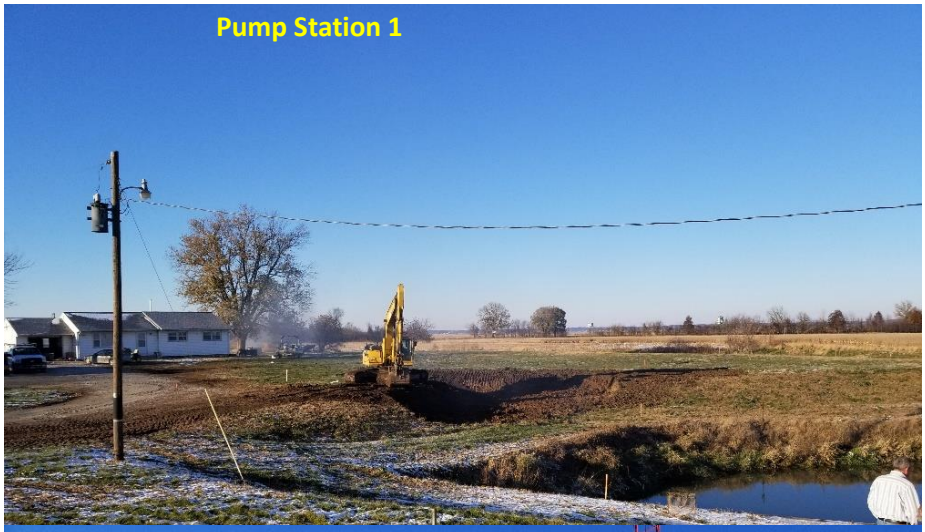
Pump Station Construction 16th Additional Assessment

An update for the landowners that I'm sure most want to hear about is where are we with the construction of the two new pump stations for the Sny. About $21,000,000.00 of the more than $25,000,000.00 in project costs associated with the 16th Additional Assessment is for the construction of a new pump station adjacent to Pump Station 1 at Hull and another new pump station adjacent to Pump Station 3A at Pleasant Hill. Magruder Construction from Eolia, Missouri got the bid for the new station at Pleasant Hill with Bleigh Construction awarded the bid for the new station at Hull. As a side note, the bid for work at Pump Station 1 came in high at the initial bid opening so that project was re-bid. The contract for that project was awarded about two months after Magruder was awarded the bid for the new station at Pleasant Hill. As is usually the case, projects of this magnitude are not without their problems.

Both contractors were able to get started on their respective projects late in 2018. Some work carried on through the winter of 2018/19. Wet weather in the spring of 2019 slowed progress

down and the near record flood during the summer stopped construction altogether at both locations. In fact, the contractors moved their equipment and office trailers out of the river bottoms to high ground. Construction began again in the late summer and has moved forward ever since. Major components of the two stations are the engines, gearboxes and pumps. The engines were delivered to a Bleigh warehouse in Hannibal for storage in May of this year with the gearboxes delivered for storage at Pump Station 1 in September. We anticipate receiving the pumps for 3A December 21 with delivery of the pumps to Pump Station 1 December 18. The following pages will take you through the various stages of construction at each site.

Construction Begins



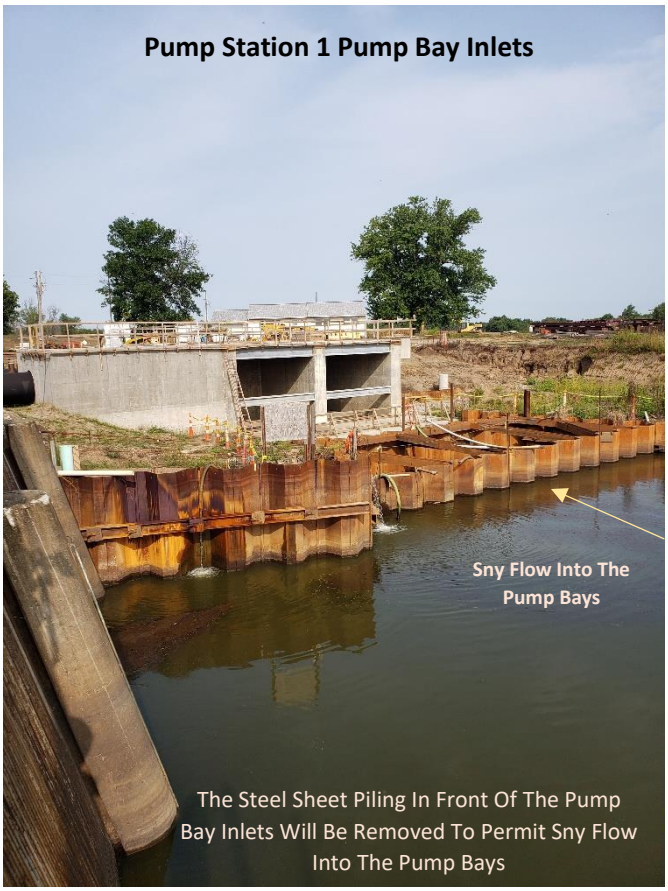

Pump Station 3A


Pump Station 1


3A Looking Down Into The Pump Bays
Sny Channel

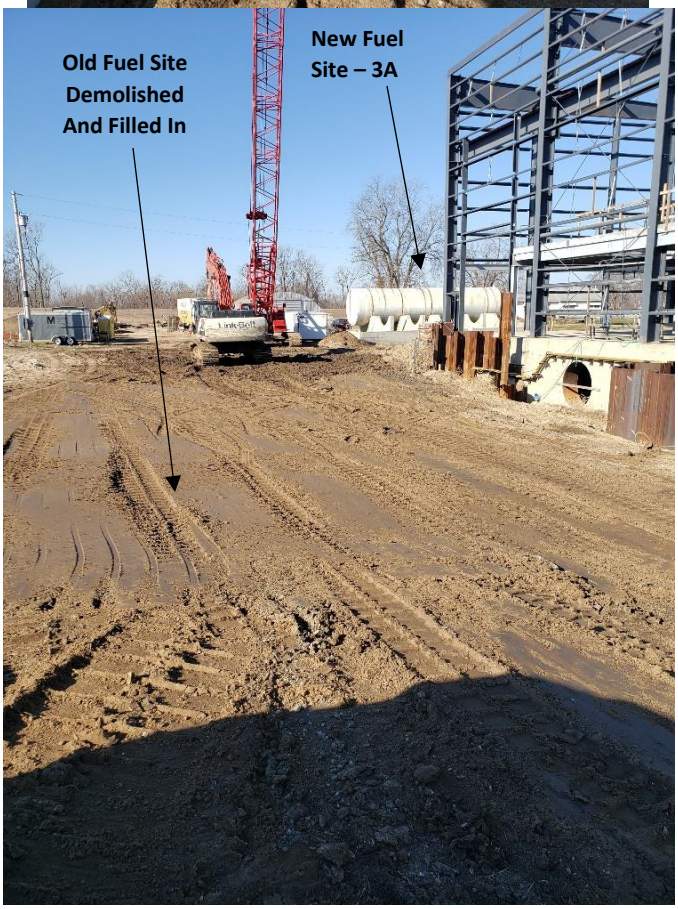

Pump Station 1 Pump Bays – Sny Channel In The Background

The images on this page show progress from both contractors on the construction of the two pump bays at each project site. The walls of each pump bay provide the support for the concrete floor at ground level at each location. The 3A image at the top left of this page shows the Sny in the background. When finished, the earthen material shown between the Sny and the pump bay inlets will be excavated out permitting the Sny channel to flood directly into the pump bays. The bottom of the image shows the openings where the discharge pipe will come out of the pump station and ultimately up an over the levee into the river. The top right image shows concrete being poured for the pump bay walls at Pump Station 1. The image at the bottom right shows workers finishing the concrete floor at ground level. The pump bay inlets for Pump Station 1 are shown at the bottom right of that image. The pump station aligns with the Sny channel in such a way the Sny will flow directly into the two pump bays.



The image above shows workers finishing the concrete second floor at Pump Station 3A. The second floor at each pump station is what we call the operational floor where the engines, electrical systems, etc. are located. If, heaven forbid we have a levee failure, these components will not be damaged and the pump station can remain operational to de-water the area once the levee breech is repaired.

There are some specific differences in various aspects of each of these projects. For instance, an important part of the Pump Station 1 project is the installation of a polyethylene piling "cut-off" wall at the top of the levee and at the levee toe parallel to the road behind the pump station to remedy a seepage issue at that location. Over the years, numerous "sink-holes" have developed during flood events around and under our current pump station. This "cut-off" wall will solve that problem. Due to the orientation of the new pump stations, the discharge pipes at Pump Station 1 come out the side of the structure while the discharge pipes at Pump Station 3A come out the back. Also, due to the orientation of the building, the fuel containment area where our two 30,000 gallon fuel storage tanks sit at Pump Station 3A has been relocated to make way for the pump station discharge pipes.



Just as a refresher, the impact the addition of these two new pump stations will have on our existing flood control system is dramatic. We are adding two 72" diameter pumps powered by 2,000 hp MTU diesel engines capable of pumping more than 400,000 gallons of water per minute combined at Pump Station 3A. At Pump Station 1 we are adding two 58" diameter pumps powered by two 1,500 hp MTU diesel engines that are capable of pumping about 280,000 gallons of water per minute combined. In other words, we are adding nearly 700,000 gallons per minute pumping capacity at these two pump stations combined when river stages are at or near normal conditions. During flood events, pumping capacity goes down due to the increased head pressure at the discharge ends of the pumps because of the higher river stages. However, these new pumps will operate much more efficiently and effectively than our current pumps at the higher river stages we are seeing ever more frequently. For example, at a 100-year flood event, these new pumps at Pump Stations 1 & 3A will still pump more than 570,000 gallons of water per minute combined. This is much more than our current system's capabilities which couldn't keep up with just the seep water in the 2008 flood.

72" Pump Loaded On A Flatbed Trailer In New Orleans Ready For Shipment To Pump Station 3A

One Of The MTU Engines In Storage At A Bleigh Construction Warehouse In Hannibal

Three Radiators Stored In Bleigh Construction Warehouse In Hannibal

A major difference between these new engines and our current engines is the radiators on the new ones are exposed to the outside air, unlike our current engines whose radiator systems are submerged in the individual pump bays. Heat transfer fluid is circulated through the underwater radiators to cool the engines. These new engines will have radiators mounted outside the pump stations in open air with 50 hp. fans blowing air across the radiator coils containing heat transfer fluid. Maintenance on these radiators will be much easier. With our current cooling systems, if a leak occurs in the radiators, the pump bay containing the equipment must be de-watered to allow staff to find and repair the leak. This "de-watering" process is time-consuming, usually resulting in the shutdown of the engine/pump for several days. Granted, repairs will be necessary at some point in time with the new systems, however the equipment is readily accessible for those repairs to occur.

All in all, we're excited about the future of the Sny with the addition of these two new pump stations. We look forward to them operating in 2021.

With the holiday season at hand, all of us at the Sny want to extend our warmest and best wishes to all of you for a Merry Christmas and a healthy, safe and prosperous New Year. We truly look forward to working with all of you in the coming New Year!

In observance of the holiday season, the Sny Business Office will be closed December 24th, 25th and 31st as well as January 1st.

Dan Lundberg - President

Brady Borrowman - Secretary

Russell Koeller - Commissioner

If you would like to access this year's or previous years' newsletters electronically, they can be found at www.snyisland.org/newsletterhtm.

<u>The financial information on the last page presents a statement of revenue and expenditures for the fiscal year ending October 31, 2019.</u>

SNY ISLAND LEVEE DRAINAGE DISTRICT
STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES
GOVERNMENTAL FUNDS
YEAR ENDED OCTOBER 31, 2019

	General Annual Maintenance	Special Revenue Fund Reserve Fund Seepage	Capital Projects Fund Reserve Fund Fall Creek	Debt Service Fund	Total Governmental Funds
REVENUES					
Assessments - general	$ 1 887 144			$ 13 397	$ 1 900 541
Assessments - 16th additional assessment				1 532 519	1 532 519
Material and pipe sales	77 405				77 405
Lease income	14 500				14 500
Farm income	32 504				32 504
Investment earnings	180 421	$ 14 556	$ 4 292		199 269
Interest on 16th additional assessment				664 073	664 073
Miscellaneous	18 562				18 562
Total revenue	2 210 536	14 556	4 292	2 209 989	4 439 373
EXPENDITURES					
Current:					
General administration					
Payroll	123 723				123 723
Office supplies	6 606				6 606
Building utilities and maintenance	13 366				13 366
Insurance	130 322				130 322
Legal and audit	374 486				374 486
Engineering	58 173				58 173
Miscellaneous	80 006				80 006
Pumping Operations					
Payroll	261 800				261 800
Operating expenses	1 913 188				1 913 188
Heavy Equipment Operations					
Payroll	46 379				46 379
Equipment expenses	217 394				217 394
Other Operations					
Payroll	24 560				24 560
Equipment expenses	52 448				52 448
Pipe and wire rope	66 559				66 559
Shop supplies and maintenance	8 294				8 294
Levee and ditch maintenance	50 135				50 135
Miscellaneous					
Payroll taxes	38 698				38 698
Employee benefits	134 894				134 894
Debt Service:					
Principal	662 093			350 000	1 012 093
Interest	52 892				52 892
Capital Outlay:	6 675 827				6 675 827
Total expenditures	10 991 843	-	-	350 000	11 341 843
OTHER FINANCING SOURCES					
Transfers	444			(444)	-
Special assessment bond issued	18 200 000				18 200 000
Debt Certificate proceeds	1 083 500				1 083 500
Proceeds from Note Payable	144 407				144 407
Net change in fund balances	10 647 044	14 556	4 292	1 859 545	12 525 437
Fund balances - beginning	2 913 320	1 849 889	573 943	339 514	5 676 666
Fund balances - ending	$ 13 560 364	$ 1 864 445	578 235	$ 2 199 059	$ 18 202 103

The accompanying notes are an integral part of these financial statements.