



Four Lakes Special Assessment District Assessment Methodology Revised January 2024

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 8,170 parcels, with 6,278 parcels having direct waterfront access and 1,892 parcels having deeded private access to the waterfront (backlots). The boundary of the SAD can only be changed under the circuit court. Four Lakes Task Force (FLTF) will annually update the number of parcels within the boundary based on tax records and 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 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](#). Grants and landowner contributions fund the cost of the capital restoration projects. Municipal entities such as the townships, Village of Sanford or counties are not subject to an at-large contribution for the restoration projects.

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. FLTF shared the proposed apportionment methodology with the public on [December 6, 2021, during an informational webinar](#).

This 2023 version of the SAD methodology reflects changes to factors based on the fact that the capital assessment will be larger, and conditions found in property differences. This is the final version, which was approved at the January 15, 2024, public hearing by the Four Lakes Task Force Board.



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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
7. 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. The proposed methodology 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 boards of commissioners may determine to contribute a portion of the costs for maintaining the normal legal lake levels by appropriating funds from the general funds.

Four Lakes Task Force is proposing a 3% apportionment continue for each county for operations and maintenance. FLTF is also proposing to continue an aggregate apportionment to the townships and Village of Sanford of 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 will apply only to the O&M Assessment. FLTF is not proposing an at-large assessment to the counties, townships or Village of Sanford for the Capital Assessment. The state, federal and private funding that FLTF received on behalf of the special assessment district significantly lowered the overall percentage of the Capital Assessment to property owners.

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

II. 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 FLTF to apportion costs to all properties within the SAD based on benefits derived. Consequently, adjacent properties will be assessed.

During the December 2021 public informational hearing, property owners were informed that adjacent parcels will be assessed and at that time it was discussed that if a property owner wishes to follow the proper procedure with their township assessor to combine their parcel it was their right to do so. Many landowners followed through with this action and in 2022 approximately 350 parcels were combined between Midland and Gladwin counties. Those combinations went into effect in the 2023 calendar year.

¹ Replaced the existing headwater factor from the original methodology



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Moving into the Capital Assessment and the 2025 – 2029 O&M assessment, parcels which have not already been combined and approved by the townships/counties will not be reflected in the assessment roll presented at the January 2024 public hearing and subsequent joint county board meeting.

III. Benefit Factor Summary

The methodology expressed below is final and has been adjusted based on input provided at numerous public meetings, the 2022 SAD hearing, property owner interactions, and communications received by FLTF. The benefit factor values may be adjusted slightly to accommodate a higher capital assessment, however the methodology used as the basis for the assessment will not change. The benefit methodology and the benefit factors, approved at the January 15 public hearing, are the basis for the calculation for future O&M assessments and the long-term capital assessment for the restoration of the dams.

a. Base Factor

All parcels are assigned a base benefit factor: 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 backlot 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 one.

b. Derived Benefit Factor

The derived benefit factor has gone through numerous iterations throughout the methodology development. This factor is applied to non-residential properties or limited development/use residential parcels 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 on January 15, 2024. 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.



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Table 1: Derived benefit factor summary

Type	Sub Type	Benefit Factor
Property with limited development or use*	Parcel cannot be developed without environmental mitigation (i.e., wetland or certified 100-year floodplain) ²	0.25
	Parcel where construction of permanent housing structure is not allowed/permitted, but parcel can still be used for recreation or a small semi-permanent residence (i.e., camping, water access, etc.), parcel size 0.05 acres or less ³	0.7
	Residential parcel with typical water access, either direct or indirect (i.e., deeded/private easement access)	1
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
	Residential under corporate ownership	1
Public Ownership ⁴	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/Non-profit organization	Cemetery	0
	Lake focused	2
Marina*	Gas and/or launch with up to five slips	2
	Boat rental slips – 5-20+	2.5

² Appropriate documentation is needed to qualify for this status such as a certified wetland delineation, survey of property as related to 100-year floodplain, or other equivalent supporting evidence. Front lot parcel total benefit factor cannot be less than 0.5 which is the maximum backlot factor.

³ Appropriate documentation is needed to qualify for this status such as a survey, letter from township/county, or other equivalent supporting evidence.

⁴ Township/village and county-owned property used for access or recreation is included in at-large assessments for O&M Assessment percentage.



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Trailer Park/Campground*	Sites – 2-10	2
	Sites – 11-25	4
	Sites – Greater than 25	7
Agricultural*		1

**Changed from July 2022 special assessment methodology*

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: (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 one and two are the most accurate as they take information directly from the legal documents governing a parcel’s description. 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

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	2,000	E	1.75
Greater than 2,000*		F	2

**Changed from 2,000-7,900 in the July 2022 special assessment methodology to 2,000+*

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 2,000 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.

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



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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

(1st bracket): 48 feet * 0.8 = 38.4 feet

(2nd bracket): 86 feet * 1 = 86 feet

(3rd bracket): 41 feet * 1.25 = 51.25 feet

(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.

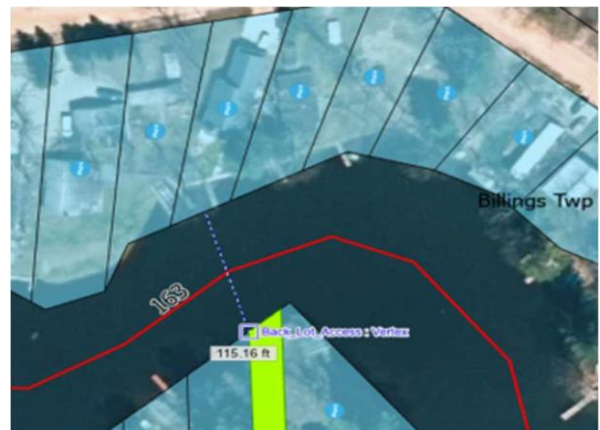
(4th bracket): 25 feet * 1.5 = 37.5 feet

(Sum of frontages): 38.4 feet + 86 feet + 51.25 feet + 37.5 feet = 213.15 feet

(Divide total frontage by sum to get weight factor): 213.15 feet/200 feet = 1.07

d. Waterfront View 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.



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



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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	2,527
230-500 ft. of water view	0.85	1,603
Greater than 500 feet	1	2,148

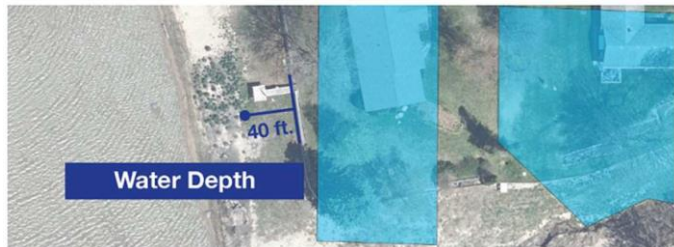
e. Water Depth

Like the waterfront view factor, the water depth factor was created to replace the previous headwater factor. In addition to high-resolution aerial imagery captured after the May 19th, 2020, 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.

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 2 feet, 2-4 feet, and greater 4 four feet. These intervals were then 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. The lower the water depth, the lower the benefit factor amount is. Table 4 below summarizes the factor.





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Table 4: Water depth factor summary table

Water Depth (feet)	Benefit Factor Amount	Number of Parcels
0-2	0.75	748
2-4	0.9	2,478
Greater than 4	1	3,052

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 are 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 that this parcel is to be assessed based on the methodology set forth in this document for both the O&M and capital roll. Midland county will also be responsible for a 3% “at-large” for the O&M roll only. 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.

g. 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. To accurately determine the benefit associated with each backlot, the front lot access parcels are evaluated using the same criteria as other parcels in the district.

We found that three primary access types exist within the lake system and include the following:

1. Non-developed/un-maintained Access – The plat allows for access, however over the years the access location was not developed or maintained as intended. Parcels that exist in plats with this situation have poor access, however the parcel still retains the right to access the waterbody. These parcels will have the lowest total factor in the district.
2. Maintained Minor Access – Parcels have access to walkways, parks, or private road ends which provide access to the waterbody and have been maintained or used over the years but were not intended or developed as a high-volume access point such as a boat launch or dock slip.
3. Maintained Major Access – The parcels have access to boat launches on the main waterbodies and/or boat slips allowing for quality access for indirect property owners. Backlot parcels in this situation will have the highest total factor.



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The lowest quality backlots have a total assessment factor of roughly 0.075. Backlots with the highest quality are at the cap of 0.5. Backlots with intermediate access fall between 0.075 and 0.5. The access parcels identified in the parcel data as a park, walkway, private easement, etc. and that do not have a parcel identification number do 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 that access through the parcel. In this situation the backlot will receive a zero-base benefit and not have an assessment directly on its winter taxes, rather it would be passed through from the subdivision association or homeowners association membership fee.

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 are 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, property owners are responsible for 91% of the total cost shown on the computation of cost. The remaining 9% is disbursed with 3% to Midland County, 3% to Gladwin County, and 3% split between nine townships and the Village of Sanford. For clarification, please refer to the example calculation below.

Example Calculation: Typical residential property within a subdivision

Assessable lakefront property – Base Factor (BF) = 1

90 feet of water frontage – Frontage Factor (FF) = 0.893

Greater than 500 feet of waterfront view – Waterfront View Factor (WV) = 1

Water depth of 4 feet or greater – Water Depth Factor (WD) = 1

Residential property – Derived Factor (DF) = 1

Product of factors – $BF \times FF \times WV \times WD \times DF = 1 \times 0.893 \times 1 \times 1 \times 1 = 0.893$

Parcel apportionment – parcel's total benefit factor divided by the sum of all factors in SAD* = $0.893/4973 = 0.0001796$ or 0.018%

Estimated total O&M Assessment – (Computation of cost amount – at large assessment) x parcel apportionment = $(8,876,000 - 798,840) \times 0.0180\% = \$1,450.00$

Estimated annual O&M assessment = Total O&M divided by 5 years = $\$1,450.00/5 \text{ years} = \$290.08/1 \text{ year}$

*The sum of all factors is calculated by adding all the total factors for all parcels together. The 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.



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For the Capital Assessment roll the landowners are responsible for 100% of the assessable project cost because the at-large factors only apply for the O&M rolls.

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 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.