

Consolidated Cut blocks 2022

Updates

1. The 2022 consolidated cut blocks dataset was cut on August 19th, 2022. The dataset is current to the data in the input datasets on that day.
2. An updated change detection methodology using LandTrendr (Landsat-based detection of Trends in Disturbance and Recovery) mapping tool was developed and applied to the 2019 to 2021 harvest years. This updated methodology continues to use Landsat satellite imagery as the data source.

Description

The consolidated cut blocks dataset spatially combines forest harvesting data from multiple datasets (i.e . Reporting Silviculture Updates and Land Status Tracking System (RESULTS), Forest Cover Inventory (VRI) and Landsat satellite change detection). The dataset depicts historical cut blocks on all land owner types that are recorded in Ministry of Forest's system and includes an estimate of the year of harvest.

Dataset Use

The consolidated cut blocks datasets was designed to assists the Timber Supply Analyst in the Timber Supply Review process.

Efforts were made to remove forest reserves areas from the data but it cannot be assumed that these areas were removed in all cases. Data with Harvest dates before 2012 or that have geometry taken from the WHSE_FOREST_VEGETATION.RSLT_OPENING_SVW or WHSE_FOREST_VEGETATION.RSLT_ACTIVITY_TREATMENT_UNIT datasets may not have reserve areas removed due to limitations in the data. **As a result, this dataset should not be used to officially determine how much area has been logged every year.**

Inputs

Name	Source
VRI	WHSE_FOREST_VEGETATION.VEG_COMP_LYR_R1_POLY (2020)
RESULTS Forest Cover	WHSE_FOREST_VEGETATION.RSLT_FOREST_COVER_INV_SVW
RESULTS Opening	1. WHSE_FOREST_VEGETATION.RSLT_OPENING_SVW 2. WHSE_FOREST_VEGETATION.RSLT_OPENING_VW
RESULTS Activity Treatment	WHSE_FOREST_VEGETATION.RSLT_ACTIVITY_TREATMENT_SVW ACT
Landsat Change	\\spatialfiles.bcgov\archive\for\VIC\HTS\FAIB_DATA_FOR_DISTRIBUTION\Cut

Detection	blocks\Harvest change detection files
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Data Model

Field Name	Data Type	Description
OPENING_ID	LONG	<p>OPENING_ID is a system generated value assigned by RESULTS to uniquely identify the opening. Opening_IDs are included in the VRI to identify cutblocks.</p> <p>***Note</p> <ol style="list-style-type: none"> 1. The Landsat change detection data does not have an Opening ID. 2. Some opening IDs in the VRI were inadvertently removed and therefore are Null or 0 in this data set
DISTURBANCE_START_DATE	Date	<p>Derived from the first reported disturbance activity reporting. This date is used to calculate the silviculture obligation milestones.</p> <p>***Note</p> <p>The Landsat change detection data does not have a Disturbance Date.</p>
DISTURBANCE_END_DATE	Date	<p>Derived from the last disturbance activity reporting record based on the disturbance activity's completion date.</p> <p>***Note</p> <p>The Landsat change detection data does not have a Disturbance Date.</p>
DATA_SOURCE	STRING	<p>DATA_SOURCE is the highest priority source of data for the disturbance polygon. The order of priority used is VRI, RESULTS, and then Landsat Change Detection.</p>
HARVEST_YEAR	LONG	HARVEST_YEAR is the year of

		harvest, derived from the disturbance end date of the data source or from the year the disturbance was detected using Landsat change detection.
Notes	STRING	More detail about the source of the cut blocks. For example, this field describes whether a cut block's shape comes from the RESULTS Forest Cover table, RESULTS Opening SVW table or RESULTS Activity Treatment table.
AREA_HA	DOUBLE	The area in hectares of the cut block

Logic and SQL Queries

1. Determine the RESULTS Opening IDs that are harvested cut blocks.

```
select DISTINCT TEMP.OPENING_ID, 1 as DENUDED
from WHSE_FOREST_VEGETATION.RSLT_ACTIVITY_TREATMENT_UNIT TEMP
      join WHSE_FOREST_VEGETATION.RSLT_OPENING_VW VIW2 on TEMP.OPENING_ID = VIW2.OPENING_ID
where (TEMP.SILV_BASE_CODE = 'DN' and VIW2.FOREST_FILE_ID is not null and VIW2.OPENING_CATEGORY_CODE
not in ('NREQ', 'NDWL', 'NDAML', 'NDCF', 'NDFS', 'NDVML', 'SPEX', 'SMPCF', 'SMPEX', 'SMPFS', 'SMPML', 'SMPWL')) or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.DISTURBANCE_CODE in ('L', 'R', 'S')) or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.SILV_SYSTEM_CODE is not null AND TEMP.DISTURBANCE_CODE <> 'E' )
```

2. Get all RSLT_FOREST_COVER_INV_SVW shapes that have opening ids the query 1 and that are not reserves or non productive land.

```
with actTreat1 as
(select
DISTINCT TEMP.OPENING_ID,
1 as DENUDED
from
WHSE_FOREST_VEGETATION.RSLT_ACTIVITY_TREATMENT_UNIT TEMP
join WHSE_FOREST_VEGETATION.RSLT_OPENING_VW VIW2 on TEMP.OPENING_ID = VIW2.OPENING_ID
where
(
TEMP.SILV_BASE_CODE = 'DN' and VIW2.FOREST_FILE_ID is not null
and VIW2.OPENING_CATEGORY_CODE not in ('NREQ', 'NDWL', 'NDAML', 'NDCF', 'NDFS', 'NDVML', 'SPEX',
'SMPCF', 'SMPEX', 'SMPFS', 'SMPML', 'SMPWL'))
or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.DISTURBANCE_CODE in ('L', 'R', 'S'))
```

```

or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.SILV_SYSTEM_CODE is not null AND TEMP.DISTURBANCE_CODE <> 'E' )
)
,

```

```

NON_PRODUCTIVE as (
select distinct
FOREST_COVER_ID,
1 as NON_PROD
from WHSE_FOREST_VEGETATION.RSLT_FOREST_COVER_INV_SVW
where STOCKING_STATUS_CODE in (
'A',      -- alpine
          'AF',    -- alpine forest
          'C',     -- cultivated
          'G',     -- gravelbar
--        'IMM',   -- immature
          'L',     -- Lake
          'M',     -- meadow
--        'MAT',   -- mature
          'NC',    -- non-commercial
          'NF',    -- non-forest
--        'NP',    -- non-productive
--        'NSR',   -- Not Satisfactorily Restocked
          'OR',    -- Open range
          'R',     -- rock
--        'RES',   -- residual
          'S',     -- swamp
          'U'      -- urban
)
or (STOCKING_STATUS_CODE in ('NP') and STOCKING_TYPE_CODE in ('NAT', 'FOR', 'BR'))
)
,

```

```

RESERVES as (
select distinct
FOREST_COVER_ID,
1 as RESERVE
from WHSE_FOREST_VEGETATION.RSLT_FOREST_COVER_INV_SVW
where
(SILV_RESERVE_CODE IN ('G') and STOCKING_STATUS_CODE = 'MAT' and EXTRACT(YEAR FROM
FOREST_COVER_WHEN_UPDATED) >= 2012)
or (SILV_RESERVE_CODE IN ('G') and STOCKING_STATUS_CODE in ('NP', 'MAT', 'IMM', 'RES') and
STOCKING_TYPE_CODE in ('NAT', 'FOR', 'BR'))
or (SILV_RESERVE_CODE IN ('G', 'W') and SILV_RESERVE_OBJECTIVE_CODE = 'WTR' and STOCKING_STATUS_CODE
in ('NP', 'MAT', 'IMM', 'RES') and STOCKING_TYPE_CODE in ('NAT', 'FOR', 'BR'))
)

```

```

SELECT
FC.GEOMETRY,
FC.OPENING_ID,

```

```

fc.forest_cover_id,
RSLT.DISTURBANCE_START_DATE,
RSLT.DISTURBANCE_END_DATE,
STOCKING_STANDARD_UNIT_ID,
DENUDED,
NON_PROD,
RESERVE,
STOCKING_STATUS_CODE,
STOCKING_TYPE_CODE,
SILV_RESERVE_CODE,
SILV_RESERVE_OBJECTIVE_CODE

```

```

from WHSE_FOREST_VEGETATION.RSLT_FOREST_COVER_INV_SVW FC
left outer join ACTTREAT1 act1 on FC.OPENING_ID = act1.OPENING_ID
left outer join RESERVES RS on FC.FOREST_COVER_ID = RS.FOREST_COVER_ID
left outer join NON_PRODUCTIVE NP on FC.FOREST_COVER_ID = NP.FOREST_COVER_ID
join WHSE_FOREST_VEGETATION.RSLT_OPENING_VW RSLT on FC.OPENING_ID = RSLT.OPENING_ID
WHERE
FC.GEOMETRY IS NOT NULL
AND DENUDED = 1
And Reserve Is Null
And Non_Prod Is Null

```

3. Get all the cut blocks from the RSLT_OPENING_SVW table that do not have an opening ids in RESULTS forest cover (i.e. query 2) and have opening IDs in query 1.

```

with actTreat1 as (
select DISTINCT TEMP.OPENING_ID, 1 as DENUDED
from WHSE_FOREST_VEGETATION.RSLT_ACTIVITY_TREATMENT_UNIT TEMP
join WHSE_FOREST_VEGETATION.RSLT_OPENING_VW VIW2 on TEMP.OPENING_ID = VIW2.OPENING_ID
where ( TEMP.SILV_BASE_CODE = 'DN' and VIW2.FOREST_FILE_ID is not null and VIW2.OPENING_CATEGORY_CODE not in
('NREQ', 'NDWL', 'NDAML', 'NDCF', 'NDFS', 'NDVML', 'SPEX', 'SMPCF', 'SMPEX', 'SMPFS', 'SMPML', 'SMPWL')) or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.DISTURBANCE_CODE in ('L', 'R', 'S')) or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.SILV_SYSTEM_CODE is not null AND TEMP.DISTURBANCE_CODE <> 'E' )),

fcSel as (
SELECT DISTINCT OPENING_ID, 1 AS RFC
FROM WHSE_FOREST_VEGETATION.RSLT_FOREST_COVER_INV_SVW
WHERE GEOMETRY is not Null)

SELECT RESVW.OPENING_ID, RESVW.GEOMETRY, RESVW.DISTURBANCE_END_DATE, RESVW.DISTURBANCE_START_DATE
FROM WHSE_FOREST_VEGETATION.RSLT_OPENING_SVW RESVW
LEFT OUTER JOIN actTreat1 act on RESVW.OPENING_ID = ACT.OPENING_ID
LEFT OUTER JOIN FCSEL fc on RESVW.OPENING_ID = FC.OPENING_ID
WHERE RESVW.GEOMETRY IS NOT Null AND
DENUDED = 1 AND
RFC is NULL

```

4. Get all VRI openings with a Harvest Date >= 1965 where opening ids are not in RESULTS forest cover or openings_svw:

```

with actTreat1 as (
select DISTINCT TEMP.OPENING_ID, 1 as DENUDED

```

```

from WHSE_FOREST_VEGETATION.RSLT_ACTIVITY_TREATMENT_UNIT TEMP
      join WHSE_FOREST_VEGETATION.RSLT_OPENING_VW VIW2 on TEMP.OPENING_ID = VIW2.OPENING_ID
where (TEMP.SILV_BASE_CODE = 'DN' and VIW2.FOREST_FILE_ID is not null and VIW2.OPENING_CATEGORY_CODE not in
('NREQ', 'NDWL', 'NDAML', 'NDCF', 'NDFS', 'NDVML', 'SPEX', 'SMPCF', 'SMPEX', 'SMPFS', 'SMPML', 'SMPWL')) or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.DISTURBANCE_CODE in ('L', 'R', 'S')) or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.SILV_SYSTEM_CODE is not null AND TEMP.DISTURBANCE_CODE <> 'E' ),

```

```

fcSel as (
SELECT DISTINCT fc.OPENING_ID, 1 AS RFC
FROM WHSE_FOREST_VEGETATION.RSLT_FOREST_COVER_INV_SVW fc
      join actTreat1 act on fc.OPENING_ID = act.OPENING_ID
WHERE GEOMETRY is not Null),

```

```

RESSel as (
SELECT DISTINCT RESVW.OPENING_ID, 1 AS RESVW
FROM WHSE_FOREST_VEGETATION.RSLT_OPENING_SVW RESVW
      join actTreat1 act on RESVW.OPENING_ID = act.OPENING_ID
WHERE GEOMETRY IS NOT Null )

```

```

SELECT VRI.HARVEST_DATE, VRI.OPENING_ID, VRI.GEOMETRY
FROM WHSE_FOREST_VEGETATION.VEG_COMP_POLY VRI
      LEFT OUTER JOIN FCSEL fc on vri.OPENING_ID = FC.OPENING_ID
      LEFT OUTER JOIN RESSEL RSL on vri.OPENING_ID = RSL.OPENING_ID
WHERE VRI.HARVEST_DATE is not Null AND
(TO_CHAR(VRI.HARVEST_DATE,'YYYY') >= '1965') AND
RFC is Null AND
RESVW is Null

```

5. Get all the cut blocks from the RSLT_ACTIVITY_TREATMENT_SVW table that do not have an opening ID in the VRI, RESULTS forest cover or RESULTS Openings SVW and have opening IDs in the actTreat1 and actTreat2 tables.

```

with actTreat1 as (
select DISTINCT TEMP.OPENING_ID, 1 as DENUDED
from WHSE_FOREST_VEGETATION.RSLT_ACTIVITY_TREATMENT_UNIT TEMP
      join WHSE_FOREST_VEGETATION.RSLT_OPENING_VW VIW2 on TEMP.OPENING_ID = VIW2.OPENING_ID
where (TEMP.SILV_BASE_CODE = 'DN' and VIW2.FOREST_FILE_ID is not null and VIW2.OPENING_CATEGORY_CODE not in
('NREQ', 'NDWL', 'NDAML', 'NDCF', 'NDFS', 'NDVML', 'SPEX', 'SMPCF', 'SMPEX', 'SMPFS', 'SMPML', 'SMPWL')) or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.DISTURBANCE_CODE in ('L', 'R', 'S')) or
(TEMP.SILV_BASE_CODE = 'DN' and TEMP.SILV_SYSTEM_CODE is not null AND TEMP.DISTURBANCE_CODE <> 'E' ),

```

```

VRISEL as (
select distinct VRI.OPENING_ID, 1 as VRI
FROM WHSE_FOREST_VEGETATION.VEG_COMP_POLY VRI
where VRI.HARVEST_DATE is not null AND (TO_CHAR(VRI.HARVEST_DATE,'YYYY') >= '1965') and OPENING_ID not in (-99, 0)),

```

```

fcSel as (
SELECT DISTINCT OPENING_ID, 1 AS RFC
FROM WHSE_FOREST_VEGETATION.RSLT_FOREST_COVER_INV_SVW
      WHERE GEOMETRY is not Null),

```

```

RESSel as (
SELECT DISTINCT RESVW.OPENING_ID, 1 AS RESVW
FROM WHSE_FOREST_VEGETATION.RSLT_OPENING_SVW RESVW
WHERE GEOMETRY IS NOT Null )

```

```

SELECT ACTfc.GEOMETRY, ACTfc.OPENING_ID, ACTfc.ATU_START_DATE, ACTfc.ATU_COMPLETION_DATE
FROM WHSE_FOREST_VEGETATION.RSLT_ACTIVITY_TREATMENT_SVW ACTfc
  LEFT OUTER JOIN actTreat1 ACT on ACTfc.OPENING_ID = ACT.OPENING_ID
  LEFT OUTER JOIN VRISel vri on ACTfc.OPENING_ID = vri.OPENING_ID
  LEFT OUTER JOIN FCSEL fc on ACTfc.OPENING_ID = FC.OPENING_ID
  LEFT OUTER JOIN RESSel RSL on ACTfc.OPENING_ID = RSL.OPENING_ID
WHERE
  ACTfc.GEOMETRY IS NOT Null AND
  DENUDED = 1 AND
  VRI is Null AND RFC is Null AND
  RESVW is Null

```

6. Merge together the Landsat Change Detection annual datasets ([\\spatialfiles.bcgov\archive\for\VIC\HTS\FAIB DATA FOR DISTRIBUTION\Cutblocks\Harvest change detection files](#)) and merge together. Where overlaps occur in the data, use the latest harvest date.
7. Remove Landsat change detection polygons where over 70 % of the cut block area intersects with cut blocks from the other datasets.
8. Union (merge) all of the cut blocks from all the data sources together (i.e. vri, Forest cover, openings, activity treatment and Landsat). Where overlaps occur, use the polygons whose data source has the highest rank (see ranking below). If overlaps occur between polygons with the same data source, use the polygon with the latest harvest year attribute.

Data Source Rank:

1. RESULTS Forest Cover
 2. VRI
 3. RESULTS Openings SWV
 4. RESULTS Activity Treatment
 5. Landsat Change Detection
9. Remove all slivers smaller than 500 metres squared that are not in the vri.

