

**ATHABASCA FLATS  
AREA STRUCTURE PLAN  
PLAN DIAGRAM  
June 9 2006**

**Bylaw 1259.2**

AREA STRUCTURE PLAN  
ATHABASCA FLATS  
N ½ 36-59-12 W5th

**A. PLAN BACKGROUND**

**1. PURPOSE**

The purpose of the area structure plan is to identify future land uses, major transportation routes and utility issues on the noted lands. The plan will establish the sequence of development and the general layout to be followed by future subdivisions. Subdivision applications conforming to the municipally approved area structure plan will not be circulated to adjacent landowners or non-municipal agencies.

**2. EXISTING SITUATION**

The land in the area has been undergoing development since the 1950's. Of the 320 acres, approximately 158 acres have been subdivided. The dominant land use has been residential with about 450 dwelling units occupying 115 acres of residential land. Schools parks and churches occupy the remaining developed land. The existing net residential density is 3.9 dwelling units per acre. Of the developed dwellings, 62% are single family homes, 11% are duplex dwellings or town houses, 20% are multi-family (apartments) and 7% are mobile homes on lots.

Public open space occupies 21.5 acres, or 6% of the total available area. Most of the (84%) public space is used for school purposes within the remainder provided in neighbourhood parks of typically less than 1.0 acre in size.

The lands are bounded on the north by a rural road and the municipal boundary (south of the road). This road serves the rural residential and agricultural area to the east of Whitecourt. North of this road are the local golf course, the major community sports field development and the Town's sewage treatment facility.

An undeveloped road allowance is the eastern boundary. This road allowance may serve as a future major north-south road location. It separates the lands from an undeveloped parcel, with future residential potential.

To the south, existing residential development consisting of older single family home, small apartments, and a large mobile home park meet the area across 55th Avenue at the western end. A site approved for a mobile home park expansion and vacant future residential land use lies to the southeast.

The western boundary (47 Street) is a major collector roadway connecting the adjacent residential areas to the downtown area. The residential areas west of 47 Street are of relatively low density, with single family homes the primary use.

The land is generally level, with a slight slope at near 0.5% down to the northeast. An old oxbow is in the southwest end portion of the lands. The oxbow is 70m wide and near one meter deep. The bottom of the oxbow lies below the design flood level. The oxbow contains a storm sewer. Surface drainage is to the Athabasca River, 1 km to the north of the site. Being part of the Athabasca flood plain, the site generally has a layer of deposited topsoil overlying river gravel. Groundwater in the gravel is within 2.5m of the surface in places. The level vacant land is cultivated, while the oxbow is vegetated with willows and wild grasses.

### **3. DESIGN GOALS**

#### **RESIDENTIAL LAND USE**

It is anticipated that low density residential development will be the major land use for the rest of the vacant lands, with a density similar to the existing level of development. The design will provide an opportunity for a range of lot sizes to address different and changing markets. The design will maximize the use of existing transportation and utility facilities. A minimal number of residential properties will front onto major transportation routes. An anticipated additional 600 dwelling units can be provided at the current net density.

#### **PARK SPACE**

In keeping with the policy of the General Municipal Plan, 10% of the developable area will be provided as park or school spaces. As there are existing public and separate school facilities on the lands, the remaining public space will be dedicated as park spaces. A further 4.5 acres in the NW quarter will be required, and 5.0 acres in the NE quarter. These parks will be provided as neighbourhood parks, with minimal street frontage. Neighbourhood parks will typically accommodate a play structure and sufficient open space for active games or a small skating rink. The neighbourhood park spaces will be connected by walkways to streets and other park areas. The existing pipeline right of way at the centre of the lands will be retained as a trail linkage from the south boundary to the sports fields on the north boundary. Neighbourhood parks should incorporate or be connected to this corridor

Neighbourhood park sites will be provided in locations that will allow park access to any resident within 150 m without crossing a collector roadway.

One large park site, suitable for a boarded rink and/or tennis courts will be provided near the centre of the parcel. This site will have direct access to a minor collector road.

#### **COMMERCIAL USE**

The most distant part of the site is slightly over three kilometres from the downtown commercial centre of Whitecourt. An existing convenience store is within 800m of the site and a future commercial site is on the south boundary. It is unlikely that the population this area could support freestanding commercial development. The current

nature of low density residential development is that shopping even for convenience items, is vehicle dependent, minimizing the need for a commercial development in this area. However, several important issues must be considered. Firstly, though current shopping is vehicle dependent, trends to pedestrian oriented activities are developing. By the time of build out of this area, neighbourhood commercial use may be viable. Secondly, designation of a site for commercial purposes in a residential area after residential designation or development will meet with extreme resistance. If demand develops for a commercial site, it may be impossible to provide a site if it is not identified at the start of the planning program. If the site is not needed for commercial use, the same attributes which make it commercially suitable will sustain it as a high density residential site.

A neighbourhood commercial site should be provided, near the centre of the area. The site should be at the intersection of collector roadways. Site configuration should allow for development as a high density residential site. Adjacent residential uses should be of a medium density type.

#### **4. TRANSPORTATION**

##### **Pedestrians and Cyclists**

The site has internal parks and school sites which are destinations for residents, and is within walking distance of schools, downtown, and major sports fields. An internal pedestrian circulation system will be designed to connect park and school spaces and external connection points. The pedestrian circulation system will make use of road alignments, park spaces, and designated routes. A primary non road route will connect 55 Avenue at the south with the sports fields to the north utilizing the abandoned pipeline right of way. Walkways adjacent to major collector or arterial roadways will be separated from the roadway by a landscaped boulevard, to enhance pedestrian safety, enjoyment, and allow snow storage away from the sidewalk.

##### **Vehicles**

The vehicle circulation system must accommodate residential traffic from within the site to all the site, off site traffic to the internal school and church sites, through site traffic for the golf course and sports fields, and through traffic for the rural area east of town. Given the size of the site and the existing development patterns on and adjacent to the site, the alignment of the major transportation routes must be established prior to the internal and local network. The major road network should serve to move traffic through the area, to the school sites and from the local network to outside the area. The local network should provide direct access to residences. For through traffic the major road network should connect Dahl Drive to the south with Flats Road to the north. This will accommodate golf and sports field traffic and rural traffic. This traffic currently uses 47 Street as a collector roadway. The density of development along 47th and eventual destination of the through traffic precludes its efficient use by through traffic. By eliminating the recreation and rural traffic from 47 Street and the western portion of Flats Road, the western portion of Flats Road may be used as a local road,



with direct property access. For school site access, major roads should connect the school sites to the off site roads, including Dahl Drive, Flats Road and the easterly undeveloped road allowance. The through site road identified above will service one school site's need, while the other's can be met by extension of its existing road to the through road. The configuration of the intersection of the east-west major road and the through road will be critical. If the through road is interrupted by the intersection, extra stopping, starting and turning movements of traffic will occur. If the through road is not interrupted, excessive speeds may develop.

The intersection of these major roads would be a suitable location for a neighborhood commercial centre, in terms of traffic volume for viability and the lessened suitability of a major intersection for residential uses.

The intersection at the through road with Dahl Drive at 55 avenue will be the major connection point to the remainder of Whitecourt. Upon build out of this area, (potential 1200 dwellings), anticipate traffic will be over 12,000 vehicles per day to serve this area, and further through traffic as the recreation facilities and rural area may generate. Most of this traffic will travel on Dahl Drive south of the intersection. The major road south will carry more than 50% of the Dahl Drive level, 55 Avenue to the east less than 30% and 55 Avenue to west less than 20%. This intersection must be configured to handle these volumes of through and turning traffic. Turning lanes, access restrictions, or medians may be required on Dahl Drive or Mink Creek Road (MCR).

Trading Post Trail/MCR will provide the neighborhoods to the west a direct linkage to Dahl Drive. Some neighborhood traffic will continue to use 47 Street as the downtown connection (Cochrane Road, Harold's Hollow), however most neighborhood traffic will use Mink Creek Road, with an anticipated traffic load of 5000 vehicles per day at this intersection, with some 1000 using Trading Post Trail.

The design of connection of the through road with Flats Road will influence the traffic loads on 47 Street, Flats road east and MCR. If the connection provides for a smooth flow through from Flats Road to MCR, then most rural traffic will use MCR.

A smooth transition may result in higher traffic speeds on MCR. If access to the sports fields remains east of the golf course access, then the smooth transition will serve Town residents well. If the sports field access is combined with the golf course access, then the smooth transition services rural road users. MCR and the southerly intersection can be developed to accommodate increased traffic with less impact on existing uses than directing through traffic on Leedy Drive/55 Avenue, Baly Road and 47 Street.

## **B. PLAN DETAILS**

### **1. Land Use Areas**

This section provides information on specific areas regarding the land uses, features, and limitations. Schematic outlines to demonstrate subdivision potential are included. The individual area plans are not intended as particular subdivision layouts, but are included to show the feasibility of subdivision within the outline of the major road network.

A1. South of Golf Course North Mink Creek) Development in this area of about 8.2ha ( 20.2 acres) can make use of the existing Baly Road lane, north trunk sanitary sewer, and Flats Road. The entire area will be residential, with large lot residential in the north (Flats Road), standard single family residential in the center and west, and a multi-family residential site in the south east corner, at the intersection of the main roads. This portion of the north trunk sewer line is identified as being near capacity in the Town's servicing study, however this is based on estimated contributions, not actual measurement. Some recent reviews suggest that the line has surplus capacity, or can accommodate a large amount of development with upstream changes to the system. Actual measurements of flow in the trunk should be obtained prior to any detail design for use or replacement. Flats Road could be used for direct property access to residential sites if the crossing of the pipeline on the south side can be coordinated with Petro Canada. Shared driveways would reduce the number of pipeline crossings and road intersection points. Development along Flats Road should have rear servicing to avoid individual service lines crossing the gas pipeline. The sanitary sewer right of way would be widened to include water and storm lines. The existing east-west storm ditch would be replaced with a relocated piped system. The area immediately south east of Allan Place presents some design difficulties as the depth of the site is minimal and direct property access from Mink Creek Road is not permitted.. The water system should be looped into the north end of Baly Road, as earlier proposed by the private developer's engineer. The area of this section may be increased if the Flats Road connection is moved further east.

20.2 acres gross, 1 acre pipeline, 1 acre park, 18 acres net

A2. South of Sports Fields This 12ha (30 acre) area would include a neighborhood commercial site at the southwest corner intersection and medium density residential sites in the south east, but be predominantly low density residential. The north trunk sanitary sewer would establish the alignment of the east/west subdivision road. Subdivision access would be from Mink Creek Road and Leedy Drive. Orienting development perpendicular to the north trunk and Mink Creek Road can minimize the utility placement in Mink Creek Road. The area of this section may be decreased if the Flats Road connection is moved further east.

30 acres gross, 1.5 acre pipeline, 1 acre park, 28 acres net

A3. East of Leedy Drive At 17 ha ( 42 acres), this is the largest undeveloped part of the development area. It is affected by the wastewater treatment plant, north trunk

sanitary sewer, east trunk sanitary sewer, a temporary storm drainage ditch, a temporary road location (south Leedy Drive), and two natural gas pipelines. The area north of the north trunk sanitary and east of Leedy is restricted from being developed as it is within 300m of the wastewater treatment plant (lagoons). The trunk sewer could be used for rear servicing, or be the centre of roadway. As road centre, extra setback to the wastewater plant is provided, but more roadway is required. The east sanitary trunk would be the center of a north south road. The open storm ditch would be piped, and relocated to a the north south roadway on the eastern edge of the area. The pipeline right of ways would be left as utility lots for the use of the pipeline company. Leedy Drive would be relocated to the original plan location.

42 acres gross, 3 acres pipeline, 2.5 acres park, 36.5 acres net

- A4. East of Wagoner Crescent (Stephen's Crescent) This 4.4ha (10.8 acre) area was previously considered for low density residential development. It is affected by the central storm sewer, the flood plain elevation, and Northwestern Utilities facilities at the west end. The area is suited for low density residential development, as a transition from the older development on Wagoner to the newer housing on Lyons Crescent. Development of a crescent or paired cul-de-sacs is possible. If the area is developed as a through crescent, traffic restricting design such as corner bulbing or a mid block choker should be incorporated to reduce shortcutting by area traffic. Walkway access to the existing school site should be provided. Developing a lane on the east side of this area (west of church site) would create a shortcut (and nuisance) to the lane on Lyons Crescent.

10.8 acres gross, .15 acre NUL site

- A5. South East of Mink Creek Road (Mink Creek) This 14.5ha (35.8 acre) area can be developed as extension north from Skagg's Crossing, or working in from Mink Creek Road. The remaining vacant land is intended as low density residential, with a small potential for medium density development at the north-east corner.

35.8 acres gross, 3.5 acres park, 32.3 acres net

- A6. East of Athabasca Terrace The south eastern part of the development area is an 8.0ha (20 acres) site, affected by the east sanitary trunk and a pipeline right of way. The east sanitary trunk would direct north south road alignment, and provide a potential future connection to the lands further south. Low density residential uses are intended for this area. A proposal currently exists for development of a about 3.5ha for a 30 unit manufactured housing condominium development.

20 acres gross, .8 acres pipeline, .8 acres park, 18.4 acres net

## **2. Park Development**

This Section identifies the approximate location of future park space, and the area required. Other minor park locations may be developed to complete individual subdivision plans. Parks would be located to allow access from residences without crossing any collector roadways, and to provide neighborhood parkspace within 250m of all residential properties.

- P1. East of Baly Road A minor neighborhood park of less than 1.0 acre (similar to Lyon's Crescent Park), with adequate area for play structures.
- P2. West of Leedy Drive Two minor neighborhood parks of about 0.5 acres (similar to Harold's Hollow Park), with adequate area for play structures.
- P3. East of Leedy Drive This park site will be a neighborhood park and also serve as a buffer to the Town's Wastewater Treatment Plant. Residential development within 300m of the working area of the plant (lagoon surface) is not permitted, therefore a greenspace buffer would be developed in the northern part of this parcel. This is not an ideal site for a neighborhood park as it is not central to the neighborhood, has an environmental restriction, and borders on a main road (Flats Road), but few other options exist for this site. The site would be more than 2.0 acres. A further 0.5 acre site would be provided south of this area, and central to this neighborhood.
- P4. East of Mink Creek Road This site would be provided as one or two small tot lots, totaling 1.0 acre. The purpose would be to supplement the larger neighborhood and school park spaces on a direct residential access level.
- P5. East of Skagg's Crossing This park site is central to the development area, and will be larger than most neighborhood parks. At about 2.5 acres it will be large enough to accommodate a neighborhood skating rink or possibly tennis courts. Street access and on site parking would be provided. The site would include part of the north-south trail along the existing pipeline right of way.
- P6. South of Torgerson Drive A portion of this park site has been previously developed. The site will be reduced from the current 1.8 acres to about 0.8 acres. It will continue as a neighborhood park, with a short frontage to Torgerson Drive.

### **3. Trails and Pedestrian Routes**

This Section outlines the location of major trails and pedestrian routes in the development area. The major trail system is intended to connect the Graham Acres Sports Fields, school sites, new park sites, and the existing community through this area. Trails adjacent to major roads would replace sidewalks at a greater width to remove bicycle, wheelchair, and roller blade traffic from roadways. Except where noted, trails would be 2.4m wide and asphalt surfaced. They would be built as part of each associated subdivision development.

- T1. Flat's Trail West This is a route running east/west along the existing sewer line right of way and connecting to the trail north of the Baly Road Park. It would replace the ditch side ATV route, and double as emergency access to dwellings if dwellings front onto Flats Road. To control ATV speeds, the trail would have physical barriers at intervals requiring vehicles to slow to a near stop. A walkway connection to P1 would be provided.
- T2. Graham Acres Access The intersection of Flats Trail West and the Pipeline Trail would be at an important connection point to the Graham Acres Sports Fields and Golf Course. The trail crossing of Flats Road would be within the urban section of the Flats Road Connector, to facilitate safe crossing. The trail would parallel the road, separated from traffic by a boulevard.
- T3. East Flat's Trail This trail follows the existing pipeline R.O.W., on the south side of Flat's Road. It provides an alternate pedestrian/cyclist route from Flat's Road, and would be built as a paved trail to Leedy Drive, with connections to P2 and P3. East of Leedy Drive, it would be a loose surfaced route to the easterly road allowance, where an informal trail currently exists.
- T4. Mink Creek Trail Following Mink Creek Road, this trail would replace the normal sidewalk associated with a main road. The trail would be separated from the roadway by a boulevard. It would be located on the north and west side of the roadway, connecting into the Dahl Drive Trail at 55<sup>th</sup> Avenue.
- T5. Pipeline Trail This route follows the abandoned pipeline R.O.W. which runs north/south through the middle of the development area. The route connects 55<sup>th</sup> Avenue in the south to Graham Acres in the north, and goes through P5. It will provide local park access for residents and internal pedestrian circulation. At the south end, it will parallel an existing lane for about 100m
- T6. 55<sup>th</sup> Avenue Trail Parallel to and north of 55<sup>th</sup> Avenue, this trail connects the east Flat's area and Pipeline Trail with the main part of the community. As this trail does not provide direct property access (properties back onto it), it does not act as a local sidewalk.
- T7. Leedy Drive A trail connecting Mink Creek Road and Flats Road along Leedy Drive would complete the internal trail network, and provide trail access to Graham Acres at the east end. Placing the trail along Leedy as a boulevarded route could restrict the direct property access contemplated for this street.



#### **4. Major Roads**

This Section outlines the major road network required for development in the area. Section numbers refer to road locations shown with matching circled digits on the plan. Road locations are not precise, but show general alignment only.

1. Flats Road Between 47<sup>th</sup> Street and Golf Course Access This road would become a local road, with potential direct access to properties fronting onto Flats Road across from the Golf Course. The Golf Course access would be extended to connect with the relocated eastern portion of this road. The road would be of a rural cross section (ditches), matching the existing roadway. The transition to curb and gutter would occur at the intersection with the easterly portion of Flats Road. This (the westerly) portion of Flats Road would be renamed. The road is under the control of the Town, but located within the Municipal District of Woodlands. Approval of the M.D. should be obtained. Two new public road pipeline crossings (West Flats Road and Golf Course Access) are shown, and would require consent from the pipeline operator, Petro Canada. This could be reduced to one new crossing if the road realignment is shifted east and the Golf Course access retained as it currently exists.
2. Flats Road East of Golf Course The portion of Flats Road east of the Golf Course access would continue to be a collector level roadway. It would serve the rural area east of Whitecourt and the sports fields. In order to reduce traffic on 47<sup>th</sup> Street, the road alignment is changed at this point to direct traffic from Flats Road onto Mink Creek Road, and eventually Dahl Drive. The portion of Flats Road that is not realigned would not be altered in any way. The realigned portion would have a transition from the rural to an urban cross section to identify the entry into Town and slow traffic. Dwellings would not front onto this road, nor have direct access. At the point of transition to an urban roadway, the surface would be 8.0m to 9.0m wide, which would allow one lane of traffic in each direction but not allow for parking. The road is under the control of the Town, but located within the Municipal District of Woodlands. Approval of the M.D. should be obtained. A new pipeline crossing would be required.
3. Flats Road Connection to Mink Creek Road The redirection of Flats Road traffic from 47<sup>th</sup> Street to Mink Creek Road and Dahl Drive will bring traffic from out of town through this area. The intersection is shown to require turning and stopping movements for the out of town traffic to reinforce the entry into the urban area, slow traffic, and give prominence to the in town traffic continuing to or from the residential area further east on Mink Creek Road. The connection to Flats Road would not have dwellings fronting onto or accessible from the road, nor would on street parking be provided. The road surface would be 8.0 to 9.0m for the most part, allowing two way traffic and emergency stopping. Widening to allow turning movements at the intersections should be provided. The right of way is shown at 30m to allow eventual upgrade to an arterial roadway in the event that future development occurs east on Flats Road, or to allow for a roadway connection to the north for a crossing of the Athabasca River. The river crossing road would run north from Flats Road on the west edge of the sports fields property.



4. Leedy Drive Leedy Drive connects Mink Creek Road to Flats Road in the North East. It provides a connection for this area to the sports fields and is the collector road for the north east and central residential local roads. It will not be a major collector roadway, and will provide direct access to properties. Driveways and on street parking will be allowed. The southern end of the road has been temporarily relocated east of the location shown, to reduce traffic on the gravel roadway in front of Percy Baxter School. The road should be built in the original location to deter non local users from travelling along 55<sup>th</sup> Avenue and Leedy Drive for sports field and out of town access. The road should not be relocated until an alternate access to Flats Road from Mink Creek Road is developed. As a minor collector roadway with parking and direct access allowed, a surface width of 11.0 to 13.0m would be suitable.
5. Mink Creek Road From its start at 55<sup>th</sup> Avenue through its end at the eastern boundary of the development area, Mink Creek Road will be a collector roadway. The southwestern portion, from 55<sup>th</sup> Avenue to Trading Post Trail, will be a major collector, providing residential access to existing Riverdale development, and access to the church and school sites from throughout the community. On this segment, direct property access and driveways would not be permitted, with residential properties flanking the roadway instead of fronting onto it. The road surface would be 15.0m to accommodate full two lane traffic flow and on street parking for the school and church during restricted hours, and full four lane traffic flow at other times. The right of way would be widened on the east side as subdivision occurs to provide a minimum 24m width. From Trading Post Trail to the Flats Road intersection, the road is still a collector, but with a lower amount of subdivision generated traffic. To accommodate the overall traffic, a road width of 15.0m should be maintained. As only a road width of 13.0m is required for subdivision access in the NW of 36 at this point, an oversize charge for the remaining 2.0m of width would be assessed to the development in the NE of 36. Direct property access should not be from Mink Creek Road in this area. Flanking lots or backing on of lots would be acceptable. East of the Flats Road intersection, the road continues as a collector to the eastern limit of the area. Traffic will be limited to subdivision and school traffic. Driveway and direct property access would be permitted, though limited to paired driveway locations upto Leedy Drive, or rear lanes would be required. East of Leedy, rear lanes or direct access would be suitable. East of 55<sup>th</sup> Avenue, the road alignment would follow the existing sewer line, and then extend to the road allowance on the eastern boundary to provide future access and connection to the adjacent quarter. A pipe line crossing would be required. A road width of 11.0 to 13.0m would suffice from the Flats Road intersection east, with a possible widening to 15.0m needed adjacent to the school site to accommodate on street parking. 15.0 m is for total length.

## **5. UTILITIES**

### **Water System**

The existing water system will provide adequate supply for the development of the area without extension of the trunk system. The entire area east of Mink Creek Road is presently dependent on the water main within 55<sup>th</sup> Avenue. Eventual connection of the system to the mains in Mink Creek Road and Baly Road will provide looping and a more secure supply system. Continued expansion of the service system for residential development will meet internal looping requirements.

Extensions of the system to the east boundary (on Mink Creek Road), to the south east boundary (on Moore Road) will provide future connection and expansion opportunities for adjacent properties, and an eventual tie in with the 47<sup>th</sup> Avenue (south of railway) water trunk main. The mains for these future extensions and the mains serving higher density residential areas should be 250mm, while internal neighborhood systems require a minimum of 200mm mains.

### **Sanitary Sewer**

Calculations by Brisbin and Sentis Engineering confirm that the existing trunk sewer systems have sufficient capacity to serve the remaining development area. Local collection systems can flow by gravity (without lift stations) to the existing trunks. Local systems will be aligned with local roadways where possible.

### **Storm Drainage**

The general slope down to the north east corner of the area and the eventual surface drainage to the north is at a slope less than normally accepted for overall surface drainage (less than 1%). Underground storm drainage is required though much of the area. Brisbin and Sentis's evaluation show the existing drainage ditches from the development area to the Athabasca drainage to be adequate. The existing open drainage ditches within the development area must be replaced with piped systems. Within the north west quarter, about 400metres of trunk storm sewer will be required. This trunk will not benefit any area outside of this parcel. In the north east quarter, about 1200m of piped trunk storm sewer is required to serve the internal catchment area. Local underground storm collection systems can connect to the open ditches until the piped trunk system is built.

### **NATURAL GAS, ELECTRICAL POWER, TELECOMMUNICATIONS**

The franchise utility providers have local distribution systems in place for the existing development. Their systems have not been evaluated for capacity for the proposed level of development. A draft of the plan was circulated for their information. No responses were provided. Upon adoption of a plan, copies will again be provided for their reference and system design.

## **6. DEVELOPMENT SEQUENCE**

The normal development sequence would be to have contiguous growth from existing developed areas. This eliminates the extension of utilities and roads to serve remote sites. In the development area, water and road connection points are adjacent to existing development, while sanitary sewer trunk connection points are more remote.

Areas A1, A3, A4, the south portion of A5, and A6 are readily developable with connections to the utility and road system. These areas can be developed immediately, in any sequence, without adverse effect on other areas or Municipal Operations.

The west portion of Area A2 and the northern portion of A5 require extension of the sanitary sewer system through vacant land, and extension of roads and the water system through vacant land. Development of these areas should take place after adjacent sites have been completed.

The issues of leap frog development are relatively minor, and the limitations on developing any of the areas are not severe enough to warrant establishing a development sequence, provided adequate utilities and transportation services are provided to each development.

**BRISBIN & SENTIS**  
Engineering Inc.

*Celebrating our 22<sup>nd</sup> Year of Service  
Since September, 1977*

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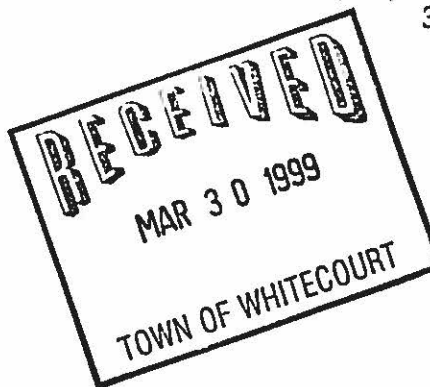
March 23, 1999

File: W724-216

Town of Whitecourt  
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T7S 1N6

FAX/MAIL  
(780) 778-4166  
3 Pages

**Attention:** Mr. Peter Yackulic  
Director of Development & Planning



Dear Sir

**RE: STORM SEWER SERVICING FOR  
THE NE 36-59-12-5**

Further to our recent discussion and as requested, we have reviewed the servicing of the NE 36-59-12-5 with a pipe storm sewer system. We provide the following for your review.

The storm drainage system for this area is directed into three catchment areas plus the existing developed area. Presently, the existing developed area storm system drains into an open ditch starting at the end of Mink Creek Road east and then north parallel to the pipeline right-of-way across Flats Road and into an existing drainage course.

This proposal to provide storm water drainage for the undeveloped portion of this area involves abandonment of the open ditch and installation of a pipe system ranging in size from 1,050 mm to 1,500 mm (*refer to the enclosed Table 1 and Drawing No. 1*).

Please note that this evaluation is preliminary and is subject to change once a concept plan and grading layout has been established.

We trust the foregoing is satisfactory. If you have any questions, please do not hesitate to contact the undersigned.

Yours truly

BRISBIN & SENTIS ENGINEERING INC.

per/  Ray H. Bouillet, C.E.T.

RHB/jam

Enclosures: 1. *Table 1, Proposed Storm Drainage Areas dated March 23, 1999*  
2. *Drawing No. 1 dated March 23, 1999*

cc: Mr. M. Schmitke - Southland Development Corp. (*w/encl.*)  
220 - 5403 Crowchild Trail N.W. • Crowchild Square • Calg

Tel. (403) 247-2001 • Fax. (403) 247-2013 • E-Mail: bs...

**STORM DRAINAGE  
ASSESSMENT**

TABLE 1  
PROPOSED STORM DRAINAGE AREAS  
FOR THE  
MINK CREEK DEVELOPMENT

CATCHMENT AREA	FROM MANHOLE	TO MANHOLE	CONTRIBUTING AREA	LENGTH	SLOPE	PIPE DIAMETER (MM)	N VALUE	PIPE CAPACITY (M <sup>3</sup> /S)	DESIGN FLOW (M <sup>3</sup> /S)	RESERVE CAPACITY (DEFICIT)
<b>AREA LT6</b>										
Existing River Side Area (Data from 1992 Report)	201	Ex. Ditch	7.42	50.7	0.40%	900	0.15	1.04	0.59	0.57
A	201	206		150.0	0.20%	900	0.13	0.81	0.59	0.22
B	206	207	6.52	100.0	0.25%	1,050	0.13	1.36	1.01	0.35
C	207	208	15.90	100.0	0.25%	1,200	0.13	1.76	1.95	0.19
D	208	Outfall	3.60	90.0	0.25%	1,200	0.13	1.95	1.95	0.00
<b>AREA LT9</b>										
Existing Mink Creek - Phase I	Ex. Manhole		3.70		0.38%	600	0.13	0.44	0.26	0.18
A Proposed portion north of Mink Creek - Phase I	Ex. Manhole		3.00		0.38%	600	0.13	0.44	0.46	(0.02)
B Existing 55 <sup>th</sup> Avenue storm (data from 1992 report)	3015	3005	18.64	100.0	0.30%	1,050	0.13	1.50	1.33	0.17
C	3005	2995	24.94	100.0	0.25%	1,200	0.13	1.95	1.77	0.18
D	2995	2985	35.91	300.0	0.20%	1,350	0.13	2.39	1.96	0.43
E	2985	2975	55.00	200.0	0.20%	1,500	0.13	3.16	2.99	0.17

**STORM DRAINAGE  
ASSESSMENT**

March 4, 1999

COURIER

Town of Whitecourt  
P.O. Box 509  
WHITECOURT, Alberta  
T7S 1N6

**Attention:** Mr. Peter Yackulic  
Director of Development & Planning

Dear Sir

**RE: SANITARY AND STORM SEWER SERVICING  
FOR THE NORTH HALF OF SECTION 36-59-12-5**

Southland Development Corp. has requested that we review storm sewer and sanitary servicing for the undeveloped portion of the north half of Section 36-59-12-5 (*Mink Creek development area*). We provide the following for your review:

**STORM SEWER**

The storm drainage system for this area is divided into two catchment areas (*Areas LT6 and LT9*). These areas were identified in the 1992 infrastructure report prepared by Associated Engineering Alberta Ltd.

Presently, area LT6 drains storm water from the existing Riverside development via a 900 mm pipe into an existing ditch which runs east to the quarter section line, then north through culverts across Flats Road and into an existing drainage course.

Our proposal for providing storm water drainage for the undeveloped portion of Section 36-59-12-5 (*Mink Creek development area*) involves abandonment of the open ditch and installation of a piped system ranging in size from 900 mm to 1,200 mm. The storm sewer would parallel the existing sanitary trunk main (*refer to the enclosed Table 1 and Drawing P-1*).

Catchment area LT9 includes the existing Athabasca development area and the east portion of the northeast quarter of Section 36. Runoff drains to the northeast portion of the quarter section across Flats Road and into an existing drainage course and has no impact on the drainage for the northwest quarter of Se

**SANITARY SEWER  
ASSESSMENT**



Mr. Peter Yackulic  
Town of Whitecourt

File: W724-216  
March 4, 1999

**SANITARY SEWER**

We propose that the north portion of the Mink Creek development area (*Areas B, C and D*) be connected to the existing North Trunk Main at points where there is reserve capacity in the main (*refer to Table 2 and Drawing P2*). The collection system for the remainder of the northeast quarter of Section 36 (*Area F*) would tie into the existing East Trunk Main. The southwest portion of the development area (*Area E*) would be directed to the Central Trunk Main.

We trust the above is satisfactory, if you require any further information, please do not hesitate to contact the undersigned.

Yours truly

BRISBIN & SENTIS ENGINEERING INC.



per: Ray H. Bouillet, C.E.T.

RHB/jam

Enclosures: 1. *Table 1 - Proposed Storm Drainage dated March 5, 1999*  
2. *Table 2 - Proposed North Sanitary Trunk Analysis dated March 5, 1999*  
3. *Drawing P-1*

cc: Mr. Martin Schmitke - Southland Development Corp. (*w/encl.*)

**SANITARY SEWER  
ASSESSMENT**

TABLE 2  
PROPOSED NORTH SANITARY TRUNK ANALYSIS  
FOR THE  
MINK CREEK DEVELOPMENT

COLLECTION AREA	FROM MANHOLE	TO MANHOLE	PIPE DIAMETER (mm)	LENGTH	SLOPE	N VALUE	PIPE CAPACITY (l/s)	ADDED AREA (ha)	TOTAL AREA (ha)	DESIGN POPULATION	TOTAL DES. Q (l/s)	RESERVE CAPACITY (DEFICIT) (l/s)
<u>NORTH TRUNK</u>												
A Existing River Side Area (Data from 1992 Report)	N 141	N 140	350	122.0	0.13%	0.15	46		39.0	1,564	29.9	16
B New Area North and West Mink Creek Road	N 140	N 136	350	460.0	0.17%	0.15	47	9.4	48.4	1,936	37.0	10
C	N 136	N 134	600	292.0	0.22%	0.15	250	19.9	68.3	2,732	52.2	198
D	N 134	N 132	600	170.0	0.14%	0.15	199	20.0	88.3	3,532	67.5	131
<u>CENTRAL TRUNK</u>												
E. New Area - Mink Creek Phase 2	New MH	401	200	62.0	0.4%	0.13	20.7	6.3	6.3	252	4.8	15.9
		401	C 311	300	47.0	0.8%	0.13	86.5	7.6	13.9	556	10.6
Existing Areas from 1992 Report	C 311	E 106	600	--	varies	0.15	184.0	13.9	193.0	9313	146	38
<u>EAST TRUNK</u>												
F. New Area		E 103	200	--	0.4%	0.13	20.7	7.5	7.5	300	5.7	15
Existing PK Flow in Trunk Main	E 103	E 132	750	--	varies	0.15	219	--	--	--	97.2	122

Above table based on the following data from 1992 infrastructure report:

- 40 people per hectare
- 450 litres per capita per day
- peak factor of 3.67

→ CURRENT STD → 360l/CAPITA/DAY (99.5%)  
∴ HIGHER RESERVE CAPACITY

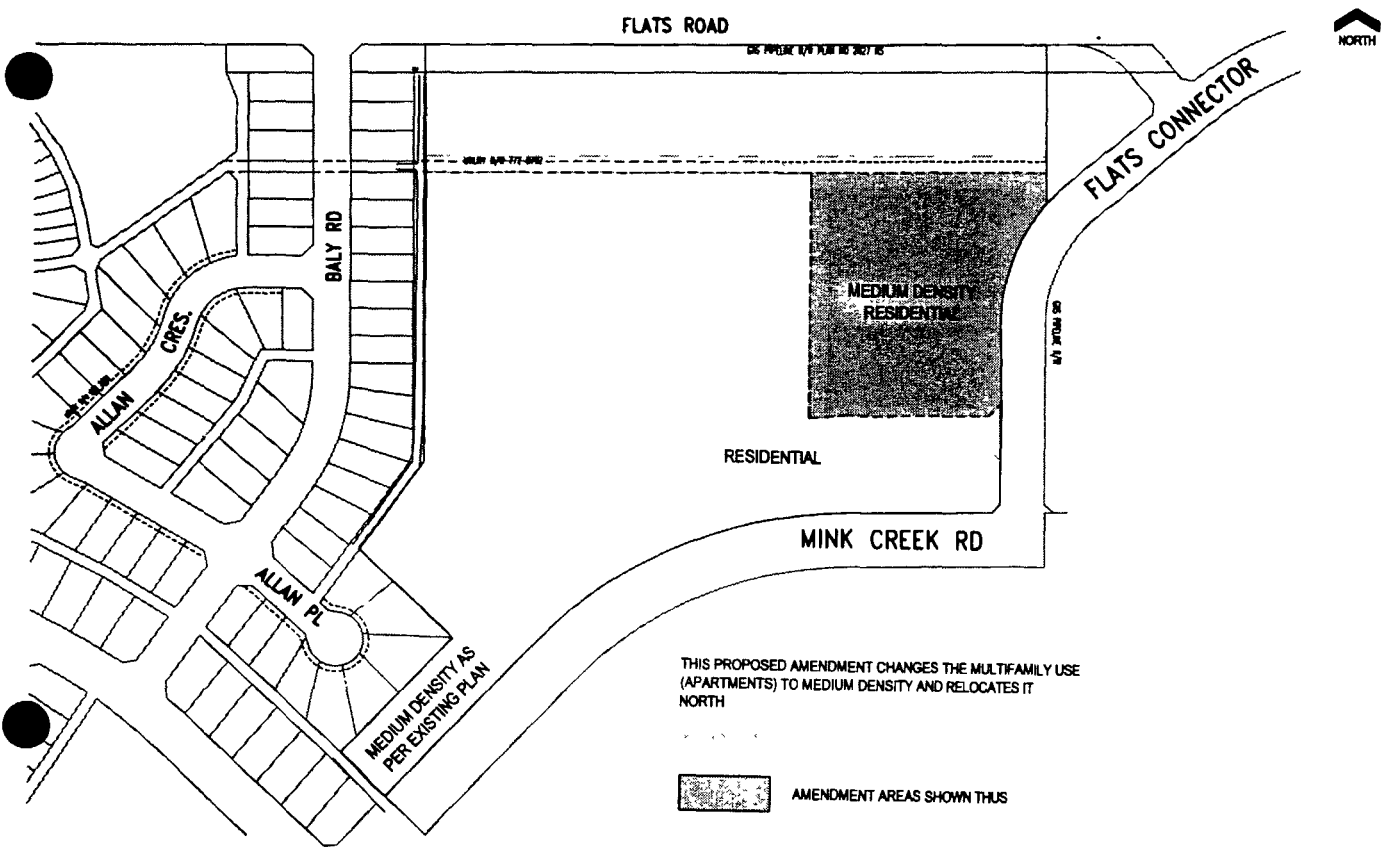
**SANITARY SEWER  
ASSESSMENT**

SKETCH AREA 1B

Graham Acres Golf Course



# SCHEDULE "A" BYLAW 1259-1



SKETCH AREA 2

Graham Acres Sport Fields

FLATS ROAD

LEEDY DR

MF

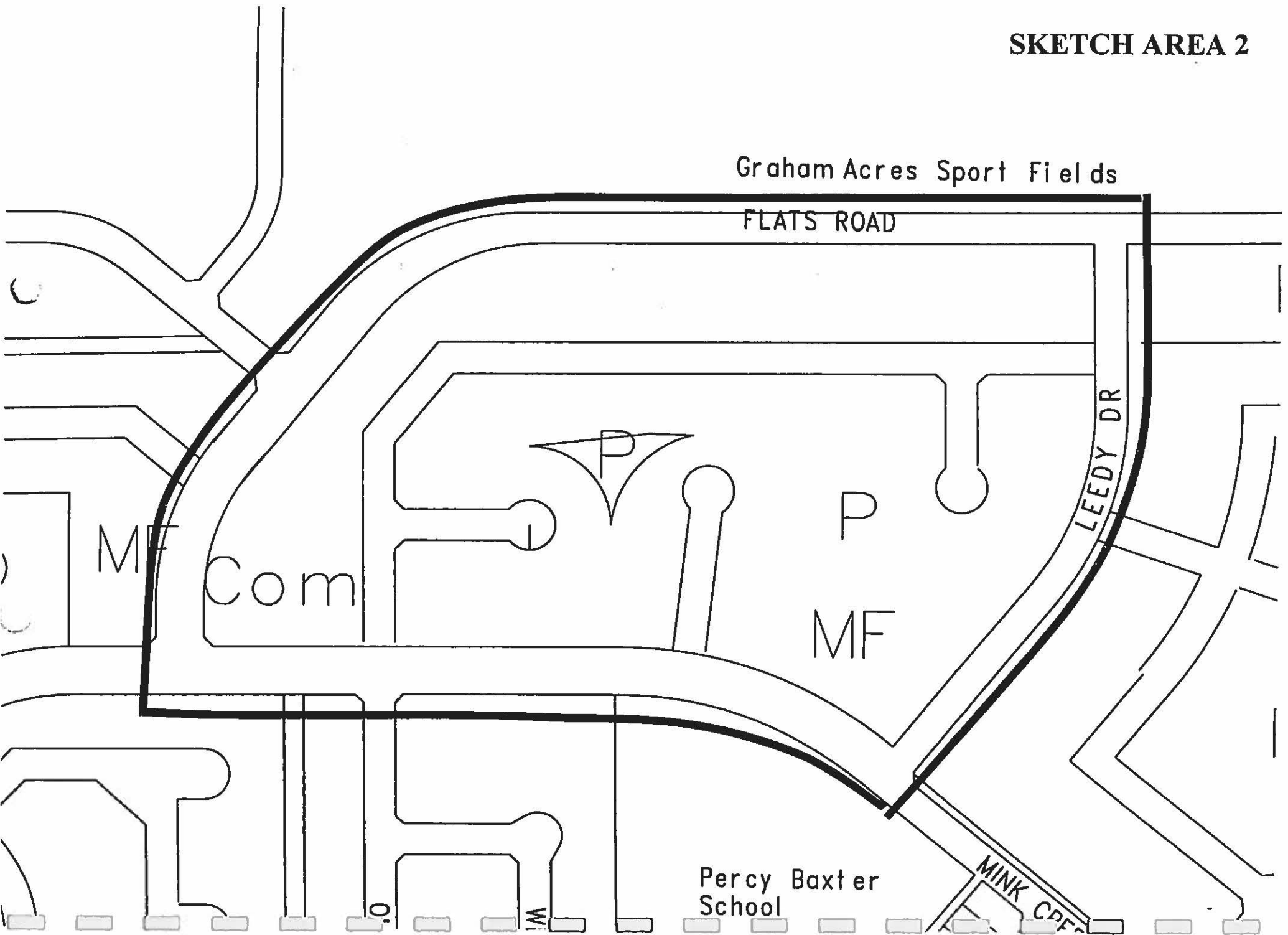
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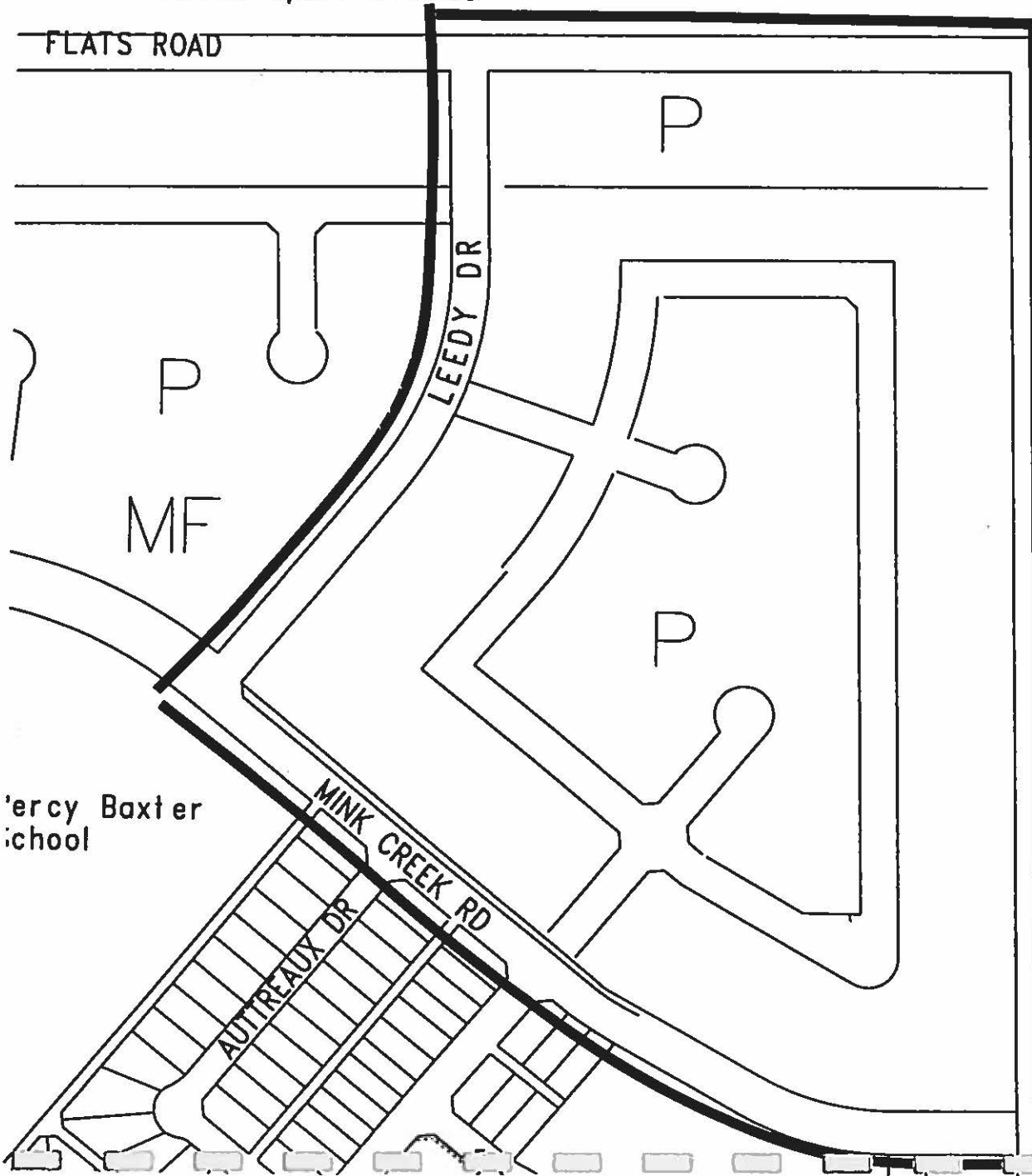
Percy Baxter School

MINK CREEK



Graham Acres Sport Fields

FLATS ROAD

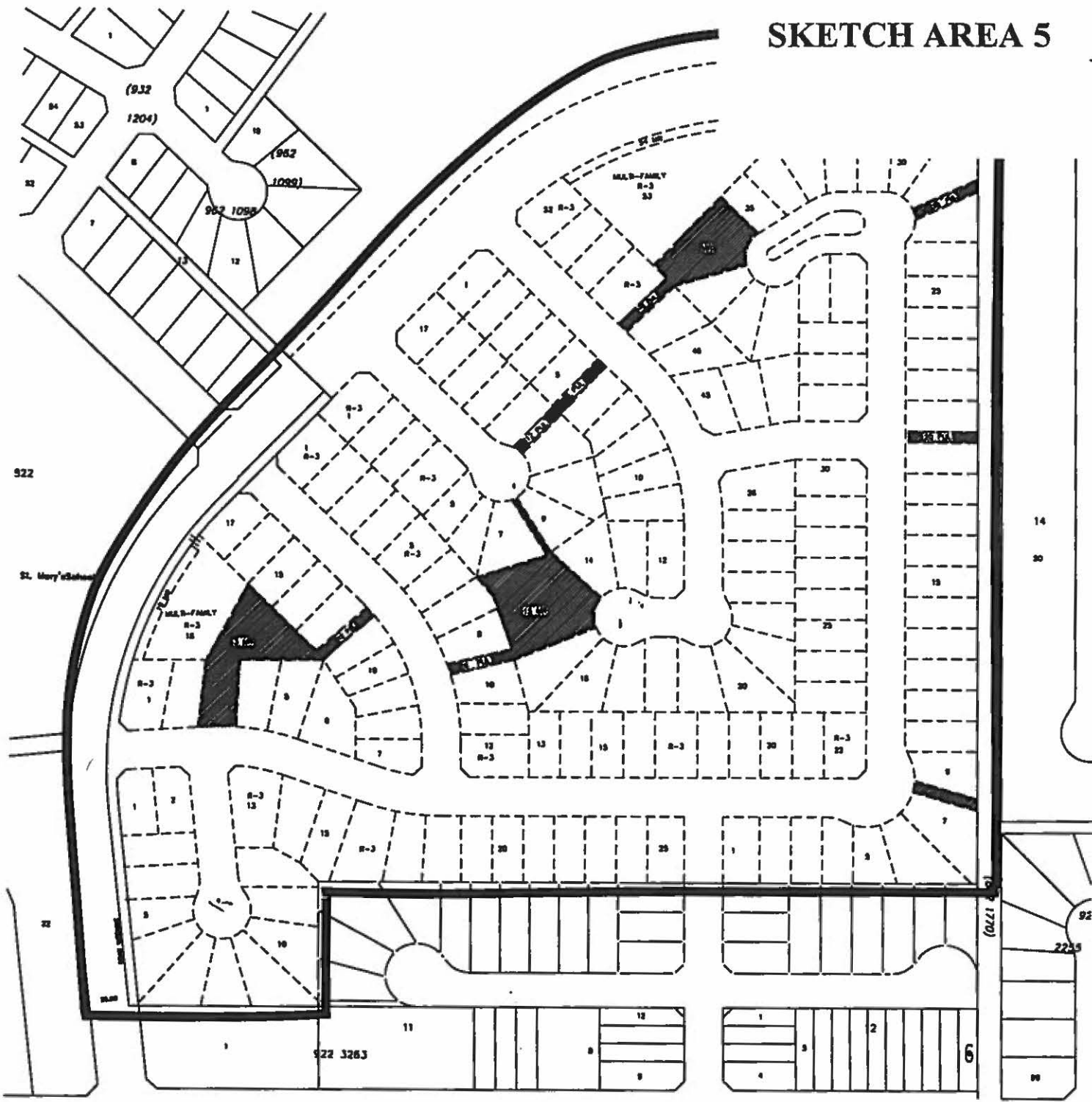


**SKETCH AREA 3**

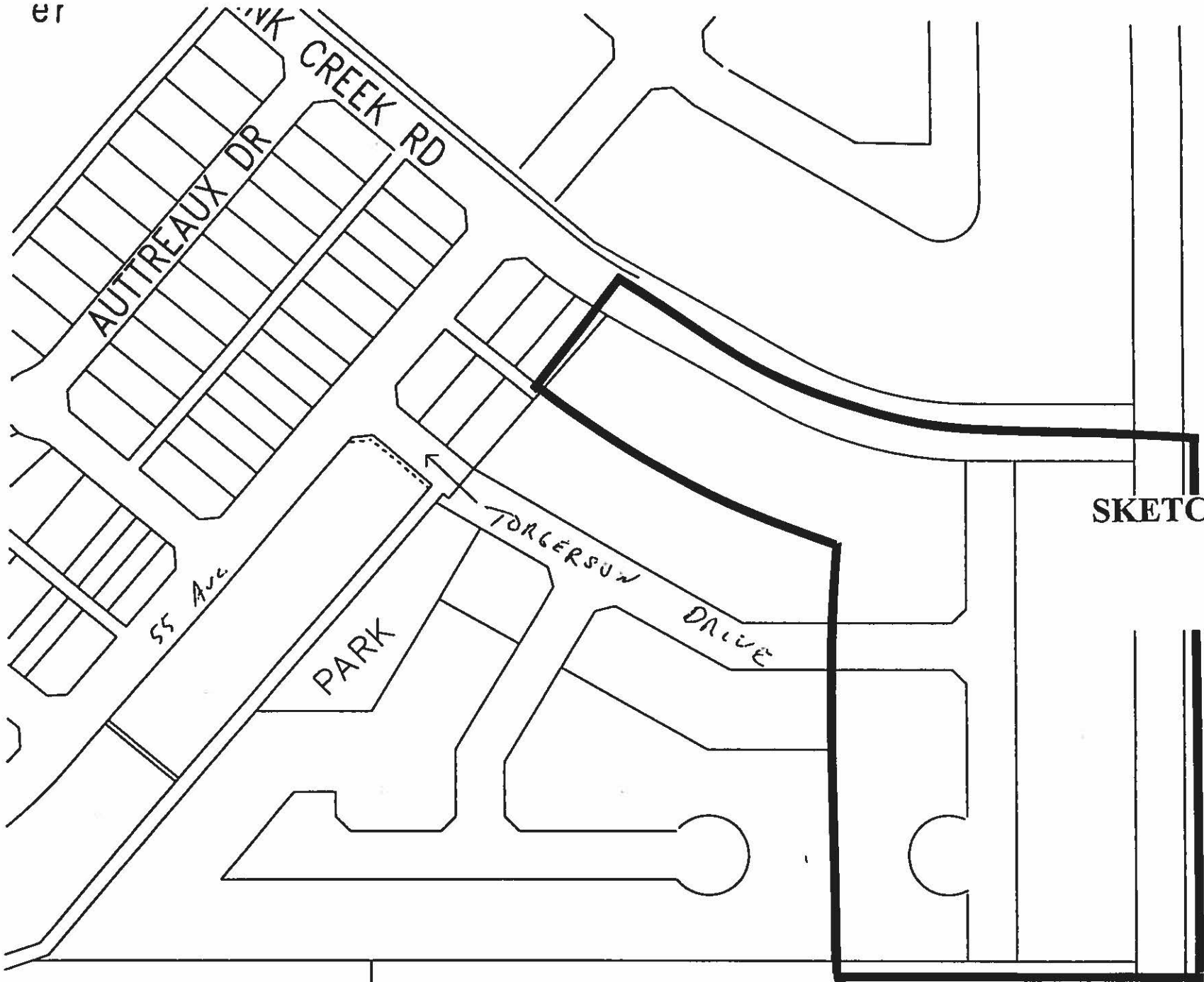
Meracy Baxter School



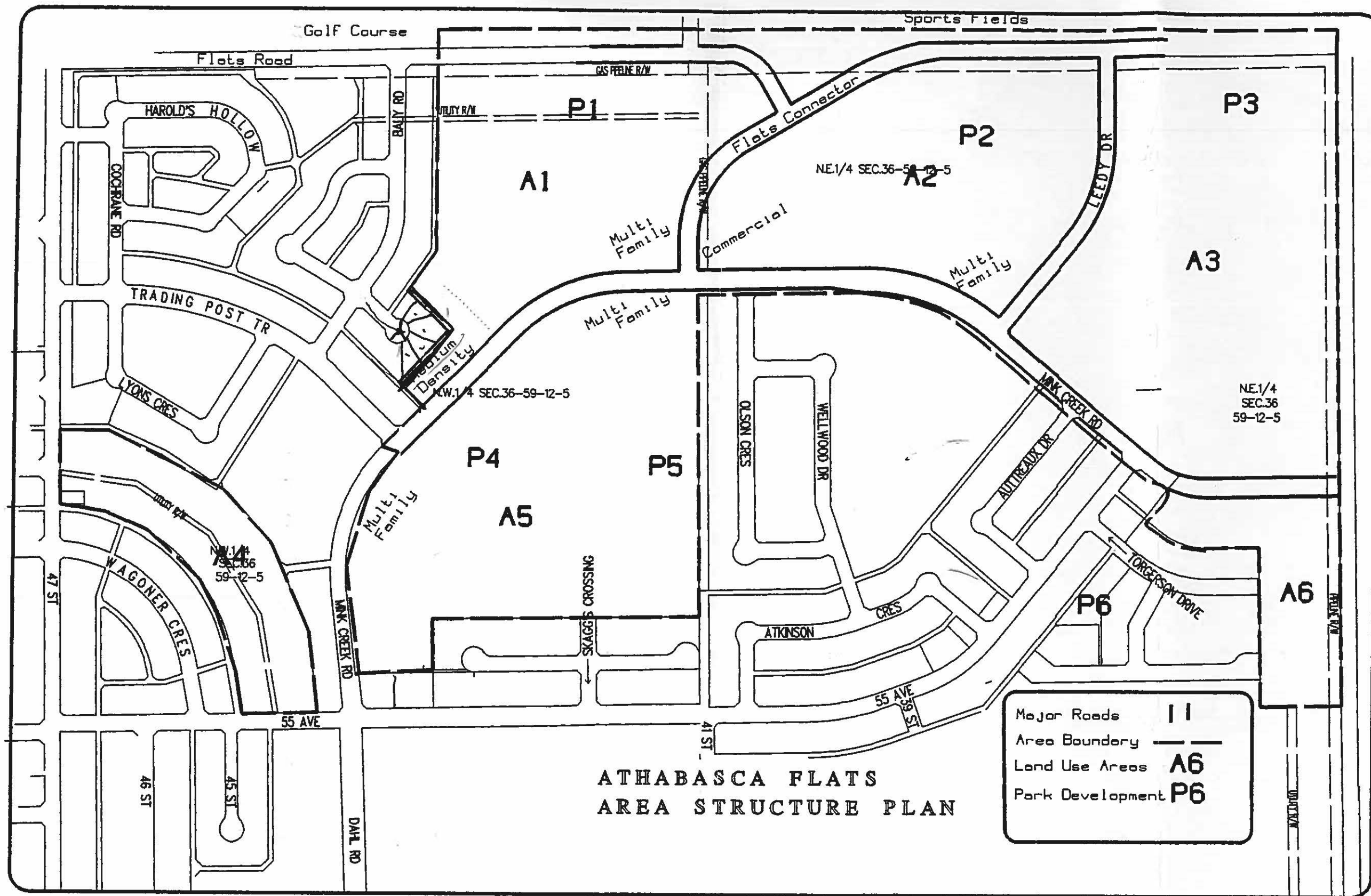
SKETCH AREA 5



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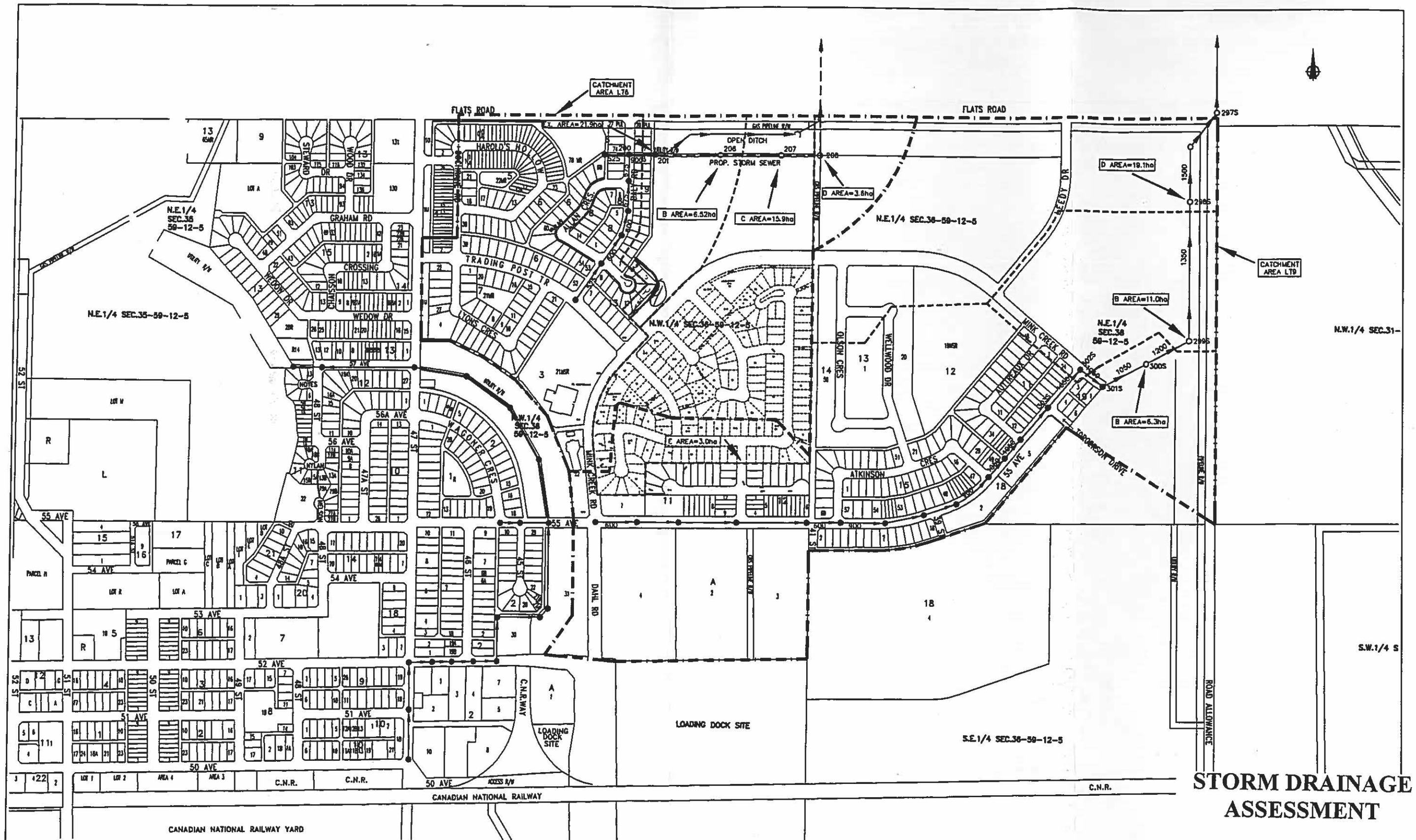


**SKETCH AREA 6**



PLAN DIAGRAM

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### STORM DRAINAGE ASSESSMENT

ISSUE	DATE	REMARKS	No.	REVISION	DATE	BY	APPROVED
1	03/99	FOR APPROVAL	1	ADDED DRAIN AREAS	03/99	J.D.C.	
2	03/99	FOR REVISION NO. 1		N.E.1/4 SEC. 36-59-12-5			

**BRISBIN & SENTIS**  
**Engineering Inc.**  
 Calgary · Alberta

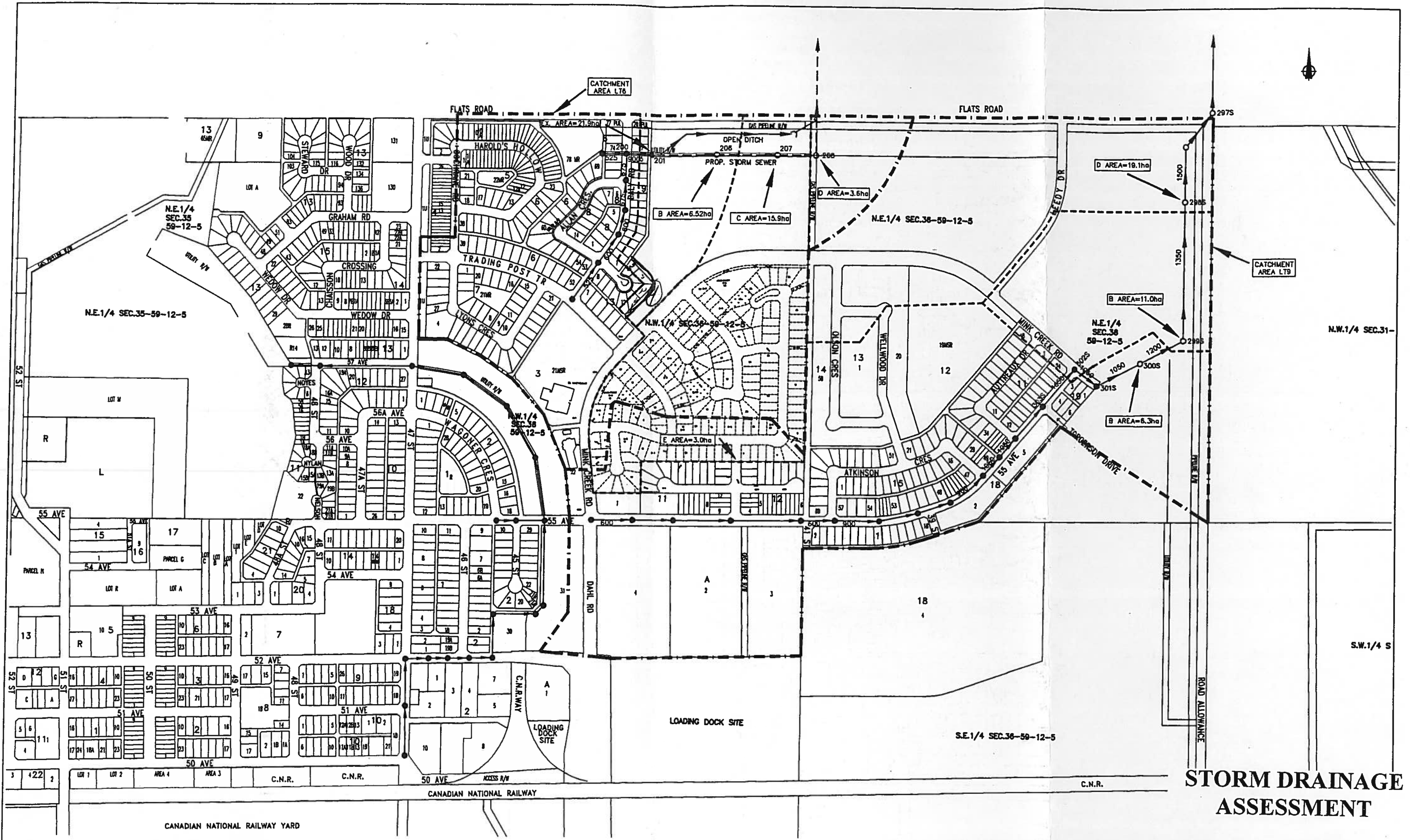
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 CHECKED R.H.B.  
 DESIGN  
 SCALE  
 1: 7500

TOWN OF WHITCOURT  
 PROPOSED MINK CREEK DEVELOPMENT  
 SOUTHLAND DEVELOPMENT CORP  
 STORM SEWER ASSESMENT

JOB	W724-216
SHEET	
DRAWING	P-1
ISSUE	2



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# STORM DRAINAGE ASSESSMENT

ISSUE	DATE	REMARKS	No.	REVISION	DATE	BY
1	03/99	FOR APPROVAL	1	ADDED DRAIN AREAS	03/99	J.D.C.
2	03/99	FOR REVISION NO. 1		N.E.1/4 SEC. 36-59-12-5		

APPROVED

**BRISBIN & SENTIS**  
**Engineering Inc.**  
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DRAWN G.J.S.  
 CHECKED R.H.B.  
 DESIGN  
 SCALE  
 1:7500

TOWN OF WHITECOURT  
 PROPOSED MINK CREEK DEVELOPMENT  
 SOUTHLAND DEVELOPMENT CORP  
 STORM SEWER ASSESMENT

JOB W724-216  
 SHEET  
 DRAWING P-1  
 ISSUE 2