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## ENVIRONMENTAL ASSESSMENT 4415 BEDWELL HARBOUR ROAD, NORTH PENDER ISLAND, BC

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**PREPARED FOR:**

Gulf Excavating Ltd.  
4415 Bedwell Harbour Rd  
Pender Island, BC  
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## Executive Summary

The Gulf Excavating Ltd. excavation company, located at 4415 Bedwell Harbour Rd., Pender Island, BC, has been operating as a concrete batch plant since 2016 and as a shale rock quarry since 2007. Gulf Excavating Ltd. has applied for a temporary use permit (TUP) for activities such as aggregate storage, redi-mix concrete batch plant operation and parking/storage of trucks and excavators. TRI Environmental Consulting Inc. and Islander Engineering Ltd. were retained by Gulf Excavating Ltd. to complete an environmental assessment (EA) to identify potential environmental effects of the proposed uses on site and provide measures for containment and management of contaminants on site for the protection of groundwater. This report presents the findings of the EA and is intended to support the TUP of the proposed uses.

This assessment characterizes the existing environmental conditions of the site, potential environmental impacts as well as mitigations and management of these impacts. The assessment focuses on effects to land use, ecosystem and vegetation, wildlife, species at risk, geology and soils, and groundwater.

The majority of the potential environmental impacts pertaining to the site include:

- Water quality- wash water from concrete trucks and potential waste water escaping from sediment tanks combining with surface runoff.
- Petroleum Hydrocarbon Management- proper storage and transfer procedures for petroleum hydrocarbons stored on site.
- Chemical Management- The handling and storage of chemicals, including documentation identifying chemicals used on site

These impacts are expected for the operation of a concrete batch plant and the impacts are expected to be manageable with the implementation of the mitigations, management plans and monitoring measures described in this report. The current conditions observed within the Site shows no visible impacts to the soil or vegetation.

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## 1.0 Introduction

TRI Environmental Consulting Inc. (TRI), a Canadian Construction Materials Engineering & Testing Inc. (CCMET) company, is pleased to present the findings of the Environmental Assessment (EA) conducted at the property located at 4415 Bedwell Harbour Rd, North Pender Island, BC (the "Site"). The Project was completed for Gulf Excavating Ltd. (the "Client").

### 1.1 Property Information

The property is located on the west side of Bedwell Harbour Road and is immediately north of the intersection of Bedwell Harbour Road and Otter Bay Road on North Pender Island, BC.

A Site location plan, Surrounding Land Use Plan and Site layout plan are presented on the appended Figures 1 through 3, respectively. Selected photographs, presented in Appendix A, show various features of the Site and surrounding areas.

The Site is part of the North Pender Island Local Trust Area. Pertinent legal information for the lot is summarized as follows:

| Table 1: Legal Site Information |  |   |   |
|---------------------------------|--|---|---|
| Parcel Identifier               | Legal Description  | Longitude and Latitude                    | Registered Owner                                |
| 018-948-421                     | Lot 1, Section 18, Pender Island, Cowichan District, Plan VIP59806 | 49° 47' 48.5" North<br>123° 7' 2.98" West | Glenn Leigh Grimmer and<br>Barbara Jean Grimmer |

A copy of the current land title for the Site is attached in Appendix B

The Site is currently zoned R (Rural) under the North Pender Island Land Use Bylaw No. 103 and as depicted on Schedule D. The zoning is intended to permit dwellings, agriculture, cottages on lots 1.2 hectares in area and larger, accessory home business, and, on lots greater than 2 hectares - accessory home industry.

### 1.2 Background

The Site has been used as a shale rock quarry since 2007 and is home to the Gulf Excavating Ltd. excavating company. It has been used as a concrete batching plant since 2016. Previous use of the Site has been for farming purposes. The property has been used for farming purposes as far back as 1932, as evidenced by aerial photos (See Appendix C) and was only slightly overgrown with low shrub by 2007. According to the current owners, the land was originally part of the former McDonald sheep farm.

The owner is applying for a temporary use permit (TUP) to allow for the following potential activities:

- aggregate (gravel, sand) storage and sales
- redi- mix concrete batch plant operation
- parking/storage of trucks and excavators(no maintenance):
  - concrete trucks (currently totals four (4) trucks)

- one truck and pup used for transport of granular materials
- two excavators
- ongoing use of the Site as a base of operations for – Gulf Excavating Ltd.

## 2.0 Scope of Work

The purpose of the Environmental Assessment (EA) was to identify potential impacts resulting from the proposed uses on the site and to propose measures to mitigate these impacts.

## 3.0 Methodology

The EA consisted of the following tasks:

- Documentation of the existing environmental conditions by conducting the following:
  - Obtain and review copies of relevant, available, historical documents, for example land titles and historical aerial photographs.
  - Collect and review relevant environmental information from the Island Trust.
  - Collect and review relevant environmental information from the British Columbia Ministry of Environment and Climate Change Strategy (MoE).
  - Review relevant physical data pertaining to the Site and surrounding area.
- Complete field assessments of aquatic, terrestrial and contaminated sites components
- Identify potential environmental effects on valued component caused by the proposed works.
- Suggesting mitigation strategies that can be implemented to avoid or minimize adverse environmental effects.
- Provide the findings and recommendations in a report.

## 4.0 Existing Environmental Conditions

### 4.1 Location and Land Use

#### Topography

The Site has an area of approximately 56,422 square meters (5.6 hectares / 13.94 acres). The Site has a topographical high on the southwest side of 60 m above sea level (masl) and is uniformly elevated at 58 to 60 masl to the northwest, west and southwest edges of the property. The land drops down uniformly to about 48 to 46 masl just east of the center of the Site and then slopes slightly down to 42 masl near the residence and yard at the northeast corner. The contour map (D-1) is presented in Appendix D – Supplemental Figures.

#### Site Layout

There is a residential dwelling located at the northeast corner of the Site which is serviced with a dug well (1.5 diameter, covered with concrete access port) with a depth of 4.5 m below grade (mbg) and in November had a water level of 0.7 mbg. The residence also has a septic field.

To the north of the dwelling is an area where boats, horse trailers and other older equipment is stored. An access lane from Bedwell Harbour Road, just south of the residence, leads to quarry area where crushed rock and sand is stored. Former shale quarrying occurred along the north side of the Site at the end of this access lane.

In the middle of the Site is the concrete batch plant which consists of a pull in bay area constructed of concrete blocks. Gravel, sand, cement powder and water sourced from settling tanks, is added to the concrete truck via a gravity fed hopper. Cement powder is stored on pallets (maximum 15 pallets each holding 90-40 kg bags of cement powder) that are tarped to protect the product from environmental conditions. Two half tanks (settling tanks), along the north side of the concrete pull in bay, hold water that is rinsed out from trucks after they return to the Site. The same water is pumped up to be re-used when mixing the next batch of concrete.

Just southeast of the settling tanks is a sea container which is used to store equipment and an above ground tank (AST) with a capacity of about 250 litres holding waste oil. There is no power service to the area of the batch plant or sea container.

The owner has excavated two depressions/reservoirs, one to the immediate northeast of the concrete batch plant area and a second one which to the west of the batch plant near the west property boundary. These reservoirs fill with ambient rain water and overland run-off and supply any additional water that is required for the concrete batch operation. The reservoir near the batch plant (reservoir #1) also receives water from excavated drainage ditches around the batch plant and the cleared area northwest of the plant as shown on Figure 3 and Photo 12 in Appendix A.

The four concrete trucks, two excavators (for the loading of supplies to the hopper and for an excavating business that also operates from this Site) and the truck and pup are stored on the Site but no maintenance on the machinery and vehicles is done at the Site. Instead they are taken to an off-Site shop for repair and maintenance. Occasional emergency maintenance or repairs may be conducted and this accounts for the presence of the waste oil tank.

### **Concrete Batch Plant Usage**

The batch plant is operated intermittently on an as-need basis. The owner estimates that approximately 400 yards of concrete is produced in a month. The number of concrete truck visits to the Site varies on demand. Smaller jobs can incur one to two concrete trucks visits to the Site per day; whereas there can be up to 10 to 15 visits per day for a large job. Each concrete truck can haul between 8 to 10 yards of concrete. Operational hours are Monday through Saturday during the day. The owner noted there are periods of days or weeks when no concrete is even produced.

### **Sand and Gravel Storage and Sales**

The owner has a truck and pup which brings in sand, drainage rock, and aggregate to the Site four to five times a week during operational hours. The sand and gravel is stored in the north quarry area.

### **Gulf Excavating Operations**

Gulf Excavating Ltd. quarries loose shale rock from the surface of the Site in several locations, but primarily the area depicted on Figure 3. Overburden removed in order to access the shale rock is stockpiled onsite. All quarrying is carried out with an excavator as the shale is brittle and is easily removed. Shale is loaded into trucks at the source for on an as needed basis for clients throughout the Pender Islands.

## 4.2 Ecosystem and Vegetation

The site is located in the Coastal Douglas-Fir (CDF) bio geoclimatic zone, moist maritime variant (CDFmm) which occurs at low elevations of approximately 150m and is limited to the southern region of Vancouver Island and the surrounding islands in the Gulf of Georgia (Meidinger & Pojar, 1991).

Based on Terrestrial Ecosystem Mapping (TEM) and Sensitive Ecosystem Inventory (SEI) Mapping, there are three broad ecosystems within the Site. The TEM and SEI show two main ecosystems Young Forest (YF) and Herbaceous: shrub (HB-sh). The secondary ecosystem located within the site is Wetland: swamp (WN-sp) (Appendix D – Supplemental Figure D-2). The site also contains two manually excavated reservoirs.

Most of the site area is composed of Herbaceous: shrub ecosystem while the outer perimeter of the site is mainly a young forest ecosystem. The secondary ecosystem Wetland: swamp is the area closer to Bedwell Harbour Road (Appendix D – Supplemental Figure D-2). A classification of the expected vegetation cover surrounding the site is described below based on a field assessment, BC Conservation data and Soils of Gulf Island report by Kenny et al. (1988)

### Coniferous trees

- Douglas Fir (*Pseudotsuga menziesii*)
- Sitka Spruce (*Picea sitchensis*)
- Western red Cedar (*Thuja plicata*)
- Grand Fir (*Abies grandis*)
- Shore Pine (*Pinus contorta*)

### Deciduous

- Arbutus (*Arbutus menziesii*)
- Red Alder (*Alnus rubra*)
- Black cottonwood (*Populus balsamifera*)
- Western flowering dogwood (*Cornus nuttallii*)
- Bitter Cherry (*Prunus emarginata*)

### Understory

- Black Hawthorn (*Crataegus douglasii*)
- Trailing blackberry (*Rubus ursinus*) Invasive
- English Ivy (*Hedera helix*) Invasive
- Salal (*Gaultheria shallon*)
- Dull Oregon grape (*Mahonia nervosa*)
- Salmonberry (*Rubus spectabilis*)

### Grasses and Shrubbery

- Common Snowberry (*Symphoricarpos albus*)
- Orchard Grass (*Dactylis glomerata*)
- Bulrush (*Schoenoplectus sp.*)
- Red Huckleberry (*Vaccinium parvifolium*)

#### 4.2.1 Young Forest Ecosystem

The young forest ecosystem is mainly located in the outer perimeter of the site and consists of the primary classifications Douglas- fir- Salal (Supplemental Figure D-2 - Appendix D). Most of the coniferous trees were less than 100cm in diameter except for one large Western red cedar tree (Photo 1). The coniferous trees on the site are less than 100 years and is considered a young forest



**Photo 1** Western red cedar (*Thuja plicata*)



**Photo 2** Douglas Fir (*Pseudotsuga menziesii*)



**Photo 3** Mixed young forest habitat

#### 4.2.2 Herbaceous: Shrub Ecosystem

The herbaceous ecosystem covers the greatest area of the site (Supplemental Figure D-2; Appendix D). The Herbaceous ecosystem is generally a non-forested area with less than 20% tree cover. It contains large openings within forested regions and contains grasses and herb species. Terrestrial Herbaceous ecosystems are characterized by their thin soil conditions that

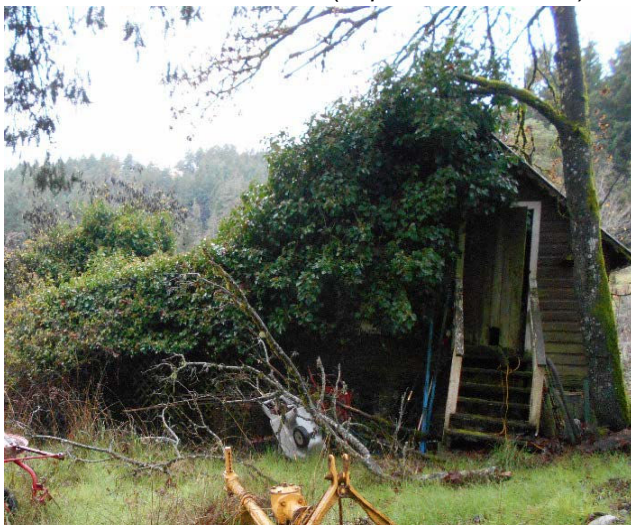
are easily disturbed. The vegetation in these ecosystems are vulnerable to human disturbances. Due to the shrub subclassification, this area within the site has >20% shrub cover.



**Photo 4** Black Cottonwood (*Populus balsamifera*)



**Photo 5** Black Hawthorn (*Crataegus douglasii*)



**Photo 6** Vegetation dominated by English Ivy



**Photo 7** Mixed shrub habitat

#### 4.2.3 Wetland/ Swamp Ecosystem

The wetland swamp area is limited to the site area closest to South of Bedwell Harbour Rd. (Supplemental Figure D-2; Appendix D). This area has the primary unit classification Western redcedar-Indian-plum, which generally occurs on fluctuating water tables. The high-water table limits rooting depth and soil bearing strength. The Western red cedar- Indian plum ecosystem often occurs in drainage channels and creeks running through cultivating fields. It is predominately a wet forest that is associated with rural creeks on level ground with fluctuating water tables. This ecosystem also contains more berry-producing shrubs which indicates richer sites (Green and Golumbia 2007).



**Photo 8** grasses and shrubbery on site South



**Photo 9** Wetland: swamp area on the site looking South

### 4.3 Wildlife

This section describes the available habitat for wildlife in general. Species at risk are discussed in Section 4.4. Based on the existing ecosystem conditions wildlife habitat exists in varying forms. Due to the nature of the CDF bio-geoclimatic zone, most habitats within the zone has fewer wildlife species. Given the presence of agricultural and residential land use within the site area, most mammalian species are likely common and widespread species suitable for the CDF habitat. These species may include black-tailed deer (*Odocoileus hemionus*), Raccoons (*Procyon lotor*) and Coyotes (*Canis latrans*). While black bears (*Ursus americanus*) are also common in the gulf islands, black bears were extirpated from Pender Island during initial development of the Island and the presence of black bears on the site is extremely low. Suitable songbird nesting habitat is available in the forested areas of the site as well as the more shrubby areas. Several songbirds were also observed on site during field assessments. The reservoirs located on site may serve as a potential habitat for amphibians (such as frogs, toads and salamanders) and common dabbling ducks, such as mallards.



**Photo 11** Black-tailed Deer (*Odocoileus hemionus*)

#### 4.4 Species at Risk

The BC Conservation Data Centre (CDC) maintains records of rare and endangered species and ecosystems in the province. These records are verified occurrences that have been mapped by the CDC. One BC red listed species<sup>a</sup> and one BC blue listed species<sup>b</sup> were noted in the area surrounding the site. The red listed species Dense-Spike Primrose (*Epilobium densiflorum*), was located within the site area. CDC data showed the area was first surveyed in July 1981 and the species was found along a roadside ditch. However, surveys in 2003 and 2004 failed to relocate the species (CDC 2016). Therefore, there is minimum potential for this species to be present on the site. The Northern Red-Legged Frog (*Rana aurora*) was also noted in the area surrounding the site and the wetland/swamp could serve as potential habitat for the Northern Red-Legged Frog. None of the species noted above were observed during the field assessment.

#### 4.5 Manually Excavated Reservoirs

Two manually excavated reservoirs are located in the site (Appendix A). The two reservoirs are shallow water features that intercept and holds surface water run-off. Overflow from reservoir #2 flows overland to the drainage ditch along Bedwell Harbour Road. The reservoirs are used as a water source to refill the setting ponds within the plant. Reservoir #1 dries out during the summer as it is smaller in volume while reservoir #2 retains water year-round. Reservoir #2 was built 10 to 15 years prior by the current owner. A tertiary reservoir previously existed on the Site and was decommissioned and filled two years ago due to safety reasons. The fill material was obtained from onsite sources. Both reservoirs retain pH levels within normal parameters (Table 2).

#### 4.6 Geology and Soils

The Site is underlain by the Galiano Formation which is a part of the Nanaimo Group which are folded and faulted sedimentary rocks which were subsequently glaciated and eroded. The soil survey of North Pender Island indicates the Site has three soil types, Galiano, Brigantine and Parksville-Tolmie, as shown on Supplemental Figure D-4 – Soil Units on the Site – Appendix D.

The most predominant soil is Galiano which consists of shaly loam, colluvial, residual and glacial drift materials, less than 50 cm deep over shale bedrock on strongly sloping land with northly aspect. It may also have exposed shale or siltstone bedrock or covered by moss or mineral soil less than 10 cm thick. This is a well-drained soil that appears on most of the southern half of the site and in intruding pockets along the north property boundary. The soil mapped here is very shallow and gravelly giving rise to a well-drained area. It is mapped as being on moderate and strongly sloping land, which concurs with the topographic contours for the Site.

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<sup>a</sup> BC Red Listed species Includes any indigenous species or subspecies that have, or are candidates for, Extirpated, Endangered, or Threatened status in British Columbia.

<sup>b</sup> BC Blue Listed Species Includes any indigenous species or subspecies considered to be of Special Concern (formerly Vulnerable) in British Columbia.

The Brigantine soil unit expresses itself as a tongue of soil from the northwest corner to approximately east centre of the Site. This soil mapped as a sandy loam to loamy sand that is less than 30 cm over coarser textured materials. It is usually mapped in narrow sloping areas surround depressional basins and draws. Since this material is mapped as near the middle of the basin like slopes of the Site, it is suitable that it is mapped as being present here. This soil unit usually has imperfect drainage.

The Parksville-Tolmie soil unit is mapped in the northeast portion of the Site around a tongue of Galiano soils. This is where the residential dwelling and equipment storage yard is located. This is a sandy loam to loamy sand marine or fluvial deposit (30-100 cm thick) over silty clay loam to silty clay marine deposits more than 100 cm deep). It has a modifier “lo” which indicates it is acting as a loamy cap of less than 30 cm thick over coarser textured materials. Typically, the drainage of this soil is poor but with coarser textures beneath, it would only serve to prolong infiltration to the coarser soils. It is mapped as being present on gentle to very gentle slopes which concurs with the topographic contours of that NE corner area.

The three soil groups are summarized below.

| Table 2 - Summary of Soil Group Classification |   |  |  |                              |               |                 |                 |
|--|---|--|--|------------------------------|---------------|-----------------|-----------------|
| Soil Symbol                                    | Soil Group                              | modifiers  | Material Description   | Slope Classes and Topography |               |                 |                 |
|  |   |  |  | Slope Class                  | Percent Slope | Approx. Degrees | Terminology     |
| <b><u>GAs/vg</u></b><br>5-6                    | Galiano Soils – Orthic Dystric Brunisol | <b>sl</b> =very shallow lithic less than 50 cm to bedrock  | 1° - Shaly loam, colluvial, residual, and glacial drift materials less than 100 cm deep over shale or siltstone bedrock (75%-100%) | 5                            | 10-15         | 6-8.5           | Moderate slopes |
|  |   | <b>vg</b> =very gravelly (>50% coarse fragments by volume) | 2° - Shale or siltstone bedrock exposed or covered by moss or mineral soil less than 10 cm   | 6                            | 16-30         | 9-17            | Strong slopes   |

| Table 2 - Summary of Soil Group Classification |  |  |   |                              |               |                 |                    |
|--|--|--|---|------------------------------|---------------|-----------------|--------------------|
| Soil Symbol                                    | Soil Group                                   | modifiers  | Material Description  | Slope Classes and Topography |               |                 |                    |
|  |  |  |   | Slope Class                  | Percent Slope | Approx. Degrees | Terminology        |
| <b><u>BE/lo</u></b><br>4-6                     | Brigantine Soils – Gleyed Dystric Brunisol   | <i>lo</i> =loamy cap less than 30 cm over coarser textured materials | 1° - Sandy loam to loamy sand marine or fluvial deposits (30-100 cm thick) over silty clay loam to clay loam marine deposits more than 100 cm deep (70%-100%) | 4                            | 6-9           | 3.5-5           | Gentle slopes      |
|  |  |  | 2° - Sandy loam to loamy sand marine or fluvial deposits (30-100 cm thick) over silty clay loam to silty clay marine deposits of more than 100 cm deep)       | 6                            | 16-30         | 9-17            | Strong slopes      |
| <b><u>PA/lo-TL</u></b><br>3-4                  | Parksville-Tolmie soils Orthic Humic Gleysol | <i>lo</i> =loamy cap less than 30 cm over coarser textured materials | 1° - Sandy loam to loamy sand marine or fluvial deposits (30-100 cm thick) over silty clay loam to silty clay marine deposits more than 100 cm deep (50%-75%) | 3                            | 2-5           | 1-3             | Very gentle slopes |
|  |  |  | 2° - Loam to silty clay marine deposits more than 100 cm deep, often with sandy loam materials in pockets or thin layers                                      | 4                            | 6-9           | 3.5-5           | Gentle slopes      |

Two areas on and close to the Site are marked on the soil map as shale pits: one in the northwest corner and another near the south west corner.

#### 4.7 Groundwater

According to the owner, three wells have been advanced on the Site. There is a shallow dug well servicing the residential dwelling. A more recent well was drilled (#1885), depth ~60 m and water table at 2.23 mbg but has not been hooked up to any operations.

The aquifer vulnerability beneath the Site has been mapped using a vulnerability methodology developed by the US Environmental Protection Agency, known as DRASTIC. DRASTIC is an

acronym for the seven parameters that can influence the vulnerability of a groundwater resource: D - Depth to water, R – (net) Recharge, A - Aquifer medium, S - Soil medium, T – Topography (slope), I - Impact of vadose zone and C – (hydraulic) Conductivity. Since the bedrock on Pender figures highly in the transport and movement of groundwater, an additional factor – fractured media or fm was included as an eighth parameter when the island was mapped. Figure D-5 – Groundwater Vulnerability (Appendix D) shows the classification of the aquifer vulnerability as mapped from the Island Trust interactive maps.

Most of the Site to the north and south is classified as having a moderately high vulnerability. This means that if there are any potential contaminants present on the Site that can be moved via water down into the ground, the aquifer is moderate to highly vulnerable to impact.

The moderately to high mapped vulnerable areas are separated by mapped moderately low to low areas of vulnerability that mirror the presence of the Brigantine soil mapped unit. Surprisingly there is a high vulnerability mapped areas along the east side of the Site from the middle to the north boundary and beyond. This somewhat corresponds to the Parksville-Tolmie soils unit and the high rating is probably due to the perching of on aquifer atop the clay loams in the area, making the aquifer very close to the surface and very susceptible to impact.

## **5.0 Interviews**

Glen and Aaron Grimmer of Gulf Excavating Ltd. were asked to fill out a Phase 1 Environmental Assessment Questionnaire regarding the historical site usage and activities. A copy of that completed questionnaire is presented in Appendix E.

## **6.0 Current Land Use and Potential Contamination**

### **6.1 Site Inspection Observations**

TRI and a representative from Islander Engineering visited the Site on November 28, 2018 and toured the Site with the current owners Glenn and Aaron Grimmer. The Site inspection was conducted to identify any potential environmental areas of concern (APECs) that could give rise to environmental contamination.

The following items/areas were noted on the Site inspection:

- The pH of water within the sedimentation tanks was measured and the results are provided below in Table 2
- The sedimentation tanks were open to the elements and did not have any secondary containment
- Ditches conveyed water away from the batch plant to Reservoir #1. The pH of this reservoir was measured and the results are provided in the Table 1 below. The results indicated the water pH was near neutral.
- The pH of the water in Reservoir #2 by the east side of the property was also near neutral as indicated by measurements made on-Site. (See Table 2)
- There were at least three “tidy tanks”, small ASTs used to fuel excavating equipment and generators, which were present on the ground. It was commented that the tanks

are normally located within a truck bed so that they can be moved around the Site to where fuelling operations need to occur.

- There were no noted stains on the soil surface or stressed vegetation.
- MSDS sheets of all chemicals used on the Site were provided by the operator and are appended.
- Cement powder is stored on wooden pallets and covered with plastic to protect it from the elements.

| <b>Table 3: Summary of pH and Temperature of on-Site Reservoirs and Sedimentation Tanks</b> |                             |           |                               |
|---|-----------------------------|-----------|-------------------------------|
| <b>Date</b>   | <b>Location</b>             | <b>pH</b> | <b>Water temperature (°C)</b> |
| 28 November 2018  | Reservoir #1                | 7.01      | 9.1                           |
| 28 November 2018  | Reservoir #2                | 7.42      | 8.9                           |
| 28 November 2018  | Sedimentation tank Sample 1 | 12.05     | 8.3                           |
| 28 November 2018  | Sedimentation tank Sample 2 | 12.86     | 8.1                           |

## 6.2 Potential Environmental Impacts

### 6.2.1 Water Management

The water pH measurements made on the sedimentation tanks reflect the concrete batch plant operations. As most wash water from the trucks is placed within these tanks it is expected that the pH values are quite basic and this was confirmed by the pH measurements made during the Site visit. We note that any surface run off that escapes capture into the current sedimentation area is directed by ditches and ends up in the reservoirs further down the Site. The pH readings of the man-made reservoirs do not appear to show an adverse effect on the pH of the water of in the man-made reservoirs. This is very important to note as the sedimentation tanks are not covered from environmental influences and the documented high precipitation of the winter months on North Pender Island may have the potential to increase the water within the sedimentation tanks to a point of overflowing.

Any escape of high pH or basic water is not an acceptable discharge for an operation as it may percolate into the near surface aquifers or may travel down to the lower deeper bedrock aquifers. In addition, we do not know other chemicals may be present in the sedimentation tanks. Although the MSDS sheets of the chemicals stored and used on the Site have been provided, it is unknown what concentrations of them may be present in the sedimentation water. The water on the Site was not tested for any other chemicals that may be present. It is also noted that portions of the Site are rated as moderately to highly vulnerable to potential contaminants.

In the summer months, it is noted that water evaporates from the man-made reservoirs, indicating that any escaped water from washing out of trucks will infiltrate the soils, which is known to have a high pH and possibly other chemicals. In the winter, water management is more pro-active and water is directed to overflow areas which helps limit the amounts of water that could enter into the soils. The sedimentation tanks do not have any secondary containment and are open allowing precipitation to enter. Although the addition of precipitation will likely help dilute the basic pH waters, it may also allow these waters to overflow the sedimentation tanks.

### **6.2.2 Petroleum Hydrocarbon Management**

It was noted during the Site visit that a number of portable Tidy Tanks are used in the operations. At the time of the visit a number of these tanks were present on the ground. No staining or odours noted in the vicinity of the tanks. It was relayed to us that these tanks are typically located within trucks for movement to the areas where the petroleum is needed.

The tanks are specifically purpose built for the transport of petroleum hydrocarbons but they also need to be placed in secondary containment areas when they are put on the ground so as to prevent any potential spillage of fuels.

No spill containment measures were noted in the area or spill management products were noted as being present.

The presence of a waste oil tank in the large seacan transportation container serves as a rudimentary secondary containment to this vessel.

### **6.2.3 Chemical Management**

It was noted during the Site visit that most chemicals used on the Site are stored on pallets with plastic covers, in large plastic industrial totes or inside the metal shipping container. A review of the MSDS sheets indicated that some of the chemicals contain the following which, if released to the environment, may create adverse impacts to soil or groundwater. Specific chemicals noted are:

- Master Polyheed N – calcium chloride
- Nuto H68 – hydraulic fluid
- Master Rheobuild-1000 – Napthlene Sulphonate

Most of the provided MSDS and technical data sheets indicate the chemical should not be released to the environment. Although current storage measures appear to be sufficient, steps should be undertaken to ensure that no release to the environment is occurring during chemical usage.

## **7.0 Mitigation Measures**

The following mitigation measures are recommended for the property if it continues to be used for the described operations.

1. Water Management Plan and
2. Petroleum Hydrocarbon Management Plan
3. Chemical Handling and Storage Plan

## 7.1 Water Management Plan

A water management plan needs to be created with input from qualified environmental consultants and implemented that will address the following issues:

- A method to ensure that all wash water from concrete trucks is captured
- Wash water from concrete trucks is placed into sedimentation tanks
- Sedimentation tanks must be protected from the elements such that additional precipitation will not allow any water to overflow the tanks
- A baseline of the quality of the water captured in the sedimentation tanks undertaken
- If any adverse chemicals are shown to be present in the sedimentation tanks at levels that exceed current BC regulated standards that:
  - Further investigation of the soil and groundwater in the area be conducted to see if there have been any adverse impacts given the previous two-year operation
  - A baseline measurement of the nature of the soil, groundwater and stored water (in reservoirs) be documented for the Site.
  - Inclusion of the specific chemicals and management of them on the Site is documented for operational purposes.
- A method for inspection and reporting designed to show compliance with the management plan

## 7.2 Petroleum Hydrocarbon Management Plan

A petroleum hydrocarbon management plan needs to be implemented at the Site that will ensure that:

- All vessels used for the containment and transport of petroleum hydrocarbons have built-in secondary containment
- That all petroleum hydrocarbon transfer protocols be designed and followed such that any spillage from the fuelling of vehicles on the Site is avoided.
- Although the volumes of petroleum hydrocarbons present on the Site are in smaller volumes (less than 100 litres for Tidy Tank containers), there needs to be a spill management plan created and actual materials stored for spill response in the event that there should be a spill. Personnel need to be trained in what should be done to mitigate the effects of a potential spill of petroleum hydrocarbon product.
- That the need for a waste oil tank is justified for the operations currently being conducted on the Site. If not justified, then the waste oil tank should be removed and any emergency waste oil collection be made in smaller containers and removed off-Site as necessary.
- That measures used for the transfer of waste oils into the tank(s) ensures that there is no escape to the environment.
- A method for inspection and reporting to ensure that the plan is being followed.

## 7.3 Chemical Storage and Handling Plan

A chemical storage and handling plan should be created to review the types of chemicals being used at the Site and to ensure proper storage and handling. Although the storage of chemicals currently appears to be sufficient, the handling and use of the chemicals is unknown and should

be documented to ensure that there are no accidental releases to the environment. This should be updated yearly to account for any new acquired or discontinued uses of chemicals.

## **8.0 Summary and Conclusion**

Currently the Site has been used for aggregate storage/sales, the base of operations for Gulf Excavating Ltd. and the operation of a part-time concrete batch plant for the Pender Islands. The current condition of the Site is such that there are no visible impacts to the soil and plants on the Site. The three main potential environmental impacts that were identified for the Site include, in descending priority, are:

1. Wash Water and Sedimentation Tanks – Specifically the presence of wash water from concrete trucks that does not get captured during the operation of the concrete batch plant and the prevention of water from escaping sedimentation tanks on the Site
2. Petroleum Hydrocarbon Storage and Transfer Procedures – Although relatively small volumes of petroleum hydrocarbons (up to 250 Litres) are stored on the Site, the containers and transfer protocols need to be examined and, if needed, revised or upgraded (in the case of actual vessel containment) to protect the Site from any accidental release.
3. Chemical Storage and Handling – Although not specifically an issue at this time, the study did not allow for observations on the handling of the chemicals. Documentation and abiding by a management plan should be implemented that will prevent any release of chemicals into the environment.

Creation of management plans and protection measures for each of these three areas, but most importantly for water management, will help mitigate any potential risks of impact at the Site for the currently described activities. The management plan for the water on the Site must include a method of annual checking and reporting to ensure compliance with the plan so as to protect this Site that has moderate to highly vulnerable areas susceptible to environmental impacts.

## **9.0 Professional Statement**

The persons signing this report have demonstrable experience in assessment and remediation of the type of potential contamination associated with this type of property to which this report and statement apply.

The information and data were collected and compiled in accordance with the general level of care and skill normally exercised by environmental science and engineering professionals practicing under similar circumstances.

## **10.0 Closure**

This report was prepared by TRI and Islander Engineering for the exclusive use of the Client.

The reported information is believed to provide a reasonable representation of general environmental conditions at the Site. The environmental investigations were limited to those areas and potential contaminants specifically addressed in the report. During the preparation of this report, TRI has relied on reports, data, studies, plans, specifications, documents and other information provided by others.

TRI has taken care to verify the information provided where possible but makes no warranty as to the accuracy of the reports, data, studies, plans, specifications, documents and other information prepared by others and accepts no responsibility for information contained in them.

No third party may use this report, or rely on the contents of this report, for any purpose, unless that third party obtains the written authorization of both TRI and the Client. Any authorized or unauthorized use by a third party of the foregoing report, or any reliance upon or decisions made by a third party based on them is the sole responsibility of such third parties. TRI Environmental Consulting Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by that third party based on the foregoing report.

This report is subject to the aforementioned limitations. For any questions and/or comments regarding the report, please contact the undersigned at (604) 436-3384, or via email at [info@tri.bc.ca](mailto:info@tri.bc.ca).

Respectfully submitted,


**TRI Environmental Consulting Inc.**


Prepared By:

Prepared By:

Per:

Per:


  
Sandamini Bandara, B.Sc.  
Environmental Scientist

  
Lori C. Larsen, P.Ag. CSAP  
Senior Environmental Professional  
& Approved Professional

  
Leandro Torrella, R.P.Bio.  
Biologist

Reviewed by:

Per:

  
Sean Babulic, EiT  
Environmental Engineer

## 11.0 References

BC Conservation Data Centre (CDC). 2016 BC Species and Systems Explorer. Available at <http://a100.gov.bc.ca/pub/eswp/>. Accessed December 2018

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Liggett, Jessica, Lapcevic, Pat, & Miller, Kate (May 2011). A Guide to the Use of Intrinsic Aquifer Vulnerability Mapping

Meidinger, D., & Pojar, J. (1991). Ecosystems of British Columbia. *Special Report Series-Ministry of Forests, British Columbia*, (6).

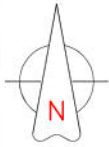
North Pender Island (1996) *Land Use Bylaw No. 103 – Schedule D*

North Pender Island Official Community Plan (2007) *ByLaw 171 – Schedule B Land Use Map*

North Pender Island Official Community Plan (2007) *ByLaw 171 – Schedule G – Agricultural Land Reserve*

North Pender Island Official Community Plan (2007) *DPA Compilation Map*

Parks Canada, Island Trust, & Province of BC (February 15, 2007) *Sensitive Ecosystems on North Pender Island Airphoto – 2004*



MAP LOCATION



### LOCATION PLAN

REFERENCE: GOOGLE MAPS

SCALE: N.T.S.

GULF EXCAVATING LTD.



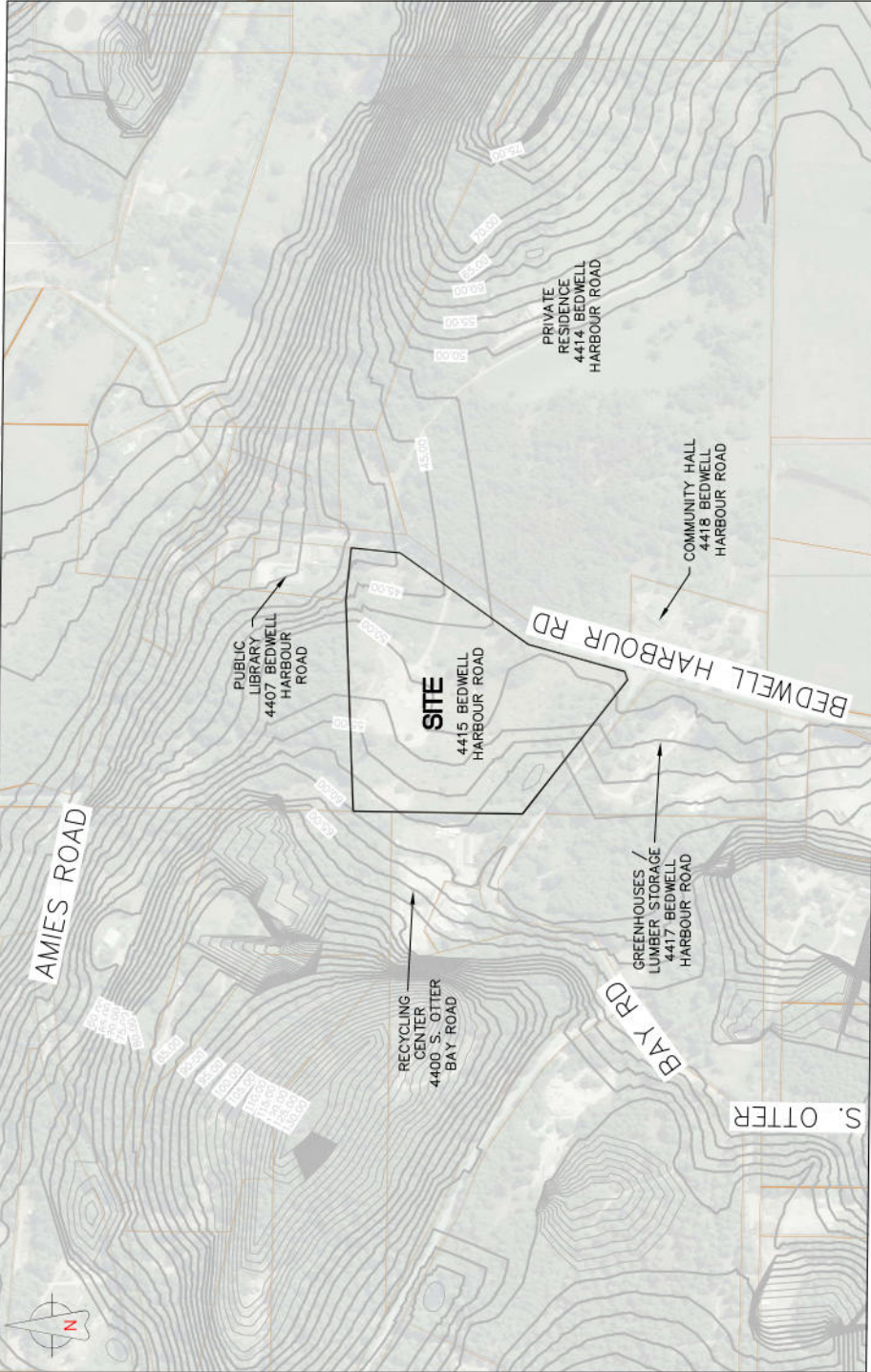
**ISLANDER**  
ENGINEERING  
www.islanderengineering.com

**LOCATION PLAN**  
**4415 BEDWELL HARBOUR ROAD**

|                         |                  |
|-------------------------|------------------|
| date:<br>DEC 04 2018    | scale:<br>N.T.S. |
| drawn:<br>SB            | checked:<br>LL   |
| file:<br>2181           |                  |
| drawing no:<br>FIGURE 1 | issue:<br>A      |

**LEGEND**

— APPROXIMATE LEGAL LOT LINE



CLIENT NAME: GULF EXCAVATING LTD.  
PROJECT LOCATION: PENDER ISLAND, BC

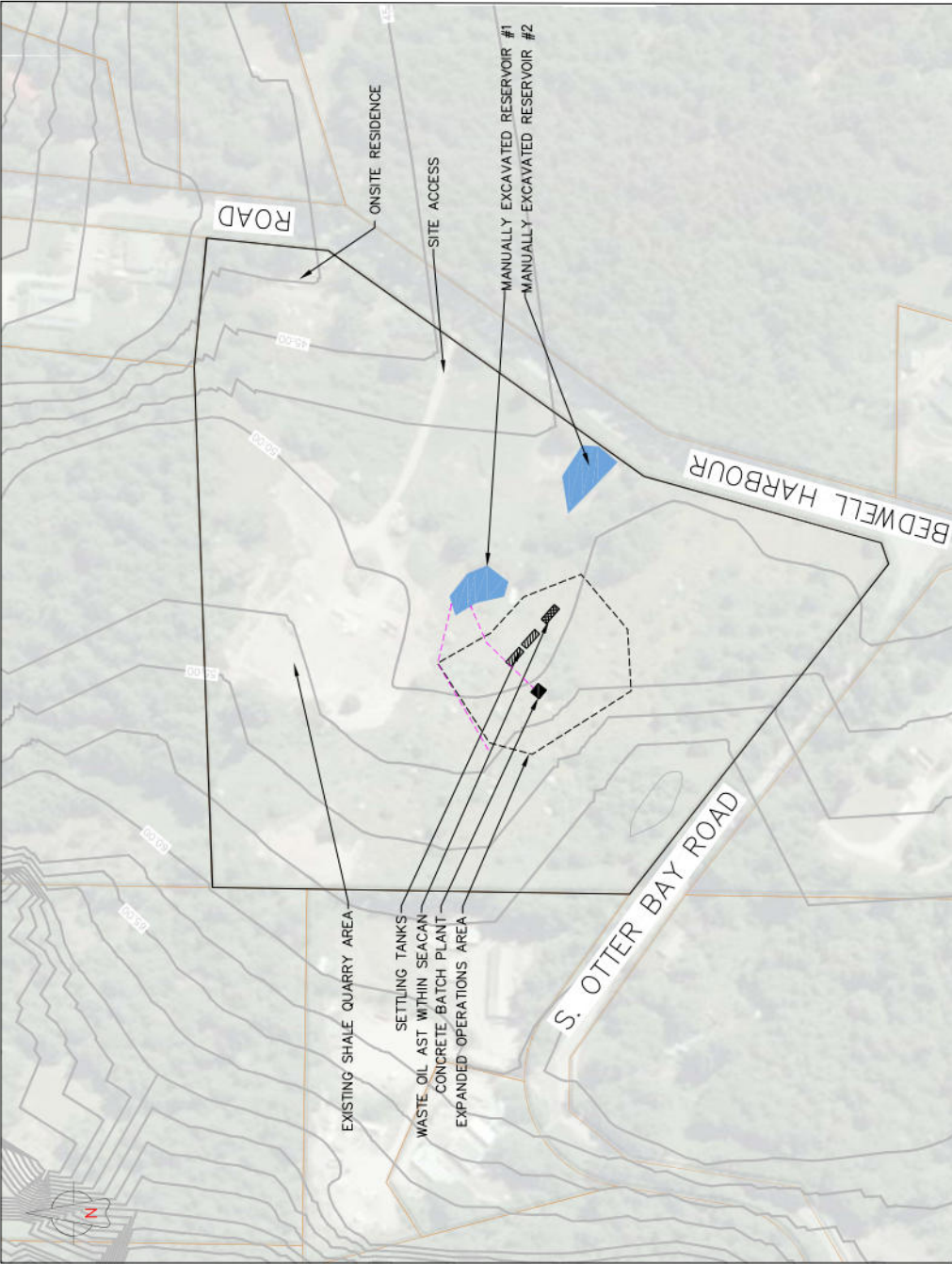
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4415 BEDWELL HARBOUR ROAD**

DWG. BY: SB DATE: 2018-12-04  
CHK'D: LL PLT: CAPRIE: 2181

REFERENCE: CVRD WEBMAP



FIGURE 2



**LEGEND**

- APPROXIMATE LEGAL LOT LINE
- ◆ CONCRETE BATCH PLANT
- MANUALLY EXCAVATED RESERVOIR
- ▨ SETTLING TANK
- ▨ SEACAN
- - - EXISTING DRAINAGE DITCHING



CLIENT NAME: GULF EXCAVATING LTD.  
 PROJECT LOCATION: PENDER ISLAND, BC

**SITE FIGURE**  
**4415 BEDWELL HARBOUR ROAD**

DWG BY: SB      DWG DATE: 2018-12-31      FIGURE 3  
 CHK'D: LL      PLT'D:      CAPRILE: 2181



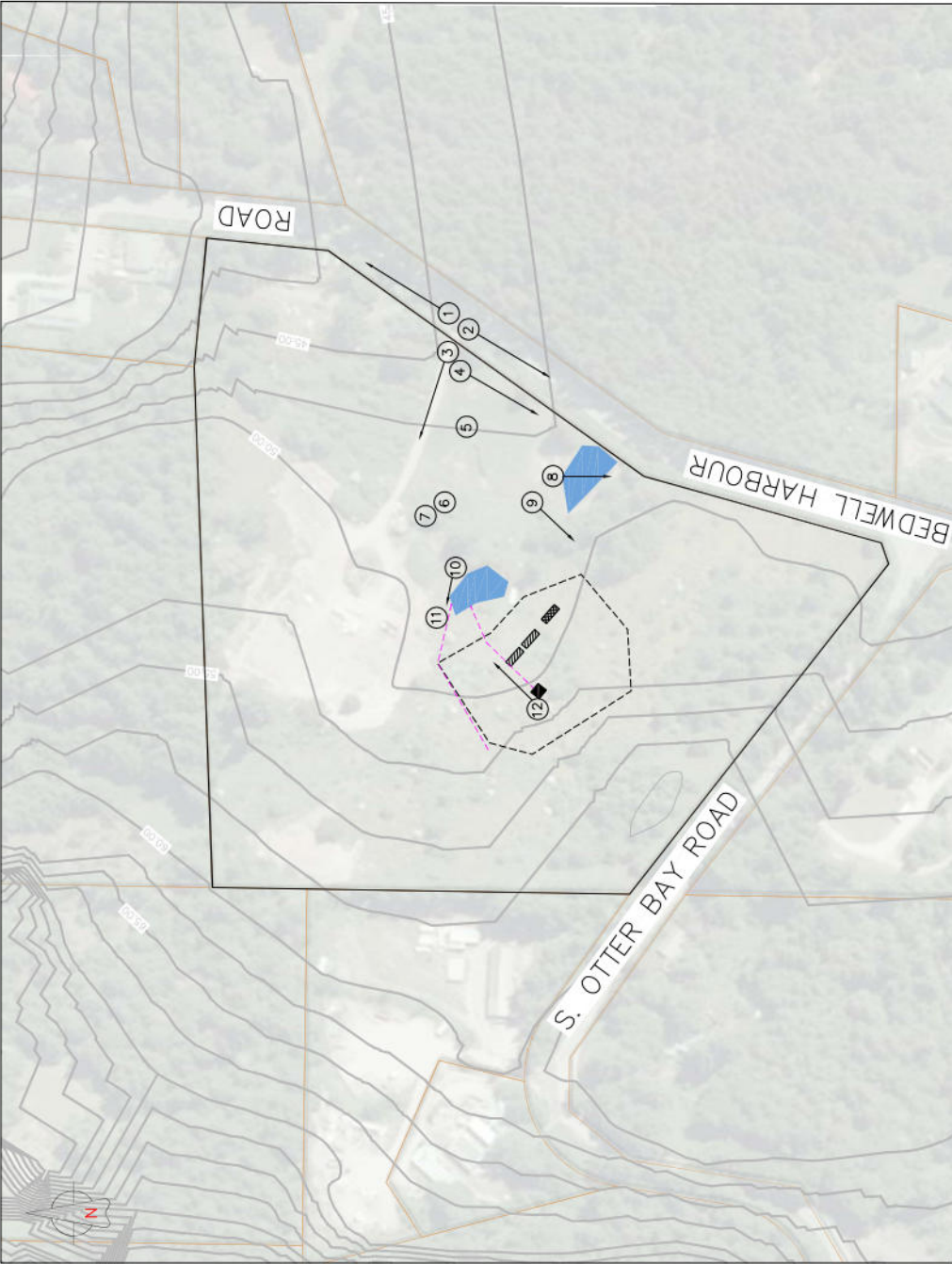
NOTE: LOCATIONS DETAILED WITHIN FIGURE ARE APPROXIMATE

REFERENCE: CRD WEBMAP

## Appendix A

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### Photo Log Figure Photo Log



**LEGEND**

- APPROXIMATE LEGAL LOT LINE
- ◆ CONCRETE BATCH PLANT
- MANUALLY EXCAVATED RESERVOIR
- ▨ SETTLING TANK
- ▩ SEACAN
- - - EXISTING DRAINAGE DITCHING
- ① PHOTO NUMBER — LOOKING DOWN
- ② PHOTO NUMBER — ARROW INDICATING VIEW DIRECTION
- ⑤ DUG WELL
- ⑥ ABANDONED DUG WELL
- ⑦ DRILLED WELL



CLIENT NAME: GULF EXCAVATING LTD.  
 PROJECT LOCATION: PENDER ISLAND, BC

|                         |                 |                  |
|-------------------------|-----------------|------------------|
| TITLE: <b>PHOTO LOG</b> |                 |                  |
| DWG. BY: SB             | DWG. NAME: 2181 | DATE: 2018-12-31 |
| CHK'D: LL               | PLT'D:          | CADFILE: 2181    |
|                         |                 | APPENDIX A       |

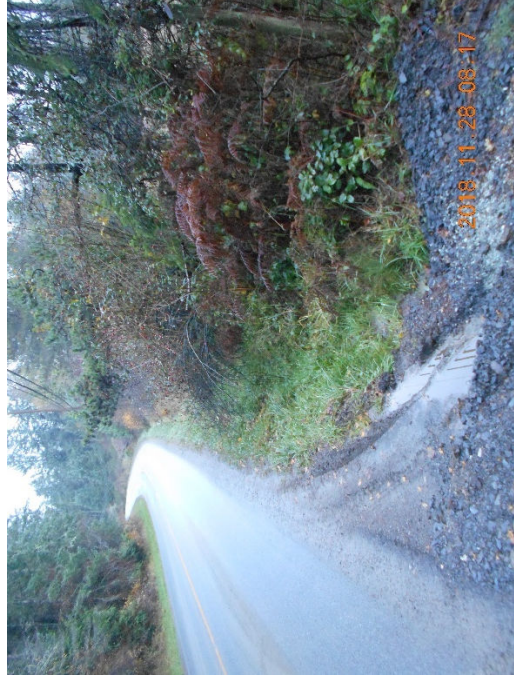
NOTE: LOCATIONS DETAILED WITHIN FIGURE ARE APPROXIMATE



REFERENCE: CRD WEBMAP



**Photo 1: Site entrance facing north along Bedwell Harbour Road.**



**Photo 2: Site entrance facing south along Bedwell Harbour Road.**



**Photo 3: Site access road facing west from Bedwell Harbour Road entrance.**



**Photo 4: Looking south from access road across non-forested field.**



**Photo 5: Drilled well.**



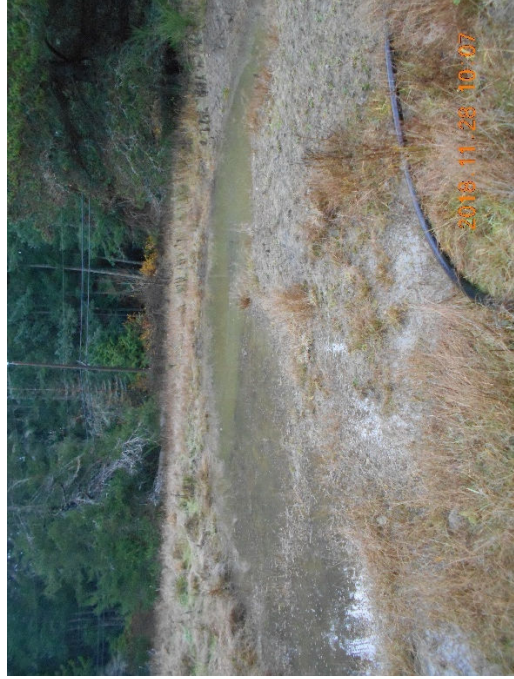
**Photo 6: Dug well.**



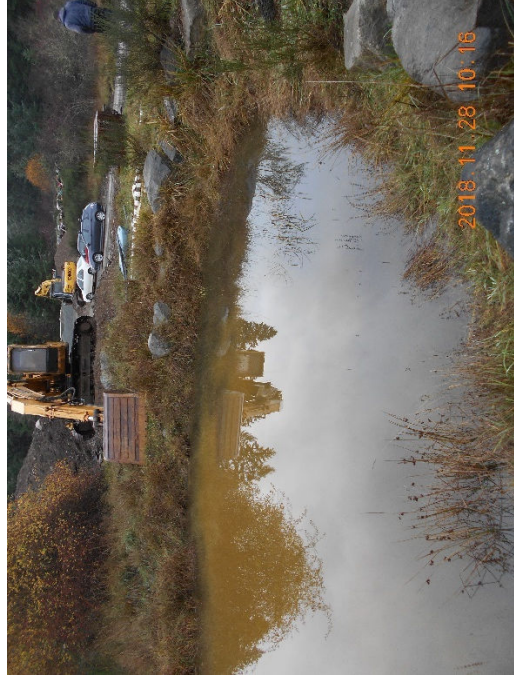
**Photo 7: Abandoned dug well.**



**Photo 8: Reservoir #2 in shrubland and mixed forest habitat facing south.**



**Photo 9: Floodplain habitat facing south.**



**Photo 10: Reservoir #1 facing operations area**



**Photo 11: Corrugated steel culvert beneath plant area access road and ditching draining into Reservoir #1.**



**Photo 12: Operation area, ditching and ponding next to concrete batch plant. Steel settling tanks visible behind mini excavator.**

## Appendix B

---

**Legal Title  
BC Online Report**

**TITLE SEARCH PRINT**

2018-12-20, 15:08:41

File Reference: T18-017-9

Requestor: Ryan Pallard

Declared Value \$ 499000

**\*\*CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN\*\***

|                                       |  |
|---------------------------------------|--|
| <b>Land Title District</b>            | VICTORIA   |
| Land Title Office                     | VICTORIA   |
| <b>Title Number</b>                   | CA242050   |
| From Title Number                     | EJ91591  |
| <b>Application Received</b>           | 2006-06-30   |
| <b>Application Entered</b>            | 2006-07-05   |
| <b>Registered Owner in Fee Simple</b> |  |
| Registered Owner/Mailing Address:     | GLENN LEIGH GRIMMER, TRUCK DRIVER<br>BARBARA JEAN GRIMMER, AGROLOGIST<br>2310 GRIMMER ROAD<br>PENDER ISLAND, BC<br>V0N 2M1<br>AS JOINT TENANTS |
| <b>Taxation Authority</b>             | Capital Assessment Area  |
| <b>Description of Land</b>            |  |
| Parcel Identifier:                    | 018-948-421  |
| Legal Description:                    | LOT 1, SECTION 18, PENDER ISLAND, COWICHAN DISTRICT, PLAN VIP59806   |
| <b>Legal Notations</b>                | NONE   |
| <b>Charges, Liens and Interests</b>   |  |
| Nature:                               | UNDERSURFACE RIGHTS  |
| Registration Number:                  | M76303   |
| Registration Date and Time:           | 1983-08-03 08:00   |
| Registered Owner:                     | THE DIRECTOR OF SOLDIER<br>SETTLEMENT  |
| Remarks:                              | INTER ALIA<br>DD 188305I<br>SECTION 172(3)   |
| <b>Duplicate Infeasible Title</b>     | NONE OUTSTANDING   |
| <b>Transfers</b>                      | NONE   |

**TITLE SEARCH PRINT**

File Reference: T18-017-9

Declared Value \$ 499000

2018-12-20, 15:08:41

Requestor: Ryan Pallard

**Pending Applications**

NONE

## Site Registry

For: [ PA65534 ] [ TRI TECHNOLOGY RESOURCE INC. ]

As Of: DEC 16, 2018

Folio: T18-017-9

[Main Menu](#)

[Return](#)

[Send to Mailbox](#)

[Help ?](#)

[BC OnLine Mailbox](#)

## Nil Search

Dec 20, 2018

01:37:02 PM

OLSRDL39C- Nil Report sent to BC OnLine Mailbox

## Area Nil Search

As of DEC 16, 2018, no records from Site Registry fall within 0.5 kilometers of coordinates Latitude 49 degrees, 47 minutes, 48.5 seconds, and Longitude 123 degrees, 17 minutes, 2.98 seconds.

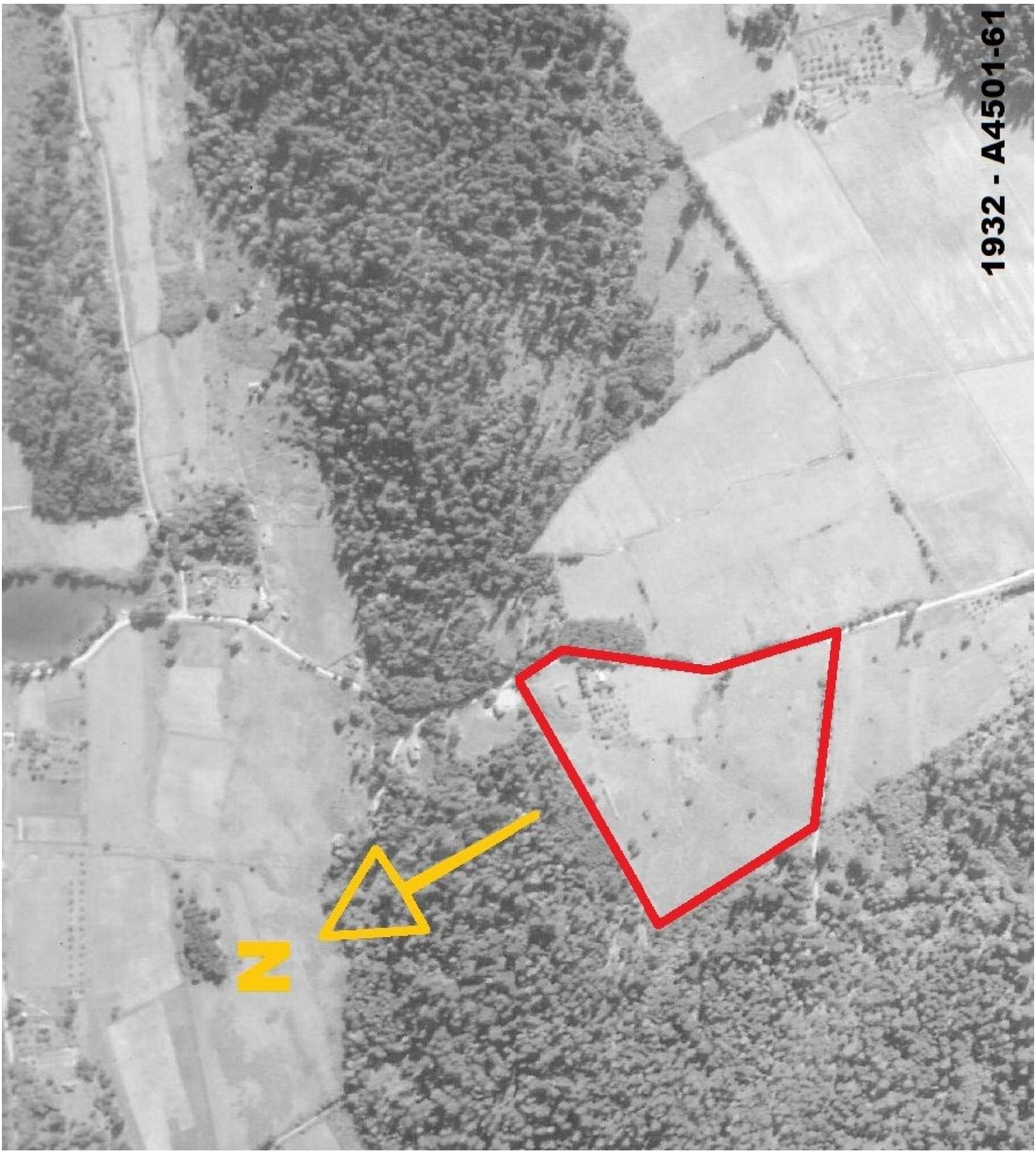
You have been charged for this information.

Sites may be revealed by searching with alternate search methods. For example, a site not revealed in an Area search may be revealed by searching with another piece of information such as PID, PIN, Address or Crown Lands File Number.

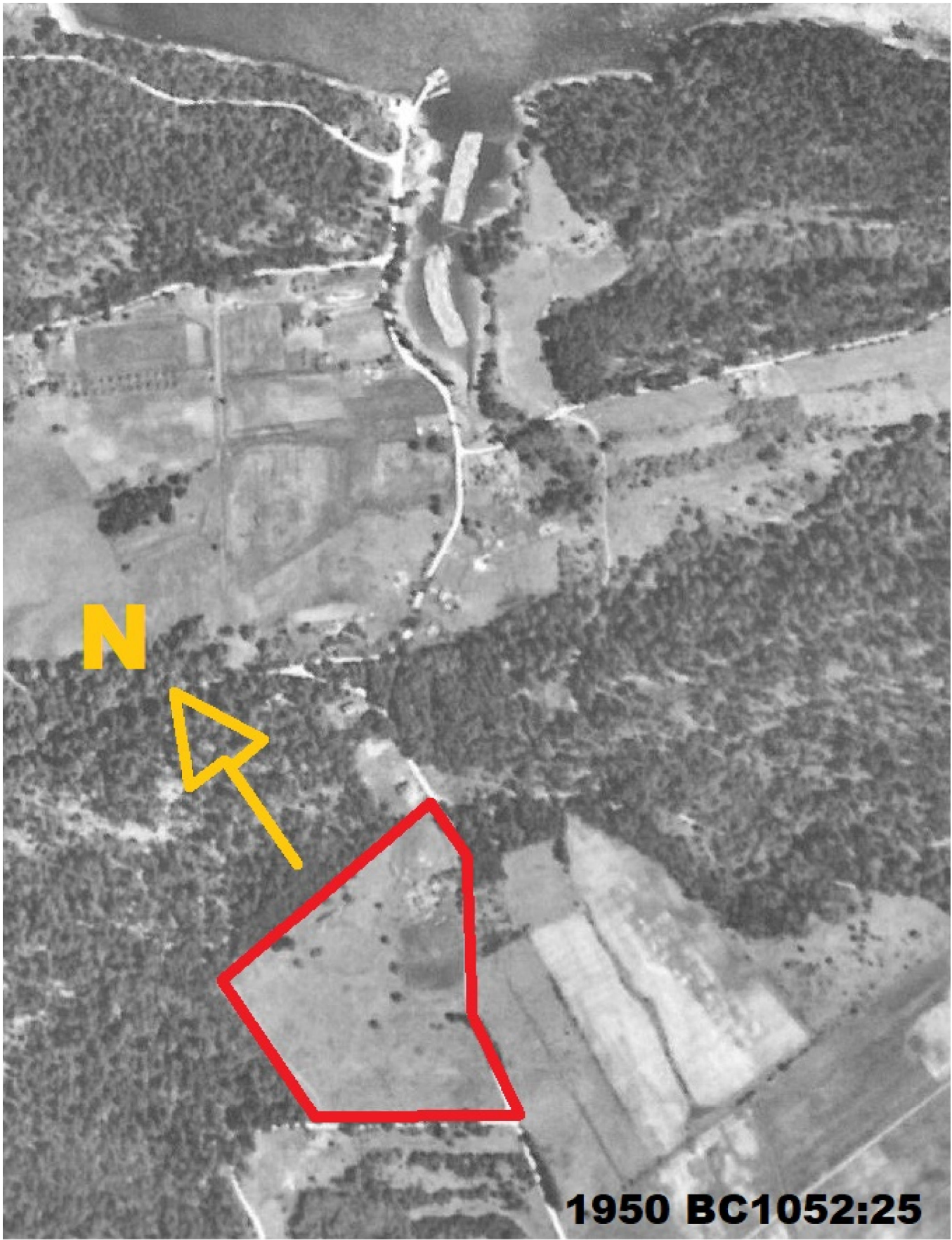
## Appendix C

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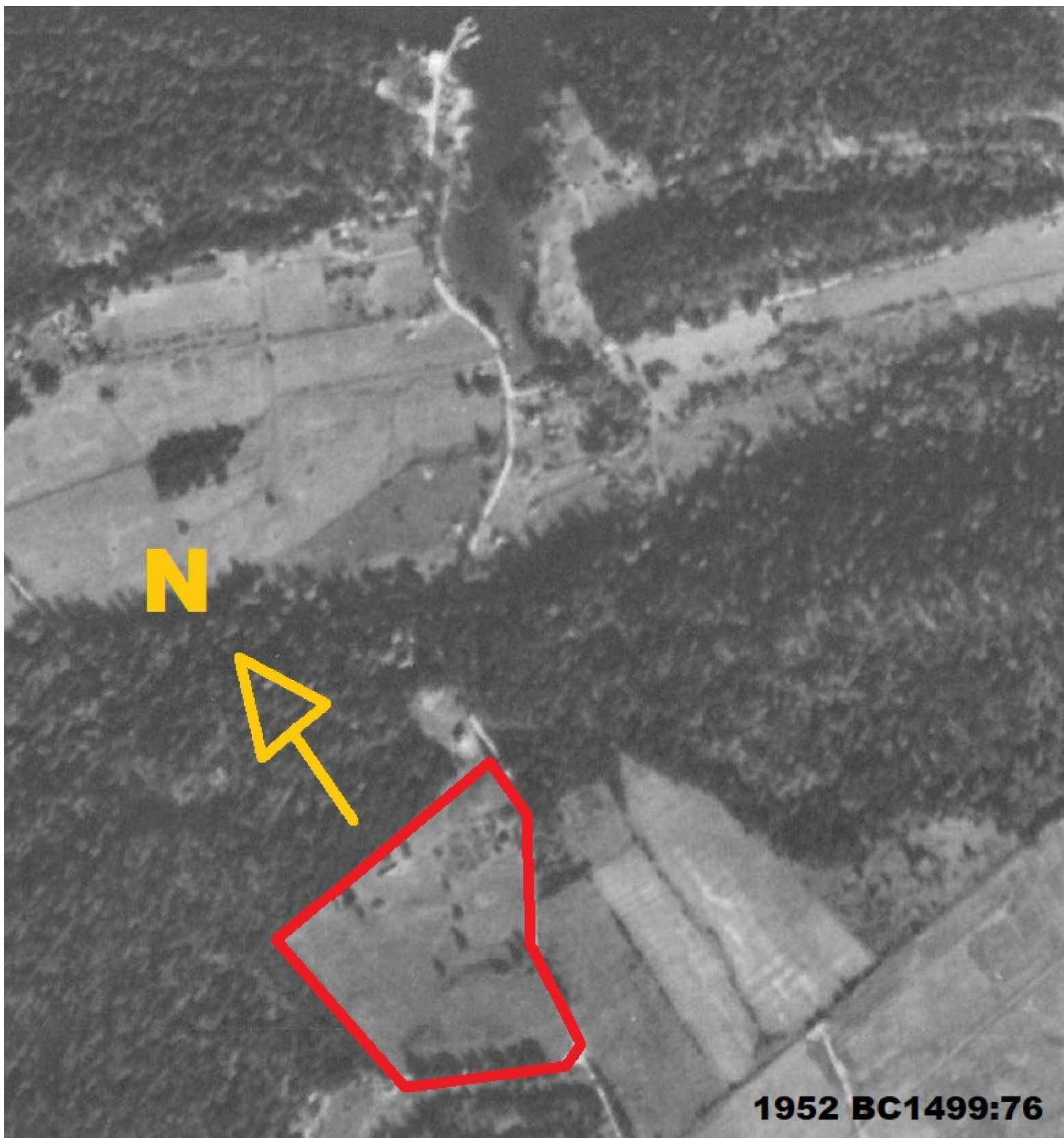
### Historical Aerial Photos



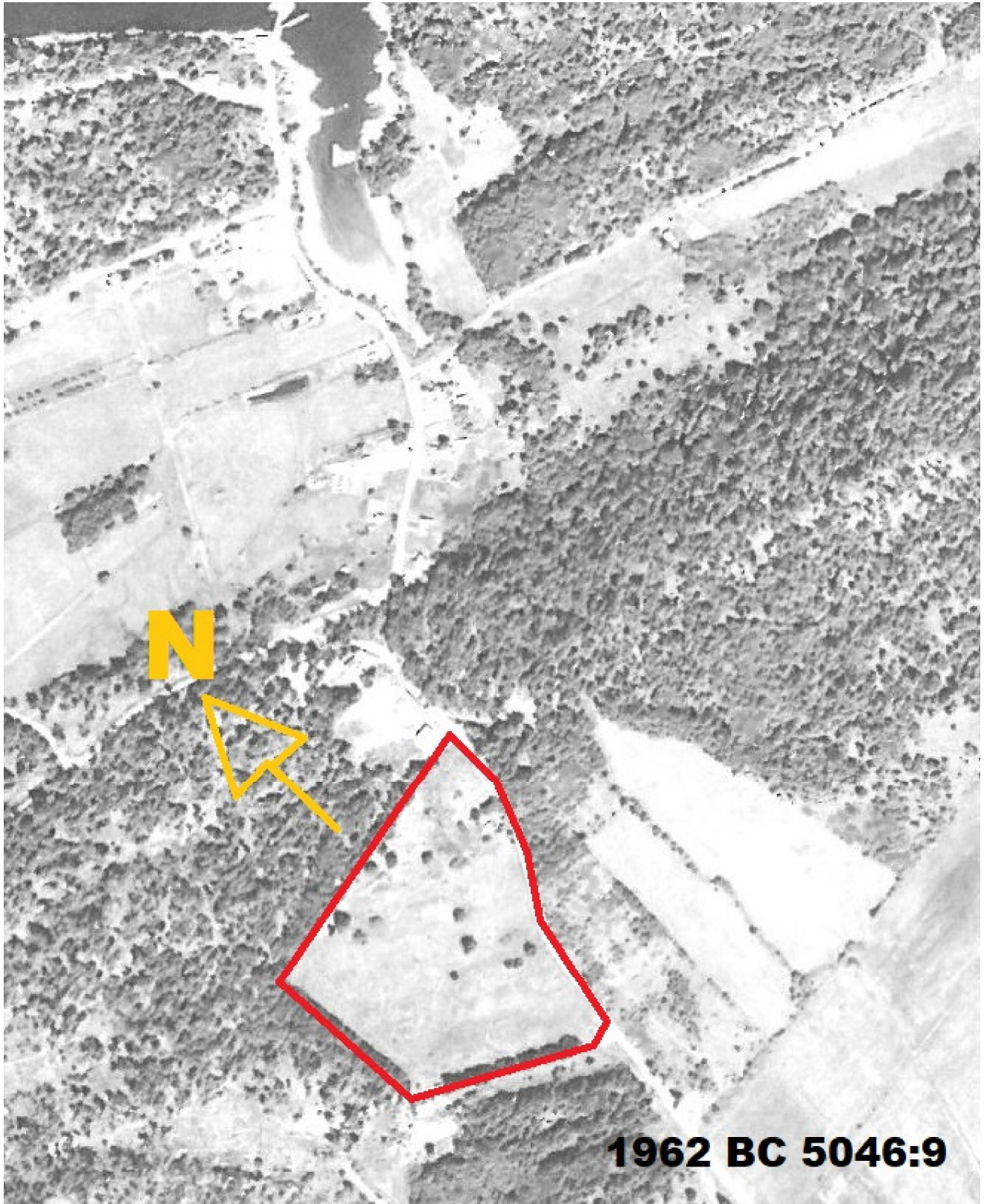
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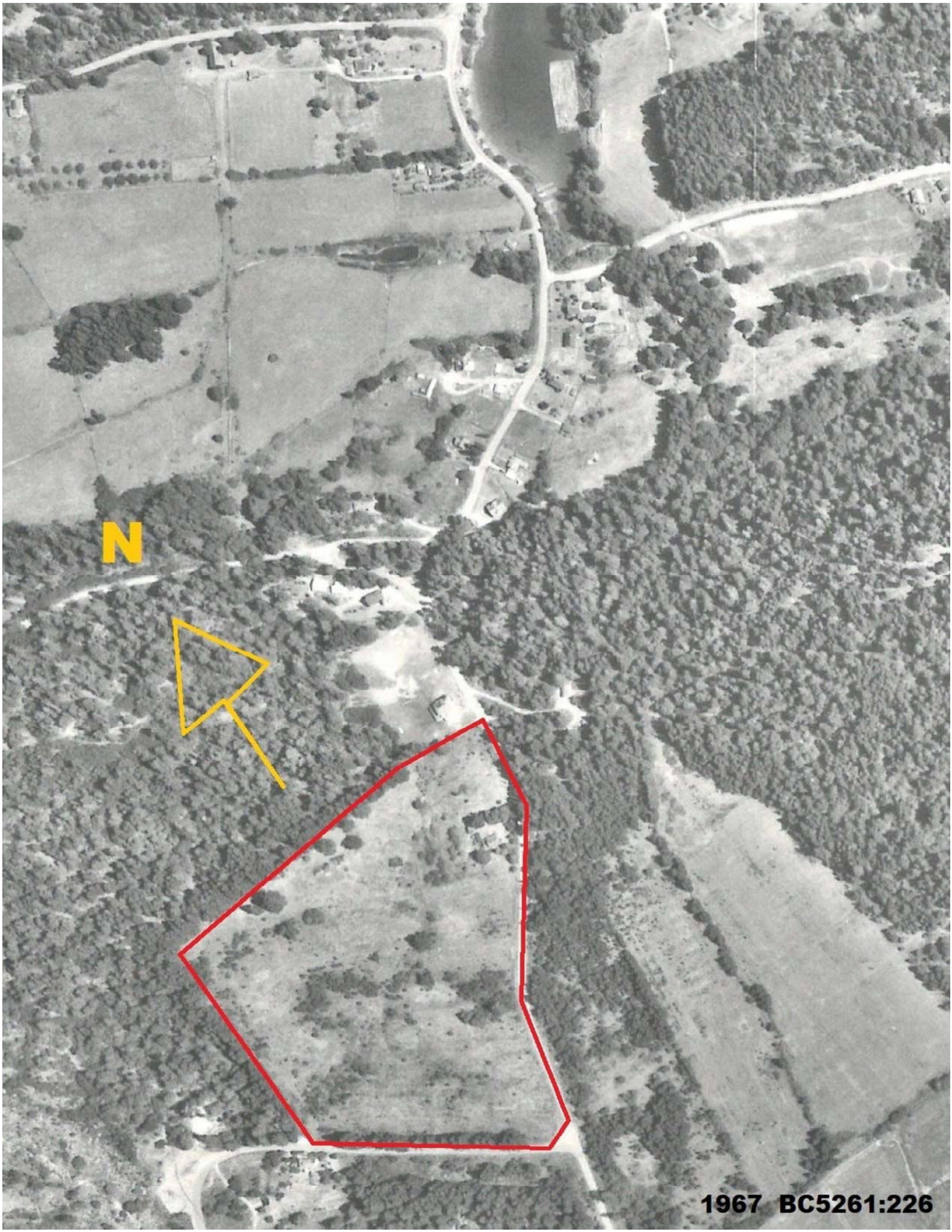
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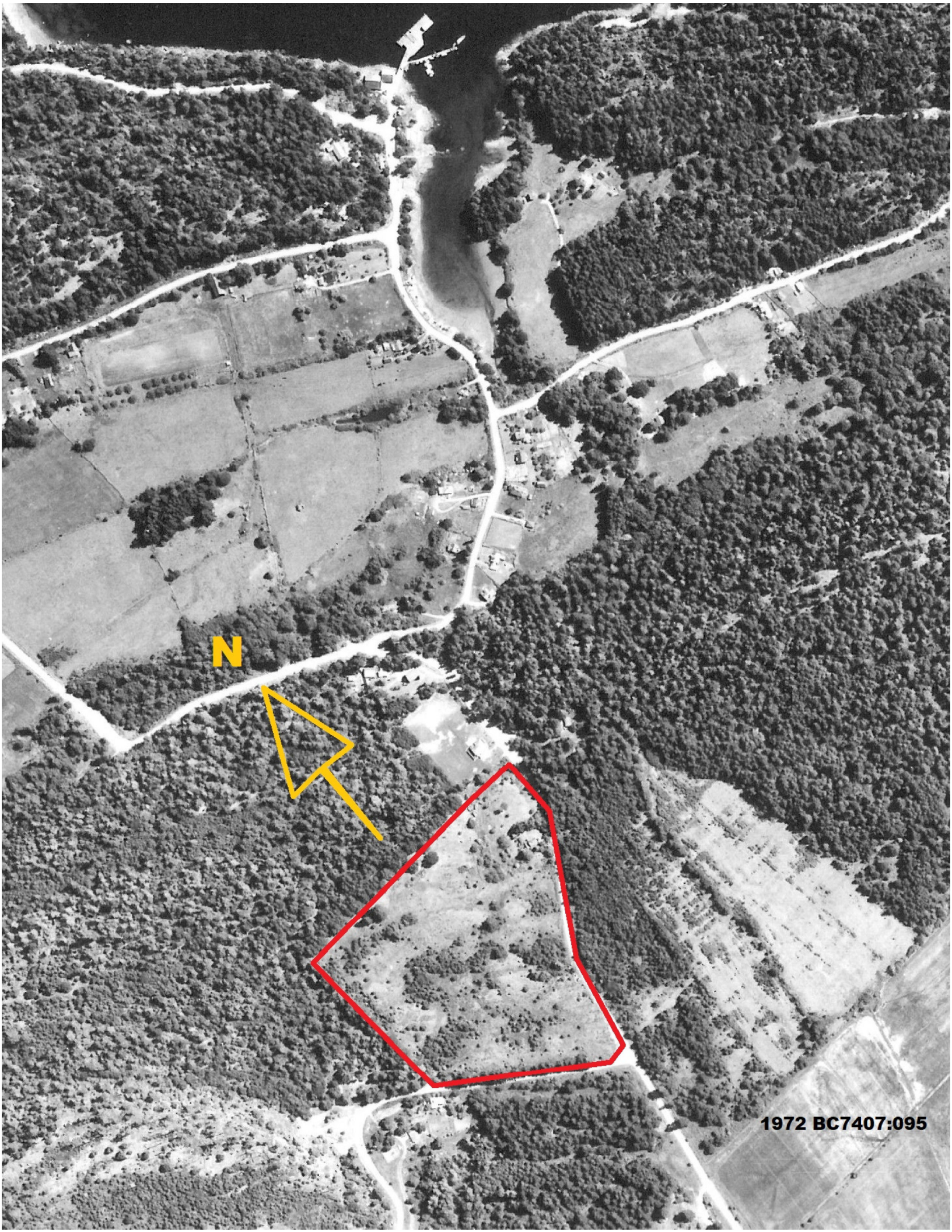
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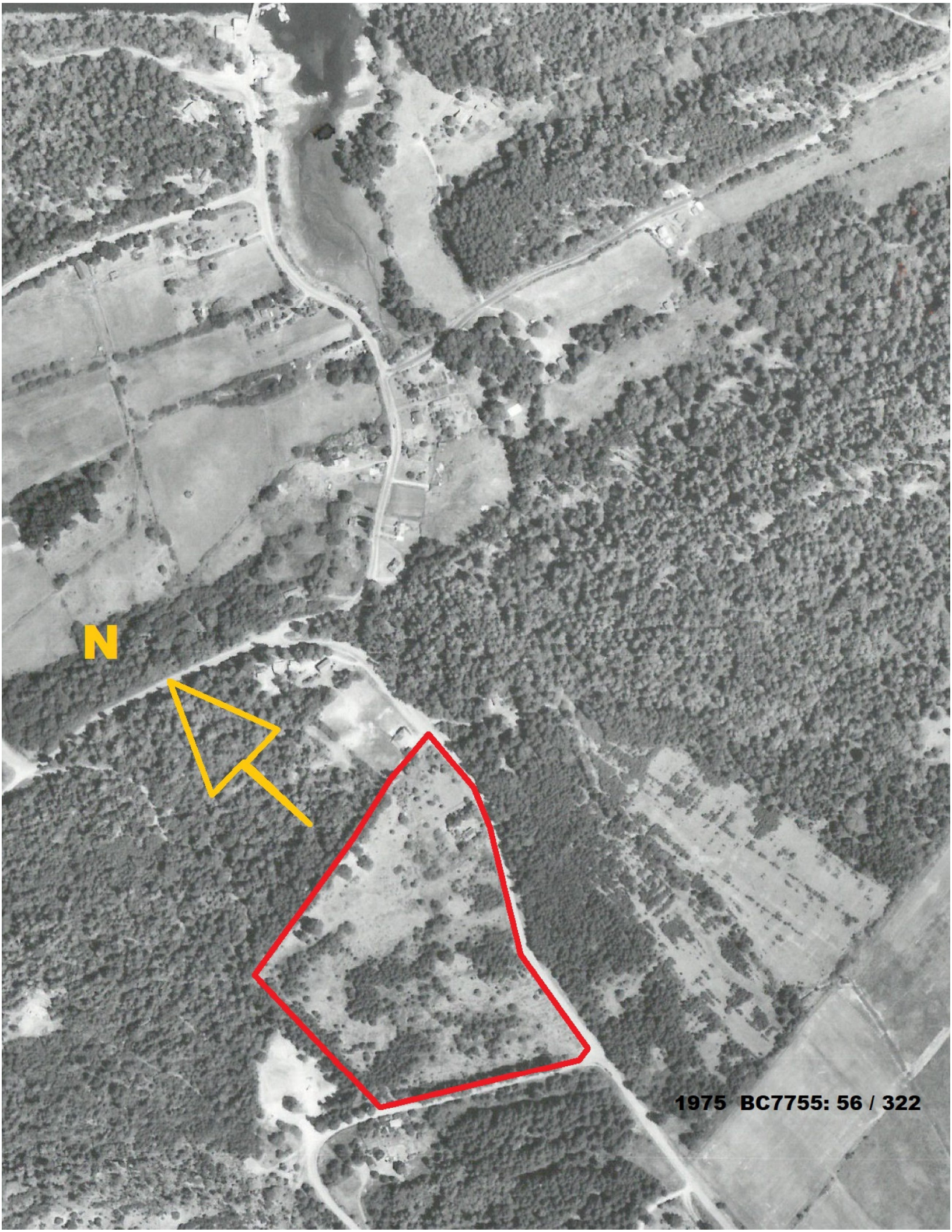


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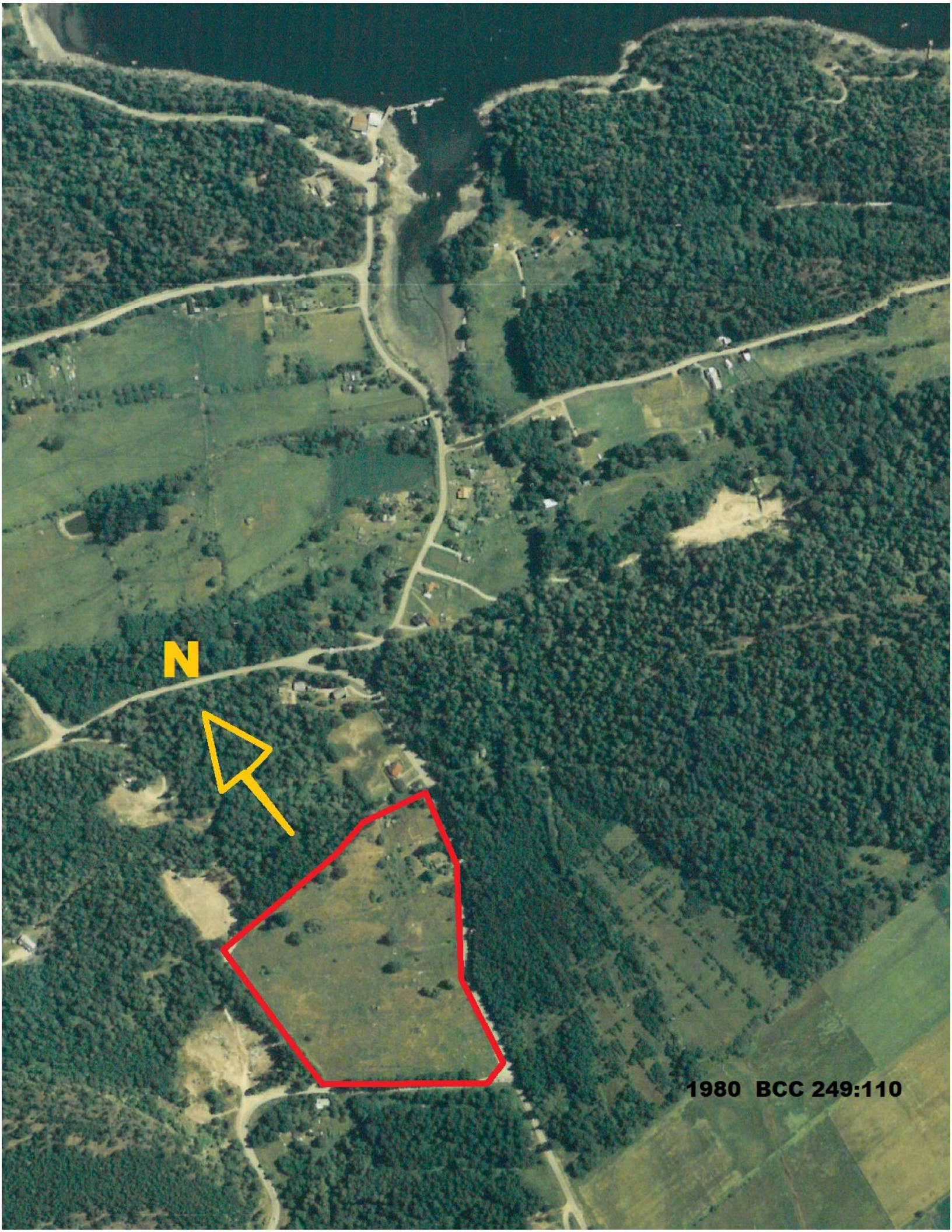


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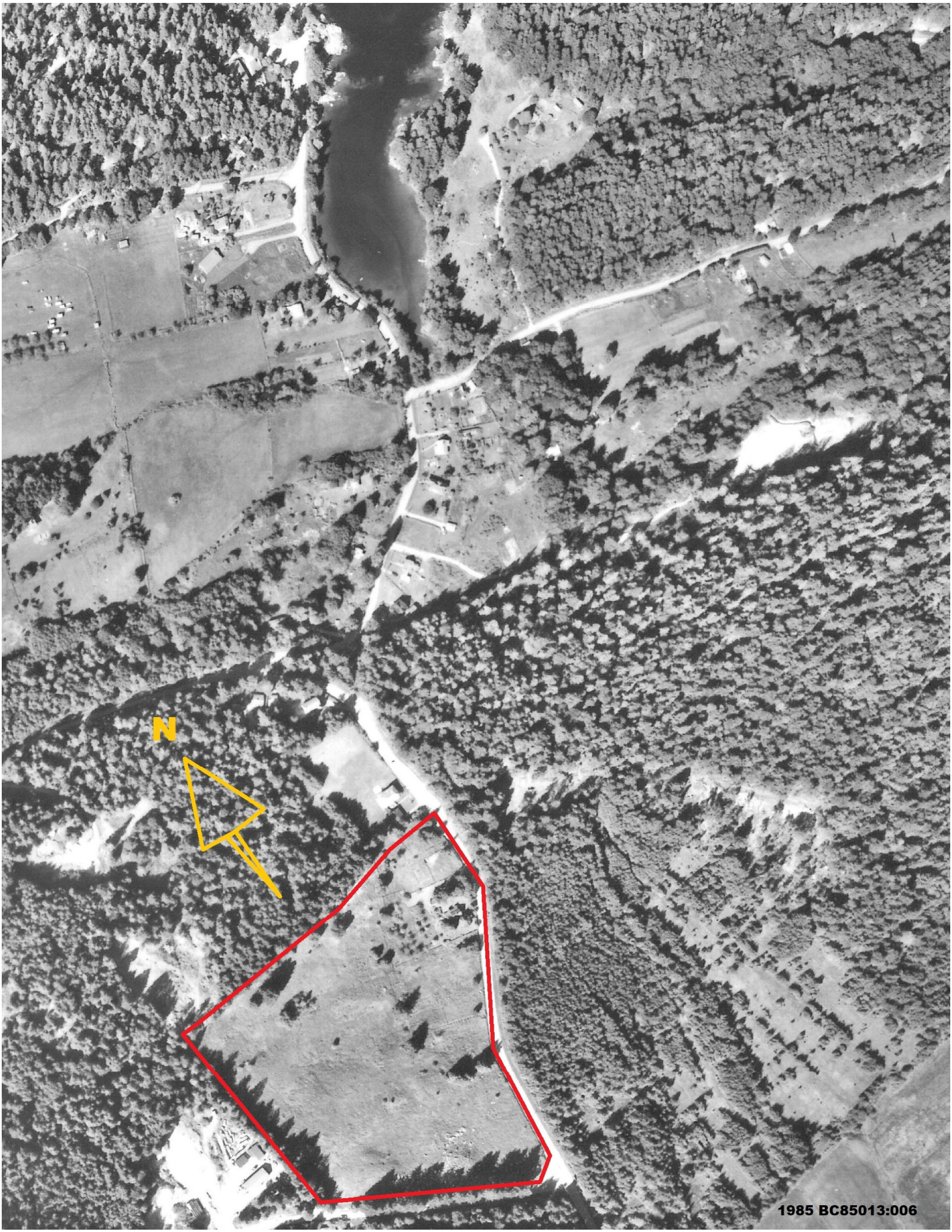


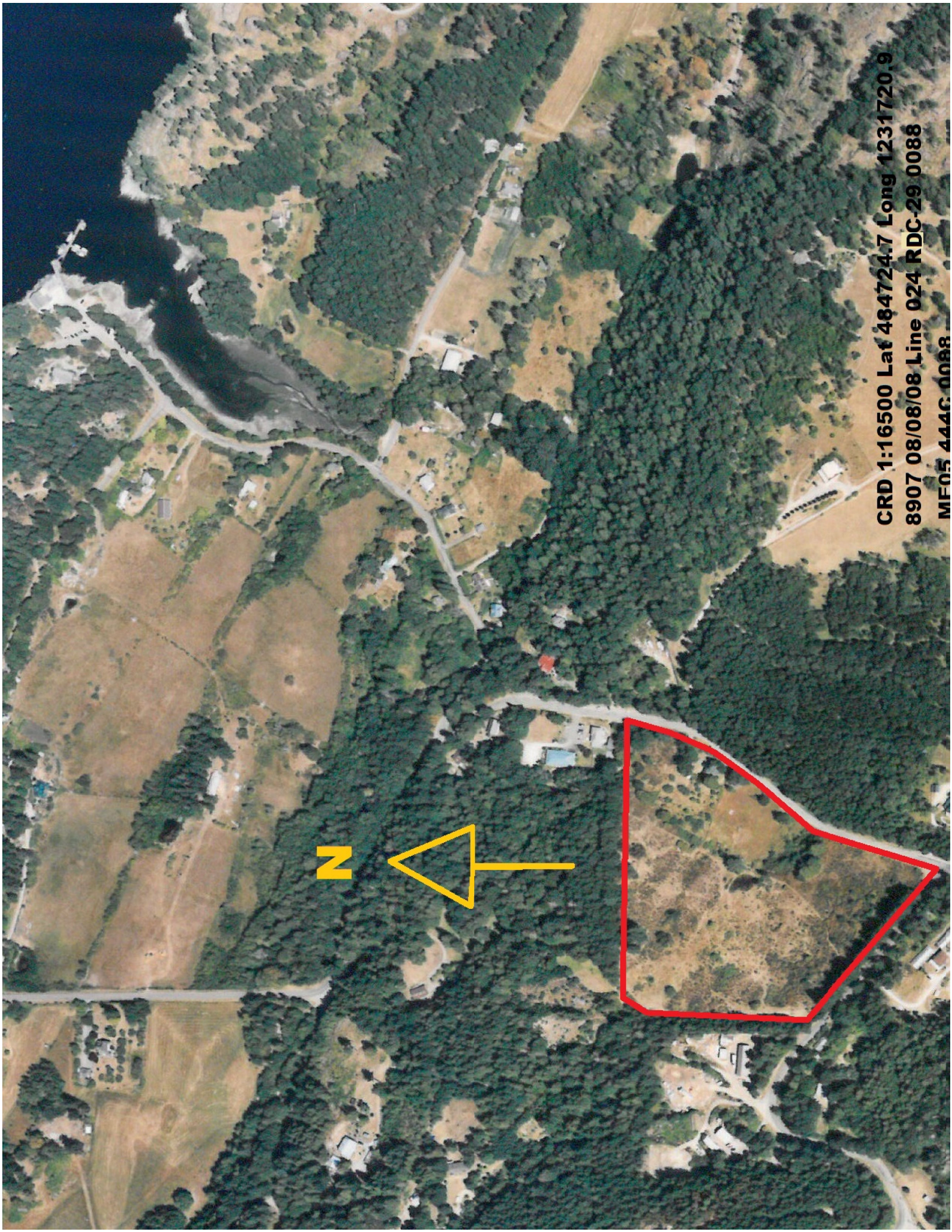
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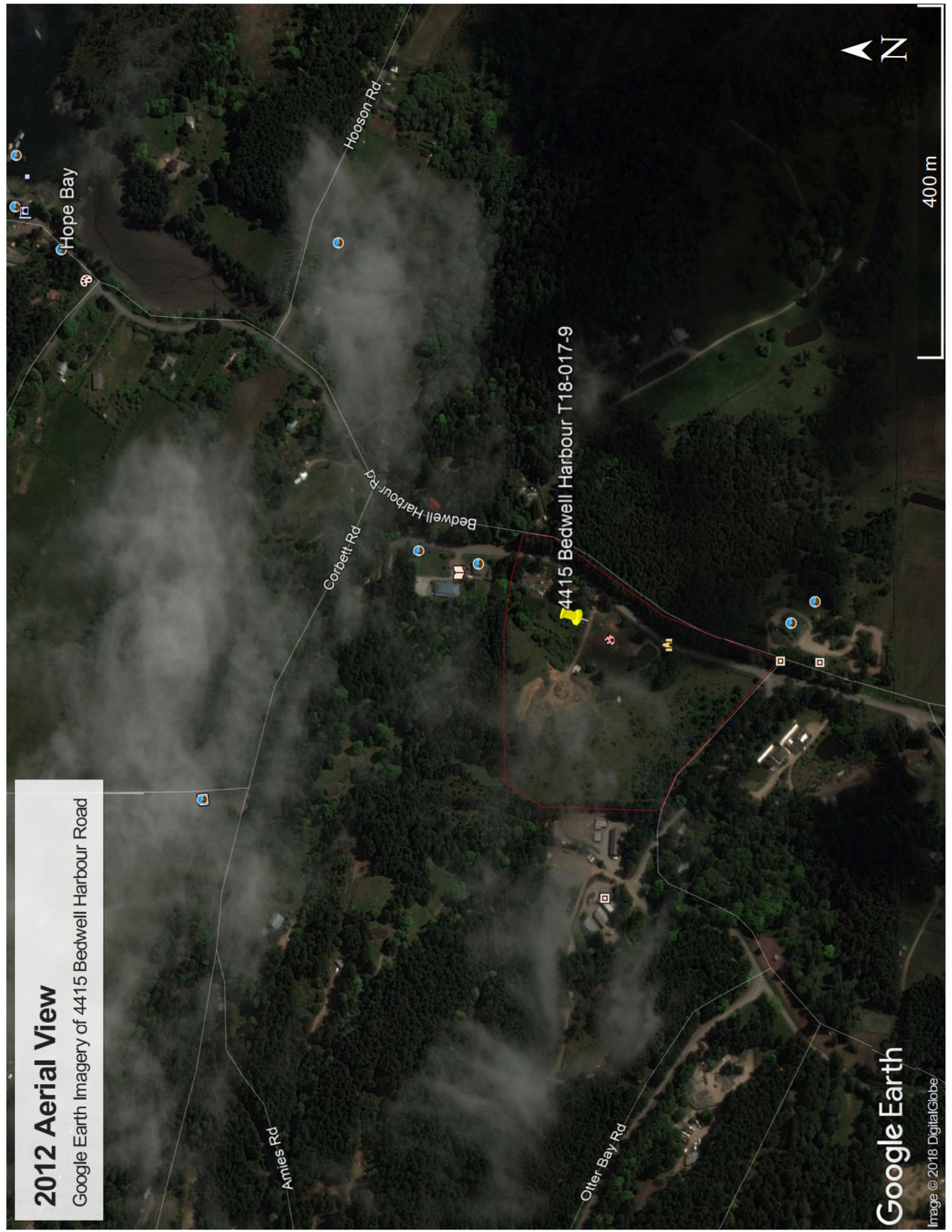
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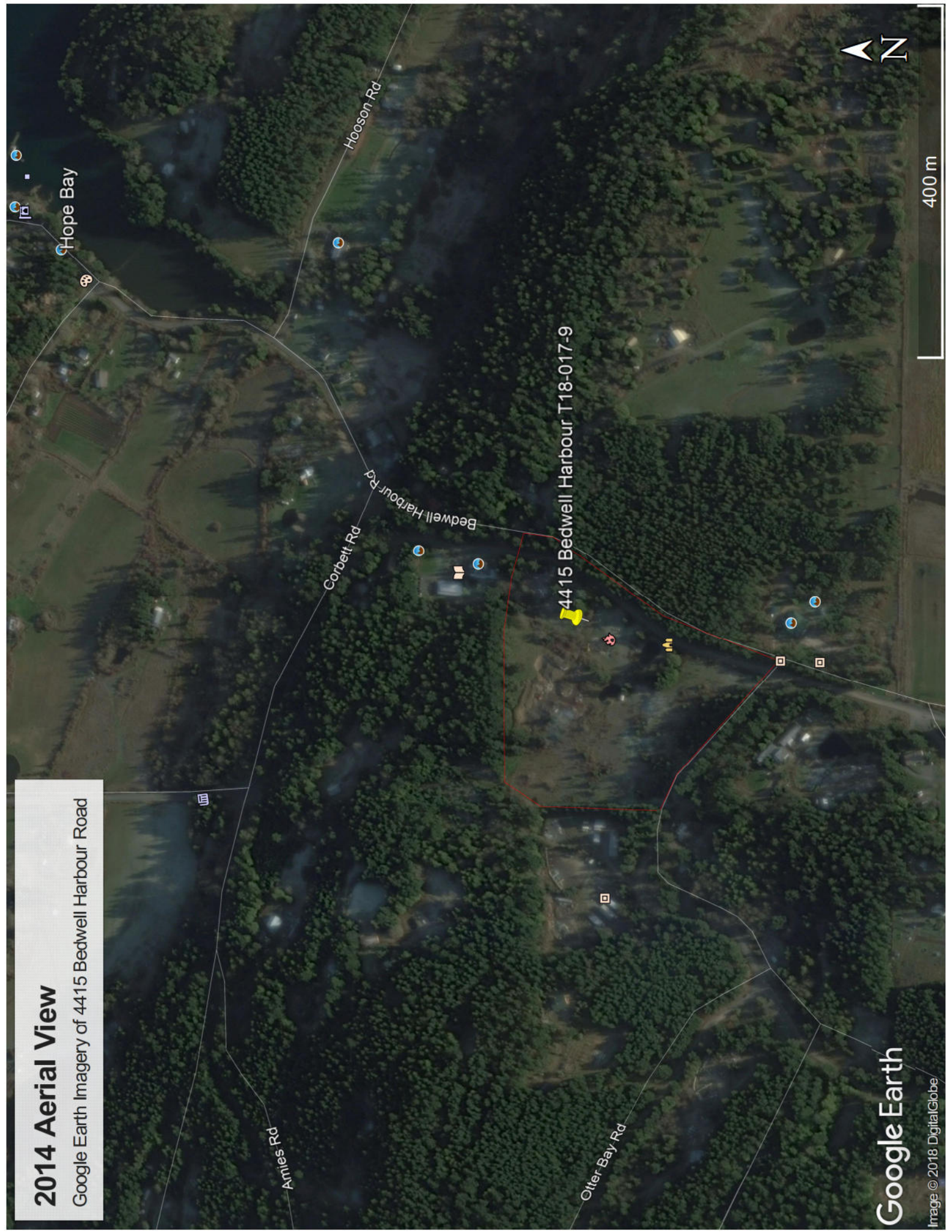
# 2012 Aerial View

Google Earth Imagery of 4415 Bedwell Harbour Road



# 2014 Aerial View

Google Earth Imagery of 4415 Bedwell Harbour Road



4415 Bedwell Harbour T18-017-9

# 2015 Aerial View

Google Earth Imagery of 4415 Bedwell Harbour Road



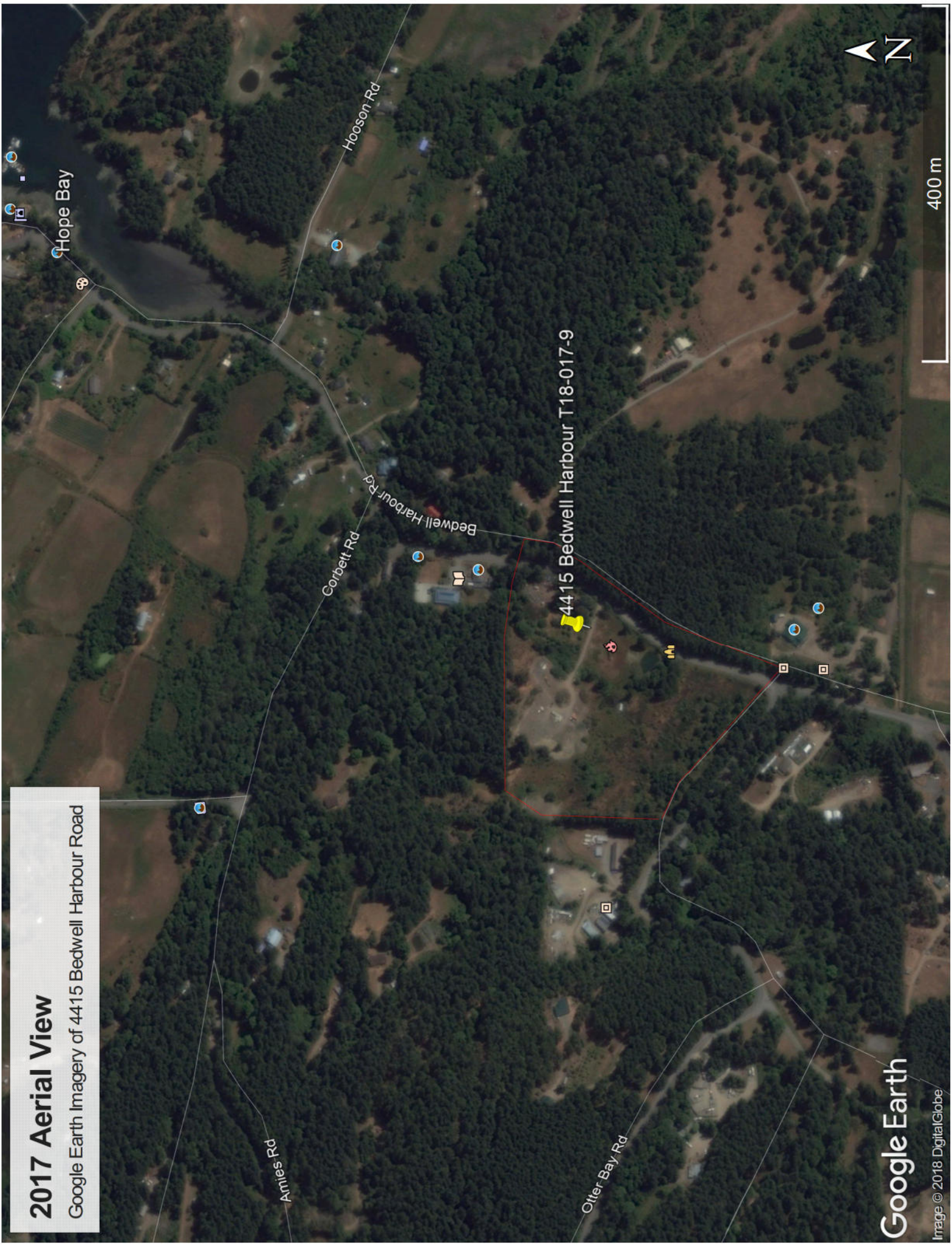
# 2016 Aerial View

Google Earth Imagery of 4415 Bedwell Harbour Road



# 2017 Aerial View

Google Earth Imagery of 4415 Bedwell Harbour Road



## Appendix D

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### Supplementary Figures

**D-1 – Site Contour Map**

**D-2 - Terrestrial and Sensitive Ecosystem Mapping**

**D-3 – Sensitive Ecosystem Areas**

**D-4 - Soil Units on the Site**

**D-5 - Groundwater Vulnerability of Site**

# Supplemental Figure D-1 Contours - 4415 Bedwell Harbour Road

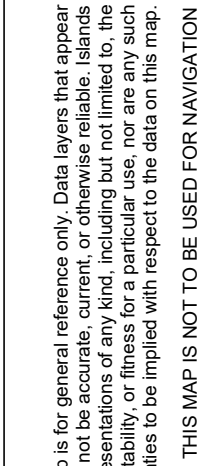


## LEGEND

- Operational Layers
- Civic Address
  - Road Names
  - Contours 2m
  - Index Contour
  - Intermediate Contour



DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. Islands Trust makes no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.



114.7 Meters

57.3

0

114.7

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
© Islands Trust

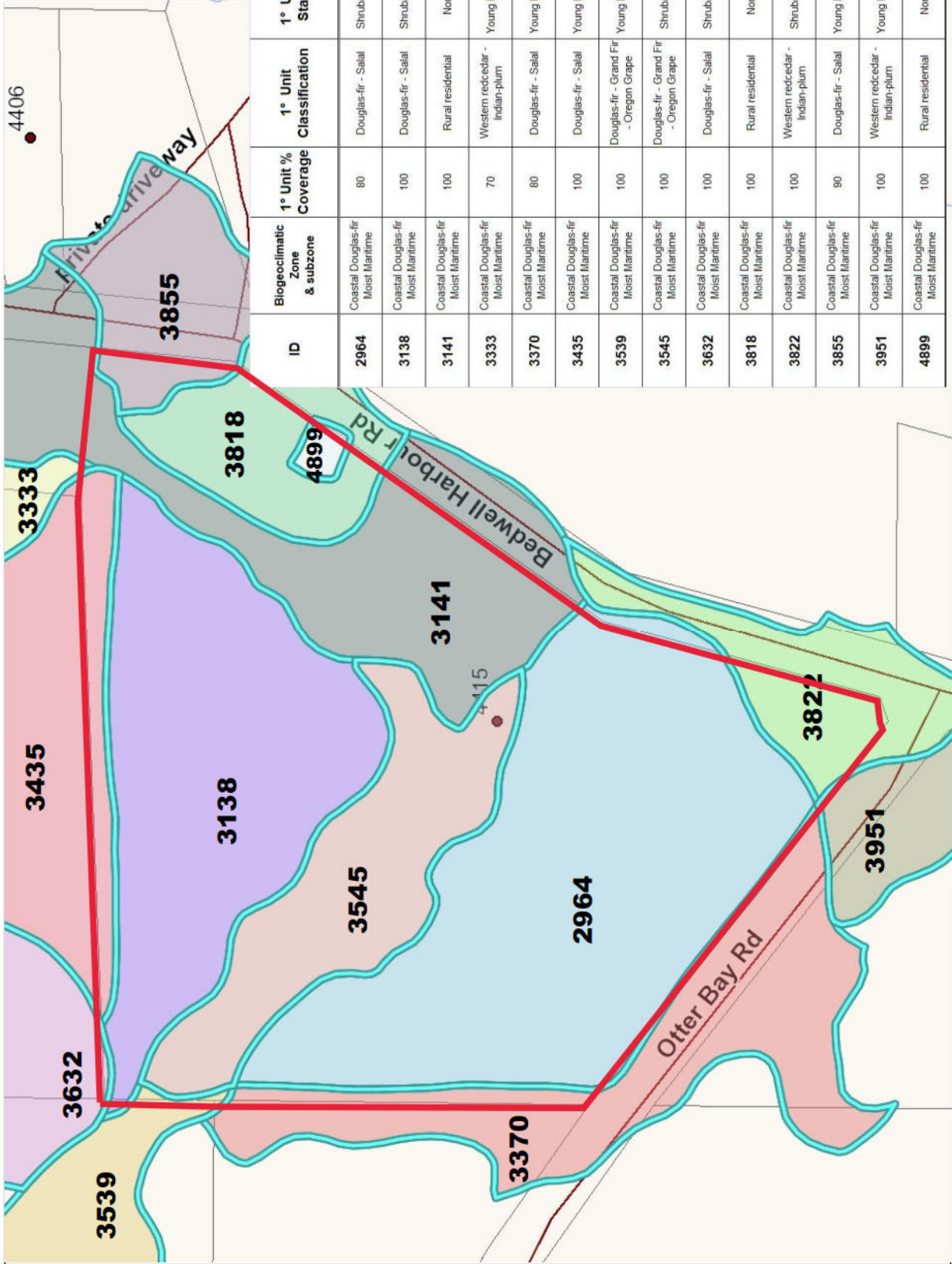


1:2,257

December 19, 2018

THIS MAP IS NOT TO BE USED FOR NAVIGATION

# Supplemental Figure D-2 Terrestrial Ecosystem Map of Site



## LEGEND

### Operational Layers

- Civic Address
  - Roads
  - Road Names
  - Site Boundary
- 2222** Terrestrial Ecosystem Map Unit ID number

| ID   | Biogeoclimatic Zone & subzone        | 1° Unit Coverage | 1° Unit Classification                 | 1° Unit Stage | 2° Unit Coverage | 2° Unit Classification                 | 2° Unit Stage |
|------|--------------------------------------|------------------|--|---------------|------------------|--|---------------|
| 2964 | Coastal Douglas-fir - Moist Maritime | 80               | Douglas-fir - Salal                    | ShrubHerb     | 20               | Douglas-fir - Grand Fir - Oregon Grape | ShrubHerb     |
| 3138 | Coastal Douglas-fir - Moist Maritime | 100              | Douglas-fir - Salal                    | ShrubHerb     | 0                | none                                   | none          |
| 3141 | Coastal Douglas-fir - Moist Maritime | 100              | Rural residential                      | None          | 0                | none                                   | none          |
| 3333 | Coastal Douglas-fir - Moist Maritime | 70               | Western redcedar - Indian-plum         | Young Forest  | 30               | Western redcedar - Slough sedge        | Young Forest  |
| 3370 | Coastal Douglas-fir - Moist Maritime | 80               | Douglas-fir - Salal                    | Young Forest  | 20               | Douglas-fir - Grand Fir - Oregon Grape | Young Forest  |
| 3435 | Coastal Douglas-fir - Moist Maritime | 100              | Douglas-fir - Salal                    | Young Forest  | 0                | none                                   | none          |
| 3539 | Coastal Douglas-fir - Moist Maritime | 100              | Douglas-fir - Grand Fir - Oregon Grape | Young Forest  | 0                | none                                   | none          |
| 3545 | Coastal Douglas-fir - Moist Maritime | 100              | Douglas-fir - Grand Fir - Oregon Grape | ShrubHerb     | 0                | none                                   | none          |
| 3632 | Coastal Douglas-fir - Moist Maritime | 100              | Douglas-fir - Salal                    | ShrubHerb     | 0                | none                                   | none          |
| 3818 | Coastal Douglas-fir - Moist Maritime | 100              | Rural residential                      | None          | 0                | none                                   | none          |
| 3822 | Coastal Douglas-fir - Moist Maritime | 100              | Western redcedar - Indian-plum         | ShrubHerb     | 0                | none                                   | none          |
| 3855 | Coastal Douglas-fir - Moist Maritime | 90               | Douglas-fir - Salal                    | Young Forest  | 10               | Douglas-fir - Grand Fir - Oregon Grape | Young Forest  |
| 3951 | Coastal Douglas-fir - Moist Maritime | 100              | Western redcedar - Indian-plum         | Young Forest  | 0                | none                                   | none          |
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114.6 0 57.3 114.6 Meters

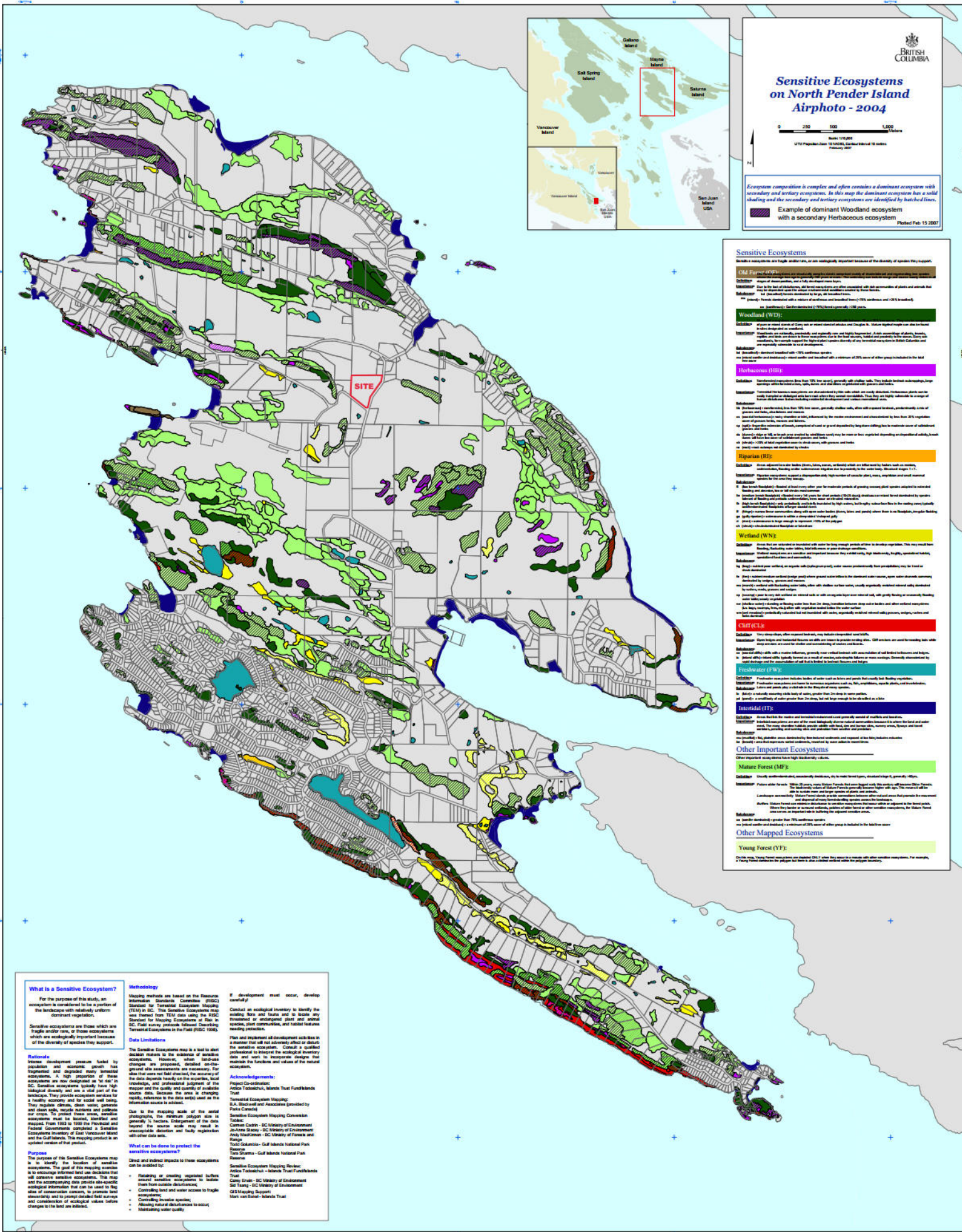
WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
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December 19, 2018

1:2,257

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**BRITISH COLUMBIA**

**Sensitive Ecosystems on North Pender Island Airphoto - 2004**

Scale: 1:4,000  
UTM Projection Zone: 18 NAD83, Datum: NAD83, Units: Metres  
Photos: 2007

Ecosystem composition is complex and often contains a dominant ecosystem with secondary and tertiary ecosystems. In this map the dominant ecosystem has a solid shading and the secondary and tertiary ecosystems are identified by hatched lines.

**Example of dominant Woodland ecosystem with a secondary Herbaceous ecosystem**

Printed Feb. 15, 2007

**Sensitive Ecosystems**

**Old Forest (OF)**

**Woodland (WD):**

**Herbaceous (HB):**

**Riparian (RI):**

**Wetland (WN):**

**Cliff (CL):**

**Freshwater (FW):**

**Intertidal (IT):**

**Other Important Ecosystems**

**Mature Forest (MF):**

**Young Forest (YF):**

**What is a Sensitive Ecosystem?**

For the purposes of this study, an ecosystem is considered to be a portion of the landscape with relatively uniform dominant vegetation.

Sensitive ecosystems are those which are fragile and/or rare, or those ecosystems which are ecologically important because of the diversity of species they support.

**Rationale**

Intense development pressure, fueled by population and economic growth has fragmented and degraded many forested ecosystems. A high proportion of these ecosystems are now designated as 'at risk' in BC. Sensitive ecosystems typically have high biological diversity and are a vital part of the landscape. They provide ecosystem services for a healthy economy and for social well-being. They regulate climate, clean water, generate and clean up, recycle nutrients and stabilize soil. To protect these sites, sensitive ecosystems must be located, identified and mapped. From 1992 to 1998 the Province and Federal Governments completed a Sensitive Ecosystems Inventory of the Vancouver Island and the Gulf Islands. This mapping product is a updated version of that product.

**Purpose**

The purpose of this Sensitive Ecosystems map is to identify the location of sensitive ecosystems. The goal of this mapping exercise is to encourage informed land use decisions that will conserve sensitive ecosystems. This map and the accompanying data provide detailed ecological information that can be used to help make conservation decisions, to protect land resources and to prevent undesirable future actions and consequences of ecological values before changes to the land are initiated.

**Methodology**

Mapping methods are based on the Resource Information Standards Committee (RISC) Standard for Terrestrial Ecosystem Mapping (TSEM) in BC. The Sensitive Ecosystems map uses the same TSEM data using the RISC Standard for Mapping Ecosystems of BC, a BC Field Survey protocol (dated December 2004) and Terrestrial Ecosystems in the Field (TSEM) (1998).

**Data Limitations**

The Sensitive Ecosystems map is a tool to assist decision makers in the selection of sensitive ecosystems. However, when land-use changes are proposed, detailed on-ground site assessments are necessary. For sites that are not field checked, the accuracy of the data depends heavily on the expertise, local knowledge, and professional judgment of the mapper and the quality and quantity of available source data. Because the area is changing rapidly, reference to the data sets) used as the information source is advised.

Due to the mapping scale of the aerial photographs, the minimum polygon size is generally 1 hectare. Exaggeration of the data beyond the source scale may result in inaccurate delineation and may be inconsistent with other data sets.

**What can be done to protect the sensitive ecosystems?**

- Direct and indirect impacts to these ecosystems can be avoided:
- Mapping or creating regulated features around sensitive ecosystems to isolate them from human disturbance.
- Controlling land and water access to fragile ecosystems.
- Controlling invasive species.
- Having detailed delineations to assist in maintaining water quality.

**If development must occur, develop carefully!**

Conduct an ecological inventory to identify the sensitive sites and features and to determine forested or unlogged plant and animal species, plant communities, and habitat features needing protection.

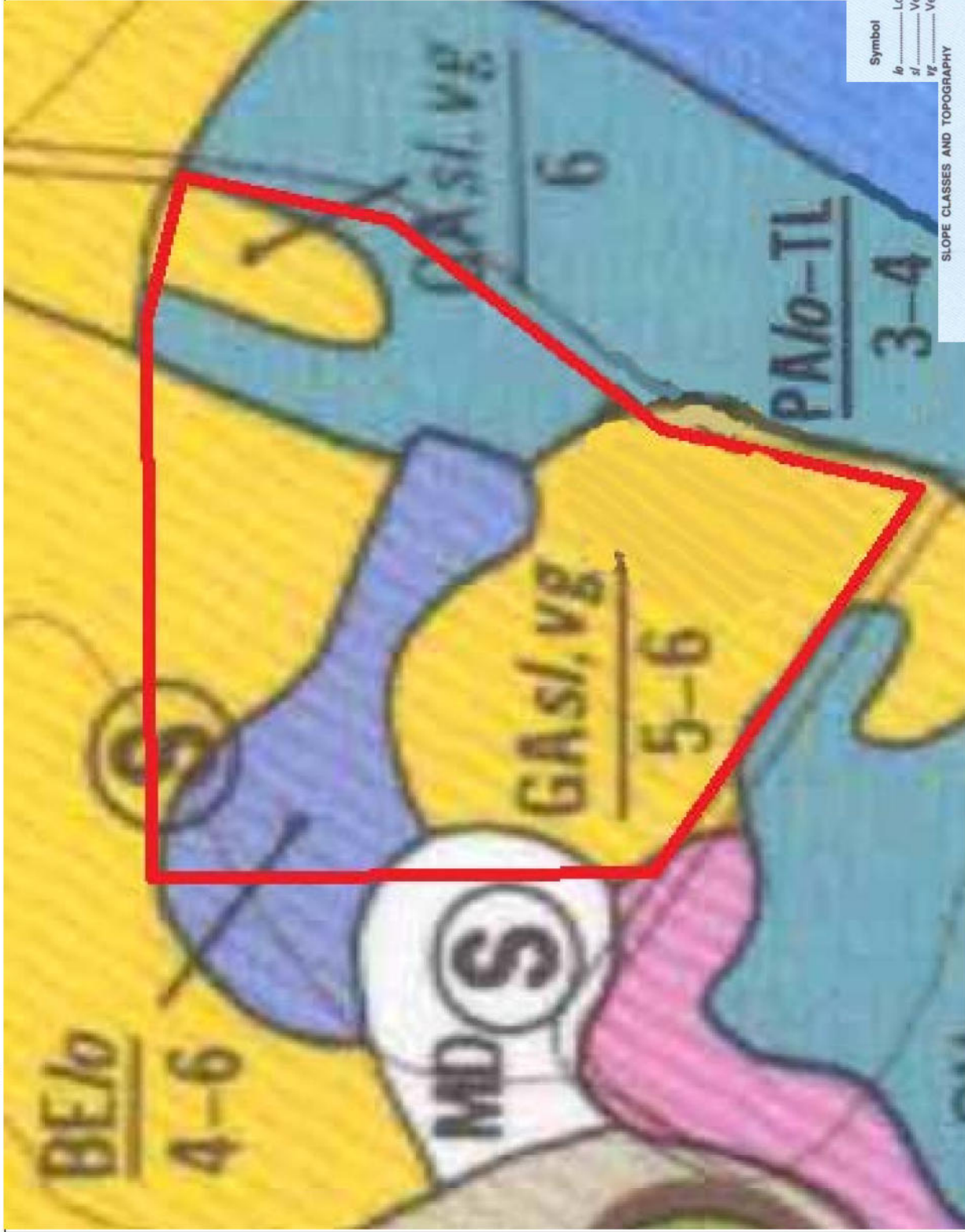
**Plan and implement all development activities in a manner that will not adversely affect or disturb the sensitive ecosystem.**

Conduct a qualified professional to inspect the ecological inventory data and work to incorporate design that maintain the functions and values of the natural ecosystem.

**Acknowledgements:**

- Project Coordinator: Andrea Tschirch, Islands Trust Fund/Islands Trust
- Terrestrial Ecosystem Mapping: S.A. Steinhilber and Associates (consulting by Parks Canada)
- Sensitive Ecosystem Mapping Contribution Tables: Garry Crivell - BC Ministry of Environment and Heritage, BC Ministry of Environment and Heritage, BC Ministry of Forests and Range, Todd Colbourne - Gulf Islands National Park Reserve, Gary Gault - Gulf Islands National Park Reserve
- Sensitive Ecosystem Mapping Review: Andrea Tschirch - Islands Trust/Fund/Islands Trust
- Photo: Crivell - BC Ministry of Environment and Heritage, BC Ministry of Forests and Range, Mary van Gorder - Islands Trust

# Supplemental Figure D-4 Soil Units on the Site



## LEGEND

**Operational Layers**

- Roads
- Site Boundary (approx).

**GA = Galiano**  
 Dominant soil: Shaly loam colluvial, residual, and glacial drift materials less than 100 cm deep over shale or siltstone bedrock

**BE = Brigantine**  
 Dominant soil: Sandy loam to loamy sand marine or fluvial deposits (30-100 cm thick) over silty clay loam to clay loam marine deposits more than 100 cm deep

**PA-TL = Parksville-Tolmie**  
 Dominant soil: Sandy loam to loamy sand marine or fluvial deposits (30-100 cm thick) over silty clay loam to silty clay marine deposits more than 100 cm deep

**(S)** = shale pit

**MD** = made land - Soils that have been artificially altered or disturbed to such a degree that they cannot be identified and classified

**SOIL PHASE<sup>7</sup> OR VARIANT<sup>8</sup> SYMBOL**

| Symbol | Description  |
|--------|--|
| lo     | Loam textured capping (<30 cm) over coarser textured materials |
| sl     | Very shallow lithic (<50 cm to bedrock)                        |
| vg     | Very gravelly (>50% coarse fragments by volume)                |



**SLOPE CLASSES AND TOPOGRAPHY**

| Slope Class | Percent Slope | Approximate Degrees | Terminology        |
|-------------|---------------|---------------------|--------------------|
| 1           | 0-0.5         | 0                   | level              |
| 2           | 0.5-2         | 0.3-1               | nearly level       |
| 3           | 2-5           | 1-3                 | very gentle slopes |
| 4           | 6-9           | 3.5-5               | gentle slopes      |
| 5           | 10-15         | 6-8.5               | moderate slopes    |
| 6           | 16-30         | 9-17                | strong slopes      |
| 7           | 31-45         | 17-24               | very strong slopes |
| 8           | 46-70         | 25-35               | extreme slopes     |
| 9           | 71-100        | 35-45               | steep slopes       |
| 10          | >100          | >45                 | very steep slopes  |

Map Excerpt from: Kenney, E. A., van Vliet, L. J. P., & Green, A. J. (1988). Soils of the Gulf Islands of British Columbia: volume 2, soils of North Pender, South Pender, Prevost, Mayne, Saturna, and lesser islands. In BC Soil Survey Report no. 43. Agriculture Canada Vancouver, BC.



December 20, 2018

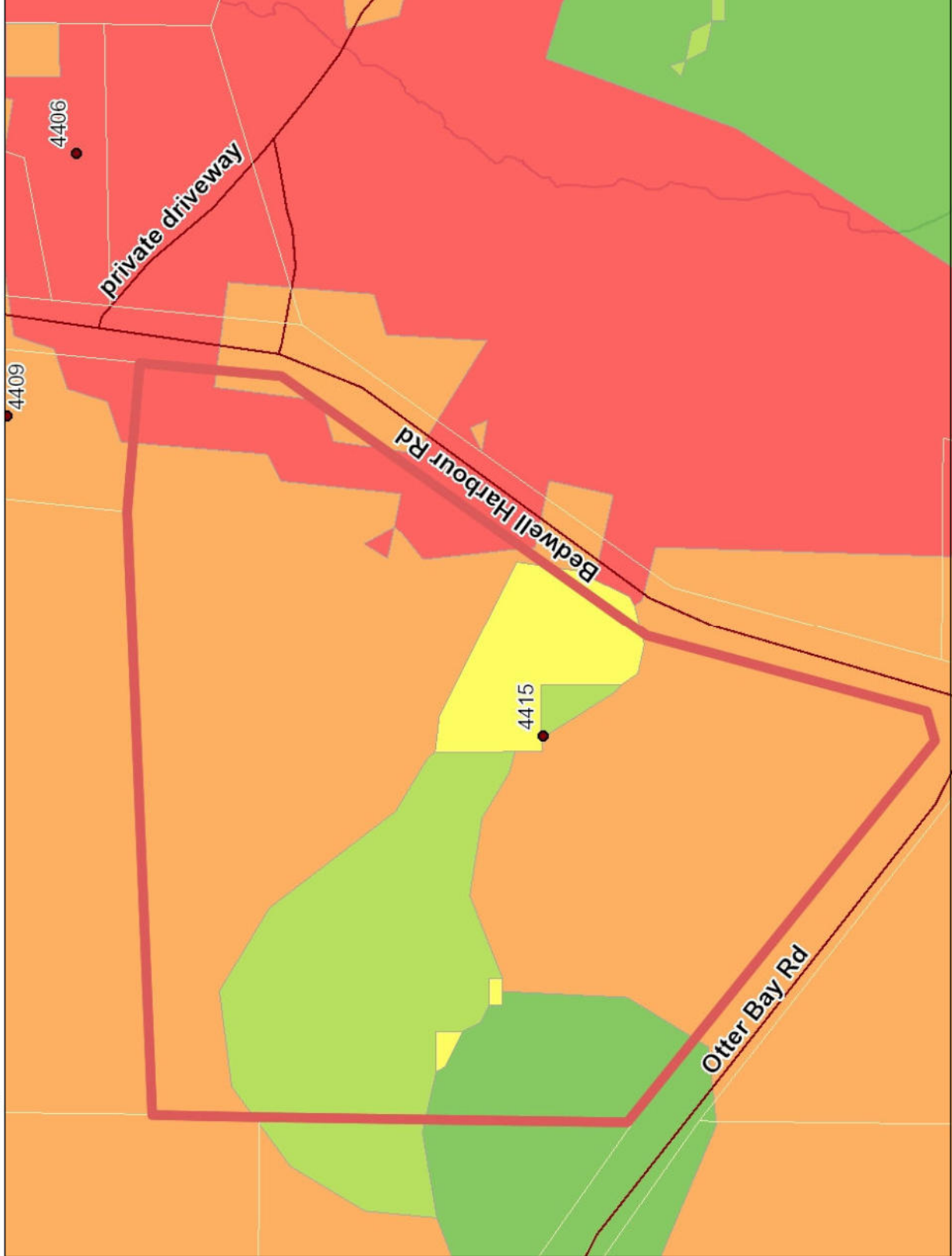
# Supplemental Figure D-5 Groundwater Vulnerability of Site



## LEGEND

### Operational Layers

- Civic Address
- Roads
- Road Names
- Groundwater Vulnerability
  - Low 43 - 90
  - Moderately Low 90 - 107
  - Moderate 107 - 122
  - Moderately High 122 - 140
  - High 140 - 193
- Site Boundary



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114.7 Meters

57.3

0



114.7

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
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December 20, 2018

## Appendix E

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### Environmental Questionnaire



TRI Environmental Consulting Inc.  
 6961 Russell Avenue  
 Burnaby, BC V5J 4R8

t 604.436.3384  
 f 604.436.5914  
 e info@tri.bc.ca  
 w tri.bc.ca



T18-017-9

27 November 2018

**Phase I Environmental Site Assessment Questionnaire Regarding Historical Site Usage and Activities**

**Site 4415 Bedwell Harbour Road, North Pender Island, BC (INTERVIEW BY L. TORRELLA)**

Person completing the questionnaire (name/position): GLENN & ERINN GRIMMER (OWNERS)

1. Above person's years of knowledge of the site: 10-15 YEARS

2. Describe past land use and activities on the site (and dates):  
USED SINCE ~ 2007 AS SHALE ROCK QUARRY. ALSO CONCRETE BATCHING IN THE LAST TWO YEARS.

BEFORE 2007 WAS OVERGROWN LAND. ONE SF RESIDENCE ON NE SINCE 1970's, PART OF McDONALD FARM (SHEEP FARM) AT THE BEGINNING.

3. Describe any past spill event (and date) on the site:  
N/A

4. Describe housekeeping and waste management practices (how often is recycling and general refuse picked up from the site):  
MANY DERELICT TRAILERS, AGRICULTURE MACHINERY AND SOME VEHICLES. USED LUBRICANTS COLLECTED BY HETHERINGTON INDUSTRIES LTD. (PORT ALBERNI) AS NEEDED. BATCHING WATER IS REUSED, CEMENT BAGS TAKEN TO DUMP.

5. For properties adjacent to the site, describe historical land use, activities, and any potential environmental concerns:  
NE: SCHOOL (1910's-1970's), THEN SCHOOL FACILITY AND THRIFT STORE.  
 W: SAWMILL (1990's-2005) - NOW GENERAL RECYCLING TRANSFER STATION (NO DRYWALL) PLUS STORAGE UNITS, GRAVEL STORAGE. SE: COMMUNITY HALL

6. Has any imported fill been placed on the site (e.g., during redevelopment)?:  
- GRAVEL MATERIAL IS IMPORTED TO SELL  
 - LOCAL-SOURCED CLAY IMPORTED FOR POTENTIAL GARDENING USE.

7. Were/Are there oil/water separator(s) or other water treatment systems on the site:  
N/A



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8. Has there been any underground storage tanks (USTs) or above ground storage tanks (ASTs) present on the site:

1 USED-OIL AST INSIDE SHIPPING CONTAINER (OVAL TANK)

3 PORTABLE FUEL SERVICE TANKS (ONLY 1 IN USE)

HOUSE ON SITE IS HEATED WITH WOOD AND ELECTRICITY.

9. Has there been a septic system or tank present on site:

1 SEPTIC SYSTEM LOCATED BY THE SF RESIDENCE STILL IN USE.

10. Has there been ever been any groundwater wells present on site:

1 DUG WELL (~  $\phi$  1.5m), DEPTH = 4.5m,  $\nabla$  = 0.7m

1 DRILLED WELL (# 1885), DEPTH ~ 60m,  $\nabla$  = 2.23m (RISE = 0.46m)

1 ABANDONED UNKNOWN WELL.

11. Has there been ever been any hydraulic elevators or lifts present on site:

NO

12. Have any orders or notices of violation or any similar claims from a regulatory agency for soil/groundwater remediation or for improper waste/hazardous materials storage or disposal on the site had been received to date:

N/A

13. Are there any land title(s), site survey plan(s), building plan(s), and/or environmental/geotechnical reports available for review?

N/A

14. Is there any bulk storage of chemicals on site?

• MASTER POLYHEED N: CHLORIDE-BEARING WATER-REDUCING ADMIXTURE.

• MASTER SET DELVO: HYDRATION CONTROLLING ADMIXTURE.

• MASTER SET AC534: NON-CHLORIDE ACCELERATING ADMIXTURE

• MOTOR OIL.

15. Are any hazardous wastes generator or stored on site?

NO

## Appendix F

---

### MSDS Sheets

# Safety Data Sheet

## MasterAir AE 90 also MB AE 90

Revision date : 2012/07/30

Version: 1.1

Page: 1/6

(30605478/SDS\_GEN\_CA/EN)

### 1. Product and Company Identification

Company

BASF Canada Inc.  
100 Milverton Drive  
Mississauga, ON L5R 4H1, CANADA

24 Hour Emergency Response Information

CANUTEC (reverse charges): (613) 996-6666  
BASF HOTLINE: (800) 454-COPE (2673)

### 2. Hazards Identification

Emergency overview

NO PARTICULAR HAZARDS KNOWN.

State of matter: liquid

Colour: dark brown

Odour: odourless

Potential health effects**Acute toxicity:**

Ingestion may cause gastrointestinal disturbances. The product has not been tested. The statement has been derived from the properties of the individual components.

**Irritation / corrosion:**

May cause slight irritation to the eyes. May cause slight irritation to the skin. May cause slight irritation to the respiratory tract. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

**Chronic toxicity:**

**Carcinogenicity:** The chemical structure does not suggest a specific alert for such an effect.

**Reproductive toxicity:** The chemical structure does not suggest a specific alert for such an effect. The product has not been tested. The statement has been derived from the properties of the individual components.

**Teratogenicity:** The chemical structure does not suggest a specific alert for such an effect. The product has not been tested. The statement has been derived from the properties of the individual components.

**Genotoxicity:** The chemical structure does not suggest a specific alert for such an effect. The product has not been tested. The statement has been derived from the properties of the individual components.

# Safety Data Sheet

## MasterAir AE 90 also MB AE 90

Revision date : 2012/07/30  
Version: 1.1

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(30605478/SDS\_GEN\_CA/EN)

### Potential environmental effects

#### **Aquatic toxicity:**

At the present state of knowledge, no negative ecological effects are expected. There is a high probability that the product is not acutely harmful to aquatic organisms. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

#### **Bioaccumulation / bioconcentration:**

Discharge into the environment must be avoided.

---

### 3. Composition / Information on Ingredients

Not WHMIS controlled.

---

### 4. First-Aid Measures

#### **General advice:**

First aid personnel should pay attention to their own safety. Remove contaminated clothing.

#### **If inhaled:**

If difficulties occur after vapour/aerosol has been inhaled, remove to fresh air and seek medical attention.

#### **If on skin:**

After contact with skin, wash immediately with plenty of water and soap. If irritation develops, seek medical attention.

#### **If in eyes:**

Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

#### **If swallowed:**

Rinse mouth and then drink plenty of water. Seek medical attention.

#### **Note to physician**

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

---

### 5. Fire-Fighting Measures

Flash point: not applicable

Autoignition: not applicable

Lower explosion limit: not applicable

#### **Suitable extinguishing media:**

foam, water spray, dry powder, carbon dioxide

#### **Unsuitable extinguishing media for safety reasons:**

water jet

#### **Hazards during fire-fighting:**

carbon monoxide, carbon dioxide, harmful vapours, nitrogen oxides, fumes/smoke, carbon black

#### **Protective equipment for fire-fighting:**

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

# Safety Data Sheet

## MasterAir AE 90 also MB AE 90

Revision date : 2012/07/30  
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(30605478/SDS\_GEN\_CA/EN)

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### 6. Accidental release measures

**Personal precautions:**

Use personal protective clothing. Do not breathe vapour/aerosol/spray mists. Sources of ignition should be kept well clear. Handle in accordance with good building materials hygiene and safety practice.

**Environmental precautions:**

Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

**Cleanup:**

For small amounts: Pick up with inert absorbent material (e.g. sand, earth etc.). Dispose of contaminated material as prescribed.

For large amounts: Pump off product.

---

### 7. Handling and Storage

**Handling**

**General advice:**

Avoid aerosol formation. Avoid inhalation of mists/vapours. Avoid skin contact. No special measures necessary provided product is used correctly.

**Protection against fire and explosion:**

No special precautions necessary.

**Storage**

**General advice:**

Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Store protected against freezing. Protect from direct sunlight.

**Temperature tolerance**

Protect from temperatures below: 0 °C

The packed product must be protected from temperatures below the indicated one.

---

### 8. Exposure Controls and Personal Protection

**Personal protective equipment**

**Respiratory protection:**

Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) respirator as necessary.

**Hand protection:**

Chemical resistant protective gloves

**Eye protection:**

Safety glasses with side-shields.

**Body protection:**

Body protection must be chosen based on level of activity and exposure.

**General safety and hygiene measures:**

In order to prevent contamination while handling, closed working clothes and working gloves should be used. Handle in accordance with good building materials hygiene and safety practice. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks).

# Safety Data Sheet

## MasterAir AE 90 also MB AE 90

Revision date : 2012/07/30  
Version: 1.1

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(30605478/SDS\_GEN\_CA/EN)

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### 9. Physical and Chemical Properties

|   |   |                    |
|---|---|--------------------|
| Form:   | liquid  |                    |
| Odour:  | odourless   |                    |
| Odour threshold:                                    | No data available.  |                    |
| Colour:   | dark brown  |                    |
| pH value:   | 10.3 - 11.5   | ( 25 °C)           |
| Boiling point:                                      | 100 °C  |                    |
| Vapour pressure:                                    |   | No data available. |
| Density:  | 1.012 - 1.020   | ( 20 °C)           |
|   | g/cm3   |                    |
| Relative density:                                   | 1.012 - 1.020   |                    |
| Bulk density:                                       |   | not applicable     |
| Vapour density:                                     |   | Heavier than air.  |
| Partitioning coefficient n-octanol/water (log Pow): |   | No data available. |
| Viscosity, dynamic:                                 |   | No data available. |
| Solubility in water:                                |   | soluble            |
| Other Information:                                  | If necessary, information on other physical and chemical parameters is indicated in this section. |                    |

---

### 10. Stability and Reactivity

**Conditions to avoid:**

See MSDS section 7 - Handling and storage.

**Substances to avoid:**

strong acids, strong bases, strong oxidizing agents

**Hazardous reactions:**

The product is stable if stored and handled as prescribed/indicated.

**Decomposition products:**

carbon oxides, nitrogen oxides

**Thermal decomposition:**

No decomposition if stored and handled as prescribed/indicated.

**Oxidizing properties:**

Based on its structural properties the product is not classified as oxidizing.

---

### 11. Toxicological information

**Other Information:**

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses. The product has not been tested. The statements on toxicology have been derived from products of a similar structure and composition.

---

### 12. Ecological Information

**Degradability / Persistence**  
**Biological / Abiological Degradation**

# Safety Data Sheet

## MasterAir AE 90 also MB AE 90

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**Evaluation:** Inherently biodegradable.  
The insoluble fraction can be removed by mechanical means in suitable waste water treatment plants.

**Other adverse effects:**

Ecological data are not available. Do not allow to enter soil, waterways or waste water channels.

---

### 13. Disposal considerations

**Waste disposal of substance:**

Do not discharge into drains/surface waters/groundwater. Dispose of in a licensed facility.

**Container disposal:**

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

---

### 14. Transport Information

**Land transport**

TDG

Not classified as a dangerous good under transport regulations

**Sea transport**

IMDG

Not classified as a dangerous good under transport regulations

**Air transport**

IATA/ICAO

Not classified as a dangerous good under transport regulations

---

### 15. Regulatory Information

**Federal Regulations**

**Registration status:**

Chemical DSL, CA released / listed

**THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CPR AND THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.**

---

### 16. Other Information

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible

# Safety Data Sheet

## MasterAir AE 90 also MB AE 90

Revision date : 2012/07/30

Page: 6/6

Version: 1.1

(30605478/SDS\_GEN\_CA/EN)

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Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

---

**MSDS Prepared by:**

BASF NA Product Regulations

msds@basf.com

BASF HOTLINE (800) 454 – COPE (2673)

MSDS Prepared on: 2012/07/30

END OF DATA SHEET

# MasterAir<sup>®</sup> AE 90

## Air-Entraining Admixture

Formerly MB-AE 90\*

### Description

MasterAir AE 90 air-entraining admixture is for use in concrete mixtures. It meets the requirements of ASTM C 260, AASHTO M 154 and CRD-C 13.

### Applications

Recommended for use in:

- Concrete exposed to cyclic freezing and thawing
- Production of high-quality normal or lightweight concrete (heavyweight concrete normally does not contain entrained air)

### Features

- Ready-to-use in the proper concentration for rapid, accurate dispensing

### Benefits

- Improved resistance to damage from cyclic freezing and thawing
- Improved resistance to scaling from deicing salts
- Improved plasticity and workability
- Reduced permeability – increased watertightness
- Reduced segregation and bleeding

### Performance Characteristics

Concrete durability research has established that the best protection for concrete from the adverse effects of freezing and thawing cycles and deicing salts results from: proper air content in the hardened concrete, a suitable air-void system in terms of bubble size and spacing, and adequate concrete strength, assuming the use of sound aggregates and proper mixing, transporting, placing, consolidation, finishing and curing techniques. MasterAir AE 90 admixture can be used to obtain adequate freeze-thaw durability in a properly proportioned concrete mixture, if standard industry practices are followed.

**Air Content Determination:** The total air content of normal weight concrete should be measured in strict accordance with ASTM C 231, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method" or ASTM C 173/C 173M, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method." The air content of lightweight concrete should only be determined using the Volumetric Method. The air content should be verified by calculating the gravimetric air content in accordance with ASTM C 138/C 138M, "Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete." If the total air content, as measured by the Pressure Method or Volumetric Method and as verified by the Gravimetric Method, deviates by more than 1.5%, the cause should be determined and corrected through equipment calibration or by whatever process is deemed necessary.

## Guidelines for Use

**Dosage:** There is no standard dosage for MasterAir AE 90 admixture. The exact quantity of air-entraining admixture needed for a given air content of concrete varies because of differences in concrete-making materials and ambient conditions. Typical factors that might influence the amount of air entrained include: temperature, cementitious materials, sand gradation, sand-aggregate ratio, mixture proportions, slump, means of conveying and placement, consolidation and finishing technique. The amount of MasterAir AE 90 admixture used will depend upon the amount of entrained air required under actual job conditions. In a trial mixture, use 0.25 to 4 fl oz/cwt (16-260 mL/100 kg) of cementitious material. Measure the air content of the trial mixture, and, if needed, either increase or decrease the quantity of MasterAir AE 90 admixture to obtain the desired air content.

In mixtures containing water-reducing or set-control admixtures, the amount of MasterAir AE 90 admixture needed may be somewhat less than the amount required in plain concrete.

Due to possible changes in the factors that can affect the dosage of MasterAir AE 90 admixture, frequent air content checks should be made during the course of the work. Adjustments to the dosage should be based on the amount of entrained air required in the mixture at the point of placement.

If an unusually high or low dosage of MasterAir AE 90 admixture is required to obtain the desired air content, consult your local sales representative. In such cases, it may be necessary to determine that, in addition to a proper air content in the fresh concrete, a suitable air-void system is achieved in the hardened concrete.

**Dispensing and Mixing:** Add MasterAir AE 90 admixture to the concrete mixture using a dispenser designed for air-entraining admixtures, or add manually using a suitable measuring device that ensures accuracy within plus or minus 3% of the required amount.

For optimum, consistent performance, the air-entraining admixture should be dispensed on damp, fine aggregate. If the concrete mixture contains fine lightweight aggregate, field evaluations should be conducted to determine the best method to dispense the air-entraining admixture.

## Precaution

In a 2005 publication from the Portland Cement Association (PCA R&D Serial No. 2789), it was reported that problematic air-void clustering that can potentially lead to above normal decreases in strength was found to coincide with late additions of water to air-entrained concretes. Late additions of water include the conventional practice of holding back water during batching for addition at the jobsite. Therefore, caution should be exercised with delayed additions of water to air-entrained concrete. Furthermore, an air content check should be performed after post-batching addition of any other materials to an air-entrained concrete mixture.

## Product Notes

**Corrosivity – Non-Chloride, Non-Corrosive:** MasterAir AE 90 admixture will neither initiate nor promote corrosion of reinforcing and prestressing steel embedded in concrete, or of galvanized floor and roof systems. No calcium chloride or other chloride-based ingredients are used in the manufacture of this admixture.

**Compatibility:** MasterAir AE 90 admixture may be used in combination with any BASF admixture, unless stated otherwise on the data sheet for the other product. When used in conjunction with other admixtures, each admixture must be dispensed separately into the concrete mixture.

## Storage and Handling

**Storage Temperature:** MasterAir AE 90 admixture should be stored and dispensed at 31 °F (-0.5 °C) or higher. Although freezing does not harm this product, precautions should be taken to protect it from freezing. If MasterAir AE 90 admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. Do not use pressurized air for agitation.

**Shelf Life:** MasterAir AE 90 admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of MasterAir AE 90 admixture has been exceeded.

**Safety:** Chemical goggles and gloves are recommended when transferring or handling this material.

## Packaging

MasterAir AE 90 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

## Related Documents

Safety Data Sheets: MasterAir AE 90 admixture

## Additional Information

For additional information on MasterAir AE 90 admixture, or its use in developing a concrete mixture with special performance characteristics, contact your local sales representative.

*The Admixture Systems business of BASF's Construction Chemicals division is the leading provider of solutions that improve placement, pumping, finishing, appearance and performance characteristics of specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets. For over 100 years we have offered reliable products and innovative technologies, and through the Master Builders Solutions brand, we are connected globally with experts from many fields to provide sustainable solutions for the construction industry.*

## Limited Warranty Notice

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Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

\* MB-AE 90 became MasterAir AE 90 under the Master Builders Solutions brand, effective January 1, 2014.

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**BASF Corporation**  
Admixture Systems

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# MasterPolyheed® N

## Mid-Range Water-Reducing Admixture

### Description

MasterPolyheed N admixture is a multi-component, chloride-bearing, mid-range water-reducing admixture. MasterPolyheed N admixture meets ASTM C 494/C 494M requirements for Type A, water-reducing admixtures.

### Applications

Recommended for use in:

- All concrete applications where superior workability, pumpability and finishability qualities are desired, in particular, flatwork, pumped concrete and pervious concrete
- Concrete containing manufactured sand and harsh concrete mixtures

### Features

- True mid-range (5-15%) water reduction and excellent performance across a wide slump range, especially the difficult slump range of 5-8 in. (125-200 mm)
- Reduced water content for a given slump
- Superior workability, pumpability and finishability qualities even in concrete mixtures containing low amounts of cementitious materials
- Normal concrete setting time throughout the recommended dosage range
- Improved performance with a wide range of cements, fly ashes, silica fume, slag cement, and aggregates (including coarse and manufactured sands)

### Benefits

- Superior workability and pumpability in various concrete applications
- Superior finishing characteristics for residential/commercial flatwork and formed surfaces
- Significantly reduced placement and finishing time resulting in lower in-place concrete costs
- Increased strength at all ages

### Performance Characteristics

**Mixture Data:** 500 lb/yd<sup>3</sup> (295 kg/m<sup>3</sup>) of Type I cement; slump, 6.75 in. (170 mm); Non-air-entrained concrete; Concrete temperature 70 °F (21 °C); Ambient temperature, 70 °F (21 °C).

#### Setting Time Performance<sup>1</sup>

| Mixture                      | Initial Set (h:min) | Difference (h:min) |
|------------------------------|---------------------|--------------------|
| Plain                        | 4:46                | —                  |
| MasterPolyheed N admixture @ |                     |                    |
| 5 fl oz/cwt (325 mL/100 kg)  | 4:34                | -0:12              |
| 10 fl oz/cwt (650 mL/100 kg) | 4:56                | +0:10              |
| 15 fl oz/cwt (980 mL/100 kg) | 5:28                |                    |

**Compressive Strength, psi (MPa)**

| Mixture                      | 7-Day       | 28-Day      |
|------------------------------|-------------|-------------|
| Plain                        | 3390 (23.4) | 4230 (29.2) |
| MasterPolyheed N admixture @ |             |             |
| 5 fl oz/cwt (325 mL/100 kg)  | 4110 (28.3) | 4950 (34.1) |
| 10 fl oz/cwt (650 mL/100 kg) | 4290 (29.6) | 5510 (38.0) |
| 15 fl oz/cwt (980 mL/100 kg) | 4770 (32.9) | 5920 (40.8) |

<sup>1</sup>Note: The data shown are based on controlled laboratory tests. Reasonable variations from the results shown here may be experienced as a result of differences in concrete making materials and jobsite conditions.

**Guidelines for Use**

**Dosage:** MasterPolyheed N mid-range water-reducing admixture has a recommended dosage range of 3-15 fl oz/cwt (195-980 mL/100 kg) of cementitious material for most concrete mixtures.

As the dosage of MasterPolyheed N admixture increases to 15 fl oz/cwt (980 mL/100 kg) of cementitious materials, normal concrete setting time characteristics are maintained and early and ultimate compressive strengths increase.

BASF does not recommend the use of dosages outside the recommended range without trial testing. Consult your local sales representative for assistance in determining the dosage for optimum performance.

**Product Notes**

**Corrosivity:** MasterPolyheed N admixture contains intentionally-added calcium chloride. The chloride ion content of this admixture, due to chlorides originating from all the ingredients used in its manufacture, is less than 0.0057% by weight of cement when used at a dosage of 1 fl oz/cwt (65 mL/100 kg) of cement. The ACI 318 (ACI 318M) building code requirements for concrete contains limits for water-soluble chloride ions in concrete for specific applications. BASF recommends strict adherence to chloride limits in project specifications. Please contact your local sales representative for other product recommendations if a project specification prohibits the use of chloride-bearing admixtures.

**Compatibility:** MasterPolyheed N admixture is compatible with most admixtures and can be used in combination with other BASF admixtures, unless stated otherwise. When used in conjunction with other admixtures, each admixture must be dispensed separately into the concrete mixture.

**Storage and Handling**

**Storage Temperature:** If MasterPolyheed N admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. **Do not use pressurized air for agitation.**

**Shelf Life:** MasterPolyheed N admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of MasterPolyheed N admixture has been exceeded.

**Packaging**

MasterPolyheed N admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

**Related Documents**

Safety Data Sheets: MasterPolyheed N admixture

**Additional Information**

For additional information on MasterPolyheed N admixture or its use in developing concrete mixtures with special performance characteristics, contact your local sales representative.

*The Admixture Systems business of BASF's Construction Chemicals division is the leading provider of solutions that improve placement, pumping, finishing, appearance and performance characteristics of specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets. For over 100 years we have offered reliable products and innovative technologies, and through the Master Builders Solutions brand, we are connected globally with experts from many fields to provide sustainable solutions for the construction industry.*

## Limited Warranty Notice

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

# Safety Data Sheet

## MasterPolyheed N

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### 1. Identification

#### Product identifier used on the label

## MasterPolyheed N

#### Recommended use of the chemical and restriction on use

Recommended use\*: for industrial and professional users

\* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

#### Details of the supplier of the safety data sheet

##### Company:

BASF Canada Inc.  
100 Milverton Drive  
Mississauga, ON L5R 4H1, CANADA

Telephone: +1 289 360-1300

#### Emergency telephone number

CANUTEC (reverse charges): (613) 996-6666  
BASF HOTLINE: (800) 454-COPE (2673)

#### Other means of identification

Chemical family: No data available.  
Synonyms: Aqueous dispersion of polymers. Use: product for construction chemicals

---

### 2. Hazards Identification

#### According to Hazardous Products Regulations (HPR) (SOR/2015-17)

#### Classification of the product

Eye Dam./Irrit.                      2A                      Serious eye damage/eye irritation

#### Label elements

Pictogram:

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Signal Word:  
Warning

Hazard Statement:  
H319 Causes serious eye irritation.

Precautionary Statements (Prevention):  
P280 Wear eye/face protection.  
P264 Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337 + P311 If eye irritation persists: Call a POISON CENTER or doctor/physician.

### Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

---

## 3. Composition / Information on Ingredients

### According to Hazardous Products Regulations (HPR) (SOR/2015-17)

| <u>CAS Number</u> | <u>Weight %</u> | <u>Chemical name</u>                 |
|-------------------|-----------------|--------------------------------------|
| 10043-52-4        | >= 1.0 - < 5.0% | calcium chloride                     |
| 102-71-6          | >= 1.0 - < 3.0% | 2,2',2"-nitrilotriethanol            |
| 111-42-2          | >= 0.0 - < 1.0% | 2,2'-iminodiethanol                  |
| 7789-41-5         | >= 0.1 - < 0.3% | Calcium bromide (CaBr <sub>2</sub> ) |

---

## 4. First-Aid Measures

### Description of first aid measures

#### General advice:

First aid personnel should pay attention to their own safety. Immediately remove contaminated clothing.

#### If inhaled:

If difficulties occur after vapour/aerosol has been inhaled, remove to fresh air and seek medical attention.

#### If on skin:

After contact with skin, wash immediately with plenty of water and soap. Under no circumstances should organic solvent be used. If irritation develops, seek medical attention.

#### If in eyes:

Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

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### **If swallowed:**

Rinse mouth immediately and then drink plenty of water, seek medical attention. Do not induce vomiting.

### **Most important symptoms and effects, both acute and delayed**

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Hazards: No applicable information available.

### **Indication of any immediate medical attention and special treatment needed**

#### Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

---

## **5. Fire-Fighting Measures**

### **Extinguishing media**

Suitable extinguishing media:  
foam, water spray, dry powder, carbon dioxide

Unsuitable extinguishing media for safety reasons:  
water jet

### **Special hazards arising from the substance or mixture**

Hazards during fire-fighting:  
carbon dioxide, carbon monoxide, harmful vapours, nitrogen oxides, fumes/smoke, carbon black

### **Advice for fire-fighters**

Protective equipment for fire-fighting:  
Wear a self-contained breathing apparatus.

### **Further information:**

The degree of risk is governed by the burning substance and the fire conditions. If exposed to fire, keep containers cool by spraying with water. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Contaminated extinguishing water must be disposed of in accordance with official regulations.

---

## **6. Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

Do not breathe vapour/aerosol/spray mists. Wear eye/face protection. If exposed to high vapour concentration, leave area immediately. Use personal protective clothing. Handle in accordance with good building materials hygiene and safety practice.

### **Environmental precautions**

Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

### **Methods and material for containment and cleaning up**

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For small amounts: Pick up with inert absorbent material (e.g. sand, earth etc.). Dispose of contaminated material as prescribed.  
For large amounts: Pump off product.

### 7. Handling and Storage

#### Precautions for safe handling

Avoid aerosol formation. Avoid inhalation of mists/vapours. Avoid skin contact. No special measures necessary provided product is used correctly.

#### Conditions for safe storage, including any incompatibilities

No applicable information available.

Suitable materials for containers: High density polyethylene (HDPE)

Further information on storage conditions: Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect from direct sunlight.

Protect from temperatures below: 0 °C

The packed product must be protected from temperatures below the indicated one.

### 8. Exposure Controls/Personal Protection

#### Components with occupational exposure limits

2,2',2"-nitrioltriethanol

ACGIH TLV      TWA value 5 mg/m<sup>3</sup> ; TWA value 5 mg/m<sup>3</sup> ;

2,2'-iminodiethanol

OSHA PEL      TWA value 3 ppm 15 mg/m<sup>3</sup> ;  
ACGIH TLV      Skin Designation Inhalable fraction and vapor ;  
The substance can be absorbed through the skin.  
TWA value 1 mg/m<sup>3</sup> Inhalable fraction and  
vapor ;

#### Advice on system design:

No applicable information available.

#### Personal protective equipment

##### Respiratory protection:

When workers are facing concentrations above the occupational exposure limits they must use appropriate certified respirators.

##### Hand protection:

Wear chemical resistant protective gloves., Manufacturer's directions for use should be observed because of great diversity of types.

##### Eye protection:

Safety glasses with side-shields.

##### Body protection:

Body protection must be chosen based on level of activity and exposure.

##### General safety and hygiene measures:

Do not inhale gases/vapours/aerosols. Avoid contact with the skin, eyes and clothing. Avoid exposure - obtain special instructions before use. Handle in accordance with good building materials

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hygiene and safety practice. Wearing of closed work clothing is recommended. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks).

### 9. Physical and Chemical Properties

|   |   |
|---|---|
| Form:   | liquid  |
| Odour:  | musty   |
| Odour threshold:                                    | No applicable information available.                            |
| Colour:   | dark brown  |
| pH value:   | approx. 7.0   |
| Melting point:                                      | No applicable information available.                            |
| Sublimation point:                                  | No applicable information available.                            |
| Flash point:  | not applicable  |
| Flammability:                                       | not flammable   |
| Lower explosion limit:                              | No applicable information available.                            |
| Upper explosion limit:                              | No applicable information available.                            |
| Autoignition:                                       | not applicable  |
| Vapour pressure:                                    | No applicable information available.                            |
| Density:  | approx. 1.18 g/cm <sup>3</sup><br>( 20 °C)                      |
| Relative density:                                   | No applicable information available.                            |
| Vapour density:                                     | Heavier than air.   |
| Partitioning coefficient n-octanol/water (log Pow): | No applicable information available.                            |
| Thermal decomposition:                              | No decomposition if stored and handled as prescribed/indicated. |
| Viscosity, dynamic:                                 | No applicable information available.                            |
| Viscosity, kinematic:                               | No applicable information available.                            |
| Solubility in water:                                | soluble   |
| Miscibility with water:                             | ( 20 °C)<br>completely (e.g. >=90%)                             |
| Solubility (quantitative):                          | No applicable information available.                            |
| Solubility (qualitative):                           | No applicable information available.                            |
| Evaporation rate:                                   | No applicable information available.                            |

### 10. Stability and Reactivity

#### Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:

Corrosive effects to metal are not anticipated.

#### Chemical stability

The product is stable if stored and handled as prescribed/indicated.

#### Possibility of hazardous reactions

The product is stable if stored and handled as prescribed/indicated.

#### Conditions to avoid

See MSDS section 7 - Handling and storage.

#### Incompatible materials

strong acids, strong bases, strong oxidizing agents, strong reducing agents

# Safety Data Sheet

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### Hazardous decomposition products

Decomposition products:  
oxides, carbon oxides, nitrogen oxides

Thermal decomposition:  
No decomposition if stored and handled as prescribed/indicated.

---

## 11. Toxicological information

### Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

### Acute Toxicity/Effects

#### Acute toxicity

Assessment of acute toxicity: Virtually nontoxic after a single ingestion. Based on available Data, the classification criteria are not met.

#### Oral

No applicable information available.

#### Inhalation

No applicable information available.

#### Dermal

No applicable information available.

#### Irritation / corrosion

Assessment of irritating effects: Eye contact causes irritation.

#### Sensitization

Assessment of sensitization: The product has not been tested. The statement has been derived from the properties of the individual components.

#### Aspiration Hazard

No aspiration hazard expected.

### Chronic Toxicity/Effects

#### Repeated dose toxicity

Assessment of repeated dose toxicity: No reliable data was available concerning repeated dose toxicity. Based on available Data, the classification criteria are not met.

#### Genetic toxicity

Assessment of mutagenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

#### Carcinogenicity

Assessment of carcinogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

*Information on: 2,2'-iminodiethanol*

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*Assessment of carcinogenicity: IARC (International Agency for Research on Cancer) has classified this substance as group 2B (The agent is possibly carcinogenic to humans). In long-term studies in rats and mice a carcinogenic effect was observed. Not Likely to Be Carcinogenic to Humans.*

-----

### Reproductive toxicity

Assessment of reproduction toxicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Teratogenicity

Assessment of teratogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Other Information

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses. The product has not been tested. The statements on toxicology have been derived from the properties of the individual components.

### **Symptoms of Exposure**

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

---

## **12. Ecological Information**

### **Toxicity**

#### Aquatic toxicity

Assessment of aquatic toxicity:

Based on available Data, the classification criteria are not met. There is a high probability that the product is not acutely harmful to aquatic organisms.

### **Persistence and degradability**

#### Assessment biodegradation and elimination (H<sub>2</sub>O)

Inherently biodegradable. The insoluble fraction can be removed by mechanical means in suitable waste water treatment plants.

The polymer component of the product is poorly biodegradable.

### **Bioaccumulative potential**

#### Assessment bioaccumulation potential

Discharge into the environment must be avoided.

### **Mobility in soil**

#### Assessment transport between environmental compartments

No data available.

### **Additional information**

Other ecotoxicological advice:

Do not discharge product into the environment without control. The product has not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

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### 13. Disposal considerations

**Waste disposal of substance:**

Dispose of in accordance with national, state and local regulations. Residues should be disposed of in the same manner as the substance/product. Do not discharge into drains/surface waters/groundwater.

**Container disposal:**

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

---

### 14. Transport Information

**Land transport**

TDG

Not classified as a dangerous good under transport regulations

**Sea transport**

IMDG

Not classified as a dangerous good under transport regulations

**Air transport**

IATA/ICAO

Not classified as a dangerous good under transport regulations

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### 15. Regulatory Information

**Federal Regulations**

**Registration status:**

Chemical DSL, CA released / listed

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### 16. Other Information

**SDS Prepared by:**

BASF NA Product Regulations

SDS Prepared on: 2016/10/24

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

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END OF DATA SHEET

# Safety Data Sheet

## MasterRheobuild 1000

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Version: 3.0

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(30584534/SDS\_GEN\_CA/EN)

### 1. Identification

#### Product identifier used on the label

## MasterRheobuild 1000

#### Recommended use of the chemical and restriction on use

Suitable for use in industrial sector: cement industry  
Recommended use\*: for industrial and professional users

\* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

#### Details of the supplier of the safety data sheet

Company:  
BASF Canada Inc.  
100 Milverton Drive  
Mississauga, ON L5R 4H1, CANADA

Telephone: +1 289 360-1300

#### Emergency telephone number

CANUTEC (reverse charges): (613) 996-6666  
BASF HOTLINE: (800) 454-COPE (2673)

#### Other means of identification

Chemical family: Solution based on: naphthalene sulfonates admixture

---

### 2. Hazards Identification

#### According to Hazardous Products Regulations (HPR) (SOR/2015-17)

#### Classification of the product

No need for classification according to GHS criteria for this product.

#### Label elements

The product does not require a hazard warning label in accordance with GHS criteria.

# Safety Data Sheet

## MasterRheobuild 1000

Revision date : 2016/02/19  
Version: 3.0

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### Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

## 3. Composition / Information on Ingredients

### According to Hazardous Products Regulations (HPR) (SOR/2015-17)

No particular hazards known.

## 4. First-Aid Measures

### Description of first aid measures

#### General advice:

First aid personnel should pay attention to their own safety. Immediately remove contaminated clothing.

#### If inhaled:

If difficulties occur after vapour/aerosol has been inhaled, remove to fresh air and seek medical attention.

#### If on skin:

After contact with skin, wash immediately with plenty of water and soap. Under no circumstances should organic solvent be used. If irritation develops, seek medical attention.

#### If in eyes:

Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

#### If swallowed:

Rinse mouth immediately and then drink plenty of water, seek medical attention. Do not induce vomiting unless told to by a poison control center or doctor.

### Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Hazards: No applicable information available.

### Indication of any immediate medical attention and special treatment needed

#### Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

## 5. Fire-Fighting Measures

### Extinguishing media

# Safety Data Sheet

## MasterRheobuild 1000

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Suitable extinguishing media:  
foam, water spray, dry powder, carbon dioxide

Unsuitable extinguishing media for safety reasons:  
water jet

### Special hazards arising from the substance or mixture

Hazards during fire-fighting:  
carbon dioxide, carbon monoxide, harmful vapours, nitrogen oxides, fumes/smoke, carbon black

### Advice for fire-fighters

Protective equipment for fire-fighting:  
Wear a self-contained breathing apparatus.

### Further information:

The degree of risk is governed by the burning substance and the fire conditions. If exposed to fire, keep containers cool by spraying with water. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Contaminated extinguishing water must be disposed of in accordance with official regulations.

---

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Do not breathe vapour/aerosol/spray mists. Wear eye/face protection. If exposed to high vapour concentration, leave area immediately. Use personal protective clothing. Handle in accordance with good building materials hygiene and safety practice.

### Environmental precautions

Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

### Methods and material for containment and cleaning up

For small amounts: Pick up with inert absorbent material (e.g. sand, earth etc.). Dispose of contaminated material as prescribed.  
For large amounts: Pump off product.

---

## 7. Handling and Storage

### Precautions for safe handling

Avoid aerosol formation. Avoid inhalation of mists/vapours. Avoid skin contact. No special measures necessary provided product is used correctly.

### Conditions for safe storage, including any incompatibilities

No applicable information available.

Suitable materials for containers: High density polyethylene (HDPE)

Further information on storage conditions: Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect from direct sunlight.

Protect from temperatures below: 5 °C

The packed product must be protected from temperatures below the indicated one.

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# Safety Data Sheet

## MasterRheobuild 1000

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### 8. Exposure Controls/Personal Protection

No occupational exposure limits known.

**Advice on system design:**

No applicable information available.

**Personal protective equipment**

**Respiratory protection:**

Wear respiratory protection if ventilation is inadequate.

**Hand protection:**

Wear chemical resistant protective gloves., Manufacturer's directions for use should be observed because of great diversity of types.

**Eye protection:**

Safety glasses with side-shields.

**Body protection:**

light protective clothing

**General safety and hygiene measures:**

Do not inhale gases/vapours/aerosols. Avoid contact with the skin, eyes and clothing. Avoid exposure - obtain special instructions before use. Handle in accordance with good building materials hygiene and safety practice. Wearing of closed work clothing is recommended. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks).

### 9. Physical and Chemical Properties

|                            |   |
|----------------------------|---|
| Form:                      | liquid  |
| Odour:                     | characteristic  |
| Odour threshold:           | No applicable information available.                            |
| Colour:                    | dark brown  |
| pH value:                  | 6 - 10<br>( 20 °C)  |
| Melting temperature:       | The product has not been tested.                                |
| boiling temperature:       | > 100 °C  |
| Sublimation point:         | No applicable information available.                            |
| Flash point:               | > 100 °C  |
| Flammability:              | not flammable   |
| Autoignition:              | not applicable  |
| Vapour pressure:           | The product has not been tested.                                |
| Density:                   | approx. 1.17 - 1.22 g/cm <sup>3</sup><br>( 20 °C)               |
| Self-ignition temperature: | not self-igniting   |
| Thermal decomposition:     | No decomposition if stored and handled as prescribed/indicated. |
| Viscosity, kinematic:      | No applicable information available.                            |
| Solubility in water:       | ( 20 °C)<br>soluble   |
| Miscibility with water:    | ( 20 °C)<br>miscible in all proportions                         |

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|                            |                                      |
|----------------------------|--------------------------------------|
| Solubility (quantitative): | No applicable information available. |
| Solubility (qualitative):  | No applicable information available. |
| Evaporation rate:          | not determined                       |

---

### 10. Stability and Reactivity

#### Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:

No corrosive effect on metal.

#### Chemical stability

The product is stable if stored and handled as prescribed/indicated.

#### Possibility of hazardous reactions

The product is stable if stored and handled as prescribed/indicated.

#### Conditions to avoid

See MSDS section 7 - Handling and storage.

#### Incompatible materials

strong acids, strong bases, strong oxidizing agents, strong reducing agents

#### Hazardous decomposition products

Decomposition products:

No hazardous decomposition products if stored and handled as prescribed/indicated.

Thermal decomposition:

No decomposition if stored and handled as prescribed/indicated.

---

### 11. Toxicological information

#### Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

#### Acute Toxicity/Effects

##### Acute toxicity

Assessment of acute toxicity: Virtually nontoxic after a single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact. Based on available Data, the classification criteria are not met. The product has not been tested. The statement has been derived from the properties of the individual components.

##### Oral

No applicable information available.

##### Inhalation

No applicable information available.

##### Dermal

No applicable information available.

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### Irritation / corrosion

Assessment of irritating effects: No irritation is expected under intended use and appropriate handling. Based on available Data, the classification criteria are not met.

### Sensitization

Assessment of sensitization: There is no evidence of a skin-sensitizing potential. Based on available Data, the classification criteria are not met. The product has not been tested. The statement has been derived from the properties of the individual components.

## **Chronic Toxicity/Effects**

### Repeated dose toxicity

Assessment of repeated dose toxicity: No reliable data was available concerning repeated dose toxicity. Based on available Data, the classification criteria are not met.

### Genetic toxicity

Assessment of mutagenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Carcinogenicity

Assessment of carcinogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Reproductive toxicity

Assessment of reproduction toxicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Teratogenicity

Assessment of teratogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Other Information

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses. The product has not been tested. The statements on toxicology have been derived from the properties of the individual components.

## **Symptoms of Exposure**

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

---

## **12. Ecological Information**

### **Toxicity**

#### Aquatic toxicity

Assessment of aquatic toxicity:

Based on available Data, the classification criteria are not met. There is a high probability that the product is not acutely harmful to aquatic organisms.

### **Persistence and degradability**

#### Assessment biodegradation and elimination (H2O)

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Inherently biodegradable. The insoluble fraction can be removed by mechanical means in suitable waste water treatment plants.

### **Bioaccumulative potential**

#### Assessment bioaccumulation potential

Discharge into the environment must be avoided.

### **Mobility in soil**

#### Assessment transport between environmental compartments

No data available.

### **Additional information**

Other ecotoxicological advice:

Do not discharge product into the environment without control. The product has not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

---

## **13. Disposal considerations**

### **Waste disposal of substance:**

Dispose of in accordance with national, state and local regulations. Residues should be disposed of in the same manner as the substance/product. Do not discharge into drains/surface waters/groundwater.

### **Container disposal:**

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

---

## **14. Transport Information**

### **Land transport**

TDG

Not classified as a dangerous good under transport regulations

### **Sea transport**

IMDG

Not classified as a dangerous good under transport regulations

### **Air transport**

IATA/ICAO

Not classified as a dangerous good under transport regulations

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## **15. Regulatory Information**

### Federal Regulations

#### **Registration status:**

Chemical                      DSL, CA      released / listed

# Safety Data Sheet

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### According to Controlled Products Regulations (CPR) (SOR/88-66)

Not WHMIS controlled.

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## 16. Other Information

**SDS Prepared by:**  
BASF NA Product Regulations  
SDS Prepared on: 2016/02/19

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

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END OF DATA SHEET



The Chemical Company

# MasterRheobuild® 1000

(Formerly known as RHEOBUILD® 1000)

## Naphthalene Sulphonate Based High Range Water Reducing I Superplasticizer Admixture

### Description of Product

**MasterRheobuild® 1000** is a naphthalene sulphonate based high range water reducing/superplasticizer admixture that improves the early and final strengths of concrete by giving Rheoplastic property.

**Consistent With the Ministry of Public Works Pos. No: 04.613I1-A3 TS EN 934-2 Table 3.1, 3.2 and 7: High Range Water Reducing I Superplasticizer Hardening Accelerator Admixture ASTM C 494 Type F: High Range Water Reducing I Superplasticizer Admixture Standards**

### Fields of Application

- In the production of pumpable and non-pumpable readymix concrete.
- In the production of wet shotcrete
- In the production of precast and prefabricated concrete.
- In the places where early demoulding is needed
- In the production of prestressed concrete with

low water/cement ratio.

- In the production of Rheoplastic\* concrete that can easily set to densely reinforced concrete elements.

### Features and Benefits

- Decreases the amount of water at least 12% by weight compared to concrete without admixture.
- Enables lower water/cement ratio or high workability in the same water/cement ratio and easy pumpability compared to concrete without admixture.
- Increases early and final strengths compared to concrete without admixture.
- Improves concrete's compressive and flexural strengths compared to concrete without admixture.
- Reduces demoulding time compared to concrete without admixture.
- Improves concrete's wear resistance by reducing segregation and bleeding.
- Improves concrete's strength to Freeze-Thaw cycle.

### Technical Data

|                                |                              |
|--------------------------------|------------------------------|
| Structure of the Material      | Naphthalene Sulphonate Based |
| Color                          | Brown                        |
| Density                        | 1,184-1,244 kg/liter         |
| Chloride Content% (EN 480-10)  | <0.1                         |
| Alkaline Content % (EN 480-12) | <5                           |

Obtained in +20°C, 50% relative humidity conditions.



The Chemical Company

# MasterRheobuild® 1000

(Formerly known as RHEOBUILD® 1000)

- Improves concrete's other mechanical properties like impermeability, durability, contraction, and creeping.
- Enables setting with lesser vibration even in densely reinforced concrete structures.
- **MasterRheobuild® 1000** does not contain chlorine.

## Working Mechanism of Admixture

Admixtures generally go into reaction only with the binder. When the admixture is added to the concrete, it is absorbed by the particles of the binder. The particles of the binder push each other by electrostatic force. Thus, the desired workability is obtained by less amount of water. Proportional with the decrease of mixture's water amount, mechanic strength increases.

## Application Procedure

Binder (cement-micro silica-fly ash) and aggregate must be mixed until a homogenous mixture is obtained. After adding 50%-70% of the water to be added to the mixture, **MasterRheobuild® 1000** must be added to the mixture along with the remaining water. **MasterRheobuild® 1000** must be mixed for 60 sec. or for the duration determined in laboratory experiments in the mixture for a homogenous diffusion.

## Dosage

**MasterRheobuild® 1000** is suggested to be used as 1.0-2.0 kg for 100 kg binder (cement-micro silica-fly ash). The dosage to be used must be determined beforehand by laboratory experiments according to concrete class and properties. BASF Master Builders Solutions San. A.ş. Technical Service must be consulted for detailed information.

## Compatibility

**MasterRheobuild® 1000** can be used with the following materials:

1. Can be used with all cement types.
2. Can be used with micro silica, fly ash and slag where high binding material like Smart Dynamic self-compacting concrete is needed to be used.
3. Can be used with air entraining **MasterAir® 200** (environment condition XF1-XF4 according to TS EN 206-1) to increase Freeze-Thaw resistance.
4. Used with **MasterRock® MS 610** micro silica Environment condition XA1-XA3 according to TS EN 206-1) to improve the performance of concrete and its strength in aggressive environments.
5. Used with **MasterRock® TCC 735** and **MasterCast® 125** to prevent shrinkage by preventing rapid losing of the water in concrete mixture.
6. Used against fissures from plastic shrinkage with synthetic fibers **MasterRoc® FIB. SP 530/540/550/650** and steel fibers.
7. In environments with high temperature and high air flow, must be used with a suitable cure material like **MasterKure® 101**, **MasterKure® 107**, **MasterKure® 176** or **MasterKure® 181** to prevent the water of the mixture inside the concrete from evaporating.

## Watch Points

- Concrete design and admixture dosage must be determined by prior laboratory trials according to concrete class and properties.
- The determined binder (cement-micro silica-fly ash), at the end of laboratory trials, fine and rough aggregate must be mixed until a homogenous and dry mixture is obtained. If admixture is added to the dry mixture before



The Chemical Company

## MasterRheobuild® 1000

(Formerly known as RHEOBUILD® 1000)

adding mixture water, then it will be adsorbed by the mixture and uniform distribution will not be obtained. Even if all the mixture water is added on top of this, aimed concrete class and properties cannot be obtained. Since the mixture will need extra water, the water amount in design values will be exceeded and the concrete's mechanical properties will be below the aimed value. For this reason, concrete admixtures must not be added directly to the dry mixture.

- The admixture amount in the mixture is calculated by multiplying the sum of cement and secondary binders (such as micro silica-fly ash-slag) in the mixture by admixture dosage ratio.
- If higher doses are used than the suggested dosage, then setting time of the mixture can increase. In such cases, reinforced concrete has to be cured by keeping it humid during demoulding.

### Packaging

30 kg drum.  
250 kg barrel.  
1200 kg tank.  
Bulk

### Storage

Must be stored in original packing, in +5°C environment. If the material freezes because of storing in undesirable environments, it must be thawed by keeping it in room temperature without direct heating, and mixed by mechanical methods until it becomes homogenous. Pressured air must not be used when mixing.

### Shelf Life

12 months after the production date under appropriate storing conditions. Opened packages

can be used throughout the shelf life if the package cover is well closed.

### Health and Safety Precautions

Work cloth, protective gloves, goggles and masks concordant with Work and Worker Health rules must be used during the application. Avoid contact to skin and eyes during storing and application. If such a contact occurs, it must be washed by soap and plenty of water. Consult a physician urgently if swallowed. Food and drink must be kept outside the application areas. Must be stored away from children. Please look at the Material Safety Data Sheet for detailed information.

The information given here is true, represents our best knowledge and is based not only on laboratory work but also on field experience. However, because of numerous factors affecting results, we offer this information without guarantee and no patent liability is assumed. For additional information or questions, please contact your local representative.

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# MasterSet® AC 534

## Accelerating Admixture

### Description

MasterSet AC 534 patented, ready-to-use, liquid admixture is formulated to accelerate time of setting and to increase early concrete strengths. MasterSet AC 534 admixture does not contain calcium chloride and is formulated to comply with ASTM C 494/C 494M Type C, accelerating, admixture requirements.

### Applications

Recommended for use in:

- Reinforced, precast, pumped, flowable, lightweight or normal weight concrete and shotcrete (wet mix)
- Concrete placed on galvanized steel floor and roof systems which are left in place
- Prestressed concrete
- Fast-track concrete construction
- Concrete subject to chloride ion constraints
- 4x4™ Concrete
- Self-consolidating concrete (SCC)
- Pervious concrete

### Features

- Accelerated setting time across a wide range of temperatures
- Increased early compressive and flexural strengths

### Benefits

- Earlier finishing of slabs — reduced labor costs
- Reduced in-place concrete costs
- Reduced or eliminated heating and protection time in cold weather
- Earlier stripping and reuse of forms
- Superior finishing characteristics for flatwork and cast surfaces

### Performance Characteristics

**Mixture Data:** 453 lb/yd<sup>3</sup> (269 kg/m<sup>3</sup>) of Type I cement; 3-4 in. (75-100 mm) slump; concrete temperature 74 °F (23 °C); ambient temperature 50 and 75 °F (10 and 24 °C); non-air-entrained concrete.

#### Setting time

**@ 50 °F (10 °C)**

|                                  | Initial Set (h:min) | Difference (h:min) |
|----------------------------------|---------------------|--------------------|
| Plain                            | 13:44               | REF                |
| MasterSet AC 534 admixture @     |                     |                    |
| › 20 fl oz/cwt (1,300 mL/100 kg) | 7:11                | - 6:33             |
| › 40 fl oz/cwt (2,600 mL/100 kg) | 6:05                | - 7:39             |

#### Setting time

**@ 75 °F (24 °C)**

|                                  | Initial Set (h:min) | Difference (h:min) |
|----------------------------------|---------------------|--------------------|
| Plain                            | 8:18                | REF                |
| MasterSet AC 534 admixture @     |                     |                    |
| › 20 fl oz/cwt (1,300 mL/100 kg) | 4:59                | - 3:19             |
| › 40 fl oz/cwt (2,600 mL/100 kg) | 4:18                | - 4:00             |

## Guidelines for Use

**Dosage:** The recommended dosage range for MasterSet AC 534 admixture is 10-45 fl oz/cwt (0.65 – 2.9 L/100 kg) of cementitious materials for most concrete mixtures using average concrete ingredients. Because of variations in job conditions and concrete materials, dosage rates other than the recommended amounts may be required. In such cases, contact your local sales representative.

The maximum dosage of MasterSet AC 534 in potable water applications that require the use of NSF Certified products is 30 fl oz/cwt (2.0 L/kg) of cementitious materials. For specialty concrete mixtures such as 4x4 Concrete, dosages up to 100 fl oz/cwt (6.5 L/100 kg) may be required.

## Product Notes

**Corrosivity – Non-Chloride, Non-Corrosive:** MasterSet AC 534 admixture will neither initiate nor promote corrosion of reinforcing steel in concrete.

**Compatibility:** MasterSet AC 534 admixture may be used in combination with any BASF admixtures. When used in conjunction with other admixtures, each admixture must be dispensed separately into the mixture.

## Storage and Handling

**Storage Temperature:** MasterSet AC 534 admixture should be stored above freezing temperatures. If MasterSet AC 534 admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. **Do not use pressurized air for agitation.**

**Shelf Life:** MasterSet AC 534 admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of MasterSet AC 534 admixture has been exceeded.

## Packaging

This product is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

## Related Documents

Safety Data Sheets: MasterSet AC 534 admixture

## Additional Information

For additional information on MasterSet AC 534 admixture or its use in developing a concrete mixture with special performance characteristics, contact your local sales representative.

*The Admixture Systems business of BASF's Construction Chemicals division is the leading provider of solutions that improve placement, pumping, finishing, appearance and performance characteristics of specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets. For over 100 years we have offered reliable products and innovative technologies, and through the Master Builders Solutions brand, we are connected globally with experts from many fields to provide sustainable solutions for the construction industry.*

## Limited Warranty Notice

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

# Safety Data Sheet

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### 1. Identification

#### Product identifier used on the label

## MasterSet AC 534

#### Recommended use of the chemical and restriction on use

Recommended use\*: for industrial and professional users

\* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

#### Details of the supplier of the safety data sheet

##### Company:

BASF Canada Inc.  
100 Milverton Drive  
Mississauga, ON L5R 4H1, CANADA

Telephone: +1 289 360-1300

#### Emergency telephone number

CANUTEC (reverse charges): (613) 996-6666  
BASF HOTLINE: (800) 454-COPE (2673)

#### Other means of identification

Chemical family: No data available.

---

### 2. Hazards Identification

#### According to Hazardous Products Regulations (HPR) (SOR/2015-17)

#### Classification of the product

|                 |    |                                   |
|-----------------|----|-----------------------------------|
| Eye Dam./Irrit. | 2B | Serious eye damage/eye irritation |
|-----------------|----|-----------------------------------|

#### Label elements

Signal Word:  
Warning

Hazard Statement:

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H320 Causes eye irritation.

Precautionary Statements (Prevention):

P264 Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P311 If eye irritation persists: Call a POISON CENTER or doctor/physician.

### Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

## 3. Composition / Information on Ingredients

### According to Hazardous Products Regulations (HPR) (SOR/2015-17)

| <u>CAS Number</u> | <u>Weight %</u>  | <u>Chemical name</u>      |
|-------------------|------------------|---------------------------|
| 540-72-7          | >= 5.0 - < 15.0% | sodium thiocyanate        |
| 102-71-6          | >= 0.0 - < 3.0%  | 2,2',2"-nitrilotriethanol |
| 111-42-2          | >= 0.0 - < 0.3%  | 2,2'-iminodiethanol       |

## 4. First-Aid Measures

### Description of first aid measures

#### General advice:

First aid personnel should pay attention to their own safety. Immediately remove contaminated clothing.

#### If inhaled:

If difficulties occur after vapour/aerosol has been inhaled, remove to fresh air and seek medical attention.

#### If on skin:

After contact with skin, wash immediately with plenty of water and soap. Under no circumstances should organic solvent be used. If irritation develops, seek medical attention.

#### If in eyes:

Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

#### If swallowed:

Rinse mouth immediately and then drink plenty of water, seek medical attention. Do not induce vomiting.

### Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Hazards: No applicable information available.

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### Indication of any immediate medical attention and special treatment needed

#### Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

---

## 5. Fire-Fighting Measures

### Extinguishing media

Suitable extinguishing media:  
foam, water spray, dry powder, carbon dioxide

Unsuitable extinguishing media for safety reasons:  
water jet

### Special hazards arising from the substance or mixture

Hazards during fire-fighting:  
carbon dioxide, carbon monoxide, harmful vapours, nitrogen oxides, fumes/smoke, carbon black

### Advice for fire-fighters

Protective equipment for fire-fighting:  
Wear a self-contained breathing apparatus.

### Further information:

The degree of risk is governed by the burning substance and the fire conditions. If exposed to fire, keep containers cool by spraying with water. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Contaminated extinguishing water must be disposed of in accordance with official regulations.

---

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Do not breathe vapour/aerosol/spray mists. Wear eye/face protection. If exposed to high vapour concentration, leave area immediately. Use personal protective clothing. Handle in accordance with good building materials hygiene and safety practice.

### Environmental precautions

Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

### Methods and material for containment and cleaning up

For small amounts: Pick up with inert absorbent material (e.g. sand, earth etc.). Dispose of contaminated material as prescribed.

For large amounts: Pump off product.

---

## 7. Handling and Storage

### Precautions for safe handling

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Avoid aerosol formation. Avoid inhalation of mists/vapours. Avoid skin contact. No special measures necessary provided product is used correctly.

### Conditions for safe storage, including any incompatibilities

No applicable information available.

Suitable materials for containers: High density polyethylene (HDPE)

Further information on storage conditions: Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect from direct sunlight. Protect from temperatures below: -25 °C

## 8. Exposure Controls/Personal Protection

### Components with occupational exposure limits

2,2',2"-nitrioltriethanol

ACGIH TLV    TWA value 5 mg/m<sup>3</sup> ; TWA value 5 mg/m<sup>3</sup> ;

### Advice on system design:

No applicable information available.

### Personal protective equipment

#### Respiratory protection:

Wear a NIOSH-certified (or equivalent) respirator as necessary.

#### Hand protection:

Wear chemical resistant protective gloves., Manufacturer's directions for use should be observed because of great diversity of types.

#### Eye protection:

Safety glasses with side-shields.

#### Body protection:

Impermeable protective clothing

#### General safety and hygiene measures:

Do not inhale gases/vapours/aerosols. Avoid contact with the skin, eyes and clothing. Avoid exposure - obtain special instructions before use. Handle in accordance with good building materials hygiene and safety practice. Wearing of closed work clothing is recommended. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks).

## 9. Physical and Chemical Properties

|                      |   |
|----------------------|---|
| Form:                | liquid  |
| Odour:               | odourless   |
| Odour threshold:     | No applicable information available.                  |
| Colour:              | dark brown  |
| pH value:            | approx. 6.5   |
| Melting temperature: | approx. 0 °C  |
| boiling temperature: | Information applies to the solvent.<br>approx. 100 °C |
| Sublimation point:   | No applicable information available.                  |

# Safety Data Sheet

## MasterSet AC 534

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|                            |   |
|----------------------------|---|
| Flash point:               | Non-flammable.  |
| Flammability:              | not flammable   |
| Upper explosion limit:     | No applicable information available.  |
| Vapour pressure:           | No applicable information available.  |
| Density:                   | approx. 1.399 g/cm <sup>3</sup><br>( 20 °C)   |
| Relative density:          | No applicable information available.  |
| Vapour density:            | Heavier than air.   |
| Thermal decomposition:     | No decomposition if stored and handled as prescribed/indicated.                                   |
| Viscosity, dynamic:        | No applicable information available.  |
| Viscosity, kinematic:      | No applicable information available.  |
| Solubility in water:       | ( 20 °C)<br>soluble   |
| Miscibility with water:    | ( 20 °C)<br>miscible in all proportions   |
| Solubility (quantitative): | No applicable information available.  |
| Solubility (qualitative):  | No applicable information available.  |
| Evaporation rate:          | No applicable information available.  |
| Other Information:         | If necessary, information on other physical and chemical parameters is indicated in this section. |

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## 10. Stability and Reactivity

### Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:

Corrosive effects to metal are not anticipated.

### Chemical stability

The product is stable if stored and handled as prescribed/indicated.

### Possibility of hazardous reactions

The product is stable if stored and handled as prescribed/indicated.

### Conditions to avoid

See MSDS section 7 - Handling and storage.

### Incompatible materials

strong acids, strong bases, strong oxidizing agents, strong reducing agents

### Hazardous decomposition products

Decomposition products:

No hazardous decomposition products if stored and handled as prescribed/indicated.

Thermal decomposition:

No decomposition if stored and handled as prescribed/indicated.

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## 11. Toxicological information

### Primary routes of exposure

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Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

### Acute Toxicity/Effects

#### Acute toxicity

Assessment of acute toxicity: Virtually nontoxic after a single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact. Based on available Data, the classification criteria are not met. The product has not been tested. The statement has been derived from the properties of the individual components.

#### Inhalation

No applicable information available.

#### Dermal

No applicable information available.

#### Assessment other acute effects

No applicable information available.

#### Irritation / corrosion

Assessment of irritating effects: Irritating to eyes.

#### Sensitization

Assessment of sensitization: The product has not been tested. The statement has been derived from the properties of the individual components.

### Chronic Toxicity/Effects

#### Repeated dose toxicity

Assessment of repeated dose toxicity: No reliable data was available concerning repeated dose toxicity. Based on available Data, the classification criteria are not met.

#### Genetic toxicity

Assessment of mutagenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

#### Carcinogenicity

Assessment of carcinogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

#### *Information on: 2,2'-iminodiethanol*

*Assessment of carcinogenicity: IARC (International Agency for Research on Cancer) has classified this substance as group 2B (The agent is possibly carcinogenic to humans). In long-term studies in rats and mice a carcinogenic effect was observed. Not Likely to Be Carcinogenic to Humans.*

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#### Reproductive toxicity

Assessment of reproduction toxicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

#### Teratogenicity

Assessment of teratogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

#### Other Information

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Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses. The product has not been tested. The statements on toxicology have been derived from the properties of the individual components.

### Symptoms of Exposure

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

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## 12. Ecological Information

### Toxicity

Aquatic toxicity

Assessment of aquatic toxicity:

Based on available Data, the classification criteria are not met. There is a high probability that the product is not acutely harmful to aquatic organisms.

### Persistence and degradability

Assessment biodegradation and elimination (H<sub>2</sub>O)

Inherently biodegradable. The insoluble fraction can be removed by mechanical means in suitable waste water treatment plants.

### Bioaccumulative potential

Assessment bioaccumulation potential

Discharge into the environment must be avoided.

### Mobility in soil

Assessment transport between environmental compartments

No data available.

### Additional information

Other ecotoxicological advice:

Do not discharge product into the environment without control. The product has not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

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## 13. Disposal considerations

### Waste disposal of substance:

Dispose of in accordance with national, state and local regulations. Residues should be disposed of in the same manner as the substance/product. Do not discharge into drains/surface waters/groundwater.

### Container disposal:

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

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### 14. Transport Information

#### Land transport

TDG

Not classified as a dangerous good under transport regulations

#### Sea transport

IMDG

Not classified as a dangerous good under transport regulations

#### Air transport

IATA/ICAO

Not classified as a dangerous good under transport regulations

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### 15. Regulatory Information

#### Federal Regulations

##### Registration status:

Chemical DSL, CA released / listed

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### 16. Other Information

#### SDS Prepared by:

BASF NA Product Regulations

SDS Prepared on: 2017/03/02

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

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END OF DATA SHEET

# MasterSet® DELVO

## Hydration Controlling Admixture

### Description

MasterSet DELVO ready-to-use, liquid admixture is used for making more uniform and predictable high-performance concrete. MasterSet DELVO admixture retards setting time by controlling the hydration of portland cement and other cementitious materials while facilitating placing and finishing operations. MasterSet DELVO admixture meets ASTM C 494/C 494M requirements for Type B, retarding, and Type D, water-reducing and retarding, admixtures.

### Applications

Recommended for use in:

- Stabilization of concrete washwater
- Stabilization of returned plastic concrete
- Stabilization of freshly batched concrete for long hauls
- 4x4™ Concrete
- Pumped concrete, shotcrete (wet mix) and conventionally-placed concrete
- Plain, reinforced, precast, prestressed, lightweight and normal weight concrete
- Pervious concrete

### Features

- Reduced water content required for a given workability
- Retarded setting time characteristics
- Improved workability

### Benefits

- Provides flexibility in the scheduling of placing and finishing operations
- Offsets the effects of slump loss during extended delays between mixing and placing
- Reduces waste associated with concrete washwater and returned concrete
- Increased strength – compressive and flexural

### Performance Characteristics

**Rate of Hardening:** The temperature of a concrete mixture and the ambient temperature (forms, earth, air, etc.) affect the hardening rate of concrete. At higher temperatures, concrete hardens more rapidly which may cause problems with placing and finishing.

One of the functions of MasterSet DELVO admixture is to retard the set of concrete. Within the normal dosage range, it will generally extend the working and setting times of concrete containing normal portland cement, fly ash, slag cement and silica fume approximately 1 hour to 5 hours compared to a plain concrete mixture. This depends on job materials and temperatures. Trial mixtures should be made under approximate job conditions to determine the dosage required.

**Compressive Strength:** Concrete produced with MasterSet DELVO admixture will develop higher early (within 24 hours) and higher ultimate strengths than plain concrete when used within the recommended dosage range and under normal, comparable curing conditions. When MasterSet DELVO admixture is used in heat-cured concrete, the length of the preheating period should be increased until the initial set of the concrete is achieved. The actual heat-curing period is then reduced accordingly to maintain existing production cycles without sacrificing early or ultimate strengths.

## Guidelines for Use

**Dosage:** MasterSet DELVO admixture is recommended for use at a dosage of  $4 \pm 1$  fl oz/cwt ( $260 \pm 65$  mL/100 kg) of cementitious materials for most concrete mixtures using average concrete ingredients. For long time-to-discharge applications, such as long hauls, dosages higher than the recommended range may be required. Specifically, for shotcrete applications, MasterSet DELVO admixture is recommended for use at a dosage of 1.5 fl oz/cwt to 25 fl oz/cwt (100 mL/100 kg to 1,500 mL/100 kg) of cementitious materials. Because of variations in job conditions and concrete materials, dosages other than the recommended amounts may be required. In such cases, contact your local sales representative. For concrete washwater and returned concrete stabilization, utilize MasterSet DELVO charts to determine the appropriate dosage rates.

## Product Notes

**Corrosivity – Non-Chloride, Non-Corrosive:** MasterSet DELVO admixture will neither initiate nor promote corrosion of reinforcing steel in concrete. This admixture does not contain intentionally-added calcium chloride or other chloride-based ingredients.

**Compatibility:** MasterSet DELVO admixture may be used in combination with any BASF admixture. When used in conjunction with another admixture, each admixture must be dispensed separately into the mixture.

**CAUTION:** While MasterSet DELVO and MasterLife CI 30 admixtures are compatible in the same concrete mixture when added separately, these two admixtures are NOT compatible in the same STORAGE TANK OR CONTAINER, in any ratio, as potentially harmful gas may result from blending the two. Contact a BASF representative if there are any questions regarding admixture storage or admixture compatibility.

## Storage and Handling

**Storage Temperature:** MasterSet DELVO admixture should be stored above freezing temperatures. If MasterSet DELVO admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. Do not use pressurized air for agitation.

**Shelf Life:** MasterSet DELVO admixture has a minimum shelf life of 12 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of MasterSet DELVO admixture has been exceeded.

## Packaging

MasterSet DELVO admixture is supplied in specially designed 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

## Related Documents

Safety Data Sheets: MasterSet DELVO admixture

## Additional Information

For more information on MasterSet DELVO admixture, contact your local sales representative.

*The Admixture Systems business of BASF's Construction Chemicals division is the leading provider of solutions that improve placement, pumping, finishing, appearance and performance characteristics of specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets. For over 100 years we have offered reliable products and innovative technologies, and through the Master Builders Solutions brand, we are connected globally with experts from many fields to provide sustainable solutions for the construction industry.*

## Limited Warranty Notice

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

# Product in Focus

## MasterSet<sup>®</sup> DELVO Admixture Technology

### Long-Haul Stabilization of Ready-Mixed Concrete

#### Description

This Product in Focus pertains to one application of MasterSet DELVO admixture technology - Long-Haul Stabilization of ready-mixed concrete.

#### Overview

Concrete loses slump and workability over time due to the hydration of hydraulic cement. The loss in slump and workability may be aggravated due to delays in transportation or concrete placement, or during summer months when elevated ambient and concrete temperatures accelerate the cement hydration process. As a result, ACI 301/301M, Specifications for Structural Concrete, and ASTM C94/C94M, Standard Specification for Ready-Mixed Concrete, limit the time-to-discharge of concrete to 90 minutes or 300 revolutions of the truck drum from the time of addition of water to the cement, unless otherwise specified. These specifications permit waiver of the time-to-discharge requirements, which tend to limit the service area of ready-mixed concrete producers, if the concrete meets the specified fresh properties and can be placed without the addition of water after the limits have been exceeded.

#### MasterSet DELVO Admixture Technology

BASF Corporation offers two ready-to-use hydration-controlling products - MasterSet DELVO admixture, a liquid, and MasterSet DELVO ESC admixture, a dry formulation - that can be used maintain the freshness of concrete, thereby permitting waiver of the time-to-discharge limits.

When dispensed into plastic concrete, both products can stop cement hydration for a period of time by forming a protective barrier around cementitious particles. This barrier effectively delays the hydration process and initial set, and helps to maintain the freshness and working time of concrete.

MasterSet DELVO and MasterSet DELVO ESC admixtures meet ASTM C 494M requirements for classification as Type B, Retarding, and Type D, Water-Reducing and Retarding, admixtures.

#### Benefits in Treating Ready-Mixed Concrete

MasterSet DELVO and MasterSet DELVO ESC admixtures can be used to stabilize ready-mixed concrete while providing the following benefits:

- Eliminate the need for portable batch plants to service jobs that would require a long haul from an existing plant
- Control/retain the slump of fresh concrete and extend the service area of ready-mix plants by increasing the working time of concrete
- Reduce or eliminate the labor cost associated with ice and liquid nitrogen used to reduce concrete temperature on jobs where a maximum concrete temperature is specified

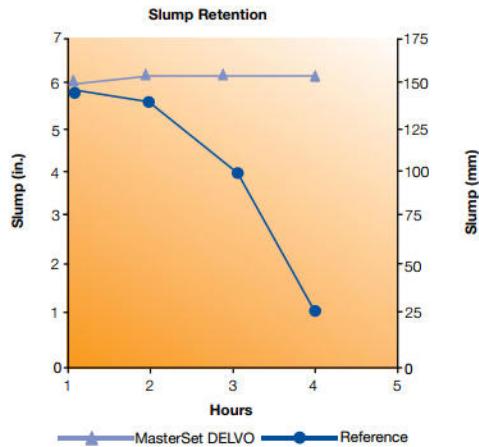
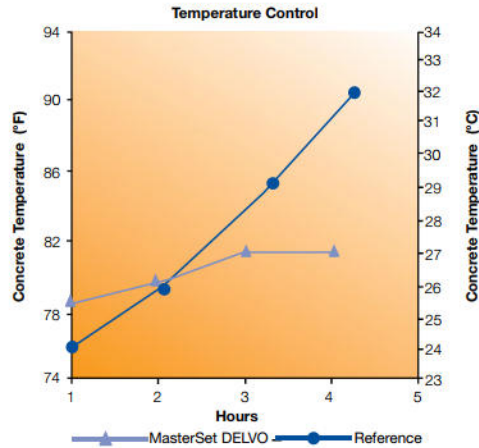
# MasterSet DELVO Admixture Technology

## Hours of Additional Working Time (Retardation)

Concrete Temp. fl oz per 100 lb (mL per 100 kg) portland cement

| Temp. °F | (°C)    | 0.5-1  | >1-1.5 | >1.5-2 | >2-2.5 | >2.5-3 | >3-3.5  |
|----------|---------|--------|--------|--------|--------|--------|---------|
| 100-109  | (38-43) | 5(325) | 6(390) | 7(455) | 8(520) | 9(585) | 10(650) |
| 90-99    | (32-37) | 4(260) | 5(325) | 6(390) | 7(455) | 8(520) | 9(585)  |
| 80-89    | (27-32) | 3(195) | 4(260) | 5(325) | 6(390) | 7(455) | 8(520)  |
| 70-79    | (21-26) | 2(130) | 3(195) | 4(260) | 5(325) | 6(390) | 7(455)  |
| 60-69    | (16-21) | 1(65)  | 2(130) | 3(195) | 4(260) | 5(325) | 6(390)  |

Note: For each additional 1/2 hour of working time (retardation) needed past the 3.5 hour limit on the chart, add an additional 1 fl oz per 100 lb. (65 mL per 100 kg) of DELVO stabilizer admixture to portland cement only.



The graphs above are an example of what can be achieved through the addition of MasterSet DELVO admixtures to ready-mixed concrete.

The specific dosage for a given concrete mixture will depend on the concrete-making materials and their proportions, the concrete temperature and the stabilization time required.

The guidelines above are for MasterSet DELVO admixture dosages for long-haul stabilization of ready-mixed concrete. These are only guidelines, therefore, it is recommended that trial batches be made with local materials to determine actual dosages.

When using MasterSet DELVO ESC admixtures, 1 puck is equal to 16 fl oz (470 mL) of MasterSet DELVO admixture.

## Stabilization Procedure

The procedure for stabilizing ready-mixed concrete for long-haul is easy, but it is important that each step be correctly followed.

1. From the batch ticket, identify the mix design and admixtures used.
2. After the fresh concrete is batched, immediately measure and record the concrete temperature.
3. Determine the total amount of portland cement per cubic yard (cubic meter) corresponding to the mix design of the fresh concrete.
4. Determine the total MasterSet DELVO admixture or MasterSet DELVO ESC admixture dosage per cubic yard (cubic meter) from the appropriate dosage chart [based on the concrete temperature, the total amount of portland cement, admixtures used, and length of working time (retardation) required].
5. Dispense MasterSet DELVO admixture or MasterSet DELVO ESC admixture material into the fresh concrete and mix for 7 to 9 minutes at normal mixing speed. This should be completed no later than one-half hour from initial batching.
6. After mixing is completed and the ready-mix truck is in transit to the job, the ready-mix truck drum must be turning as slowly as possible.

## More Information

The Master Builders Solutions brand brings all of BASF's expertise together to create chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry.

The know-how and experience of a global community of BASF construction experts form the core of Master Builders Solutions. We combine the right elements from our portfolio to solve your specific construction challenges. We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide. We leverage global BASF technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make you more successful and drive sustainable construction.

The comprehensive portfolio under the Master Builders Solutions brand encompasses concrete admixtures, cement additives, chemical solutions for underground construction, waterproofing solutions, sealants, concrete repair & protection solutions, performance grouts, performance flooring solutions.

## LIMITED WARRANTY NOTICE

We warrant our products to be of good quality and will replace or, at our discretion, refund the purchase price of any products proved defective. Satisfactory results depend not only upon quality products, but also upon many factors beyond our control. Therefore, except for such replacement or refund, BASF MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, RESPECTING ITS PRODUCTS, and BASF shall have no other liability with respect thereto. Any claims regarding product defect must be received in writing within one (1) year from the date of shipment. User shall determine the suitability of the products for the intended use and assume all risks and liability in connection therewith. Any authorized change in the printed recommendations concerning the use of our products must bear the signature of the BASF Technical Manager.

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\*Effective January 1, 2014, the names of BASF's Master Builders Solutions brand products have changed:  
DELVO Stabilizer became MasterSet DELVO  
DELVO ESC became MasterSet DELVO ESC

## Contact

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Brampton, Ontario L6T 4M7  
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### 1. Identification

#### Product identifier used on the label

## MasterSet DELVO

#### Recommended use of the chemical and restriction on use

Recommended use\*: for industrial and professional users

\* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

#### Details of the supplier of the safety data sheet

##### Company:

BASF Canada Inc.  
100 Milverton Drive  
Mississauga, ON L5R 4H1, CANADA

Telephone: +1 289 360-1300

#### Emergency telephone number

CANUTEC (reverse charges): (613) 996-6666  
BASF HOTLINE: (800) 454-COPE (2673)

#### Other means of identification

Chemical family: No data available.

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### 2. Hazards Identification

#### According to Hazardous Products Regulations (HPR) (SOR/2015-17)

##### Classification of the product

|                   |    |                                   |
|-------------------|----|-----------------------------------|
| Skin Corr./Irrit. | 2  | Skin corrosion/irritation         |
| Eye Dam./Irrit.   | 2A | Serious eye damage/eye irritation |
| Skin Sens.        | 1B | Skin sensitization                |

##### Label elements

Pictogram:

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Signal Word:  
Warning

Hazard Statement:

H319 Causes serious eye irritation.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.

Precautionary Statements (Prevention):

P280 Wear protective gloves and eye/face protection.  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P264 Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P333 + P311 If skin irritation or rash occurs: Call a POISON CENTER or doctor/physician.  
P303 + P352 IF ON SKIN (or hair): Wash with plenty of soap and water.  
P332 + P313 If skin irritation occurs: Get medical advice/attention.  
P362 + P364 Take off contaminated clothing and wash it before reuse.  
P337 + P311 If eye irritation persists: Call a POISON CENTER or doctor/physician.

Precautionary Statements (Disposal):

P501 Dispose of contents/container to hazardous or special waste collection point.

### Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

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## 3. Composition / Information on Ingredients

### According to Hazardous Products Regulations (HPR) (SOR/2015-17)

| <u>CAS Number</u> | <u>Weight %</u>  | <u>Chemical name</u>                           |
|-------------------|------------------|--|
| 6419-19-8         | >= 5.0 - < 15.0% | Phosphonic acid, [nitrilotris(methylene)]tris- |
| 1310-73-2         | >= 0.3 - < 3.0%  | Sodium Hydroxide                               |
| 13598-36-2        | >= 0.0 - < 1.0%  | Phosphonic acid                                |
| 59-50-7           | >= 0.0 - < 0.2%  | 4-chloro-3-methyl phenol                       |

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## 4. First-Aid Measures

### Description of first aid measures

**General advice:**

First aid personnel should pay attention to their own safety. Immediately remove contaminated clothing.

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### **If inhaled:**

If difficulties occur after vapour/aerosol has been inhaled, remove to fresh air and seek medical attention.

### **If on skin:**

After contact with skin, wash immediately with plenty of water and soap. Under no circumstances should organic solvent be used. If irritation develops, seek medical attention.

### **If in eyes:**

Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

### **If swallowed:**

Rinse mouth immediately and then drink plenty of water, seek medical attention. Do not induce vomiting.

### **Most important symptoms and effects, both acute and delayed**

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

Hazards: No applicable information available.

### **Indication of any immediate medical attention and special treatment needed**

#### Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

---

## **5. Fire-Fighting Measures**

### **Extinguishing media**

Suitable extinguishing media:  
foam, water spray, dry powder, carbon dioxide

Unsuitable extinguishing media for safety reasons:  
water jet

### **Special hazards arising from the substance or mixture**

Hazards during fire-fighting:  
carbon dioxide, carbon monoxide, harmful vapours, nitrogen oxides, fumes/smoke, carbon black

### **Advice for fire-fighters**

Protective equipment for fire-fighting:  
Wear a self-contained breathing apparatus.

### **Further information:**

The degree of risk is governed by the burning substance and the fire conditions. If exposed to fire, keep containers cool by spraying with water. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Contaminated extinguishing water must be disposed of in accordance with official regulations.

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### 6. Accidental release measures

#### **Personal precautions, protective equipment and emergency procedures**

Do not breathe vapour/aerosol/spray mists. Wear eye/face protection. If exposed to high vapour concentration, leave area immediately. Use personal protective clothing. Handle in accordance with good building materials hygiene and safety practice.

#### **Environmental precautions**

Contain contaminated water/firefighting water. Do not discharge into drains/surface waters/groundwater.

#### **Methods and material for containment and cleaning up**

For small amounts: Pick up with inert absorbent material (e.g. sand, earth etc.). Dispose of contaminated material as prescribed.

For large amounts: Pump off product.

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### 7. Handling and Storage

#### **Precautions for safe handling**

Avoid aerosol formation. Avoid inhalation of mists/vapours. Avoid skin contact. No special measures necessary provided product is used correctly.

#### **Conditions for safe storage, including any incompatibilities**

No applicable information available.

Suitable materials for containers: High density polyethylene (HDPE)

Further information on storage conditions: Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect from direct sunlight.

Protect from temperatures below: 5 °C

The packed product must be protected from temperatures below the indicated one.

---

### 8. Exposure Controls/Personal Protection

#### **Components with occupational exposure limits**

|                  |           |   |
|------------------|-----------|---|
| Sodium Hydroxide | OSHA PEL  | PEL 2 mg/m <sup>3</sup> ; CLV 2 mg/m <sup>3</sup> ; |
|                  | ACGIH TLV | CLV 2 mg/m <sup>3</sup> ;                           |

#### **Advice on system design:**

No applicable information available.

#### **Personal protective equipment**

##### **Respiratory protection:**

When workers are facing concentrations above the occupational exposure limits they must use appropriate certified respirators.

##### **Hand protection:**

Wear chemical resistant protective gloves., Manufacturer's directions for use should be observed because of great diversity of types.

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**Eye protection:**

Safety glasses with side-shields.

**Body protection:**

Body protection must be chosen based on level of activity and exposure.

**General safety and hygiene measures:**

Do not inhale gases/vapours/aerosols. Avoid contact with the skin, eyes and clothing. Avoid exposure - obtain special instructions before use. Handle in accordance with good building materials hygiene and safety practice. Wearing of closed work clothing is recommended. When using, do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks).

### 9. Physical and Chemical Properties

|   |   |
|---|---|
| Form:   | liquid  |
| Odour:  | odourless   |
| Odour threshold:                                    | No applicable information available.  |
| Colour:   | dark brown  |
| pH value:   | 2.1 - 4<br>( 25 °C)   |
| Freezing point:                                     | -3 °C   |
| Boiling point:                                      | 105 °C  |
| <i>Information on: Water</i>                        |   |
| Boiling point:                                      | 100 °C  |
| -----   |   |
| Sublimation temperature:                            | No applicable information available.  |
| Flash point:  | A flash point determination is unnecessary due to the high water content.                         |
| Upper explosion limit:                              | No applicable information available.  |
| Autoignition:                                       | Based on the water content the product does not ignite.   |
| Vapour pressure:                                    | 0.0227 ATM<br>contains water, negligible  |
| Density:  | approx. 1,075 g/cm <sup>3</sup><br>( 25 °C)   |
| Vapour density:                                     | Heavier than air.   |
| Partitioning coefficient n-octanol/water (log Pow): | not applicable  |
| Thermal decomposition:                              | No decomposition if stored and handled as prescribed/indicated.                                   |
| Viscosity, dynamic:                                 | not determined  |
| Viscosity, kinematic:                               | No applicable information available.  |
| Solubility in water:                                | ( 20 °C)<br>soluble   |
| Miscibility with water:                             | ( 20 °C)<br>soluble   |
| Solubility (quantitative):                          | No applicable information available.  |
| Solubility (qualitative):                           | No applicable information available.  |
| Evaporation rate:                                   | not determined  |
| Other Information:                                  | If necessary, information on other physical and chemical parameters is indicated in this section. |

# Safety Data Sheet

## MasterSet DELVO

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### 10. Stability and Reactivity

#### Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:

Corrosive effect on: mild steel Aluminium The product is not to be labelled as corrosive for transport purposes.

Oxidizing properties:

not fire-propagating

#### Chemical stability

The product is stable if stored and handled as prescribed/indicated.

#### Possibility of hazardous reactions

The product is stable if stored and handled as prescribed/indicated.

#### Conditions to avoid

See MSDS section 7 - Handling and storage.

#### Incompatible materials

strong acids, strong bases, strong oxidizing agents, strong reducing agents

#### Hazardous decomposition products

Decomposition products:

Possible decomposition products: phosphines, carbon oxides

Thermal decomposition:

No decomposition if stored and handled as prescribed/indicated.

---

### 11. Toxicological information

#### Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

#### Acute Toxicity/Effects

##### Acute toxicity

Assessment of acute toxicity: Virtually nontoxic after a single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact. Based on available Data, the classification criteria are not met. The product has not been tested. The statement has been derived from the properties of the individual components.

##### Inhalation

No applicable information available.

##### Assessment other acute effects

Assessment of STOT single:

Based on available Data, the classification criteria are not met.

# Safety Data Sheet

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### Irritation / corrosion

Assessment of irritating effects: Eye contact causes irritation. Skin contact causes irritation.

### Sensitization

Assessment of sensitization: Sensitization after skin contact possible.

### Aspiration Hazard

No aspiration hazard expected.

## **Chronic Toxicity/Effects**

### Repeated dose toxicity

Assessment of repeated dose toxicity: No reliable data was available concerning repeated dose toxicity. Based on available Data, the classification criteria are not met.

### Genetic toxicity

Assessment of mutagenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Carcinogenicity

Assessment of carcinogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Reproductive toxicity

Assessment of reproduction toxicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Teratogenicity

Assessment of teratogenicity: The chemical structure does not suggest a specific alert for such an effect. Based on available Data, the classification criteria are not met.

### Other Information

The product has not been tested. The statement has been derived from the properties of the individual components.

## **Symptoms of Exposure**

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

---

## **12. Ecological Information**

### **Toxicity**

#### Aquatic toxicity

Assessment of aquatic toxicity:

Based on available Data, the classification criteria are not met. There is a high probability that the product is not acutely harmful to aquatic organisms.

#### Toxicity to fish

LC0 (96 h) 5,000 mg/l, *Salmo gairdneri*, syn. *O. mykiss*

#### Aquatic invertebrates

LC0 (48 h) 400 mg/l, *Daphnia magna*

### **Persistence and degradability**

# Safety Data Sheet

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### Assessment biodegradation and elimination (H2O)

Inherently biodegradable. The insoluble fraction can be removed by mechanical means in suitable waste water treatment plants.

### **Bioaccumulative potential**

#### Assessment bioaccumulation potential

Discharge into the environment must be avoided.

### **Mobility in soil**

#### Assessment transport between environmental compartments

No data available.

### **Additional information**

Other ecotoxicological advice:

Do not discharge product into the environment without control. The product has not been tested. The statements on ecotoxicology have been derived from the properties of the individual components.

---

## **13. Disposal considerations**

### **Waste disposal of substance:**

Dispose of in accordance with national, state and local regulations. Residues should be disposed of in the same manner as the substance/product. Do not discharge into drains/surface waters/groundwater.

### **Container disposal:**

Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

---

## **14. Transport Information**

### **Land transport**

TDG

Not classified as a dangerous good under transport regulations

### **Sea transport**

IMDG

Not classified as a dangerous good under transport regulations

### **Air transport**

IATA/ICAO

Not classified as a dangerous good under transport regulations

---

## **15. Regulatory Information**

### **Federal Regulations**

# Safety Data Sheet

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**Registration status:**

Chemical DSL, CA released; restriction on quantity / not listed

**NFPA Hazard codes:**

Health: 2 Fire: 0 Reactivity: 0 Special:

---

**16. Other Information****SDS Prepared by:**

BASF NA Product Regulations  
SDS Prepared on: 2018/08/09

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

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END OF DATA SHEET

# MATERIAL SAFETY DATA SHEET

## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT

**Product Name:** HYDRESSTIC 32  
**Product Description:** Base Oil and Additives  
**MSDS Number:** 18771  
**Product Code:** 20156010L010  
**Intended Use:** Hydraulic fluid

### COMPANY IDENTIFICATION

|   |  |                |
|---|--|----------------|
| <b>Supplier:</b>  | <b>Imperial Oil Downstream</b><br>240 4th Avenue<br>Calgary, ALBERTA T2P 3M9 | Canada         |
| <b>24 Hour Environmental / Health Emergency Telephone</b> |  | 1-866-232-9563 |
| <b>Transportation Emergency Phone Number</b>              |  | 1-866-232-9563 |
| <b>Product Technical Information</b>                      |  | 1-800-268-3183 |
| <b>Supplier General Contact</b>                           |  | 1-800-567-3776 |

## SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

## SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see Section 15).

### HEALTH EFFECTS

Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

|                        |           |                 |               |
|------------------------|-----------|-----------------|---------------|
| <b>NFPA Hazard ID:</b> | Health: 0 | Flammability: 1 | Reactivity: 0 |
| <b>HMIS Hazard ID:</b> | Health: 0 | Flammability: 1 | Reactivity: 0 |

**NOTE:** This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

## SECTION 4 FIRST AID MEASURES

### INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek

immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

#### SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

#### EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

#### INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

### SECTION 5 FIRE FIGHTING MEASURES

#### EXTINGUISHING MEDIA

**Appropriate Extinguishing Media:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

**Inappropriate Extinguishing Media:** Straight streams of water

#### FIRE FIGHTING

**Fire Fighting Instructions:** Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

**Unusual Fire Hazards:** Pressurised mists may form a flammable mixture.

**Hazardous Combustion Products:** Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulphur oxides

#### FLAMMABILITY PROPERTIES

**Flash Point [Method]:** 200°C (392°F) [ASTM D-92]

**Flammable Limits (Approximate volume % in air):** LEL: 0.9 UEL: 7.0

**Autoignition Temperature:** N/D

### SECTION 6 ACCIDENTAL RELEASE MEASURES

#### NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

#### PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification

Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

## SPILL MANAGEMENT

**Land Spill:** Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

**Water Spill:** Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

## ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

## SECTION 7

## HANDLING AND STORAGE

### HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

**Static Accumulator:** This material is a static accumulator.

### STORAGE

The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

## SECTION 8

## EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure limits/standards for materials that can be formed when handling this product:** When mists/aerosols can occur the following is recommended: 5 mg/m<sup>3</sup> - ACGIH TLV (inhalable fraction).

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

## ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

## PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

**Respiratory Protection:** If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

**Hand Protection:** Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

**Eye Protection:** If contact is likely, safety glasses with side shields are recommended.

**Skin and Body Protection:** Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

**Specific Hygiene Measures:** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

## ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

|                  |   |
|------------------|---|
| <b>SECTION 9</b> | <b>PHYSICAL AND CHEMICAL PROPERTIES</b> |
|------------------|---|

**Note:** Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

**GENERAL INFORMATION**

**Physical State:** Liquid  
**Form:** Clear  
**Colour:** Pale Yellow  
**Odour:** Characteristic  
**Odour Threshold:** N/D

**IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION**

**Relative Density (at 15 °C):** 0.872  
**Flash Point [Method]:** 200°C (392°F) [ASTM D-92]  
**Flammable Limits (Approximate volume % in air):** LEL: 0.9 UEL: 7.0  
**Autoignition Temperature:** N/D  
**Boiling Point / Range:** > 316°C (600°F)  
**Vapour Density (Air = 1):** > 2 at 101 kPa  
**Vapour Pressure:** < 0.013 kPa (0.1 mm Hg) at 20°C  
**Evaporation Rate (n-butyl acetate = 1):** < 0.1  
**pH:** N/A  
**Log Pow (n-Octanol/Water Partition Coefficient):** > 3.5  
**Solubility in Water:** Negligible  
**Viscosity:** 32 cSt (32 mm<sup>2</sup>/sec) at 40°C  
**Oxidizing Properties:** See Hazards Identification Section.

**OTHER INFORMATION**

**Freezing Point:** N/D  
**Melting Point:** N/A  
**Pour Point:** -33°C (-27°F)  
**DMSO Extract (mineral oil only), IP-346:** < 3 %wt  
**Decomposition Temperature:** N/D

|                   |                                 |
|-------------------|---------------------------------|
| <b>SECTION 10</b> | <b>STABILITY AND REACTIVITY</b> |
|-------------------|---------------------------------|

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Excessive heat. High energy sources of ignition.

**MATERIALS TO AVOID:** Strong oxidizers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**HAZARDOUS POLYMERIZATION:** Will not occur.

|                   |                                  |
|-------------------|----------------------------------|
| <b>SECTION 11</b> | <b>TOXICOLOGICAL INFORMATION</b> |
|-------------------|----------------------------------|

**ACUTE TOXICITY**

| Route of Exposure                         | Conclusion / Remarks                                    |
|---|---|
| Inhalation                                |   |
| Toxicity: No end point data for material. | Minimally Toxic. Based on assessment of the components. |

|   |   |
|---|---|
| Irritation: No end point data for material. | Negligible hazard at ambient/normal handling temperatures.                                    |
| <b>Ingestion</b>                            |   |
| Toxicity: No end point data for material.   | Minimally Toxic. Based on assessment of the components.                                       |
| <b>Skin</b>                                 |   |
| Toxicity: No end point data for material.   | Minimally Toxic. Based on assessment of the components.                                       |
| Irritation: No end point data for material. | Negligible irritation to skin at ambient temperatures. Based on assessment of the components. |
| <b>Eye</b>                                  |   |
| Irritation: No end point data for material. | May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.      |

**CHRONIC/OTHER EFFECTS**

**Contains:**

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

**CMR Status:** None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1  
 2 = IARC 2A

3 = IARC 2B  
 4 = ACGIH ALL

5 = ACGIH A1  
 6 = ACGIH A2

**SECTION 12 ECOLOGICAL INFORMATION**

The information given is based on data available for the material, the components of the material, and similar materials.

**ECOTOXICITY**

Material -- Not expected to be harmful to aquatic organisms.

**MOBILITY**

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

**PERSISTENCE AND DEGRADABILITY**

**Biodegradation:**

Base oil component -- Expected to be inherently biodegradable

**BIOACCUMULATION POTENTIAL**

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

|                   |                                |
|-------------------|--------------------------------|
| <b>SECTION 13</b> | <b>DISPOSAL CONSIDERATIONS</b> |
|-------------------|--------------------------------|

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

**DISPOSAL RECOMMENDATIONS**

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

**REGULATORY DISPOSAL INFORMATION**

**Empty Container Warning** Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

|                   |                              |
|-------------------|------------------------------|
| <b>SECTION 14</b> | <b>TRANSPORT INFORMATION</b> |
|-------------------|------------------------------|

**LAND (TDG):** Not Regulated for Land Transport

**LAND (DOT):** Not Regulated for Land Transport

**SEA (IMDG):** Not Regulated for Sea Transport according to IMDG-Code

**AIR (IATA):** Not Regulated for Air Transport

|                   |                               |
|-------------------|-------------------------------|
| <b>SECTION 15</b> | <b>REGULATORY INFORMATION</b> |
|-------------------|-------------------------------|

**WHMIS Classification:** Not controlled

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations.

**CEPA:** All components of this material are either on the Canadian Domestic Substances List (DSL), exempt, or have been notified under CEPA.

**Listed or exempt from listing/notification on the following chemical inventories:** AICS, DSL, IECSC, KECI, PICCS, TSCA

**Special Cases:**

| <b>Inventory</b> | <b>Status</b> |
|------------------|---------------|
|------------------|---------------|

ENCS

Restrictions Apply

**The Following Ingredients are Cited on the Lists Below:**

--REGULATORY LISTS SEARCHED--

1 = TSCA 4  
2 = TSCA 5a2

3 = TSCA 5e  
4 = TSCA 6

5 = TSCA 12b  
6 = NPRI

**SECTION 16**

**OTHER INFORMATION**

N/D = Not determined, N/A = Not applicable

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

Hazard Identification: CA - Not Hazardous Statement information was modified.  
Section 01: Company Contact Methods information was modified.  
Section 01: Company Mailing Address information was modified.  
Section 05: Fire Fighting Measures - Fire Fighting Instruction information was modified.  
Section 05: Hazardous Combustion Products information was modified.  
Section 06: Protective Measures information was modified.  
Section 07: Handling and Storage-Handling information was modified.  
Section 07: Handling and Storage-Storage Phrases information was modified.  
Section 09: Decomposition Temp - Header information was added.  
Section 09: Decomposition Temperature information was added.  
Section 11: Additional Health Information information was modified.  
Section 11: Inhalation Lethality Test Comment information was deleted.  
Section 13: Regulatory Disposal Information - Header information was modified.  
Section 14: LAND (TDG) - Header information was modified.  
Section 15: Canadian List Citations Table information was deleted.  
Section 15: CAS Number - Header information was deleted.  
Section 15: Chemical Name - Header information was deleted.  
Section 15: List Citations -Header information was deleted.  
Section 15: National Chemical Inventory Listing - Header information was modified.  
Section 15: Special Cases Table information was modified.  
Section 16: MSN,MAT ID information was modified.  
Section 16: Not determined, Not applicable information was modified.

-----  
WHMIS Classification: Not controlled

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be consulted to insure proper health, safety and other necessary information is included on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted.

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Prepared by: Imperial Oil Limited, IH and Product Safety

# SAFETY DATA SHEET

## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT

**Product Name:** NUTO H 68  
**Product Description:** Base Oil and Additives  
**Product Code:** 20156010H540, 583211  
**Intended Use:** Hydraulic fluid

### COMPANY IDENTIFICATION

**Supplier:** East Coast Lubes Pty Ltd (Queensland and Northern Territory)  
A.B.N. 37 117 203 611  
Cnr North and Mort Streets  
Toowoomba, Queensland 4350 Australia

**24 Hour Emergency Telephone** 1300 131 001  
**Supplier General Contact** 1800 069 019

**Supplier:** Southern Cross Lubes (Victoria and Tasmania, New South Wales and Australian Capital Territory)  
58-66 Ajax Road  
Altona, Victoria 3018, Australia

**24 Hour Emergency Telephone** 1300 131 001  
**Product Technical Information**  
**Supplier General Contact** 1300 466 245  
1300 552 861

**Supplier:** Perkal Pty Ltd Trading as Statewide Oil (Western Australia)  
A.B.N. 43 009 283 363  
14 Beete Street  
Welshpool, Western Australia 6106 Australia

**24 Hour Emergency Telephone** (8:00am to 4:30pm Mon to Fri) 1300 919 904  
**Product Technical Information**  
**Supplier General Contact** (08) 9350 6777  
(08) 9350 6777

**Supplier:** Perkal Pty Ltd Trading as Statewide Oil (South Australia)  
A.B.N. 43 009 283 363  
6-10 Streiff Rd  
Wingfield, South Australia 5013 Australia

**24 Hour Emergency Telephone** (8:00am to 4:30pm Mon to Fri) 1300 919 904  
**Product Technical Information**  
**Supplier General Contact** (08) 8359 8995  
(08) 8359 8995

## SECTION 2 HAZARDS IDENTIFICATION

Product Name: NUTO H 68  
Revision Date: 30 Aug 2018  
Page 2 of 10

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

**Other hazard information:**

**Physical / Chemical Hazards:**

No significant hazards.

**Health Hazards:**

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

**Environmental Hazards:**

No significant hazards.

**NOTE:** This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

**SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**

This material is defined as a mixture.

**Reportable Hazardous Substance(s) or Complex Substance(s)**

| Name   | CAS#      | Concentration* | GHS Hazard Codes                         |
|--|-----------|----------------|--|
| 2,6-DITERTBUTYL PHENOL   | 128-39-2  | 0.1 - < 0.25%  | H315, H400(M factor 1), H410(M factor 1) |
| ZINC, BIS[O,O-BIS(2-ETHYLHEXYL)PHOPSHORODITHIOATO-KS,KS']-, (T-4)- | 4259-15-8 | 0.1 - < 1%     | H318, H401, H411                         |

\* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. Other ingredients determined not to be hazardous up to 100%.

**SECTION 4 FIRST AID MEASURES**

**INHALATION**

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

**SKIN CONTACT**

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent

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of injury.

#### EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

#### INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

#### NOTE TO PHYSICIAN

None

### SECTION 5 FIRE FIGHTING MEASURES

#### EXTINGUISHING MEDIA

**Appropriate Extinguishing Media:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

**Inappropriate Extinguishing Media:** Straight streams of water

#### FIRE FIGHTING

**Fire Fighting Instructions:** Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

**Unusual Fire Hazards:** Pressurised mists may form a flammable mixture.

**Hazardous Combustion Products:** Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume, Sulphur oxides

#### FLAMMABILITY PROPERTIES

**Flash Point [Method]:** >218°C (424°F) [ASTM D-92]

**Flammable Limits (Approximate volume % in air):** LEL: 0.9 UEL: 7.0

**Autoignition Temperature:** N/D

### SECTION 6 ACCIDENTAL RELEASE MEASURES

#### NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

#### PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self

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Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

## SPILL MANAGEMENT

**Land Spill:** Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

**Water Spill:** Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

## ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

## SECTION 7

## HANDLING AND STORAGE

### HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

**Static Accumulator:** This material is a static accumulator.

### STORAGE

The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

**Storage Temperature:** < 45°C (113°F)

Material is defined under the National Standard [NOHSC:1015] Storage and Handling of Workplace Dangerous Goods.

## SECTION 8

## EXPOSURE CONTROLS / PERSONAL PROTECTION

### Exposure limits/standards for materials that can be formed when handling this product:

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

### Biological limits

No biological limits allocated.

### ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions.

Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

### PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

**Respiratory Protection:** If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Particulate

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

**Hand Protection:** Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Nitrile, Viton

No protection is ordinarily required under normal conditions of use.

**Eye Protection:** If contact is likely, safety glasses with side shields are recommended.

**Skin and Body Protection:** Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

**Specific Hygiene Measures:** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

### ENVIRONMENTAL CONTROLS

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Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

**Note:** Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

### GENERAL INFORMATION

**Physical State:** Liquid  
**Colour:** Pale Yellow to Brown  
**Odour:** Characteristic  
**Odour Threshold:** N/D

### IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

**Relative Density (at 15 °C):** 0.883  
**Flammability (Solid, Gas):** N/A  
**Flash Point [Method]:** >218°C (424°F) [ASTM D-92]  
**Flammable Limits (Approximate volume % in air):** LEL: 0.9 UEL: 7.0  
**Autoignition Temperature:** N/D  
**Boiling Point / Range:** > 316°C (600°F)  
**Decomposition Temperature:** N/D  
**Vapour Density (Air = 1):** > 2 at 101 kPa  
**Vapour Pressure:** < 0.013 kPa (0.1 mm Hg) at 20 °C  
**Evaporation Rate (n-butyl acetate = 1):** N/D  
**pH:** N/A  
**Log Pow (n-Octanol/Water Partition Coefficient):** > 3.5  
**Solubility in Water:** Negligible  
**Viscosity:** 68 cSt (68 mm<sup>2</sup>/sec) at 40 °C | 8.5 cSt (8.5 mm<sup>2</sup>/sec) at 100°C  
**Oxidizing Properties:** See Hazards Identification Section.

### OTHER INFORMATION

**Freezing Point:** N/D  
**Melting Point:** N/A  
**Pour Point:** -12°C (10°F)  
**DMSO Extract (mineral oil only), IP-346:** < 3 %wt

## SECTION 10 STABILITY AND REACTIVITY

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Excessive heat. High energy sources of ignition.

**INCOMPATIBLE MATERIALS:** Strong oxidisers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**POSSIBILITY OF HAZARDOUS REACTIONS:** Hazardous polymerization will not occur.

## SECTION 11 TOXICOLOGICAL INFORMATION

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## INFORMATION ON TOXICOLOGICAL EFFECTS

| <b>Hazard Class</b>  | <b>Conclusion / Remarks</b>  |
|--|--|
| <b>Inhalation</b>  |  |
| Acute Toxicity: No end point data for material.                | Minimally Toxic. Based on assessment of the components.  |
| Irritation: No end point data for material.                    | Negligible hazard at ambient/normal handling temperatures.   |
| <b>Ingestion</b>   |  |
| Acute Toxicity: No end point data for material.                | Minimally Toxic. Based on assessment of the components.  |
| <b>Skin</b>  |  |
| Acute Toxicity: No end point data for material.                | Minimally Toxic. Based on assessment of the components.  |
| Skin Corrosion/Irritation: No end point data for material.     | Negligible irritation to skin at ambient temperatures. Based on assessment of the components.                  |
| <b>Eye</b>   |  |
| Serious Eye Damage/Irritation: No end point data for material. | May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.                       |
| <b>Sensitisation</b>   |  |
| Respiratory Sensitization: No end point data for material.     | Not expected to be a respiratory sensitizer.   |
| Skin Sensitization: No end point data for material.            | Not expected to be a skin sensitizer. Based on assessment of the components.                                   |
| <b>Aspiration:</b> Data available.                             | Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.                 |
| <b>Germ Cell Mutagenicity:</b> No end point data for material. | Not expected to be a germ cell mutagen. Based on assessment of the components.                                 |
| <b>Carcinogenicity:</b> No end point data for material.        | Not expected to cause cancer. Based on assessment of the components.   |
| <b>Reproductive Toxicity:</b> No end point data for material.  | Not expected to be a reproductive toxicant. Based on assessment of the components.                             |
| <b>Lactation:</b> No end point data for material.              | Not expected to cause harm to breast-fed children.   |
| <b>Specific Target Organ Toxicity (STOT)</b>                   |  |
| Single Exposure: No end point data for material.               | Not expected to cause organ damage from a single exposure.   |
| Repeated Exposure: No end point data for material.             | Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components. |

## OTHER INFORMATION

### Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

### IARC Classification:

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1

2 = IARC 2A

3 = IARC 2B

**SECTION 12 ECOLOGICAL INFORMATION**

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

**ECOTOXICITY**

Material -- Not expected to be harmful to aquatic organisms.

**MOBILITY**

Base oil component -- Low solubility and floats and is expected to migrate from water to the land.  
Expected to partition to sediment and wastewater solids.

**PERSISTENCE AND DEGRADABILITY**

**Biodegradation:**

Base oil component -- Expected to be inherently biodegradable

**BIOACCUMULATION POTENTIAL**

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

**SECTION 13 DISPOSAL CONSIDERATIONS**

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

**DISPOSAL RECOMMENDATIONS**

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

**Empty Container Warning** Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

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|                   |                              |
|-------------------|------------------------------|
| <b>SECTION 14</b> | <b>TRANSPORT INFORMATION</b> |
|-------------------|------------------------------|

**LAND (ADG):** Not Regulated for Land Transport

**SEA (IMDG):** Not Regulated for Sea Transport according to IMDG-Code

**Marine Pollutant:** No

**AIR (IATA):** Not Regulated for Air Transport

|                   |                               |
|-------------------|-------------------------------|
| <b>SECTION 15</b> | <b>REGULATORY INFORMATION</b> |
|-------------------|-------------------------------|

This material is not considered hazardous according to Australia Model Work Health and Safety Regulations.

Product is not regulated according to Australian Dangerous Goods Code.

No Poison Schedule number allocated by the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) established under the Therapeutic Goods Act.

AS1940 COMBUSTIBLE CLASS: C2

**REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS**

**Listed or exempt from listing/notification on the following chemical inventories (May contain substance(s) subject to notification to the EPA Active TSCA inventory prior to import to USA):** AICS, DSL, ENCS, IECSC, KECI, PICCS, TCSI, TSCA

|                   |                          |
|-------------------|--------------------------|
| <b>SECTION 16</b> | <b>OTHER INFORMATION</b> |
|-------------------|--------------------------|

**KEY TO ABBREVIATIONS AND ACRONYMS:**

N/D = Not determined, N/A = Not applicable, STEL = Short-Term Exposure Limit, TWA = Time-Weighted Average

**KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):**

H315: Causes skin irritation; Skin Corr/Irritation, Cat 2  
H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1  
H400: Very toxic to aquatic life; Acute Env Tox, Cat 1  
H401: Toxic to aquatic life; Acute Env Tox, Cat 2  
H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1  
H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

Southern Cross Lubes (Victoria and Tasmania): Section 01: Supplier Mailing Address information was deleted.  
Southern Cross Lubes (Victoria and Tasmania, New South Wales and Australian Capital Territory): Section 01: Supplier Mailing Address information was added.  
Section 12: information was modified.

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DGN: 7000324DAU (1004417)

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Prepared by: Exxon Mobil Corporation  
EMBSI, Clinton NJ USA  
Contact Point: See Section 1 for Local Contact number

**End of (M)SDS**



LUBRICANTS

## Megaflow® AW Hydraulic Oil

Phillips 66® Megaflow AW Hydraulic Oil is a high-quality anti-wear hydraulic oil developed for use in a wide variety of industrial and mobile hydraulic system applications. It meets the performance requirements of all major hydraulic pump manufacturers, and is recommended for use in all types of high-pressure, high-speed hydraulic pumps.

Megaflow AW Hydraulic Oil is formulated to provide excellent wear protection for hydraulic pumps and motors, and to protect hydraulic system components against rust and corrosion. It has excellent oxidation resistance and thermal stability at high temperatures to minimize deposit formation and provide long service life. It has excellent water-separating properties to minimize the formation of emulsions, and is resistant to excessive foam buildup that can cause poor or sluggish hydraulic system response.

### Applications

- Hydraulic systems on industrial, mobile and marine equipment
- Automated machine tools
- Elevators, hoists, presses and floor jacks
- Marine cargo winches and steering systems
- Mobile construction equipment
- Service station lifts
- Air tools and other pneumatic equipment lubricated through air line lubricators
- Chain drives
- Electric motor bearings
- Lightly to moderately loaded enclosed industrial gear drives that do not require a compounded or extreme-pressure (EP) gear oil

Megaflow AW Hydraulic Oil meets the requirements of the following industry and OEM specifications:

- Bosch Rexroth RE 90220, Type HLP
- DIN 51524 Part 2, Anti-wear Hydraulic Oils, Type HLP
- Parker Hannifin (Denison) HF-0, HF-1, HF-2 (approved ISO 32, 46, and 68)
- Eaton-Vickers I-286-S, M-2950-S, 35VQ25A anti-wear performance (brochure 03-401-2010 Rev 1 ISO 32, 46, and 68)
- Fives Cincinatti P-68 (ISO VG 32), P-70 (ISO VG 46), P-69 (ISO VG 68) (approved)
- German Steel Industry SEB 181222
- ISO 11158:1997, Family H (Hydraulic Systems), Type HM
- U.S. Steel 127

**High-Quality  
Anti-wear  
Hydraulic Oil**

KEEPING THE  
WORLD  
RUNNING  
SMOOTHLY. 



## Features/Benefits

- Excellent wear protection for hydraulic pumps and motors
- Excellent oxidation resistance and thermal stability
- Protects against rust and corrosion
- Excellent water-separating properties
- Good foam resistance

## Megaflow® AW Hydraulic Oil

| Typical Properties                         |           |           |           |           |
|--|-----------|-----------|-----------|-----------|
| ISO Grade                                  | 22        | 32        | 46        | 68        |
| Specific Gravity @ 60°F                    | 0.855     | 0.862     | 0.869     | 0.874     |
| Density, lbs/gal @ 60°F                    | 7.12      | 7.18      | 7.24      | 7.27      |
| Color, ASTM D1500                          | 0.5       | 0.5       | 0.5       | 0.5       |
| Flash Point (COC), °C (°F)                 | 196 (385) | 216 (421) | 227 (441) | 238 (460) |
| Pour Point, °C (°F)                        | -40 (-40) | -37 (-35) | -37 (-35) | -33 (-27) |
| Viscosity                                  |           |           |           |           |
| cSt @ 40 °C                                | 22.0      | 32.0      | 46.0      | 68.0      |
| cSt @ 100 °C                               | 4.3       | 5.4       | 6.8       | 8.7       |
| SUS @ 100 °F                               | 106       | 150       | 214       | 315       |
| SUS @ 210 °F                               | 39.9      | 44.0      | 48.5      | 54.9      |
| Viscosity Index                            | 101       | 102       | 102       | 99        |
| Acid Number, ASTM D974, mg KOH/g           | 0.38      | 0.38      | 0.38      | 0.38      |
| Copper Corrosion, ASTM D130                | 1a        | 1a        | 1a        | 1a        |
| Demulsibility, ASTM D1401, minutes to pass | 10        | 10        | 10        | 10        |
| Foam Test, ASTM D892, Seq. I, mL           | 0/0       | 0/0       | 0/0       | 0/0       |
| FZG Scuffing Test, ASTM D5182              |           |           |           |           |
| Failure Load Stage                         | ---       | 12        | 12        | 12        |
| Oxidation Stability                        |           |           |           |           |
| TOST, ASTM D943-04a, hours                 | >5,000    | >5,000    | >5,000    | >5,000    |
| Rust Test, ASTM D665 A&B                   | Pass      | Pass      | Pass      | Pass      |
| Zinc, wt %                                 | 0.043     | 0.043     | 0.043     | 0.043     |

Typical properties are average values only and do not constitute a specification. Minor variations that do not affect product performance are to be expected during normal manufacture, and at different blending locations. Product formulations are subject to change without notification.

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### Megaflow® AW Hydraulic Oil

| Typical Properties                         |           |           |           |           |
|--|-----------|-----------|-----------|-----------|
| ISO Grade                                  | 100       | 150       | 220       | 320       |
| Specific Gravity @ 60°F                    | 0.878     | 0.882     | 0.881     | 0.887     |
| Density, lbs/gal @ 60°F                    | 7.31      | 7.35      | 7.34      | 7.38      |
| Color, ASTM D1500                          | 0.5       | 0.5       | 0.5       | 0.5       |
| Flash Point (COC), °C (°F)                 | 252 (486) | 274 (525) | 282 (540) | 274 (525) |
| Pour Point, °C (°F)                        | -32 (-26) | -33 (-27) | -30 (-22) | -24 (-11) |
| Viscosity                                  |           |           |           |           |
| cSt @ 40 °C                                | 100       | 150       | 220       | 320       |
| cSt @ 100 °C                               | 11.0      | 14.7      | 19.2      | 24.3      |
| SUS @ 100 °F                               | 463       | 695       | 1,020     | 1,483     |
| SUS @ 210 °F                               | 62.8      | 76.8      | 95.1      | 117       |
| Viscosity Index                            | 94        | 96        | 98        | 96        |
| Acid Number, ASTM D974, mg KOH/g           | 0.38      | 0.38      | 0.38      | 0.38      |
| Copper Corrosion, ASTM D130                | 1a        | 1a        | 1a        | 1a        |
| Demulsibility, ASTM D1401, minutes to pass | 10        | 10        | 10        | 10        |
| Foam Test, ASTM D892, Seq. I, mL           | 0/0       | 0/0       | 0/0       | 0/0       |
| FZG Scuffing Test, ASTM D5182              |           |           |           |           |
| Failure Load Stage                         | 12        | 12        | 12        | 12        |
| Oxidation Stability                        |           |           |           |           |
| TOST, ASTM D943-04a, hours                 | >5,000    | >4,500    | >4,500    | >4,500    |
| Rust Test, ASTM D665 A&B                   | Pass      | Pass      | Pass      | Pass      |
| Zinc, wt %                                 | 0.043     | 0.043     | 0.043     | 0.043     |

### Health & Safety Information

For recommendations on safe handling and use of this product, please refer to the Safety Data Sheet via <http://www.phillips66.com/EN/products/Pages/MSDS.aspx>.



# Safety Data Sheet

According to OSHA HCS 2012 (29 CFR 1910.1200), Health Canada HPR (SOR/2015-17), and Mexico NOM-018-STPS-2015



## SECTION 1: Identification

**Product Identifier** **Megaflow® AW Hydraulic Oil**  
**Other means of identification** Phillips 66 Megaflow® AW Hydraulic Oil 22  
Phillips 66 Megaflow® AW Hydraulic Oil 32  
Phillips 66 Megaflow® AW Hydraulic Oil 46  
Phillips 66 Megaflow® AW Hydraulic Oil 68  
Phillips 66 Megaflow® AW Hydraulic Oil 100  
Phillips 66 Megaflow® AW Hydraulic Oil 150  
Phillips 66 Megaflow® AW Hydraulic Oil 220  
Phillips 66 Megaflow® AW Hydraulic Oil 320  
**Code** **LBPH814637**  
**Relevant identified uses** Hydraulic Fluid  
**Uses advised against** All others  
**24 Hour Emergency Phone Number** CHEMTREC 1-800-424-9300  
CHEMTREC México 01-800-681-9531

|  |   |  |
|--|---|--|
| <b>Manufacturer/Supplier</b><br>Phillips 66 Lubricants<br>P.O. Box 4428<br>Houston, TX 77210 | <b>SDS Information</b><br>URL: <a href="http://www.Phillips66.com">www.Phillips66.com</a><br>Phone: 800-762-0942<br>Email: <a href="mailto:SDS@P66.com">SDS@P66.com</a> | <b>Customer Service</b><br>U.S.: 800-368-7128 or International: 1-832-765-2500<br><b>Technical Information</b><br>1-877-445-9198 |
|--|---|--|

## SECTION 2: Hazard identification

|                           |  |
|---------------------------|--|
| <b>Classified Hazards</b> | <b>Hazards Not Otherwise Classified (HNOC)</b> |
| No classified hazards     | PHNOC: None known<br><br>HHNOC: None known     |

### Label Elements

No classified hazards

## SECTION 3: Composition/information on ingredients

| Chemical Name   | CASRN      | Concentration <sup>1</sup> |
|---|------------|----------------------------|
| Distillates, petroleum, hydrotreated heavy paraffinic | 64742-54-7 | <100                       |

<sup>1</sup> All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## SECTION 4: First aid measures

**Eye Contact:** If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

**Skin Contact:** First aid is not normally required. However, it is good practice to wash any chemical from the skin. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician. (see Note to Physician)

**Inhalation:** First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Seek immediate medical attention.

**Ingestion:** First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

**Most important symptoms and effects, both acute and delayed:** Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea.

**Notes to Physician:** Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities. When using high-pressure equipment, injection of product under the skin can occur. In this case, the casualty should be sent immediately to the hospital. Do not wait for symptoms to develop. High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

## SECTION 5: Firefighting measures

### NFPA 704 Hazard Class

Health: 0 Flammability: 1 Instability: 0



0 (Minimal)  
1 (Slight)  
2 (Moderate)  
3 (Serious)  
4 (Severe)

**Extinguishing Media:** Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

### Specific hazards arising from the chemical

**Unusual Fire & Explosion Hazards:** This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

**Hazardous Combustion Products:** Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

**Special protective actions for fire-fighters:** For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

## SECTION 6: Accidental release measures

**Personal precautions, protective equipment and emergency procedures:** This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

**Environmental Precautions:** Stop and contain spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

**Methods and material for containment and cleaning up:** Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken. See Section 13 for information on appropriate disposal.

## SECTION 7: Handling and storage

**Precautions for safe handling:** Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8). Spills will produce very slippery surfaces. High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

**Conditions for safe storage:** Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

## SECTION 8: Exposure controls/personal protection

### Occupational exposure limits

| Chemical Name   | ACGIH  | OSHA | Mexico | Phillips 66 |
|---|--|------|--------|-------------|
| Distillates, petroleum, hydrotreated heavy paraffinic | TWA: 5mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup><br>as Oil Mist, if Generated | ---  | ---    | ---         |

**Note:** State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

### Biological occupational exposure limits

**This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies**

**Engineering controls:** If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

**Eye/Face Protection:** The use of eye/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals.

**Skin/Hand Protection:** The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of gloves or other appropriate skin protection whenever working with chemicals. Suggested protective materials: Nitrile

**Respiratory Protection:** Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

**Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.**

## SECTION 9: Physical and chemical properties

**Note:** Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

**Appearance:** Amber, Transparent

**Physical Form:** Liquid

**Odor:** Petroleum

**Odor Threshold:** No data

**pH:** Not applicable

**Vapor Density (air=1):** >1

**Upper Explosive Limits (vol % in air):** No data

**Lower Explosive Limits (vol % in air):** No data

**Evaporation Rate (nBuAc=1):** No data

**Particle Size:** Not applicable

**Percent Volatile:** No data

**Flammability (solid, gas):** Not applicable

**Solubility in Water:** Negligible

**Flash Point:** > 302 °F / > 150 °C (ASTM D93)

**Test Method:** Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010

**Initial Boiling Point/Range:** No data

**Vapor Pressure:** <1 mm Hg

**Partition Coefficient (n-octanol/water) (Kow):** No data

**Melting/Freezing Point:** No data

**Auto-ignition Temperature:** No data

**Decomposition Temperature:** No data

**Specific Gravity (water=1):** 0.85-0.89 @ 60°F (15.6°C)

**Bulk Density:** 7.12-7.38 lbs/gal

**Viscosity:** 4.0 - 25 cSt @ 100°C; 21 - 345 cSt @ 40°C

**Pour Point:** < 10 °F / < -12 °C

## SECTION 10: Stability and reactivity

**Reactivity:** Not chemically reactive.

**Chemical stability:** Stable under normal ambient and anticipated conditions of use.

**Possibility of hazardous reactions:** Hazardous reactions not anticipated.

**Conditions to avoid:** Extended exposure to high temperatures can cause decomposition. Avoid all possible sources of ignition.

**Incompatible materials:** Avoid contact with strong oxidizing agents and strong reducing agents.

**Hazardous decomposition products:** Not anticipated under normal conditions of use.

## SECTION 11: Toxicological information

### Information on Toxicological Effects

#### Substance / Mixture

| Acute Toxicity | Hazard                 | Additional Information | LC50/LD50 Data            |
|----------------|------------------------|------------------------|---------------------------|
| Inhalation     | Unlikely to be harmful |                        | >5 mg/L (mist, estimated) |
| Dermal         | Unlikely to be harmful |                        | > 2 g/kg (estimated)      |
| Oral           | Unlikely to be harmful |                        | > 5 g/kg (estimated)      |

**Aspiration Hazard:** Not expected to be an aspiration hazard

**Skin Corrosion/Irritation:** Not expected to be irritating. Repeated exposure may cause skin dryness or cracking.

**Serious Eye Damage/Irritation:** Not expected to be irritating.

**Skin Sensitization:** No information available on the mixture, however none of the components have been classified for skin sensitization (or are below the concentration threshold for classification).

**Respiratory Sensitization:** No information available.

**Specific Target Organ Toxicity (Single Exposure):** No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

**Specific Target Organ Toxicity (Repeated Exposure):** No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

**Carcinogenicity:** No information available on the mixture, however none of the components have been classified for carcinogenicity (or are below the concentration threshold for classification).

**Germ Cell Mutagenicity:** No information available on the mixture, however none of the components have been classified for germ cell mutagenicity (or are below the concentration threshold for classification).

**Reproductive Toxicity:** No information available on the mixture, however none of the components have been classified for reproductive toxicity (or are below the concentration threshold for classification).

#### Information on Toxicological Effects of Components

##### Distillates, petroleum, hydrotreated heavy paraffinic

**Carcinogenicity:** This oil has been highly refined by a variety of processes to reduce aromatics and improve performance characteristics. It meets the IP-346 criteria of less than 3 percent PAH's and is not considered a carcinogen by the International Agency for Research on Cancer.

## SECTION 12: Ecological information

### GHS Classification:

#### No classified hazards

**Toxicity:** All acute aquatic toxicity studies on samples of lubricant base oils show acute toxicity values greater than 100 mg/L for invertebrates, algae and fish. These tests were carried out on water accommodated fractions and the results are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

**Persistence and Degradability:** The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

**Bioaccumulative Potential:** Log Kow values measured for the hydrocarbon components of this material are greater than 5.3, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

**Mobility in Soil:** Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of the hydrocarbon constituents in soil and sediment.

**Other adverse effects:** None anticipated.

## SECTION 13: Disposal considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations. This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the SDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste. This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle used oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

## SECTION 14: Transport information

**U.S. Department of Transportation (DOT)**

**UN Number:** Not regulated

**UN proper shipping name:** None

**Transport hazard class(es):** None

**Packing Group:** None

**Environmental Hazards:** This product does not meet the ADG/UN/IMDG/IMO criteria of a marine pollutant

**Special precautions for user:** If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable

**SECTION 15: Regulatory information**

**CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds)**

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

**CERCLA/SARA - Section 311/312 (Title III Hazard Categories)**

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

**CERCLA/SARA - Section 313 and 40 CFR 372**

This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

**EPA (CERCLA) Reportable Quantity (in pounds)**

This material does not contain any chemicals with CERCLA Reportable Quantities.

**California Proposition 65**

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

**International Inventories**

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.

All components are either on the DSL, or are exempt from DSL listing requirements.

**SECTION 16: Other information**

| Issue Date: | Previous Issue Date: | SDS Number | Status: |
|-------------|----------------------|------------|---------|
| 31-Aug-2017 | 28-Jun-2016          | LBPH814637 | FINAL   |

**Revised Sections or Basis for Revision:**

Format change

**Legend (pursuant to NOM-018-STPS-2015):**

The information within is considered correct but is not exhaustive and will be used for guidance only, which is based on the current knowledge of the substance or mixture and is applicable to the appropriate safety precautions for the product.

**Guide to Abbreviations:**

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; HPR = Hazardous Products Regulations; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

**Disclaimer of Expressed and implied Warranties:**

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