COUNTY COUNCIL

OF

TALBOT COUNTY

2004 Legislative Session, Legislative Day No. September 28, 2004

Resolution No.: 122

Introduced by: Mr. Carroll, Mr. Duncan

A RESOLUTION TO ADOPT THE REVISED TALBOT COUNTY REGION II – SANITARY DISTRICT ALLOCATION PROGRAM (CHAPTER TWO, PAGES 47 – 50E AND FIGURE 25); PURSUANT TO THE POWER AND AUTHORITY CONTAINED IN THE ENVIRONMENTAL ARTICLE, TITLE 9, SUBTITLE 5, OF THE ANNOTATED CODE OF MARYLAND

By the Council: September 28, 2004

Introduced, read the first time, and ordered posted, with Public Hearing scheduled on Tuesday, October 26, 2004 at 7:30 p.m. in the Council Meeting Room, 142 North Harrison Street, Easton, Maryland.

By order: Susan W. Moran
Secretary

A RESOLUTION TO ADOPT THE REVISED TALBOT COUNTY REGION II – SANITARY DISTRICT ALLOCATION PROGRAM (CHAPTER TWO, PAGES 47 – 50E AND FIGURE 25); PURSUANT TO THE POWER AND AUTHORITY CONTAINED IN THE ENVIRONMENTAL ARTICLE, TITLE 9, SUBTITLE 5, OF THE ANNOTATED CODE OF MARYLAND

WHEREAS, The Talbot County Council adopted Resolution No. 100 (October 22, 2002), which was based on the October, 2002, Report of the Review of the Comprehensive Water and Sewerage Plan; and

WHEREAS, the Region II (St. Michaels) Wastewater Treatment Plant was to be constructed with a design flow of 1.0 million gallons per day, but would be permitted to discharge 800,000 gallons per day as authorized in Resolution No. 100; and

WHEREAS, the section of Chapter Two of the Talbot County Comprehensive Water and Sewerage Plan identified as *Talbot County Region II – Sanitary District Allocation Program,* pages 47 through 50 and Figure 25, present a detailed analysis supporting the design flow of 1.0 million gallons per day, but would be permitted to discharge 800,000 gallons per day of the proposed Biological Nutrient Removal Upgrade and Expansion of the Region II (St. Michaels) Wastewater Treatment Plant; and

WHEREAS, Resolution No. 106, adopted by the County Council in 2003, authorized the Region II (St. Michaels) Wastewater Treatment Plant to be constructed with a design flow of 660,000 gallons per day; and

WHEREAS, to address conflict between Resolution No. 106 and the detailed analysis presented in Chapter Two of the Talbot County Comprehensive Water and Sewerage Plan, pages 47 through 50 and Figure 25, shall be replaced with an updated analysis associated with the design flow of 660,000 gallons per day.

NOW, THEREFORE, be it resolved by the County Council of Talbot County, Maryland as follows:

Section 1. Adoption of this amendment, by the County Council of Talbot County, shall authorize the Department of Public Works to replace the section of Chapter Two of the Talbot County Comprehensive Water and Sewerage Plan identified as *Talbot County Region II – Sanitary District Allocation Program,* pages 47 through 50, with the revised section of the same title dated August 11, 2004, pages 47 through 50E, effective from the date of adoption.

Section 2. Adoption of this amendment, by the County Council of Talbot County, shall authorize the Department of Public Works to replace Figure 25 with the revised Figure 25, dated August 11, 2004, effective from the date of adoption.

Be It Further Resolved that this Resolution shall take effect immediately upon its date of passage.

COMPREHENSIVE WATER AND SEWER PLAN
TALBOT COUNTY, MARYLAND

RESOLUTION NO. 122

ATTACHMENT

THE FOLLOWING CHANGE, ADPOTED AS RESOLUTION NO. 122, IS ATTACHED HEREIN, IN ACCORDANCE WITH PROVISIONS OF AMENDMENT TO THE TALBOT COUNTY COMPREHENSIVE WATER AND SEWERAGE PLAN, ADOPTED BY RESOLUTION NO. 100.

1. The section of Chapter Two of the Talbot County Comprehensive Water and Sewerage Plan identified as *Talbot County Region II – Sanitary District Allocation Program,* pages 47 through 50E, dated August 11, 2004.
2. Figure 25 with the revised date of August 11, 2004

PUBLIC HEARING

Having been posted and Notice of time and place of hearing and Title of Resolution No. 122 having been published, a public hearing was held on Tuesday, October 26, 2004 at 7:30 p.m. in the County Council Meeting Room, Talbot County Government Building, 142 North Harrison Street, Easton, Maryland.

BY THE COUNCIL

Read the third time.

ENACTED: November 9, 2004

By order Susan W. Moran
Secretary

Foster	Nay
Harrington	Aye
Duncan	Aye
Spence	Aye
Carroll	Aye

TALBOT COUNTY REGION II - SANITARY DISTRICT ALLOCATION PROGRAM

Background

The 2002 Report of the Review for the Talbot County Comprehensive Water and Sewerage Plan incorporated a detailed analysis to support the planning, design and construction of a 1.0 million gallon per day wastewater treatment plant to replace the existing Region II Wastewater Treatment Plant with a design capacity of 500,000 gallon per day. Through negotiations with the Maryland Departments of Environment (MDE) and Planning (MDP), the County and State agreed that the 1.0 million gallon per day (MGD) facility should be constructed but the National Pollution Discharge Elimination System (NPDES) Permit would only allow the discharge of 800,000 gallons per day (gpd). The proposed wastewater treatment plant would be capable of biological nutrient removal, and would be capable of discharging concentrations of 3.0 mg/l of total nitrogen and 0.3 mg/l of total phosphorus at temperature of 10°C or greater to the receiving stream, Miles River.

After seeking approval from MDE and MDP as to the design capacity of the Region II Wastewater Treatment Plant, Talbot County sought engineering proposals for design services for the new 1.0 MGD Biological Nutrient Removal (BNR) Upgrade and Expansion of the Region II Wastewater Treatment Plant. The County selected Rummel, Klepper and Kahl (RK&K) through a competitive bidding process to design the new BNR Wastewater Treatment Plant.

During the design process, the County and RK&K sought ways to maximize the operation of the new 1.0 MGD BNR Upgrade and Expansion of the Region II Wastewater Treatment Plant. To provide temporary storage of extraneous flows experienced during periods of wet weather, the Bardnepho process would be constructed with two trains, each train capable of treating 500,000 gpd. In addition to the two train process, a flow equalization basin was incorporated into the new wastewater treatment plant with a capacity of 100,000 gallons. The flow equalization basin would be connected to one of the treatment trains providing the County with 600,000 gallons of storage of extraneous flow in addition to the 1.7 million gallon pond used for emergency storage and volume for shellfish protection as required within the NPDES Permit.

During the initial operation of the new Region II Wastewater Treatment Plant, flows would be treated through one train while efforts during this period would be made to improve the sewer collection system. As improvements were being made to the sewer collection system, thus creating capacity at the Region II Wastewater Treatment Plant, new opportunities to extend sewer into areas served by onsite sewage disposal systems would be created. Based on the information provided in the 1992 Update of the Talbot County Comprehensive Water and Sewerage Plan, the soils west of Route 50 are poor draining, clay laden soils, thus requiring groundwater penetration for effluent disposal for onsite sewage disposal systems. Utilizing the restricted, denied access sewer service policy that was adopted for the villages of Unionville, Tunis Mills and Copperville, the County could utilize the capacity reserved for inflow and infiltration for addressing water quality problems associated with septic systems thus establishing a program for protecting the tributaries of the Chesapeake Bay and promoting improvements of water quality of the tributaries in Talbot County.

As the design of the 1.0 MGD facility was being completed, MDE requested that the County execute the ENR agreement to proceed with the funding of the project using BNR grant funds and State Revolving Funds for low-interest loans. The ENR agreement was forwarded to the County Council President for execution, however, due to public concern as to the design and construction of a 1.0 MGD wastewater treatment facility to be permitted for 0.8 MGD, the County Council sought information from the Department of Public Works and input from the general public. During this period, the Region II Wastewater Treatment System experienced problems with extraneous flows associated with groundwater and stormwater entering the sewer collection system.

These extraneous flows are defined as inflow and infiltration flows. As the County was attempting to complete the design of the BNR upgrade and expansion of the Region II Wastewater Treatment Plant, the County was also completing in-pipe flow monitoring and smoke testing of the gravity sewer collection system in the Town of St. Michaels and the communities of Rio Vista and Bentley Hay. Through analysis by the Department of Public Works, the amount of I&I flows entering the Region II Wastewater Treatment Plant was fairly consistent with the difference in the daily average flows recorded for calendar year 2002 and 2003. In 2002, the Mid-Atlantic Region of the United States experienced a serious drought and flows at the Region II Wastewater Treatment Plant averaged 298,000 gpd. In 2003, the Eastern Shore and the State of Maryland experienced record snowfalls and rainfalls that resulted in a yearly daily average flow of 486,000 gpd being recorded at the Region II Wastewater Treatment Plant. Using the difference in the yearly daily average flows for calendar year 2002 and 2003, the estimated amount of I&I entering the Region II Wastewater Treatment Plant is 170,000 gpd.

As concerns from the general public mounted concerning the 1.0 MGD plant, permitted for 0.8 MGD and on-going problems with the sewer collection system, the County Council introduced and adopted Resolution No. 106 to authorize the design and construction of a BNR wastewater treatment plant with a design capacity of 0.660 MGD.

With the adoption of Resolution No. 106, a conflict resulted within the Talbot County Comprehensive Water and Sewerage Plan associated with the analysis in Chapter 2 supporting the design and construction of a 1.0 MGD facility to be permitted for 0.8 MGD and the decision of the County Council to design and construct a 0.660 MGD BNR Wastewater Treatment Plant. Because of this conflict, MDE and MDP requested that Talbot County complete a new analysis to determine the allocation of capacity of the Region II Wastewater Treatment Plant to the various areas served by the treatment facility. The analysis completed herein utilized existing data and various assumptions to determine existing and future flows from the various sewer service areas to the Region II Wastewater Treatment Plant.

Determination of Wastewater Flow from the Villages, Communities, and Other Areas

In the 2002 Report of the Review, the analysis used principles of MDE guidelines for determining water generation from a residential structure with the assumption that the wastewater generation equaled the water generation. Typically wastewater generation is a percentage of water generation due to water being used for lawns, to wash cars or fill pools thus resulting in water being used but is not being discharged into the sewer system. In accordance

with the MDE guidelines, flow projections for wastewater less than 80 gallons per day per person must be justified. Metering the wastewater flow for over 17 months and reviewing the data, the metered data is consistent and provides justification for using a flow projection less than 80 gallons per day per person or 184 gallons per equivalent dwelling per day.

In an attempt to accurately assess the wastewater generation for the villages of Unionville, Tunis Mills, Copperville, Royal Oak, Newcomb, and Bellevue, the wastewater flows were metered at the Unionville Pump Station serving the villages of Unionville, Tunis Mills and Copperville and Royal Oak Pump Station. The Royal Oak Pump station receives wastewater flows from the villages of Bellevue, Newcomb and Royal Oak as well as the flows from the Unionville Pump Station. The recorded flows from January, 2003 through May, 2004 are listed in Table 1.

Table 1 - Pump Station Flow Data

MONTH	Royal Oak Pump Station No. 1 (gallons per day)	Unionville Pump Station Unionville, Tunis Mills and Copperville Flows (gallons per day)	Royal Oak, Newcomb, and Bellevue Flows (gallons per day)
January, 2003	64,000	22,000	42,000
February, 2003	80,000	28,000	52,000
March, 2003	77,000	25,000	52,000
April, 2003	65,000	20,000	45,000
May, 2003	68,000	20,000	48,000
June, 2003	74,000	22,000	52,000
July, 2003	66,000	19,000	47,000
August, 2003	67,000	20,000	47,000
September, 2003	74,000	20,000	54,000
October, 2003	68,000	19,000	49,000
November, 2003	71,000	23,000	48,000
December, 2003	68,000	22,000	46,000
January, 2004	61,000	21,000	40,000
February, 2004	65,000	20,000	45,000
March, 2004	64,000	17,000	47,000
April, 2004	68,000	20,000	48,000
May, 2004	56,000	20,000	36,000

Using the data provided in Table 1, the daily average flows were calculated as follows:

Unionville, Tunis Mills and Copperville

Calendar Year 2003 Daily Average Flow:	21,700 gallons per day
Calendar Year 2004 Daily Average Flow:	19,600 gallons per day
2003/2004 (Jan – May) Daily Average Flow:	21,100 gallons per day

Royal Oak, Newcomb and Bellevue

Calendar Year 2003 Daily Average Flow:	48,400 gallons per day
Calendar Year 2004 Daily Average Flow:	43,800 gallons per day

2003/2004 (Jan – May) Daily Average Flow: 47,100 gallons per day

Unionville, Tunis Mills and Copperville

Within the Region I - Unionville, Tunis Mills and Copperville Sewer Service Area, 175 residential structures are connected to the sewer system with a daily average flow of 21,100 gpd, reported for the past 17 months. Approximately 48 lots can be connected in the future. To assess the future flows from the proposed 48 lots, the daily average flow of 21,100 gpd was divided by the existing number of residential structures connected to the sewer system to establish a flow per connection. The flow per connections was calculated to be 121 gpd per connection. To calculate the future flow rate of 48 lots, or future connections, 48 lots were multiplied by 121 gpd per connection, with the future flow being estimated to be 5,900 gpd. Because of various unknowns such as missing and/or broken cleanout caps, broken laterals, leaking tank seals and/or leaking tank lids, a safety factor was used. Consistent with EPA and MDE guidelines, a safety factor of 20% was used to estimate the flow allocation for this region, and this safety factor addresses the variability of wastewater flows for small systems. The following outlines how the flow allocation for Region I Unionville, Tunis Mills and Copperville Sewer Service Area, of 32,400 gpd, was determined.

Estimated Total Flow (Q) = Existing Flow ($Q_{existing}$) + Future Flows (Q_{future}) + 20% Safety Factor
32,400 gpd = 21,100 gpd + 5,900 gpd + 5,400 gpd

Royal Oak, Newcomb and Bellevue

Within the Region II - Royal Oak, Newcomb and Bellevue Sewer Service Area, 376 residential structures are connected to the sewer system with a daily average flow of 47,100 gpd as recorded for the past 17 months. Approximately 460 lots can be connected in the future. To assess the future flows from the proposed 460 lots, the daily average flow of 47,100 gpd was divided by the existing number of residential structures connected to the sewer system to establish a flow per connection. The flow per connection was calculated to be 126 gpd per connection. To calculate the future flow rate of 460 lots, or future connections, 460 lots were multiplied by 126 gpd per connection, with the future flow being estimated to be 58,000 gpd. Because of various unknowns such as missing and/or broken cleanout caps, broken laterals, leaking tank seals and/or leaking tank lids, a safety factor was used. Consistent with EPA and MDE guidelines, a safety factor of 20% was used to estimate the flow allocation for this region, and this safety factor addresses the variability of wastewater flows for small systems. The following outlines how the flow allocation for the Region II Royal Oak, Newcomb and Bellevue Sewer Service Area, of 126,200 gpd, was determined.

Estimated Total Flow (Q) = Existing Flow ($Q_{existing}$) + Future Flows (Q_{future}) + 20% Safety Factor
126,200 gpd = 47,100 gpd + 58,000 gpd + 22,100 gpd

Community of Bentley Hay

In completing the 2002 Report of the Review of the Talbot County Comprehensive Water and Sewerage Plan, the Department of Public Works learned that the subdivision of Bentley Hay was

excluded from the County and State Priority Funding Area maps. The subdivision of Bentley Hay is outside the municipal boundary of the Town of St. Michaels, yet receives water service from the Town of St. Michaels, and receives sewer service from Talbot County via the Region II Wastewater Treatment Plant.

The Subdivision of Bentley Hay dates back to 1947 and has been assumed to be built out as of this date. The projected sanitary sewer flow from this subdivision was estimated to be 29,800 gallons per day that was reported in the Region II Wastewater Treatment Plant Allocation Program in the 2002 Report of the Review.

The allocation as presented in the 2002 Report of the Review shall be the same within the revised allocation. The Bentley Hay community allocation shall be 29,800 gpd.

Other County Areas

As presented in the 2002 Report of the Review, flows from various areas in the County were incorporated into the allocation program. These areas included Chester Park, areas outside the priority funding areas and properties within the priority funding areas identified by MDP. In addition to the areas in the County, estimated flows from the Perry Cabin Inn were incorporated into the flow calculations.

With the completion of the expansion of the Inn at Perry Cabin, the estimated flow of 8,000 gpd has been assumed to be part of the existing flows for the Town of St. Michaels and Rio Vista. With the reduced capacity of the Region II Wastewater Treatment Plant, estimated wastewater flows from the Community of Back Creek and Chester Park have been incorporated into the category of Other County Areas with an estimated existing flow of 3,000 gpd and 12,000 gpd for future flows. The areas allocated wastewater flow in the 2002 Report of the Review, Unincorporated Areas being identified by MDP as being priority funding areas shall be incorporated into the future flows and made part of the reserved capacity for I&I flows for the Town of St. Michaels and Rio Vista as presented in this analysis. Both the County and the Town of St. Michaels will have to determine how future areas will be served with the capacity identified for future flows and the flows associated with the reserved capacity to I&I flows.

Town of St. Michaels and Rio Vista

As presented in the 2002 Report of the Review, the estimated existing and future flows from the incorporated limits of the Town and the Rio Vista Subdivision was 544,000 gpd. These wastewater flows were estimated on the statutory criteria for a priority funding areas (PFAs), minimum density of 3.5 lots per acre. In calculating this estimated flow rate, the County used data collected by Hyder Consulting that was presented in their August 2000 Region II Wastewater Collection System Study. The estimated flow rate for growth and high priority areas within the corporate limits of the Town was reported as 176,000 gpd that was incorporated into the total estimated sewerage flow of 544,000 gpd.

The original design of the Region II Wastewater Treatment Plant was to serve primarily the Town of St. Michaels. The estimated flow associated with the unincorporated areas around St.

Michaels and within the MDP defined priority funding area was found to be approximately 52,500 gpd based on the analysis completed in 2002. The flows included Chester Park and the proposed expansion at the Inn at Perry Cabin. The estimated flows of 42,000 gpd, excluding Chester Park and the Inn at Perry Cabin, will require corrections within the St. Michaels sewer collection system to reduce the amount of flow being associated with extraneous, I&I flows to create capacity within the treatment plant to serve these areas.

Within this analysis, the existing flows for St. Michaels and Rio Vista were determined by deducting the recorded and estimated flows for other areas and the extraneous flows associated with I&I flows. The estimated existing flow of 197,000 gallons per day was determined for St. Michaels and Rio Vista. To estimate the future flows from the Town of St. Michaels and Rio Vista, I&I flows were held constant establishing a reserved capacity for existing and future extraneous flows. The safety factors for Unionville, Tunis Mills and Copperville and Royal Oak, Newcomb and Bellevue Sewer Service Areas were incorporated as part of extraneous flows held constant as reserved capacity. The estimated future flows for the Town of St. Michaels and Rio Vista was estimated to be 116,100 gpd, or 109,700 gpd for the Town of St. Michaels and 6,400 gpd for Rio Vista.

Community of Rio Vista

After completing the analysis to determine the existing and future flows for St. Michaels and Rio Vista, an estimate of the wastewater flows being generated by Rio Vista was completed. The Rio Vista Community has 264 residential lots with a church owning 16 of this these lots. Incorporated into the Rio Vista flows are the lots along Maryland Route 33 with approximately 65.25 equivalent dwelling units (EDUs) with a future total 97.25 EDUs. Using 200 gallons per day per residential lot, the estimated wastewater flow for Rio Vista area was determined to be 63,050 gallons per day with 49,600 gpd associated with 248 residential lots in the Rio Vista Community, 400 gallons per day of wastewater flow being estimated for the church, and 13,050 gpd being allocated for the businesses on Maryland Route 33. The future flows for this area were estimated to be 6,400 gpd with the assumption that Rio Vista was built-out, thus establishing a total allocation of 67,450 gpd for this area.

Inflow and Infiltration Flows and Reserved Capacity

Using calendar year 2003 flow data for the Region II Wastewater Treatment Plant and the design capacity of 500,000 gpd, the allocations for the various sewer service areas are provided in Table 2. Based on the amount of extraneous, I&I flows experienced in calendar year 2003 being 170,000 gpd, this value has been shown in Table 2 as I&I flows. Because of the extraneous flows currently being recorded at the Region II Wastewater Treatment Plant, measures need to be taken to reserve this capacity to avoid over allocating the existing and future capacity of the plant.

The estimated flow being reserved for I&I is 170,000 gpd. The 170,000 gpd is primarily associated with the extraneous flows experienced in the gravity sewer collection system within Town of St. Michaels and the communities of Bentley Hay and Rio Vista but impacts the overall capacity of the Region II Wastewater Treatment Plant. By reserving capacity for the extraneous,

I&I flows, this capacity will buffer peak flows associated with future extraneous, I&I flows allowing the Region II Wastewater Treatment Plant to be operated within the permit limitations for capacity. As improvements to the gravity sewer system are completed, the flows recorded at the Region II Wastewater Treatment Plant, recorded through in-pipe flow monitoring and computer analysis can be used to determine how much capacity can be removed from the reserved capacity set aside for I&I flows.

The 170,000 gpd allocated for I&I flows (or the wastewater treatment plant safety factor) equates to approximately 26% of the design capacity. The use of a 20% safety factor for the village flows is associated with variability of small flows and was not intended to reflect additional reserve capacity within the wastewater treatment plant. As future efforts are made to reduce extraneous flows entering the St. Michaels Gravity Sewer Collection System, capacity within the Region II Wastewater Treatment Plant can be reallocated from the reserve and used to address sewer needs and water quality improvements.

Table 2. Existing Wastewater Flows to the Region II Treatment Plant

SEWER SERVICE AREA	EXISTING FLOWS
Existing Design Capacity	500000
Recorded Flows for Calendar Year 2003	-468000
Remaining Capacity	**32000**
REVIEW OF EXISTING FLOWS	
Total for the Region II Wastewater Treatment Plant	468000
Bentley Hay	-29800
Unionville, Tunis Mills and Copperville	-21100
Royal Oak, Newcomb and Bellevue	-47100
Other County Areas	-3000
Inflow and Infiltration Flow	-170000
St. Michaels And Rio Vista	**197000**

As presented in Table 2, the existing flows for the Town of St. Michaels and Rio Vista equates to 197,000 gpd with 133,950 gpd being estimated for the Town of St. Michaels and 63,050 gpd being estimated for the Rio Vista area. Using the flows presented earlier in the analysis, the projected flows for new wastewater treatment plant with a capacity of 660,000 gpd has been presented in Table 3.

Table 3. Allocation of Capacity at the Region II Wastewater Treatment Plant

SEWER SERVICE AREA	EXISTING FLOWS	FUTURE FLOWS	RESERVED CAPACITY FOR I&I	TOTAL FLOWS
St. Michaels	133950	109700	*143500*	387150
Rio Vista Area	63050	6400	*0*	67450
Bentley Hay	29800	0	*0*	29800
Unionville, Tunis Mills and Copperville	21100	5900	*5400*	32400
Royal Oak, Newcomb and Bellevue	47100	58000	*21100*	126200
Other County Areas	3000	12000	*0*	15000
Inflow and Infiltration Reserved Capacity	170000	0	*0*	0
Totals	468000	192000	*170000*	660000

In comparison with the 2002 Report of the Review, the existing and future flows for the Town of St. Michaels and the Rio Vista were reduced from 544,000 gpd to 313,100 gpd. The wastewater flow allocation for the Town of St. Michaels can be increased as sewer collection system improvements are made and confirmed by the Department of Public Works to have actually reduced the amount of I&I flow into the sewer collection system.

Community of Martingham and Harbourtowne Golf Resort and Conference Center

In April, 2004, representatives from Martingham Utilities met with the Talbot County Department of Public Works to discuss the possibility of connecting to the Region II Wastewater Treatment Plant. The current operation of the wastewater treatment system serving the residents of the Martingham Community and the Harbourtowne Golf Resort and Conference Center is a two stage stabilization lagoon followed by disinfection and an effluent holding pond. Under proper weather conditions, the treated effluent is spray irrigated on various fairways with one spray irrigation site being on private land where Martingham Utilities paid for an easement to spray irrigate on the land.

The wastewater treatment facility for the Martingham Community has a treatment plant capacity of 75,000 gallons per day but the spray disposal areas have a permit limit of 66,800 gallons per day. The Martingham Community serves 320 residents and a commercial establishment, the Harbourtowne Golf Resort and Conference Center.

Based on information received from Martingham Utilities, MDE, and Maryland Environmental Service, the contract-operator for the Region II and Martingham Wastewater Treatment Plants, the spray irrigation site on private land has been reduce by nearly 65% of the usable land area due to MDE requiring a 200 foot setback. Based on a meeting with MDE, the only option available to Martingham Utilities is to send flow to the Region II Wastewater Treatment Plant, especially during periods of dry weather in the late fall and winter months to establish enough pond capacity to retain water in the ponds when Martingham Utilities cannot spray irrigate.

Based on the discussions with Martingham Utilities, up to 8,000,000 gallons of either raw wastewater or treated effluent would need to be sent to the Region II Wastewater Treatment Plant. During years with normal precipitation amounts, an estimated 2,000,000 to 4,000,000 gallons of flow would be sent to the Region II Wastewater Treatment. In the event of an extremely wet year, 8,000,000 gallons would be sent to the Region II Wastewater Treatment Plant over a period of 300 days (26,667 gpd).

For the County to participate with Martingham Utilities and MDE in resolving this issue, corrective measures that involve the Region II Wastewater Treatment Plant and Sewer Collection System will need to be completed in two phases. First, a short-term strategy would employ a temporary force main laid within the road drainage ditches or other approved temporary strategy conveying treated effluent to the Region II Wastewater Treatment Plant. The standard operating procedure, in the short-term, would need to limit the amount of treated effluent to 19,000 gpd or less on a calendar year daily average flow with no flow being conveyed during periods of rainfall. During this short-term, temporary period, improvements to the sewer collection system

must occur, and the County believes that these improvements would need to be made in areas around Mill and Carpenter Streets, and the north end of Town to reduce enough I&I flows from the system to allow Martingham to connect to the Region II Sewer Collection System on a permanent basis.

Assuming a long-term strategy is approved with a new force main being constructed from the Martingham Wastewater Treatment Plant to the sewer collection system of the Region II Wastewater Treatment Plant, ownership of the Martingham plant would need to be considered by Talbot County Sanitary District. This would allow the County to control the means of treating the wastewater and operating the spray irrigation system to comply with the two discharge permits, the Region II Wastewater Treatment Plant NPDES and Martingham NPDES permits.

Because of the low-strength of the raw wastewater being treated at the Region II Wastewater Treatment, raw sewage from the Martingham Wastewater Treatment Plant should be pumped for treatment at the Region II Wastewater Treatment Facility using the same flow restriction outlined earlier for total, average gallons treated in a calendar year. The Region II Wastewater Treatment Facility would handle up to 26,700 gpd of raw sewage during wet years such as 2003.

In developing capacity at the Region II Wastewater Treatment Plant, improvements with the sewer collection system must be implemented and completed. These improvements would take place in the various sections of the sewer collection system found to have the highest priority for being repaired. The allocation for Martingham has been allocated from the flows designated within the reserved capacity for I&I flows. The revised flow allocation for the existing Region II Wastewater Treatment Plant with a design capacity of 500,000 has been presented in Table 4. Table 5 lists the flows allocations associated with the new treatment facility with a design capacity of 660,000 gallons per day after making improvements in the collection system and establishing a permanent solution to the problem. The Board for Martingham Utilities Cooperative and the Talbot County Department of Public Works shall continue to review and explore options to establish a permanent solution to addressing the discharge permit and report to the County Council the various solutions prior to committing capacity of the 660,000 gallon per day Wastewater Treatment Plant.

Table 4. Revised Allocation of Capacity for 500,000 gallons per day

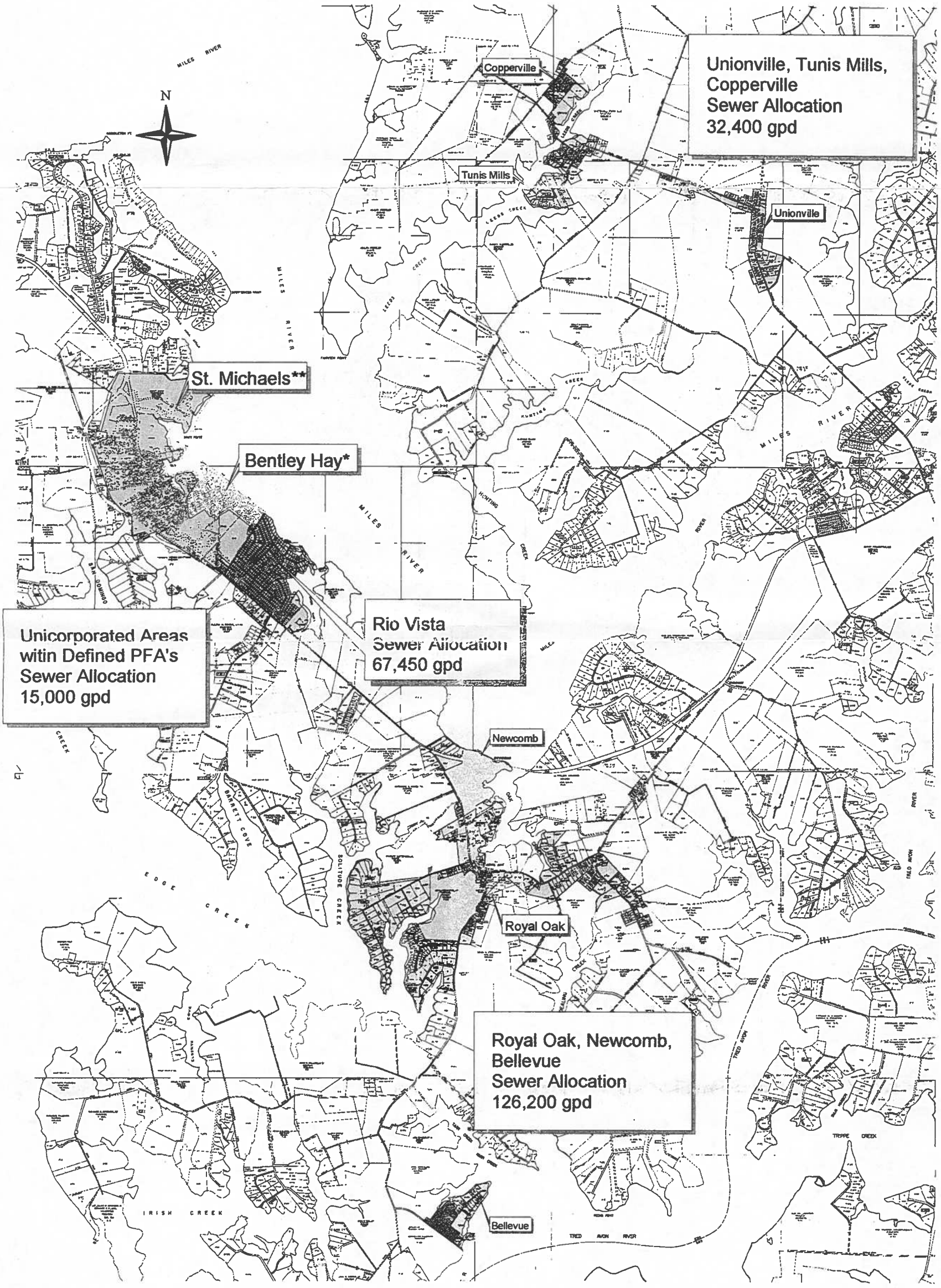
SEWER SERVICE AREA	EXISTING FLOWS
St. Michaels And Rio Vista	197000
Bentley Hay	29800
Unionville, Tunis Mills and Copperville	21100
Royal Oak, Newcomb and Bellevue	47100
Other County Areas	3000
Martingham Community	19,000
Inflow and Infiltration	*170000*
Totals	487000

Table 5. Revised Allocation of Capacity for 660,000 gallons per day

SEWER SERVICE AREA	EXISTING FLOWS	FUTURE FLOWS	RESERVED CAPACITY FOR I&I	TOTAL FLOWS
St. Michaels And Rio Vista	197000	116100	*116800*	429900
Bentley Hay	29800	0	*0*	29800
Unionville, Tunis Mills and Copperville	21100	5900	*5400*	32400
Royal Oak, Newcomb and Bellevue	47100	58000	*21100*	126200
Other County Areas	3000	12000	*0*	15000
Martingham Community	26700	0	*(26700)*	0
Totals	324700	192000	*143300*	660000

TALBOT COUNTY
MDP DEFINED PRIORITY FUNDING AREAS
SERVED BY REGION II WWTP

Data Source: Maryland Department of Planning (MDP)



Note: *1. Bentley Hay subdivision platted in 1947, built-out in 1970's; Sewer Allocation 29,800 gpd.

**2. St. Michaels Sewer Allocation 243,650 gpd
Reserved capacity for I&I flows 170,000 gpd
Total Capacity = 413,650 gpd

Produced By
Talbot County Public Works GIS
November 8, 2002
Revised August 11, 2004

Figure 25