C STREET INDUSTRIAL PARK
BLOCK 3, LOT 3

SOILS REPORT

JULY 27, 2002

KND ENGINEERING, Inc.
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EAGLE RIVER, AK 99577-8736
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APPENDIX

SOILS REPORT
"C" ST. INDUSTRIAL BLOCK 3, LOT 3
ANCHORAGE, ALASKA

1.0 PURPOSE AND SCOPE

This report presents the results of the subsurface explorations for KND Investments, Ltd. The proposed development is a light-industrial warehouse/ office building with adjacent parking and storage area. The purpose of the field explorations was to determine the soil and ground water conditions for use in the design of the commercial building, driveway, and utilities. To develop these criteria, three test holes were excavated at the site. The report includes descriptions of the site and an interpretation of the subsurface conditions.

2.0 SITE AND PROJECT DESCRIPTION

The proposed construction site is C Street Industrial Park, Block 3, Lot 3, Anchorage, Alaska. Access to the property is from B Street. The lot is sparsely vegetated with brush, spruce and birch. The general slope of the lot is flat (0-1%).

3.0 FIELD EXPLORATIONS

Three testholes were excavated on July 27, 2002 to define subsurface conditions. The approximate locations of the test holes are shown in Figure 1.

The owner excavated the testhole using a Hitachi EX200. An engineer from KND Engineering, Inc was on site continuously during excavation to locate the test hole, observe excavation, log subsurface conditions, and monitor any ground water encountered.

The testholes were excavated to a depth of 11 to 12 feet below ground surface. The testholes were back filled with existing soils after investigation. The locations shown in Figure 1 should be considered approximate.

4.0 SUBSURFACE CONDITIONS

Soils: The subsurface conditions at the site are depicted in detail on the testhole logs in the Appendix. The testholes encountered a layer of clay with sand pockets overlaid by native organics, and peat

Groundwater: Ground water was not encountered, but water seeps were noted in all of the testholes.

5.0 RECOMMENDATIONS

Engineering Recommendations:

1. Site Preparation

All vegetation should be removed from within the building footprint and parking area. This includes any previous fill that may have been placed over the insitu material. Prior to placement of any structural fill or foundations, the remaining clean soils should be scarified, proofrolled and compacted to a minimum 95% of the modified proctor density. Details regarding foundation and fill placement are presented in the following sections.

2. Foundation Type/Soil Capacity

Elements of any foundation design in this area need to take into account freezing soils, bearing capacity of the soils and the degree of settlement that will be expected. The soils conditions underneath the organic layer indicate that they are medium dense to dense materials and are capable of supporting conventional spread footings for a foundation. Based on our field observations we recommend that the buildings be designed for an allowable soil bearing pressure of 3,000 pounds per square foot. It is assumed that the foundation will be founded on natural insitu materials below any organic or fill material. If soils are encountered which deviate from these conditions then the owner should notify us immediately so that a new analysis can be conducted. Placement of the foundation should be at least 3.5' below the top of ground to protect against freezing. We feel that the 3,000 lbs/SF is a conservative number and that this number can be increased if necessary for other loading considerations. (i.e. winds, seismic, snow, etc....)

3. Settlements

We do not anticipate significant settlements in these soils due to the underlying density of the materials. Any settlement that should occur should be uniform and increase with loading so that it does not create significant differential settlement.

4. Drainage

To minimize any potential for water entering the foundation, the ground surrounding the structure should be properly sloped away from the structure and the footings should be placed sufficiently high enough to provide positive drainage. Although not required, if subdrains are used then they should be placed at the bottom of the footing and around the entire perimeter of the building and backfilled with porous granular material. The footing drain should outfall away from the structure and into a proper drainage course.

5. Backfill and Compaction

It's important that when backfilling adjacent to the structure that care be taken in the placement and compaction. Soils should be placed and compacted in one-foot lifts. The contractor should avoid using heavy equipment adjacent to the structure as it may cause increased lateral pressure to the adjacent walls which may exceed their design strength thus causing damage.

All footing excavations should include proper density testing to insure a 95% compacted density based on the maximum density as determined by the Modified Proctor compaction procedure (ASTM D-1557).

6. Lateral Resistance

External lateral forces from wind and seismic loading may be resisted by passive pressures against the sides of footings and exterior walls below grade. These forces will be distributed as an equivalent fluid pressure of about 200 pcf. This value includes a factor of safety of about 2 on the full passive earth pressure. To develop this value, the backfill around the footings should be compacted as structural fill to a density as defined in the above paragraph.

Lateral resistance may also be developed in friction against sliding along the base of foundations placed on grade such as footings and floor slabs. These forces may be computed using a coefficient of friction of 0.4 between the smooth concrete and the soil.

6.0 LIMITATIONS

The subsurface conditions presented in this report are based on conditions at the site as they presently exist. It is further assumed that the exploration is representative of the subsurface condition throughout the site, i.e., the subsurface conditions everywhere are not significantly different than those encountered in our exploration. If there is a substantial lapse of time between the submission of this report and the start of work at the site, or, if conditions have changed due to natural causes or construction operations at or adjacent to the site, it is recommended that this report be reviewed to determine if the data is still applicable in view of the changed conditions and time lapse.

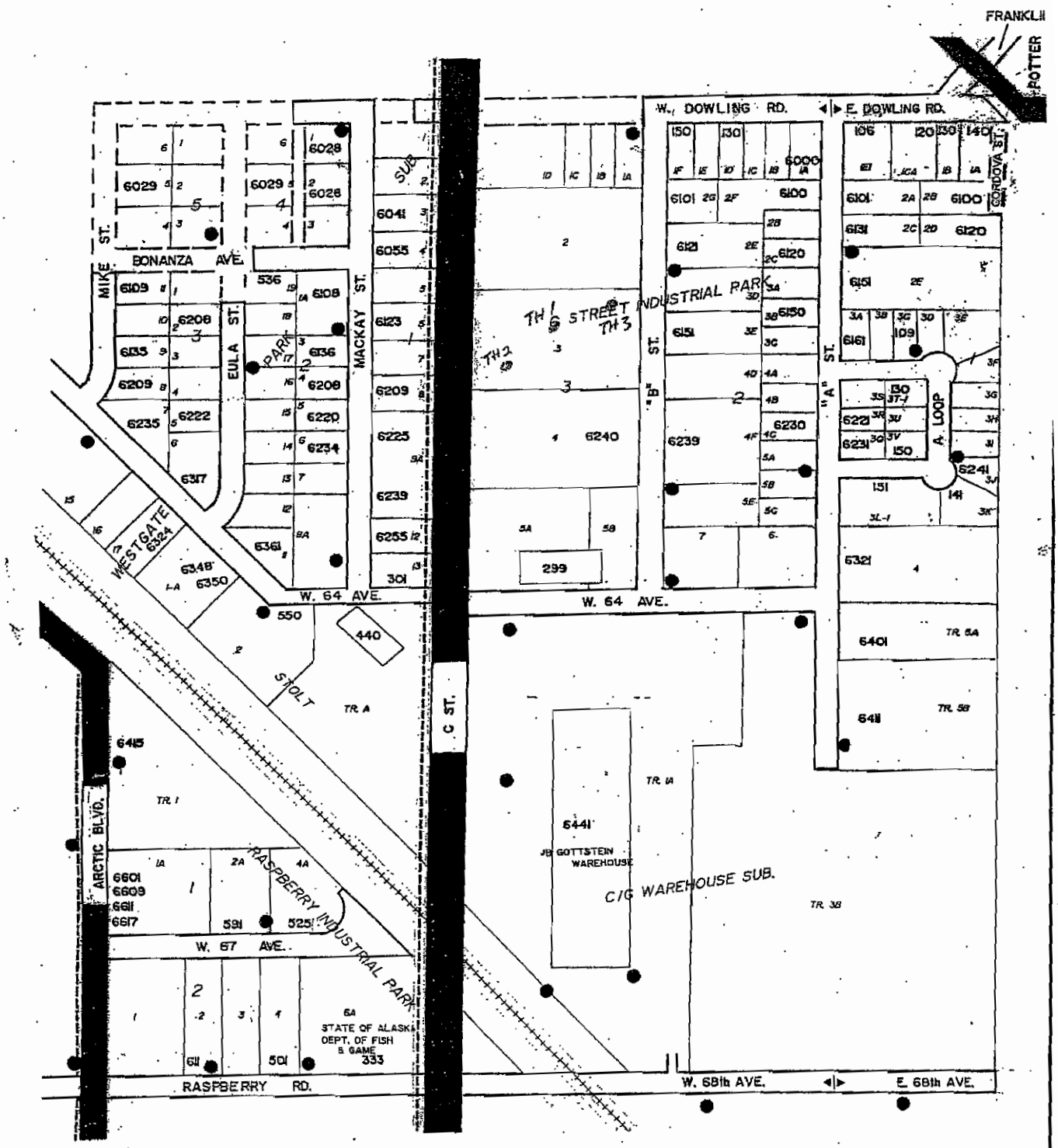
Unanticipated soil conditions are commonly encountered and cannot fully be determined by merely taking soil samples or testholes. Such unexpected conditions frequently require additional expenditures being made to attain a properly constructed project, therefore, some contingency fund is recommended to accommodate such potential extra cost.

The analyses, conclusions, and recommendations contained in our report are based on site conditions described by other contractors at various times in the past and further assume that their report of subsurface conditions is accurate. If, during future subsurface investigations, different conditions from those used in our interpretations are encountered, we must be advised promptly so that we can review these conditions and reconsider our interpretations where necessary.

KND Engineering, Inc conducted this work in a professional manner. Readers of this report should use this information with the limitations presented in the report. No other warranty is expressed or implied. Please contact us at 696-6111 if you have any questions or would like further assistance.

Respectfully submitted,
KND Engineering, Inc.

Kenneth M. Duffus, P.E.



GR. 2030

NW 1/4 SEC. 6, T12N R3W

SEE OVERVIEW MAP "L"

195
206 208
221

207

KND ENGINEERING, INC.
20441 PTARMIGAN BLVD.
EAGLE RIVER, AK 99577-8736

STATE OF ALASKA
49TH
Kenneth M. Duffus
CE 7116
REGISTERED PROFESSIONAL ENGINEER

SOILS PERCOLATION TEST

Performed for: KND Engineering Date Performed: 07/27/02

Project: 'C' st Industrial Park B3, L3 TEST HOLE # 02-1

Mossy overburden

Peat, moist, drk brn,

Seeps from 3-7'

Soft clay, peat mix

Ml/Cl dense clay

Sandy ML

B.O.H.

SEE ATTACHED SITE PLAN FOR HOLE LOCATION

Was Ground water encountered? NO What depth? NA

Depth to water after monitoring? NO Date? 07/27/02

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
*	Water	Added			

Percolation Rate ___ (min/in) Perc Hole Diameter___

Test Run Between _____ feet and _____ feet

This test was performed by_____.

I, Kenneth M. Duffus, certify that this test was performed in accordance with all State and Municipal guidelines in effect on this date.

KND ENGINEERING, INC.
20441 PTARMIGAN BLVD.
EAGLE RIVER, AK 99577-8736

SOILS PERCOLATION TEST

Performed for: KND Engineering Date Performed: 07/27/02

Project: 'C' st Industrial Park B3, L3 TEST HOLE # 02-2

Mossy overburden

Peat, moist, drk brn,

Seeps from 3-7'

Ml/Cl dense clay sand pockets

B.O.H.

SEE ATTACHED SITE PLAN FOR HOLE LOCATION

Was Ground water encountered? NO What depth? NA

Depth to water after monitoring? NO Date? 07/27/02

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
*	Water	Added			

Percolation Rate ___ (min/in) Perc Hole Diameter___

Test Run Between _____ feet and _____ feet

This test was performed by_____.

I, Kenneth M. Duffus, certify that this test was performed in accordance with all State and Municipal guidelines in effect on this date.

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STATE OF ALASKA
49TH
Kenneth M. Duffus
CE 7116
REGISTERED PROFESSIONAL ENGINEER

SOILS PERCOLATION TEST

Performed for: KND Engineering Date Performed: 07/27/02

Project: 'C' st Industrial Park B3, L3 TEST HOLE # 02-3

Mossy overburden

Peat, moist, drk brn,

Seeps from 3-7'

Soft clay, peat mix, grey

Ml/Cl dense clay

Drk blue clay, dense, sandy

B.O.H.

SEE ATTACHED SITE PLAN FOR HOLE LOCATION

Was Ground water encountered? NO What depth? NA

Depth to water after monitoring? NO Date? 07/27/02

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
*	Water	Added			

Percolation Rate ____ (min/in) Perc Hole Diameter____

Test Run Between _____ feet and _____ feet

This test was performed by_____.

I, Kenneth M. Duffus, certify that this test was performed in accordance with all State and Municipal guidelines in effect on this date.

AWMP

The new methodology evaluates four wetland functions:

1. Hydrology,
2. Habitat,
3. Species Occurrence, and
4. Social Function.

Each category includes factors which address virtually all aspects of the most common wetland functions:

1. Sediment trapping;
2. Flood retention;
3. Erosion control; nutrient retention, and transport;
4. Fish, wildlife, and plant habitats; and
5. Recreation and heritage values.

Many of these factors were not included or only generally identified in the original resource analysis. For further review of the evaluation methods, refer to the evaluation data work sheets included in the Appendices.

Unlike the resource analysis contained in the original plan, the new assessment method does not weight individual functions, nor does it add the four scores into a single total score for each site. Instead, each of the four category scores is listed independently. Evaluating scores in this manner facilitates the understanding of a site's ability to perform each of the key wetland functions. Adding the scores from each category to a single total would merge values, confuse the evaluation process, and obscure a site's specific wetland functions.

In order to place the new assessment into proper perspective, wetland scores from each of the Municipality's three subareas: Anchorage Bowl, Chugiak-Eagle River, and Turnagain Arm, were grouped and compared only by each subarea. This method was appropriate since wetland areas within each of these subareas are noticeably different from each other and the data are more meaningful if these associations are kept separate.

Throughout the Municipality, there are fairly simple wetland assemblages along most small streams and feeder tributaries. Turnagain Arm wetlands are characterized by lower plant diversity and are dominated by the coastal Sitka spruce-western hemlock forest community. There are also a few patterned ground-like bogs in the Girdwood Valley. Anchorage Bowl wetlands include large-scale, very diverse, patterned ground bogs and riparian complexes, mixed open meadows, and black spruce thickets. In the Chugiak-Eagle River subarea, there is a mix of wetland types with none being dominant. Along Eagle River, there is a mosaic of large open floodplain wetlands, old sloughs and river terraces and black spruce woods. Large bog-like complexes exist adjacent to larger lakes in the northern area of the Municipality. Throughout the Municipality, wetland functions related to fish and wildlife habitat and biological productivity become reduced in significance with distance from tidewater and, especially, with increases in elevation.

1. Wetland Scores

The four wetland function scores for each site served as the key indicators and basis for individual wetland designations. Final designations were reached using a combination of the scores, knowledge of on-site conditions (especially when these were weakly reflected or delineated in the assessments), and other parameters such as platting, zoning, existence of infrastructure, floodplain, coastal zone designations, and relation of site to local drainage studies. In no case, however, did the other site parameters alone determine a site's designation. They were always secondary to the main assessment scores and on-site conditions.

To clearly identify the Municipality's reasoning in the assignment of designations for each site, a separate report has been developed which outlines the key justifications used for every wetland designation. This report, entitled Anchorage Wetlands Management Plan-Background Information, Volume II, includes specific background information on the resource evaluation method and a justification and explanation section on wetland designations.

To develop designation cut-off points within the range of wetland scores for each subarea, all scores from the new assessments were graphed by wetland function and by Municipality subarea. By this means, it was possible to identify groupings of scores in the general range of high, medium, and low totals. These natural groupings served as the basic break points for the identification of "A," "B," and "C" wetland sites. A separate report is available from the Department of Community Planning and Development which provides all the background that the Municipality relied upon to reach final wetland designations.

Most score cut-offs are close to the average scores calculated for wetlands under the original designations in the 1982 plan. For example, the Anchorage Bowl wetlands originally classified as "Preservation" averaged 108 points for the Hydrology category. The new cut-off for "A" wetlands for the Hydrology function is a score greater than 100 points.

Generally, sites with a very high score for more than one function category were designated at least "B" and, most often, were given an "A" designation. These sites are generally of importance to public health and safety and any fills are considered detrimental due to their potential impacts on hydrology and water quality functions.

Determining break points for "B" wetlands was more difficult. Since "B" wetlands generally have a wide range of wetland functions at varying levels of significance, it was seldom easy to separate out a "B" wetland from others based on scores alone. Consequently, "B" sites showed the greatest range of scores for each wetland function category.

Sites with a mid-range of scores typically reflect the "B" designation. Moderate scores were assigned to those sites where the wetland functions were not critical. However, most "B" sites provide at least periodic significant contributions to key wetland functions, usually on a more localized scale; i.e., within a watershed or drainage basin. Generally, cumulative losses associated

with filling "B" wetlands would likely contribute to significant drainage basin or watershed water quality losses, flood problems, or loss of wildlife habitats and/or public uses.

Sites with minimal scores for more than one category were generally classified as "C." "C" wetland functions are not significant and are more often minimal or lacking. Individual and cumulative impacts from loss of "C" sites would be negligible, especially given the site-specific management strategies for "C" areas. Nevertheless, some sites with low scores were designated in a higher class if more than one significant species was present. Significant species are identified within the Species Occurrence category.

There are instances where the final wetland designations deviate from the general scoring break rules outlined earlier in this section. There are two main reasons for this.

First, in nearly all cases, these deviations occurred where the assessments did not accurately reflect existing on-site conditions. In such cases, final designations deviated to both higher and lower levels from the score break guidelines based on best professional judgments derived from knowledge of each site.

Second, many sites with score deviations include wetlands where the significant or higher value sections are concentrated, either geographically on-site or around a waterbody. With these particular sites, it seemed prudent to use the specifics in the management strategies to protect, or otherwise address, a high score or function.

Wetland areas along the mid-Little Campbell Creek watershed exemplify this second phenomenon, where transition black spruce wooded wetlands grade to riparian areas along the channel. The outer edges of the black spruce woods were generally lower in value than the immediate riparian zone wetlands, a breakdown not delineated or represented in the assessment scores.

2. Acreage Breakdown

Table 1 summarizes new acreage totals for each of the new wetland designations within the three geographic subareas of the Municipality.

For a comparison to the breakdown of new designations in this plan revision, the 1982 original plan designated approximately **9,408** acres of wetlands in the ***Anchorage Bowl*** subarea, in the following categories:

Preservation	=	3,793 acres	
Conservation	=	1,066 acres	
Developable	=	3,949 acres	(includes Mixed Developable category)
Special Study	=	600 acres	
TOTAL	=	**9,408 acres**	

C. CUMULATIVE IMPACTS

As outlined in Chapter I, a 1993 U.S. Fish and Wildlife Service study summarizes the extent and type of fill wetland projects undertaken in the Municipality, both from 1950 and within the period since the 1982 Wetlands Plan adoption. Other studies by that agency attempt to qualify the cumulative impacts from these fills over time on Anchorage area wildlife habitat and plant communities. In general , those studies summarize an overall trend of habitat loss for several of the most sensitive waterbird species (e.g., Hudsonian Godwit) that nest in patterned ground bogs within the Anchorage Bowl. The vegetation studies show that in several of the larger, more impacted bogs an overall drying trend is allowing brushier, scrub-shrub plant species/communities to intrude into originally wetter bog cores.

Other less documented, but probable or assumed cumulative impacts from wetland fills since the 1950's include trends towards reduced water quality in Anchorage Bowl streams, especially for sediment and the more ubiquitous metals. The Alaska Department of Fish and Game has some documentation of reduced anadromous fish populations in several Anchorage Bowl streams which has initiated a fish habitat enhancement program and policy for the Bowl. Local hydrologic changes within individual wetlands, identified as blocked surface and subsurface drainages, and more common local flooding within area floodplains after even marginal storm events have also been experienced. The extent to which these hydrologic functions have been altered is not well documented, but certainly wetland fills, especially before the 1982 Plan adoption, have contributed to this effect.

Table 1

SUMMARY OF FRESHWATER WETLAND ACREAGE BY DESIGNATION AND SUBAREA

Subarea	"A" Designation		"B" Designation		"C" Designation		Total Acreage
	Acreage	% of Total	Acreage	% of Total	Acreage	% of Total	
Anchorage Bowl	4,337	59.6%	1,114.00	15.3%	1,818.0	25%	7,269
Eagle River to Eklutna	1,790	54.0%	944.00	28.0%	573.0	18%	3,308
Turnagain Arm	468	65.0%	113.45	16.0%	134.5	19%	716
TOTAL	**6,595**	**58.0%**	**2,171.50**	**19.0%**	**2,525.5**	**22%**	**11,292**

Note: Acreage figures are approximate, especially for the Eagle River to Eklutna subarea, which does not include acreages for the Eagle River greenbelt and military land wetlands.

Source: Municipality of Anchorage, Department of Community Development and Planning.

Anchorage Bowl creeks with the more prolific and regular flooding problems, notably Little Campbell/Campbell, Chester, Fish, and Furrow Creeks, are also the watersheds with the most accumulated wetland fills and channel alterations. As an example, the Corps of Engineers' Environmental Assessment for the 1987 reauthorization of Anchorage's General Permits included an accounting of past General Permits issued in each Anchorage Bowl watershed. Of the 75 permits issued, 50 were in the Little Campbell/Campbell Creek watershed, 10 were in the Furrow Creek watershed, and 6 were located in the Chester Creek watershed.

In direct response to these cumulative impacts analyses and summaries, the Municipality, in the Wetlands Plan revision, and the Corps of Engineers in the General Permits reauthorization, have taken steps to reverse or minimize past trends and address future cumulative impacts. These steps are incorporated as conditions on the new General Permits and as site-specific conditions and guidelines in Table 2 of this plan. Many of the new enforceable policies in Chapter 4 address past and future cumulative impacts. For example, stream setbacks and additional site restrictions are incorporated into all riparian wetlands, especially those sensitive areas within the Little Campbell/Campbell Creek watersheds. Also, the management strategies for upper Hillside wetlands call for site fill restrictions to further minimize impacts in headwater wetlands. There is also an effort supported by permit conditions to: 1) expand buffer zones between "C" and "A" or "B" sites; 2) require drainage impact analysis to further reduce fill impacts on local hydrology, and; 3) require other site-specific Best Management Practices that address individual and cumulative impacts. In order to ensure minimal cumulative impacts to "A" and "B" wetlands, new and expanded enforceable policies are included in this revised plan.

The "C" wetlands have been grouped because of their generally low wetland values and functions. Only those wetlands which, if developed, would have negligible individual and cumulative environmental impacts are included in this designation. This determination of insignificant impacts from future developments is appropriate since most of the "C" wetlands have very low scores for all wetland functions, as delineated in the wetland assessment methodology, and the functional loss of those wetlands would not accumulate to significant proportions. After reviewing the scores and known site values of the "C" wetlands, it was determined that if the "C" sites were filled according to conditions of the General Permits and enforceable policies that the sum of their lost functions would not represent a significant cumulative environmental impact. Since most "C" wetlands do not provide significant wildlife habitat or water quality functions, wildlife habitat within the Municipality will not be adversely impacted if and when these sites are filled.

In those instances where "C" sites have moderate scores, those wetland functions are identified and addressed in the management strategies through site-specific setbacks, timing restrictions, and Best Management Practices. For the first time, this plan also attempts, through the use of expanded buffers and other methods, to address secondary impacts of "C" site fills on adjacent "A" or "B" sites. (Also note new setbacks in large, split-designations wetlands.) No longer are "C" wetlands simply meant to be totally filled without efforts to address and minimize individual and cumulative impacts. Fill avoidance and minimization are incorporated into the general management and guidance for "C" sites.

43
DOWLING
BONANZA
A
39
C
38C
38
B
WEST 67th Ave
W 70th Ave
W 72nd
W 74th Ave
HART
FOXRIDGE
HUNTSHANCE
NATHAN
EAST
NOTE "SHOULD BE TREATED AS A WETLAND"
INDUSTRIAL

Site #	'82 #	Map #	Site Description, Enforceable and Administrative Policies and Management Strategies	1982 Designation	New Designation
38A	12	44	INTERNATIONAL: CAMPBELL CREEK, EAST AND WEST OF HIGHWAY (11.3 acres; Private Ownership) (Scores assessed in two parts: Hydrology = 86, 63; Habitat = 50, 34; Species Occurrence = 18, 18; Social Function = 45, 46) *A 25-foot non-disturbance buffer shall be maintained from "A" wetlands. Run-off from any new development shall be treated before entering the creek.*	Developable	C
38B	12	55	OLD SEWARD HIGHWAY/64TH AVENUE (12.4 acres; Private Ownership) (Scores: Hydrology = 80; Habitat = 63; Species Occurrence = 26; Social Function = 35) Although disturbed, considerable habitat values exist where ponded. Potential for habitat enhancement. *Eastern one-third of site and ponds shall be retained and enhanced with 65-foot setbacks.* Cluster development could occur on western and southern fringes with buffering from ponds. Ponded sites east of foot trail require Individual Permit.	Developable	C
38B	12	55	NEAR TAKU ELEMENTARY (7.5 acres; Private Ownership) (Scores: Hydrology = 81; Habitat = 66; Species Occurrence = 24; Social Function = 59) Marginal wetlands on east side of creek. *A 25-foot buffer shall be maintained from "A" wetland/greenbelt. On-site drainage shall be treated before entering creek.*	Developable	C
38C	12	55	ALONG C STREET: DOWLING TO 76TH AVENUE (14.01 acres; Public & Private Ownership) (Scores: Hydrology = 85; Habitat = 88; Species Occurrence = 28; Social Function = 49) Artificially created ponds: road decreases habitat values; nesting ducks present. Area has drainage problems. *A written plan shall be submitted to the Municipal Department of Community Planning and Development describing how proposed fill would minimize impacts to nesting habitat, such as timing windows, additional setbacks, vegetative screening, reduction of fill, and onsite enhancement. A hydrologic analysis shall be done and shall meet the acceptable standards of the Municipal Department of Public Works in order to prevent flooding, maintain both surface and subsurface cross drainage, and prevent drainage of adjacent wetlands. It shall be used in determining the placement of fill that would minimize interference with the local hydrology. In Tract 3B, the seasonal drainage pattern (west to east toward Campbell Creek) shall be maintained via fill avoidance of seasonal surface flow low points. The water body at the south end of tract within the C Street right-of-way, south of Raspberry Road, and a 25-foot setback around the water body shall be treated as an "A" wetland. No work shall be done in this setback under the GPs from April through July.* Area has permanent and seasonal ponds. "B" area includes parcels at SE Hart and 72d intersection.	Developable ALL ABOVE "C" VALUES FALL INTO "B" VALUE RANGES	B/C
38D	None	75	EAST SIDE OF CAMPBELL LAKE, AT VICTOR ROAD (1.6 acres; Public & Private Ownership) (Scores: Hydrology = 98; Habitat = 77; Species Occurrence = 78; Social Function = 41) Includes lakeshore wetlands. Good species use, i.e., salmon, and stormwater filtering values; *area shall be preserved.*	Undesignated	A

"A" WETLANDS

1. *Unless site-specific policies in Table 2 or exceptions outlined in Policy #2 indicate otherwise, "A" wetlands shall be maintained in their natural state to the maximum extent.*

2. *A roadway, utility, trail, and minor park amenity with no practicable, less damaging alternatives and with a demonstrated public need may be allowed in "A" wetlands if wetlands values and functions are maintained to the maximum extent.*

3. *Residential and other development in "A" wetlands, subject to other AWMP policies and state and federal regulatory requirements, shall be considered only when no less damaging alternatives exist and if all economic use of a property would otherwise be precluded.*

"B" WETLANDS

4. *Key wetland areas and functions in "B" wetlands shall be maintained to the maximum extent in all development activities.*

"C" WETLANDS

5. *For "C" wetlands in large-lot, rural, residential zoning districts (R 8-11, at AMC 21.40.100-117), fills shall be limited, to the maximum extent, to what is necessary for a principal structure and outbuilding, utilities, and driveway pad. Drainages and other key wetland areas shall be identified in the General Permit process and avoided to the maximum extent.*

6. *For "C" wetlands in all other zoning districts (AMC 21.40), fills shall be subject to all applicable enforceable policies within this plan and fill avoidance and minimization techniques as otherwise identified during the General Permit processing by the Department of Community Planning and Development.*

7. *To mirror federal Section 404 regulations, no wetland permits for projects in the Municipality* (both General Permits and Individual Section 404 Permits) *shall be issued for speculative fills, i.e., a specific project shall be planned, and the applicant shall have considered alternative sites and construction measures. Neither a General Permit nor an Individual Section 404 Permit shall be issued for a subject parcel prior to final action on a rezoning request from the Municipal Department of Community Planning and Development.*

"C" WETLANDS

DEFINITION: Identified as "DEVELOPABLE" in the 1982 Wetlands Plan, "C" wetlands are the lowest value wetlands within the Municipality. Some "C" sites may have moderate values for one or more wetland function, but they generally have reduced or minimal functions and/or ecological values. Such sites are suitable for development with only minor alteration and are to be generally managed to reflect the needs for community expansion and infilling. "C" sites are intended to be permitted under General Permit authorization from the Municipality. The development of "C" wetlands in accordance with Table 2 and Enforceable Policies, should have an insignificant cumulative impact on overall functions and values of Municipality of Anchorage wetlands.

The following score breaks from the wetland assessment process serve as general guidelines for delineating **"C" wetlands**:

Wetland Designation	Hydrology Values	Habitat Values	Species Occurrence Values	Social Function Values
Anchorage Bowl	Less than 85 points	Less than 65 points	Less than 25 points	Less than 35 points
Chugiak-Eagle River	Less than 80 points	Less than 65 points	Less than 20 points	Less than 30 points
Turnagain Arm	Less than 70 points	Less than 70 points	Less than 35 points	Less than 40 points

"C" WETLANDS - MANAGEMENT GUIDELINES AND IMPLICATIONS

"C" wetlands fall within the definitions outlined in Sections 322.2 and 323.2 of the Clean Water Act, where conditions under which certain wetlands can be included in a Regional General Permit are identified. Specifically, such wetlands within the Municipality may be developed where filling would "cause only minimal individual and cumulative environmental impacts." In other words, "C" wetlands may be developed to satisfy growth needs but are not to be filled automatically or speculatively. Fill activities in "C" sites are to be permitted under General Permit authorization as granted to the Municipality by the Corps of Engineers.

Best Management Practices and fill avoidance or minimization may be required in permits for "C" sites. The more significant and important sections of "C" wetlands are identified in the Table 2 Management Strategies, or will be delineated, as necessary and required by the Department of Community Planning and Development, during processing of a General Permit. Because of hydrologic and drainage concerns, drainage impact analyses will be required for many "C" sites

Wetland #38C

ANCHORAGE WETLANDS ASSESSMENT METHOD
FIELD DATA SHEETS

DATE OF FIELD WORK: 8/7/91
INVESTIGATORS: Karen

A. WETLAND NAME AND/OR NUMBER #12 ADJACENT TO C St. DOWLING TO 76TH

B. MAP # 55

C. DESIGNATION IN AWMP DEVELOPABLE

(If not designated in the AWMP, check here _____)

D. MUNICIPALITY SUB-REGION, GEOZONE SW

E. LEGAL DESCRIPTION: Section 6 Township 12N Range 3W
Quarter _____ Subdivision _____
Lot _____ Block _____

F. GENERAL LOCATION AND DESCRIPTION OF WETLAND BOUNDARY
AREAS IMMEDIATELY ADJACENT TO C St, INCLUDING HART ST. AND B St. WETL'S

G. MAP AND AIR PHOTO REFERENCES

i. USGS 1:63,360 Map # _____
ii. National Wetlands Inventory Map # _____
iii. Aerial Photos:
1. Date most recent photo taken 6-3-90
2. Scale 1" = 1000'
3. Flight Line ## Anch G #7

H. WETLAND SIZE

TOTAL WETLANDS SIZE: 14.01 Acres

SECTION 1. HYDROLOGICAL COMPONENT

FLOW STABILIZATION

1.1 TYPE OF STORMWATER THAT WETLANDS DETAINS (check one)

(10)	_____	Man-induced and natural (ambient) storm flows.
(5)	✓	Man-induced stormwater flows only.
(2)	_____	Natural (ambient) stormwater flow.
(1)	_____	Minimal stormwater detention

1.2 POSITION OF WETLANDS WITHIN WATERSHED (State Park or National Forest boundary as upper limit)

(10)	_____	In Upper Third of Watershed
(5)	_____	In Middle Third of Watershed
(2)	✓	In Lower Third of Watershed

1.3 LAND USE ALONG WATERWAY OR WETLANDS FOR .5 MILES BELOW THE WETLAND. Check One

1. Developed residential/commercial/industrial area located within .5 miles of outflow	✓	(10)
2. Lands below outflow are undeveloped and/or outflow enters lake, stream or wetland	_____	(5)
3. Developed residential/commercial/industrial area located > .5 miles downstream of outflow	_____	(2)

SIZE (Hydrological Component)

1.4 Size Evaluation (Hydrological Component)

Wetlands Size (Acres)	Total Points	Wetlands Size (Acres)	Total Points
<1	1	44-53	10
1-4	2	54-64	12
5-8	3	65-77	14
9-12	4	78-92	16
13-17	5	93-110	18
18-22	6	111-128	20
23-28	7	129-160	22
29-35	8	161-200	24
36-43	9	> 200	25

Points: (5) (see table--maximum = 25)

FLOW RETENTION/FLOOD CONTROL

1.5 Size of catchment basin 76 acres
Wetlands area as a % of catchment basin size
18 %

Catchment Basin Evaluation Points Table

Basin Size Acres	Wetland Area as % of Basin Size								
	<3	3-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80+
<1	1	2	3	5	7	9	11	13	15
1-3	2	4	6	8	10	12	14	16	18
4-9	4	6	8	10	12	14	16	18	20
10-27	6	8	10	12	14	16	18	20	22
28-81	9	11	13	15	18	21	23	25	25
82-243	12	15	18	21	24	25	25	25	25
244-729	15	19	23	25	25	25	25	25	25
730-2100	18	22	25	25	25	25	25	25	25
2101-6500+	22	25	25	25	25	25	25	25	25

Points for Flow Augmentation (see table) (13)
(Maximum = 25 pts)

1.6 SUBJECT WETLANDS AS A % OF TOTAL WETLANDS ACREAGE IN CATCHMENT BASIN

(2) 0-20% _____
(5) 21-40% _____
(10) 41-60% _____
(15) 61-80% _____
(20) 81-100% ✓

WATER QUALITY

Removal of Surface Water Contaminants

1.7 SITE TYPE (check dominant site)

(1) _____ Palustrine (isolated)
(5) ✓ Palustrine (with permanent or ephemeral flow)
(7) _____ Riverine
(10) _____ Riverine (at rivermouth)
(8) _____ Lacustrine (exposed to lake)

1.8 SENSITIVE AREAS BELOW SUBJECT WETLANDS. Identify types of areas/uses downstream of outlet or downgradient of groundwater outflow that are positively influenced by subject wetlands.

(Check all that apply)

_____ Fish Spawning and Rearing Habitat
_____ Sport Fishing Area
_____ Potable Water Sources
_____ Contact Water Recreation Area
_____ Waterbird Nesting Habitat (High numbers and diversity of nesting species)

2 Points each (maximum = 10 pts).

1.9 ACTUAL WETLANDS AREA DOMINATED BY ROBUST EMERGENTS AND SUBMERGENTS (Check one)

(1) ___✓___ <5% coverage
(2) ___✓___ 5-10% coverage
(3) _____ 10-20% coverage
(6) _____ 20-40% coverage
(10) _____ 40-60% coverage
(15) _____ >60% coverage

1.10 GENERALIZED LAND USE IN CATCHMENT BASIN (Check one)

(1) _____ Mainly parks and open space
(3) _____ Mixture of parks/open space and residential
(5) _____ Mainly residential
(7) _____ Mixture of residential and commercial
(9) _____ Mainly commercial
(11) ___✓___ Mixture of commercial and industrial
(15) _____ Mainly industrial

1.11 LONG TERM NUTRIENT TRAP (Check one)

(10) ___✓___ Wetland with organic soils on 50%+ of area
(5) _____ Wetland with organic soils on < 50% of area, mineral soils or very shallow peat

1.12 WATER QUALITY MAINTENANCE (Check one)

(20) _____ Inflow to wetlands is of poor quality (e.g. storm drains, snow disposal, industrial runoff) and detention time is several days and storage capacity is high. Wetlands is obvious filter and/or is a nutrient sink.
(12) _____ Inflow is from stream flows or from storm event overflow and detention time is moderate. Area has moderate storage capacity and moderate nutrient uptake.
(8) _____ Inflow is from stream flows or storm events but

is from relatively undisturbed or undeveloped areas and detention time and storage capacity are moderate.

(2) ✓ Essentially no inflow and/or very short detentio time and low storage capacity.

EROSION CONTROL

1.13 EROSION BUFFER (Lacustrine/Riverine only)

Riverine Wetlands (shoreland and floodplain)
(check principal veg. form)

(10) _____ Trees or shrubs
(5) _____ Emergents, submergents
(1) _____ Sparsely vegetated

Lacustrine (including floodplain)

(10) ____ Trees or shrubs
(8) ____ Emergents
(4) ____ Submergents or floating
(1) ____ Sparsely vegetated

TOTAL FOR HYDROLOGIC COMPONENT: 85
(Maximum = 200)

SECTION 2. HABITAT POTENTIAL COMPONENT

HABITAT STRUCTURE AND FUNCTION

2.1 Vegetation Community Structure (see Figs., Appendix D.). Identify forms for each community type in subject wetland. Particular form must cover at least 5% of site. (Maximum points = 25)

EXAMPLE: Subject wetlands has 4 communities. Within each community, identify each (and all) form(s) and fill in appropriate lines below.

A. One Form (1 pt per community)

Community #	List Form

B. Two Forms (2 pts per community)

(+2)

Community #	List Forms	
13	herbs	n.l. emergents

C. Three Forms (3 pts per community)

(+3)

Community #	List Forms		
IIe ?	low shrubs	herbs	n.l. emergents

D. Four Forms (4 pts per community)

(+4)

Community #	List Forms			
13a ?	dead trees	n.l. emergents	herbs	robust emergents

E. Five Forms (5 pts per community)

(+5)

Community #	List Forms				
15	dead trees	n.l. emergents	robust	free-floating	herbs

F. Six + Forms (6 pts per community)

Community #	List Forms					
(+6) 5	Conifers	deciduous	tall shrubs	low shrubs	herbs	moss

SPATIAL ATTRIBUTES

2.2 NUMBER OF WETLANDS PLANT COMMUNITIES
(from Hogan and Tande, 1983, see key, Appendix C.)
(Count only numbered plant communities.)

			List Communities:
> 7		(5)	
5 - 7	✓	(4)	5 MIXED FOREST
2 - 4		(3)	15 Aquatic
1		(1)	13a Wet Herb Bog
			11e Cinquefoil-Sphagnum bog
			13 Wet Herb Meadow

2.3 INTRASPERSION/EDGE EFFECT OF COMMUNITY TYPES (see Figures Appendix E.)
Find pattern which most closely resembles subject wetlands.

Type 1		(1)
Type 2	✓	(2)
Type 3		(3)
Type 4		(5)

2.4 DIVERSITY OF SURROUNDING HABITAT (check all that apply). Within .25 mile of wetlands edge = Migratory Corridors.

- ____ Pasture, open fields, nursery or sod farm (1)
- ✓ Mixed Deciduous/Coniferous forest (2)
- ✓ Urban Residential Development (1)
- ✓ Open lake (3) Tina lake
- ____ Undulating, undeveloped terrain and/or wooded ravines (2)
- ✓ Creeks, drainageways or ephemeral streams (3)

= TOTAL #4 (Max. 12 pts.)

2.5 PROXIMITY TO OTHER WETLANDS HABITATS

(10) _____ A. Hydrologically connected by surface flow to other wetlands (different type) within .25 mile.

(8) ✓ B. Hydrologically connected by surface flow to other wetlands (different type) from .25 to .5 miles away.

(6) _____ C. Hydrologically connected by surface flow to other wetlands (same type) or open water within .25 mile.

(5) _____ D. Hydrologically connected by surface flow to other wetlands (same type) or open water from .25 to .5 mile away.

(4) _____ E. Within .5 mile of other wetlands (different type) or open water, but not hydrologically connected by surface flow.

(2) _____ F. Within .5 mile of other wetlands (same type) but not hydrologically connected by surface flow.

(0) _____ G. No wetland within .5 mile.

2.6 OPEN WATER TYPES (see Figures Appendix F.) Find pattern which most closely resembles subject wetlands.

No open water	_____	(0)
Type 1	_____	(4)
Type 2	_____	(5)
Type 3	_____	(7)
Type 4	_____	(9)
Type 5	_____	(12)
Type 6	✓	(4)
Type 7	_____	(7)
Type 8	_____	(3)

WETLAND PRODUCTIVITY

2.7 HARDINESS ZONE (see Appendix A.)
(Extrapolate for outlying areas)

Zone 5-6	_____	(5)
Zone 4	_____	(3)
Zone 3	✓	(2)
Zone 2	_____	(1)

2.8 SOILS TYPE
- Caswell silt loam
- Clam Gulch silt loam
- Doroshin peat
- Starichkof peat

(in upper 3', from SCS, or other soils survey)

	% of AREA		
Mineral	_____	X 5	_____
Organic	100%	X 2	(2)
Clays	_____	X 1	_____

2.9 TYPE OF WETLAND (smallest unit = 4000 sq ft)

Approx. Area (acres)		% of Total		
	Palustrine (Isolated)		X 2 =	
13.51	Palustrine (With Outflow)	96%	X 3 =	2.9
	Riverine		X 4 =	
	Riverine (at mouth)		X 5 =	
	Lacustrine (Next to Lake)		X 4 =	
0.5	Lacustrine (Open Water)	4%	X 2 =	.08

Total Points = 2.98 ≈ (3)

2.10 NUTRIENT STATUS OF SURFACE WATER

A.) Write conductivity reading and calculate TDS @ 25 C as per tables in Appendix B. Readings to be taken at all outflows of subject wetlands.

Location Sampled	Initial Sp. Con.	Temperature	TDS mg/l
Hart St - 72nd			100
Raspberry - C St.			120

AVERAGE TDS = 110

B. Check category from A.

Average TDS, mg/l

< 100		(2)
100 - 300	✓	(6)
301 - 500		(3)
> 500		(2)

WATER REGIME

2.11 SURFACE WATER PERSISTENCE-(% probability of surface water present during the period April-July)

0 to 50% of April-July		(2)
50 to <100% of April-July		(6)
100% of April-July	✓	(10)

2.12 WATER BODY SIZE (estimate size of smallest open water body during period April-July)

400 sq ft or less	✓	(2)
400 sq ft to .5 acre		(5)
.5 acre to 4 acres		(10)
> 4 acres		(15)

2.13 WETLAND CONTIGUITY WITH STREAM OR LAKE

wetland isolated from stream/lake	✓	(0)
wetland drains/is connected to stream/lake		(3) ?
Stream or lake lies within wetland		(5)

2.14 WETLAND SIZE

Points (Max = 80, see table below for points)

Table 1--Size (HABITAT COMPONENT) Evaluation Table

* Sum of HABITAT Points = Add points from 2.1 to 2.13

Acres	* Sum of Habitat Component Points* <15	15-30	31-45	46-60	61-75	76-90	>90	
<2	4	6	7	8	9	10	11	72
2-4	4	6	8	9	10	11	14	16
5-8	5	7	9	11	13	15	18	88
9-12	5	8	10	12	14	17	20	
13-17	6	9	11	14	16	19	24	
18-23	6	11	14	16	18	22	29	
24-28	7	11	14	18	20	27	35	
29-37	7	12	16	21	25	32	39	
38-49	7	13	18	23	27	34	44	
50-62	8	15	20	26	31	38	48	
63-81	8	17	23	32	36	43	53	
82-105	9	18	26	34	38	47	57	
106-137	9	19	29	36	42	52	62	
138-178	10	20	32	39	45	57	67	
179-233	10	22	36	43	48	62	72	
234-302	10	24	39	48	52	68	78	
303-400	11	26	43	53	56	73	80	
> 400	11	30	46	58	63	78	80	

TOTAL = (16)

(TOTAL FOR HABITAT POTENTIAL COMPONENT 88

(Maximum = 200)

SECTION 3. SPECIES OCCURRENCE COMPONENT

RARITY AND/OR SCARCITY

3.1 HABITAT FOR PLANT SPECIES OF STATEWIDE SIGNIFICANCE (see Appendix G.) (Species listed as threatened/endangered in AK; or known from a very few sites statewide)

Name of Species: _____ (1 species = 10 pts)
_____ (2 species = 15 ")
_____ (3+ species = 25 ")
✓ 0 species

3.2 BREEDING, FEEDING, SPAWNING, or REARING HABITAT FOR BIRD or ANADROMOUS FISH SPECIES SIGNIFICANT TO THE MUNICIPALITY OF ANCHORAGE (Existing or historic within past 5 years) (see Appendix G.)

Name of Species: _____ (1 species = 5 pts)
_____ (2 species = 8 ")
_____ (3+ species = 15 ")
✓ (0 species)

3.3 HABITAT FOR PLANT SPECIES RARE OR UNIQUE IN THE MUNICIPALITY OF ANCHORAGE (see Appendix G.)

Name of Species: Typha latifolia (1 species = (4) pts)
_____ (2 species = 7 ")
_____ (3 species = 12 ")

3.4 SCARCITY VALUE (Subject wetlands type as % of total type in catchment basin; calculate % for all types in subject area)

Wetland Type in Acres (A)	Total Acreage of Type in Basin (B)	A/B as %
palustrine - flow (13.51)	13.51	1
lacustrine - open water (.5)	.50	1

A/B (%) X 10

1 x 10
1 x 10

Total Points: 20 16 Not to Exceed 16 Points

SIGNIFICANT FEATURES

3.5 NESTING OF COLONIAL WATERBIRDS--{Red-necked Grebe, Canada Goose, Glaucous-winged/Herring Gull, Mew Gull, Bonaparte's Gull}

if yes to --->(12) ____ Currently nesting; species
(9) ____ Known to have nested in past 5 yrs; Species:
(6) ____ Active feeding area in nest season
(3) ____ Staging area for colonial waterbirds
(0) ✓ NONE KNOWN

3.6 WATERFOWL STAGING (Check highest level)

If yes to --->(15) ____ High Importance within Municipality-supports high numbers of several species
(10) ____ Moderate Importance
(5) ____ Very local importance
(0) ✓ Not used for staging

3.7 WATERBIRD PRODUCTION (Check highest level)

If yes to ----> (15) ____ High Importance-produces several broods of several species
(10) ✓ Moderate importance
(2) ✓ Minimal or no significance

3.8 BREEDING BIRD DIVERSITY

##if yes to -->(25) ____ Nesting occurs for >8 obligate wetlands species, and/or (circle one) >15 total species.
(15) ____ Nesting occurs for 4 to 8 obligate wetlands species, and/or (circle one) 8-15 total species.
(5) ✓ Nesting occurs for <4 obligate wetlands species, and/or (circle 1) <8 total species.

3.9 MIGRATORY BIRD STAGING AREA--Non waterfowl species.

##if yes to -->(15)	_____	High significance (annual use by >25 species)
(5)	_____	Moderate significance (can occasionally be significant; annual use by 10-25 species)
(1)	✓	No significance (annual use by <10 species)

3.10 SIGNIFICANCE FOR FISH SPAWNING

Number of Species that Spawn in Immediately Adjacent Waterbody

##if yes to -->(25)	_____	5+ species
(15)	_____	2-4 species
(5)	_____	1 species
	_____	No species

3.11 SIGNIFICANCE FOR FISH REARING

Number of Fish Species that Use Wetlands or Immediately Adjacent Waterbody for Rearing

##if yes to -->(25)	_____	5+ species
(15)	_____	2-4 species
(5)	_____	1 species
	_____	No species

TOTAL POINTS FOR SPECIES OCCURRENCE COMPONENT
28 **(MAX.=200)**

SECTION 4. SOCIAL COMPONENT

EXISTING RECREATIONAL ACTIVITIES

4.1 TYPE OF WETLAND-ASSOCIATED USE
(Maximum = 50 pts)

Use Intensity**(see below)	Hunting	Passive Recreation	Fishing	Boating	Other
High (10 pts)					
Moderate (5 pts)					
Low (2 pts)		✓			
None Known/(0) Not Possible					

USE INTENSITIES: High = used in several seasons by numerous individuals and/or groups
Moderate = used in one to two seasons by a few individuals (from local area) and/or by a single group
Low = used irregularly by a very few individuals

Total Points from Above = (2)

4.2 EDUCATIONAL USE--KNOWN OR POTENTIAL

(15) _____ Frequent--5+ Times per year by schools, clubs or tour groups
(8) _____ Occasional--used 2-5 times per year
(4) _____ Infrequent--used by organized groups once/year
(2) _____ No known educational use but in close proximity to schools
(0) ✓ No known or potential use

List Groups Utilizing the Wetlands: _____

4.3 FACILITIES AND PROGRAMS

(5) _____ Area has interpretive trail or other educational function
(0) ✓ No facilities or programs

WETLANDS RECREATION POTENTIAL

4.4 LANDSCAPE DISTINCTNESS (Identify subject wetland's relative position and value to viewshed from all perspectives)

(15) ✓ Clearly distinct in urban area
(8) _____ Distinct in rural area
(0) _____ Indistinct

4.5 TYPES OF DISTURBANCE (check all that apply and total)

✓ Roads/Trails
_____ Buried utility corridor
_____ Surface utility corridor
_____ Channelization
_____ Drainage
✓ Filling
✓ Water pollution
_____ Clearing/grubbing
_____ ORV use

Total and subtract from points (-3) (either 0 or a minus #

4.6 DEGREE OF DISTURBANCE/AESTHETIC VALUES

(15) _____ Human disturbance absent or nearly so
(10) ✓ One or several single, or local disturbances
(6) ✓ Moderate disturbance or local water pollution
(2) _____ Impaired natural quality is intense in some areas or severe local water pollution
(0) _____ Extremely intense disturbance or widespread, severe water pollution

4.7 PUBLIC USE/OPEN SPACE VALUE (Deficiency is based on MOA park plans)

(15) ✓ Wetland is within 1 mile of area known to be relatively deficient in parkland/open space or provides direct access to adjacent public lands.
(8) _____ Wetland is within 1 to 2.5 miles of an area known to be deficient in parkland or could (but does not) provide access to adjacent public lands.
(0) _____ Wetland is >2.5 miles away from area known to be deficient in parkland and does not provide access to public lands.

4.8 LAND USE IDENTIFICATION AS PARKLAND
(Specific to MOA planning)

(10) _____ Wetlands identified as dedicated parkland in Municipal Document
(5) _____ Wetlands identified as potential future park, open space or trail in Parks/Trails Plan
(2) _____ Wetlands is identified Municipal selection from State or in Heritage Land Bank and of little commercial value
or ✓ N/A

4.9 RESEARCH AND STUDIES

(5) _____ One or more wetland-related paper published
(2) _____ One or more reports written about some aspect of the wetlands
(0) ✓ No reports or papers

List Reports or Papers:

4.10 OWNERSHIP/ACCESSIBILITY

Estimate % of area, enter in the space, and multiply by points values (in brackets). Round off figures to nearest whole number and total points.

Ownership

	Public, unrestricted	Public, restricted	Private, open to public	Private, closed to public	Private, posted
1. Easy by road, water or trail	✓ (20)	____ (15)	✓ (8)	_____ (3)	_____ (2)
2. Easy only at certain times	____ (15)	____ (8)	_____ (4)	_____ (3)	_____ (2)
3. Limited, with some effort	____ (8)	____ (7)	_____ (4)	_____ (3)	_____ (2)
4. Difficult	_____ (7)	_____ (6)	_____ (3)	_____ (2)	_____ (0)

Avg = 14

Total : 14

TOTAL FOR SOCIAL COMPONENT: 49 **(Maximum = 150)**

POINTS TOTALS:

SECTION 1. HYDROLOGIC COMPONENT	85
SECTION 2. HABITAT POTENTIAL COMPONENT	88
SECTION 3. SPECIES OCCURRENCE COMPONENT	28
SECTION 4. SOCIAL COMPONENT	99

**** List all ## (=significant features) from Sections 3.1 - 3.11)**

Typha latifolia

Management Recommendations:

MISCELLANEOUS COMMENTS/EXISTING CONDITIONS:
Spp: Spotted sandpiper
mallards

SKETCH MAP OF AREA AND IMPORTANT FEATURES (On back of sheet, if appropriate):

Version: 10-23-91

THE ANCHORAGE DEBIT-CREDIT METHOD:

A METHOD FOR DETERMINING DEVELOPMENT DEBITS AND COMPENSATORY MITIGATION CREDITS FOR AQUATIC AREAS IN ANCHORAGE, ALASKA

Developed by Representatives of the:
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service and
Municipality of Anchorage

Finalized 12/12/00

Table 1: Ecological Units and Relative Ecological Values (REVs)

Ecological Unit				REV[1]
Type of Area	*Other Characteristics*			
Intertidal Zone	*vegetated*			1
	unvegetated	*high bird use*		1
		low bird use		2
Lakes & Ponds	*persistent*	*natural*		1
		artificial	*naturalized*	1
			non-naturalized	3
	seasonal			2
	floating aquatic mat			2
Patterned Ground & Other Ponded Wetlands	*persistently ponded*			1
	seasonally ponded			2
	rarely or never *ponded*			3
Streams & Other Flowing Waters (excluding *Ditches*)	*perennial*	*natural* or *naturalized*	*anadromous*	1
			non-anadromous	2
		channelized		2
	ephemeral or *intermittent*			3
	piped			4
	Inactive Channels	connected to stream		2
		not connected to stream		3
	Springs & Seeps			3
	Drainageways			3
Ditches	vegetated			3
	unvegetated			4

Table 1 (Cont'd): Ecological Units and REVs

Ecological Unit		*REV*[1]
Type of Area	*Other Characteristics*	
Other Wetlands and Aquatic Areas	*Islands & Peninsulas*	same as surrounding area
	Water Body Setbacks[2]	same as water body
	Buffer Areas[2]	2
	highly degraded areas	4
	areas not described elsewhere	3
Other *Uplands*	*Islands & Peninsulas*	same as surrounding area
	Water Body Setbacks[2]	same as water body
	Buffer Areas[2]	2
	developed or *highly degraded* areas	4
	areas not described elsewhere	3

[1]For *Restoration, Enhancement and Creation* Projects, *REV* assignments for areas to be *restored, enhanced* or *created* should be based on the existing condition of each *Polygon* (e.g., type of vegetation, hydrologic regime, extent of degradation), rather than its location/position (i.e., *stream bank, island/ peninsula, water body setback, buffer*

area). For determining credits, post-project *REV(s)* should be based on location, with standards for success specified in the permit or similarly binding document.

[2]For Development Projects, it may be appropriate to assign *REVs* for *Water Body Setbacks* or *Buffer Areas* based instead on their vegetation, hydrologic regime and condition when: a) they are located solely within the *Disturbance Shadow(s)* of the new development or b) the water body or area being buffered will be eliminated by the development.