

MARQUETTE COUNTY DRAINAGE REGULATIONS

PREPARED FOR:

THE MARQUETTE COUNTY DRAIN COMMISSIONER

ADOPTED

July 15, 2007

PREPARED BY:



ENGINEERS, PLANNERS, LAND SURVEYORS

424 South Pine Street

Ishpeming, MI 49849

Ph (906) 485-1011, Fax (906) 485-1013

eci@eci-ish.com

"Quality Service to the U.P. Since 1974"

TO: All Marquette County Municipalities, Land Developers, Land Surveyors, Engineers and Architects

RE: Marquette County Drainage Regulations

Adopted: July 15, 2007

The enclosed Regulations are an updated version of the previously published "Drainage Regulations for Subdivisions", last amended on June 21, 1993, and now include regulations for unplatted land within established drainage districts in Marquette County. These have been combined to eliminate some confusion experienced in the past and to get all rules together in one document. It is my intent that this will make the design requirements for projects requiring review by the Drain Commissioner easier to follow. Having been asked by some townships to assist with drainage reviews, these regulations will also be applied to those reviews.

Sincerely,

M C D C

P. Mike Farrell
Marquette County Drain Commissioner

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ARTICLE A - GENERAL

SECTION I - GENERAL PROVISIONS

1.1 Purpose

To protect the public health, convenience or welfare, and to assure compliance with the adopted rules, regulations and procedures relative to providing adequate storm water facilities and outlets as required to accommodate all lands proposed for subdividing and platting and all land development in drainage districts within the County of Marquette, and other land when requested by the governing body.

1.2 Authority

1.2.1 **Proposed Subdivisions** - Under the Land Division Act, Act No. 591, P.A. of 1996, as amended, hereinafter referred to as the Act, the following rules, regulations and procedures, as provided for in Section 105©, of the Act, have been adopted to guide land developers interested in subdividing land and to provide a uniform method of preparing plats submitted to the office of the Commissioner for review and approval in accordance with the Act.

- a) In accordance with the provisions of the Act, the Commissioner has the right to require that county drains and natural watercourses, both inside and outside the plat, be improved to the standards established by the Commissioner, if necessary for the adequate drainage of the proposed subdivision. Further, it is the intent of the Commissioner that the proposed drainage improvements for all new plats shall be established as county drains pursuant to Section 433 of the Drain Code of 1956, Act No. 40, P.A. of 1956, as amended. Under certain circumstances where the required drainage improvements are minimal and no detention/retention basins are required, the Commissioner may waive this requirement.
- b) Unless the requirement is waived by the Commissioner, the developer shall comply with the provisions for the establishment of a drainage district in accordance with Chapter 18, Section 433 of the Drain Code of 1956, Act No. 40, P.A. of 1956, as amended. This procedure shall be completed prior to final approval of the final plat.
- c) These rules provide minimum standards to be complied with by the proprietors and in no way limit the authority of the governing body of the municipality in which the subdivision is situated to adopt, publish, and enforce higher standards as a condition of approval by the municipality of the final plat as provided by the Act.
- d) These rules, regulations and procedures will be revised as necessary with the most recently dated version being applicable.

1.2.2 **Lands within an Established Drainage District** - As provided in the Drain Code of 1956, Act No. 40, P.A. of 1956, as amended, hereinafter referred to as the Drain Code, through legislative enactment, the Commissioner has acquired jurisdiction and established county drains and may under the terms of the Drain Code acquire jurisdiction of drainage systems within drainage districts.

The following rules, regulations and procedures have been adopted to guide land developers interested in developing land within established drainage districts and to provide a uniform method of preparing construction plans submitted to the office of the Commissioner for review and approval. (These rules are applicable within established drainage districts within which the proposed development is located.)

- a) In accordance with the provisions of the Drain Code, the Commissioner has the right to require that county drains and natural watercourses, both inside and outside the proposed land development, be improved to the standards established by the Commissioner, if necessary for the proper drainage of the proposed land/site construction. Further, it is the intent of the Commissioner that all stormwater facilities necessary for the proposed land development have an appropriate public or private corporation responsible for maintenance in perpetuity.
- b) These rules provide for minimum standards to be complied with by the proprietors and in no way limit the authority of the governing body of the municipality in which the development is situated to adopt, publish, and enforce higher standards as a condition of approval by the municipality.
- c) These rules, regulations and procedures will be revised as necessary with the most recently dated version being applicable.

1.2.3 All Other Lands

- a) The rules and regulations established for lands within an established Drainage District shall apply to all other lands when the governing body of the municipality requests such a review.
- b) These rules provide for minimum standards to be applied. If the municipality has adopted higher standards they will be used for the review.
- c) These rules, regulations and procedures will be revised as necessary with the most recently dated version being applicable.

SECTION II - DEFINITIONS

Act	- The Land Division Act, Act No. 591, P.A. of 1996, as amended
Drain Code	- The Drain Code of 1956, Act No. 40, P.A. of 1956, as amended
Drainage District	-A designated drainage district which has been ordered by the Commissioner in conformance with the Drain Code.
County Drain	- Drains established and/or constructed pursuant to the Michigan Drain Code (P.A. 40 of 1956, as amended)
Drain	- The interception, conveyance and removal of surface or subsurface water by natural or artificial means.
Commissioner	- The Marquette County Drain Commissioner, State of Michigan.

SECTION II - DEFINITIONS, (Cont'd)

Governing Body	- The legislative body of a county, city or village or the township board of a township.
Proprietor	- Any person, firm, association, partnership, private corporation or combination of any of the above with a financial interest in the land being platted.
Detention Basin	- A basin designed to temporarily store a portion of the runoff to delay its impact on downstream drainage structures.
Retention Basin	- A basin without any surface outlet, designed to retain storm runoff until it percolates into the ground.
Drainage Calculations	- Computations employing Soil Conservation Service procedures i.e. TR-20, TR-55, Hydraflow.
Developer	- The party proposing to create a development which may impact stormwater runoff.

SECTION III - EASEMENT REQUIREMENTS

- 3.1 Easements required for drainage improvements shall be acquired by the proprietor in the name of the Drainage District. If the Commissioner decides to make an exception to the requirement that a drainage district be established for a proposed subdivision due to specific site conditions, then the easements shall be dedicated for public drainage purposes. Minimum width easements shall be required for all drainage facilities within the boundaries of the proposed subdivision in accordance with the following schedule.
 - 3.1.1 Open drains and watercourse easements shall be a minimum width of twenty-four (24) feet centered on the centerline of the watercourse.
 - 3.1.2 Enclosed drains and sewers shall have a minimum easement width of twenty (20) feet centered on the enclosures. Larger easements may be required due to soil conditions, depth of cut, larger pipe size requirements or for specific maintenance requirements.
 - 3.1.3 All drainage facilities, including but not limited to, pumping stations, detention/retention basins, settling ponds, exfiltration ponds, etc., shall have sufficient sized easements provided for maintenance and access purposes.
 - 3.1.4 The Commissioner reserves the right to allow exceptions to the minimum easement width requirements if site conditions warrant; however, approval for such exception must be acquired prior to submission of the preliminary plat. A request for an exception will be denied if granting it would restrict the Commissioner's ability to gain access to the drainage improvements for maintenance or access purposes.
- 3.2 Easement widths for legally established County Drains shall be established by the Commissioner in accordance with applicable legislative rules and regulations.

SECTION III - EASEMENT REQUIREMENTS, (Cont'd)

- 3.3 Off-site easements may be required by the Commissioner to facilitate or best accommodate any drainage situation.

SECTION IV - PERMITS

The Commissioner requires permits for activities within the county drain easement. Permit applications are available upon request. Obtaining a permit from the Commissioner does not relieve the Proprietor from the responsibility of obtaining permits from other regulatory agencies.

SECTION V - AMENDMENTS

For the purpose of providing for the public health, safety and general welfare, the Commissioner may from time to time amend the provisions imposed with these rules, regulations and procedures. Adequate notice of all proposed amendments shall be provided by the Commissioner to assure conformance in the manner prescribed by law.

SECTION VI - SEVERABILITY CLAUSE

If any part or provision of these Drainage Regulations or application thereof to any person or circumstance is adjudged invalid by any court of competent jurisdiction, such judgment shall be confirmed in its operation to the part, provision or application directly involved in all controversy in which such judgement shall have been rendered and shall not affect or impair the validity of the remainder of these Drainage Regulations or the application thereof to other persons or circumstances. The Commissioner hereby declares that he would have enacted the remainder of these regulations even without any such part, provision or application.

ARTICLE B - PROPOSED SUBDIVISIONS

SECTION I - PRELIMINARY PLAT SUBMISSION

- 1.1 All preliminary Subdivision Plats shall be submitted to the office of the Commissioner in accordance with the requirements set forth in Sections 111 and 114 of the Act, and the following rules, regulations and procedures. The filing fee and any subsequent filing or review fees, regulations and procedures shall accompany the initial and subsequent submissions and shall be deposited with the Commissioner prior to review. Refer to Appendix C for the fee schedule.
- 1.2 The proprietor or his representative shall submit to the Commissioner three (3) copies of the preliminary plats along with all other information required herein or which may be of significant value in reviewing the proposed subdivision development. All documents shall be properly signed and sealed by a Registered Land Surveyor and/or Registered Professional Engineer licensed to practice within the State of Michigan. The names, addresses and telephone numbers of the proprietor and the consultants shall be clearly noted on all of the documents submitted for review and approval.
- 1.3 **Information Requirements** - The preliminary submittal shall contain the following minimum information:
 - a) The name of the proposed subdivision plat, complete with legal caption containing section number, town and range, township, county and state.
 - b) Full name, address and telephone number of the development company and/or the individual proprietor or representative who will be responsible for the proposed development.
 - c) Full company name, address and telephone number of the Registered Land Surveyor and/or the Professional Engineer who is preparing the plat and the plans.
 - d) Date, North point and graphic scale (not to exceed 1" = 100').
 - e) Ownership and proposed use of "excepted" areas or designated "outlots".
 - f) Existing zoning classification of the area within the bounded limits of the proposed subdivision.
 - g) Ownership and existing zoning classification of all adjacent properties and, if platted, the liber and page numbers of record plats.
 - h) Total gross acreage of land to be subdivided.
 - i) Proposed lot sizes and lot numbers of each lot.
 - j) Vicinity sketch and location of subdivision (scale 2,000'/inch approximate).
 - k) Location, use, size, etc., of any existing utility system on or adjacent to the proposed subdivision.
 - l) Location, width and names of all existing and proposed roads or other rights-of-ways on or adjacent to the proposed subdivision.

SECTION I - PRELIMINARY PLAT SUBMISSION, (Cont'd)

- m) Location and dimensions of all boundary lines and lot lines, and notation as to the minimum building line setbacks.
 - n) Location of all existing lakes, ponds, bays, rivers, streams, creeks, canals, slips, lagoons, waterways, county drains, or natural or man-made surface drainage courses including swales, ditches or culverts and the elevations thereof; flood plain areas within or adjacent to the proposed subdivision and any proposed plans for filling, dredging or otherwise improving or altering said flood plain areas.
 - o) Location of all proposed drainage facilities including the proposed outlet.
 - p) Location, description and dimensions of any existing buildings or structures on the site or proposed to be a part of the future platted area.
 - q) Contours of the site based upon United States Geological Survey (USGS) datum and shown at two (2) foot minimum intervals - five (5) foot intervals may be used where grades are in excess of 10%.
 - r) Designate all open spaces, parks or community areas and indicate whether they will be private or dedicated public areas and the proposed use thereof.
 - s) Location and dimensions of any existing easements for public or private utilities, ingress or egress, roadways, or pedestrian walkways, railroads, high tension towers, or underground transmission or supply lines of any type.
 - t) Information relative to groundwater aquifers shall be provided, including the elevation of the high water table and any other available information, the general nature of which may describe or locate existing or man-made features that may be of value in determining the overall drainage requirements for the proposed subdivision development.
 - u) A notation on the plat is required if "Restrictive Deed Covenants" are proposed to be recorded against future lots within the proposed subdivision plat. Three (3) copies of the proposed covenants shall be provided to the office of the Commissioner with the initial preliminary plat submission.
 - v) A Soil Conservation Service map showing the various soils and the outline of the proposed subdivision shall accompany the preliminary plat submission. The Commissioner may require on-site soil borings in proposed detention/retention basin sites or in areas where high groundwater tables are known to exist or are suspected. The Commissioner may also require percolation tests for a proposed retention basin site if in his opinion the site conditions warrant the tests.
- 1.4 The preliminary plat shall include a location map at the USGS scale delineating the drainage boundary of the proposed subdivision and the relationships with existing drainage patterns. Any watercourse passing through the proposed subdivision shall be shown along with the following items:

SECTION I - PRELIMINARY PLAT SUBMISSION, (Cont'd)

- a) Area of the upstream watershed and the current zoning classification.
 - b) A preliminary set of drainage calculations of runoff from the upstream area based on a storm having a fifty (50) year frequency under existing conditions, and then fully developed conditions according to the current comprehensive development plan, proposed land use plan or zoning map for the area.
- 1.5 Any proposed utility easements which will be required to service the proposed development shall be shown on the preliminary plat to avoid subsequent changes in the proposed layout. The developer should consult with the various utility companies to assure specific width and location of required easements prior to submission of the layout to the Commissioner.
- 1.6 If the proposed development is planned in stages or will be phased, a master plan of the total planned development showing the proposed total layout shall be submitted with the first phase clearly delineated thereon. Subsequent subdivisions shall be added as the development progresses to illustrate the method and direction of development the proprietor intends to pursue. Staged or phased subdivisions will be accepted and approved on an individual basis and each submission shall follow the same procedures as outlined herein. Final acceptance of the individual subdivisions of part of a total master plan for development does not ensure total acceptance of the master plan. Flexibility should be provided to accommodate any necessary or desired changes and/or revisions.
- 1.7 Section 114(3) of the Act requires that the Commissioner approve or reject the preliminary plat within thirty (30) days of submittal. If the proposed preliminary plat and accompanying data meets all the requirements as outlined in these rules, regulations and procedures, then one (1) copy of the preliminary plat will be approved, dated, sealed and signed by the Commissioner and returned to the proprietor.
- 1.8 Approval by the Commissioner will be valid for a period of two (2) years from the date the Commissioner approves the preliminary plat. If the final plat has not been submitted within this period of time, the proprietor shall petition the Commissioner in writing for an extension stating the reasons for such extension. If an extension is not requested, the approval shall lapse. If the proposed preliminary plat is not approved as originally submitted, the Commissioner will notify the proprietor in writing, setting forth the reasons for withholding approval and shall state the changes and/or revisions or additions necessary to obtain such approval.
- 1.9 To avoid unnecessary delays and undue hardships, approval of the proposed preliminary subdivision plat is strongly recommended prior to proceeding with the preparation of any final construction plans.

SECTION II - EASEMENT REQUIREMENTS

The easement requirements of Article A, Section III shall apply to proposed subdivisions. In addition, any exceptions requested under Article A, Section III, Paragraph 3.1.4 must be approved prior to the submission of the preliminary plat.

SECTION III - PRELIMINARY DRAINAGE PLAN REQUIREMENTS

- 3.1 The preliminary plat shall include the general drainage scheme for the proposed subdivision, or the plat will be rejected. The general drainage scheme shall indicate how and where storm drainage facilities will be provided and where they will outlet.
 - 3.1.1 Drainage proposed for subdivisions shall conform to the drainage plan for established county drainage districts, or if the proposed subdivision is not within an established drainage district, then the proposed drainage shall conform to the requirements of 3.1.5.
 - 3.1.2 The preliminary plat shall indicate, in general, any proposed on-site and/or off-site drainage facilities together with appropriate easements.
 - 3.1.3 The preliminary plat shall indicate, in general, any drainage originating outside of the subdivision limits which has previously flowed onto or across the proposed subdivision, as well as any natural watercourses and county drains that traverse or abut the subdivision.
 - 3.1.4 Proposed drainage facilities should compliment the community master plan for drainage, if such a plan is available. It is the responsibility of the proprietor to provide a stormwater management plan that is both suitable for the subdivision and which can be integrated into the overall management plan for the surrounding watershed.
 - 3.1.5 Approval of the preliminary plat shall require that the peak discharge, when fully developed, shall be no more than 0.2 cfs/acre of drainage area of the plat during a fifty (50) year storm. (Special cases as may be defined by the Commissioner may result in a more restricted outlet limit.) In the event of a storm with a return frequency of fifty (50) years or less, the proprietor shall not discharge the stormwater runoff at a rate greater than the calculated rate from the undeveloped site during a ten (10) year storm. Drainage calculations shall be submitted with the preliminary plat to show that the plat is in general conformance with these requirements. If the ten (10) year calculated rate of storm water discharge under undeveloped conditions exceeds 0.2 cfs/acre and the proprietor desires to discharge at the calculated rate, it will be necessary to show that the downstream conveyance system is capable of passing the flow. If the ten (10) year calculated rate of storm water discharge for the drainage area under undeveloped conditions is less than 0.7 cfs, the proprietor will be allowed to install a 4-inch diameter orifice as a minimum. Submission of flow calculations, cross-sections or other pertinent data shall be required.
 - 3.1.6 Any increase in the volume of water discharged due to development of the subdivision shall not be so great as to create adverse impacts on downstream property owners.
- 3.2 Final approval of the preliminary plat will be given after all preliminary plat requirements have been met and following payment of all appropriate fees as established by the most recent fee schedule adopted by the Commissioner.

SECTION IV - FINAL CONSTRUCTION PLAN APPROVAL

- 4.1 To carry out the provisions of the Act, and to determine that adequate storm drainage will be provided, and that the proposed construction plans will ensure adequate protection of downstream property owners and watercourses, the Commissioner shall require that the proprietor or his representative submit final construction plans along with a letter of transmittal.
- 4.1.1 Final construction plans shall be prepared under the direction of a Registered Professional Engineer and drawn to scale not smaller than 1" = 40'.
- 4.1.2 Three (3) complete sets of subdivision construction plans (24" x 36") shall be submitted which shall include the following:
- a) Subdivision layout of lots, roads and easements.
 - b) Plans, profiles and details of all roads and storm sewers. The storm sewer details shall include type and class of pipe, length of run, percent of slope, and elevation of all inverts, top of castings, and the profile of the hydraulic gradient.
 - c) Plans, profiles and details of all open ditch drains and drainage structures.
 - d) Plans and details of the proposed soil erosion and sedimentation control measures.
 - e) Plans and details of any detention/retention basins, if required, including copies of all relative drainage calculations.
 - f) A drainage area computation sheet indicating the number of acres calculated to the nearest tenth of an acre contributing to each specific inlet, the calculated hydraulic gradient elevation, drainage calculations showing the maximum flow in cfs and the flow velocities for enclosed systems.
 - g) Topographic maps or maps of two (2) foot contour intervals or less, on USGS datum, showing existing and proposed grades of the entire area to be subdivided. This map or maps shall also show all existing watercourses, lakes and swamps.
 - h) The number of acres proposed to be platted.
 - i) Locations of all existing and proposed drain fields as approved by the Health Department. Lots adjacent to proposed drainage easements shall have sufficient area to ensure that drain fields do not encroach on the easements.
 - j) Any specifications governing construction.
 - k) The design data and criteria used for sizing all drainage structures, channels and detention/retention basins.
- 4.2 The Act gives no time limit in which final construction plans must be reviewed; however, the Commissioner will attempt to review these plans in the shortest possible time. Therefore, it is imperative that initial and final submissions include all necessary information.

SECTION IV - FINAL CONSTRUCTION PLAN APPROVAL, (Cont'd)

- 4.3 A soil erosion permit under "Soil Erosion and Sedimentation Control", Act No. 347, Public Acts of 1974, as amended, may be required from the Marquette County Enforcement Agent prior to any on or off-site earth changes.
- 4.4 The approval of final construction plans by the Commissioner is valid for two (2) calendar years. Under certain conditions where extensions may be required, the proprietor shall petition the commissioner in writing for an extension stating the reasons for such extension. If there are no objections, the commissioner may extend the initial approval and such approval shall be in writing. Written notice of the extension shall be sent by the commissioner to the other approving authorities as provided under Section 120 of the Act.
- 4.5 Final approval of the construction plans will be given after all construction plan requirements have been met and following payment of all appropriate fees as established by the most recent fee schedule adopted by the Commissioner.

SECTION V - FINAL PLAT APPROVAL

- 5.1 The Proprietor shall submit the final plat mylars to the Commissioner along with any required filing and/or review fee as outlined in Section VII - Schedule of Fees. If the Commissioner approves the plat, he will affix his signature to it and the plat will be executed. If the Commissioner rejects the plat, written notice of such rejection stating the reasons for withholding approval and the revisions and/or corrections necessary prior to approval shall be forwarded to the Proprietor within ten (10) days of the date of submission of the final plat.
- 5.2 As a condition of the final plat approval, the Commissioner will require the following:
 - 5.2.1 Final approval of the preliminary plat by the governing body is valid for a two (2) year period. Evidence of approval by the governing body of the preliminary plat shall be submitted with the final plat. Such evidence shall include a copy of the minutes of the meeting wherein the governing body approved the preliminary plat (See Section 120 of the Act).
 - 5.2.2 All stormwater facilities must be free of sediment, unobstructed and in good working order at the date of acceptance. If adequate storm water facilities within the land proposed for platting are not installed before approval of the final plat, the proprietor shall enter into an agreement with the governing body or Commissioner and shall post a cash deposit or certified check in an amount not less than the cost of construction of the drainage facilities, whichever the proprietor selects. Rebates of any cash deposits shall be given to the proprietor as work progresses in accordance with the ratio of the work completed to the entire project.
 - 5.2.3 Certification of the stormwater facility construction must be submitted. If the governing body provides construction inspection, then the governing body may provide certification. The certificate must state that the stormwater facilities were installed in an acceptable manner and according to the approved construction plans. If the governing body does not provide certification, the certification shall be done by a Registered Professional Engineer selected by the Commissioner, and inspection fees must be deposited in advance with the Commissioner. The inspection fees shall be determined by the Commissioner.

SECTION V - FINAL PLAT APPROVAL, (Cont'd)

- 5.2.4 A certificate shall also be obtained from a Registered Professional Engineer satisfactory to the Commissioner to the effect that the outlet for the proposed county drain is the only reasonably available outlet for the drain and that there is sufficient capacity in the existing outlet for the proposed drain to serve as an adequate outlet without detriment or diminution of the drainage service which the outlet presently provides, as required by the Drain Code.
- 5.2.5 Landowners of land proposed to be platted shall enter into an agreement with the Marquette County Drain Commissioner to establish a drainage district that contains the platted land and drainage improvements in order to provide for future maintenance of the drainage improvements. A sample agreement can be found in Appendix A. If the governing municipality wherein the proposed plat resides accepts complete responsibility for maintenance, repair and cleaning of proposed drainage improvements, the requirement that a drainage district be created may be waived. The Commissioner will require a letter from the municipality accepting responsibility.
- 5.2.6 Reproducible mylars of the as-constructed plans of the drainage systems shall be provided to the Commissioner. The mylars shall be of quality material and 3 mils in thickness and acceptable to the Commissioner.
- 5.2.7 Digital files of the final plat as submitted for approval and the as-constructed drawings of the complete construction plans shall be provided in a format and on a media approved by the Commissioner.
- 5.2.8 Approval of the final plat will be given after all final plat requirements have been met, including the execution of the Agreement for the Establishment of a County Drain, if applicable, and following payment of all appropriate fees as established by the most recent fee schedule adopted by the Commissioner.

5.3_____Procedures When Drainage Improvements Are Made Prior to Submission of the Final Plat:

- 5.3.1 If the proprietor desires to make the necessary drain improvements required in the proposed subdivision before submission of the final plat, the proprietor's Registered Professional Engineer shall prepare drainage plans in accordance with the requirements set forth in Section VI.
- 5.3.2 The proprietor shall make satisfactory arrangements with the Commissioner before commencing any work in the subdivision to provide for the construction inspection of the project improvements by the Commissioner. These arrangements shall include among other things, the submission of three (3) sets of drainage plans for approval by the Commissioner. The proposed improvements shall be established as a county drain pursuant to Section 433 of the Drain Code, if the area being platted is not already in a drainage district. If the drainage work contemplates a relocation, tiling, deepening, or widening of a county drain, an application requesting approval of any such work shall be submitted to the Commissioner. The application for approval shall be accompanied by the necessary release of right-of-way in recordable form, executed by all owners of interest.

SECTION V - FINAL PLAT APPROVAL, (Cont'd)

- 5.3.3 If it is necessary to retain a natural watercourse because it serves land outside the subdivision, then recordable releases for said watercourse shall be submitted. The proprietor's Registered Professional Engineer shall submit a summary sheet listing and describing the items required to complete the watercourse. At the time this information is provided to the Commissioner, inspection deposits shall be determined by the Commissioner. Payment of same shall be made to the Commissioner, prior to the commencing of any on- or off-site construction work. The proprietor will be held legally responsible for the actual and necessary inspection costs incurred by the Commissioner.
 - 5.3.4 The proprietor should take whatever precautions are deemed necessary to ensure that the work performed by the contractor meets with the approval of the Commissioner. The attention of the proprietor is called to the inspection requirements of these rules.
 - 5.3.5 Upon completion of the improvements to the satisfaction of the Commissioner, the proprietor may submit the final plat to the Commissioner for approval. At this time the proprietor will be required to post a certified check or cash deposit with the Commissioner to guarantee repairs of any defects which may result from poor workmanship and/or defective materials, within one year after completion of the improvement. The amount of the deposit shall be equivalent to five (5%) percent of construction costs of projects over One Hundred Thousand (\$100,000.00) Dollars or ten (10%) percent for projects less than One Hundred Thousand (\$100,000.00) Dollars, which security shall be used for the completion of necessary repairs, if required. Should no defects occur within this period of one year and should no adjustments be required, the certified check or cash deposit will be returned to the proprietor.
- 5.4 Procedures When Drainage Improvements Are Made after Approval of Final Plat:
- 5.4.1 If the proprietor plans to have the plat recorded before completing the drainage improvements, he shall enter into an agreement with the Commissioner and post a certified check or cash deposit in an amount determined by the proprietor's Registered Professional Engineer and approved by the Commissioner to guarantee the completion of all drainage improvements in accordance with the Commissioner's requirements.
 - 5.4.2 The proprietor shall also enter into an agreement with the Commissioner to establish a county or intercounty drain and county or intercounty drainage district pursuant to Section 433 of the Drain Code. This agreement shall be signed and the required maintenance money deposited with the Commissioner prior to final plat approval, unless the Commissioner has waived this requirement based on the limited improvements required.
 - 5.4.3 The time for completion of the drainage improvements under this arrangement shall generally not extend for a period greater than one year from the original date of the agreement. If after this period, the drainage improvements are not completed, the Commissioner may require that the amount posted as surety be reviewed and renegotiated, or the Commissioner may exercise the right under the terms of the agreement to keep the certified check or cash deposit and proceed to fulfill the proprietor's obligation under such agreement at such time and in such manner as the Commissioner may determine to be necessary.

SECTION V - FINAL PLAT APPROVAL, (Cont'd)

5.4.4 In the event the proprietor makes a cash deposit to guarantee the requirements along with submission of the final plat, the Commissioner shall rebate to him portions of the original deposit as work progresses. However, the amount of deposit retained by the Commissioner will at no time be reduced to less than the cost for the Commissioner to complete the remaining work.

SECTION VI - STORM WATER DETENTION/RETENTION FACILITIES

- 6.1 The proposed use of storm water detention/retention facilities as part of the development's storm water drainage plan must be approved by the Commissioner prior to consideration by the Marquette County Road Commission.
- 6.2 The proprietor's Registered Professional Engineer shall explore all feasible alternatives to on-site storm water detention/retention basins. Retention basins will be approved by the Commissioner only in the event suitable alternatives cannot be implemented.
- 6.3 When approved as an acceptable part of the storm water drainage plan, the design of storm water detention/retention basins shall be based on storms having a fifty (50) year frequency and a twenty-four (24) hour duration. The method of estimating runoff shall be the U.S. Department of Agriculture Soil Conservation Service Method, hereinafter referred to as the S.C.S. method. The following parameters shall apply:
- a) A Type II storm distribution shall be used.
 - b) The Hydrologic Soil Group used for computations of site runoff shall be based on the most recent Soil Survey of Marquette County unless the developer can present evidence that the use of one or more of the other soil groups as shown in Appendix B, Figure I, is warranted.
 - c) Runoff Curve Numbers (CN) shall be determined from the chart included in Appendix B.
 - d) Rainfall Data for Marquette County, Michigan.

TABLE B-1		
Duration	Frequency	Rainfall
24 Hr.	2 Year	2.4 Inches
24 Hr.	10 Year	3.5 Inches
24 Hr.	25 Year	4.2 Inches
24 Hr.	50 Year	4.7 Inches
24 Hr.	100 Year	5.3 Inches

- e) The volume of runoff from a watershed shall be expressed as the average depth of water that would cover the entire watershed. This information shall be determined from Appendix B, Figure III.

SECTION VI - STORM WATER DETENTION/RETENTION FACILITIES, (Cont'd)

- f) Slopes to be used in detention/retention basin construction shall not be steeper than one (1) foot vertical to three (3) feet horizontal unless the Commissioner specifically approves otherwise based on site conditions. Embankment top-width shall be 10 feet minimum. There shall be a minimum of one (1) foot of freeboard above the design water level.
 - g) All basins shall have an emergency spillway designed to pass a storm event that exceeds the design storm.
 - h) Where the walls of a detention/retention basin are to be constructed as an earth fill embankment, the entire embankment surface shall be sodded unless an equivalent form of soil stabilization is specifically approved by the Commissioner. When a basin is created by excavation, the lower three (3) feet of the inside slopes shall be sodded and the remainder may be topsoiled, seeded, fertilized and mulched rather than sodded.
 - i) The entire bottom of the detention/retention basin shall generally be cleared and grubbed of underbrush and small trees. The decision to utilize existing and/or natural basin areas or to leave mature trees, will be at the discretion of the Commissioner.
 - j) To facilitate maintenance access, a stabilized gravel drive a minimum of 12 feet wide at a 1-on-4 maximum slope shall be provided from the subdivision street to the bottom area of the basin.
 - k) Inflow and outflow structure details, when such structures are to be used, will be reviewed for approval by the Commissioner on an individual basis. The outflow structure shall be designed to completely drain the detention basin.
 - l) Stormwater detention/retention basins must provide storage capacity for the additional runoff resulting from the development of the site. In addition, the detention/retention basin capacity shall be increased by 5% of the calculated storage volume to provide for an average year accumulation of sediment load from the watershed.
 - m) When it is determined to be necessary by the Commissioner, the entire periphery of the storm water detention/retention basin area shall be enclosed by a four (4) foot high fence. Where a fence is required, the fence shall be eleven (11) gauge galvanized steel of the chain-link type with knuckled selva as a minimum. Metal posts shall be used. For maintenance purposes, a twelve (12) foot wide metal gate utilizing the same fabric type shall be located in the fence across the access drive to allow access from the subdivision street to the bottom area of the basin.
 - n) A depth gauge shall be installed at the deepest part of the basin for the purpose of measuring depth of water in the basin. A sediment gauge shall be installed near the inlet for the purpose of measuring accumulation of sediment.
- 6.4 The requirements listed in this section may be revised when it is deemed necessary by the Commissioner. When the final construction of the stormwater detention/retention basin has been satisfactorily completed, written approval will be provided by the Commissioner. All costs incurred prior to approval shall be the responsibility of the proprietor.

SECTION VI - STORM WATER DETENTION/RETENTION FACILITIES, (Cont'd)

- 6.5 The Commissioner reserves the right to make exceptions to these rules when it is deemed by the Commissioner that the circumstances warrant the exceptions.

SECTION VII - SCHEDULE OF FEES

- 7.1 There shall be a minimum fee for the filing and review of all preliminary and final plats and final construction plans submitted in accordance with the following schedule:
- 7.1.1 The Preliminary Plat filing fee shall be paid to the Commissioner at the time of initial application and submission of the preliminary plat. Since the time required to review the preliminary plat will vary depending on the magnitude and detail required in determining adequate drainage provisions, an additional fee may be required based upon expenses incurred by the office of the Commissioner. The review fee shall be paid prior to approval of the preliminary plat.
 - 7.1.2 Construction Plan fees shall accompany the submission of the final construction plans. Since the time required to review the construction plans will vary depending on the magnitude and the detail required in determining adequate drainage provisions, an additional fee shall be required based upon expenses incurred by the office of the Commissioner. Any additional fee shall be paid prior to approval of the final construction plans.
 - 7.1.3 The Final Plat fee shall be paid to the Commissioner at the time of the filing of the final plat with the Commissioner for final approval and signing.
 - 7.1.4 Refer to Appendix C for the list of specific fee amounts.

ARTICLE C -

LANDS WITHIN AN ESTABLISHED COUNTY DRAINAGE DISTRICT

SECTION I - DRAINAGE PLAN SUBMISSION

- 1.1 All proposed development plans within an established County Drainage District shall be submitted to the office of the Commissioner. The filing fee and any subsequent filing or review fees provided for in these rules, regulations and procedures shall accompany the submission of the site plans and shall be deposited with the commissioner prior to review.
- 1.2 Prior to submission of the site plan, the developer shall request preliminary design basis criteria from the Commissioner to establish a stormwater runoff basis for the development.
- 1.3 After the developer has completed the preliminary drainage analysis, he shall request a meeting with the Commissioner to review the feasibility of the proposed drainage plan. The intent of this meeting is to alert the developer to restrictions which may be associated with the County Drain.
- 1.4 The developer shall complete a hydrologic analysis and submit it to the Commissioner for review and approval with the site plan and filing appropriate fees in accordance with the established fee schedule (See Appendix C).
- 1.5 The site plans shall include any off-site stormwater conveyance between the proposed site and the County Drain and shall include an analysis which demonstrates that future development along the conveyance is not restricted.
- 1.6 The Commissioner reserves the right to review proposed development plans and conclude that such development is insignificant with regard to its effect on the stormwater runoff to the drain. In that case, further submittal may not be required.

SECTION II - DRAINAGE PLAN REQUIREMENTS

- 2.1 The site plans submitted for review shall include the design basis and associated calculations of the proposed drainage improvements for the proposed site development or they will be returned. The site plans shall detail the location, size and slope of any drainage improvements along with catch basins and manholes and shall include adequately designed outlet facilities.
- 2.2 Drainage proposed for the development shall conform to the design capacity of the established County Drain.
- 2.3 The site plan shall indicate any proposed on-site and/or off-site drainage facilities together with appropriate easements.
- 2.4 The site plan shall indicate any drainage originating outside of the land development which has previously flowed onto or across it, as well as any natural watercourses and County Drains that traverse or abut the land to be developed.

SECTION II - DRAINAGE PLAN REQUIREMENTS, (Cont'd)

- 2.5 Proposed drainage facilities should complement the County Drain master plan for drainage. It is the responsibility of the proprietor to provide a stormwater management plan that is both suitable for the site development and which can be integrated into the overall County Drain management plan for the surrounding watershed.
- 2.6 The discharge from a site development shall be limited to no more than 0.2 cfs/acre of area of the development property being drained during a 50 year storm. Special cases as may be defined by the Commissioner may result in a more restricted discharge limit. The proprietor may not discharge the stormwater runoff at a rate greater than the calculated rate from the undeveloped site during a ten (10) year storm, unless he provides an analysis which demonstrates that the capacity of the existing drainage system will not be exceeded with full development as presently zoned. If the calculated rate of storm water discharge exceeds 0.2 cfs/acre and the proprietor desires to discharge at the calculated rate, it will be necessary to show that the conveyance system has adequate capacity. Submission of flow calculations, cross-sections or other pertinent data shall be required.

SECTION III - SITE PLAN REQUIREMENTS

- 3.1 To carry out the provisions of the Drain Code, and to determine that adequate storm drainage will be provided, and that the proposed construction plans will ensure adequate protection of downstream property owners and watercourses, the Commissioner shall require that the proprietor or his representative submit final site plans along with a letter of transmittal.
- 3.1.1 Site plans shall be prepared under the direction of a Registered Professional Engineer and drawn to scale not smaller than 1" = 40 feet.
- 3.1.2 Three (3) complete sets of plans (24" x 36") shall be submitted which shall include the following:
- a) Layout of the site, including roads and easements, the area of the property in acres, and the number of acres to be developed.
 - b) Plans, profiles and details of all roads and storm sewers. The storm sewer details shall include type and class of pipe, length of run, percent of slope, and elevation of all inverts, top of castings, and profile of the hydraulic gradient.
 - c) Plans, profiles and details of all, open ditch drains and drainage structures.
 - d) Plans and details of the proposed soil erosion and sedimentation control measures.
 - e) Plans and details of any detention/retention basins, if required, including copies of all relative calculations.
 - f) A drainage area computation sheet indicating the number of acres calculated to the nearest tenth of an acre contributing to each specific inlet, the calculated hydraulic gradient elevation, maximum flow in cfs and the flow velocities for enclosed systems.

SECTION III - SITE PLAN REQUIREMENTS, (Cont'd)

- g) Topographic map or maps of two (2) foot contour intervals or less, on USGS datum, showing existing and proposed grades of the entire area of construction influence. This map or maps shall also show all existing watercourses, lakes and swamps.
 - h) Locations of all existing and proposed drain fields as approved by the Health Department. Lots adjacent to proposed drainage easements shall have sufficient area to ensure that drain fields do not encroach on the easements.
 - i) Any specifications governing construction.
 - j) The design data and criteria used for sizing all drainage structures, channels and detention/retention basins.
- 3.2 The Commissioner will attempt to review plans in the shortest possible time. Therefore, it is imperative that submissions include all necessary information.
- 3.3 A soil erosion permit under "Soil Erosion and Sedimentation Control", P.A. 347, Public Acts of 1974, as amended, may be required from the Marquette County Conservation District prior to any on or off-site earth changes.
- 3.4 The approval of site plans by the Commissioner is valid for two (2) calendar years. Under certain conditions where extensions may be required, the proprietor shall petition the Commissioner in writing for an extension stating the reasons for such extension. If there are no objections, the Commissioner may extend the initial approval and such approval shall be in writing. Written notice of the extension shall be sent by the Commissioner to the other approving authorities as provided under the Drain Code.
- 3.5 Final approval of the site plan will be given after all site plan requirements have been met and following payment of appropriate fees as established by the most recent fee schedule adopted by the Commissioner.

SECTION IV - FINAL PLAN APPROVAL

- 4.1 The Proprietor shall submit the final plan mylars to the Commissioner along with any required filing and/or review fee as outlined in Section VII - Schedule of Fees. If the Commissioner approves the plan, he will furnish written approval to the Proprietor. If the Commissioner rejects the plan, written notice of such rejection stating the reasons for withholding approval and the revisions and/or corrections necessary prior to approval shall be forwarded to the Proprietor within thirty (30) days of the date of submission of the final plan.
- 4.2 As a condition of the final plan approval, the Commissioner will require the following:
 - 4.2.1 All stormwater facilities must be free of sediment, unobstructed and in good working order at the date of acceptance. The proprietor shall post a cash deposit or certified check in an amount not less than the cost of construction of the drainage facilities, with Commissioner. Rebates of any cash deposits shall be given to the proprietor as work progresses in accordance with the ratio of the work completed to the entire project.

SECTION IV - FINAL PLAN APPROVAL, (Cont'd)

After the work has been accepted by the Commissioner, the certified check or the balance of the cash deposit will be returned to the Proprietor.

- 4.2.2 Certification of the stormwater facility construction must be submitted. The certificate must state that the stormwater facilities were installed in an acceptable manner and according to the approved construction plans. The certification shall be done by a Registered Professional Engineer acceptable to the Commissioner, and inspection fees must be deposited in advance with the Commissioner. The inspection fees shall be determined by the Commissioner.
- 4.2.3 A certificate shall also be obtained from a Registered Professional Engineer satisfactory to the Commissioner to the effect that the outlet for the proposed county drain is the only reasonably available outlet for the drain and that there is sufficient capacity in the existing outlet for the proposed drain to serve as an adequate outlet without detriment or diminution of the drainage service which the outlet presently provides, as required by the Drain Code.
- 4.2.4 Reproducible mylars of the as-constructed plans of the drainage systems shall be provided to the Commissioner. The mylars shall be of quality material and 3 mils in thickness and acceptable to the Commissioner.
- 4.2.5 Digital files of the final plan as submitted for approval and the as-constructed drawings of the complete construction plans shall be provided in a format and on a media approved by the Commissioner.

SECTION V - STORM WATER DETENTION/RETENTION FACILITIES

- 5.1 The proposed use of storm water detention/retention facilities as part of the development's stormwater drainage plan must be approved by the Commissioner prior to consideration by the Marquette County Road Commission.
- 5.2 The proprietor's Registered Professional Engineer shall explore all feasible alternatives to on-site stormwater detention/retention basins. Retention basins will be approved by the Commissioner only in the event suitable alternatives cannot be implemented.
- 5.3 If the proposed development is planned in stages or will be phased, a master plan of the total planned development showing the proposed total layout shall be submitted with the first phase clearly delineated thereon. Subsequent phases shall be added as the development progresses to illustrate the method and direction of development the proprietor intends to pursue. Staged or phased development will be accepted and approved on an individual basis and each submission shall follow the same procedures as outlined herein. Final acceptance of the individual phases of part of a total master plan for development does not ensure total acceptance of the master plan. Flexibility should be provided to accommodate any necessary or desired changes and/or revisions.
- 5.4 When approved as an acceptable part of the stormwater drainage plan, the design of stormwater detention basins shall be based on the design parameters used for the stormwater drainage plan. The design of retention basins shall be based on storms having a one hundred (100) year frequency and a twenty-four (24) hour duration. The method of estimating runoff shall be the S.C.S. method. The following parameters shall apply:

SECTION V - STORM WATER DETENTION/RETENTION FACILITIES, (Cont'd)

- a) A Type II storm distribution shall be used.
- b) The Hydrologic Soil Group used for computations of site runoff shall be based on the most recent Soil Survey of Marquette County unless the developer can present evidence that the use of one or more of the other soil groups as shown in Appendix B, Figure I, is warranted.
- c) Runoff Curve Numbers (CN) shall be determined from the chart included in Appendix B.
- d) Rainfall Data for Marquette County, Michigan.

TABLE C-1		
Duration	Frequency	Rainfall
24 Hr.	2 Year	2.4 Inches
24 Hr.	10 Year	3.5 Inches
24 Hr.	25 Year	4.2 Inches
24 Hr.	50 Year	4.7 Inches
24 Hr.	100 Year	5.3 Inches

- e) The volume of runoff from a watershed shall be expressed as the average depth of water that would cover the entire watershed. This information shall be determined from Appendix B, Figure III.
- f) Slopes to be used in detention/retention basin construction shall not be steeper than one (1) foot vertical to three (3) feet horizontal unless the Commissioner specifically approves otherwise based on site conditions. Embankment top-width shall be 10 feet minimum. There shall be a minimum of one (1) foot of freeboard above the design water level.
- g) All basins shall have an emergency spillway designed to pass a storm event that exceeds the design storm.
- h) Where the walls of a detention/retention basin are to be constructed as an earth fill embankment, the entire embankment surface shall be sodded unless, an equivalent form of soil stabilization is specifically approved by the Commissioner. When a basin is created by excavation, the lower three (3) feet of the inside slopes shall be sodded and the remainder may be topsoiled, seeded, fertilized and mulched rather than sodded.
- i) The entire bottom of the detention/retention basin shall generally be cleared and grubbed of underbrush and small trees. The decision to utilize existing and/or natural basin areas or to leave mature trees will be at the discretion of the Commissioner.
- j) To facilitate maintenance access, a stabilized gravel drive a minimum of 12 feet wide at a 1-on-4 maximum slope shall be provided from the street to the bottom area of the basin.

SECTION V - STORM WATER DETENTION/RETENTION FACILITIES, (Cont'd)

- k) Inflow and outflow structure details, when such structures are to be used, will be reviewed for approval by the Commissioner on an individual basis. The outflow structure shall be designed to completely drain the detention basin.
 - l) Storm water detention/retention basins must provide storage capacity for the additional runoff resulting from the development of the site. In addition, the detention /retention basin capacity shall be increased by 5% of the calculated storage volume to provide for an average year accumulation of sediment load from the watershed.
 - m) When it is determined to be necessary by the Commissioner, the entire periphery of the storm water detention/retention basin area shall be enclosed by a four (4) foot high fence. Where a fence is required, the fence fabric shall be eleven (11) gauge galvanized steel of the chain-link type with knuckled selvage as a minimum. Metal posts shall be used. For maintenance purposes, a twelve (12) foot wide metal gate utilizing the same fabric type shall be located in the fence to allow access from the street to the bottom area of the basin.
 - n) A depth gauge shall be installed at the deepest part of the basin for the purpose of measuring depth of water in the basin. A sediment gauge shall be installed near the inlet for the purpose of measuring accumulation of the sediment.
- 5.5 The requirements listed in this section may be revised when it is deemed necessary by the Commissioner. When the final construction of the stormwater detention/retention basin has been satisfactorily completed, written approval will be provided by the Commissioner. All costs incurred prior to approval shall be the responsibility of the proprietor.
- 5.6 The Commissioner reserves the right to make exceptions to these rules when it is deemed by the Commissioner that the circumstances warrant the exceptions.

SECTION VI - SCHEDULE OF FEES

There shall be a minimum filing fee for the review and filing of the site plans. Since the time required to review the construction plans can vary considerably dependent on the magnitude and the detail required in determining adequate drainage provisions, an additional fee shall be required based upon time and expenses incurred by the office of the Drain Commissioner and shall be paid prior to the approval of the site plan. Refer to Appendix C for the filing fee amount.

ARTICLE D - ALL OTHER LANDS

SECTION I - DRAINAGE PLAN SUBMISSION

- 1.1 The developer shall request preliminary design basis criteria from the Commissioner to establish a stormwater runoff basis for the development.
- 1.2 After the developer has completed the preliminary drainage analysis, he shall request a meeting with the Commissioner to review the feasibility of the proposed solution. The intent of this meeting is to alert the developer to restrictions which may be associated with a proposed solution.
- 1.3 The developer shall complete a hydrologic analysis and submit it to the Commissioner for review and approval.
- 1.4 The site plans shall include any off-site stormwater conveyance between the proposed site and the downstream conveyances and shall include an analysis which demonstrates that future development along the conveyance is not restricted.
- 1.5 The Commissioner reserves the right to review proposed development and conclude the such development is insignificant with regard to its effect on the stormwater runoff to the drain. In that case, further submittal may not be required.

SECTION II - DRAINAGE PLAN REQUIREMENTS

- 2.1 The site plans submitted for review shall include design of the proposed drainage improvements for the proposed site development or they will be returned. The site plans shall detail the location, size and slope of any drainage improvements along with catch basins and manholes and shall include adequately designed outlet facilities.
- 2.2 The site plan shall indicate any proposed on-site and/or off-site drainage facilities together with appropriate easements.
- 2.3 The site plan shall indicate any drainage originating outside of the land development which has previously flowed onto or across it, as well as any natural watercourses and county drains that traverse or abut the land to be developed.
- 2.4 Proposed drainage facilities should complement the community master plan for drainage, if such a plan is available. It is the responsibility of the proprietor to provide a stormwater management plan that is both suitable for the site development and which can be integrated into the overall management plan for the surrounding watershed.
- 2.5 The discharge from a site development shall limit peak stormwater discharge to no more than 0.2 cfs/acre of area of the development property being drained during a fifty (50) year storm. Special cases as may be defined by the Commissioner may result in a more restricted outlet limit. In the event of a storm with a return frequency of 50 years or less, the proprietor shall not discharge the stormwater runoff at a rate greater than the calculated rate from the undeveloped site during a ten (10) year storm, unless he provides an analysis which demonstrates that the capacity of the existing drainage system will not be exceeded with full development as presently zoned.

SECTION II - DRAINAGE PLAN REQUIREMENTS, (Cont'd)

If the calculated rate of storm water discharge exceeds 0.2 cfs/acre and the proprietor desires to discharge at the calculated rate, it will be necessary to show that an outlet exists capable of passing the flow. Submission of flow calculations, cross-sections or other pertinent data shall be required.

- 2.6 All drain fields and/or septic areas shall be a minimum of 100 feet from the annual high water mark of any detention/retention basins.
- 2.7 Any increase in the volume of water discharged due to development of the site shall not be so great as to create adverse impacts on downstream property owners.

SECTION III - SITE PLAN REQUIREMENTS

- 3.1 To determine that adequate storm drainage will be provided, and that the proposed construction plans will ensure adequate protection of downstream property owners and watercourses, the Commissioner shall require that the proprietor or his representative submit final site plans along with a letter of transmittal. The site plans shall include but not be limited to the following:
 - 3.1.1 Site plans shall be prepared under the direction of a Registered Professional Engineer and drawn to scale not smaller than 1" = 40 feet.
 - 3.1.2 Three (3) complete sets of plans (24" x 36") shall be submitted which include the following:
 - a) Layout of site, including roads and easements, the area of the property in acres, and the number of acres to be developed.
 - b) Plans, profiles and details of all roads and storm sewers. The storm sewer details shall include type and class of pipe, length of run, percent of slope, and elevation of all inverts, top of castings, and profile of the hydraulic gradient.
 - c) Plans, profiles and details of all open ditch drains and drainage structures.
 - d) Plans and details of the proposed soil erosion and sedimentation control measures.
 - e) Plans and details of any detention/retention basins, if required, including copies of all relative calculations.
 - f) A drainage area computation sheet indicating the number of acres calculated to the nearest tenth of an acre contributing to each specific inlet, the calculated hydraulic gradient elevation, maximum flow in cfs and the flow velocities for enclosed systems.
 - g) Topographic map or maps of two (2) foot contour intervals or less, on USGS datum, showing existing and proposed grades of the entire area of construction influence. This map or maps shall also show all existing watercourses, lakes and swamps.
 - h) Locations of all existing and proposed drain fields as approved by the Health Department. Parcels adjacent to proposed drainage easements shall have sufficient area to ensure that drain fields do not encroach on the easements.

SECTION III - SITE PLAN REQUIREMENTS, (Cont'd)

- i) Any specifications governing construction.
 - j) The design data and criteria used for sizing all drainage structures, channels and detention/retention basins.
- 3.2 The Commissioner will attempt to review plans in the shortest possible time. Therefore, it is imperative that submissions include all necessary information.
- 3.3 A soil erosion permit under "Soil Erosion and Sedimentation Control", P.A. 347, Public Acts of 1974, as amended, may be required from the Marquette County Conservation District prior to any on or off-site earth changes.
- 3.4 Recommendation for approval of the site plan will be given after all site plan requirements have been met.
- 3.5 The Commissioner shall bill the governing body for actual costs associated with the review.

SECTION IV - STORM WATER DETENTION / RETENTION FACILITIES

- 4.1 The developer's Registered Professional Engineer shall explore all feasible alternatives to on-site stormwater detention/retention basins. Retention basins will be approved by the Commissioner only in the event suitable alternatives cannot be implemented.
- 4.2 If the proposed development is planned in stages or will be phased, a master plan of the total planned development showing the proposed total layout shall be submitted with the first phase clearly delineated thereon. Subsequent phases shall be added as the development progresses to illustrate the method and direction of development the proprietor intends to pursue. Staged or phased development will be accepted and approved on an individual basis and each submission shall follow the same procedures as outlined herein. Final acceptance of the individual phases of part of a total master plan for development does not ensure total acceptance of the master plan. Flexibility should be provided to accommodate any necessary or desired changes and/or revisions.
- 4.3 When approved as an acceptable part of the stormwater drainage plan, the design of stormwater detention/retention basins shall be based on storms having a fifty (50) year frequency and a twenty-four (24) hour duration. The method of estimating runoff shall be the S.C.S. method. The following parameters shall apply:
 - a) A Type II storm distribution shall be used.
 - b) The Hydrologic Soil Group used for computations of site runoff shall be based on the most recent Soil Survey of Marquette County unless the developer can present evidence that the use of one or more of the other soil groups as shown in Appendix B, Figure I, is warranted.
 - c) Runoff Curve Numbers (CN) shall be determined from the chart included in Appendix B.
 - d) Rainfall Data for Marquette County, Michigan.

SECTION IV - STORM WATER DETENTION / RETENTION FACILITIES, (Cont'd)

TABLE D-1		
Duration	Frequency	Rainfall
24 Hr.	2 Year	2.4 Inches
24 Hr.	10 Year	3.5 Inches
24 Hr.	25 Year	4.2 Inches
24 Hr.	50 Year	4.7 Inches
24 Hr.	100 Year	5.3 Inches

- e) The volume of runoff from a watershed shall be expressed as the average depth of water that would cover the entire watershed. This information shall be determined from Appendix B, Figure III.
- f) Slopes to be used in detention/retention basin construction shall not be steeper than one (1) foot vertical to three (3) feet horizontal unless the Commissioner specifically approves otherwise based on site conditions. Embankment top-width shall be 10 feet minimum. There shall be a minimum of one (1) foot of freeboard above the design water level.
- g) All basins shall have an emergency spillway designed to pass a storm event that exceeds the design storm.
- h) Where the walls of a detention/retention basin are to be constructed as an earth fill embankment, the entire embankment surface shall be sodded unless, an equivalent form of soil stabilization is specifically approved by the Commissioner. When a basin is created by excavation, the lower three (3) feet of the inside slopes shall be sodded and the remainder may be topsoiled, seeded, fertilized and mulched rather than sodded.
- I) The entire bottom of the detention/retention basin shall generally be cleared and grubbed of underbrush and small trees. The decision to utilize existing and/or natural basin areas or to leave mature trees will be at the discretion of the Commissioner.
- j) To facilitate maintenance access, a stabilized gravel drive a minimum of 12 feet wide at a 1-on-4 maximum slope shall be provided from the street to the bottom area of the basin.
- k) Inflow and outflow structure details, when such structures are to be used, will be reviewed for approval by the Commissioner on an individual basis. The outflow structure shall be designed to completely drain the detention basin.
- l) Storm water detention/retention basins must provide storage capacity for the additional runoff resulting from the development of the site. In addition, the detention/retention basin capacity shall be increased by 5% of the calculated storage volume to provide for an average year accumulation of sediment load from the watershed.

SECTION IV - STORM WATER DETENTION / RETENTION FACILITIES, (Cont'd)

- m) When it is determined to be necessary by the Commissioner, the entire periphery of the storm water detention/retention basin area shall be enclosed by a four (4) foot high fence. Where a fence is required, the fence fabric shall be eleven (11) gauge galvanized steel of the chain-link type with knuckled selvage as a minimum. Metal posts shall be used. For maintenance purposes, a twelve (12) foot wide metal gate utilizing the same fabric type shall be located in the fence to allow access from the street to the bottom area of the basin.
 - n) A depth gauge shall be installed at the deepest part of the basin for the purpose of measuring depth of water in the basin. A sediment gauge shall be installed near the inlet for the purpose of measuring accumulation of the sediment.
- 4.4 The requirements listed in this section may be revised when it is deemed necessary by the Commissioner. When the final construction of the stormwater detention/retention basin has been satisfactorily completed, written approval will be provided by the Commissioner. All costs incurred prior to approval shall be the responsibility of the proprietor.
- 4.5 The Commissioner reserves the right to make exceptions to these rules when it is deemed by the Commissioner that the circumstances warrant the exceptions.

APPENDIX A

AGREEMENT FOR THE ESTABLISHMENT OF A COUNTY
OR INTERCOUNTY DRAIN AND DRAINAGE DISTRICT

**AGREEMENT FOR THE ESTABLISHMENT OF A COUNTY OR INTERCOUNTY DRAIN
AND COUNTY OR INTERCOUNTY DRAINAGE DISTRICT PURSUANT TO SECTION
433 OF ACT NO. 40 OF THE PUBLIC ACTS OF 1956, AS AMENDED**

This Agreement, made and entered into this _____ day of _____,
_____, by and between _____, MARQUETTE
COUNTY DRAIN COMMISSIONER, hereinafter referred to as "Drain Commissioner"; and
_____ of _____, as owner(s) of
land described in Exhibit A attached hereto, hereinafter referred to as "Landowner."

WITNESSETH:

WHEREAS, Section 433 of Act No. 40 of the Public Acts of 1956, as amended, authorizes the Drain Commissioner to enter into an Agreement with the Landowner and developer, if any, to establish an existing private drain which was constructed by the Landowner or developer to service an area of his or her own land as a County or Intercounty Drain; and,

WHEREAS, Landowner, pursuant to Section 433 of Act No. 40 of 1956, as amended, wishes to provide drainage service to his or her own lands and has requested same to be established and dedicated as a County or Intercounty Drain under the jurisdiction of the Drain Commissioner; and,

WHEREAS, Landowner has been advised and understands and agrees to assume the total cost of the construction of the private drain to include engineering, inspection, easement acquisition, administrative expenses and costs attendant to this Agreement; and,

WHEREAS, Landowner further understands that when the Drain constructed, or to be constructed, pursuant to this Agreement is finally accepted by the Drain Commissioner, that the land to be drained will be known and constituted as the _____ Drain Drainage District and the Drain will known as the _____ Drain and will be subject to assessments, for costs of future inspection, maintenance and improvement; and,

WHEREAS, Landowner has agreed to assume and pay all costs as set forth herein; and,

WHEREAS, Landowner has obtained, at his or her own expense, a certificate from a registered professional engineer satisfactory to the Drain Commissioner to the effect that the outlet for the Drain is the only reasonably available outlet and that there is sufficient capacity in the existing outlet for the proposed Drain to serve as an adequate outlet without detriment to or diminution of the drainage service which the outlet presently provides. A copy of said certificate being attached hereto as Exhibit B.

NOW, THEREFORE, in consideration of the premises and covenants of each, the parties hereto agree as follows:

1. Landowner agrees to construct or has constructed, at his or her expense, the Drain and appurtenances in accordance with plans and specifications approved by the Drain Commissioner.

2. The Landowner agrees to pay, and/or has paid, the costs of construction of said Drain and drainage facilities, including the acquisition of the necessary right-of-ways or easements, engineering, surveying, inspection and administration costs. In addition, the Landowner has deposited with the Drain Commissioner an amount of money equivalent to five (5%) percent of the costs of construction of the Drain, not to exceed Two Thousand Five Hundred and no/100 (\$2,500.00) Dollars, which monies are to be deposited in a special drain fund to be used for future maintenance of the drain.
3. That, the Landowner shall secure, at his or her own expense, all easements or right-of-ways necessary for the construction of the Drain over and across the properties owned by the Landowner and across such other lands as necessary for the construction of the drain from the point of beginning at the outlet to the point of ending. Said easements or right-of-ways shall be secured in writing and in a form acceptable to the Drain Commissioner. The Landowner shall be responsible for all costs for the recording of said easements, as directed by the Drain Commissioner.
4. That, in the event that the Landowner intends or is required to use detention or retention facilities which are to be located off-site of the lands described in Exhibit A, Landowner shall submit plans and specifications for said facilities to the Drain Commissioner for approval, detailing location, capacity, construction and outlet for facilities. Landowner shall secure all necessary easements or right-of-ways for said detention or retention facilities, inlets and outlets, as well as sufficient easements or right-of-ways for maintenance of said facilities. The description of said facilities and easements are attached hereto as Exhibit C.
5. Landowner shall secure all necessary permits or authorizations as may be required by local, state or federal law.
6. Landowner shall prepare, or cause to be prepared and conveyed to the Drain Commissioner, a map and description of the proposed Drainage District and provide, without charge, one set of reproducible mylar record drawings of the Drain as constructed, which shall include design calculations showing flow rates, impervious factors, drainage district and sub-district parcel descriptions and any other data needed by the Drain Commissioner for proper drain operation, maintenance, inspection and assessment.
7. Landowner agrees to provide to the Drain Commissioner, without charge, one copy of the Master Deed Agreement as recorded with the Marquette County Register of Deeds for condominium developments and/or one set of final subdivision plans prepared consistent with the provisions of the Michigan Subdivision Control Act.
8. That, Landowner shall notify the Drain Commissioner of the completion of the construction of the proposed Drain, at which time the Drain Commissioner shall perform, or cause to be performed, an inspection, advising of defects and corrections to be made by Landowner. Upon completion of the inspection, Landowner shall post with the Drain Commissioner cash or other security acceptable to the Drain Commissioner, in an amount equivalent to five (5%) percent of construction costs of projects over One Hundred Thousand and no/100 (\$100,000.00) Dollars or ten (10%) percent for projects less than One Hundred Thousand and no/100 (\$100,000.00) Dollars, which security shall be used for the completion of necessary repairs, as specified below.

One year following inspection and posting of security, Landowner shall request the Drain Commissioner to make final inspection. The Drain Commissioner shall proceed with the final inspection of the project and, following such inspection, the Drain Commissioner shall notify Landowner of the necessity for corrections of any defects of the project. At such time as the Landowner makes the corrections as specified by the Drain Commissioner, the Drain Commissioner shall issue a letter of final acceptance of the Drain as a County or Intercounty Drain and, by operation of this Agreement, same shall be so dedicated and will be established as a County or Intercounty Drain pursuant to the provisions of Act 40 of the Public Acts of 1956, as amended. In the event that Landowner fails to make the necessary corrections of specified defects, the Drain Commissioner shall either deny final acceptance of the project as a County or Intercounty Drain, or make the necessary corrections, utilizing the cash or security posted by Landowner, refunding any unused monies to Landowner. That prior to final acceptance of the project by the Drain Commissioner, Landowner shall file in the office of the Drain Commissioner a sworn statement that all claims or amounts due for labor, materials and equipment furnished for the project have been paid in full.

9. The payment of the costs of the project is agreed and understood as being for the sole benefit of the _____ Drain and use thereof may be made by the _____ Drain Drainage District at large, or part thereof, and that such payment shall not relieve the subject property from any future assessments levied pursuant to the Drain Code of 1956, as amended.
10. Prior to written final acceptance being issued by the Drain Commissioner, the Landowner shall be responsible for any and all construction costs and liens and shall further indemnify and hold harmless the Drainage District, the Drain Commissioner and the County of Marquette from any and all damages, costs or fees which may arise as a result of the lawful or unlawful discharge of any material deemed to be toxic or which may constitute a pollutant by any state or federal agency. Further, Landowner shall be responsible for any and all clean up costs and disposal of any such material and shall hold harmless and indemnify the Drainage District, the Drain Commissioner and/or Marquette County with regard to same.

This Agreement shall become effective upon its execution by the Landowner and the Drain Commissioner and shall be binding upon the successors and assigns of each party.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by the duly authorized officers as of the day and year first above written.

IN THE PRESENCE OF:

Marquette County Drain Commissioner

STATE OF MICHIGAN }
 }
 }**s.s.**
COUNTY OF MARQUETTE }

On this _____ day of _____, _____, before me, a Notary Public in and for said County, personally appeared _____, Marquette County Drain Commissioner, to me known to be the person described in and who executed the foregoing instrument and acknowledged the same to be his free act and deed.

_____, Notary Public

_____ County, Michigan

My Commission expires: _____

IN THE PRESENCE OF:

Land Owner

By: _____

Its: _____

IN THE PRESENCE OF:

Land Owner

By: _____

Its: _____

STATE OF MICHIGAN }
 }
COUNTY OF MARQUETTE }
 }

On this _____ day of _____, _____, before me, a Notary Public in and for said County, personally appeared _____, Marquette County Drain Commissioner, to me known to be the person described in and who executed the foregoing instrument and acknowledged the same to be his free act and deed.

, Notary Public

County, Michigan

My Commission expires: _____

DRAFTED BY:
CARR W. BALDWIN
E C I
424 S. PINE STREET
ISHPEMING, MI 49849
(906) 485-1011
JULY 2007

APPENDIX B

SURFACE RUNOFF TABLES AND CHARTS

FIGURE I
USDA / SCS Runoff Curve Numbers for Selected Agricultural, Suburban and Urban Land Use

Cover description	Average percent impervious area ^{2/}	Curve numbers for hydrologic soil group			
		A	B	C	D
Cover type and hydrologic condition					
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) ^{2/} :					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ^{2/}		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
<i>Developing urban areas</i>					
Newly graded areas (pervious areas only, no vegetation) ^{2/}		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

¹ Average runoff condition, and $I_a = 0.2S$.

² The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

³ CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

⁴ Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

⁵ Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

FIGURE II
 U.S. Weather Bureau 10-year, 24-hour Rainfall Chart for Conterminous United States

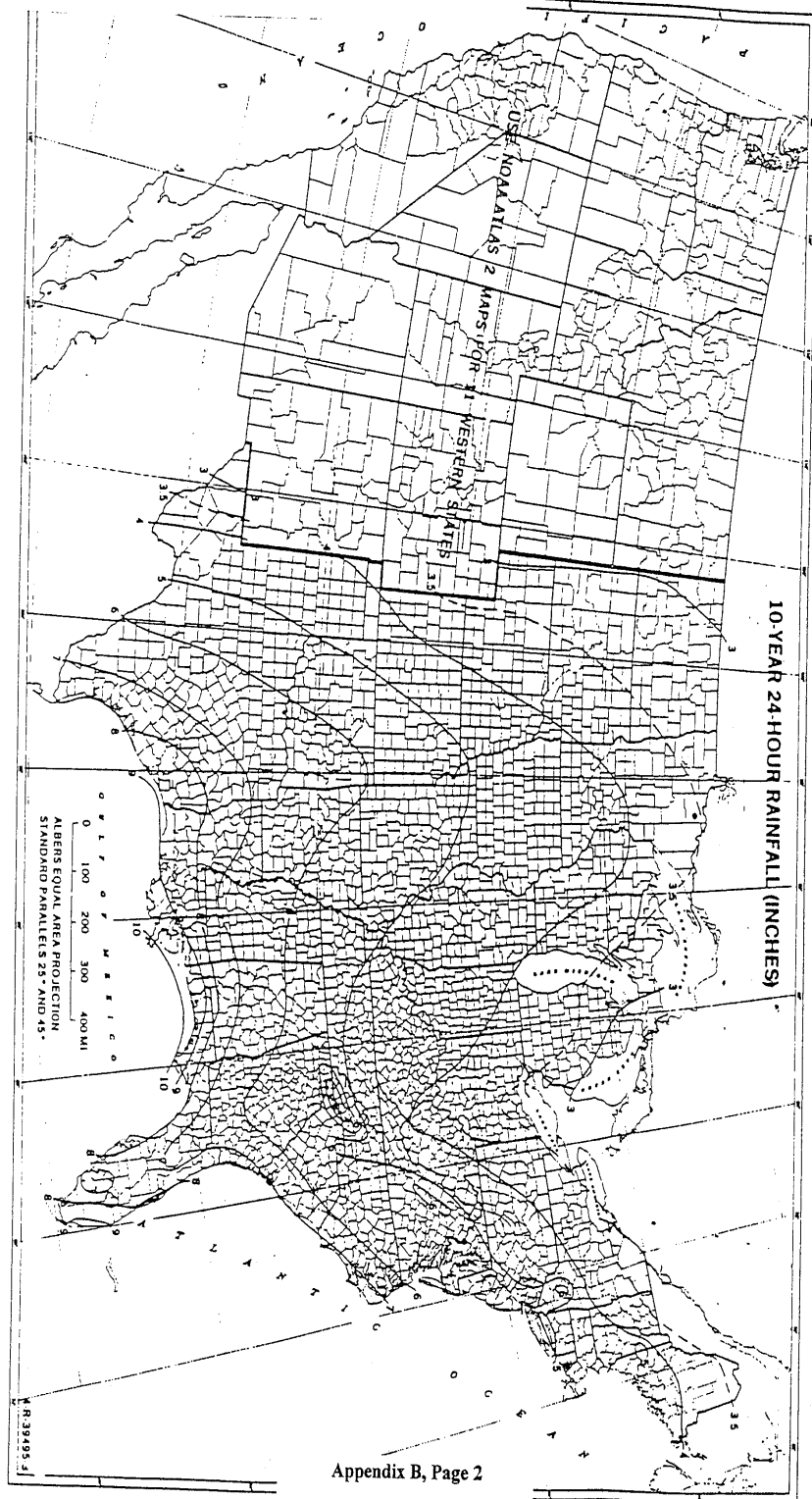


FIGURE III
Runoff Depth Chart

	Runoff depth for curve number of—													
Rainfall	40	45	50	55	60	65	70	75	80	85	90	95	98	
	inches													
1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.08	0.17	0.32	0.56	0.79	
1.2	.00	.00	.00	.00	.00	.00	.03	.07	.15	.27	.46	.74	.99	
1.4	.00	.00	.00	.00	.00	.02	.06	.13	.24	.39	.61	.92	1.18	
1.6	.00	.00	.00	.00	.01	.05	.11	.20	.34	.52	.76	1.11	1.38	
1.8	.00	.00	.00	.00	.03	.09	.17	.29	.44	.65	.93	1.29	1.58	
2.0	.00	.00	.00	.02	.06	.14	.24	.38	.56	.80	1.09	1.48	1.77	
2.5	.00	.00	.02	.08	.17	.30	.46	.65	.89	1.18	1.53	1.96	2.27	
3.0	.00	.02	.09	.19	.33	.51	.71	.96	1.25	1.59	1.98	2.45	2.77	
3.5	.02	.08	.20	.35	.53	.75	1.01	1.30	1.64	2.02	2.45	2.94	3.27	
4.0	.06	.18	.33	.53	.76	1.03	1.33	1.67	2.04	2.46	2.92	3.43	3.77	
4.5	.14	.30	.50	.74	1.02	1.33	1.67	2.05	2.46	2.91	3.40	3.92	4.26	
5.0	.24	.44	.69	.98	1.30	1.65	2.04	2.45	2.89	3.37	3.88	4.42	4.76	
6.0	.50	.80	1.14	1.52	1.92	2.35	2.81	3.28	3.78	4.30	4.85	5.41	5.76	
7.0	.84	1.24	1.68	2.12	2.60	3.10	3.62	4.15	4.69	5.25	5.82	6.41	6.76	
8.0	1.25	1.74	2.25	2.78	3.33	3.89	4.46	5.04	5.63	6.21	6.81	7.40	7.76	
9.0	1.71	2.29	2.88	3.49	4.10	4.72	5.33	5.95	6.57	7.18	7.79	8.40	8.76	
10.0	2.23	2.89	3.56	4.23	4.90	5.56	6.22	6.88	7.52	8.16	8.78	9.40	9.76	
11.0	2.78	3.52	4.26	5.00	5.72	6.43	7.13	7.81	8.48	9.13	9.77	10.39	10.76	
12.0	3.38	4.19	5.00	5.79	6.56	7.32	8.05	8.76	9.45	10.11	10.76	11.39	11.76	
13.0	4.00	4.89	5.76	6.61	7.42	8.21	8.98	9.71	10.42	11.10	11.76	12.39	12.76	
14.0	4.65	5.62	6.55	7.44	8.30	9.12	9.91	10.67	11.39	12.08	12.75	13.39	13.76	
15.0	5.33	6.36	7.35	8.29	9.19	10.04	10.85	11.63	12.37	13.07	13.74	14.39	14.76	

1/ Interpolate the values shown to obtain runoff depths for CN's or rainfall amounts not shown.

APPENDIX C

FEE SCHEDULE

FEE SCHEDULE

SUBDIVISIONS

Preliminary Filing Fee	\$200.00
Construction Plan Submittal Fee	\$200.00
Final Plat Fee	\$200.00

Supplemental Charges will be based on the required review time.

ESTABLISHED COUNTY DRAINS

Filing Fee	\$200.00
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Supplemental Charges will be based on the required review time.

OTHER LANDS

The fees for other lands will be collected from the governing body based on the required review time.