Peabody City Council Meeting

Crystal Lake and Elginwood Pond Dredging Project

April 2, 2014

Edward A. Bettencourt, Mayor
Barry Sinewitz, City Council

David A. Murphy, P.E., Principal
Daniel R. Buttrick, P.E., Project Engineer/Manager

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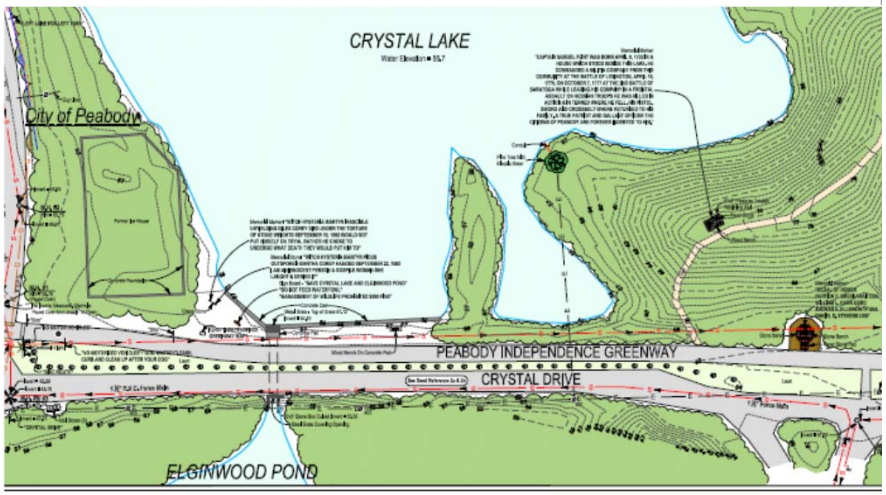
Presentation Outline

- **Project Update**
- **Project Schedule**
- **Dredging Method**
- **Environmental Impacts**
- **Outdoor Recreation Improvements**

Project Update

- **Completed**
  - Topographic Survey
  - Wetlands Delineation
  - Preliminary Sediment Quality Sampling
  - Dredging and Disposal Option Assessment
  - Dredging Program Development
  - Open Space Concept Development
  - Pre-permitting coordination



Preliminary Project Schedule

April 2015	Additional Sediment Sampling
March – August 2015	Permitting (underway)
Fall 2015	Procurement
Winter 2015 – Spring 2016	Dredging
Summer – Fall 2016	Open Space Area Construction

Proposed Dredging Program

- **Focus Dredging on Crystal Lake**
  - Up to 50,000 cubic yards of dredging
  - Proposed Pond Depth
    - » 8 foot target depth in 3.5 acre area near center of pond
    - » Slope gradually upward to shoreline
    - » Leave areas near vegetated shallows undisturbed
  - Discussions underway with MassDEP for disposal options
- **Budget - $2.5 million**
  - Tailor dredging limits to prices at bidding
  - More funding needed to include Elginwood Pond

Proposed Dredging Program

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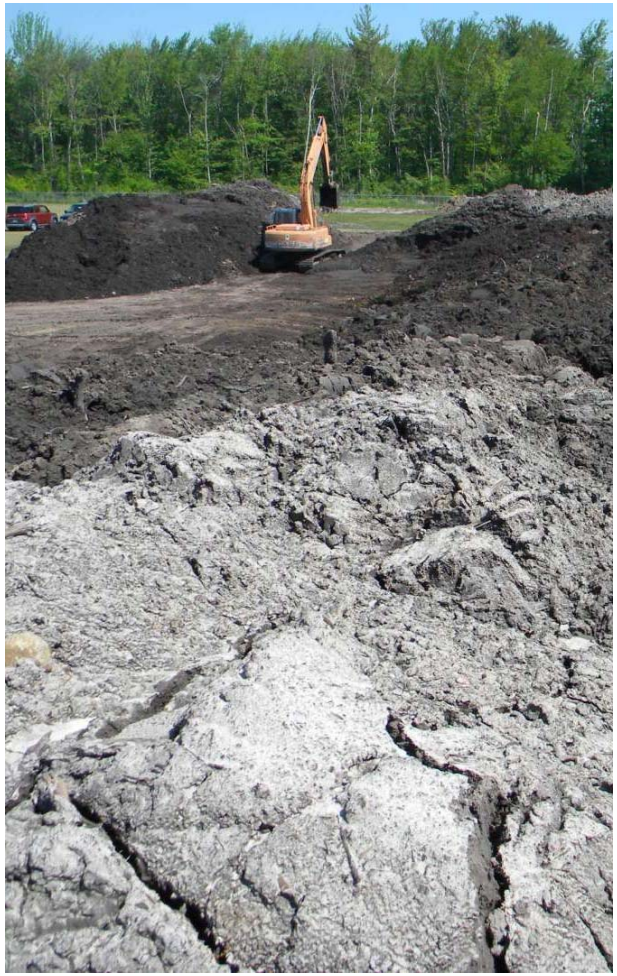
Dredging Methods

- **Proposed Method**
  - Dewater Crystal Lake by pumping
  - Use cofferdams to control inflowing water
  - Isolate area in Elginwood Pond for additional control
  - Dewater sediment in-place
  - Excavate sediment with standard heavy machinery
  - Haul sediment away



Other Dredging Methods Considered

- **Pump sediment (Hydraulic Dredging)**
  - Advantage
    - » fewer environmental impacts
  - Disadvantages
    - » too costly
    - » inadequate land area available for dewatering sediment
    - » Equipment intolerant to debris

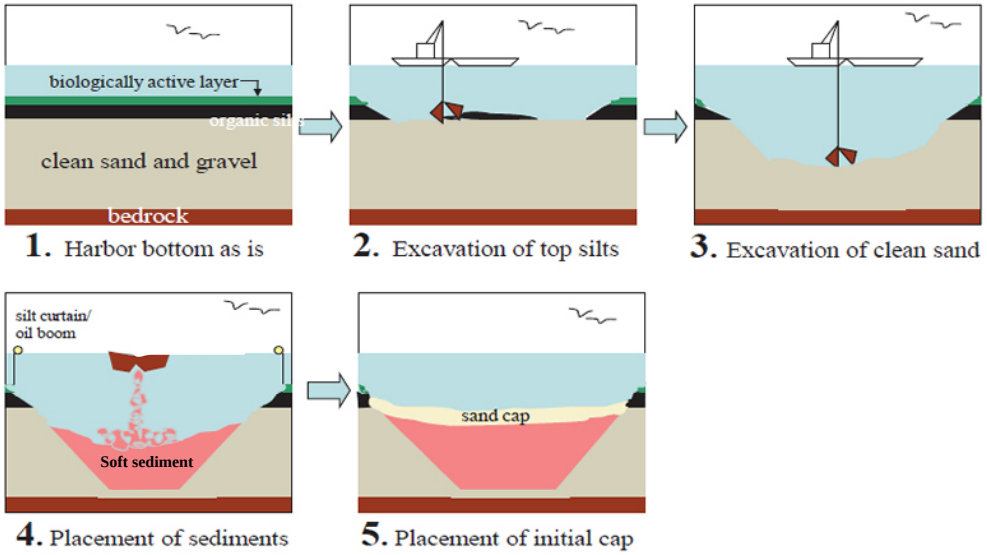
Source: TenCate Geosynethetics

Other Dredging Methods Considered

- **Mechanically dredge sediment from barges**
  - Advantages
    - » Fewer environmental impacts than drawdown
    - » Possible lower cost than hydraulic dredging
  - Disadvantages
    - » Sediment suspension/turbidity
    - » Possible high cost of barge operations
    - » Inadequate space available for dewatering

Other Dredging Methods Considered

- **Cut-and-cover**
  - Concept – remove material from below organic sediments and confine organic sediments in-place.
  - Advantages
    - » Sale or use opportunity
    - » Faster dewatering
  - Disadvantages
    - » Technically challenging
    - » No data on material



Source: EPA

Environmental Impacts

- **No endangered species known in area**
- **Sediment relatively free from contaminants**
- **Coordinating with MassWildlife on fisheries concerns**
  - State has no fisheries data on ponds
  - Fish relocations
  - Volunteer opportunity

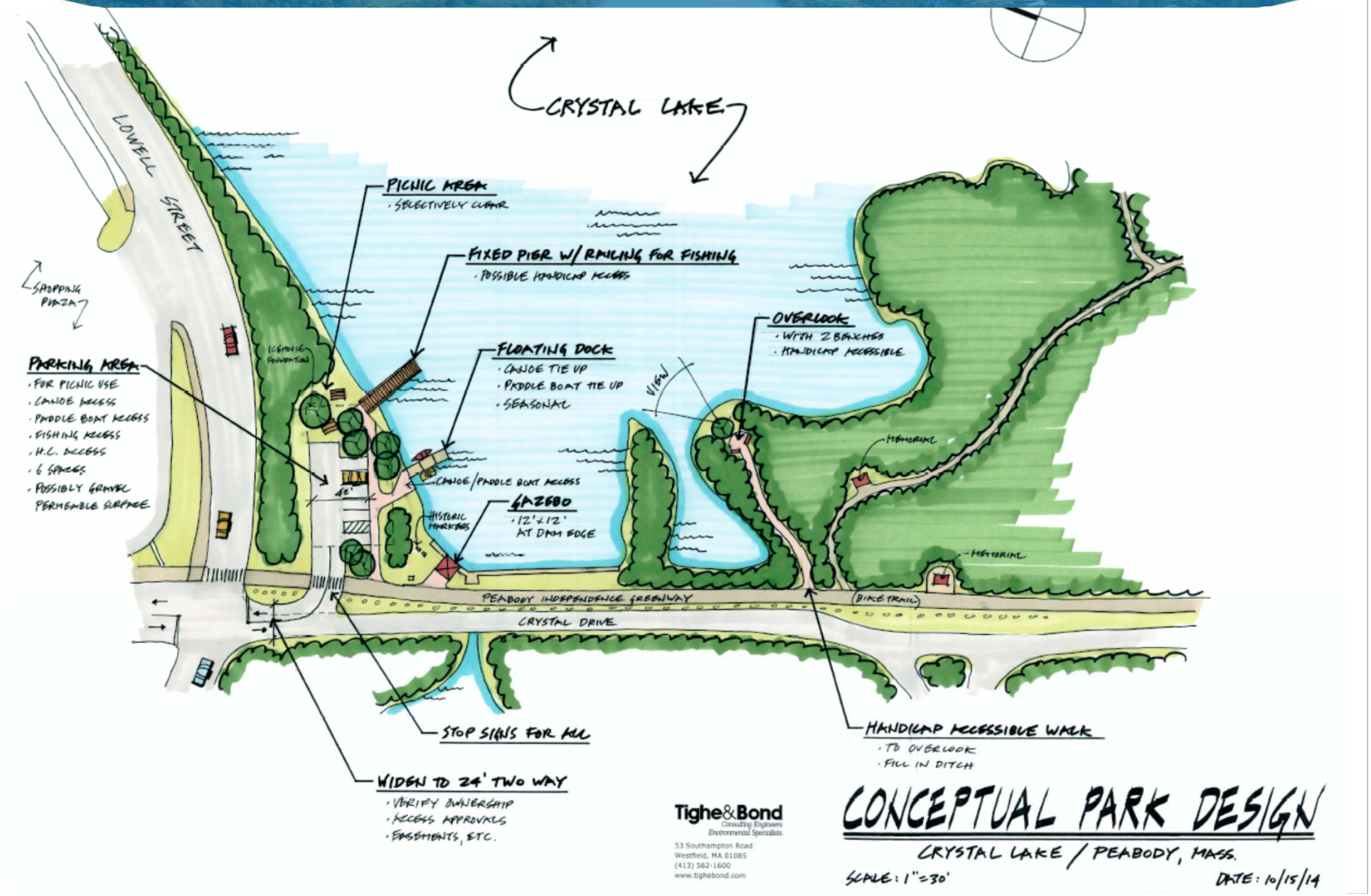
Environmental Impacts

- **Noise**
  - 24/7 Pumping for initial drawdown
  - Possible 24/7 pumping to maintain drawdown
    - » Hospital mufflers on pumps – not silent, but quieter
- **Truck Trips**
  - Estimate 20-25 per day for approximately 100 days
- **Odor**
  - May be present
  - Duration of work will be limited

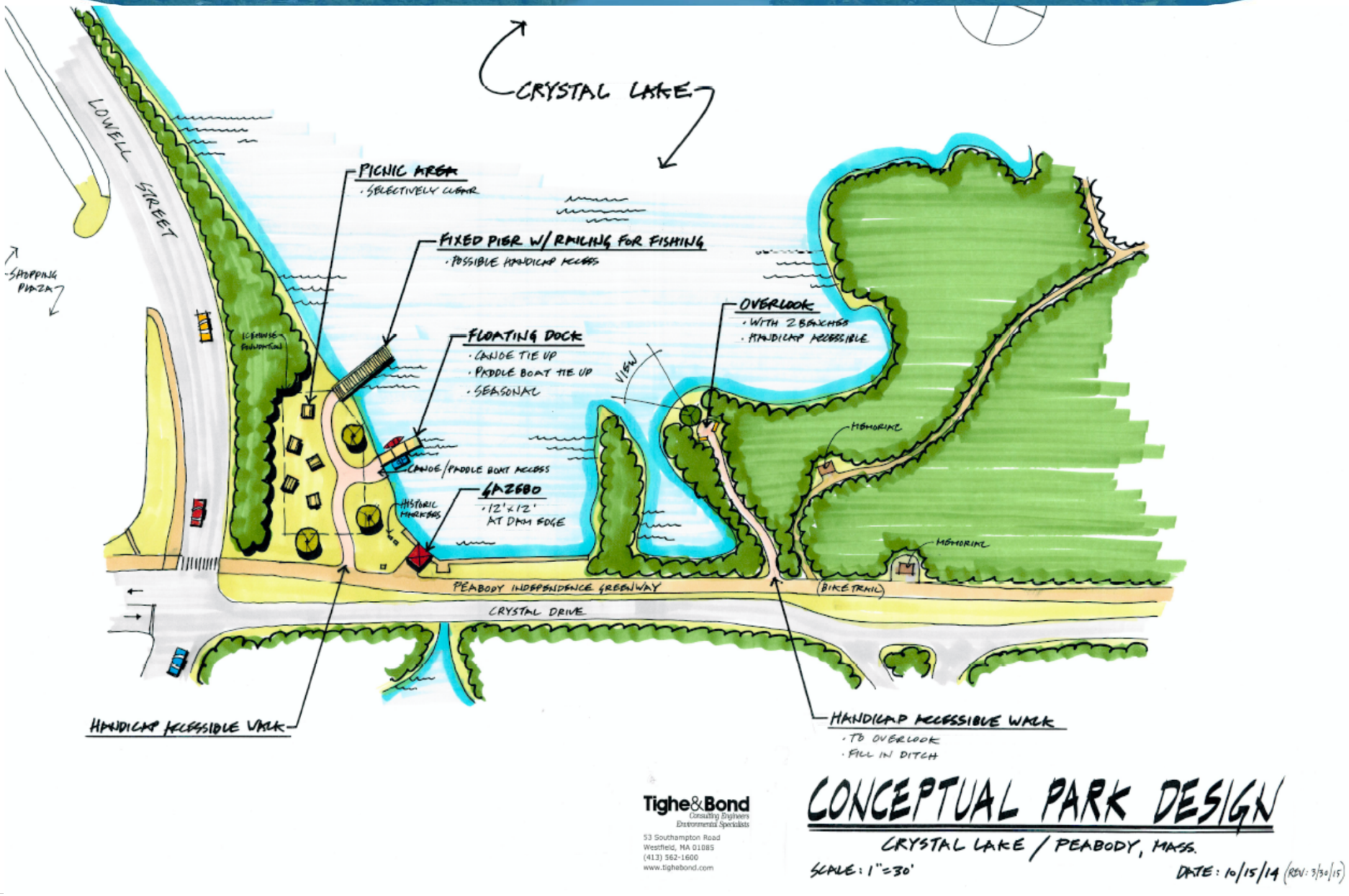
Outdoor Recreation Improvements

- **Provide open space area at Crystal Lake**
  - Picnicking
  - Fishing access
  - Boating Access
- **ADA-accessible trail to lake with overlook**
- **Access via Independence Greenway**
- **Integrate existing monuments and displays**
- **Parking, if possible**
- **Target budget - $300,000**

Concepts


CRYSTAL LAKE
LOWELL STREET
SHOPPING PLAZA
PICNIC AREA
· SELECTIVELY CLEAR
FIXED PIER W/ RAILING FOR FISHING
· POSSIBLE HANDICAP ACCESS
FLOATING DOCK
· CANOE TIE UP
· PADDLE BOAT TIE UP
· SEASONAL
OVERLOOK
· WITH 2 BENCHES
· HANDICAP ACCESSIBLE
PARKING AREA
· FOR PICNIC USE
· CANOE ACCESS
· PADDLE BOAT ACCESS
· FISHING ACCESS
· H.C. ACCESS
· 6 SPACES
· POSSIBLY GRAVEL PERMEABLE SURFACE
LICENSE FOUNDATION
VISTA
MEMORIAL
CANOE/PADDLE BOAT ACCESS
GAZEBO
· 12'x12'
AT DAM EDGE
HISTORIC MARKERS
PEABODY INDEPENDENCE GREENWAY
BIKE TRAIL
CRYSTAL DRIVE
STOP SIGNS FOR ALL
HANDICAP ACCESSIBLE WALK
· TO OVERLOOK
· FILL IN DITCH
WIDEN TO 24' TWO WAY
· VERIFY OWNERSHIP
· ACCESS APPROVALS
· EASEMENTS, ETC.
Tighe&Bond
Consulting Engineers
Environmental Specialists
53 Southampton Road
Westfield, MA 01085
(413) 562-1600
www.tighebond.com
CONCEPTUAL PARK DESIGN
CRYSTAL LAKE / PEABODY, MASS.
SCALE: 1"=30'
DATE: 10/15/14

Concepts



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