Rich - For File

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Douglas M. Duncan
County Executive

James A. Caldwell
Director

MEMORANDUM

September 24, 1997

TO: Richard Brush,
Department of Permitting Services

VIA: Keith Van Ness KVN
Department of Environmental Protection,
Watershed Management Division

FROM: Ken Brown KWB and Doug Marshall DWM
Department of Environmental Protection,
Watershed management Division,
Special Protection Area Program

SUBJECT: Clarksburg Town Center Final Water Quality Plan Review

The Department of Environmental Protection (DEP), Special Protection Area (SPA) staff have reviewed the Final Water Quality Plan (FWQP) for the Clarksburg Town Center (CTC) development project. DEP/SPA staff comments focus on the FWQP's performance goals, how the applicant proposes to meet these performance goals, and how the applicant intends to monitor the BMPs.

Performance Goals - General Comments

Our initial comment pertains to the fact that the performance goals are not clearly stated under Section 2.0 Water Quality Performance Goals or anywhere else in the document. Section 2.0 states, "This final water quality plan will assist the Montgomery County Department of Environmental in setting performance goals for the development of the CTC." The performance goals for the CTC were established in a pre-application meeting on May 4, 1995. The pre-application meeting was attended by the Department of Environmental Protection, The Maryland-National Capital Park and Planning Commission, the applicant, Biohabitats, Inc., and Loiederman Associates, Inc. Based upon the discussions at the preapplication meeting, Biohabitats, Inc. prepared a report entitled Water Quality Performance Goals - Addendum to the Water Quality Inventory Report for the Clarksburg Town Center (June 5, 1995). This report was reviewed by the Department of Environmental Protection with comments being forwarded to Biohabitats, Inc. Biohabitats, Inc. revised the report on June 22, 1995. This report, dated June 22, 1995 clearly states the performance goals for the project. The FWQP needs to make reference to this report. The goals in the June 22, 1995 report are as follows:

1. To protect the stream/aquatic habitat - restore habitat which promotes natural recovery toward a Use IV stream habitat.

Watershed Management Division
250 Hungerford Drive, Suite 175 • Rockville, Maryland 20850-4153 • 301/217-2044, FAX 301/217-6376

2. To maintain natural onsite stream channels - Through effective upland site planning, stormwater controls, and sediment and erosion control, protect stream habitat features vulnerable to anticipated development impacts.

3. Minimize stormflow runoff increases - Through stormwater management, decrease duration and frequency of bankfull discharges to pre-construction levels.

4. To identify and protect stream banks prone to erosion and slumping - Identify the most erosion prone stream bank areas and stabilize them with a combination of structural and bioengineered solutions to anticipate the altered flow regime resulting from development.

5. To minimize increases to ambient water temperature - minimize increases to xx percent of existing baseflow conditions.

6. To minimize sediment loading - minimize sediment loading and reduce stream embeddedness by xx percent

7. Maintain stream baseflow - Limit the post development reduction of base flow in streams by xx percent

8. Protect springs, seeps, and wetlands - Protect natural recharge areas pf perennial seeps and springs that provide cold water to streams where feasible.

Section 2.2 describes how the CTC proposes to meet the performance goals. This section is confusing in that it does not address each performance goal as stated in the above referenced report. This section should be rewritten to concisely address how the applicant intends to meet each performance goal.

Performance Goals - Specific Comments

Our specific comments regarding Section 2.2 are as follows:

1.) The first bullet statement in this section (p. 8) states that stream channels will be protected and enhanced by effective upland site planning that incorporates redundant BMPs, stormwater management, reforestation and conservation of the stream buffer, sediment and erosion control, and soil bioengineering. This paragraph goes on to state, "By protecting the stream, CTC will enhance the stream system and maintain the Use IV stream habitat." This bullet statement offers no specific details on how these broad strategies will accomplish this goal. If these strategies are detailed somewhere else in the document, then the reader should be directed to those portions of the document. We require details stating how each of these broad categories will protect the stream. For example, do not state that sediment and erosion control will protect the stream, but state how the sediment and erosion control plan will specifically protect the stream. Details pertaining to the number of structures, the redundancy within the sediment control system, the soil stabilization strategies, the amount of ground be open at one time, the acreage of stream buffer to be reforested, should be included in the text.

In addition, protecting the stream is not enhancement. This section does not state how the stream system will be enhanced through protection. The word "enhanced" should be replaced unless specific enhancement methods are detailed.

2.) The second bullet statement on page 8, pertaining to erosion prone streambanks, states that erosion prone streambank areas have been identified and stabilization strategies are

proposed that will incorporate soil bioengineering techniques. This is a broad statement with no supporting detail. Where are the proposed stabilization strategies detailed in the text? Further reading reveals this information in Section 5.0. The reader needs to be directed to section 5.0 for detailed supporting information, but there needs to be at least a summarization of the stabilization strategy in the text of Section 2.2.

3.) The third bullet statement on page 8 states, "...target goals for maintaining minimum base flow to the stream system have been established. What are these target goals? The minimum base flow should be stated in this section of the text. This bullet statement also refers to BMPs and groundwater recharge. There needs to be a detailed discussion of how the design of the BMPs integrates stormwater treatment and groundwater recharge. Do all the BMPs integrate recharge? Where is the information detailing the current groundwater pattern on the property and how the proposed BMPs will maintain this groundwater pattern?

4.) The fourth bullet statement on page 8 states, "Construction of ponds 1 and 2, along with storage provided by the BMPs, will decrease duration and frequency of discharges to pre-construction rates. How can both the duration and frequency of discharges be decreased to pre-development rates? What discharges are being referred to, bankfull, two-year, one year? This statement needs clarification and additional detailed documentation.

5.) The first bullet statement on page 9 addresses efforts to minimize increases in ambient stream temperatures. While this paragraph lists several strategies, there are no details given. This is not acceptable. Will the first one inch of runoff be infiltrated? If not what percentage of runoff will be infiltrated? How do the cool water recharge/discharge structures function? Is there any documented use of these structures in other places? How much temperature reduction is expected? What amount of stormwater runoff treatment is expected? If you are considering these structures to be as efficient as gravel filters, have they been designed as gravel filters?

6.) The second bullet statement on page 9 states that sediment loading to the stream will be minimized by employing stream buffer reforestation, stabilization of eroding streambanks, restoring stream headcuts, the use of stringent sediment controls, the use of SWM and BMP facilities, and converting agricultural fields to forest and open space. While these are useful broad categories of methods, there are no specific details regarding their use. How many acres of stream buffer will be reforested? What length of eroding streambanks will be stabilized? (on page 33 the author states that most of the stream reaches are in good shape and require no restoration or stabilization measures) What are the stringent sediment controls? How much agricultural field will be converted to forest and open space and how much will be converted to residential and commercial uses? What are the erosion characteristics of the CTC soils.

Overall, there is a lack of specific detailed information necessary to determine whether or not there is reasonable assurance that the performance goals will be achieved. This section and the overall document needs to be written to specifically address the performance goals and how they will be met. A Final Water Quality Plan is a summary document, intended to bring all the elements of site design together and present them as a unified strategy to protect the aquatic environment.

BMP Modeling - General Comments

The BMP modeling is inadequate, the source material is not adequately documented or referenced, and there are only two parameters modeled. There are several more parameters that should be included in the model. (Total Suspended Solids, Total Phosphorus, Total Nitrogen, Nitrate, Zn, Pb, Cu, and BOD_5). Pollutant reduction data for the various BMPs can be found in

Design of Stormwater Filtering Systems, (The Center for Watershed Protection, 1996).

Overall, the BMP model needs to be expanded and recalculated. The Traville BMP model study is referenced in the text. The Clarksburg Town Center BMP model should, at a minimum, reflect the same level of detail.

BMP Modeling - Specific Comments

On page 19, a value of 32.2% impervious was chosen for cropland. The use of 32.2% impervious for agricultural lands is not adequately documented. The source documentation should be provided. The analysis does not consider the actual current land use. It appears that the model is treating the whole site as cropland in the predevelopment scenario. The site should be divided into forest, cropland, and fallow land (if appl.) The complete calculations for each BMP Drainage area should be included in a tabular or spreadsheet format (DA, Impervious area, land use, load rate, etc.).

Cool water recharge should not be included in the pollutant reduction calculations unless it is an infiltration device. There is no documentation as to its pollutant removal efficiency. Unless this BMP is actually designed as a gravel filter it cannot be considered to have the same pollutant removal efficiency as a gravel filter.

The second paragraph on page 25 states that coolwater recharge is the most efficient BMP with a removal rate of 70% for Phosphorus and 60% for Nitrogen. Where does this information come from? If the cool water recharge is designed as an infiltration device it is 100% effective. If it is just a gravel filled pit, it is not a water quality BMP at all.

Post -Construction BMP Monitoring

Section 4.0 Final BMP Monitoring Plan - The majority of this section of the document does not even deal with BMP monitoring. Only the last page of this section (p. 27) describes the final BMP monitoring plan.

The second paragraph (p. 27) under the heading post-construction monitoring states that monitoring of BMPs will be accomplished by grab sampling. We are not in favor of grab sampling for all BMP monitoring. There are five different BMP techniques proposed in the plan. There already exists ample documentation as to the performance of wet ponds. As such we propose grab samples for monitoring the wet pond. Wet pond monitoring would involve grab samples of the baseflow output of the pond. This will be used to compare the quality of the water (baseflow) leaving the pond with the quality of the stream baseflow in the predevelopment condition. Quarterly measurements will be required during the five year post-construction phase.

The other proposed BMP techniques are less well documented as to their performance in this region. If the bioretention and sand filters are underdrained then they will be sampled. If the cool water discharge is not an infiltration device then it will be sampled as well. We will require flow weighted means for this BMP sampling at the inflow and outflow points. Four storms per year will be sampled. So as not to require numerous automated samplers, each year one BMP can be sampled for the five years post construction monitoring or a single BMP can be monitored for the duration of the project.

The parameters to be sampled should include: Total Suspended Solids (TSS),Total Kjedahl Nitrogen (TKN), Nitrate (NO_3-N), Total Phosphorus (TP), Ortho Phosphorus (PO_4), Petroleum Hydrocarbons, Metals (Cu, ZN, Pb, Ca, Cd), Herbicides/Pesticides. Biochemical Oxygen Demand (BOD_5).

No biological sampling will be completed by the applicant.

In addition to comments on the final water quality plan, DEP/SPA staff have some serious concerns about the current deployment of the flow logger at Stringtown Rd. A field visit revealed that the sensor (transducer) is not solidly secured in the stream. It is critical that the sensor be mounted on or in some stable structure in order to obtain accurate data. In addition, a staff gage must be installed in the same pool as the sensor in order to establish a relationship between discharge and water surface elevation (rating curve). Once the rating curve is established (based on field measurements of discharge at a range of staff gage readings), it is programed into the logger. The logger is to be set to match the staff plate readings. This allows one to confirm that the logger is reading accurately (i.e. no drift has occurred) during each visit to the site.

In addition, the container housing the flow logger is vulnerable to damage from high flow events, it should be better secured and housed in a vandal proof box.

DEP would like to set up a meeting with the applicant to discuss the flow logger installation further.

Should you have any questions or concerns regarding these comments, please contact Ken Brown at 217-6331 or Doug Marshall at 217-6141.

cc: Cameron Weigand, DEP/WMD
Richard Gee, DPS
Blair Lough, DPS
File

G:\DATA\SPA\CLARKSPA.DOC

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Douglas M. Duncan
County Executive

James A. Caldwell
Director

MEMORANDUM

December 9, 1997

TO: Richard Brush,
Department of Permitting Services

VIA: Keith Van Ness KVN
Department of Environmental Protection, Watershed Management Division

FROM: Ken Brown KRB and Doug Marshall DRM
Department of Environmental Protection,
Watershed management Division, Special Protection Area Program

SUBJECT: Clarksburg Town Center Final Water Quality Plan Review

The Department of Environmental Protection (DEP), Special Protection Area (SPA) staff have reviewed the second submission of the Final Water Quality Plan (FWQP) for the Clarksburg Town Center (CTC) development project (Dec. 6, 1997). While many of DEP/SPA staff comments on the first submission have been addressed, some others are still in need of further attention. The following are those comments from the first submission which need further clarification and revision in the FWQP.

1. The performance goal for maintaining base flow is clearly stated on page 2-6 as a zero percent reduction in flow. However, later on the same page, it is stated that the proposed BMPs should provide 80% of the necessary subsurface flow to maintain baseflow. The resulting 20% reduction in baseflow is unacceptable and does not meet the performance goal for the CTC. Clearly state how the CTC site will meet the performance goal of a 0% reduction in baseflow in the FWQP.

2. Your pollutant reduction performance goals presented in Table 3.2.9 are not the BMP performance goals for the site. The figures presented in Table 3.2.4, as removal efficiencies are the performance goals for each BMP. Post development BMP monitoring has been designed to determine if these goals are met.

3. The use of 32.2% impervious for agricultural land remains undocumented (the Traville study is not adequate documentation) and is unacceptable. From the literature and discussions with other staff, a more accurate method of determining runoff coefficients from cropland is to use that presented in: Pitt,1987 section 5,

Watershed Management Division
250 Hungerford Drive, Suite 175 • Rockville, Maryland 20850-4153 • 301/217-2044, FAX 301/217-6376

Small Stream Hydrology (Table 5.5 from this publication is attached). An average annual rain event will result in a runoff coefficient (Rv) of 0.20 for clay soils.

0.20 represents a conservative number as the channery silt loam soils on the site are not technically clay soils but, due to agricultural use, would have similar runoff characteristics. This is the value to use in the calculation of cropland runoff. The Rv that you are currently using represents the runoff coefficient for clay soils in a two year storm event and does not represent an average runoff condition for rainfall over a typical year.

4. Forest land may presently exist within some of the BMP drainage area's. Please document whether forested land exists within the BMP drainage areas and include the forested areas in the BMP model.

5. The water quality monitoring section must include the statement that all flow weighted sampling of BMP's at both the input and output locations is to be done using **automated samplers. The automated sampler must be connected to, and work in conjunction with, a flow logger unit.** Contact DEP staff for assistance.

6. We have been told that our concerns about the flow logger deployment at Stringtown Road have been addressed (per verbal communication with Marshall Rudo, Biohabitats). DEP/SPA staff will inspect the flow logger in the next week to verify it is deployed according to our specification.

7. The estimates of bankfull flow presented in the FWQP are not correct and need to be revised. MCDEP has a monumented, surveyed cross section located below Stringtown Rd. and has calculated bankfull discharge at that site to be considerably lower (approximately 40-50 cfs) then that calculated for cross section # 7, located above Stringtown Rd. Our bankfull estimate is also within the range predicted from regional curves (Leopald, 1993) and the values used on the stormwater computations by M/K Enterprises.

   In addition, several of the cross sections in the FWQP have bankfull flows decreasing in a downstream direction. This must also be corrected.

Should you have any questions or concerns regarding these comments, please contact Ken Brown at 217-6331 or Doug Marshall at 217-6141.

cc: Cameron Weigand, DEP/WMD
Richard Gee, DPS
Blair Lough, DPS
File

G:\DATA\SPA\CLRKSPA2.DOC

Table 5.5 Summary of Volumetric Runoff Coefficients for Urban Runoff Flow Calculations

RUNOFF COEFFICIENTS FOR DIRECTLY CONNECTED AREAS:

Rain depth mm	Rain depth in.	flat roofs* (or large unpaved parking areas)	pitched roofs*	large impervious areas*	small impervious areas* streets	sandy soils	clayey soils
1	0.04	0.00	0.25	0.93	0.26	0.00	0.00
3	0.12	0.30	0.75	0.96	0.49	0.00	0.00
5	0.20	0.54	0.85	0.97	0.55	0.00	0.10
10	0.39	0.72	0.93	0.97	0.60	0.01	0.15
15	0.59	0.79	0.95	0.97	0.64	0.02	0.19
20	0.79	0.83	0.96	0.97	0.67	0.02	0.20
30	1.2	0.86	0.98	0.98	0.73	0.03	0.22
50	2.0	0.90	0.99	0.99	0.84	0.07	0.26
80	3.2	0.94	0.99	0.99	0.90	0.15	0.31
125	4.9	0.96	0.99	0.99	0.93	0.25	0.45

YOU SHOULD PROBABLY BE IN THIS RANGE FOR ANNUAL RUNOFF VALUES. MEAN RAINFALL IN MD IS ABOUT .4-.5 INCHES.

* If these "impervious" areas drain across sandy soils, the sandy soil runoff coefficients will usually be applied, however if these "impervious" areas drain across clayey soils, the runoff coefficients will be reduced, depending on the land use and rain depth:

reduction factors	rain depth (mm): 1	3	5	10	15	20	30	50	80	125
strip commercial & shopping centers:	0.00	0.00	0.47	0.90	0.99	0.99	0.99	0.99	0.99	0.99
other medium to high density land uses, with alleys:	0.00	0.08	0.11	0.16	0.20	0.29	0.46	0.81	0.99	0.99
other medium to high density land uses, without alleys:	0.00	0.00	0.11	0.16	0.20	0.21	0.22	.027	0.34	0.46

if low density land uses, use clayey soil runoff coefficients

MONTGOMERY / KONTGIAS
ENTERPRISES, INC.

December 18, 1997

Montgomery County Department of Permitting Services
Water Resources Section
250 Hungerford Drive, 2nd Floor, Station 8
Rockville, Maryland 20850

Attn: Mr. Richard R. Brush, Section Manager

Re: Clarksburg Town Center
Final Water Quality Plan
Phase I

Dear Mr. Brush:

The above-captioned water quality plan has been revised, based your comments of December 11, 1997, and is being resubmitted under this cover. The following is a point by point response to items 1 through 16 of your review letter.

1. We believe that the off-site roads were in fact included in the waiver approved at preliminary plan. Regardless, the off-site road sections have been recently modified by DPW&T, as you know. While some road issues are still under negotiation, we have no choice but to accommodate most of the new sections as part of our site plan approval.

2. The following is a comparison of the newly revised cross sections for perimeter roads to the preliminary plan road sections, and a discussion of the impact of the road changes on the water quality facilities. Because the new sections may still be open to some negotiation, the calculations have not yet been revised to reflect these changes. The purpose of this response is to demonstrate that the existing facilities accommodate or can be made to accommodate all of the road changes proposed by DPW&T on December 8, 1997.

Intersection of MD 355 and Clarksburg Road
Proposed- 275' additional southbound right turn lane with 100' taper on Route 355.
Impact on facilities-This area drains to as separate watershed and has no impact on the facilities proposed under this Final Water Quality Plan. For this reason, and because there are still outstanding issues related to the road section, we request that we be allowed to prepare a separate Water Quality Concept for this area, when the cross section is finalized.

Clarksburg Road from Intersection with MD 355 to Station 8+10 (CTC Property Line)
Proposed- 38' pavement symmetrically located within RW, 8' bike path on south side, 5' sidewalk on north side, closed section.
Impact on facilities-None. This portion of road improvements are not the responsibility of Clarksburg Town Center.

Clarksburg Road from Station 8+10 to high point 9+20
Proposed- Same as above.
Impact on facilities-This area has no bearing on Phase I facilities, because it drains to another watershed. We propose to include this area in the separate Water Quality Concept for intersection improvements on MD 355 as discussed above.

Clarksburg Road from high point Station 9+20 to Station 19+70
Proposed- Same as above.
Previous- 25' pavement from centerline and 5' sidewalk on south side.
Impact on facilities- The proposed section results is 27' of imperviousness from the centerline, which is less than the previous 30' of impervious area. Thus, SF#15 has sufficient storage to accommodate the impervious area south of the centerline, as well as, 3 additional feet from the north side. This results in 21' of untreated impervious surface north of the centerline, which is not within the scope of this Water Quality Plan. However, if amenable to M-NCP&PC, SF#15 could be extended into park property in order to provide the additional volume required to treat the remaining imperviousness.

Clarksburg Road from Station 19+70 to Station 29+40
Proposed-32' pavement centered, 5' sidewalk north side, open section.
Impact on facilities- None. Roadway not adjacent to property; not part of the scope of this Final Water Quality Plan.

Clarksburg Road from Station 29+40 to Station 33+40
Proposed- Same as above.
Impact on facilities-None. This part of roadway will be part of the Phase II Water Quality Plan.

Clarksburg Road Station 33+40 to Intersection with A305
Proposed-38' pavement centered, 5' sidewalk north side, closed section.
Impact on facilities-None. This part of roadway will be part of the Phase II Water Quality Plan.

A305 from Intersection with Clarksburg Road, Station 36+60 to Intersection of School Road, Station 29+60
Proposed- 40' pavement centered, 8' bike path west side, closed section.
Impact on facilities- None. Part of future Phase II Water Quality Plan.

A305 from Station 29+60 to high point Station 22+00
Proposed-40' pavement centered, 8' bike path west side, open section.
Impact on facilities- None. Part of future Phase II Water Quality Plan.

A305 from Station 22+00 to Station 3+25
Proposed-Same as above.
Previous-24' pavement with additional 8' foot paved shoulders; 40' total imperviousness.
Impact on facilities-SF#14 and SF#12 were sized to accommodate the full A305 RW rather than the minimum 1/2 RW, since the property is adjacent to both sides of the RW for most of A305. (SF#14 is sized for 1/2 inch, with redundancy in the Pond 1 wet pool. SF#12 is sized for 1 inch.) The addition of the 8' bike path will increase the storage elevation primarily at SF#14 by approximately 4". This is acceptable, since 2' of freeboard has been provided at this facility. Alternatively, raising the embankment 4" would not create a hardship.

A305 from Station 3+25 to Intersection with Stringtown Road
Proposed- 42' pavement centered, 8' bike path west side, closed section.
Previous- 24' pavement with additional 8 foot paved shoulders; 40' total.
Impact on facilities- SF#12 was sized to accommodate 40' of imperviousness. The additional 10' of pavement will result in an increase in the storage elevation. The cumulative effect on SF#12 of this increase, the increase described above, and increases on Stringtown Road is discussed below.

Stringtown Road from the Intersection with A305, Station 47+95 to Station 45+45
Proposed-32' total pavement, hybrid section.
Previous- 24' pavement from centerline.
Impact on Facilities- None. SF#12 is oversized for this new section, which represents 16' of imperviousness from the centerline.

Stringtown Road from Station 45+45 to high point Station 33+50
Proposed- 58' pavement, 5' sidewalk south side, 8' bike path north side, hybrid section.
Previous- 24' pavement from centerline.
Impact on Facilities-The new section results in an additional imperviousness of 13' from centerline. This will result in an increase in the storage elevation of SF#13 of 3 to 4 inches. The cumulative effect of increases on A305 and Stringtown Road on SF#12 will also be approximately 4 inches. These facilities were also designed with 2' of freeboard. Therefore, the increases in volume can be accommodated.

Stringtown Road from high point Station 33+50 to Intersection with Greenway Road (Street K) Station 15+21
Proposed- Same as above, with 10' deceleration lane and 200' taper at intersection.
Previous-24' pavement from centerline.

Impact on facilities- No impact on Phase I water quality facilities; this portion of road improvements will be part of the Phase II Water Quality Plan.

Stringtown Road from Station 15+21 to Intersection with MD 355
Proposed- 54' pavement, closed section
Previous- 24' pavement from centerline.
Impact on facilities- The new section results in 27' of pavement from centerline, which represents a 3' increase. SF#6 can accommodate this with a slight increase in storage elevation. Alternatively, SF#6 can be enlarged without impacting the Phase I site plan.
If amenable to M-NCP&PC, storage can be provided in a separate BMP, within the stream buffer, adjacent to Stringtown Road, in the Pond 2 area, to provide water quality enhancement for the remaining 1/2 of the RW.

3. We concur.

4. The 5' P.U.E. has been moved to the other side of the right of way of Street K, Greenway Road. This adjustment has been made in plan view on both the Site Plan and the Final Water Quality Plan, and also appears on the cross section for Street K in the Site Plan. We are including herein a letter from Allegheny Power indicating that it is acceptable to delete P.U.E.s along roadways if necessary.

5. It is anticipated that a fence will be provided along the top of 2:1 slopes adjacent to road rights of way, where the vertical fall exceeds 4 feet, as required by MCDOT. In addition a fence or railing which meets applicable safety codes will be installed along the top of the retaining wall. Access to the facility will be provided through a gate located across the maintenance road which appears in plan view on the Final Water Quality Plan.

6. Our latest guidance from Wynn Witthans of M-NCP&PC is that no additional bike paths or lanes will be required on internal streets. Therefore, the grading and cross-sections which appear on the Site Plan are correct and do not require further revision. The typical sections can be found on sheet A of the Site Plan. Also, since the impervious area will not increase, no revision to water quality structures is required due to this issue.

7. Please refer to the foregoing discussion of perimeter roads under item 2.

8. SF #3 has been regraded to provide the required 10' minimum maintenance access along the top of the embankment to the infiltration trench. Please note also that in a very recent change, additional parking has been required by M-NCP&PC along the alley, at the top of the slope, above the infiltration trench. (See also item 16.) As part of the regrading, SF#3 and the infiltration trench have been enlarged slightly to accommodate this extra imperviousness. The computations have been adjusted to reflect this. In lieu of moving this and other outfalls to the treeline, we have added a note that all outfalls will be field located to the Final Water Quality Plans.

9. We have added a note to all outfalls that they will be field located. See also item 8.

10. We have provided this hydrologic information to Richard Gee of your office, and our environmental consultants, Biohabitats, Inc., are addressing the mitigation issue as part of their separate response to your comments. The data indicates that post development peak flow rates can be anticipated to be larger than the pre-development rates, but that the proposed flow rates compare favorably with the existing rates, based on agricultural land use.

11. We anticipate that the Town Square will consist of a civic building, such as a library, and a green which will contain sidewalks and possibly a small paved plaza. We have programmed this site into our calculations as roughly 57% impervious. However, because the building may be publicly constructed, as in the case of a library, we cannot guarantee the final layout.

12. All picnic and play areas will have pervious, wood chip surfaces. The path system will be asphalt. The run-off from the path ringing Kings Pond will flow into the pond, where it is presumed water quality treatment will take place. A portion of the path connecting to the Greenway Road will be treated at SF#15. The run-off from the remainder of the two path extensions to Greenway Road will surface flow through the stream buffer and the wetland mitigation areas, thus enhancing water quality.

13. We have added a note on sheet 12 to clarify that all rooftops must drain to the roof drain system shown on the plans. On sheet 9, we have also adjusted the grading behind Lot 11 and on the access road to Old Stringtown Road to insure maximum capture of surface run-off.

14. This information has already been furnished. See item 10 above.

15. Lot lines have been adjusted to run parallel to the splitter pipe and to cross the pipe in only one location. This revision has been made to both the Site Plan and the Final Water Quality Plan. Easements will be provided on all public and private storm drains through private properties when the design has been finalized.

16. Since our last review, M-NCP&PC has required 14 additional parking spaces along this alley, and it therefore cannot be deleted. SF#3 and its infiltration trench have been revised to accommodate the additional imperviousness, and the parking spaces have been added to the plan view of the Final Water Quality Plan.

The remaining comments from your December 11th correspondence and from the Watershed Management Division's December 9th memo will be addressed separately by Biohabitats, Inc. and Schnabel Engineering, Inc.

Also included in this submission is a dam breach package requested by Joseph Cheung of your office. This information can also be found in the bound Final Water Quality Plan calculations. Please forward this to Mr. Cheung for his review.

We are extremely hopeful that this will conclude what has been a long and arduous review process for all parties involved. If there are any other comments or concerns regarding this submission, please call us as soon as possible.

The staff of MK Enterprises extends to you and your staff our best wishes for a joyous Holiday Season and a prosperous New Year.

Sincerely,

Irene A. Carrato, P.E.
Director of Engineering

IAC/abc
wqresp.doc

Biohabitats
Incorporated

15 West Aylesbury Road
Timonium, Maryland 21093
410-337-3659
fax/410-583-5678

Ecological Assessments
Ecological Planning
Ecological Restoration

November 6, 1997

Mr. Richard R. Brush, Manager
Water Resources Section
Montgomery County
Department of Permitting Services
250 Hungerford Drive, Second Floor
Rockville, Maryland 20850

REF: **Final Water Quality Plan for Monitoring of Clarksburg Town Center Phase I**
Preliminary Plan #: 1-95042

Biohabitats Project #97004.01

SUBJ: **Response to Department of Permitting Services Comments**

Dear Mr. Brush:

Enclosed is a point-by-point response to your review comments of October 6, 1997 on the Final Water Quality Plan. We have revised the Final Water Quality Plan and have submitted a copy for you to review.

As previously noted in Richard Gee's letter of September 8, 1997, the terms redundant, redundancy, linked or multiple mean BMPs (structures or methods) in a series configuration, each sized for the appropriate drainage areas, which provide water quality if the previous structure fails. A minimum of one-half of the required storage should be provided in each structure.

The following section by section comments are in addition to MCDEP comments:

Section 1.0 *The narrative is too general and lacks specifics.*

Section 1.0 has been revised. Section 1.0 now contains a general site description along with an outline of the document structure. Section 2.2 contains very specific information on how the Final Water Quality Plan meets the Specific Performance Objectives of the SPA.

Section 2.2 *Para. 1. The overall plan lacks redundancy.*

A description of how the BMPs function and are linked are included in Section 3.2. MK Enterprises' Final Water Quality Plans detail the location of the various BMPs.

Para. 2. The detail of the work does not appear on any of the plans submitted.

We are now providing soil bioengineering details for the stream restoration - vortex rock weirs, step pools and live stakes.

November 6, 1997

Mr. Richard R. Brush, Manager
Water Resources Section
Montgomery County
Department of Permitting Services

REF: **Final Water Quality Plan for Monitoring of Clarksburg Town Center Phase I**
Preliminary Plan #: 1-95042
Biohabitats Project #97004.01

SUBJ: **Response to Department of Permitting Services Comments (Cont.)**

Section 2.2 (cont.)

Para. 3. If this is part of the plan then the information should be part of the submission.

This is the hydrogeologic report on Clarksburg presented in Appendix I.

Para. 4. This statement is not normally correct. We control a storm event by detaining excess runoff and releasing it at the pre-developed flow rate over a longer period of time. Therefore, the hydrograph of any storm event should show an increase in the duration of the maximum flow. None of the BMPs shown will mitigate this tendency. Provide details.

Stormwater management BMPs will provide 2-year peak runoff control. Additionally, the infiltration and design of the BMPs will provide a reduction in frequency and duration of the bankfull event. Refer to Sections 3.3.3.

Para. 5. The general lack of soil boring data and percolation testing for all BMPs makes this statement difficult to verify.

The results of boring information is contained in Schnabel Engineering's boring report contained in Appendix I.

Para. 6. The plans do not clearly identify most of this work, let alone when, where or how it will be done.

Conceptual plans for the stream restoration can be found in Appendix B - "Clarksburg Town Center Water Quality Concept: Proposed Conditions". Final contract drawings will be provided after site plan approval.

Para. 7. None of the weeps, seeps and springs to be protected are to be protected are clearly shown on the sediment control/stormwater management plans.

The location of the weeps, seeps and springs have been added to MK Enterprises Conceptual Sediment and Erosion Control Plans contained in Appendix M.

November 6, 1997

Mr. Richard R. Brush, Manager
Water Resources Section
Montgomery County
Department of Permitting Services

REF: **Final Water Quality Plan for Monitoring of Clarksburg Town Center Phase I**
Preliminary Plan #: 1-95042
Biohabitats Project #97004.01

SUBJ: **Response to Department of Permitting Services Comments (Cont.)**

Section 2.2 (cont.)

Para. 8. There appears to be very little redundancy of structures shown on the plans. The structures, as shown, either stand alone or, if they fail, will mix dirty water with clean water due to lag times in the storm drain systems. To simply label all of the BMPs proven is not totally correct. Please provide full documentation, with unbiased research as to the effectiveness of each BMP. It is also difficult to agree that any of the designs are innovative. All BMPs shown are in use within the County. The plan does not appear to use any of the BMPs in systems or fashions which would make them or the plan innovative or unique.

Design of the BMPs is detailed in Section 3.2. Documentation of the pollutant removal capacities of each BMP is cited in Section 3.2. Perimeter sediment controls on the sediment and erosion control plan will contain an innovative design. Supplementing the super silt fence will be earth dikes that direct the filtered water from the super silt fence to a modified dewatering rip-rap outlet. Details of this filtering BMP are also provided in MK Enterprises' Conceptual Sediment and Erosion Control Plans - Appendix M.

Para. 9. The draft Ecological Covenant needs to propose methods of enforcement; it should also include a simpler preface for the average homeowner to understand.

Enforcement of the Ecological Covenant (Section 3.6) will be incorporated into the Home Owner's Association documents.

The preface has been simplified.

Section 3.0

No comment.

November 6, 1997

Mr. Richard R. Brush, Manager
Water Resources Section
Montgomery County
Department of Permitting Services

REF: **Final Water Quality Plan for Monitoring of Clarksburg Town Center Phase I**
Preliminary Plan #: 1-95042
Biohabitats Project #97004.01

SUBJ: **Response to Department of Permitting Services Comments (Cont.)**

Section 4.0 *Will this section be used for the sediment control phase of the project? If so provide details of how the SC BMPs will be monitored in accordance with E.R.. 29-95. There must be details of proposed SC BMPs and the realistic performance expected from them.*

Details of the SC BMPs are found in MK Enterprises' Conceptual Sediment and Erosion Control Plans contained in Appendix M. A discussion of these practices including redundancies is found in Section 3.5.2. Monitoring of the site during construction is discussed in Section 4.2.

Section 5.0 *Provide details - what, where, when and how.*

We are now providing soil bioengineering details for the stream restoration - vortex rock weirs, step pools and live stakes **Appendix XX** . Conceptual quantities have been also tabulated and are found in Section 3.3.2. Final design plans including construction drawings, specifications and permit applications will be prepared after Site Plan approval.

Section 6.0 *The SC/SM plans lack details of many of the performance measures stated in this section. The approved SC/SM concept plans need to include this information.*

The SC/SM plans have been revised to meet the performance measures stated in this section. A discussion of the SC plans is found in Section 3.5.2. A discussion of the SM plans is found in Section 3.2. Drawings of the SM and SC BMPs are found in MK Enterprises' Final Water Quality Plans and Conceptual Sediment and Erosion Control Plans contained in Appendices C and M respectively .

In accordance with the conditional approval letter dated July 28, 1995, the following information needs to be submitted:

1. *A full soils report with soil borings and percolation tests at each BMP, and the borings necessary to for the dam designs, must be submitted at this time.*

MK Enterprises and the geotechnical engineer, Schnabel Engineering, have prepared and submitted boring reports for County review.

November 6, 1997

Mr. Richard R. Brush, Manager
Water Resources Section
Montgomery County
Department of Permitting Services

REF: **Final Water Quality Plan for Monitoring of Clarksburg Town Center Phase I**
Preliminary Plan #: 1-95042
Biohabitats Project #97004.01

SUBJ: **Response to Department of Permitting Services Comments (Cont.)**

2. *Provide a hydro-geologic evaluation of this site with expected and or anticipated results for each of the proposed types or groups of BMPs.*

A copy of the geotechnical investigation of this site with the BMPs have prepared and is included in Appendix I of this Final Water Quality Plan.

3. *Install ground water monitoring wells at that following locations:*

Per discussions with MK Enterprises, Schnabel Engineering, Biohabitats, Deborah Gier and Richard Gee, monitoring wells will not be required until just before construction.

In response to the MCDEP memorandum of September 24, 1997. I have spoken with Mr. Doug Marshall and was informed that a point-by-point response was not necessary. A revised copy of the Final Water Quality Plan is being forwarded to Mr. Marshall's office for review. If you have an questions or if I may be of further assistance please do not hesitate to contact me or Keith Bowers at (410) 337-3659.

Very truly yours,

BIOHABITATS, INC.

Marshall N. Rudo P.E.

Marshall N. Rudo, P.E.
Project Engineer

enc.
cc: Richard Gee, Montgomery County Department of Permitting Services.
cc: J. Keith Bowers, RLA, Principal, Biohabitats, Inc.

F:\BIO\PROJECT\97004.01\CORRESP\11-6-97.WPD

DEPARTMENT OF PERMITTING SERVICES

Douglas M. Duncan
County Executive

Robert C. Hubbard
Director

November 26, 2001

Mr. Jeffery Strulic
Charles P. Johnson and Associates
1751 Elton Road
Silver Spring , Md 20903

Re: Stormwater Management ***CONCEPT and Final Water Quality Plan*** Request for Information for Clarksburg Town Center Phase 2

SM File #: CN 204464, (1-95042)

Dear Jeff:

Your request for a stormwater management concept approval is being reviewed. The following information in support of your water quantity and water quality concept request must be submitted prior to any further consideration of your concept application.

This request for additional information deals with the plan views submitted and does not include a review of the computations. Any questions or requests for further information on them will be by a separate letter.

The following questions and problems need to be addressed at this time, as they may have an effect on the overall impervious area or the number of dwelling units. Please respond to each item in plan view and in writing.

1. Quantity control will honor all primary drainage divides (10 acres or more) to any given point

2. All stormwater and clear water structures must be on their own parcels.

3. Isolate, cross out all areas/phases which are already approved.

4. Provide a clear explanation of the Phase 2 drainage area (DA) to Pond 1. This will explain or address the following: 1. How the revised layout does not exceed the original pond design, 2. How much new impervious area is being added or removed from the pond DA, and 3. How you think you can mitigate any increase.

5. Pond 3's outfall may conflict with the existing sewer line, provide a preliminary barrel design that will get the barrel either under or over the pipe. The invert of the sewer is the controlling factor.

6. All water quality systems are to be **multiple** and **redundant** i.e. Out of a water quality inlet, into a sand filter out of the sand filter into an infiltration trench, etc.

7. Sand filters may not be placed in the bottom of a quantity control ponds.

8. Most lots appear to have excessive runoff through the back yards. Provide a means to minimize the flow.

9. On the lots where the garages are attached the space between the 2 driveways needs to be shown and calculated as impervious.

10. Where possible roof top drainpipes will be off the lots and on common ground.

11. Soil borings and percolation testing should be done at this time, to locate the better recharge areas, so they may be reserved.

12. Provide a color coded plan on the 30 scale sheets that shows ALL impervious areas, including, but not limited to: buildings, sidewalks, yard walks, paving, and all other impervious areas not mentioned.

13. All clear water wells within 50 feet of a down hill basement will require a seepage analysis.

14. Based on the plans submitted, one half or less of most of the houses will drain to the recharge structures. Please correct the roof area and the available runoff volume.

15. Provide for an Environmentally sensitive stream crossing for Clarksburg Square Road.

16. The drainage areas to the proposed sand filters are too big. Revised them to provide for DA's no larger than 5 acres. This will require additional structures.

17. Provide parking for ALL MPDU's, either as pad on the lot or by formal on-street parking.

18. All sediment control will be a series of multiple structures. Silt fence and super silt fence may not be used as primary control, except for very small, flat areas.

19. Ground water recharge above the roadway stream crossing for Clarksburg Square Dr. (Main Street) must be maximized in all possible locations.

20. Because development has not proceeded at the pace first envisioned, we have not had adequate monitoring time to see how the development affects the base flow in all of the tributaries. As part of the Phase 1 approval, a condition was placed on Phase 2 to provide additional base flow recharge should development affect the tributaries. Therefore, your design will need to incorporate a REGULATED ground water recharge system for each tributary.

21. Provide for ground water recharge above the spring located below Block "P".

22. The original preliminary plan had a school on the parcel to be dedicated to the MNCPPC, has the school been deleted by MNCPPC, if not it needs to be shown.

23. The plan fails to provide water quantity and quality control for A-305 from Stringtown Road to Clarksburg Road.

24. The conveyance channel along the back of the lots on block "P", needs to be directed to a flow splitting system. The channel if use, may never be reforested and will have to be maintained at all times. Furthermore, it will have to be demonstrated that the channel will not impact any lot, nor cause any steep grading near any yard. It may not be impacted, damaged, piped, or filled for any type of trail, Park or otherwise.

25. The plan shows the stream valley buffers being impacted by filling and grading for roadways, house pads and conveyance ditches these encroachments will require the concurrence of the EP Division of MNCPPC.

26. The calculations for the ground water recharge include recharge structures 5, 6, 7, and 8, which are part of Phase 1, this is Phase 2 and it has its own recharge requirements. Why are they being mixed up?

Failure to provide the requested information by January 4, 2001 **will be cause for your request to be formally deemed unacceptable at that time.** If you have any questions regarding the requested information, please feel free to contact me at 240-777-6333.

Sincerely,

Richard Gee
Water Resources Section
Division of Land Development Services

cc: SM File # 1-95042
Cathy Conlon MNCPPC
Wynn Witthans MNCPPC