

GUIDELINES FOR
DEVELOPING SITE-SPECIFIC
NATURAL AREA
MANAGEMENT PLANS IN
THE CITY OF EDMONTON

MAY 2014

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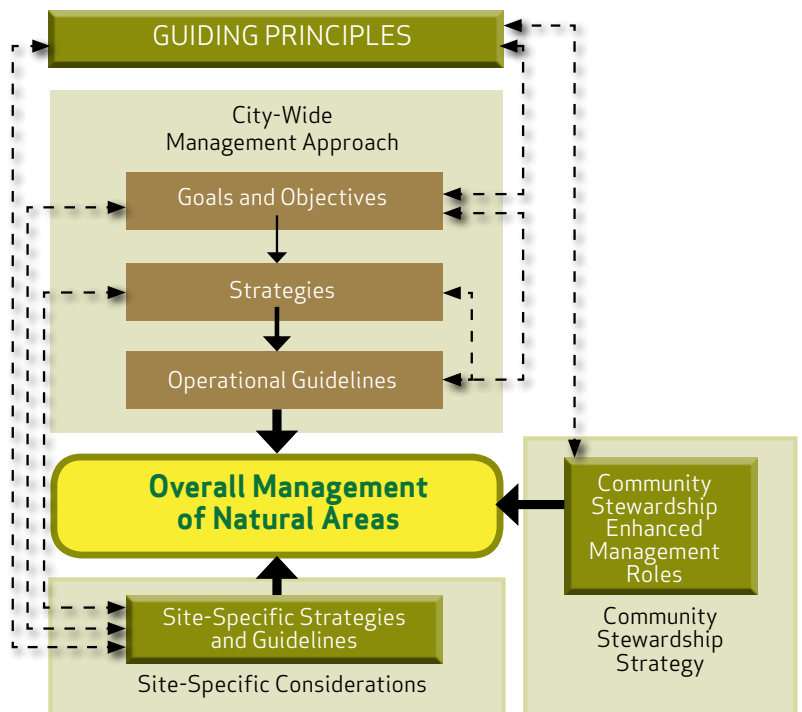
BACKGROUND ON SITE-SPECIFIC MANAGEMENT PLANS

While natural areas are part of the city-wide park system that provides the community with access to nature and recreational opportunities, they are a unique subset of parkland. They are different from groomed parks, sports fields and schoolyards both in the opportunities they provide, and in the management challenges they present. Compared to manicured park areas, natural areas require less routine and less intensive management, and the management priorities go beyond human use and access. Although the approaches required are different, active and careful management is no less important, particularly in the context of a rapidly growing urban area such as Edmonton.

In order to more effectively manage natural areas in the City of Edmonton, the *City-Wide Natural Area Management Plan* (NAMP) has been developed to support the management of the ecological network as a whole

(City of Edmonton 2014). The City-Wide NAMP sets out guiding principles and management strategies that are common to all natural areas throughout the City. When a new natural area is protected, the city-wide objectives and strategies are applied to the new site. In addition, a **Site-Specific Natural Area Management Plan (SSNAMP)** must be developed to provide additional guidance on the unique features and management strategies that apply to the management of that site. The site-specific strategies are to be implemented in addition to the city-wide strategies, which apply to all natural areas (Figure 1).

Figure 1: The City-Wide Natural Area Management Plan Framework, illustrating how Site-Specific Natural Area Management Plans fit into the overall natural area management approach.



HOW TO USE THESE GUIDELINES

The information provided in each Site-Specific Natural Area Management Plan (SSNAMP) should be informed by, and summarized from, existing documents (e.g., Natural Site Assessment, Neighbourhood Structure Plan, Phase I and II Ecological Network Reports, etc.). Should existing documentation provide insufficient information to fulfill all information and mapping requirements of the SSNAMP, site-specific surveys, conducted at the appropriate time of year and in accordance with standardized methods developed for Phase I and II ENRs, must be undertaken.

The SSNAMP should focus on information that describes the unique features of the site. The SSNAMP should not include any of the information that is already included in the *City-Wide Natural Area Management Plan* (City of Edmonton 2014).

These guidelines are intentionally focused on providing relevant **operational** information to land managers, such that these natural areas can be more effectively managed

and maintained. The information provided in each Site-Specific Management Plan should be informed by, and summarized from, existing documents (e.g., Ecological Network Reports, Neighbourhood Structure Plans, etc.), and should focus on information that describes the *unique* features of the site. The SSNAMP **should not** include any of the information that is already included in the *City-Wide Natural Area Management Plan* (City of Edmonton 2014).

The intent of Site-Specific Management Plans is to include information that can be used to more effectively operationalize the management objectives and strategies specific to each natural area, and to present this information in a way that is accessible to land managers and operational staff. Thus, SSNAMPs *should be limited in length to between 12 and 15 pages*, and must include all relevant mapping Appendices that clearly identify and spatially reference information that has been identified as critical information by City land managers.

GUIDELINES FOR PREPARING SITE-SPECIFIC NATURAL AREA MANAGEMENT PLANS



PHOTO COURTESY OF DAVE CONLIN

1.0 OVERALL CONSERVATION OBJECTIVES

Provide a brief description of the site and state the primary purpose and overall conservation objective for the management of the natural area. This section should address and provide answers to the following questions (**not exceeding one page in length**):

1. What kind of natural area is being managed (e.g., tree stand, wetland, etc.)?
2. How big is the natural area including buffer (hectares)?
3. What are the unique features of the natural area, and why is it being conserved (e.g., regionally significant habitat, rare or unique¹ species occurrence, important focal point for the neighbourhood, etc.)?
4. How does the natural area relate to other nearby natural areas within the context of Edmonton's Ecological Network?
5. What (if any) are the special management considerations for the site (e.g., 30 m buffer, special lighting, restrictions on the placement of trails, etc.)?

2.0 INTRODUCTION

Provide a brief introduction to the document. The following excerpt can be copied into the management plan:

This Site-Specific Natural Area Management Plan provides guidance for the management of [name of natural area]. This document provides a general site description and securement information, as well as a description of the ecological condition of the site, site-specific management objectives and strategies, and operational guidelines for site management. This report was developed using Guidelines for Developing Site-Specific Natural Area Management Plans in the City of Edmonton (City of Edmonton 2014) and the City-Wide Natural Area Management Plan (City of Edmonton 2014).

¹ Rare species are those that are listed as:

- Threatened or Endangered under the provincial Wildlife Act
- Sensitive, May Be At Risk, or At Risk under the General Status of Alberta Wild Species
- S1, S2, or S3 by the Alberta Conservation Information Management System (ACIMS)

Unique species are those that may not be listed as rare, but are considered to be ecologically underrepresented in the Edmonton area

3.0 GENERAL SITE DESCRIPTION AND ACQUISITION INFORMATION

Provide all of the relevant information listed in the tables below. If there are fields in the table that are not relevant to the site, indicate this by specifying “Not Applicable.”

3.1 SOURCE MATERIAL

Land Developer or Proponent	<i>Specify the name of the land developer responsible for the planning and development of lands surrounding the natural area.</i>
Environmental Consultant	<i>Specify the name of the author and environmental consulting group responsible for drafting the SSNAMP.</i>
SSNAMP Submission Date	<i>Specify the month and year the approved SSNAMP was submitted to the City of Edmonton.</i>

3.2 GENERAL SITE INFORMATION

Natural Area Reference Number	<i>Specify the Natural Area number as described in Spencer Environmental (2006) and Geowest (1993) or as identified in the Phase II ENR.</i>
Site Address	<i>Provide a street address, if applicable (i.e., nearest major street and avenue or intersection).</i>
Road Access	<i>Name of the nearest major road that can be used to access the site for maintenance or emergency access, as well as the approximate distance (m) from the centre of the natural area to the major road.</i>
Neighbourhood ²	<i>Provide the name of the neighbourhood (referenced in the City of Edmonton SAP³) in which the natural area is located.</i>
Operational District (select one) ⁴	<i>Using Appendix B (District Maps) in the City-Wide NAMP⁵, specify the Operational Area as one of the following:</i> <ul style="list-style-type: none"> • Northwest • Northeast • Southwest • Southeast • River Valley and Ravine System
Plans in Effect ⁶	<i>Specify the name of the plan in effect at the time of writing the SSNAMP (e.g. Area Structure Plan, Neighbourhood Structure Plan, etc.).</i>
Legal Land Description (ATS)	<i>List the quarter section, section, township, range, and meridian.</i>
Legal Parcel	<i>Provide the legal parcel, if available.</i>
UTM Coordinate (3TM, NAD83)	<i>Provide an easting and northing for the center point of the natural area in 3TM</i>

² Neighbourhood Maps: http://www.edmonton.ca/for_residents/neighbourhoods/neighbourhood-maps.aspx

³ SAP is the software that the City of Edmonton uses to run its day-to-day business transactions and processes

⁴ See City-Wide Natural Area Management Plan for Operational Area Maps

⁵ City of Edmonton. 2014. City-Wide Natural Area Management Plan.

⁶ Plans in Effect: http://www.edmonton.ca/city_government/urban_planning_and_design/plans-in-effect.aspx

3.2 GENERAL SITE INFORMATION (CONTINUED)

Drainage Basin ⁷ (select one)	<p>Specify the basin in which the natural area is located:</p> <ul style="list-style-type: none"> • Beaverhill Subwatershed • Sturgeon Subwatershed • Strawberry Subwatershed
Size of Natural Area including buffer (ha)	<p>Specify the total size of the natural area including buffer (ha). If size will change as a result of the proposed development, specify the original size and the size that will be managed under the SSNAMP.</p>

3.3 SECUREMENT AND MANAGEMENT INFORMATION

Site Owner	<p>Specify if the site is owned by the City of Edmonton, or is held by other interests (e.g., Edmonton and Area Land Trust, University of Alberta).</p>
Site Securement	<p>Specify how the site came under the management of the City of Edmonton, and the associated date:</p> <ul style="list-style-type: none"> • Direct purchase (note date of the purchase agreement) • Donation or gift (e.g. EcoGift program; note date of the donation or gift agreement) • Municipal Reserve dedication (note date of subdivision approval) • Environmental Reserve dedication (note date of subdivision approval or title and date of compensation agreement).
Neighbourhood Structure Plan Approval Date ⁶	<p>Specify the date of approval (month and year) of the Neighbourhood Structure Plan in which the natural area was planned for protection.</p>
Site Management Agreements	<p>Describe any site management agreements that may exist between the COE and a third party (e.g., management of a wetland claimed as public land by the province).</p>
City Departments with Management Interests	<p>List all of the City Departments that have been assigned management responsibilities in section 9.0 of this report.</p>
Site Zoning	<p>Specify the current zoning for the site.</p>

⁷ North Saskatchewan Watershed Alliance. 12 Sub Watersheds. Maps available: <http://www.nswa.ab.ca/content/12-sub-watersheds>

4.0 ECOLOGICAL FUNCTION AND IMPORTANCE ASSESSMENT

This section provides a general description of the site-specific ecological conditions and landscape context of the natural area. Information for this section should be taken from existing studies, reports, or assessments. **In particular, this section should be informed by the ecological assessment conducted specifically for the site using the standardized methods developed for Phase I and II Ecological Network Reports (ENRs) in the City of Edmonton.** Should existing studies, reports, or assessments provide insufficient information to fulfill all information and mapping requirements of the SSNAMP, site-specific surveys must be completed in accordance with the standardized methods developed for Phase I and II ENRs.

4.1 SITE-SPECIFIC ECOLOGICAL CONDITIONS

Provide a description of the following ecological resources present within the natural area. If there are fields in the table that are not relevant to the site, indicate this by specifying “Not Applicable.”

Topography and Soils

Hydric Soils	<i>Indicate (YES or NO) whether hydric soils are present and provide more details about these areas in the Hydrology section.</i>
Rare or Unique Landforms ⁸	<i>Indicate (YES or NO) whether there are any rare or unique landforms present on-site (e.g. sand dunes, karst formations, hoodoos, etc.). Provide a map identifying the location of these features in Appendix B.</i>
Erosion and/or Sedimentation Concerns	<i>Indicate (YES or NO) whether there are any erosion and/or sedimentation concerns. If YES, provide details regarding the nature and extent of the concerns below and provide a map identifying the location of these features in Appendix B.</i>
Geotechnical Concerns	<i>Indicate (YES or NO) whether there are any geotechnical concerns on-site, including the following:</i> <ul style="list-style-type: none"> • Slopes $\geq 15\%$ • Slopes deemed unstable through a formal geotechnical assessment <i>If YES, provide more details below and provide a map identifying the location of these features in Appendix B.</i>

In the text, provide a general description the ecological conditions on-site, including the following:

- If rare or unique landforms are present (e.g. sand dunes, karst formations, hoodoos, etc.), provide a description and location information.
- Provide a description of the nature, extent, and location of any sedimentation and erosion concerns.
- Describe and map any slopes $\geq 15\%$, or any slopes deemed to be unstable through a formal geotechnical assessment. Note the aspect and soil type of these slopes, and comment on whether there are (or there is the potential for) slope stability issues within the site

⁸ Rare or unique landforms are features that are not widespread throughout Edmonton, and may be regionally rare or unique.

Hydrology

Feature Type and Class	<p>Map and describe the feature types found within the natural area, as well as the classification of each feature type:</p> <ul style="list-style-type: none"> • For rivers and streams, provide the Code of Practice classification⁹. • For wetlands, indicate the class as per Stewart and Kantrud (1971) or the appropriate wetland classification system in use by the Province of Alberta (see Phase II ENR). • For uplands and wetlands, indicate the dominant vegetation types.
Feature Size	Specify the size (ha) of the natural area and of each feature type within the natural area.
Aquatic and Riparian Habitat	Map and describe the location and condition of aquatic and riparian habitat and buffers.
Changes and Impacts to Natural Area	Describe any ways in which the natural area will be modified from its natural state through the development process. Note any issues or problems in the surrounding landscape that may impact the hydrology of the natural area, such as modifications of natural flows, wetland loss, channelization of streams, etc.
Local Catchment Area Mapping	Provide a map delineating the local catchment area for the natural area.
Contour Mapping	Provide a map illustrating post-development grading at, and immediately adjacent to, the natural area boundary. Indicate any areas where pre- and post-development grading differ.
Public Utility Lot Mapping	Provide a map identifying Public Utility Lot (PUL) zoning and infrastructure (e.g., sediment forebay, outlets, outfalls, etc.) required to sustain the natural area.
Water Balance and Hydrologic Inputs	Referencing the NDR and Phase II ENR, confirm pre- and post-development hydrologic inputs (e.g., run-off rates) necessary to maintain the ecological function and integrity of the natural area (including upland and wetland features).
Flooding Concerns	Indicate whether there are any existing or potential concerns with flooding on-site, including a description of the severity, extent, frequency, and location of flooding, and a description of flood protection structures or facilities that exist on-site.

All mapping requirements listed above may be provided as part of the maps provided in Appendix B or as separate maps, as appropriate.

⁹ Alberta Environment. 2011. St Paul Code of Practice Map: <http://environment.alberta.ca/documents/StPaul.PDF>

Vegetation

Vegetation Communities	<p>List the dominant vegetation communities present on-site, described as:</p> <ul style="list-style-type: none"> • Dominant tree/dominant shrub/dominant forb or grass For example: Trembling Aspen/Highbush Cranberry/Blue-joint Reedgrass. This should be provided for each unique vegetation community present on-site. <p>If available, provide the Primary Land and Vegetation Inventory classification of each vegetation community.</p>
Rare or Unique Plants or Vegetation Communities	Indicate (YES or NO) whether any rare or unique plants or vegetation communities have been detected through previous on-site assessments.
Weed Control Act	Indicate (YES or NO) whether there are any Prohibited or Prohibited Noxious, or Nuisance weeds on site (as defined by the Alberta Weed Control Act ¹⁰).
Invasive Non-native Species ¹¹	Indicate (YES or NO) whether there are any invasive non-native species present on-site.
Buffers	Indicate the location and size of upland and riparian buffers.

In the text, provide a general description of the type and condition of the vegetation detected on-site, including the following:

- A description of any natural or anthropogenic influences (e.g. pest damage, fire suppression, etc.) that have impacted the vegetation.

- For natural areas that contain forest stands, specify the stage of stand development (i.e., stand initiation, stem exclusion, understory re-initiation, or old, multi-aged community) and estimate the time since the last stand-initiation event (i.e., estimate the approximate age of the largest trees on-site).
- Provide a summary of relevant information (e.g., number of species detected, type of vegetation structure present, habitat value, etc.).

If there are any rare, unique, weed, or invasive species detected on-site, list those elements in the table below.

Vegetation Element (select all that apply)	Species Name (Genus and species)
<ul style="list-style-type: none"> • Rare Plant • Rare Plant Community • Uncommon or Unique Plant • Prohibited Weed • Noxious Weed • Invasive Non-native Species • Other (Specify) <p>Add a new row for each unique vegetation element present.</p>	<ul style="list-style-type: none"> • Provide the common name, along with the genus and species, for each vegetation element detected. <p>For example: Creeping Thistle (<i>Cirsium arvense</i>)</p>

In the text, provide a general description of the vegetation element, including:

- The approximate location within the natural area.
- The approximate number of plants and/or the size of the patch.

- Any specific threats to rare or unique vegetation elements that may result from surrounding development or human use.
- Any risk that weeds or invasive species may pose to the health of the natural area, if not actively managed.

All relevant vegetation elements should be mapped in Appendix B.

10 Weed Control Regulation, Alta Reg 19/2010: http://www.qp.alberta.ca/574.cfm?page=2010_019.cfm&mandleg_type=Regs&disbncln=9780779748150

11 Non-native species not listed under the Weed Control Act that may pose a threat to native plant communities if not actively managed

Wildlife

Wildlife Species	Indicate (YES or NO) whether any wildlife species have been detected during any on-site assessment(s).
Proposed or Existing Wildlife Passage Structure	Specify (YES or NO) whether there is an existing or proposed wildlife passage structure on-site.

Wildlife Passage Structure

If there are existing or proposed wildlife passage structures present on-site or adjacent to the site, list them in the table below.

Ecological Design Groups Supported	Specify the Ecological Design Groups that will be supported by the structure
Type of Wildlife Passage Structure ¹²	Specify the type of wildlife passage structure (select one): <ul style="list-style-type: none"> • Signage and/or reflectors • Fencing • Reduced speed limits • Wildlife “crosswalk” • Diversionary methods • Curb improvements • Closed bottom culvert • Open bottom culvert • Box culvert • Amphibian tunnel • Bridge • Tunnel/overpass
Size	Specify the dimensions (e.g., length, width, and height) of the structure.
Location	Specify the existing or proposed location of the wildlife passage structure and map this feature on the Wildlife Map.

In the text, provide the following information:

Key Habitats

Provide a description of key habitats found on-site (e.g. staging areas, spawning habitat, etc.) and discuss how these key habitats relate (e.g., proximity, connectedness) to other key habitats at the local (i.e., within the city) and regional scale (i.e., within the subwatershed).

Species Observed On-site

Provide a table that includes all species that were observed (including indirect observations, such as nests, tracks, scat, etc.) on-site during any previous field assessment, including the common and scientific (*genus* and *species*) names for each species.

Rare or Sensitive Species Observed On-site

Provide a table that lists all rare species that were observed (including indirect observations, such as nests, tracks, scat, etc.) on-site during any previous field assessment.

Potential Impacts of Development on Wildlife

Discuss any pressures or concerns associated with current and future land use that may limit or impact wildlife that were observed on-site during any previous field assessment.

All relevant wildlife features should be mapped in Appendix B.

¹² City of Edmonton Wildlife Passage Engineering Design Guidelines: http://www.edmonton.ca/environmental/documents/WPEDG_FINAL_Aug_2010.pdf

4.2 REGIONAL CONTEXT

<p>Designation within Edmonton's local Ecological Network ¹⁴</p>	<p><i>Indicate how the site, or natural features within it, has been designated within Edmonton's Ecological Network by specifying its designation:</i></p> <ul style="list-style-type: none"> • Biodiversity core area • Habitat patch • Stepping stone • Corridor • Buffer • Barrier (natural or anthropogenic; land or water) <p><i>These designations can apply to natural or semi-natural features. A site or feature's designation should be considered independently as well as in relation to other natural features in the area.</i></p>
<p>Designation within Edmonton's regional Ecological Network ¹³</p>	<p><i>Indicate how the site, or natural features within it, contributes to the regional ecological network:</i></p> <ul style="list-style-type: none"> • Regional biodiversity core area • Regional biological corridor

In the text, provide the following information:

Local Ecological Importance

Discuss the significance of the site in the context of Edmonton's Ecological Network:

- Is the site part of an existing corridor? Is it an important stepping stone habitat? Is it isolated in the landscape?
- Discuss the ecological value of this site for flora and fauna known to, or having the potential to occur on-site, in relation to the other natural features in the area.

Regional Ecological Importance

Consider the ecological importance of the site at the regional (subwatershed) scale:

- Discuss the importance of the site as it relates to other provincially recognized (e.g., Environmentally Significant Areas and/or Aquatic Environmentally Significant Areas) or internationally recognized sites (e.g., RAMSAR wetlands) in the region.

Provide a regional context map in Appendix B.

¹³ Edmonton's Ecological Network Map: http://www.edmonton.ca/environmental/documents/Ecological_Network_Map.pdf

5.0 HUMAN USE

Describe existing and anticipated public use of the site, including educational programs, facilities (e.g. buildings, educational signage, washrooms), site access, roads, and trails.

5.1 CURRENT PUBLIC USE AND INFRASTRUCTURE

Current Public Use	<i>Indicate (YES, NO, or UNKNOWN) whether there is any current public use of the site.</i>
Existing Facilities or Infrastructure	<i>Specify (YES or NO) whether there are any existing facilities or infrastructure on-site. Examples of infrastructure include garbage cans, benches, wildlife viewing platforms, public washrooms, and stormwater management facilities.</i>
Existing Trails	<i>Specify (YES or NO) whether there are any existing trails within the natural area or the buffer.</i>

If there is any current public use of the site, describe it in more detail in the table below.

Current Site Activities	Future Activity	Use Restrictions
<ul style="list-style-type: none"> • Walking/hiking • Cycling • Wildlife viewing (e.g. bird watching) • Fishing • Educational programs • Other (Specify) <p><i>Add a new row for each unique activity known to occur on-site.</i></p>	<p><i>Indicate whether the current activity will be continued or discontinued as part of the future management of the site.</i></p>	<p><i>For continued activities, indicate whether on-going or future activity will be open (no restrictions) or restricted (limits on timing or location of activity) as part of the future management of the site.</i></p> <p><i>Discuss any use restrictions within the natural area buffer.</i></p>

Restriction Details

Briefly describe any use restrictions (e.g. indicate timing and/or location restrictions) associated with any continued human use of the natural area or the buffer, and provide rationale for the use restriction.

Provide a list of all existing infrastructure and facilities located on-site in the table below, and provide a map of these features in Appendix C.

Impacts of Current Use

Briefly describe any negative ecological impacts (if applicable) that may result from current human use of the site.

Existing Facilities or Infrastructure

If applicable, provide a list of all existing facilities or infrastructure on-site:

- Garbage cans
- Signage (directional or interpretive)
- Benches
- Wildlife viewing platforms
- Public washrooms
- Stormwater management facilities
- Internal trails
- Perimeter trails
- Internal roads
- Other (specify)

5.2 FUTURE PUBLIC USE AND INFRASTRUCTURE

Future Public Use	Indicate (YES or NO) whether any new public use (not already specified above) is anticipated as part of future site management.
Proposed Facilities or Infrastructure	Specify (YES or NO) whether there are any proposed facilities or infrastructure for the site.
Proposed Trails	Specify (YES or NO) whether there are any INTERNAL trails proposed for the site.
Public Education Programs	Specify (YES or NO) whether there are any proposed Public Education Programs for the site.

Describe any new public use (not already specified above) that is anticipated as part of future management of the site.

Anticipated Site Activities	Use Restrictions
<ul style="list-style-type: none"> • Walking/hiking • Cycling • Wildlife viewing (e.g. bird watching) • Fishing • Other (Specify) <p>Add a new row for each unique activity anticipated to occur on-site.</p>	<p>Indicate whether future activity will be open (no restrictions) or restricted (limits on timing or location of activity) as part of the future management of the site.</p>

Restriction Details

Briefly describe any use restrictions (e.g., indicate timing and/or location restrictions) associated with any continued human use of the site, and provide rationale for the use restriction. Map areas limited or restricted to public use in Appendix C.

If there are any facilities or infrastructure proposed for the site, list it in the table below and provide a map of these features in Appendix C.

In the text, provide a description, including the location, of any proposed facilities or infrastructure. Briefly describe any potential negative ecological impacts (if applicable) that may result from future human use of the site.

Public Education Programs

Provide details for any public education programs that exist or are proposed for the site, including the goals and objectives of the program.

Proposed Facilities or Infrastructure

If applicable, provide a list of all proposed facilities or infrastructure on-site:

- Garbage cans
- Signage (directional or interpretive)
- Benches
- Wildlife viewing platforms
- Public washrooms
- Stormwater management facilities
- Internal trails
- Perimeter trails
- Internal roads
- Other (specify)

5.3 PUBLIC ACCESS

Feature	Description
Public Parking	<i>Specify the approximate distance from the centre of the natural area to the nearest public parking area, and indicate whether this is on-street parking or a designated parking lot.</i>
Transit Access	<i>Specify the transit stop number for any transit stops located within a 500 m radius of the center point of the natural area.</i>

Provide a map of all existing and proposed access points (roads and/or trails), parking areas, or transit stops within 500m in Appendix C.

5.4 PUBLIC SAFETY

In the table below, provide a description of any features or elements of the site that might pose a hazard to public safety.

Existing or Potential Hazard	Description of Hazard
<ul style="list-style-type: none"> • Hazard trees • Steep or unstable slopes • Water • Fire • Nuisance wildlife • Other (Specify) 	<i>Briefly describe the nature and extent of the public safety hazard. If applicable, map safety hazards in Appendix C.</i>
<p><i>Add a new row for each unique safety hazard known to occur on-site.</i></p>	

6.0 SITE-SPECIFIC ECOLOGICAL IMPACTS, MANAGEMENT CHALLENGES, AND OPPORTUNITIES

Describe ecological impacts to, and management challenges for, the site that have, or are likely to result from, the proposed development. Site-specific ecological impacts identified in the Phase II ENR for the area should be provided here. Management challenges listed should primarily include those that are not already included in section 5.0 of the City-Wide NAMP (City of Edmonton 2014). If there are challenges listed in section 5.0 of the City-Wide NAMP that require further detail specific to the site, briefly discuss the full scope of the issues in this section.

Examples of ecological impacts include, but are not limited to:

- Fragmentation or reduction in size.
- Disruption or loss of ecological corridors and linkages.
- Likely reduction in the population size, diversity, health or reproductive capacity of local species.
- Alteration of the quantity, quality, timing or direction of flow of surface or groundwater within and surrounding the site.

- Erosion and/or sedimentation concerns.
- Increased potential for intrusion by humans or domestic animals into previously remote areas.
- Increased potential for introduction of invasive species.
- Impacts of occupancy (e.g., disturbance through increased access, lighting, noise, encroachment, garden escapes, etc).

In addition, identify opportunities for habitat enhancement and restoration.

- If there are habitat enhancements or restoration activities proposed for the site, provide a detailed description of these activities.
- Include a map with the location and details of the proposed design for habitat enhancement or restoration in Appendix D.

7.0 SITE-SPECIFIC CONSTRUCTION MITIGATION MEASURES

Describe site-specific mitigation measures that should be incorporated into the construction plan within or adjacent to the site in order to avoid, minimize, or compensate for each ecological impact listed in section 6.0 that relates to construction and/or operation. Site-specific mitigation measures identified in the Phase II ENR for the area should be provided here.

Mitigation measures should be interdisciplinary in nature, and result in construction and operational solutions that ensure the site is sustained over the long term. Recommendations must consider the sustainability of the site throughout the development process and must address indirect, as well as direct, effects of development. For example, hydrologic inputs must be maintained to the site for the duration of construction in the entire plan area, even if the site is part of a later development phase.

The mitigation measures must be described in sufficient detail so as to facilitate successful and effective

implementation. Mitigation measures identified as part of the Phase II ENR should be further refined and detailed here. At minimum, the following measures should be described on a site-specific basis and included in this section:

- Referencing the NDR and the water balance study prepared as part of the Phase II ENR, clearly delineate catchment areas and confirm pre-and post-development hydrologic inputs (e.g., run-off rates) necessary to maintain the ecological function and integrity of the site.
- Buffers and setbacks to protect habitat (include specific details about the buffer's location, width and composition).
- Erosion and sedimentation control measures [see *Erosion and Sedimentation Control Guidelines* (City of Edmonton 2005)].

8.0 SITE-SPECIFIC MANAGEMENT OBJECTIVES AND STRATEGIES

Identify and present **site-specific** management objectives and strategies for the following elements:

1. Vegetation
 2. Wildlife and Habitat
 3. Safety
 4. Hydrology and Water Resources
 5. Human Use
 6. Education
- This section should include only those management objectives and strategies that are not already included in the list of city-wide management objectives that are common to all natural areas in Edmonton (section 5.0 of the City-Wide NAMP).
 - Any additional site-specific objectives or strategies should be reflective of the guiding principles stated in section 5.0 of the City-Wide NAMP, and must be accompanied by a specific operational guideline (section 5.0).
 - Each objective should describe the goal of the management action, and each associated strategy should be **specific** and **action-oriented**.
 - If there is more than one objective associated with each of the six elements listed above, the objectives should be listed alphanumerically.
 - Each strategy should be listed numerically under the related objective; note that there may be more than one strategy associated with a single objective.

Example:

2. Wildlife and Habitat Objective 2A

Retain and enhance natural conditions that may maintain and/or increase populations of special status (and other non-listed) avian species, mammals, and amphibians utilizing the natural area

Strategy 2.1

Conduct annual bird surveys and develop appropriate management objectives and strategies where special status species are identified

Objective 2B

Provide appropriate bat habitat to discourage roosting in buildings

Strategy 2.2

Install roosting bat boxes along the interior edge of the natural area

Strategy 2.3

Maintain bat boxes within the natural area

If there are no management objectives or strategies specific to the site that are not already included in the City-Wide NAMP, note this by inserting the following excerpt into this section:

There are no additional site-specific management objectives or strategies for [name of site] beyond those already listed in section 5.0 of the City-Wide NAMP (City of Edmonton 2014).

9.0 OPERATIONAL GUIDELINES

For each strategy specified in section 5.0 of the City-Wide Natural Area Management Plan and within this Site-Specific Natural Area Management Plan, an operational guideline must be specified. The operational guideline **must** assign responsibility for each strategy to a City department or to a third party (e.g. land developer, community volunteer group, etc.). Assignment of responsibility for any site-specific management strategy to a City of Edmonton department must only be done after consultation with the City of Edmonton Ecology Unit and the responsible department.

In Table 1, list site-specific management strategies (section 8.0) that are the responsibility of the City of Edmonton.

- For each management strategy, specify the **date** (month and year), the **duration** (number of years) and the **frequency** (how many times per year) of each activity.
- If there are no site-specific management objectives or strategies listed in section 8.0, do not include this table in the report.

In Table 2, list any site-specific management strategies (section 8.0) that are the responsibility of the proponent, site owner, or any other third party.

- For each management strategy, specify the **date** (month and year), the **duration** (number of years) and the **frequency** (how many times per year) of each activity.
- If there are no third party site-specific management strategies listed in section 8.0, do not include this table in the report.

Table 1 — Example of the Operational Guidelines table that must be included in each Site-Specific Natural Area Management Plan, specifying which City department is responsible for undertaking each management strategy, as well as the schedule (date, duration, and frequency) for each activity.

NP and CR = Neighbourhoods, Parks and Community Recreation Branch
 CRF = Community and Recreation Facilities Branch
 CSB = Community Standards Branch
 UP and E = Urban Planning and Environment Branch

● Represents Action Lead
 ○ Represents Action Support

MANAGEMENT STRATEGY	SCHEDULE (DURATION AND FREQUENCY)							
	NP AND CR	CRF	CSB	UP AND E	OTHER	TRANSPORTATION SERVICES ¹⁵	DRAINAGE SERVICES ¹⁵	ECOLOGICAL UNIT
VEGETATION								
Establish the required buffer around perimeter of the natural area								
Identify and map the location of all noxious, nuisance, and invasive species	●			○				
WILDLIFE AND HABITAT								
Conduct annual surveys and develop appropriate management objective and strategies if special status species are identified				○				
Maintain bat boxes within the natural area				○				
SAFETY — No site-specific management requirements. See City-Wide Natural Area Management Plan for site management requirements.								
HYDROLOGY AND WATER RESOURCES								
Monitor and maintain inlet and outlet structures								
HUMAN USE								
Identify and reclaim areas used as off-pathway trails (when they occur) and apply measures to block these trails and revegetate	○			○				
EDUCATION								
Develop interpretive signage content and criteria				○				

¹⁵ As future management plans are developed, it is anticipated that Drainage Services and Transportation Services will play a more active role in reviewing and participating in the implementation of management plans.

Table 2 — Example of the Third Party Operational Guideline Table, specifying which management strategies are the responsibility of the third party, as well as the schedule for undertaking each strategy.

Management Strategy	Schedule (Duration and Frequency)
Vegetation	
<i>Establish the required buffer around the perimeter of the natural area</i>	Spring 2014; one-time in consultation with Ecology Unit
<i>Restore buffers with native vegetation seeding and topsoil additions to achieve vertical stratification and desirable landscape grades</i>	Spring 2014; one-time during construction phase
<i>Monitor vegetation establishment within the buffer zone to ensure successful restoration</i>	Annually during the spring of 2015, 2016 and 2017
<i>Install tree protection hoarding in accordance with the City of Edmonton Tree Protection Hoarding Requirements</i>	Spring 2014; one-time during construction phase
<i>Conduct additional revegetation activities if initial vegetation establishment is unsuccessful</i>	Annually during the spring of 2015, 2016 and 2017
Wildlife and Habitat	
<i>Install bat boxes along the interior edge of the natural area</i>	Spring 2014; one-time post-construction
<i>Conduct bird surveys prior to planned vegetation clearing during the breeding period (April 15 - July 31, 2014)</i>	Spring 2014
SAFETY - No site-specific management requirements	
Hydrology and Water Resources	
<i>Determine and establish the pre-development flow regime for the natural area as outlined in the Phase II ENR</i>	Spring 2013; one-time
<i>During site construction, maintain existing grades to the adjacent MR lands to maintain hydrological input</i>	Spring 2014 to Spring 2015
<i>Install and monitor Erosion and Sedimentation Control Measures</i>	Installation: 2014; one-time during construction phase Monitoring: Annually during the spring of 2015, 2016, 2017
<i>Construct sedimentation ponds at the inlet locations around the wetland to filter out sediments/pollutants</i>	Spring 2013 to Spring 2014; one-time during construction phase
Human Use	
<i>Construct public access trails to viewpoints</i>	Spring 2013 to Spring 2014
Education	
<i>Install interpretative signage at viewpoints</i>	Spring 2014; one-time in consultation with Ecology Unit

APPENDIX A: SITE LOCATION MAP SERIES

All of the maps listed below must be included in Appendix A. All maps must include a north arrow, a scale in kilometers, and a legend. Please use the colour scheme as a recommendation.

All mapping files should also be submitted electronically in GeoMedia-compatible format (3TM, NAD83). ArcView shape files can be accepted but require the projection file. Spatial files requested include the following:

- Biophysical Inventory (Vegetation; Wildlife; and Hydrology, Aquatic Features, and Landforms),
- Existing Ecological Network (See Phase II Ecological Network Report),
- Recommended Ecological Network (See Phase II Ecological Network Report),
- Post-Development Ecological Network (See Phase II Ecological Network Report),
- Ecological Shadow Plan (includes: NSP Land-Use Concept, Transportation Infrastructure, Storm Servicing Scheme, Water Network, Sanitary Servicing Scheme, and Utility Network)

Map 1. Natural Area Location:

An overview map that situates the natural area within the City of Edmonton (scale between 1:135,000 and 1:150,000). This map must include:

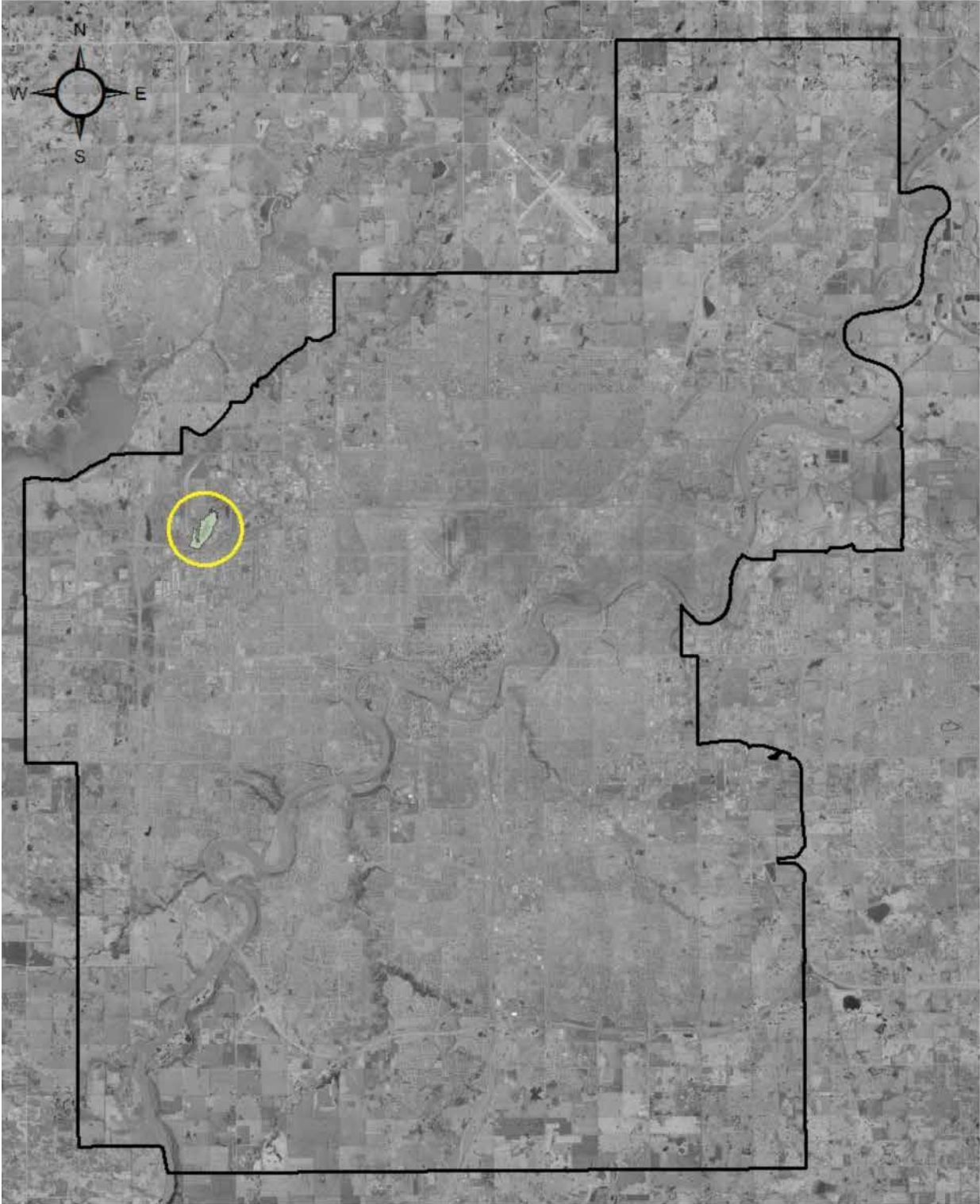
- The City of Edmonton boundaries
- A circle that illustrates the location of the natural area within the city
- Boundaries of the natural area

Map 2. Neighbourhood Structure Plan Overview:

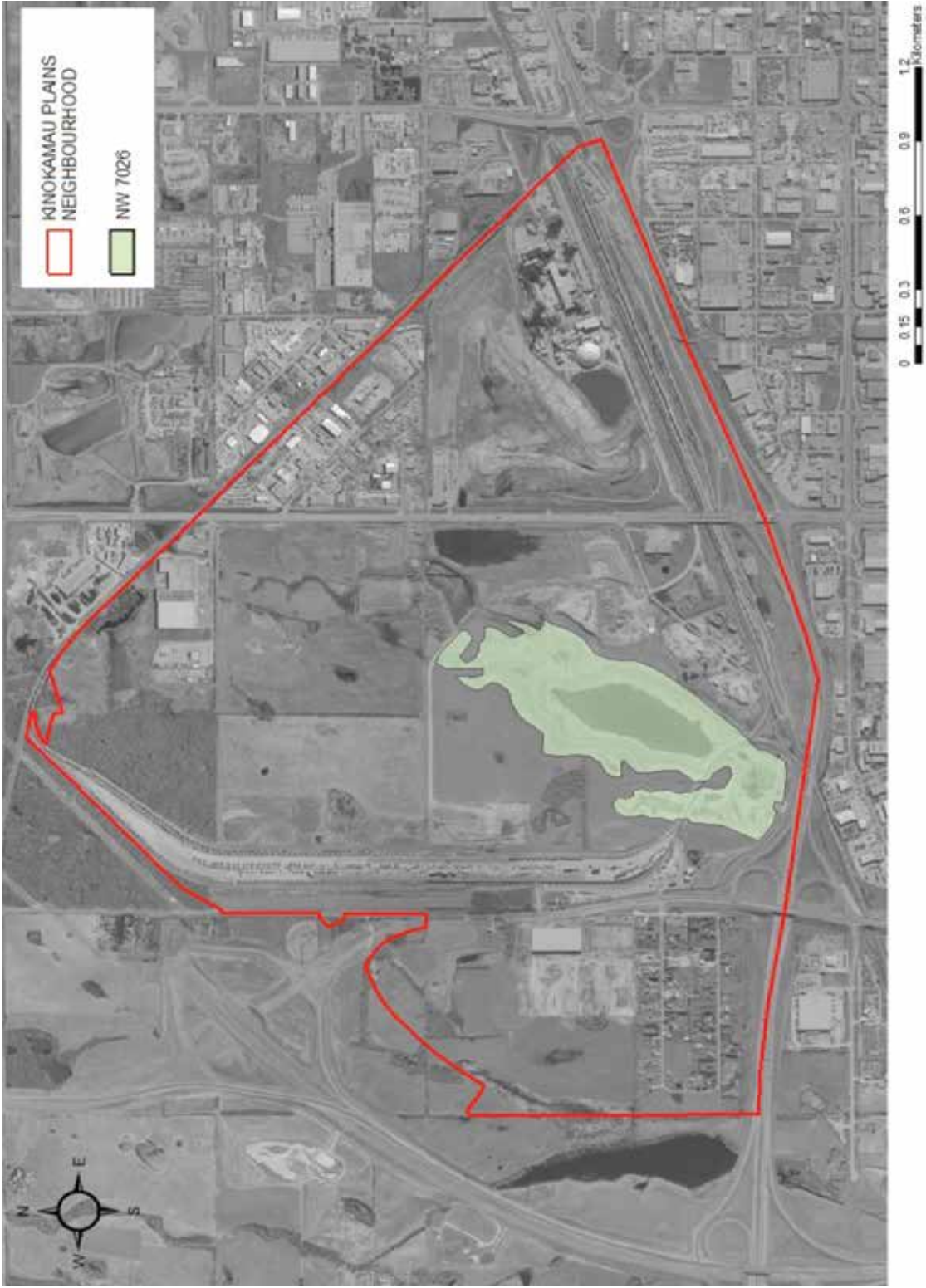
An overview map that situates the natural area within the neighborhood, at a scale that is appropriate for the site and features being mapped (suggested scale of between 1:5,000 and 1:15,000). This map must include:

- Boundaries of the natural area
- Boundaries of the neighbourhood

Map 1: Natural Area Location



Map 2: Neighbourhood Overview



APPENDIX B: ECOLOGICAL FEATURES MAP SERIES

Maps for all of the relevant ecological features listed below that are present on-site must be included in Appendix B. All mapped features should be overlaid on an air photo of the site and the scale of the map should be appropriate for the site and features being mapped (suggested scale of between 1:1,000 and 1:10,000, unless otherwise stated). Mapping at a finer scale than specified in higher-level planning documents, such as the Phase I and II Ecological Network Reports, may be necessary in order to fulfill the requirements of this map series. All maps must include a north arrow, a scale in meters, and a legend. Please use the colour scheme as a recommendation.

All mapping files should also be submitted electronically in GeoMedia-compatible format (3TM, NAD83). ArcView files can be accepted but require the projection file.

Map 3. Topography and Soils:

Map any rare or unique landforms

- Where possible, select colours from the Topography and Soils colour pallet
- Use appropriate symbology and label all features in the legend
- Map the location of unstable slopes and/or slopes $\geq 15\%$
- Map the location of any areas that are susceptible to sedimentation or erosion

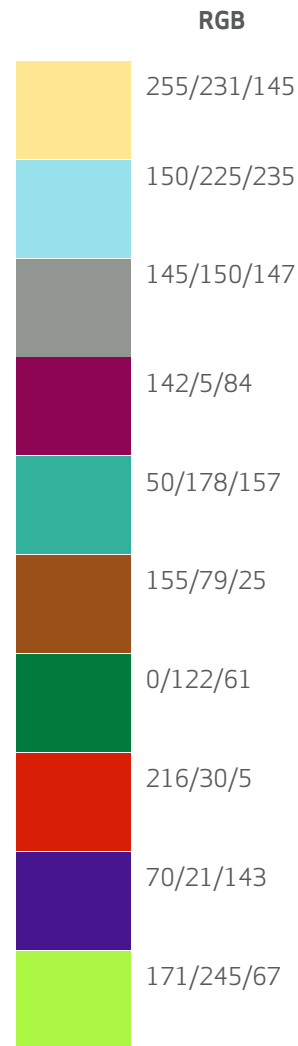
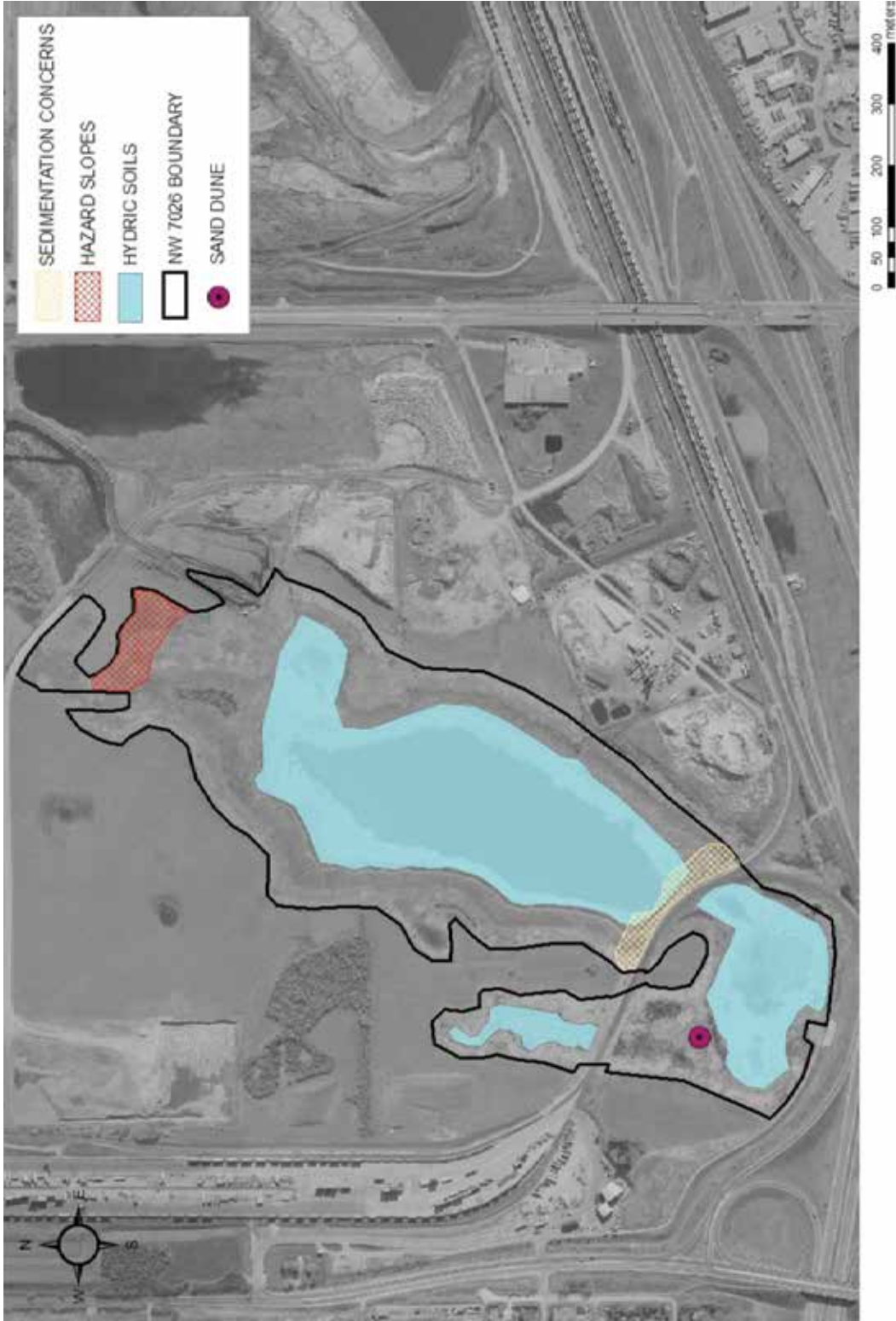


Figure 2. Suggested colour palette for mapping Topography and Soils features.

Map 3: Topography and Soils



MAP 4. HYDROLOGY:

- Map the location of all surface water features (rivers, creeks, wetlands).
- Delineate the boundary of each wetland zone
 - Open Water Zone
 - Deep Marsh Zone
 - Shallow Marsh Zone
 - Wet Meadow Zone
 - Low Wet Prairie Zone
 - Fen Zone
 - Riparian Area

Where applicable, include flood information for the site, including:

- Identify areas with a known history of flooding
- Identify any flood protection structures or facilities (e.g. inlet, outlet, and forebay structures)
 - Use appropriate symbology and label feature on the map
- Provide a map of the wetland's catchment area (this information is available through the Phase II ENR)

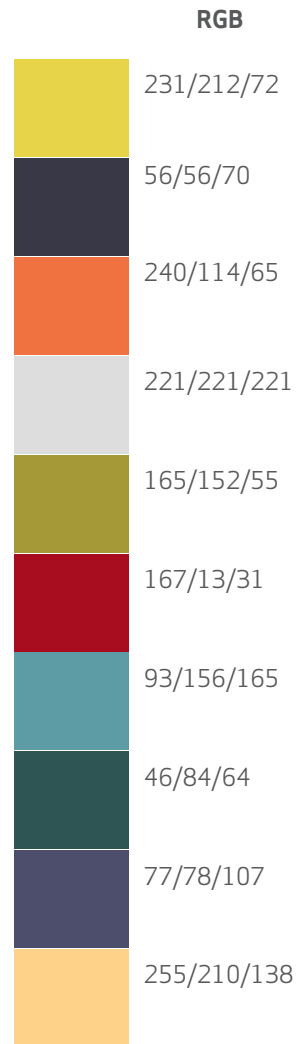
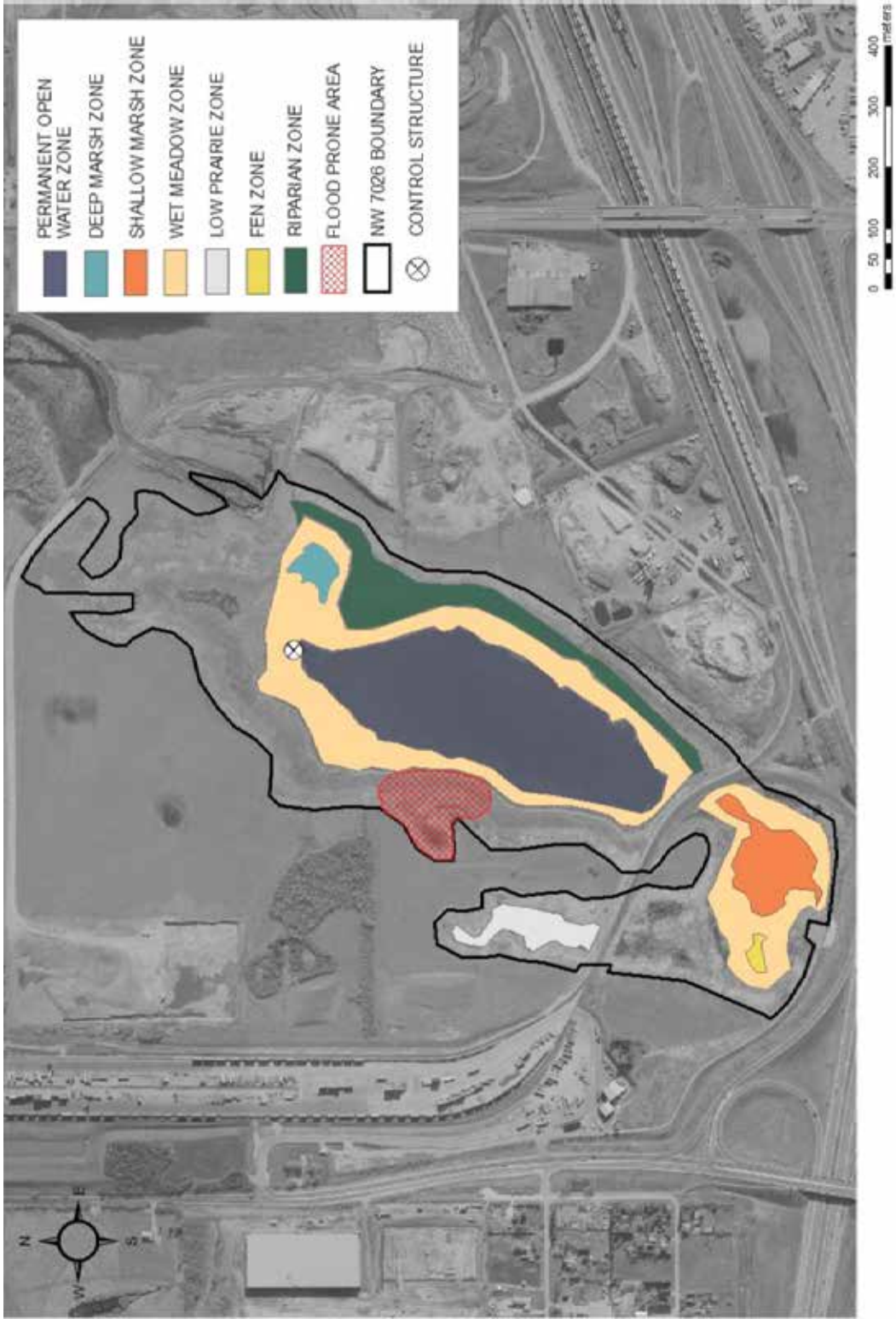


Figure 3. Suggested colour palette for mapping Hydrology features.

Map 4: Hydrology



MAP 5. VEGETATION:

- Delineate all distinct vegetation communities present on-site
- Vegetation communities should be labeled using the following conventions:
 - Dominant tree sp./dominant shrub sp./dominant forb or grass sp. (*genus* and *species*)
 - If available, Primary Land and Vegetation Inventory
 - Where possible, select colours from the vegetation colour pallet (Figure 4)
- Map the location of all rare plants or rare plant communities
 - Use a polygon to delineate large or significant patches
 - For point locations, map the rare plant using appropriate symbology and label all locations using the scientific name in the legend
- Map all Noxious or Prohibited Noxious weeds
 - Use a polygon to delineate large or significant patches:
 - Use a circle to map single point locations

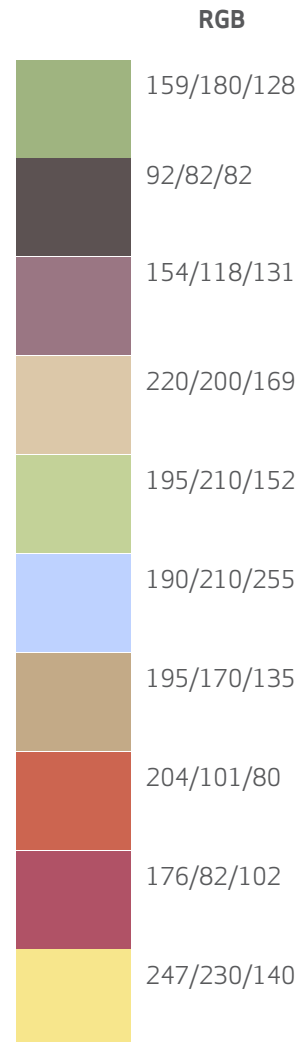


Figure 4. Suggested colour palette for mapping Vegetation features.

Map 5: Vegetation



MAP 6. WILDLIFE:

Delineate key habitats occurring on-site

- Where possible, select colours from the Wildlife colour pallet (Figure 3)
- Map any nests, den sites, or other important habitat elements that require special management
 - Where possible, select colours from the Wildlife colour pallet
 - Use appropriate symbology and label all habitat elements in the legend
- Map all wildlife passage structures
 - Where possible, select colours from the Wildlife colour pallet
 - Use appropriate symbology and label all habitat elements in the legend

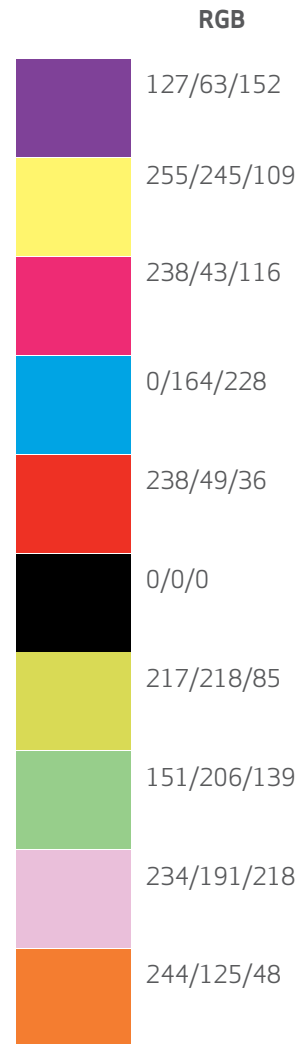


Figure 5. Suggested colour palette for mapping Wildlife features.

Map 6: Wildlife



MAP 7. REGIONAL CONTEXT:

Map the location of the natural area at a regional scale (suggested scale of between 1:90,000 and 1:115,000), with the City of Edmonton Ecological Network and other significant ecological features (e.g. provincial Environmentally Significant Areas)

- ESA
 - NA
 - RV
 - SNA
- Include other relevant features, such as road networks and the City of Edmonton boundary
 - Where possible, select colours from the Regional Context colour palette

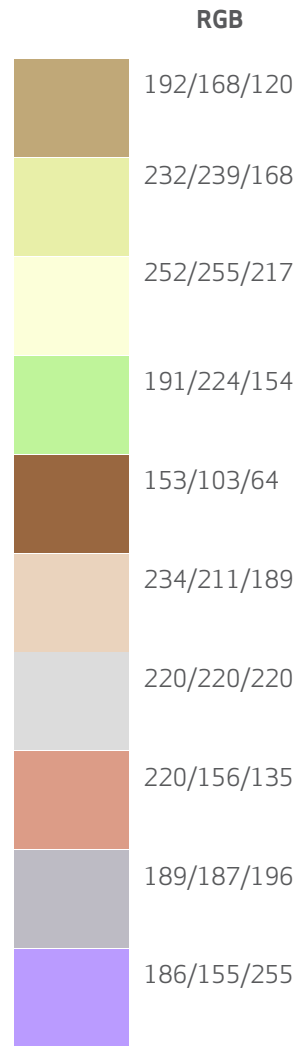
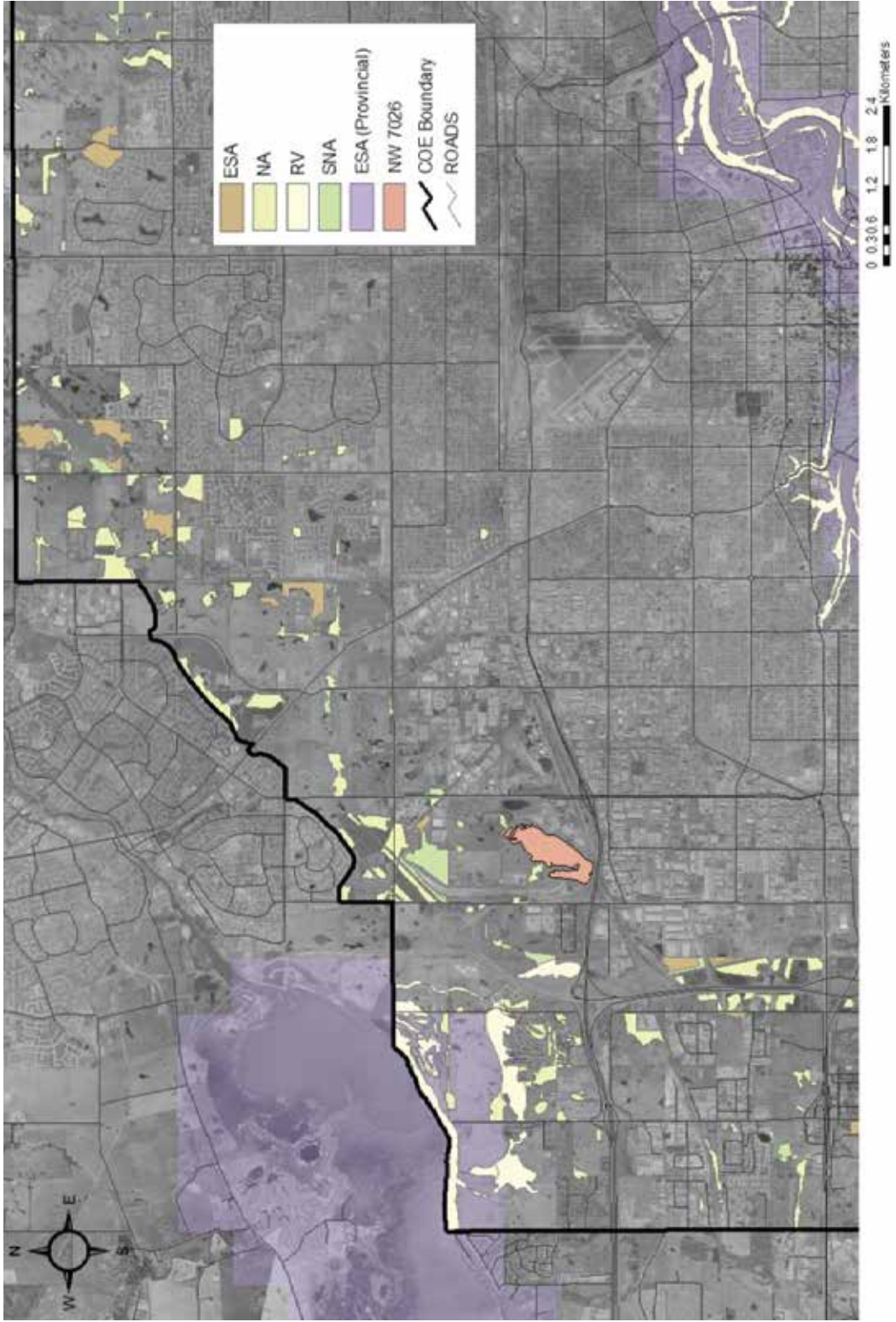


Figure 6. Suggested colour palette for mapping Landscape features.

Map 7: Regional Context



APPENDIX C: HUMAN USE MAP

A map detailing human use of the site, including trails, restricted areas, infrastructure, and site access must be included in Appendix C. All mapped features should be overlaid on an air photo of the site and the scale of the map should be appropriate for the site and features being mapped (suggested scale of between 1:1,000 and 1:10,000, unless otherwise stated). All maps must include a north arrow, a scale in meters, and a legend.

MAP 8. PUBLIC USE, INFRASTRUCTURE AND SITE ACCESS:

- Map any areas that are limited or restricted to public use
- Map any areas that pose a risk to public safety
- Map current and proposed on-site facilities, including (but not limited to):
 - Garbage cans
 - Directional signage
 - Educational signage
 - Wildlife viewing platforms
 - Public washrooms
 - Stormwater facilities
 - Existing or proposed public parking areas and/or transit stops within 500m
 - Existing or proposed Internal or perimeter trails
- Existing or proposed maintained or unmaintained roads
- Use appropriate symbology for those features that are not specified above and where possible select colours from the Public Use, Infrastructure and Site Access colour palette
- Label all features in the legend

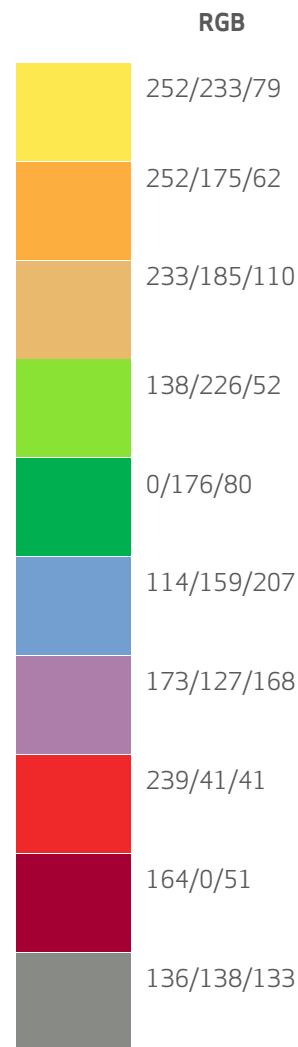
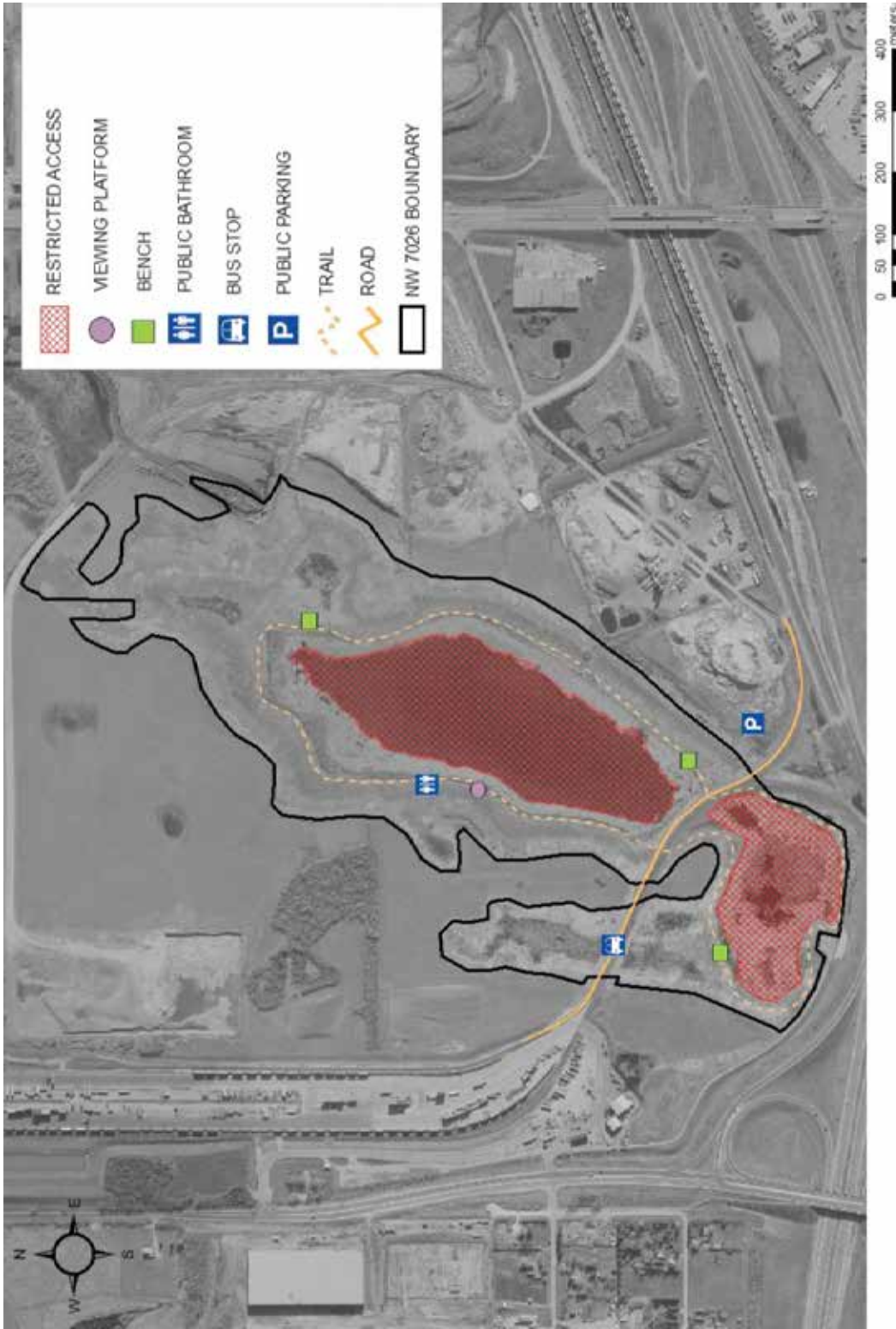


Figure 7. Suggested colour palette for mapping Public Use, Infrastructure and Site Access features.

Map 8: Public Use, Infrastructure and Education



APPENDIX D: HABITAT ENHANCEMENT AND RESTORATION MAP

A map clearly indicating the location of habitat enhancement and restoration features or elements must be included in Appendix D. This map should be overlaid on an air photo of the site and the scale of the map should be appropriate for the site and features being mapped (suggested scale of between 1:1,000 and 1:10,000, unless otherwise stated). All maps must include a north arrow, a scale in meters, and a legend.

MAP 10: HABITAT ENHANCEMENT AND RESTORATION

Provide a map that identifies the location and extent of any proposed habitat enhancement or restoration for the site. The following elements or features should be included on this map:

- Constructed wildlife habitat enhancement features such as artificial nesting structures (e.g., bird houses, nesting platforms), bat boxes, and wildlife passage structures
- Areas impacted by weeds or invasive plants that require active management
- Areas that will be enhanced with vegetation plantings
 - Use appropriate symbology and label all habitat elements in the legend
 - Where possible, select colours from the Habitat Enhancement and Restoration colour palette

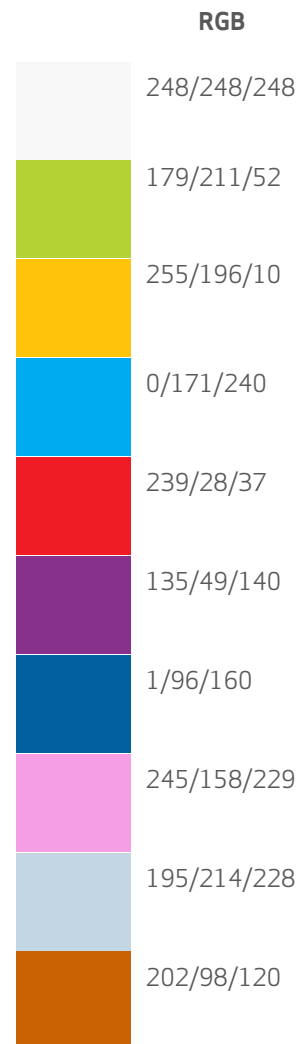
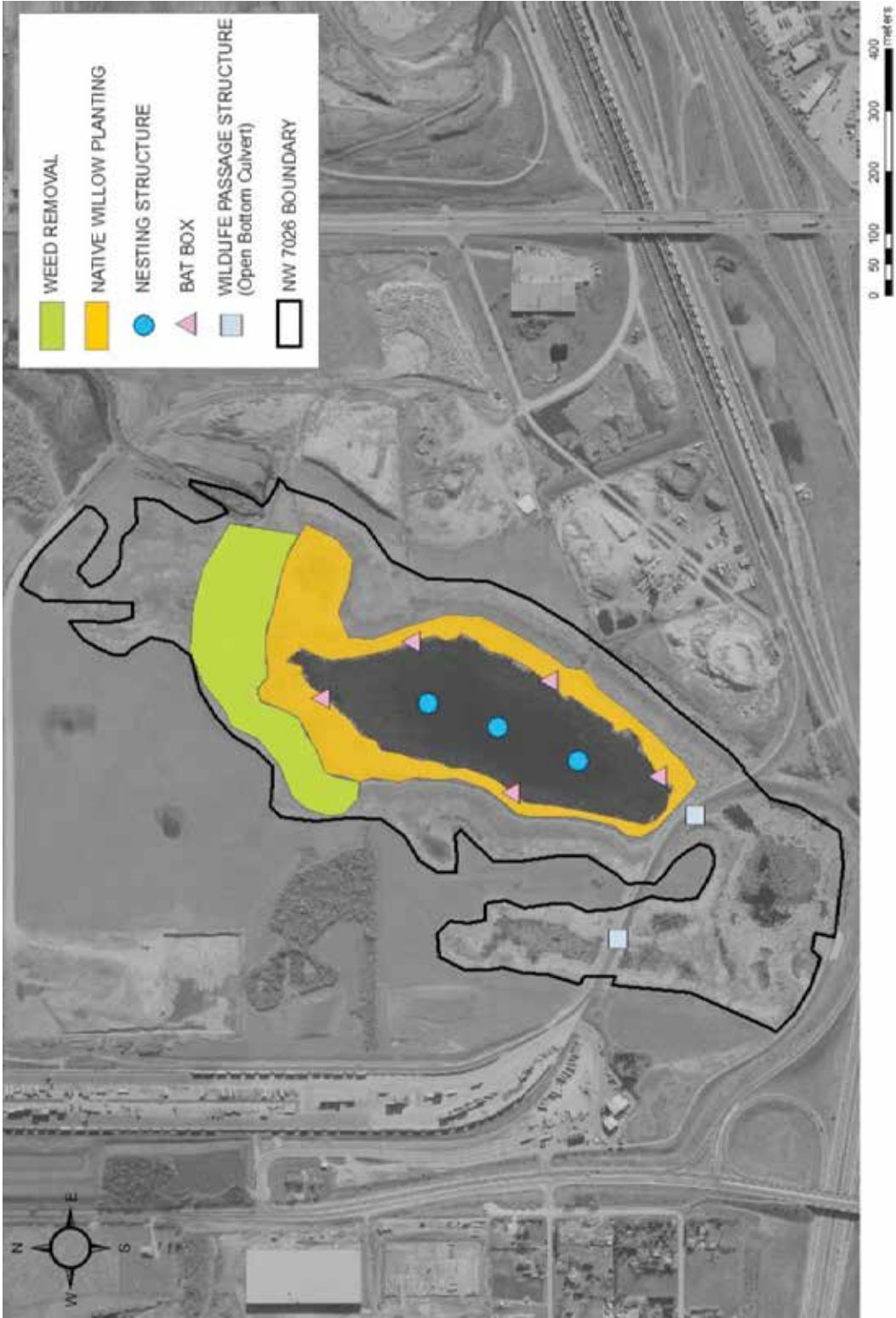


Figure 8. Suggested colour palette for mapping Habitat Enhancement and Restoration features.

Map 9: Habitat Enhancement and Restoration



NOTES
