Village of Put-in-Bay
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Economic Study

Waterline vs Ozone

Contents

Executive Summary

The Village of Put-in-Bay in meeting its obligations in providing safe drinking water, and mostly due to Harmful Algae Blooms (HAB), is in need and required to provide a solution to meet these obligations. Two methods have been discussed.

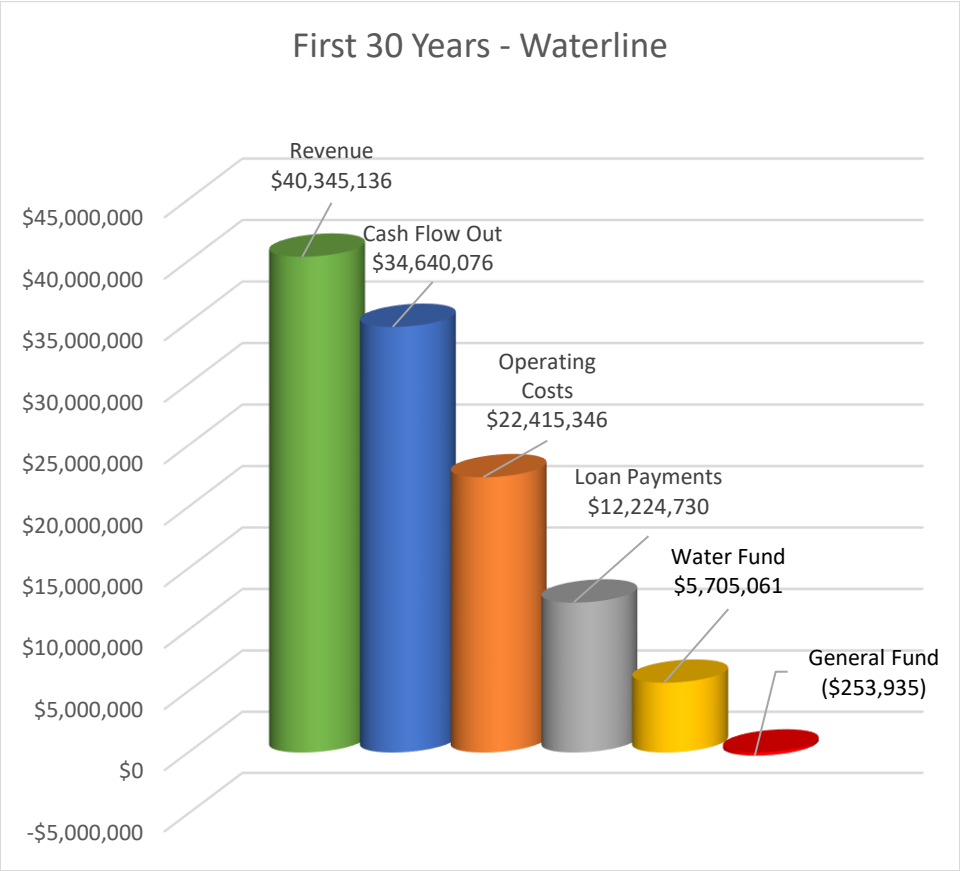
Installing ozone generating equipment into the existing Water Treatment Plant (WTP) has received most notably much of the attention. Installing waterlines to the mainland to displace the need for the WTP gets attention but a concern for the feasibility is a major fear. However, given the results of this economic study showing cash flows (separate spreadsheet) it becomes clear that this fear should be relieved.

The Village of Put-in-Bay contracted with Poggemeyer Design Group (PDG) possibly February 2017 to provide a Waterline to Mainland vs Water Treatment Plant/Ozone study. The study was to be used by council to understand which method proved to be most cost efficient, without relying on uninformed opinion and/or unresearched information. As of this date nothing has been received back from PDG. Given this fact the The Village of Put-in-Bay is placed in a difficult position of not having all the necessary information necessary to provide for a fuller understanding of the projects. As a result, this creates a condition where the ability to complete a due diligence lacks severely.

Further, the recent lack of responsiveness of the village to the Ohio Environmental Protection Agency (OEPA) in providing a permanent solution to the HAB issues and additional issues has brought increased pressure from the OPEA. This increased pressure is forcing decisions that may lead the village into an uninformed economic decision, which risks becoming viewed as a blunder of epic proportions. From known information this spreadsheet presents an understanding of most of the economic impacts regarding the two choices.

Highlights (Charts and Graphs)

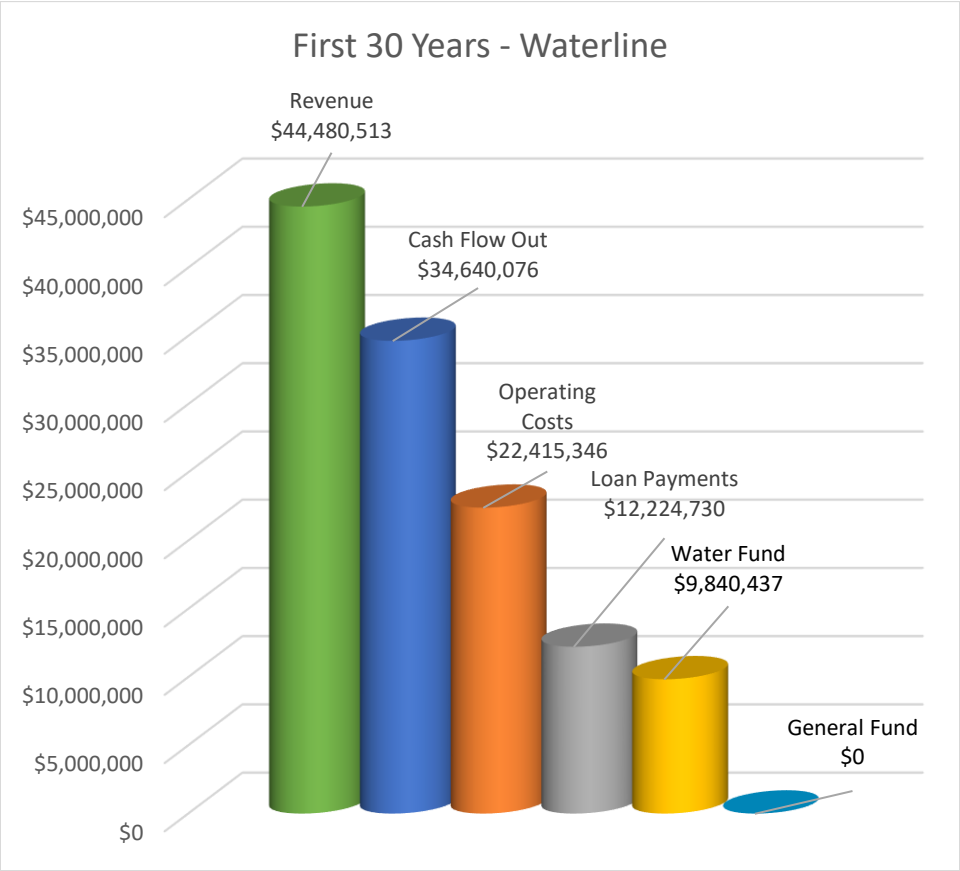
The charts below quickly identify the differences in the two choices and clearly shows the waterline is the best economic solution. The WTP/Ozone chart does not include future costs identified in the HAB plan by PDG regarding needed asset replacement due to end of life aging. These costs could easily be an additional $20M over the next 10 to 30 years and push the cash flow out to $60M or more. Whereas the life expectancy of the waterline (HDPE) will likely exceed 200 years with very minimal replacement costs of support equipment.



Graph 1 - Cash Flow Source and Uses – Ozone (current rates)

Note – Title says Waterline Loan only, however all pre-existing loans are included as well.

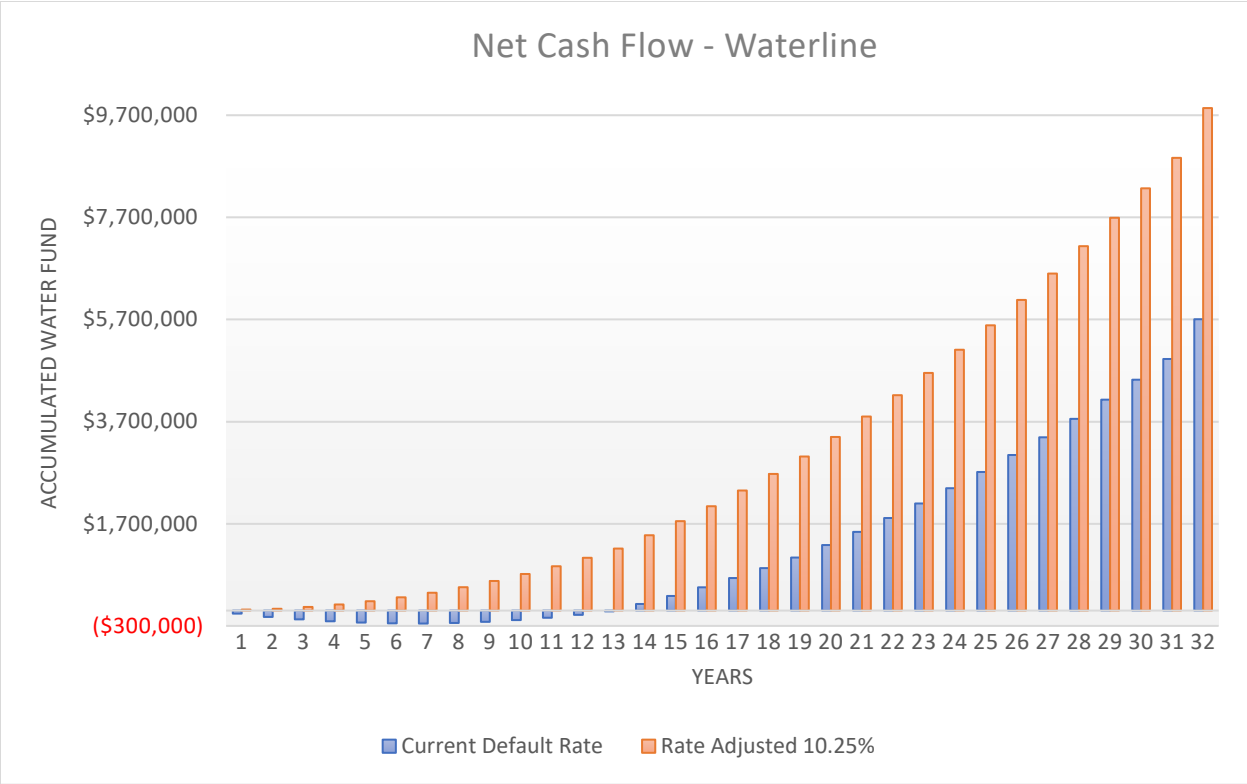
WATERLINE LOAN ONLY				
Total Revenue	**$40,345,136**			
Cash Flow Out	$34,640,076			
Operating Costs	**$22,415,346**			
Loan Payments	$12,224,730			
Water Fund	$5,705,061			
General Funds Used	($253,935)			
Loan Rate Waterline	2.0%			
Loan Rate Ozone	2.0%			
Rate Adjust	0.0%	2019	Effective one time initial	
Maintenace	0.0%	2019	rate increase	
		0.00%		



Graph 2 - Cash Flow Source and Uses – Waterline (rate increased)

Note – Title says Waterline Loan only, however all pre-existing loans are included as well.

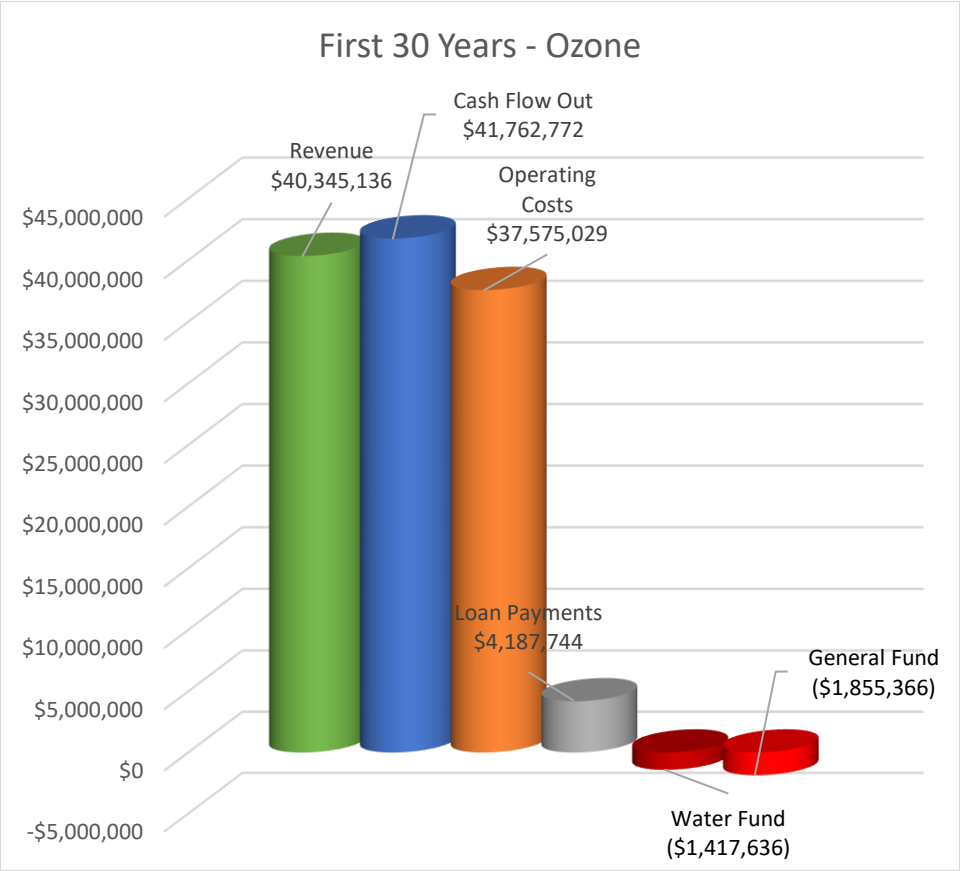
WATERLINE LOAN ONLY				
Total Revenue	**$44,480,513**			
Cash Flow Out	$34,640,076			
Operating Costs	**$22,415,346**			
Loan Payments	$12,224,730			
Water Fund	$9,840,437			
General Funds Used	$0			
Loan Rate Waterline	2.0%			
Loan Rate Ozone	2.0%			
Rate Adjust	5.0%	2019	Effective one time initial	
Maintenace	5.0%	2019	rate increase	
		10.25%		



Graph 3 - Accumulated Net Cash - Waterline

Waterline – Summary of Graphs 1 - 3

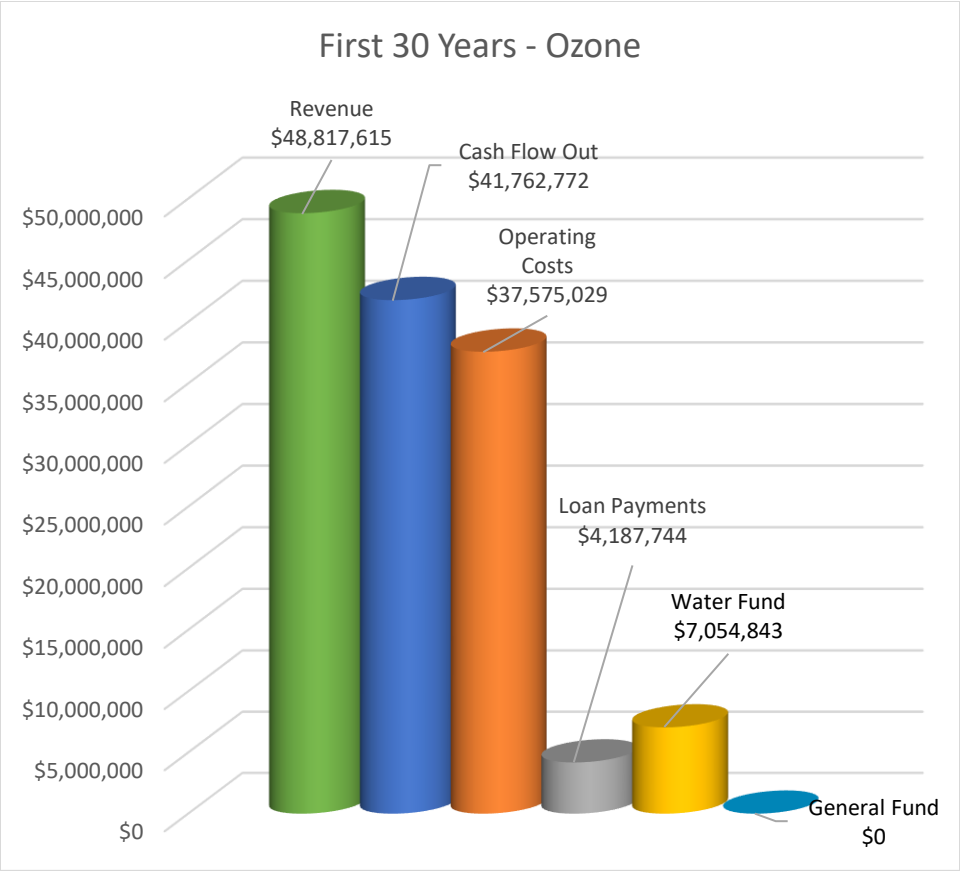
Graph 3 shows the accumulated amount year-over-year for the Water Fund. Separate graph lines developed from the data of ***Graph 1*** (blue) and ***Graph 2*** (red) was used. These lines show that it is important to adjust rates higher (red line) by a minimum of 10.25% in 2019. Not adjusting the rates (blue line) depletes the Water Fund for the early years. The lack of funding would likely need to come from the General Fund.



Graph 4 – Cash Flow Source and Uses – Ozone (current rates)

Note – Title says Ozone Loan only, however all pre-existing loans are included as well.

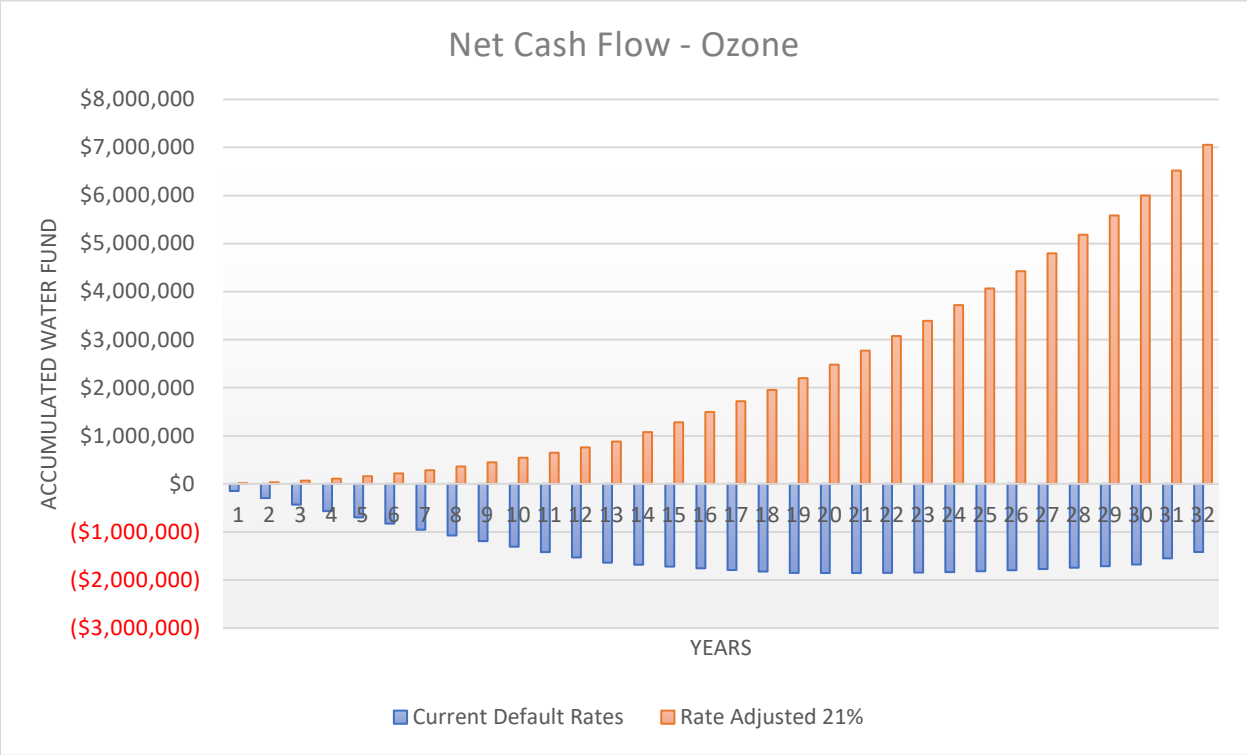
OZONE LOAN ONLY				
Total Revenue	**$40,345,136**			
Cash Flow Out	$41,762,772			
Operating Costs	**$37,575,029**			
Loan Payments	$4,187,744			
Water Fund	($1,417,636)			
General Funds Used	($1,855,366)			
Loan Rate Waterline	2.0%			
Loan Rate Ozone	2.0%			
Rate Adjust	0.0%	2019	Effective one time initial	
Maintenace	0.0%	2019	rate increase	
		0.00%		



Graph 5 – Cash Flow Source and Uses – Ozone (rate increased)

Note – Title says Ozone Loan only, however all pre-existing loans are included as well

OZONE LOAN ONLY				
Total Revenue	**$48,817,615**			
Cash Flow Out	$41,762,772			
Operating Costs	**$37,575,029**			
Loan Payments	$4,187,744			
Water Fund	$7,054,843			
General Funds Used	$0			
Loan Rate Waterline	2.0%			
Loan Rate Ozone	2.0%			
Rate Adjust	10.0%	2019	Effective one time initial	
Maintenace	10.0%	2019	rate increase	
		21.00%		



Graph 6 –Accumulated Net Cash - Ozone

Ozone – Summary of Graphs 4 - 6

Graph 6 shows the accumulated amount year-over-year for the Water Fund. Separate graph lines developed from the data of ***Graph 4*** (blue) and ***Graph 5*** (red) was used. These lines show that it is important to adjust rates higher (red line) by a minimum of 21% in 2019. Not adjusting the rates (blue line) depletes the Water Fund so severely that the Water Fund lacks funding and does begin to accumulate a positive balance until sometime beyond 32 years of operation, if ever. During this period the lack of funds would likely come from the General Fund.

Paying attention to Cash Flow Out on ***Graph 4*** shows that it exceeds Revenue.

Summary

The shortfalls are severe with the Ozone plan and require a 20% to 30% rate increase in 2019 to the consumer. The waterline shortfall is minimal and occurs in the early 6 years and is mostly a result of existing loan payments from previous projects. The waterline would eliminate the shortfalls with a minimum 10% to 11% increase.

One might ask a question, how can an $8M project be better than a $2M project, and not increase rates as severely? Answer, operating costs. Looking at the 30-year total operating costs of the all the graphs above show there is $15M less operating cost using the waterline. This $15M in savings pays for the total loan payments (2% finance rate) of $12M. The difference is accumulated into the Water Fund which provides for maintenance of systems.

Note – The $12M total loan payments includes all currently existing loan payments as well. The total loan payments for the WATERLINE ONLY ($8M – 2% - 30 yr.) is $10.7M and existing loans make up the balance. The same is true for the OZONE where total loan payments are $4.2M and the OZONE ONLY portion $2.7M.

Objectives

The immediate objectives of this study should be:

1. Meet with OEPA and review what really should be done.
2. Work with PDG or other engineering firms to complete an estimate of waterline installation.
3. Begin searching for funding.

Keys to Success

Providing this study as a tool to explain to the OEPA why forcing Ozone as the long-term solution creates economic harm and risk for the village.

Oops! What now? We bought Ozone.

Major Issues

Committing to the ozone might also mean committing to a WTP long-term, but not necessarily. Should the village not also commit to a future waterline it then must replace the existing WTP at some point. The issue of replacing the WTP in the next 10 – 20 years is already known, even without having the ozone debate.

What is unknown:

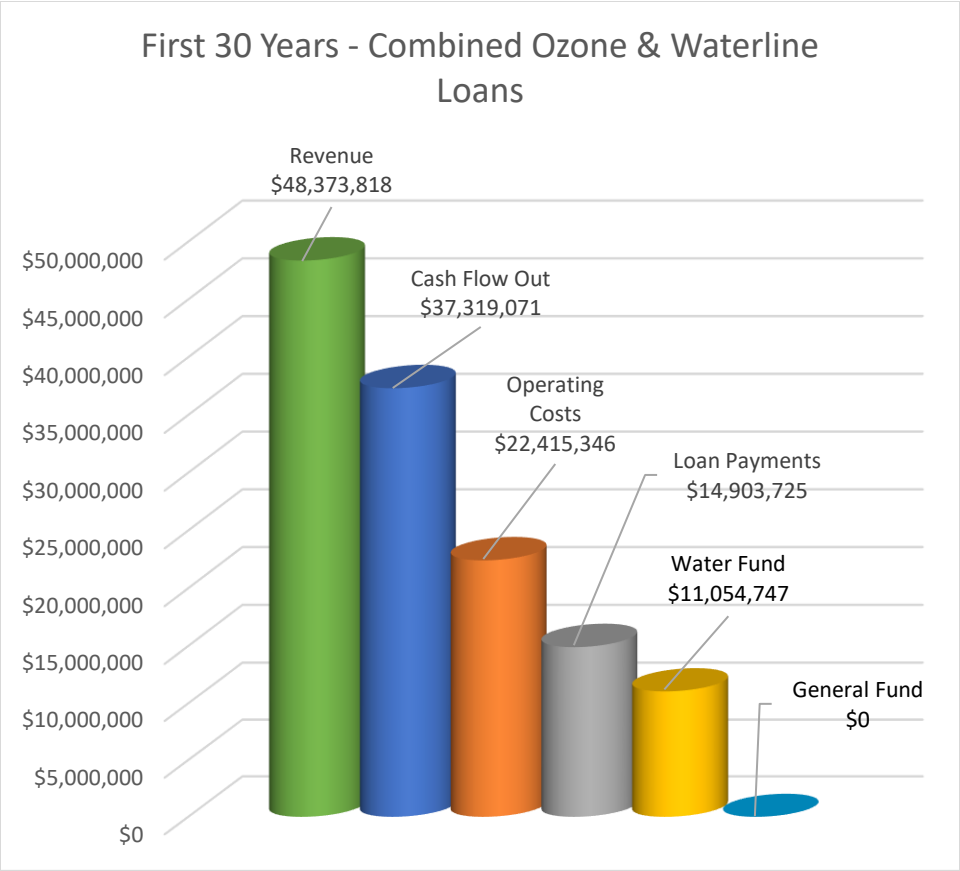
1. What type of water treatment processes may be available by then?
2. What will the OEPA permit?
3. What size of plant will be needed (given type of equipment needed)?

4. Where would a new plant be located?
5. What operator licenses would be required?
6. How many operators?
7. What new requirements will be issued by the OEPA?
8. How much will it cost to make and provide safe drinking water?
9. What rates would be needed to provide revenue that to supports and maintains operations and equipment?

The point here is the answer to these questions certainly gives one pause and to ask a question. **Is ozone the solution for The Village of Put-in-Bay?**

Combined Ozone & Waterline

Below are graphs showing what the cash flow might look like if both the ozone and waterline were installed. The outcome is like that of ***Graph 5,*** ozone only, regarding the increased rates, however the two most significant differences are Operating Costs and the elimination of the need for a future WTP replacement.



Graph 7 – Combined Ozone & Waterline Loans

Note – Title says Both Loans, however all pre-existing loans are included as well

BOTH LOANS			
Total Revenue	**$48,373,818**		
Cash Flow Out	$37,319,071		
Operating Costs	**$22,415,346**		
Loan Payments	$14,903,725		
Water Fund	$11,054,747		
General Funds Used	$0		
Loan Rate Waterline	2.0%		
Loan Rate Ozone	2.0%		
Rate Adjust	9.0%	2019	Effective one time initial
Maintenace	10.0%	2019	rate increase
		19.90%	

Description of Spreadsheet

The spreadsheet is designed to analyze cash flows. It provides an understanding of the economic consequences in choosing between the two different solutions.

1. Ozone treatment installed at the current Water Treatment Plant (WTP).

   Estimated cost to purchase and install …. $2,000,000. *(This is an engineering estimate of a scope of work currently moving toward release to bid)*

2. Installation of two separated waterlines, separate and parallel directionally drilled trenches from a previously install water main located on Catawba Island near Miller Ferry Dock.

   Estimated costs …. $8,000,000. *(This is a best guess estimate at this time supplied by PDG. The estimate is supported by previous research done by PDG and aligns well with other projects identified through searching information available on the internet.)*

The following sections will explain how this spreadsheet is constructed and the results received when running this spreadsheet.

Tabs

There are five tabs to the spreadsheet.

1. **Loans** – This tab identifies existing loan payments that the village has for previous projects related only to the WTP and water distribution. It also has a section that calculates a payment for any new loans, waterline and ozone. This tab sheet is locked.
2. **Cash Flow** – This tab provides for all the calculations and results and has a section at the top where input data is provided. Everything except Input Data is locked.
3. **Notes** – This tab has some brief descriptive notes. This tab sheet is locked.
4. **Bar Graph** – This tab has three bar graphs. The first graph at the top of the page is dynamic to any change in data. The other two graphs are fixed to the default input data and can be used as base line for the two different solution. This tab sheet is locked.
5. **Line Graph** – Used to show how the Net Cash Flow for Accumulated Water Funds.

6. **Summary Data** – Provides a recap of the calculated results from the Cash Flow tab. This tab sheet is locked.

Input Data

On the Cash Flow tab in the workbook at the top of the sheet there is an unlocked area where the input data can be changed and experimented with for different reasons and conditions.

Calculations

The method used to arrive at the cash flows is as follows:

1. **2016** sets the basis all projections. **2019** is the staring year for all the analysis.
2. **Revenue** and increased each year by the amount entered in the field labeled **VPIB Annual Price Increase.** The default value used was 3% based on ordinance of the village.
3. **Available Operational Funds** is determined each year by deducting the total amount of loan payments due in that year from the revenue. The amount left determines how much money is available for all operating costs.
4. **Cost of Operations** is based off the 2016 figure reported on financials. The amount escalates yearly by the value entered in **VPIB Annual Price Increase.** In 2019 the input value for Operational Costs of Ozone are added. The new sum is used as the new basis and is increased by the value of **VPIB Annual Price Increase.**
5. **Cost of Water** is calculated when the loan for the waterline has a positive value which would indicate that water is being purchased. **Cost of Water** also escalates yearly by the **VPIB Annual Price Increase.**
6. **Net Cash Flow** is the difference of **Available Operational Funds** to **Cost of Operations.**

Display of Results

Rate Calculations provide some insight to what occurs with rates with the given inputs.

Cash Flow Projections provide insight into if available funds are enough to cover all expenses. It helps determine negative cash flow if any and finds situations where

either rate increases should be adjusted, or funds pulled from the general fund in difficult situations.