



Special Assessment Methodology April 7, 2022

I. Introduction/Background

The Four Lakes Special Assessment District (SAD) consists of waterfront properties and backlot properties that have deeded access to the lakes. The boundaries of the SAD were established with the issuance of the [2019 Circuit Court Lake Level Order](#). Prior to the issuance of this order, numerous public meetings regarding establishing a legal lake level were conducted, resolutions from the [Gladwin](#) and [Midland](#) County Boards of Commissioners were adopted, and the Circuit Court held a hearing.

The SAD contains approximately 8,442 parcels, with 6,520 parcels having direct waterfront access and 1,922 parcels having deeded private access to the waterfront (backlots). The boundary of the SAD can only be changed under the Circuit Court. The number of parcels within the boundary will be updated annually by Four Lakes Task Force (FLTF) based on tax records. FLTF will update the parcels within the SAD boundary based on property splits or combinations that are approved by township assessors and updated in county equalization records.

The counties determined that all costs associated with the maintenance of the legal lake levels for the Four Lakes should be financed by special assessments to the benefitted properties within the SAD. While there can be other sources, such as government, private and public funding, the Four Lakes SAD is considered the primary source of funding to maintain the lakes and lake level structures (i.e., dams). For further questions about the Four Lakes SAD, please visit the Four Lakes Task Force website [here](#).

The special assessment, levied on properties within the SAD, is based on a methodology that uses criteria for determining the benefits derived from the lake level project. Lake level project costs are identified in section 30712 of Part 307 "Inland Lake Levels" of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.30712, but generally include all costs for locating, constructing, operating, repairing, and maintaining a dam or works of improvements necessary to maintain the normal or legal levels of inland lakes. Project costs are apportioned to private properties, state lands, and local municipalities, and a special assessment roll is prepared based on that apportionment.

Prior to the dam failures in 2020, the initial methodology under consideration was derived from the existing weed control districts surrounding the lakes. This previous methodology considered waterfront lots versus backlots, location with respect to the dam, and property use. However, following the dam failures, FLTF determined that further review of the initial methodology was necessary based on input from property owners and community leaders.

In May 2021, FLTF established a SAD workgroup led by Spicer Group (consulting engineers) to discuss, revise and develop an apportionment methodology for apportioning project costs in connection with both operations and maintenance (O&M) of the dams, and capital improvements required to restore the lakes. The workgroup consisted of engineers, geographic information system (GIS) specialists, assessment advisors, individuals familiar with levying assessments and legal counsel. The



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proposed apportionment methodology was released to the public on [December 6, 2021, during an informational webinar](#).

The proposed apportionment methodology for determining benefits derived considers the following benefit factors:

1. Base
2. Water frontage
3. Water view¹
4. Water depth¹
5. Public use
6. Derived benefit

¹Replaced the existing “headwater factor” from the original methodology

a. Costs Apportioned to Local Government (At-Large)

Since December 2021, two other major changes were made to the apportionment methodology. First, the methodology provides for apportioning a portion of the operation and maintenance costs to the counties and local municipalities. Based on the [public survey completed by Public Sector Consultants \(PSC\)](#), 74% of property owners believe the costs should be shared with people outside of the SAD. The proposed methodology has determined that municipalities within the Four Lakes SAD receive a general benefit from lakes created by the impoundment of the Tittabawassee and Tobacco rivers, and therefore, should contribute to the O&M special assessment. Per Part 307, the county board of commissioners may determine to contribute a portion of the costs for maintaining the normal legal lake levels by appropriating funds from their general fund.

In discussions with county leaders, and after review of similar lake level projects in the counties, Four Lakes Task Force is proposing a 3% apportionment to each county. Four Lakes Task Force is also proposing that an aggregate apportionment to the townships and Village of Sanford would be 3%, which is based, and will be allocated, on the total amount of benefit the parcels within the given municipality and within the SAD provide when compared to the entire district. This would apply only to the O&M Assessment.

The updated cost range is based on the updated assessment percentages and can be seen on the updated web map, located [here](#).

b. Adjacent Parcels

The second significant revision to the apportionment methodology includes addressing the apportionment on adjacent parcels owned by the same property owner. The law requires that Four Lakes apportion costs to all properties within the SAD based on benefits derived. Consequently, adjacent properties will be assessed.



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That said, if a property owner wishes to combine their parcels, they may coordinate with their local assessor and follow the procedures set forth by that local authority to do so. There is not sufficient time to consolidate the parcels into a single parcel during the year of 2022 when the first O&M assessment is levied, therefore FLTF is proposing a grace period for property owners, provided that property owners can provide documentation, through their local assessors' office, that the combination will take effect in 2023. The complete policy as described in the communications following the February 2022 preliminary days of review can be found on the FLTF website.

c. Preliminary Days of Review

On February 15th and 17th, 2022, FLTF held [two unofficial preliminary days of review](#) to permit property owners to review the benefit factors affecting the apportionment of costs to their property. These meetings were optional for property owners to attend and provided a one-on-one experience with an engineer or FLTF board member to discuss their concerns about the methodology and understand how benefit factors applied to their property within the SAD. Approximately 160 property owners attended and provided feedback to FLTF. The feedback received included additional information to support claims for reduced frontage, water depth and lakeview. Property owners also provided good insight on how the factors were being applied to specific regions of the lakes, limitations of the lake frontage calculation, and general technical/accuracy concerns related to the web-based SAD map. Following those meetings, the final iteration of the SAD apportionment methodology was completed, and updates were made to both the frontage and water depth factors.

II. Benefit Factor Summary

The methodology expressed below is final and has been adjusted based on input provided at numerous public meetings, property owner interactions, and communications received by FLTF. The benefit factor values are likely not going to change. However, this is not final until the completion of the special assessment hearing in June 2022. The benefit methodology and the benefit factors will be the basis for the calculation of the annual O&M assessment amount and the long-term capital assessment for the restoration of the dams.

a. Base Factor

All parcels are assigned a base benefit factor which includes either a 0, 0.5 or 1. All parcels which are exempt from Part 307 special assessments, such as school property or cemeteries, and properties that are included in the SAD but receive no benefit, such as road right of ways and parcels without private access, are assigned a zero base factor. This results in a zero-assessment for parcels with a base factor of zero. All back lot parcels that are not directly on a body of water but do have private access to water receive a base factor of 0.5. All other parcels in the district receive a base factor of 1.

b. Derived Benefit Factor



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The derived benefit factor has gone through numerous iterations throughout the methodology development. This factor is applied to non-residential properties within the SAD. Table 1 shown below summarizes the tentative factor values for derived benefit types. These are still subject to slight variation until the final special assessment hearing, which is anticipated to be held in June 2022. Some parcels receive more benefit than others from the existence of the Part 307 lake levels, typically properties zoned commercial or designed specifically for recreational use.

For parcels that have various amounts of use such as marinas or residential/recreational rental units, the benefit factor value will be calculated like frontage. This means weighted values will be assigned based on the brackets for marinas and trailer parks/campgrounds shown below in Table 1.

Table 1: Derived benefit factor summary table

Type	Sub Type	Benefit Factor
Commercial/Corporate	Lake related – provides boat launch access	2.5
	Lake related – provides boat slips	2.25
	Lake related – does not provide access	2
	Non-lake related	1.5
	Residential under corporate ownership	1
Public Ownership*	County property (apportioned by agreement)	0
	Township/village property (apportioned at-large)	0
	State boating access site	2.5
	State forest – primarily hunting	1.5
	State forest – potential canoe	2
Church Owned	Cemetery	0
	Lake focused	2
Marinas	Gas and/or launch	2
	Boat rental slips – 2-20	2.5
	Boat rentals slips – 21+	5
Trailer Park/Campground	Sites – 2-10	2
	Sites – 11-25	4
	Sites – 26-50	7



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	Sites – 51+	10
Agricultural		1.5
Non-developable/reduced benefit residential parcels		<1

**Township/village and county-owned property used for access or recreation is included in at-large assessments for O&M assessment percentage*

c. Frontage Factor

The frontage factor is a weighted factor given solely to parcels with direct access to the water. The frontage for all waterfront parcels was determined by three methods which included (1) review of all subdivision plats for platted parcels, (2) review of the metes and bounds description for un-platted parcels, and (3) utilizing GIS to manually measure the frontage based on parcel linework and aerial photography. Methods 1 and 2 are the most accurate as they take information directly from the legal documents governing the parcels’ descriptions. They were applied to approximately 90% of the waterfront parcels.

The next step consisted of developing the frontage factor brackets and associated frontage factors as seen in Table 2 below.

Table 2: Lake frontage bracket table

Low (feet)	High (feet)	Group	Factor
0	48	A	0.8
48	134	B	1
134	175	C	1.25
175	220	D	1.5
220	1,000	E	1.75
1,000	7,900	F	2

When looking at a whole lake system, there is a wide range of frontage amounts. To separate the outliers from the data, we took the interquartile range (IQR) of the water frontage parcel data set. The parcels beyond the max upper range (230 ft) were removed. The standard deviations (SD) from the mean average were then used to determine the brackets for the frontage factor.

If the frontage is within one SD from the mean average of 90 feet, the group B bracket was assigned a value of 1. For every SD greater than 1, the factor value increases incrementally by 0.25 to a max of 1.75. The outliers, which have more than 1,000 ft of frontage, were placed in Group F which has a factor value of 2. For an SD below 1 (Group A), the factor value was set to 0.8.



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With the frontage for all parcels known and the frontage bracket table created, the frontage factor could then be calculated. The original methodology, communicated during the December 6th, 2021 webinar, determined the frontage factor based on the brackets shown in Table 2. This was done by taking the frontage of a parcel, identifying the frontage group based on Table 2, and assigning the frontage factor based on the given group. For example, if a parcel had 35 feet of frontage, it would be assigned a 0.8 frontage factor. If a parcel had 200 feet of frontage it would be assigned a 1.5 frontage factor. This method to determine the frontage factor is no longer used. The methodology evolved to its current iteration, described below, following input received from property owners during the February 2022 preliminary days of review.

The new and final calculation to determine the weighted frontage factor is similar to how income taxes are determined. Utilizing the frontage brackets in Table 2, a factor of 0.8 is applied to the first 48 feet of frontage, the next 86 feet (134 feet – 48 feet = 86 feet) have a factor of 1, the next 41 feet (175 feet – 134 feet = 41 feet) have a factor of 1.25 applied, and so on, up to the total amount of a parcel's frontage. Please see an example calculation below.

Example calculation: parcel with 200 feet of frontage

1. (1st bracket): 48 feet * 0.8 = 38.4 feet
2. (2nd bracket): 86 feet * 1 = 86 feet
3. (3rd bracket): 41 feet * 1.25 = 51.25 feet
4. (Determine frontage to be applied to 4th bracket): 200 feet – 48 feet – 86 feet – 41 feet = 25 feet. Step 4 will vary based on total amount of frontage.
5. (4th bracket): 25 feet * 1.5 = 37.5 feet
6. (Sum of frontages): 38.4 feet + 86 feet + 51.25 feet + 37.5 feet = 213.15 feet
7. (Divide total frontage by sum to get weight factor): 213.15 feet/200 feet = **1.07**

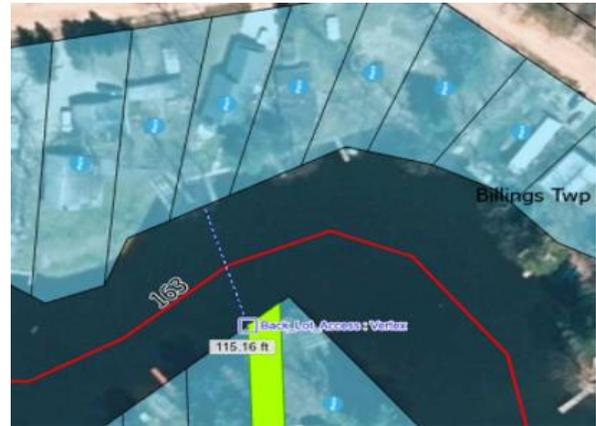
d. Waterfront View Factor (replaced headwater factor)

The original methodology included a headwater factor which provided a reduction in benefit to parcels that were located on the lake systems in headwater areas (uppermost portion of each lake), where the waterbody behaved more like a river rather than a lake. Please note, however, that the limits of the SAD were determined based on the effects of the dams in place. All areas are impacted by backwater effects of the dams when they are at the Part 307 legal lake levels. The process to determine the headwater zones was subjective and at the time was not based on substantiated data. However, following the May 2020 flood event, high-resolution (3-inch pixels) images were captured of the Four Lakes system. This allowed for comprehensive mapping of the existing shoreline. This was the basis to determine the waterfront view factor.



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The waterfront view factor measures the width of the waterway in front of a parcel perpendicular to its frontage. Thus, it is a factor that assesses the width of the water the parcel is located on. This is important for making sure that parcels located on canals and tributaries receive a reduction in benefit compared to those located on the lake proper. To determine the width of the waterway, an offset line was added around the centerline of the water bodies. The distance from one edge of the offset to the other was used to assign zones within the system and categorize the various waterway widths throughout the lakes.



The waterfront view factor, as summarized in Table 3 below, is split into three categories: (1) a parcel with less than 230 feet of waterfront view receives a waterfront view factor amount of 0.75, (2) a parcel with 230-500 feet of waterfront view receives a waterfront view factor amount of 0.85, and (3) all remaining parcels with a view of greater than 500 feet receive a waterfront view factor amount of 1.

Table 3: Waterfront View Summary Table

Waterfront View Factor	Waterfront View Factor Amount	Number of Parcels
Less than 230 ft. of water view	0.75	2,402
230-500 ft. of water view	0.85	1,152
Greater than 500 feet	1	2,850

e. Water Depth (replaced headwater factor)

Like the waterfront view factor, the water depth factor was created to replace the previous headwater factor and is the second of the two new factors presented at the December 2021 webinar. In addition to high-resolution aerial imagery captured after the May 19th flood event, Quality Level 1 (QL1) light detecting and ranging (LiDAR) elevation data was also collected for the lake bottoms of all four lakes. The accuracy of this data is roughly +/- 0.3 feet in non-vegetative areas, which was the landscape when the data was collected in early June 2020. This elevation data was the foundation of the analysis performed to calculate the water depth associated with all waterfront parcels within the SAD, as described below.

To calculate the water depth factor, a series of geoprocessing tools were used in ArcGIS Pro. Two input datasets were used, the first being the SAD parcel layer which includes all properties within the SAD. This layer was then queried so that only parcels with frontage were included in the analysis.



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The second dataset was the one-foot interval contour layer for the entire exposed bottomlands of the Four Lakes system. These contours were produced from the QL1 LiDAR data.

The first step of the analysis was to calculate a 40-foot buffer around each lakefront parcel. This 40-foot buffer was to account for the opportunity for a property owner to install a dock on their property to achieve a greater water depth when the lake is at its Part 307 summer legal lake level. Next, the bottomland contour layer was queried and exported into three separate intervals: less than two feet, two to four feet, and greater than four feet. These intervals were then each clipped to the SAD parcel buffer layer and combined into one complete dataset encompassing all three possible values.



Manual verification of all parcels was then performed to make sure no parcels were assigned multiple depth values. If a parcel did get assigned multiple values, the deepest water depth value was chosen for that individual parcel. There are three depths which a parcel can be assigned: less than two feet, two to four feet, and greater than four feet. The lower the water depth, the lower the benefit factor amount is. A value of less than two feet is equal to a benefit factor of 0.8, a value of two feet to four feet is 0.9, and a value of greater than four feet is 1.0.

The total number of waterfront parcels within the SAD is 6,404. Of these, 812 parcels have a depth of less than two feet, 2,611 fall between two and four feet, and 2,977 have a depth of greater than four feet. The table 4 below summarizes this information.

Table 4: Water depth factor summary table

Water Depth (feet)	Benefit Factor Amount	Number of Parcels
Less than 2	0.8	816
2-4	0.9	2,611
Greater than 4	1	2,977

f. Public Lands Factor

The public lands factor which was revealed during the December 2021 webinar has been removed from the FLTF methodology. Originally the public lands factor was placed on municipal or state-owned parcels used for public access and recreation. However, with the inclusion of a local government "at-large," portions of the operations and maintenance cost is placed on the counties and townships/village so the parcels owned by these entities will now receive a zero-base benefit. Their contribution to the district will be a result of the at-large assessment which is levied against them. Midland County, which maintains and operates a large park on Sanford Lake, has agreed to pay an annual \$8,000 O&M assessment related to its public parks in addition to its 3% "at-large" portion of the



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assessment. This amount will be converted to a percentage and added to Midland County. With respect to the state-owned properties, these parcels will be affected by the derived benefit factor as the assessment to the Michigan Department of Natural Resources is on a parcel-by-parcel basis.

III. Backlot Assessment Methodology

The initial assessment methodology assigned all assessable backlots a benefit factor of 0.25. The revised methodology increased the max back lot factor to 0.5. This rationale takes into consideration that not all backlots provide the same quality of access throughout the system. To accurately determine the benefit associated with each backlot, the front lot access parcels are evaluated the same as any other waterfront lot in the SAD. The waterfront view, depth and frontage are determined utilizing the methods summarized above. If the access location provides only walk-in access to shallow water on a canal, the benefit factor would be much less than that which provides a beach, boat launch or dock. The lowest quality backlots have a total assessment factor of roughly 0.25. Backlots with the highest quality would be at the cap of 0.5. Backlots with intermediate access would fall between 0.25 and 0.5. The access parcels identified in the county parcel data as a park, walkway, private easement, etc. and that do not have a parcel identification number will not receive an assessment.

For access parcels owned by a subdivision association or homeowners association that allow access to specific backlot parcels or control access through memberships, the access parcel will be assessed. The assessment will then be paid by the association which receives the tax bill, and it is the association's responsibility to collect from the backlots which access through this parcel. In this situation the backlot will receive a zero-base benefit and not have an assessment directly on their winter taxes, rather it would be passed through from the subdivision association or homeowners association membership fee.

IV. Assessment Roll Summary

GIS is used to assign the above-described benefit factors to each parcel. Manual reviews are performed to verify all automated processes are completed correctly. Once the factors have been assigned, the SAD data is exported and then placed into a Microsoft Excel assessment roll which calculates the apportionment percentage for all parcels. The apportionment percentage is unique for each individual parcel and represents the percentage of the project cost that specific parcel is responsible for.

For the O&M assessment roll, the property owners are responsible for 91% of the total cost shown on the computation of cost. This remaining 9% is disbursed with 3% to Midland County (plus the Sanford Lake Park Department's annual contribution), 3% to Gladwin County, and 3% split between 9 townships and the Village of Sanford. For clarification, please refer to the example calculation below.

Example Calculation: Typical residential property within subdivision

1. Assessable lakefront property – Base Factor (BF) = 1
2. 90 feet of water frontage – Frontage Factor (FF) = 0.893
3. Greater than 500 feet of waterfront view = Waterfront View Factor (WV) = 1
4. Water depth of 4 feet or greater = Water Depth Factor (WD) = 1



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5. Residential property – Derived Factor (DF) = 1
6. Product of factors – $BF \times FF \times WV \times WD \times DF = 1 \times 0.893 \times 1 \times 1 \times 1 = 0.893$
7. Parcel apportionment – parcel's total benefit factor/sum of all factors in SAD* = $0.893/5550 = 0.0001609$ or 0.0161%
8. Estimated total O&M assessment – (Computation of cost amount – at large assessment) *parcel apportionment = $(4,692,000 - 422,280) \times 0.01609\% = \687
9. Estimated annual O&M assessment = Total O&M/3 years = $\$687.00/3 \text{ years} = \$229.00/\text{year}$

*The sum of all factors is calculated by adding all the total factors for all parcels together. This sum is subject to change as it is tied to all the factors in the district. If the total factor of one parcel changes, the sum of all factors also changes.

V. Upcoming Events for the SAD

On April 6th, 2022, a [public webinar](#) will be held to explain the changes to the water frontage and depth factors. Additionally, a summary of the revised estimated capital cost will be provided, given that FLTF received a [\\$200 million appropriation from the State of Michigan](#). On April 19th and 20th, 2022, additional [preliminary days of review](#) will be held. The purpose of these meetings is to gather additional information to make clerical updates to parcels given the final methodology described above. If property owners wish to combine parcels and have that reflected on the 2022 FLTF special assessment, coordination with the local assessor should begin. The local assessor must submit the approved form to FLTF no later than June 15th, 2022. This form summarizes that the parcel combination is in process and will take effect in the year 2023.

The special assessment hearing is in the process of being scheduled and is estimated to take place at the **end of June 2022**. Property owners will be mailed a legal notice of the hearing 10 days prior. At the hearing, property owners must present evidence illustrating that their apportionment is not consistent with the methodology and must be present to appeal to the Midland circuit court. Following the special assessment hearing, both the Midland and Gladwin county boards must approve the roll by either a yes or no. If it is approved then the 15-day appeal period begins, if it is not approved it goes back to FLTF to be updated. This presentation to the county boards will take place in July 2022. Once the appeal period ends, the finalized roll will be given to the counties to be implemented within their tax software. **The assessment will be placed on the property owners' 2022 winter taxes.**

VI. Conclusion

Over the past three years, FLTF has worked to create a fair apportionment methodology that considers various benefits parcels receive by having access to lakes with established part 307 lake levels. The apportionment methodology explained in this document is in part from valuable feedback received from the property owners within the SAD. We would like to thank the property owners in the Four Lakes SAD for their continued patience and cooperation with FLTF. We look forward to continued interactions with them throughout the project and as the lakes reach a greater state of restoration and renewal.